

California High-Speed Rail Authority

Bakersfield to Palmdale

Project Section

Final Environmental Impact Report/Environmental Impact Statement

CEQA Findings of Fact and Statement of
Overriding Considerations

August 2021



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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TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	vii
1 INTRODUCTION	1-1
2 PROJECT DESCRIPTION.....	2-1
2.1 Background – Description of Statewide High-Speed Rail System.....	2-1
2.2 Description of the Preferred Alternative	2-1
2.2.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield	2-4
2.2.2 Oswell Street in Bakersfield to Spruce Court in Palmdale.....	2-4
2.2.3 Impact Avoidance and Minimization Features.....	2-8
3 FINDINGS REGARDING THE NEED FOR FURTHER RECIRCULATION	3-1
4 FINDINGS ON SPECIFIC IMPACTS AND MITIGATION MEASURES.....	4-1
4.1 Transportation	4-2
4.1.1 Impact TR #2: Circulation and Emergency Access During Construction.....	4-2
4.2 Air Quality and Global Climate Change	4-3
4.2.1 Impact AQ # 1: Regional Air Quality Impacts during Construction.....	4-3
4.2.2 Impact AQ #2: Compliance with Air Quality Plans during Construction.....	4-4
4.2.3 Impact AQ #8: Cumulative Impacts during Construction.....	4-5
4.3 Noise and Vibration	4-6
4.3.1 Impact N&V #1: Construction Noise	4-6
4.3.2 Impact N&V #2: Construction Vibration	4-7
4.3.3 Impact N&V #3: Moderate and Severe Noise Impacts from Project Operation to Sensitive Receptors	4-8
4.3.4 Impact N&V #4: Noise Effects on Wildlife and Domestic Animals.....	4-11
4.3.5 Impact N&V #5: Impacts from Project Vibration	4-11
4.3.6 Impact N&V #7: Noise from HSR Stationary Facilities	4-12
4.4 Electromagnetic Interference and Electromagnetic Fields	4-13
4.4.1 Impact EMI/EMF#1: Impacts During Construction	4-13
4.4.2 Impact EMI/EMF#5: Effects on Sensitive Equipment from Electromagnetic Interference.....	4-14
4.5 Public Utilities and Energy	4-15
4.5.1 Impact PU&E #6: Conflicts with Existing Utilities.....	4-15
4.6 Biological and Aquatic Resources.....	4-16
4.6.1 Impact BIO #1: Construction Impacts on Special-Status Plant Species	4-16
4.6.2 Impact BIO #2: Construction Impacts on Special-Status Wildlife Species	4-19
4.6.3 Impact BIO #3: Construction Impacts on Special-Status Plant Communities	4-26
4.6.4 Impact BIO #4: Construction Impacts on Aquatic Resources	4-28
4.6.5 Impact BIO #5: Construction Impacts on Wildlife Movement	4-30
4.6.6 Impact BIO #6: Construction Impacts on Protected Trees	4-31
4.6.7 Impact BIO #7: Operational Impacts on Special-Status Plant Species	4-32
4.6.8 Impact BIO #8: Operational Impacts on Special-Status Wildlife Species	4-34
4.6.9 Impact BIO #9: Operation Impacts on Special-Status Plant Communities	4-37
4.6.10 Impact BIO #10: Operation Impacts on Aquatic Resources	4-39
4.6.11 Impact BIO #11: Operation Impacts on Wildlife Movement.....	4-40
4.6.12 Impact BIO #12: Operation Impacts on Protected Trees.....	4-41

4.7	Hydrology and Water Resources	4-42
4.7.1	Impact HWR #1: Temporary Construction Impacts to Floodplains and Floodways.....	4-42
4.7.2	Impact HWR #3: Temporary Construction Impacts to Surface Water Quality	4-42
4.7.3	Impact HWR #4: Temporary Construction Impacts to Groundwater Volume, Quality, and Recharge.....	4-43
4.7.4	Impact HWR #5: Permanent Operation Impacts to Floodplains and Floodways.....	4-44
4.7.5	Impact HWR #7: Permanent Operation Impacts to Surface Water Quality.....	4-44
4.8	Geology, Soils, Seismicity, and Paleontological Resources	4-45
4.8.1	Impact Paleo #1: Geologic Units Sensitive to Unknown Paleontological Resources During Construction	4-45
4.9	Hazardous Materials and Wastes	4-46
4.9.1	Impact HMW #4: Temporary Hazardous Material and Waste Activities in the Proximity of Schools	4-46
4.10	Safety and Security	4-47
4.10.1	Impact S&S #9: Risk of Fire and Secondary Effects from Fire.....	4-47
4.10.2	Impact S&S #12: Need for Expansion of Existing Fire, Rescue, and Emergency Services Facilities.....	4-48
4.11	Socioeconomics and Communities	4-48
4.11.1	Impact SO #1: Temporary Disruption to Community Cohesion or Division of Existing Communities from Project Construction.....	4-48
4.11.2	Impact SO #4: Permanent Displacement and Relocation of Local Residents from Construction.....	4-49
4.11.3	Impact SO #5: Permanent Displacement and Relocation of Local Businesses from Construction	4-50
4.11.4	Impact SO #7: Permanent Displacement and Relocation of Community Facilities from Construction	4-51
4.11.5	Impact SO #8: Permanent Displacement and Relocation of Sensitive Populations from Construction	4-52
4.11.6	Impact SO #9: Temporary Disruption to Community Facilities from Construction.....	4-53
4.11.7	Impact SO #14: Potential for Permanent Physical Deterioration from Construction.....	4-53
4.11.8	Impact SO #19: Permanent Disruption to Community Facilities from Operation	4-54
4.12	Agricultural Farmland and Forest Land.....	4-55
4.12.1	Impact AG #5: Permanent Conversion of Important Farmland to Nonagricultural Use	4-55
4.12.2	Impact AG #6: Creation of Remnant Parcels of Important Farmland.....	4-56
4.12.3	Impact AG #7: Permanent Impacts to Important Farmland under Williamson Act or Farmland Security Zone Contracts, Local Zoning, or Agricultural Conservation Easement Land	4-56
4.13	Parks, Recreation, and Open Space.....	4-58
4.13.1	Impact PK #1: Temporary Impact Areas, Temporary Facility Closures, or Temporary Detours	4-58
4.13.2	Impact PK #2: Temporary Access, Air Quality, Noise, and Visual Impacts.....	4-59
4.13.3	Impact PK#3: Permanent Partial Acquisition of Property from Parks, Recreation, and School Play Area Resources	4-60
4.13.4	Impact PK#4: Permanent Acquisition of Property from Publicly Owned Parks	4-61
4.13.5	Impact PK#6: Project Changes to Park or Recreation Facility Use or Character	4-61

4.14	Aesthetics and Visual Quality.....	4-63
4.14.1	Impact AVQ #1: Temporary Impacts Associated with Construction Staging, Equipment, Lighting, and Spoils.....	4-63
4.14.2	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the East Bakersfield Landscape Unit.....	4-64
4.14.3	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Edison/Rural Valley Landscape Unit.....	4-64
4.14.4	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Mountains West Landscape Unit.....	4-65
4.14.5	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Valley Landscape Unit.....	4-66
4.14.6	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Mountains East Landscape Unit.....	4-67
4.14.7	Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Rosamond Rural Landscape Unit.....	4-68
4.14.8	Impact AVQ #7: Permanent Impacts from Construction of Electric Power Utility Improvements.....	4-69
4.15	Cultural Resources.....	4-69
4.15.1	Impact CUL#1: Permanent Construction-Period Potential Adverse Impacts on Archaeological Resources Due to Construction Activities.....	4-70
4.15.2	Impact CUL#2: Permanent Construction-Period Potential Adverse Impacts on Built Resources due to Construction Activities.....	4-72
4.16	Regional Growth (Section 3.18 in the Final EIR/EIS).....	4-73
5	CUMULATIVE IMPACTS (SECTION 3.19 OF THE FINAL EIR/EIS).....	5-1
5.1	Transportation.....	5-1
5.2	Air Quality and Global Climate Change.....	5-1
5.3	Noise and Vibration.....	5-2
5.4	Electromagnetic Interference and Electromagnetic Fields.....	5-3
5.5	Public Utilities and Energy.....	5-3
5.6	Biological and Aquatic Resources.....	5-4
5.6.1	Special-Status Plant and Wildlife Species.....	5-4
5.6.2	Aquatic Resources.....	5-4
5.6.3	Wildlife Movement Corridors.....	5-5
5.7	Hydrology and Water Resources.....	5-6
5.8	Geology, Soils, Seismicity, and Paleontological Resources.....	5-7
5.9	Hazardous Materials and Wastes.....	5-7
5.10	Safety and Security.....	5-8
5.11	Socioeconomics and Communities.....	5-9
5.12	Station Planning, Land Use, and Development.....	5-9
5.13	Agricultural Farmland and Forest Land.....	5-10
5.14	Parks, Recreation, and Open Space.....	5-10
5.15	Aesthetics and Visual Resources.....	5-11
5.16	Cultural Resources.....	5-11
6	FEASIBILITY OF POTENTIAL ALTERNATIVES.....	6-1
6.1	Alternatives Considered in the Draft EIR/EIS and Not Selected for Approval.....	6-2
6.1.1	The No Project Alternative.....	6-2
6.1.2	Selection of the Preferred Alternative over Other Final EIR/EIS Alternatives.....	6-3

6.1.3	Alternative 3	6-4
6.1.4	Alternative 5	6-4
6.1.5	César E. Chávez National Monument Design Option	6-5
6.1.6	Lancaster North A and Lancaster North B Maintenance Site	6-5
6.1.7	Findings on Final EIR/EIS Alternatives Not Adopted	6-5
6.2	Alternatives Suggested by Commenters	6-5
6.3	Alternatives Previously Considered and Not Carried Forward for Study in the Draft EIR/EIS	6-7
6.4	Preferred Alternative	6-7
6.5	Conclusion on Alternatives	6-8
7	MITIGATION MEASURES SUGGESTED BY COMMENTERS	7-1
7.1	Section 3.2, Transportation	7-1
7.1.1	Measure Addresses an Impact Not Caused by the HSR Project	7-1
7.1.2	Measure Addresses an Impact That is Less Than Significant	7-1
7.2	Section 3.4, Noise and Vibration	7-2
7.2.1	Measure Relates to a Significant and Unavoidable Environmental Effect of the Project	7-2
7.3	Section 3.7, Biological and Aquatic Resources	7-2
7.3.1	Measure Addresses an Impact That is Less Than Significant	7-2
7.3.2	Measures That Do Not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace	7-3
7.4	Section 3.12, Socioeconomics and Communities	7-3
7.4.1	Measure Addresses an Impact That is Less Than Significant	7-3
7.4.2	Measure Does Not Address an Impact on the Environment	7-4
7.4.3	Measure Does not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace	7-4
7.5	Section 3.13, Station Planning, Land Use, and Development	7-4
7.5.1	Measure Relates to a Significant and Unavoidable Environmental Effect of the Project	7-4
7.6	Section 3.15, Parks, Recreation, and Open Space	7-4
7.6.1	Measure Does not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace	7-4
8	STATEMENT OF OVERRIDING CONSIDERATIONS	8-1
8.1	General Findings on Significant and Unavoidable Impacts Associated with the Preferred Alternative	8-1
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	8-3
8.2.1	Environmental Benefits	8-3
8.2.2	Transportation Benefits	8-5
8.2.3	Intermodal Opportunities and Land Use Planning Benefits in Palmdale	8-6
8.2.4	Economic and Social Benefits	8-7
8.2.5	Benefits May Be Lower Initially than in 2040, but Will Build Over Time	8-9
8.3	Benefits of the Preferred Alternative in Connection with the Previously Approved Merced to Fresno and Fresno to Bakersfield Project Sections	8-9
8.4	Benefits of the Preferred Alternative on Its Own	8-11
8.4.1	Transportation, Safety, and Noise Reduction Benefits of Grade Separations	8-11

8.4.2 Benefits of Drainage Improvements in Palmdale and Rosamond 8-11
8.4.3 Benefits of Restoring Oak Creek to a Natural Condition 8-12
9 REFERENCES 9-1

Figures

Figure 1 California HSR System 2-2
Figure 2 Bakersfield to Palmdale Section Preferred Alternative 2-3
Figure 3 Palmdale Station 2-7

Attachments

- A: Mitigation Measures
- B: Fresno to Bakersfield Mitigation Measures/Impact Avoidance and Minimization Measures Compared to Bakersfield to Palmdale Mitigation Measures/Impact Avoidance and Minimization Features
- C: Fresno to Bakersfield Section Draft Supplemental EIR/EIS Appendix 2-H

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
AQMD	Air Quality Management District
ATP	Archaeological Treatment Plan
Authority	California High-Speed Rail Authority
AVAQMD	Antelope Valley Air Quality Management District
BETP	built environment treatment plan
BLM	Bureau of Land Management
BMP	best management practices
B-P Build Alternatives	Bakersfield to Palmdale Project Section Build Alternatives
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCNM	César E. Chávez National Monument
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
C.F.R.	Code of Federal Regulations
CMP	Construction Management Plan
CO	carbon monoxide
CO ₂	carbon dioxide
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
dBA	A-weighted decibel
DPR	California Department of Parks and Recreation
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EKAPCD	Eastern Kern Air Pollution Control District
EMF	electromagnetic field
EMI	electromagnetic interference
ERA	environmentally restricted area
ESA	environmentally sensitive area
F-B LGA	Fresno to Bakersfield Locally Generated Alternative
FEMA	Federal Emergency Management Agency
Final EIR/EIS	Bakersfield to Palmdale Project Section Final EIR/EIS

Findings and SOC	California Environmental Quality Act Findings of Fact and Statement of Overriding Considerations
FR	<i>Federal Register</i>
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GC	general conformity
GHG	greenhouse gas
I-5	Interstate 5
IAMF	Impact Avoidance and Minimization Features
IAMM	Impact Avoidance and Minimization Measures
La Paz	Nuestra Señora Reina de la Paz/César E. Chávez National Monument
L _{eq}	equivalent continuous sound level
LMF	light maintenance facility
MOA	<i>Memorandum of Agreement Among the Federal Railroad Administration, California High-Speed Rail Authority, the Surface Transportation Board, the U.S. Army Corps of Engineers, Sacramento District, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Fresno to Bakersfield Section of the California High-Speed Train System in Fresno, Kings, Tulare, and Kern Counties</i>
MOIS	maintenance of infrastructure siding
MOWF	maintenance-of-way facility
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O ₃	ozone
PA	<i>Programmatic Agreement among the USDOT Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the California High-Speed Train Project</i>
PCT	Pacific Crest Trail
PI	Principal Investigator
PM ₁₀	particulate matter 10 microns or less in size
PM _{2.5}	particulate matter 2.5 microns or less in size
PRMMP	Paleontological Resource Monitoring and Mitigation Plan
PRS	paleontological resources specialist
RF	radio frequency
RRP	Restoration and Revegetation Plan
RWQCB	Regional Water Quality Control Board

SB	California Senate Bill
SCS	sustainable communities strategy
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCP	short-lived climate pollutant
SO ₂	sulfur dioxide
SR	State Route
SWRCB	State Water Resources Control Board
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VERA	Voluntary Emission Reduction Agreement
VMT	vehicle miles traveled
VOC	volatile organic compound
WEAP	worker environmental awareness program

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1 INTRODUCTION

These California Environmental Quality Act (CEQA) Findings of Fact and Statement of Overriding Considerations (Findings and SOC) are intended to fulfill the responsibilities of the California High-Speed Rail Authority (Authority) under CEQA for its project approval for the Bakersfield to Palmdale 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/CEQA Proposed Project for the Bakersfield to Palmdale Project Section (Alternative 2 with the Refined César E. Chávez National Monument (CCNM) Design Option, Avenue M maintenance site and maintenance-of-way facility [MOWF], and the Palmdale Station), findings of fact concerning significant environmental impacts and mitigation measures to address such impacts, a discussion of cumulative and growth-inducing impacts, and a statement of overriding considerations.

The custodian of the documents and other materials that constitute the record of proceedings upon which the Authority’s decision is based, including these CEQA findings of fact and statement of overriding considerations are based is the California High-Speed Rail Authority, 770 L Street, Suite 620 MS-1, Sacramento, California 95814, telephone (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 station locations of the statewide HSR system that the Authority and FRA selected 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. 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 Bakersfield to Palmdale Project Section.¹

2.2 Description of the Preferred Alternative

The Bakersfield to Palmdale Project Section Preferred Alternative/CEQA Proposed Project (hereafter, Preferred Alternative) extends from immediately south of the previously approved Bakersfield F Street Station, at the intersection of 34th and L Streets in Bakersfield, to the Palmdale Station and to approximately 1.1 miles south of the Palmdale Station to Spruce Court in Palmdale. Figure 2 shows the Preferred Alternative. These Findings and SOC apply to the entire Preferred Alternative. In some instances, the Preferred Alternative is described in two parts: from 34th and L Streets in Bakersfield to Oswell Street in Bakersfield, and from Oswell Street in Bakersfield to Spruce Court in Palmdale. The Preferred Alternative is Alternative 2 with the Refined CCNM Design Option, the Avenue M maintenance site and MOWF, and the Palmdale Station.

As explained in the Final EIR/EIS, the Authority considered and incorporated engineering and design refinements after the publication of the Draft EIR/EIS. The refinements were considered and incorporated for several reasons, including (1) in response to comments on the Draft EIR/EIS from agencies, stakeholders, and the public; (2) to further minimize environmental impacts, including by reducing the necessary footprint area; and (3) to improve safety and reduce costs. Appendix 3.1-B of the Final EIR/EIS provides a description of the refinements and the resulting changes in environmental impacts.

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. The Bakersfield to Palmdale Project Section discussed in these findings is a fully grade-separated, dedicated track alignment.



SUBJECT TO CHANGE – FEBRUARY 2021

Figure 1 California HSR System

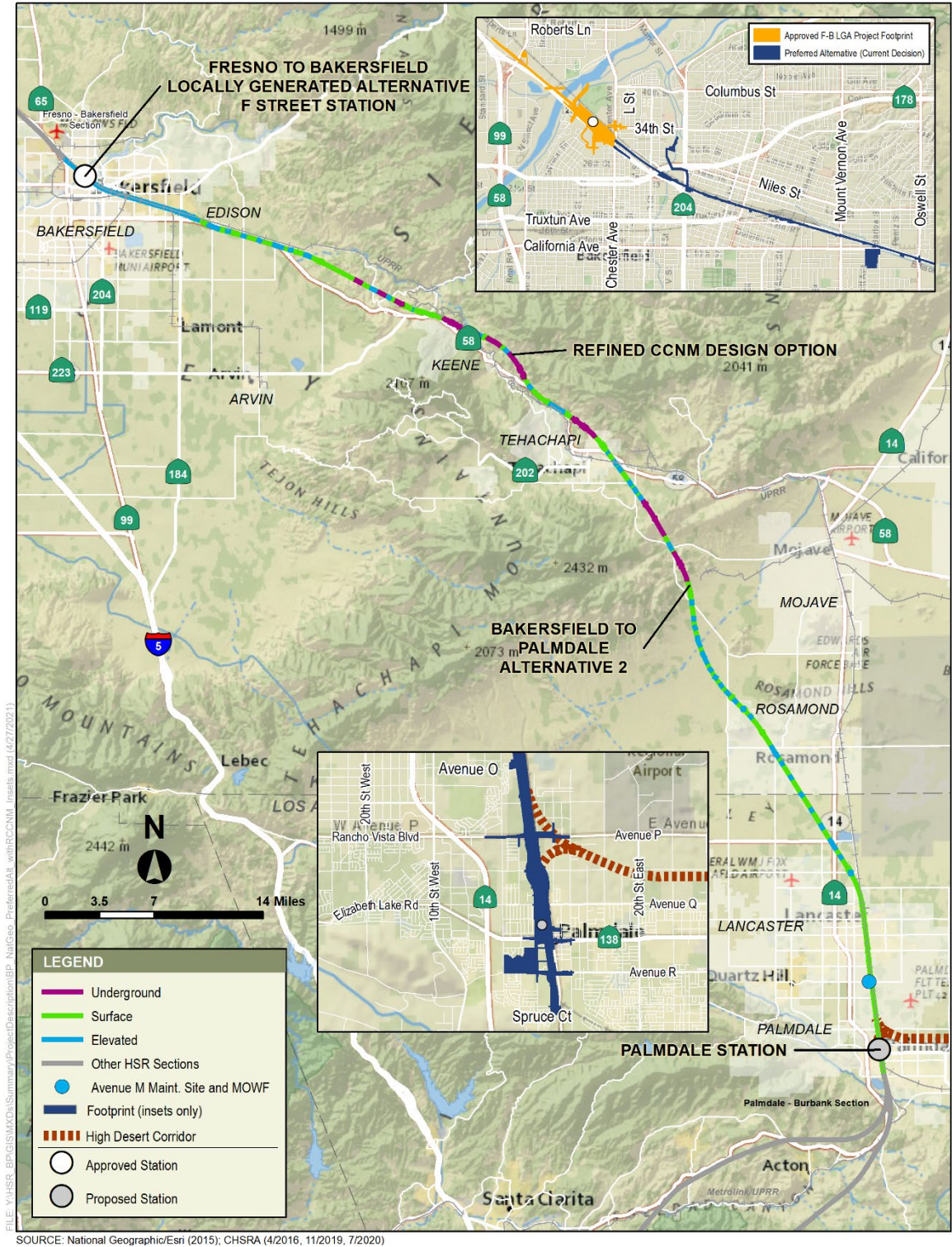


Figure 2 Bakersfield to Palmdale Section Preferred Alternative

2.2.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield

On October 16, 2018, the Authority Board certified the Fresno to Bakersfield Section Final Supplemental EIR (Resolution #HSRA 18-16) and approved the portion of the Fresno to Bakersfield Locally Generated Alternative (F-B LGA) from just north of Poplar Avenue in Kern County up to and including the F Street Station (specifically, to the intersection of 34th Street and L Street in Bakersfield) (Resolution #HSRA 18-17). As stated in Resolution #HSRA 18-17, the Authority Board reserved the decision on the alignment to the south and the east of the F Street Station for inclusion in the Bakersfield to Palmdale Project Section environmental document for further analysis and decision making.

Therefore, the portion of the F-B LGA from 34th Street and L Street in Bakersfield to Oswell Street that was previously analyzed in the certified Fresno to Bakersfield Section Final Supplemental EIR² is included in the Bakersfield to Palmdale Final EIR/EIS and is included in these Findings and SOC.

As shown in Figure 2, the Preferred Alternative begins at the southwest end of the F Street Station site. The alignment will continue southeast until the proposed crossing at State Route (SR) 178, where the alignment will turn east and will generally run parallel to the Union Pacific Railroad (UPRR) corridor. The alignment will turn southeast, crossing over 24th Street, Sumner Street, and Union Avenue, and will then run down the center of Sumner Street on a viaduct.

The alignment will continue east on Sumner Street, crossing over Baker Street, Beale Avenue, the BNSF Railway and UPRR tracks, and Truxtun Avenue. East of Truxtun Avenue, the alignment will continue on viaduct and transition to the north side of the Edison Highway corridor, crossing over connecting streets such as Washington Street, Ogden Street, Chamberlain Avenue, and Mt. Vernon Avenue. The alignment continues to Oswell Street on a viaduct (Bakersfield to Palmdale Final EIR/EIS, Section 2.4.2.3; Fresno to Bakersfield Section Draft Supplemental EIR/EIS, Section 2.4.3).

2.2.2 Oswell Street in Bakersfield to Spruce Court in Palmdale

The Preferred Alternative alignment continues to run from Oswell Street to Morning Drive (SR 184), with the Preferred Alternative centerline on the north side of Edison Highway on a viaduct. East of Morning Drive, the alignment transitions from the Edison Highway corridor to the SR 58 corridor, reaching the freeway corridor at Edison Road, and crossing over to the south side of SR 58. Under the Preferred Alternative, SR 58 will remain in its current alignment, but the HSR tracks will require an elevated structure spanning the SR 58/Edison Road interchange diagonally. This will require another elevated structure crossing back over SR 58 just past Towerline Road and three additional elevated structures to cross the HSR over existing north-south roads (i.e., Malaga Road, Comanche Drive, and Tejon Highway) spaced approximately 1 mile apart between Edison and Towerline Roads.

The Preferred Alternative alignment will continue eastbound, parallel to Edison Highway, toward Caliente Creek. From Caliente Creek to Bealville Road, the Preferred Alternative will continue southeast through Keene before beginning to climb the Tehachapi Mountains at a 2.8 percent vertical grade. The alignment will include a viaduct over Caliente Creek and a combination of cuts, fills, tunnels, and viaducts before reaching and passing underneath Bealville Road. East of Bealville Road, the alignment will generally follow SR 58 north of the freeway to the SR 58 interchange with Broome Road. Between Bealville Road and Broome Road, the alignment will include three tunnels and four viaducts. The viaducts will span the UPRR, Tehachapi Creek, Avenue E, and Woodford-Tehachapi Road northeast of Nuestra Señora Reina de la Paz/César E. Chávez National Monument (La Paz), and SR 58 at Broome Road, crossing SR 58 three more times as the two facilities form a braided configuration within the Tehachapi Creek canyon. Under the Preferred Alternative, the viaduct will be approximately 2,800 feet from the La Paz boundary.

² The Fresno to Bakersfield Section Final Supplemental EIR is inclusive of the impacts analysis in the Draft Supplemental EIR/EIS. These Findings refer to sections or pages of the Draft Supplemental EIR/EIS for clarity in reference.

The alignment will then curve farther south and pass to the east, crossing over SR 58 near Arabian Drive before crossing the Tehachapi Valley on a straight alignment through the mountains southeast of Tehachapi in a 12,700-foot tunnel that roughly follows Tehachapi Willow Springs Road. As the alignment begins the 2.8-percent descending grade into the northern Antelope Valley, it will cross Tehachapi Willow Springs Road near the Cameron Canyon Road intersection, where it will also cross the Pacific Crest Trail (PCT) and the Garlock Fault.

In response to a comment on the Draft EIR/EIS from CalPortland Cement Company indicating that the north portal of Tunnel 9 (located immediately south of the PCT crossing and Oak Creek Road) was within the potential flyrock zone of their active mining operations, the project design for the Preferred Alternative was revised to provide for construction of a cover extending 1,700 feet from the northerly terminus of the 9,500-foot-long Tunnel 9 to protect the HSR infrastructure from the potential for damage from flyrock.

In one of its comments on the Draft EIR/EIS, the U.S. Department of Interior Bureau of Land Management expressed concern regarding the proposed design that will require PCT users (including equestrians) to cross under the HSR viaduct in an 80-foot long, 15-foot by 15-foot box culvert. In response to this comment, the Authority developed a revised design of the HSR crossing of the PCT. In the area where the HSR alignment crosses the PCT, the alignment of Tehachapi Willow Springs Road in this area was shifted to the west of the HSR alignment under the Preferred Alternative. This shift in the alignment of Tehachapi Willow Springs Road eliminated a complex crossing of the HSR alignment over Tehachapi Willow Springs Road. In addition, with the new design and the realignment of the PCT as described in Mitigation Measure PCT-MM#1, PCT users will now cross under the HSR viaduct (and the new Tehachapi Willow Springs Road bridge) in an open crossing adjacent to the creek with more than 57 feet of vertical clearance that will improve the experience for the trail users as they cross under the HSR viaduct.

The alignment will pass just west of the CalPortland Company's existing limestone quarry in Tunnel 9, then continue southeast past the east side of Willow Springs International Raceway, where it will proceed across the Antelope Valley through Rosamond toward the northern end of the City of Lancaster. The alignment will pass over SR 138 and SR 14 near their northern interchange and then will enter the City of Lancaster at Avenue H, running parallel to the Sierra Highway/UPRR corridor through Lancaster and Palmdale. In this area, the Preferred Alternative will require a realignment of the UPRR corridor to the east. Therefore, the Preferred Alternative will align east of Sierra Highway and west of the UPRR corridor.

In the Lancaster area, from Avenue H through the City of Lancaster, the Preferred Alternative will combine the HSR, UPRR, and Metrolink rail corridors into one blended corridor. The new combined rail corridor matches the current westerly extent of the existing rail right-of-way and widens the corridor to the east as necessary to accommodate all three rail systems and their respective separation requirements. This alternative will require the relocation of all the UPRR and Metrolink facilities in the corridor from north of Avenue H to approximately Avenue L. The alternative will create separate rights-of-way for the UPRR and Metrolink rail corridors to the east of the HSR right-of-way.

To avoid airspace restrictions from the U.S. Air Force Plant 42 Airport to the south, the alignment will begin a transition to the west at Avenue K. The alignment will continue to Avenue M, where it will be situated west of the existing UPRR/Metrolink right-of-way, which will remain in its existing location. The HSR alignment will then continue south, parallel to and along the westerly side of the existing rail corridor. The westerly transition of the alignment, from Avenue K to Avenue O, will require the relocation of approximately 4.2 miles of Sierra Highway to the west. Preliminary routes for this highway relocation will vary between 500 feet and 2,900 feet west of its existing location. This will provide a separation of 500 to 2,800 feet between the rail corridor and the highway until the section terminus at the Palmdale Station, located at the Palmdale Transportation Center.

The Preferred Alternative includes a maintenance site and an MOWF at Avenue M in the Cities of Lancaster and Palmdale, respectively. (Final EIR/EIS, p. 2-82.) The actual site is between W Avenue L-4 and Avenue O. W Avenue L-4 and Avenue O are both two-lane, paved roadways

where access to the site can be gained and future utilities could be built to service the site. The reasons for the Avenue M site being chosen as the preferred location include: (1) the Authority's requirement for maintenance facilities to have freight rail access for delivery of materials, (2) the southerly location of the MOWF at Avenue M rather than Lancaster North will improve connectivity to the Palmdale Station and HSR project sections to the south of Palmdale, and (3) the Avenue M footprint area is of sufficient size to accommodate a light maintenance facility (LMF) in the future. The Authority is reserving its decision on the preferred LMF site at this time.

The Palmdale Station will be along the proposed HSR alignment parallel to the existing rail corridor (Figure 3). The existing Palmdale Transportation Center will be expanded to the south to accommodate the HSR system and will be bounded by Technology Drive to the north and Palmdale Boulevard to the south. The Palmdale Station will consist of train platforms, pedestrian walkways/connectors, a transit plaza pick-up/drop-off facility for private automobiles, and surface parking areas. These station facilities will be on approximately 50 acres.

Chapter 2 further describes that the Preferred Alternative includes the following features:

- **System Design Performance, Safety, and Security:** The HSR 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.
- **Train 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.
- **Stations:** Stations include station platforms and trackway, arrival and departure facilities, and parking. As part of these Findings and SOC, one station is proposed for the Bakersfield to Palmdale Project Section: the Palmdale Station.
- **Track:** The HSR track will run from Bakersfield to Palmdale, generally along existing transportation corridors. The track, or guideway, will include multiple different vertical profiles.
- **Grade Separations:** The HSR will be fully grade-separated from all crossing traffic through roadway overcrossings or undercrossings, or through placement of the HSR on viaducts above roadway centers.
- **Access Roads:** Access roads will provide emergency and maintenance access from public roadways to HSR facilities in between tunnels or bridges, providing access to every segment of at-grade track.
- **Traction Power Distribution:** The Bakersfield to Palmdale Project Section includes a traction power distribution system allowing trains to draw electric power from a catenary system fed through an overhead contact system. The catenary system will consist of a series of mast poles with contact wires suspended from the mast poles. The catenary system will connect to traction power 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 include small huts within the right-of-way that will house signal relay and microprocessor components and related equipment.
- **Signaling and Train-Control Elements:** 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 3 miles or less, depending on the terrain selected, radio frequency, and locations of other facilities.

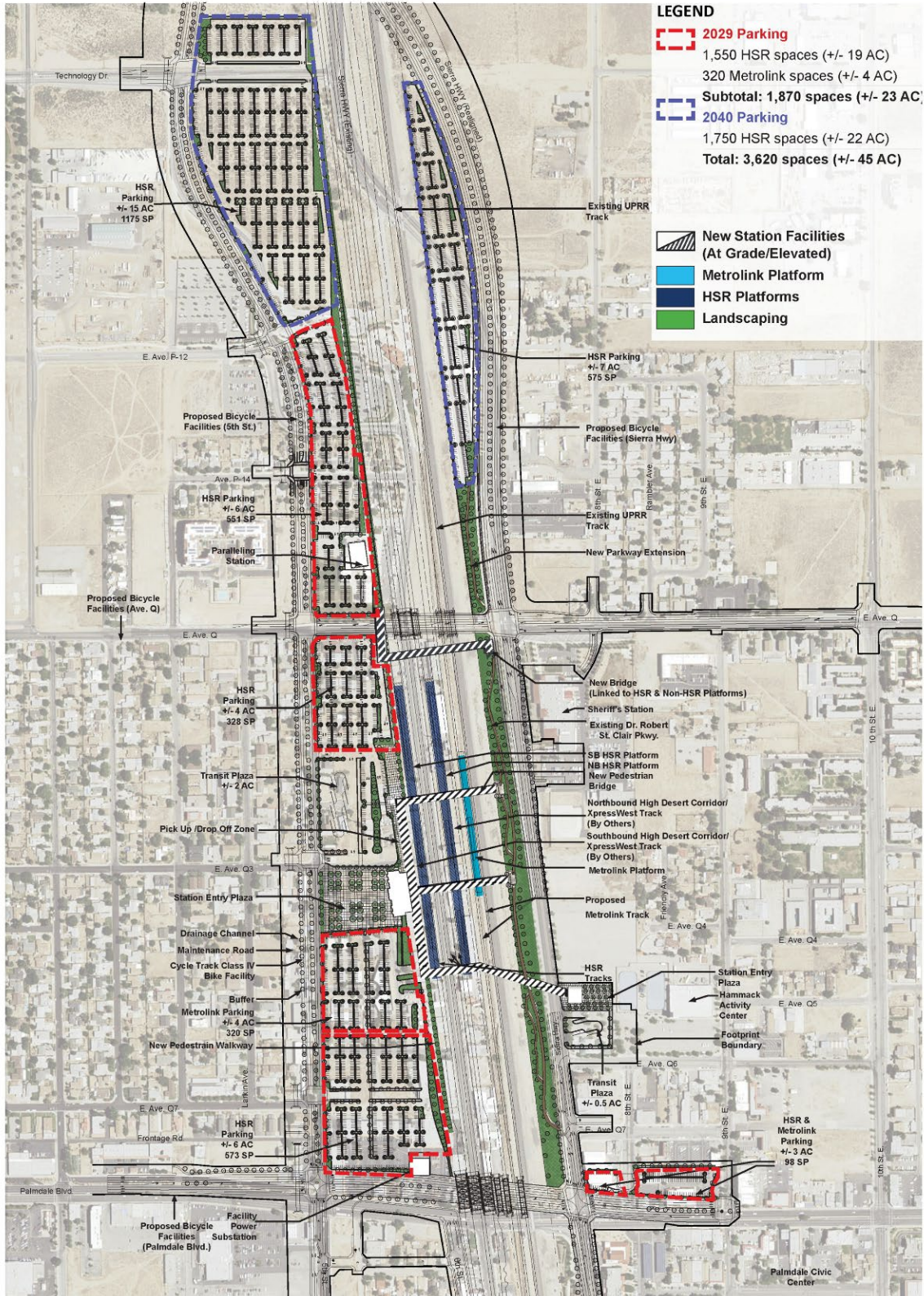


Figure 3 Palmdale Station

- **Track Structure:** The track structure will consist of either a direct fixation system (with track, rail fasteners, and slab) or ballasted track. HSR track will be constructed with ballast and ties, with continuous welded rail, for all at-grade sections. Direct fixation will be used for elevated structures exceeding 1,000 feet in length where operating speeds are planned for 220 miles per hour.
- **Maintenance Facilities:** The Bakersfield to Palmdale Project Section includes the evaluation of one MOWF and two maintenance of infrastructure siding [MOIS] facilities plus an option for an LMF facility in the Antelope Valley.

2.2.3 Impact Avoidance and Minimization Features

The Authority has committed to implementing programmatic impact avoidance and minimization features (IAMF) consistent with the (1) *2005 Statewide Program Environmental Impact Report/ Environmental Impact Statement (EIR/EIS)*, (2) *2008 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 Bakersfield to Palmdale Project Section. The IAMFs represent practices that are standard in the construction industry and are incorporated into the project definition. The Authority will implement these IAMFs during project design and construction of the Bakersfield to Palmdale 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 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-5 of the Final EIR/EIS:

- Transportation – Sections 3.2.2 and 3.2.4.2
- Air Quality and Global Climate Change – Sections 3.3.2 and 3.3.4.2
- Noise and Vibration – Sections 3.4.2 and 3.4.4.3
- Electromagnetic Interference and Electromagnetic Fields – Sections 3.5.2 and 3.5.4.2
- Public Utilities and Energy – Sections 3.6.2 and 3.6.4.2
- Biological and Aquatic Resources – Sections 3.7.2 and 3.7.4.2
- Hydrology and Water Resources – Sections 3.8.2 and 3.8.4.2
- Geology, Soils, Seismicity, and Paleontological Resources – Sections 3.9.2 and 3.9.4.2
- Hazardous Materials and Wastes – Sections 3.10.2 and 3.10.4.2
- Safety and Security – Sections 3.11.2 and 3.11.3.2
- Socioeconomics and Communities – Sections 3.12.2 and 3.12.4.2
- Station Planning, Land Use, and Development – Sections 3.13.2 and 3.13.4.2
- Agricultural Farmland and Forest Land – Sections 3.14.2 and 3.14.4.2
- Parks, Recreation, and Open Space – Sections 3.15.2 and 3.15.4.2
- Aesthetics and Visual Quality – Sections 3.16.2 and 3.16.4.2
- Cultural Resources – Sections 3.17.2 and 3.17.5.3
- Regional Growth – Section 3.18.2
- Cumulative Impacts – Section 3.19.2

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

In the Final EIR/EIS, the analysis for certain impacts from the intersection of 34th and L Streets to Oswell Street includes reference to IAMFs³ described in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS and Final Supplemental EIR. Each section of the Final EIR/EIS summarizes the IAMFs that apply in this geographic area of the Preferred Alternative, and Appendix 2-H of the Fresno to Bakersfield Section Draft Supplemental EIR/EIS (Authority and FRA 2017a) lists all impact avoidance and minimization measures for the entirety of the F-B LGA developed in consultation with appropriate agencies. For these Findings and SOC, the Preferred Alternative from the intersection of 34th and L Streets to Oswell Street incorporates the IAMFs identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS and Final Supplemental EIR (Attachments B and C).

³ The Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR used the terminology of IAMMs, or impact avoidance and minimization measures.

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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 engineering and design refinements, which were included in the Final EIR/EIS in response to stakeholder comments on the Draft EIR/EIS, to reduce environmental impacts, to further improve the safety of the design, or to reduce costs where possible.
- The Final EIR/EIS includes changes to the environmental impacts analysis in Chapters 3–5 resulting from the engineering and 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, and described in more detail in Appendix 3.1-B.
- The engineering and design refinements refine the features of the alternatives 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 Bakersfield and Palmdale as presented in Chapter 2 of the Draft EIR/EIS.
- The engineering and design refinements do not change the horizontal alignment of any of the alignment alternatives or the design options, and do not change the stations in Bakersfield or Palmdale.
- The engineering and design refinements result in lowering the vertical profile of the alignment in three locations, but these changes reduce visual impacts and were made in response to stakeholder comments.
- Although the Final EIR/EIS includes updates to impact data and calculations, the overall analysis, conclusions, and CEQA significance determinations have not changed from those presented in the Draft EIR/EIS.
- The engineering and design refinements do not cause new significant environmental impacts or a substantial increase in the severity of a previously identified impact.
- The engineering and design refinements result in an overall reduction of 100 acres of the total footprint required for the proposed project (an approximately 1 percent decrease in total acreage). Of the engineering and design refinements along the 80 linear miles, a majority consisted of reductions (approximately 40 percent) or sliver additions to accommodate the HSR alignment, existing roadways, or features supporting the HSR system (50 percent).

Based on these facts, the Authority finds that the new information included in the Final EIR/EIS related to the engineering and design refinements, and changes to impacts analysis based on the engineering and design refinements and public comments, does not require further 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 (Figure 2) that will be significant are described in Chapter 3 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 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.

As noted above, the portion of the Preferred Alternative from the intersection of 34th and L Streets to Oswell Street in Bakersfield was analyzed in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR. The Bakersfield to Palmdale Project Section Final EIR/EIS resource sections include a summary of that analysis and, for certain impacts, includes mitigation measures that were identified in the Fresno to Bakersfield Final Supplemental EIR to mitigate impacts in that geographic area. For other impacts and resource categories, the analysis in the Bakersfield to Palmdale Project Section Final EIR/EIS covers the entire Preferred Alternative, including the portion from the intersection of 34th and L Streets to Oswell Street in Bakersfield, and does not rely on the analysis or mitigation measures in the Fresno to Bakersfield documents for the CEQA determinations.

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 or beneficial. The resource areas that include one or more less than significant impacts without mitigation, or beneficial impacts, include:

- Transportation
- Air Quality and Global Climate Change
- Noise and Vibration
- Electromagnetic Fields and 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
- Cumulative Impacts

Resource areas for which all impacts in the Final EIR/EIS were identified as less than significant without mitigation measures or beneficial are designated by an asterisk (*) in the list above and are not discussed further in this Findings and SOC document.

4.1 Transportation

4.1.1 Impact TR #2: Circulation and Emergency Access During Construction

4.1.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.2 in the Final EIR/EIS Summarizing Section 3.2 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)*

The construction-related transportation impacts identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS for the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will be less than significant, including for Impact TR #2, transportation and circulation, and will not require mitigation. (Bakersfield to Palmdale Final EIR/EIS, pp. 3.2-47–3.2-49; Fresno to Bakersfield Section Draft Supplemental EIR/EIS, pp. 3.2-50–3.2-52.)

4.1.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.2 in the Final EIR/EIS)*

Between Oswell Street in Bakersfield and Spruce Court in Palmdale, there is a potential for the Preferred Alternative to result in circulation impacts and inadequate emergency access during the construction period due to the need for road closures, construction vehicles and equipment, staging areas, reconstruction and construction of transportation facilities, and earthwork haul routes. The Preferred Alternative incorporates TR-IAMF#2 (Construction Transportation Plan), which specifically includes measures to limit temporary traffic interruptions from road closures by providing temporary signage, advance detour notification, and 24-hour emergency access. In addition, SOCIO-IAMF#1 (Construction Management Plan) requires communication and access protocols to maintain access for emergency service providers and transportation users.

Several other IAMFs are part of the Preferred Alternative and support circulation and emergency access during construction, including the following: TR-IAMF#3 (Off-Street Parking for Construction-Related Vehicles), TR-IAMF#4 (Maintenance of Pedestrian Access), TR-IAMF#5 (Maintenance of Bicycle Access), TR-IAMF#6 (Restriction on Construction Hours), TR-IAMF#7 (Construction Truck Routes), TR-IAMF#8 (Construction During Special Events), TR-IAMF#9 (Protection of Freight and Passenger Rail During Construction), TR-IAMF#11 (Maintenance of Transit Access), and TR-IAMF#12 (Pedestrian and Bicycle Safety). These IAMFs will maintain access for all affected transportation modes and address circulation and emergency access impacts during construction. Adherence to IAMFs and compliance with applicable regulatory requirements during construction of the Preferred Alternative will address potential circulation and emergency access impacts related to road closures, construction vehicles and equipment, staging areas, and reconstruction and construction of transportation facilities. However, even with these IAMFs, there is a potential for the Preferred Alternative to impact circulation and lead to inadequate emergency access during construction associated with earthwork truck route traffic. This impact is significant under CEQA (Final EIR/EIS, pp. 3.2-58–3.2-60).

Implementation of the following measure mitigates this impact: (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **TRAN-MM#2: Earthwork Haul Routes**

Mitigation Measure TRAN-MM#2 requires flaggers/temporary traffic control personnel at specific intersections associated with earthwork haul routes. This mitigation measure will improve circulation and thereby maintain adequate emergency access. Implementation of TRAN-MM#2 is not anticipated to result in secondary impacts.

The Authority finds that Mitigation Measure TRAN-MM#2 is required under the Preferred Alternative and that implementation of this mitigation measure will reduce impacts to circulation and emergency access to a less-than-significant level.

4.2 Air Quality and Global Climate Change

Once operational, the Preferred Alternative will have a beneficial effect on air quality and greenhouse gas (GHG) emissions (see Impacts AQ #9 through AQ #18 in Section 3.3 of the Final EIR/EIS). Construction of the Preferred Alternative will result in air quality impacts. Specifically, Impact AQ#1, Impact AQ#2, and Impact AQ#8 will remain significant (for carbon monoxide [CO] only) with implementation of the identified mitigation. In adopting the resolution of approval of the Preferred Alternative, the Authority confirms that the IAMFs identified in the Final EIR/EIS are part of the Preferred Alternative.

Section 3.3 of the Final EIR/EIS evaluated air quality impacts for the section as a whole, rather than separately addressing the portion of the Preferred Alternative from the intersection of 34th and L Streets to Oswell Street in Bakersfield. The Final EIR/EIS nevertheless lists mitigation measures that were identified in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR that apply (see Final EIR/EIS Section 3.3.8.1). Although the impacts analysis in Section 3.3 does not refer to these mitigation measures from the Fresno to Bakersfield documents for the CEQA determinations, the Final EIR/EIS identifies that they are applicable. One measure, F-B LGA AQ-MM#4, is identical to AQ-MM#1 discussed below. Other measures, including F-B LGA AQ-MM#1, F-B LGA AQ-MM#2, and F-B LGA AQ-MM#3, were included in the analysis as IAMFs, as shown in Attachment B, consistent with the Authority's updated list of standard IAMFs and to ensure uniform statewide application. Attachment B shows how the mitigation measures from the Fresno to Bakersfield documents correspond with mitigation measures or IAMFs identified in the Bakersfield to Palmdale Project Section Final EIR/EIS.⁴

4.2.1 Impact AQ # 1: Regional Air Quality Impacts during Construction

Direct emissions from the construction phase of the Preferred Alternative will exceed the GC applicability thresholds for VOC and/or NO_x in certain calendar years in which construction will take place (see Tables 3.3-22 through 3.3-24 in Section 3.3 of the Final EIR/EIS). The Preferred Alternative will exceed CEQA emissions thresholds for VOC, CO, and NO_x. With on-site minimization measures (i.e., AQ-IAMF#4 and AQ-IAMF#5), VOC, CO, NO_x, PM₁₀, and/or PM_{2.5} impacts will be reduced but could remain significant under CEQA. However, VOC and NO_x emissions will be offset and reduced below the GC applicability thresholds through purchase of offset emissions through:

- A VERA with the SJVAPCD (Mitigation Measure AQ-MM#1 [VOC and NO_x])
- An Emission Banking Certificate Program with the Eastern Kern Air Pollution Control District (EKAPCD) (Mitigation Measure AQ-MM#1 [VOC and NO_x])
- An Air Quality Investment Program with the Antelope Valley Air Quality Management District (AVAQMD) (Mitigation Measure AQ-MM#1 [NO_x])

With implementation of Mitigation Measure AQ-MM#1, however, CO emissions will remain significant within the SJVAPCD and AVAQMD. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AQ-MM#1: Offset Project Construction Emissions through Off-Site Emission Reduction Programs**

Mitigation Measure AQ-MM#1 will require the offset of project construction emissions through an SJVAPCD VERA agreement, participation in the EKAPCD Emission Banking Certificate program, and participation in the AVAQMD Air Quality Investment Program. The Authority's existing VERA

⁴ F-B LGA AQ-MM#5 is listed in Section 3.3.8.1 of the Final EIR/EIS as an applicable mitigation measure for the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. However, F-B LGA AQ-MM#5 would mitigate F-B LGA Impact AQ #3, which identified materials-hauling emissions from outside of the San Joaquin Valley Air Basin. The Final EIR/EIS analysis assumes ballast material for construction of the Preferred Alternative would be available from the San Joaquin Valley Air Basin and the Mojave Desert Air Basin. Because the Final EIR/EIS analysis supersedes the F-B LGA analysis, F-B LGA Impact AQ #3 would not apply to the Preferred Alternative and F-B LGA AQ-MM#5 would not be required.

agreement with SJVAPCD commits to offsetting actual emissions from construction to net zero. Agreements with AVAQMD and EKAPCD would also commit to offsetting actual emissions from construction to net zero to the extent that offsets are available. The methodologies implemented by HSR contractors to reduce emissions may result in increased fuel or energy consumption associated with emissions control equipment. However, it is also possible that fuel and energy consumption may decrease. The change in fuel consumption will likely be small on a per-equipment basis. If after-market control devices are used, such as diesel particulate filters, they will generate additional waste associated with disposal of spent filters. In comparison to the scope of the project, these additional increases will be small. Therefore, the impacts of mitigation will be less than significant under CEQA.

The Authority finds that Mitigation Measure AQ-MM#1 has been required in the Preferred Alternative and that it will mitigate or avoid the project's significant air quality impacts related to VOC and NO_x, but that CO emissions will remain significant within the SJVAPCD and AVAQMD for some construction years. 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 (Section 8 of this document) support certification of the Final EIR/EIS and approval of the project.

4.2.2 Impact AQ #2: Compliance with Air Quality Plans during Construction

Emissions from construction of the Preferred Alternative will be temporary. However, based on the amount of construction to be completed, construction activities will involve heavy-duty construction equipment and have the potential to cause air quality impacts that will conflict with or obstruct implementation of the applicable air quality plan. 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.

As discussed in Section 3.2.3, VOC, CO, and NO_x emissions within the SJVAPCD associated with the Preferred Alternative will be greater than applicable mass emission CEQA significance thresholds, which will impede or obstruct implementation of the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts. VOC and NO_x emissions within the EKAPCD will be greater than applicable emission CEQA significance thresholds, which will impede or obstruct implementation of the EKAPCD's CEQA Guidelines. In addition, CO and NO_x emissions within the AVAQMD will be greater than applicable emission CEQA significance thresholds, which will impede or obstruct implementation of the AVAQMD's CEQA Guidelines and attainment of air quality standards. Therefore, VOC and NO_x emissions will have a significant impact under CEQA.

Even with implementation of on-site minimization measures (i.e., AQ-IAMF#4 and AQ-IAMF#5), VOC, CO, NO_x, PM₁₀, and PM_{2.5} impacts will be reduced but could remain significant under CEQA. Purchase of offset emissions through a VERA with the SJVAPCD, the Emission Banking Certificate Program with the EKAPCD, and the Air Quality Investment Program with the AVAQMD (Mitigation Measure AQ-MM#1) for these pollutants will reduce impacts of VOC and NO_x. However, CO emissions will remain significant. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AQ-MM#1: Offset Project Construction Emissions through Off-site Emission Reduction Programs**

Mitigation Measure AQ-MM#1 will require the offset of project construction emissions through an SJVAPCD VERA agreement, participation in the EKAPCD Emission Banking Certificate program, and participation in the AVAQMD Air Quality Investment Program. The methodologies implemented by HSR contractors to reduce emissions may result in increased fuel or energy consumption associated with emissions control equipment. However, it is also possible that fuel and energy consumption may decrease. The change in fuel consumption will likely be small on a per-equipment basis. If after-market control devices are used, such as diesel particulate filters,

they will generate additional waste associated with disposal of spent filters. In comparison to the scope of the project, these additional increases will be small. Therefore, the impacts of mitigation will be less than significant under CEQA.

The Authority finds that Mitigation Measure AQ-MM#1 has been required in the Preferred Alternative and that it will mitigate or avoid the project's significant air quality impacts related to VOC and NO_x but that CO emissions will remain significant within the SJVAPCD and the AVAQMD. 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 (Section 8 of this document) support certification of the Final EIR/EIS and approval of the project.

4.2.3 Impact AQ #8: Cumulative Impacts during Construction

VOC, CO, and NO_x emissions within the SJVAPCD associated with the Preferred Alternative will be greater than applicable mass emission CEQA significance thresholds. VOC and NO_x emissions within the EKAPCD will be greater than applicable emission CEQA significance thresholds. In addition, CO and NO_x emissions within the AVAQMD will be greater than applicable emission CEQA significance thresholds. Therefore, these construction emissions will contribute to air quality degradation and impede the region's ability to attain air quality standards. In addition, past, present, and reasonably foreseeable future projects will have significant VOC, CO, and NO_x emissions. Because these projects will be constructed during the same timeframe as the Preferred Alternative, a cumulatively significant air quality impact will occur. Even with implementation of on-site minimization measures (i.e., AQ-IAMF#4 and AQ-IAMF#5), VOC, CO, NO_x, PM₁₀, and PM_{2.5} impacts will be reduced but could remain significant under CEQA. Purchase of offset emissions through a VERA with the SJVAPCD, the Emission Banking Certificate Program with the EKAPCD, and the Air Quality Investment Program with the AVAQMD (Mitigation Measure AQ-MM#1) for these pollutants will reduce VOC and NO_x impacts to a less-than-significant level. However, CO impacts will remain significant. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AQ-MM#1: Offset Project Construction Emissions through Off-site Emission Reduction Programs**

Mitigation Measure AQ-MM#1 will require offset project construction emissions through an SJVAPCD VERA agreement, participation in the EKAPCD Emission Banking Certificate program, and participation in the AVAQMD Air Quality Investment Program. The methodologies implemented by HSR contractors to reduce emissions may result in increased fuel or energy consumption associated with emissions control equipment. However, it is also possible that fuel and energy consumption may decrease. The change in fuel consumption will likely be small on a per-equipment basis. If after-market control devices are used, such as diesel particulate filters, they will generate additional waste associated with disposal of spent filters. In comparison to the scope of the project, these additional increases will be small. Therefore, the impacts of mitigation will be less than significant under CEQA.

The Authority finds that Mitigation Measure AQ-MM#1 has been required in the Preferred Alternative and that it will mitigate or avoid the project's significant air quality impacts related to VOC and NO_x, but that CO emissions will remain significant within the SJVAPCD and the AVAQMD for some construction years. 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 (see Section 8 of this document) support certification of the Final EIR/EIS and approval of the project.

4.3 Noise and Vibration

Both construction and operation of the Preferred Alternative will result in significant noise and vibration impacts along the alignment and from the station facilities.

4.3.1 Impact N&V #1: Construction Noise

4.3.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.4 in the Final EIR/EIS Summarizing Section 3.4 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The Fresno to Bakersfield Section Draft Supplemental EIR/EIS (Authority and FRA 2017a) estimated the screening distances for construction noise impact using the Federal Transit Administration (FTA) construction impact noise methodology and criteria (see Table 3.4-1 in the Draft Supplemental EIR/EIS), and estimates of typical equipment noise for rail construction (see Table 3.4-9 in the Draft Supplemental EIR/EIS).⁵ For residential land uses between the intersection of 34th and L Streets and Oswell Street in Bakersfield, potential for temporary construction noise impact will be limited to locations within approximately 150 feet of the alignment (without pile driving). However, without pile driving, the potential for noise impact from nighttime construction could extend to residences as far as 493 feet from the construction boundary. If pile driving is required and is conducted simultaneously with other construction, the potential for temporary construction noise impact will be limited to locations within 316 feet of the construction boundary. With pile driving, the potential for noise impact from nighttime construction could extend to residences as far as 998 feet from the construction boundary.

The exposure of persons or generation of noise levels in excess of standards for a severe impact established by the FTA is considered a significant impact. The standards cover temporary/periodic increases in ambient noise levels above existing levels. For residences within 156 feet of the construction boundary during the day, or within 493 feet of the construction boundary during nighttime, construction noise will be a significant impact. With pile driving, for residences within 316 feet of the construction boundary during the day or within 998 feet of the construction boundary during nighttime, construction noise will be a significant impact. While NV-IAMM#1 (see Attachment C) will reduce potential noise impacts from construction by requiring the Contractor to document how federal guidelines for minimizing noise will be employed when construction is taking place near sensitive receptors (such as hospitals, residential neighborhoods and schools), construction noise impacts from the project will be significant under CEQA because the resulting noise levels will exceed the FRA construction noise levels. Implementation of the following measure will mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA N&V-MM#1: Construction Noise Mitigation Measures**

F-B LGA N&V-MM#1 requires the Contractor to monitor construction noise and verify compliance with FRA Noise limits (FRA 2012) identified in Table 3.4-7 of the Fresno to Bakersfield Section Final EIR/EIS (Authority and FRA 2014). The Contractor will have the flexibility to employ a variety of measures as needed to meet daytime and nighttime noise limits, including use of temporary sound barriers, use of low-noise emission equipment, and limits on nighttime construction. Measures to reduce construction-related noise levels will not expand the construction area and the increase in noise will be minimal in comparison to the scope of the project. Therefore, the impacts of mitigation will be less than significant under CEQA. Secondary impacts from these construction noise mitigation measures, including impacts on existing visual quality and construction light and glare, are discussed in Section 4.14 of this Findings and SOC document. Although the visual degradation during construction will be more noticeable in urban areas adjacent to residences and parkways, the construction activities are considered temporary

⁵ FRA guidelines for assessing noise impacts from HSR, with the exception of noise effects on livestock and wildlife, are based on the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) for rail projects and their associated stationary facilities.

as they will cease after completion. Implementation of construction noise mitigation measures are not anticipated to result in secondary impacts.

4.3.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.4 in the Final EIR/EIS)*

The Final EIR/EIS estimated the screening distances for construction noise impact using the FRA construction impact noise methodology and criteria (see Table 3.4-7 in the Final EIR/EIS), and estimates of typical equipment noise for rail construction (see Table 3.4-11 in the Final EIR/EIS). The FRA noise criteria are 80 A-weighted decibels (dBA) for daytime noise levels for the 8-hour equivalent continuous sound level (L_{eq}), and 70 dBA for nighttime noise levels. Noise levels from construction of the Preferred Alternative will exceed these criteria for both daytime and nighttime activities for some sensitive receptors. As shown in Table 3.4-14 in the Final EIR/EIS, depending on the construction phase, construction will temporarily affect 1,551 sensitive receptors during daytime hours and 8,074 sensitive receptors during nighttime hours.

It is expected that the implementation of N&V-IAMF#1 will provide a significant amount of reduction in noise and vibration effects; however, even with implementation of N&V-IAMF#1 during construction of the Preferred Alternative, the construction-related impacts under CEQA will be potentially significant due to the resulting noise levels exceeding the FRA construction noise levels of 80 dBA L_{eq} during daytime hours and 70 dBA L_{eq} during nighttime hours. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#1: Construction Noise Mitigation Measures**

Mitigation Measure N&V-MM#1, implemented to reduce construction-related noise levels, will not expand the construction area, and the increase in noise associated with the erection of temporary sound barriers will be minimal in comparison to the scope of the project. Implementation of construction noise mitigation measures are not anticipated to result in secondary impacts.

The Authority finds that Mitigation Measures FB-LGA N&V-MM#1 and N&V-MM#1 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce construction noise below the FRA construction noise limits; therefore, this impact will be reduced to a less-than-significant impact.

4.3.2 *Impact N&V #2: Construction Vibration*

4.3.2.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.4 in the Final EIR/EIS Summarizing Section 3.4 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The exposure of persons or the generation of excessive ground-borne vibration or ground-borne noise levels above the levels in Table 3.4-2 of the Fresno to Bakersfield Section Draft Supplemental EIR/EIS is considered a significant impact. As described in the Final EIR/EIS, should fragile or historic structures be located within 77 feet of pile driving or residential structures within 55 feet of pile driving, there will be a potential for vibration impacts related to construction damage. Because the exact locations of these activities have yet to be determined, construction vibration will be a significant impact under CEQA. However, implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#2: Construction Vibration Mitigation Measures**

Implementation of this mitigation measure is not expected to result in secondary impacts. Although vibration impacts will occur during construction activities, the construction activities and implementation of the construction vibration mitigation are considered temporary, as they will cease after completion.

4.3.2.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.4 in the Final EIR/EIS)*

Generation of excessive ground-borne vibration or ground-borne noise levels above the levels in Table 3.4-8 of the Final EIR/EIS is considered a significant impact. There is a potential for construction to cause vibration impacts at levels that exceeds the annoyance criteria in Final EIR/EIS Table 3.4-16 and the building damage criteria in Final EIR/EIS Table 3.4-17. This is the case for pile driving that may be required for road and canal overcrossing and track construction. No vibration impacts from construction-related activities will occur at schools, however. (Final EIR/EIS, p. 3.4-35.) Construction vibration will be a significant impact under CEQA. However, implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#2: Construction Vibration Mitigation Measures**

Mitigation Measure N&V-MM#2, implemented to reduce construction-related vibration levels, may require pre-construction surveys and repair of damaged buildings outside the construction boundary. However, these efforts will not result in additional vibration impacts. Implementation of this mitigation measure is not expected to result in secondary impacts. Although vibration impacts will occur during construction activities, the construction activities are considered temporary, as they will cease after completion.

The Authority finds that Mitigation Measures FB-LGA N&V-MM#2 and N&V-MM#2 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce construction vibration impacts noise below the FRA construction vibration limits; therefore, this impact will be reduced to a less-than-significant impact.

4.3.3 *Impact N&V #3: Moderate and Severe Noise Impacts from Project Operation to Sensitive Receptors*

4.3.3.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.4 in the Final EIR/EIS Summarizing Section 3.4 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The Fresno to Bakersfield Section Draft Supplemental EIR/EIS assessed noise impacts from operation of the HSR on noise-sensitive land uses by comparing existing, measured noise levels with future noise levels predicted for the project. The future noise levels with HSR were developed following the FRA *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA 2012), as described in Section 3.4 of the Fresno to Bakersfield Section Draft Supplemental EIR/EIS and as further documented in the F-B LGA Noise and Vibration Technical Report (Authority and FRA 2017b).

The exposure of persons or generation of noise levels in excess of standards for a severe impact established by the FRA for high-speed ground transportation and the FTA for transit projects (see Figure 3.4-1 of the Draft Supplemental EIR/EIS) is considered a significant impact. These standards cover both permanent and temporary/periodic increases in ambient noise levels in the project vicinity above levels existing without the project. In locations with sensitive receptors where train speeds and operations are high, severe noise impacts will be a significant impact. Table 3.4-19 in the Final EIR/EIS includes the number of sensitive receptors for the entirety of the F-B LGA. Appendix 3.4-A, Figure 3.4-A-3, illustrates the severe noise impacts in the area between the F Street station to Oswell Street for land use category 2, including residential and hospital uses. (Final EIR/EIS, p. 3.4A-29.) In addition, three schools will have a severe impact, including Valley Oaks Charter School, Bakersfield Play Center, and Bethel Christian School. (Final EIR/EIS, p. 3.4-39.) The severely impacted sensitive receptors will constitute a significant impact. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA N&V-MM#3: Implement Proposed California High-Speed Train Project Noise Mitigation Guidelines**
- **F-B LGA N&V-MM#4: Vehicle Noise Specification**
- **F-B LGA N&V-MM#5: Special Track Work**
- **F-B LGA N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design**

Section 3.16, Aesthetics and Visual Resources, of the Fresno to Bakersfield Section Draft Supplemental EIR/EIS discusses secondary impacts from sound walls including visual intrusion and view blockage. None of the mitigation measures will result in secondary impacts.

Table 3.4-29 of the Final EIR/EIS shows that two sound barriers were evaluated under the Bakersfield Station—F-B LGA alignment (e.g., the alignment from 34th and L Streets to Oswell Street in Bakersfield). Sound Barrier Nos. 5 and 6 were determined to be both feasible and reasonable. Details of the sound barrier analysis are provided in the Fresno to Bakersfield Section Noise and Vibration Technical Report (Authority and FRA 2017b). Table 3.4-29 also shows the height, approximate length, number of benefited receivers, total construction cost, the number of unmitigated severe impacts, and number of residual impacts (with mitigation) for each barrier height. Figure 3.4-A-11 (Sheets 1 and 2) of the Final EIR/EIS shows the sound barrier locations associated with the alignment from 34th and L Streets to Oswell Street in Bakersfield.

A total of 29 receivers will continue to be severely impacted after installation of a sound barrier associated with the F-B LGA Preferred Alternative Segment. Therefore, these receivers will be eligible for either sound insulation or compensation for acquisition of a noise easement on specific properties.

Not all impacted receivers may receive noise mitigation that will reduce their impacts below the severe level shown in Figure 3.4-1 of the Final EIR/EIS. Further, there is uncertainty about the effectiveness of mitigation measures because of the important role that local jurisdictions and communities will play in determining the use of sound barriers. Therefore, the Final EIR/EIS described that operational noise impacts from the HSR will be significant and unavoidable.

4.3.3.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.4 in the Final EIR/EIS)*

Noise effects for the Preferred Alternative at La Paz will not be severe based on inclusion of the Refined CCNM Design Option and a 12-foot sound barrier that was incorporated into the design to protect this receptor.

The Final EIR/EIS assessed noise impacts from operation of the HSR on noise-sensitive land uses by comparing existing, measured noise levels with future noise levels predicted for the project. The future noise levels with HSR were developed following the FRA *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA 2012), as described in Section 3.4 of the Final EIR/EIS and as further documented in the *Bakersfield to Palmdale Project Section Noise and Vibration Technical Report* (Authority 2019a).

The exposure of persons or the generation of noise levels in excess of standards for a severe impact established by the FRA for high-speed ground transportation and the FTA for transit projects (see Figure 3.4-1 of the Final EIR/EIS) is considered a significant impact. These standards cover both permanent and temporary/periodic increases in ambient noise levels in the project vicinity above levels existing without the project. In locations with sensitive receptors where train speeds and operations are high, severe noise impacts will be a significant impact. As shown in Table 3.4-21 of the Final EIR/EIS, the Preferred Alternative will result in significant impacts from operations at 1,815 noise-sensitive receptors, prior to mitigation. This is a significant impact under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#3: Implement Proposed California High-Speed Rail Project Noise Mitigation Guidelines**
- **N&V-MM#4: Vehicle Noise Specification**
- **N&V-MM#5: Special Trackwork**
- **N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design**

Mitigation Measure N&V-MM#3 will reduce operations-related noise from the proposed HSR project. The installation of sound barriers along the HSR alignment will remain within the construction boundary, within the HSR right-of-way, and will not be an additional obstacle to wildlife movement. Secondary impacts could potentially occur at the locations where the project will install sound barriers. The changes to visual and aesthetic qualities and the existing environment that might occur because of the installation of these barriers are covered in Section 3.16, Aesthetics and Visual Resources, of the Final EIR/EIS, but these changes are not assessed in site-specific locations because of uncertainty about the locations of these barriers, their heights, and their applications.

No secondary effects are associated with the implementation of Mitigation Measure N&V-MM#4 because the measure involves bidding and procurement.

Mitigation Measure N&V-MM#5 will require special types of trackwork to eliminate gaps that will reduce noise levels generated from rail turnouts. Because this measure will be conducted within the HSR right-of-way and staging areas, this measure will have no secondary effects.

No secondary effects are associated with the implementation of Mitigation Measure N&V-MM#6 because the measure involves conducting additional noise and vibration analysis.

Table 3.4-30 and Table 3.4-33 of the Final EIR/EIS show the reasonableness of each feasible sound barrier (achieve a minimum 5 dBA reduction) along with their heights, approximate lengths, number of benefited receivers, total construction cost, number of unmitigated severe impacts, and number of residual impacts (with mitigation) for each barrier height. Sound barriers were determined to be reasonable when the cost to construct the barriers will not exceed the combined dollar amount of each benefited receiver. Table 3.4-30 of the Final EIR/EIS shows that 14 sound barriers were evaluated for the Preferred Alternative for the Bakersfield to Palmdale (Between Station Areas) alignment. Of the 14 evaluated, 9 barriers (Sound Barriers Nos. 1, 2, 3, 5, 7, 8, 9, 11, and 12) were determined to be both feasible and reasonable for the Preferred Alternative. Table 3.4-33 of the Final EIR/EIS shows that 2 sound barriers were evaluated in the Palmdale Station area. Sound Barrier Nos. 1 and 2 were determined to be both feasible and reasonable.

A total of 264 residential receivers that will be severely impacted were not evaluated with a sound barrier because they are in areas that do not meet the minimum number of 10 severely impacted receivers and a minimum barrier length of 800 feet. Therefore, these receivers will be eligible for either sound insulation or compensation for acquisition of a noise easement on specific properties.

Not all impacted receivers may receive noise mitigation that will reduce their impacts below the levels shown in Figure 3.4-1 of the Final EIR/EIS. Further, there is uncertainty about the effectiveness of mitigation measures because of the important role that local jurisdictions and communities will play in determining the use of sound barriers. Therefore, operational noise impacts from the HSR are significant and unavoidable.

The Authority finds that Mitigation Measures F-B LGA N&V-MM#3, F-B LGA N&V-MM#4, F-B LGA N&V-MM#5, and F-B LGA N&V-MM#6 have been required in the Preferred Alternative, and that Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6 have been required in the Preferred Alternative, and that they will mitigate or avoid some, but not all, of the project's significant noise impacts to sensitive noise receptors. 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 (Section 8 of this document) support approval of the project.

4.3.4 Impact N&V #4: Noise Effects on Wildlife and Domestic Animals

The Final EIR/EIS discusses noise effects on wildlife and domestic animals for the Preferred Alternative as a whole. Domestic and wild birds and mammals near the HSR project railway corridor may be affected by train pass-bys if they are subjected to sound exposure level values of 100 dBA or higher. While it is possible for some animals to become habituated to higher noise levels and exhibit reduced response to noise after prior exposure, there is no developed general criterion level or threshold for habituation. Wildlife responses to noise are species-dependent. Their responses to noise depend upon the same components as any other noise-sensitive receiver, but each animal's responses and thresholds are unique enough that noise standards cannot be established. The duration of the noise, the type of noise, and the level of existing ambient noise weigh differently upon what type of response to expect from individual species. One specific use of concern is equestrian use of the PCT, which will have a crossing underneath the aerial structure of the HSR system. Operation of the HSR could have a potentially significant impact on equestrian uses at the PCT. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.) Refer to Section 3.7, Biological and Aquatic Resources, Impact BIO #8: Operational Impacts on Special-Status Species of the Final EIR/EIS, for additional discussion of noise impacts from HSR operations on special-status species.

- **N&V-MM#8: Startle Effect Warning Signage**

Mitigation Measure N&V-MM#8 will create a change in the existing environment from the installation of the signs, but they will not substantially degrade the existing visual environment. Implementation of this mitigation measure is not anticipated to result in secondary impacts.

The Authority finds that Mitigation Measure N&V-MM#8 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project's potential for startle impacts on equestrian uses to less-than-significant levels under CEQA.

4.3.5 Impact N&V #5: Impacts from Project Vibration

4.3.5.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.4 in the Final EIR/EIS Summarizing Section 3.4 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The Preferred Alternative will result in vibration impacts associated with the rail corridor operation between the intersection of 34th and L Streets and Oswell Street. Table 3.4-27 in the Final EIR/EIS shows that 14 residential units, 2 hotel/motel uses, and 2 shelters will be impacted at levels that exceed the FRA vibration threshold. Because the Preferred Alternative will expose persons to or generate excessive ground-borne vibration above the FRA threshold, this will be a significant impact under CEQA. Implementation of the following measure will mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA N&V-MM#5: Special Track Work**

Mitigation Measure F-B LGA N&V-MM#5 will require special types of trackwork to eliminate gaps that will reduce noise levels generated from rail turnouts and reduce vibration levels resulting from HSR operation. This measure will be conducted within the HSR rail right-of-way and staging areas and will not lead to secondary effects. The increase in noise and vibration will be minimal to negligible in comparison to the scope of the project. Therefore, the impacts of mitigation will be less than significant under CEQA.

4.3.5.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.4 in the Final EIR/EIS)*

The Preferred Alternative will result in vibration impacts associated with the rail corridor operation. Because the Preferred Alternative will expose persons to or generate excessive ground-borne vibration, this will be a significant impact under CEQA. Implementation of the following measures mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#4: Vehicle Noise Specification**
- **N&V-MM#5: Special Track Work**
- **N&V-MM#6: Additional Noise and Vibration Analysis**

No secondary effects are associated with the implementation of Mitigation Measure N&V-MM#4, because the measure involves bidding and procurement.

Mitigation Measure N&V-MM#5 will require special types of trackwork to eliminate gaps that will reduce noise levels generated from rail turnouts. Because this measure will be conducted within the HSR right-of-way and staging areas and is only related to different types of track used for construction of the project, this measure will have no secondary effects.

No secondary effects are associated with the implementation of Mitigation Measure N&V-MM#6 because the measure involves conducting additional noise and vibration analysis.

The Authority finds that Mitigation Measures F-B LGA N&V-MM#5, F-B LGA N&V-MM#4, N&V-MM#5, and N&V-MM#6 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce the project's operation vibration impacts to less-than-significant levels.

4.3.6 *Impact N&V #7: Noise from HSR Stationary Facilities*

4.3.6.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.4 in the Final EIR/EIS Summarizing Section 3.4 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

Long-term noise impacts associated with operation of the traction power paralleling station at the intersection of Union Avenue and Sumner Street in the portion of the alignment between the intersection of 34th and L Streets and Oswell Street in Bakersfield (Sheet 3 of 127 in Appendix 3.1-C of the Final EIR/EIS) would result in a significant impact under CEQA. Implementation of the following measure will mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA N&V-MM#7: Station, Maintenance of Infrastructure Facility and Traction Power Supply Station**

Mitigation Measure F-B LGA N&V-MM#7 would reduce noise levels generated from long-term operations of the traction power paralleling station at the intersection of Union Avenue and Sumner Street. The menu of measures included in F-B LGA N&V-MM#7 will be effective and would not expand the project boundary or have secondary effects. Therefore, the impacts of mitigation would be less than significant under CEQA.

4.3.6.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.4 in the Final EIR/EIS)*

Long-term noise impacts associated with operation of HSR stationary facilities include public address systems, signal horns, impact tools, human activity, and vehicle activity and will result in a significant impact under CEQA. Implementation of the following measures mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#3: Implement Proposed California High-Speed Rail Project Noise Mitigation Guidelines**

- **N&V-MM#7: Station, Maintenance-of-Way Facility, and Traction Power Substation**

Mitigation Measures N&V-MM#3 and N&V-MM#7 will reduce noise levels generated from long-term operations of stationary facilities associated with the HSR project. No secondary effects are expected from the implementation of the proposed mitigation measure, with the exception of the potential sound barrier mitigation at the stations and the LMF site. The changes to visual and aesthetic qualities and the existing environment that might occur because of the installation of sound barriers are covered in Section 3.16, Aesthetics and Visual Resources, in the Final EIR/EIS, but these changes are not assessed in site-specific locations because of uncertainty about the locations of these barriers, their heights, and their applications. AVQ-IAMF#2: Aesthetic Review Process will incorporate the affected communities' input on the appearance of the key non-station structures, potentially including sound barriers, to reduce secondary visual and aesthetic impacts.

The Authority finds that Mitigation Measures F-B LGA N&V-MM#7, N&V-MM#3, and N&V-MM#7 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce the project's long-term stationary source noise impacts to less-than-significant levels.

4.4 Electromagnetic Interference and Electromagnetic Fields

4.4.1 Impact EMI/EMF#1: Impacts During Construction

4.4.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.5 in the Final EIR/EIS Summarizing Section 3.5 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The construction-related EMI/EMF impacts for the portion of the Preferred Alternative between the intersection of 34th and L Streets and Oswell Street will be less than significant and will not require mitigation. (Final EIR/EIS, p. 3.5-16; Fresno to Bakersfield Draft Supplemental EIR/EIS, pp. 3.5-8 - 3.5-13.)

4.4.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.5 in the Final EIR/EIS)*

Construction of the Preferred Alternative between Oswell Street in Bakersfield and Spruce Court in Palmdale will require use of heavy equipment, trucks, and light vehicles, which, like all motor vehicles, generate electromagnetic fields (EMF). Many types of construction equipment contain electric motors that also generate EMFs. Movement of large construction vehicles has the potential to result in transient changes to the static (DC) magnetic field, however, research shows large construction vehicles will pose no reasonable interference risk to magnetically sensitive equipment at pass-by distances greater than 50 feet, because any magnetic shift will be below 2 milligauss. Even with implementation of EMI/EMF-IAMF#2, which requires the Contractor to prepare a technical memorandum to describe how it will comply with the Authority's established Implementation Stage Electromagnetic Compatibility Program Plan, sensitive equipment could potentially be disrupted by construction activities at the Anatase Products site prior to the relocation of the facility. Therefore, this impact is considered significant under CEQA. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **EMI/EMF-MM#1: Protect Sensitive Equipment**

EMI/EMF-MM#1 will require the Authority to contact relevant entities regarding the potential impacts of both HSR-related EMF radio frequency (RF) and low-frequency EMI on imaging equipment prior to completion of final design, and requires that the final design include suitable design provisions to prevent interference. Design provisions may include establishing magnetic field-shielding walls around sensitive equipment or installing RF filters into sensitive equipment. RF filters, when correctly specified and installed, can be equally effective in reducing EMI compared to shielding, and (under the right conditions) are an alternative to providing a shielded

enclosure for the equipment. As explained in the Final EIR/EIS, these options are very effective at preventing external EMI. With implementation of EMI/EMF-MM#1, the impact of EMI on sensitive equipment will have a less-than-significant impact under CEQA. Additionally, no secondary environmental impacts will result from implementation of any EMI/EMF-MM#1 measures because the shields and filters will be installed inside the building or on the sensitive equipment.

The Authority finds that Mitigation Measure EMI/EMF-MM#1 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project's construction-related EMI/EMF impacts to less-than-significant levels by preventing the interference with sensitive equipment

4.4.2 Impact EMI/EMF#5: Effects on Sensitive Equipment from Electromagnetic Interference

4.4.2.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.5 in the Final EIR/EIS Summarizing Section 3.5 in the Fresno to Bakersfield Draft Supplemental EIR/EIS)*

The operation-related EMI/EMF impacts for the Preferred Alternative between the intersection of 34th and L Streets and Oswell Street will be less than significant and will not require mitigation. (Final EIR/EIS, p. 3.5-16; Fresno to Bakersfield Draft Supplemental EIR/EIS, pp. 3.5-8 - 3.5-13.)

4.4.2.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.5 in the Final EIR/EIS)*

For the portion of the Preferred Alternative between Oswell Street in Bakersfield and Spruce Court in Palmdale, the Final EIR/EIS identified one medical facility that will be sensitive to HSR-generated EMFs. (Final EIR/EIS, pp. 3.5-19 - 3.5-20 and Table 3.5-6.) However, the site, Family Urgent Care in Lancaster, was determined to not operate magnetically sensitive imaging equipment. (Final EIR/EIS, pp. 3.5-20–3.5-21.) In fact, no sensitive sites were identified. The Preferred Alternative includes EMI/EMF-IAMF#2, which will require the Contractor to prepare a technical memorandum to describe how it will comply with the Authority's established Implementation Stage Electromagnetic Compatibility Program Plan, thereby identifying the potential for interference with any sensitive equipment that may be present during operation of the Preferred Alternative. Even with the IAMF, a significant impact may occur under CEQA if sensitive equipment will be potentially disrupted by HSR EMFs, for example, as sites identified in Table 3.5-6 that do not currently have sensitive equipment, but may acquire it. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **EMI/EMF-MM#1: Protect Sensitive Equipment**

EMI/EMF-MM#1 will require the Authority to contact relevant entities regarding the potential impacts of both HSR-related EMF RF and low-frequency EMI on imaging equipment prior to completion of final design, and requires that the final design include suitable design provisions to prevent interference. Design provisions may include establishing magnetic field shielding walls around sensitive equipment or installing RF filters into sensitive equipment. As explained in the Final EIR/EIS, these options are very effective at preventing external EMI. With implementation of EMI/EMF-MM#1, the impact of EMI on sensitive equipment will have a less-than-significant impact under CEQA. Additionally, no secondary environmental impacts will result from implementation of any EMI/EMF-MM#1 measures because the shields and filters will be installed inside the building or on the sensitive equipment.

The Authority finds that Mitigation Measure EMI/EMF-MM#1 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project's construction-related EMI/EMF impacts to less-than-significant levels by preventing interference with sensitive equipment.

4.5 Public Utilities and Energy

Section 3.6 of the Final EIR/EIS evaluated impacts to public utilities and energy for the project section as a whole, rather than separately addressing the portion of the Preferred Alternative from the intersection of 34th and L Streets to Oswell Street in Bakersfield.

4.5.1 Impact PU&E #6: Conflicts with Existing Utilities

Within the Preferred Alternative utility resource study area, there are 10 electrical substations (Final EIR/EIS, Figure 3.6-1). Two are owned by Pacific Gas and Electric Company and four are owned by Southern California Edison. The ownership of the remaining four is unknown. The Preferred Alternative will displace one Pacific Gas and Electric Company substation, the Magunden Substation. Adjacent electrical lines leading into the 10 electrical substations may be within the HSR construction footprint and may result in an indirect conflict with each substation. Where the Preferred Alternative will conflict with an existing electrical substation's ancillary infrastructure, there is the potential for disruption in electric power within the area serviced by the substation. PUE-IAMF#4, which requires the Contractor to prepare a technical memorandum documenting how construction will be coordinated with electrical service providers to avoid or minimize disruptions, and with the negotiation of utility agreements between the Authority and the utility owners to avoid, protect, or relocate potentially affected existing utility infrastructure, will reduce these conflicts to a less than significant level.

For the Magunden Substation, even with implementation of PUE-IAMF#4, which requires the Contractor to prepare a technical memorandum documenting how construction will be coordinated with electrical service providers to avoid or minimize disruptions, and with the negotiation of utility agreements between the Authority and the utility owners to avoid, protect, or relocate potentially affected existing utility infrastructure, the impact will be significant under CEQA because of the potential disruption in electric power within the area serviced by the substation. The HSR project will conflict with a fixed facility, the Magunden Electrical Substation, which is considered a significant impact pursuant to the thresholds defined in Section 3.6.4.4 of the Final EIR/EIS. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **PU&E-MM#1: Reconfigure or Relocate Substations and/or Substation Components**

Potential impacts of implementing this mitigation measure, which will consist of reconfiguring potentially affected electrical lines and related components connected to an electrical substation, include brief power service interruptions when disconnecting from existing infrastructure and connecting to replacement electrical service infrastructure. Where necessary and possible, project design and phasing of construction activities will include constructing new utilities and relocating existing utilities prior to disruption. As described in PUE-IAMF#3, prior to construction in areas where utility service interruptions are unavoidable, the contractor will notify the public within the jurisdiction and affected service providers of the planned outage through a combination of communication media (e.g., telephone, email, mail, newspaper notices, or other means). The notification will specify the estimated duration of the planned outage and will be published no less than 7 days prior to the outage. Construction will be coordinated to avoid interruptions of utility service to hospitals and other critical users. Further, per the requirements of California Public Utilities Commission General Order 131-D, environmental impacts that might occur will be addressed in separate environmental documentation that is specific to the relocated substation ancillary components. Because of the temporary duration of any potential interruptions, the interruption notification procedures, and the Authority's coordination with the affected utility company to avoid service interruptions, this secondary impact is less than significant under CEQA.

The Authority finds that Mitigation Measure PU&E-MM#1 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the impact to a less-than-significant level under CEQA by resolving the conflict with the electrical substantial through relocating or reconfiguring it and/or its components.

4.6 Biological and Aquatic Resources

Section 3.7 of the Final EIR/EIS describes impacts as either construction period, which examines temporary and permanent impacts from construction activities, or operations period, which examines impacts associated with operations and maintenance activities. This categorization is carried through in these Findings and SOC.

Section 3.7 of the Final EIR/EIS lists mitigation measures that are identified in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR (see Final EIR/EIS Section 3.7.7.1). Although the impacts analysis in Section 3.7 does not rely on these mitigation measures from the Fresno to Bakersfield documents for the CEQA determinations, the Final EIR/EIS identifies that they are applicable. In many instances, the mitigation measures from the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR match the mitigation measures in the Final EIR/EIS. For example, F-B LGA BIO-MM#1 through F-B LGA BIO-MM#12, correspond with BIO-IAMF#1 through BIO-IAMF#8 as discussed in Section 3.7.4.2 of the Final EIR/EIS. To ensure clarity and consistency with the Final EIR/EIS, the Authority is including and adopting the F-B LGA mitigation measures. Attachment B shows how the mitigation measures from the Fresno to Bakersfield documents correspond with mitigation measures or IAMFs identified in the Bakersfield to Palmdale Project Section Final EIR/EIS.

4.6.1 Impact BIO #1: Construction Impacts on Special-Status Plant Species

Up to 32 special-status plant species have the potential to occur in and immediately adjacent to the footprint of the Preferred Alternative, and as a result, may be directly or indirectly impacted by construction period activities. Table 3.7-5 of the Final EIR/EIS presents the potential effects on suitable habitats for special-status species within the resource study area.

In addition to the species that have been observed within the Special-Status Plant Study Area, special-status plant species have the potential to occur in areas of suitable habitat in parcels that have not been surveyed. These species include federally and/or state-listed species and species listed by the California Native Plant Society, all of which are considered rare in California (CEQA Guidelines, §15380). If these species occur in the construction footprint, they will be subject to the same adverse effects as those described below for species known to occur.

Direct, temporary impacts on special-status plant species from construction activities could occur due to the clearing, grubbing, covering, undercutting, and damaging of roots, or the unearthing of individual plants. Dust and airborne soil, which may settle on plants (particularly herbs), may inhibit their ability to photosynthesize or reproduce through pollination. Soil compaction and the placement of fill may directly affect special-status plant species by causing decreased fitness or death by root compaction, decreased germination from the seed bank, and/or the plants being covered with soil. Chemical spills have the potential to contaminate the soil and groundwater, resulting in mortality, habitat degradation, or reduced reproductive success of special-status plant species.

Direct, permanent impacts on special-status plants will result from the construction of track, stations, maintenance and equipment storage areas, access roads, road overcrossings, substations, and other permanent facilities. These activities may require the removal of individual plants and could prevent regeneration through the placement of fill and other materials. These structures could also form an impenetrable cap over the seed bank. Excess dust and piled dirt could lower the success of a viable seed bank or otherwise negatively alter surface areas for special-status plants and their habitats.

Indirect, temporary impacts on special-status plant species could occur as a result of changes in erosion and sedimentation resulting from construction activities. Displaced sediment and changes to microtopography could alter the soil and substrate conditions required by special-status plants. Impacts on hydrology may affect water availability to plant species, inhibit growth, and hinder survival during harsh conditions and/or germination. Fragmentation could result from the construction of temporary features, especially staging areas and access roads that bisect special-status plant species' habitats. Construction activities could facilitate the spread of invasive and

noxious weeds through introduction of seeds by construction equipment, vehicles, and personnel, and could provide ample habitat for colonization where temporary ground-disturbing activities take place.

Indirect, permanent impacts on special-status plant species could occur from the construction of HSR components that alter the landscape and may include changes in erosion and sedimentation resulting from construction activities. Displaced sediment and major changes to microtopography could alter the soil and substrate conditions preferred by special-status species. Impacts on hydrology may affect water availability to special-status plant species and may inhibit growth, survival during harsh conditions, and germination. Fragmentation will result from the construction of permanent features, especially linear features (e.g., track and access roads) that bisect special-status plant species' habitats. Construction activities could facilitate the spread of invasive and noxious weeds through the introduction of seeds by construction equipment, vehicles, and personnel, and could provide ample habitat for colonization where permanent ground-disturbing activities will take place. Indirect impacts could include increasing the potential for introducing and spreading invasive and nonnative species and harmful pathogens to special-status plants.

As described in the Final EIR/EIS, the project includes numerous IAMFs related to biological resources, including features to track success and provide assurance that IAMFs are implemented correctly and fully. These IAMFs are standard procedures, commonly used on large infrastructure projects to reduce impacts on special-status plant species (e.g., BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors; BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training).

During final design, the Mitigation Manager, or its designee (Project Biologist, Regulatory Specialist [Waters], Project Botanist) will implement BIO-IAMF#5 (Prepare and Implement a Biological Resources Management Plan), which will help the long-term perpetuation of biological resources within the temporarily disturbed areas, as well as protect adjacent targeted habitats. Additional avoidance measures to be implemented prior to construction avoid impacts to special-status plant species (see BIO-IAMF#8 Delineate Equipment Staging Areas and Traffic Routes). Agency personnel may visit the site to ensure compliance with avoidance/minimization measures (BIO-IAMF#2: Facilitate Agency Access). In the event of an accidental removal or injury to a federal or state-listed plant species, the Contractor's employees will be required to notify the United States Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Wildlife (CDFW) and identify any corrective measures to aid in preventing future impacts. Post-construction compliance reports consistent with agency protocols to document compliance with these IAMFs will be submitted at regular intervals.

Even with IAMFs, the direct and indirect impacts on special-status plant species and habitats suitable for special-status plant species during construction are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #1 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#1: Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities**
- **BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species**
- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#38: Compensate for Impacts to Listed Plant Species**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**

- **BIO-MM#50: Implement Measures to Minimize Impacts during Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#55: Prepare and Implement a Weed Control Plan**
- **BIO-MM#56: Conduct Monitoring of Construction Activities**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones**
- **BIO-MM#61: Establish and Implement a Compliance Reporting Program**
- **BIO-MM#75: Minimize Impacts on Kern Primrose Sphinx Moth Host Plants**
- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

Under BIO-MM#58, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist will delineate environmentally sensitive areas and non-disturbance zones prior to the start of ground-disturbing activities, including special-status plant populations, to protect these areas from impacts during construction.

Measure BIO-MM#55: Prepare and Implement a Weed Control Plan will minimize or avoid the spread of noxious and invasive weeds during construction, and BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan will restore temporarily disturbed uplands following construction activities.

To avoid and minimize impacts on special-status plant species in areas of suitable habitat where floristic surveys could not be conducted, BIO-MM#1: Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities will identify the locations of all special-status plant species in areas not previously surveyed. Based on the results, BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species will be fully implemented throughout the project area to further avoid or minimize direct and indirect impacts to special-status plants.

Because avoidance, minimization (BIO-MM#1), rectification, or reduction (BIO-MM#2) of direct and indirect impacts will not reduce the significance of these impacts by themselves, the Authority will also secure mitigation through compensatory mitigation as described in BIO-MM#38: Compensate for Impacts to Listed Plant Species. In conjunction with final design and the permitting process and in compliance with the project's Biological Opinion, the Authority will mitigate at a minimum 1:1 ratio at a USFWS-approved site.

Additionally, WQ-MM#3 will require the preparation and implementation of a Groundwater Adaptive Management and Monitoring Plan prior to, during, and after construction of tunnels. The Groundwater Adaptive Management and Monitoring Plan will specify requirements for baseline data collection, groundwater modeling, monitoring during and after construction, adaptive management triggers and required remedial actions (such as augmenting water supplies to effected seeps and springs), and communication and reporting requirements. Mitigation Measure WQ-MM#3 will reduce impacts on seeps and springs if tunneling disrupts water flow. By avoiding, minimizing, rectifying, reducing, and compensating for direct and indirect impacts to special-status plants, long-term effects to the future success of special-status plant species will be reduced. There will be no secondary impacts from these mitigation measures.

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**

- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program.**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Management Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resource Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#15: Post-Construction Compliance Reports.**
- **F-B LGA BIO-MM#16: Conduct Protocol-Level Pre-Construction Surveys for Special-Status Plant Species and Special Status Plan Communities.**
- **F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special Status Plant Species.**
- **F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**

The Authority finds that implementation of the above-listed mitigation measures have been required in the Preferred Alternative and that implementation of these mitigation measures will substantially lessen the direct and indirect impacts to special-status plant species and their habits and will reduce the impact to a less-than-significant level under CEQA.

4.6.2 Impact BIO #2: Construction Impacts on Special-Status Wildlife Species

Wildlife habitat and land cover types in the footprint of the Preferred Alternative have the potential to support a variety of special-status wildlife species. Construction activities have the potential to disturb the life cycles of these special-status species. Up to 58 special-status wildlife species have the potential to occur in and near the footprint of the Preferred Alternative and as a result may be directly or indirectly impacted by construction period activities. Table 3.7-6 of the Final EIR/EIS provides a comparison of estimated potential impacts on suitable habitat for special-status wildlife species within the resource study area. Additionally, Table 3.7-7 of the Final EIR/EIS displays the results of the habitat species modeling used to address potential impacts on federally and state-listed species.

Direct impacts associated with the Preferred Alternative on special-status wildlife species (including amphibians, reptiles, insects, birds, and mammals) and native fauna will disturb suitable habitats (e.g., destruction, alteration, degradation, fill, or pollution of suitable habitat) that have potential to support special-status wildlife species. As a result of construction activities, the Preferred Alternative may result in adverse effects on special-status wildlife species through harassment, disturbance, injury, nest abandonment or death of individuals. These impacts may occur to all life stages (i.e., eggs, young, juveniles, or adults).

Direct impacts may occur as a result of permanent conversion of occupied habitat to project infrastructure, direct strikes during operation and maintenance, trampling, or crushing.

Construction period indirect impacts associated with the Preferred Alternative on special-status wildlife species (including amphibians, reptiles, insects, birds, and mammals) and native fauna may result from increased noise, light, and ground disturbance. These impacts may indirectly result in water quality degradation, hydrological modifications, habitat degradation (through soil

compaction, or alteration of vegetation cover), introduce nonnative invasive (noxious) weeds, and in some cases may result in mortality of individuals. Specifically, the indirect impacts may result in reduced reproductive success, decreased survivorship of these species and their food, abandonment of refugia (e.g., burrows), temporary shifts in foraging patterns or territories (displacement), and increased mortality or predation. These impacts may occur to all life stages (i.e., eggs, young, juveniles, or adults).

The direct and indirect impacts on special-status wildlife species and their suitable habitats during construction are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #2 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species**
- **BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species**
- **BIO-MM#11: Conduct Surveys for Blunt-Nosed Leopard Lizard**
- **BIO-MM#13: Implement Avoidance Measures for Blunt-Nosed Leopard Lizard**
- **BIO-MM#14: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds**
- **BIO-MM#15: Conduct Pre-Construction Surveys and Monitoring for Raptors**
- **BIO-MM#16: Implement Avoidance Measures for California Condor**
- **BIO-MM#17: Conduct Surveys for Swainson’s Hawk Nests and Implement Avoidance and Minimization Measures**
- **BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson’s Hawk Nests**
- **BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls**
- **BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl**
- **BIO-MM#22: Conduct Pre-Construction Surveys for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse**
- **BIO-MM#23: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse**
- **BIO-MM#25: Conduct Pre-construction Surveys for Special-Status Bat Species**
- **BIO-MM#26: Implement Bat Avoidance and Relocation Measures**
- **BIO-MM#27: Implement Bat Exclusion and Deterrence Measures**
- **BIO-MM#28: Conduct Pre-Construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures**
- **BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures**
- **BIO-MM#30: Conduct Pre-Construction Surveys for San Joaquin Kit Fox**
- **BIO-MM#31: Minimize Impacts on San Joaquin Kit Fox**
- **BIO-MM#36: Install Aprons or Barriers within Security Fencing.**
- **BIO-MM#42: Provide Compensatory Mitigation for Impacts to Habitat for Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson’s Antelope Squirrel**

- **BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson’s Hawk Nesting Trees and Habitat**
- **BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**
- **BIO-MM#50: Implement Measures to Minimize Impacts during Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#55: Prepare and Implement a Weed Control Plan**
- **BIO-MM#56: Conduct Monitoring of Construction Activities**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones**
- **BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds**
- **BIO-MM#61: Establish and Implement a Compliance Reporting Program**
- **BIO-MM#62: Prepare Plan for Dewatering and Water Diversions**
- **BIO-MM#63: Work Stoppage**
- **BIO-MM#65: Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles**
- **BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests**
- **BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests**
- **BIO-MM#68: Avoid and Minimize Impacts to White-Tailed Kite**
- **BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies**
- **BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat**
- **BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use**
- **BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor**
- **BIO-MM#74: Implement Bird Nest and Avian Special Status Species Avoidance Measures for Helicopter-Based Construction Activities**
- **BIO-MM#75: Minimize Impacts on Kern Primrose Sphinx Moth Host Plants**
- **BIO-MM#76: Implement Wildlife Rescue Measures**
- **BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing**
- **BIO-MM#78: Install Wildlife Jump-Outs**
- **BIO-MM#79: Mitigation for Desert Tortoise**
- **BIO-MM#80: Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee**
- **BIO-MM#81: Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee**
- **BIO-MM#82: Avoid Direct Impacts on Monarch Butterfly Host Plants**

- **BIO-MM#84: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens**
- **BIO-MM#86: Implement Lighting Minimization Measures During Construction**
- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

Many of the mitigation measures described in Impact BIO #1 have the same or similar ability to reduce impacts to special-status wildlife species. As such, they are not repeated here except for those measures that are unique to Impact BIO #2.

To minimize entanglement of special-status wildlife species, the erosion control materials will not include plastic mono-filament netting (BIO-IAMF#6: Establish Monofilament Restrictions). Wildlife exclusion barriers will keep wildlife out of the construction work area as specified and designed through consultation with USFWS and/or CDFW (BIO-MM#8: Wildlife Exclusion Fencing). In areas that have the potential to entrap wildlife, entrapment prevention measures will be enacted (BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations). These measures may include covering holes, providing escape ramps or covering culverts.

To further avoid impacts to special-status wildlife species, work will stop in the event a special-status wildlife species enters the construction footprint in an area where construction is taking place (BIO-MM#63: Work Stoppage). Work will be suspended until the individual leaves voluntarily or is relocated (except in the case of a fully protected species) using USFWS and/or CDFW approved techniques or methods.

Qualified, agency-approved Biologists (where required, or as designated by the Project Biologist) will conduct preconstruction, protocol-level and focused surveys for special-status wildlife where suitable habitat is present within the construction footprint. Conducting surveys will aid in the avoidance and minimization of impacts to special-status wildlife species by identifying the locations where each species occurs and/or has the potential to occur in order to guide the avoidance and minimization mitigation measures and implement performance standards. The following mitigation measures require surveys.

- **BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species**
- **BIO-MM#11: Conduct Surveys for Blunt-Nosed Leopard Lizard**
- **BIO-MM#14: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds**
- **BIO-MM#15: Conduct Pre-Construction Surveys and Monitoring for Raptors**
- **BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests and Implement Avoidance and Minimization Measures**
- **BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls**
- **BIO-MM#22: Conduct Pre-Construction Surveys for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse**
- **BIO-MM#25: Conduct Pre-construction Surveys for Special-Status Bat Species**
- **BIO-MM#28: Conduct Pre-Construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures**
- **BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures**
- **BIO-MM#30: Conduct Pre-Construction Surveys for San Joaquin Kit Fox**
- **BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests**
- **BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies**

- **BIO-MM#80: Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee**
- **BIO-MM#82: Avoid Direct Impacts on Monarch Butterfly Host Plants.**
- **BIO-MM#84: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens**
- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

The surveys will provide additional information that will be used to guide the placement of ESAs, ERAs, and wildlife exclusion fencing; the extent and locations of construction buffers; focus monitoring efforts; and in some instances, species relocation. As a result, impacts on special-status species and their habitat will be avoided and minimized. These measures include the following: BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species; BIO-MM#13: Implement Avoidance Measures for Blunt-Nosed Leopard Lizard; BIO-MM#16: Implement Avoidance Measures for California Condor; BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson's Hawk Nests; BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl; BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests; BIO-MM#68: Avoid and Minimize Impacts to White-Tailed Kite; BIO-MM#23: Implement Avoidance and Minimization Measures for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse; and BIO-MM#26: Implement Bat Avoidance and Relocation Measures.

In many instances, these mitigation measures follow existing natural resource agency guidelines or protocols. These include CDFW's Staff Report on Burrowing Owl Mitigation (CDFW 2012) and USFWS' Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS [1999] 2011).

Where direct or indirect impacts to special-status wildlife species cannot be sufficiently avoided, minimized, or rectified, the Authority will conduct compensatory mitigation. The compensatory mitigation may include preservation, enhancement, restoration, or creation of suitable habitats that will protect in perpetuity suitable occupied habitat for impacted species at a level commensurate to or in excess of the project's direct and indirect impacts. Applicable compensatory mitigation measures include:

- **BIO-MM#42: Provide Compensatory Mitigation for Impacts to Habitat for Blunt-Nosed Leopard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel**
- **BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat**
- **BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests**
- **BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat**
- **BIO-MM#81: Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee**
- **BIO-MM#83: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Breeding and Foraging Habitat**
- **BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat**

The compensatory mitigation follows existing natural resource agency guidelines or protocols. Examples of compensatory mitigation may include the conservation of similar vegetation communities to that of the impact area, a conservation easement, and the development and

implementation of a land management plan to address the long-term sustainability of the mitigation site for special-status wildlife species. Habitat compensation may be accomplished by (1) purchasing “credits” from a USFWS approved and/or CDFW approved conservation bank with a service area covering the impact area; (2) acquiring appropriate properties in fee-title; or (3) establishing a conservation easement over a property. The USFWS and CDFW approved compensation will be consistent with the USFWS Biological Opinion and/or the CDFW 2081(b).

Where offsite mitigation is necessary to offset short-term temporary and/or long-term permanent residual impacts that have not been sufficiently avoided, reduced, rectified, or minimized to a less-than-significant level, the Authority will identify suitable habitat restoration, enhancement, and preservation sites to compensate for the residual impacts on special-status wildlife species (BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites). In order to minimize secondary impacts associated with the offsite compensatory mitigation, the offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored in ways that are consistent with the terms and conditions of the CDFW 1600 Streambed Alteration Agreement, CESA, and the federal Endangered Species Act as they apply to their jurisdiction and resources onsite.

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program.**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#8: Wildlife Exclusion Fencing.**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#10: Monofilament Netting.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#12: Entrapment Prevention.**
- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14: “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post Construction Compliance Reports.**
- **F-B LGA BIO-MM#22: Conduct Pre-Construction Surveys for Special Status Reptile and Amphibian Species.**
- **F-B LGA BIO-MM#23: Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance and Relocation.**

- **F-B LGA BIO-MM#29: Conduct Pre-Construction Surveys and Delineate Active Nest Exclusion Areas of Other Breeding Birds.**
- **F-B LGA BIO-MM#30: Conduct Pre-Construction Surveys and Monitoring for Raptors.**
- **F-B LGA BIO-MM#31: Bird Protection.**
- **F-B LGA BIO-MM#32: Conduct Protocol and Pre-Construction Surveys for Swainson’s Hawks.**
- **F-B LGA BIO-MM#33: Swainson’s Hawk Nest Avoidance and Monitoring.**
- **F-B LGA BIO-MM#34: Monitor Removal of Nest Trees for Swainson’s Hawks.**
- **F-B LGA BIO-MM#35: Conduct Protocol Surveys for Burrowing Owl.**
- **F-B LGA BIO-MM#36: Burrowing Owl Avoidance and Minimization.**
- **F-B LGA BIO-MM#37: Conduct Pre-Construction Surveys for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse.**
- **F-B LGA BIO-MM#38: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse.**
- **F-B LGA BIO-MM#40: Conduct Pre-construction Surveys for Special-Status Bat Species.**
- **F-B LGA BIO-MM#41: Bat Avoidance and Relocation.**
- **F-B LGA BIO-MM#42: Bat Exclusion and Deterrence.**
- **F-B LGA BIO-MM#43: Conduct Pre-construction Surveys for American Badger and Ringtail.**
- **F-B LGA BIO-MM#44: American Badger and Ringtail Avoidance.**
- **F-B LGA BIO-MM#45: Conduct Protocol Level Pre-Construction Surveys for San Joaquin Kit Fox.**
- **F-B LGA BIO-MM#46: Minimize Impacts on San Joaquin Kit Fox.**
- **F-B LGA BIO-MM#51: Install Flashing or Slats within Security Fencing.**
- **F-B LGA BIO-MM#58: Compensate for Loss of Swainson’s Hawk Nesting Trees.**
- **F-B LGA BIO-MM#59: Compensate for Loss of Burrowing Owl Active Burrows and Habitat.**
- **F-B LGA BIO-MM#60: Compensate for Destruction of San Joaquin Kit Fox Habitat.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**
- **F-B LGA AVR-MM#1b: Minimize Light Disturbance during Construction.**

There will be no secondary impacts from these mitigation measures. By avoiding, minimizing, and compensating for direct and indirect impacts to special-status wildlife, long-term effects to the future success of special-status wildlife species will be reduced. The Authority finds that the combination of the above list of mitigation measures will substantially lessen the direct and indirect impacts to special-status wildlife species and will reduce the impacts to a less-than-significant level under CEQA.

4.6.3 Impact BIO #3: Construction Impacts on Special-Status Plant Communities

As described in Section 3.7.6.4 of the Final EIR/EIS, the project will result in direct and indirect impacts on special-status plant communities that occur within the project footprint. Of the nine plant communities identified as potentially being in the Preferred Alternative footprint, the following seven special-status plant communities will be affected by project construction of the Preferred Alternative: blue oak woodland, desert wash, valley foothill riparian, mixed chaparral, desert riparian, perennial grassland, and Joshua tree woodland (Table 3.7-11 in the Final EIR/EIS). The avoidance of sensitive biological resources was an important consideration during the design and selection of the Preferred Alternative.

Construction activities within and adjacent to temporary impact areas of the construction footprint will have direct impacts on special-status plant communities. These impacts will include removal or disruption (i.e., trampling and crushing) of special-status plant communities by construction vehicles and personnel. With respect to vegetation removal, it should be noted that vegetation within the HSR right-of-way will be permanently removed (as discussed under Impact BIO #7). However, special-status plant communities requiring removal to accommodate construction operations (i.e., access and laydown area) will be restored after construction activities are completed (BIO-MM#6).

Indirect impacts will include contamination of special-status plant communities outside the construction footprint from construction equipment leaks, construction dust-reducing photosynthetic capability, and an increased risk of fire in adjacent open spaces.

Temporary indirect construction impacts on special-status plant communities will include fragmentation and introduction of nonnative, invasive plant species. These changes will result in decreased viability and gradual loss of special-status plant communities. Fragmentation will result from the construction of temporary features, especially linear features, including access roads that bisect special-status plant communities. Construction activities could facilitate the spread of nonnative, invasive plant species through introduction of seeds by construction equipment, vehicles, and personnel.

The direct and indirect impacts on special-status plant communities during construction are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #3 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#1: Conduct Protocol-Level or Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities**
- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones**
- **BIO-MM#61: Establish and Implement a Compliance Reporting Program**
- **BIO-MM#75: Minimize Impacts on Kern Primrose Sphinx Moth Host Plants**
- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

The measures are the same as the general mitigation measures described in Impacts BIO #1 and #2 and have the same or similar ability to reduce impacts on special-status plant communities. As such, they are not repeated here except for those additional measures that did not apply to Impacts BIO #1 and #2.

To avoid and minimize impacts on special-status plant communities, in areas of suitable habitat where floristic surveys could not be conducted, BIO-MM#1: Conduct Protocol-Level or Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities will identify the locations of all special-status plant communities in areas not previously surveyed.

Where avoidance and minimization of habitats are not feasible, both temporary and permanent impacts will be mitigated through habitat restoration. To reduce impacts to these sensitive habitats, during post-construction, the Contractor will revegetate all disturbed riparian areas (BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan).

Because avoidance, minimization, rectification, or reduction of direct and indirect impacts will not alone fully mitigate all impacts on special-status plant communities to a less-than-significant level, the Authority will also secure mitigation through compensatory mitigation. The Authority will compensate for permanent impacts on special-status plant communities, as determined in consultation with the appropriate agencies (e.g., CDFW, SWRCB), through (1) purchasing “credits” from a Service-approved conservation bank with a service area covering the impact area, (2) acquiring appropriate properties in fee-title, or (3) establishing a conservation easement over a property.

Specifically, the following compensatory mitigation will mitigate for loss of special-status plant communities:

- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**

Prior to the start of ground-disturbing activities, to ensure compliance with permit applications for USFWS, SWRCB, and CDFW, the Authority will develop a Compliance Reporting Program (BIO-MM#61) and a Compensatory Mitigation Plan for Species and Species Habitat (BIO-MM#53).

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**

- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14: “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post Construction Compliance Reports.**
- **F-B LGA BIO-MM#16: Conduct Protocol Level Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities.**
- **F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species.**
- **F-B LGA BIO-MM#48: Restore Temporary Impacts on Jurisdictional Waters.**
- **F-B LGA BIO-MM#49: Monitor Construction Activities within Jurisdictional Waters.**
- **F-B LGA BIO-MM#50: Mitigation and Monitoring of Protected Trees.**
- **F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.**
- **F-B LGA BIO-MM#64: Compensate for Impacts on Protected Trees.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**

The Authority finds that the combination of the above list of mitigation measures will substantially lessen the direct and indirect impacts to special-status plant communities and will reduce the impacts to a less-than-significant level under CEQA.

4.6.4 Impact BIO #4: Construction Impacts on Aquatic Resources

The design characteristics of the Preferred Alternative include effective IAMFs to identify aquatic resources and to delineate ESAs or environmentally restricted areas on final construction plans and in the field. These IAMFs will minimize, but not avoid, the potential impact on those resources from construction activities. Based on the CEQA thresholds identified in Section 3.7.4.7 of the Final EIR/EIS, the impact under CEQA on aquatic resources is significant. This determination is because permanent and temporary disturbance of aquatic resources during construction activities could cause a substantial adverse effect by damaging the sensitive ecosystem.

Direct construction impacts on aquatic resources include the placement of temporary fill during construction in both built and natural waters. Construction staging areas are planned where bridges are proposed at at-grade crossings. Temporary fill will be placed during the construction of access roads and staging/equipment storage areas. This fill will result in a temporary loss of jurisdictional waters; potential impacts on the physical, chemical, and biological characteristics of aquatic substrates and food webs; and a potential increase in erosion and sediment transport into adjacent aquatic areas.

Because project period indirect impacts on aquatic resources are more extensive than and tend to encompass the construction period impacts, the indirect impacts on jurisdictional waters are discussed in Impact BIO #10 in Section 3.7.6.5 of the Final EIR/EIS.

The direct and indirect impacts on aquatic resources during the construction period are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #4 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts**

- **BIO-MM#34: Monitor Construction Activities within Aquatic Resources**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones**
- **BIO-MM#61: Establish and Implement a Compliance Reporting Program**
- **BIO-MM#62: Prepare Plan for Dewatering and Water Diversions**
- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

For Impact BIO #4, the measures are the same as the general mitigation measures described in Impacts BIO #1 and #2 and have the same or similar ability to reduce impacts on aquatic resources. As such, they are not repeated here except for those additional measures that did not apply to Impacts BIO #1 and #2.

To reduce impacts on jurisdictional waters, protective devices will be installed and construction will be monitored (BIO-MM#34: Monitor Construction Activities within Aquatic Resources).

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#15: Post Construction Compliance Reports.**
- **F-B LGA BIO-MM#48: Restore Temporary Impacts on Jurisdictional Waters.**
- **F-B LGA BIO-MM#49: Monitor Construction Activities within Jurisdictional Waters.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.**

The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to aquatic resources during the construction period for the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.5 Impact BIO #5: Construction Impacts on Wildlife Movement

As explained in the Final EIR/EIS, disturbance of wildlife crossings and habitat for construction access and activities could interfere substantially with the movement of native wildlife species.

The design characteristics of the Preferred Alternative include effective IAMFs to identify wildlife crossings and delineate ESAs or environmentally restricted areas on final construction plans and in the field (BIO-IAMF#8 and BIO-IAMF#5). These measures minimize, but do not avoid, the potential impact on wildlife crossings from construction activities.

Direct impacts from the installation of track segments, road crossing stations, maintenance facilities, or electrical substations may affect wildlife movement or generally alter the effectiveness of existing wildlife movement corridors, and physical barriers, such as fencing, could hinder wildlife movement through normal ranges or along migration routes. Wildlife undercrossing or overcrossing structures that will be incorporated into the project's design will ameliorate this effect, depending on their placement and eventual usage. Building structures could also hinder movement depending on their location and size; however, these facilities are generally located within previously developed areas, and wildlife will probably avoid such structures by moving around them.

Direct impacts from placement of temporary barriers (e.g., temporary fencing), construction staging areas, increased vehicular traffic, or construction laydown within natural lands and known linkages may affect the ability of wildlife (both special-status and common wildlife species) to move freely. Further, noise, vibrations, light, dust, or human disturbance within construction areas may dissuade wildlife from using those areas for daily or seasonal movement or foraging. These direct impacts could permanently alter historical migration corridors, territories, or foraging habitats. However, because these are temporary impacts, it is likely that wildlife could alter their normal functions for the duration of project construction and then reestablish these functions once all temporary construction activities have been removed.

Indirect impacts from installation of track, fencing, and building structures may include the alteration of long-term movement, foraging ranges, and genetic distribution of a species. Specifically, linear obstacles, such as track and fencing, may prevent wildlife from moving throughout their ranges during daily foraging, migration, or the breeding season. This could result in habitat fragmentation, habitat shifts, increased foraging competition, or limitations on genetic exchange. However, the construction of tunnels and viaducts, particularly in the mountainous areas, will allow for continued wildlife movement over and under the alignments. In addition, wildlife undercrossings and overcrossings will be installed along the length of the track. This will further reduce the impacts on normal wildlife movement throughout ranges. However, wildlife crossing effectiveness will depend on wildlife usage and continual maintenance of the structures.

The direct and indirect impacts on wildlife movement during the construction period are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #5 to less than significant. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#36: Install Aprons or Barriers within Security Fencing**
- **BIO-MM#37: Minimize Effects to Wildlife Movement Corridors During Construction**
- **BIO-MM#42. Provide Compensatory Mitigation for Impacts to Habitat for Blunt-Nosed Leopard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#56: Conduct Monitoring of Construction Activities**
- **BIO-MM#64: Establish Wildlife Crossings**

- **BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing**
- **BIO-MM#78: Install Wildlife Jump-outs**
- **BIO-MM#83: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Breeding and Foraging Habitat**
- **BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat**
- **BIO-MM#87: Implement Lighting Minimization Measures for Operations**

Impacts to wildlife crossings and habitat linkages will be reduced by the mitigation measures which are described, in part, under Impact BIO #2. A construction avoidance and minimization plan (BIO-MM#37: Minimize Effects to Wildlife Movement Corridors During Construction) will reduce impacts to special-status wildlife by optimizing the locations of wildlife movement structures and minimizing ground-disturbance in and near identified wildlife movement corridors, particularly during nighttime hours.

The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to wildlife crossings and habitat linkages during the construction period for the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.6 Impact BIO #6: Construction Impacts on Protected Trees

Construction of the Preferred Alternative will result in direct and indirect impacts on trees protected under county and local plans and ordinances. Several protected tree species also receive protection as the dominant species within special-status plant communities (also discussed in Impact BIO #3, with quantifications of tree-dominated communities in Table 3.7-11 of the Final EIR/EIS). The trees within the special-status plant communities that overlap the project footprint will be directly affected during construction.

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 require clearing (e.g., materials staging, temporary access roads, and construction rights-of-way) that will cause a permanent effect by removal or severe pruning. Direct impacts from construction activities could result from unintentional contamination, such as chemical leaks and spills, which could affect water or soils used by protected trees, potentially resulting in their mortality.

Indirect permanent impacts on protected trees could occur as a result of changes in erosion and sedimentation. Displaced sediment and alterations to microtopography could change the soil and substrate conditions required by protected trees. Indirect impacts on protected trees could result from temporary changes in hydrology and topography (as a result of temporary staging areas; access roads; equipment storage; and foot, vehicle, and machine traffic), which may inhibit water and nutrient intake and thereby inhibit growth or cause leaf mortality.

The direct and indirect impacts on protected during the construction period are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #6 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#56: Conduct Monitoring of Construction Activities**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones**
- **BIO-MM#61: Establish and Implement a Compliance Reporting Program**

- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

Impacts to protected trees will be reduced by conducting preconstruction surveys to evaluate the condition of protected trees, fencing protected trees that may be indirectly affected by construction activities to form ERAs, or by transplanting trees (BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees).

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14: “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post Construction Compliance Reports.**
- **F-B LGA BIO-MM#50: Mitigation and Monitoring of Protected Trees.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#64: Compensate for Impacts on Protected Trees.**

The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to protected trees during the construction period for the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.7 Impact BIO #7: Operational Impacts on Special-Status Plant Species

Up to 32 special-status plant species have the potential to occur in and immediately adjacent to the footprint of the Preferred Alternative and as a result may be directly or indirectly impacted by project period activities. Table 3.7-5 of the Final EIR/EIS presents the potential effects on suitable habitats for special-status species within the resource study area.

In addition to the species that have been observed within the Special-Status Plant Study Area, special-status plant species have the potential to occur in areas of suitable habitat in parcels that have not been surveyed. These species include federally and/or state-listed species and species listed by the California Native Plant Society, all of which are considered rare in California (CEQA Guidelines, §15380). If these species occur in the project footprint, they will be subject to the same adverse effects as those described below for species known to occur.

Direct impacts on special-status plant species and native plant species will result from the permanent removal of vegetation from within the Preferred Alternative footprint. Disturbance of individuals, populations, or potential suitable habitat for special-status plant species could occur during construction of permanent infrastructure, and ongoing operation and maintenance activities (e.g., routine inspection and maintenance of the HSR right-of-way).

Direct impacts include the permanent removal of special-status plant communities and land cover types that provide habitat for a number of special-status plants. Based on the habitat requirements of special-status plants, as many as 24 species have a potential to occur within the Preferred Alternative. Some areas within the Preferred Alternative were not made available for pedestrian field surveys. Therefore, inaccessible areas with potentially suitable habitat present are considered occupied by special-status plant species. For these reasons, the Preferred Alternative is assumed to have suitable habitat for special-status plant species.

Indirect impacts on special-status plant species and native plant species are anticipated to include erosion, sedimentation, siltation, and changes in hydrology that could affect adjacent aquatic habitats; wind erosion effects; increased risk of fire; habitat degradation through changes in habitat heterogeneity, fragmentation, and the introduction of nonnative invasive plant species; and introduction of noxious plant species.

The direct and indirect impacts on special-status plant species and habitats suitable for special-status plant species during the project period are considered a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #5 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan**
- **BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds**

Impacts to special-status plant species will be reduced by the mitigation measures, which are described under Impact BIO #1.

There will be no secondary impacts from these mitigation measures. By minimizing and compensating for direct and indirect impacts to special-status plants, long-term effects to the future success of special-status plant species will be reduced. The combination of these mitigation measures will lessen the direct and indirect impacts to special-status plant species to a less-than-significant impact under CEQA.

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Management Plan.**

- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resource Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14 “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post-Construction Compliance Reports.**
- **F-B LGA BIO-MM#16: Conduct Protocol-Level Pre-Construction Surveys for Special-Status Plant Species and Special Status Plant Communities.**
- **F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special Status Plant Species.**
- **F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**

The Authority finds that the above-listed mitigation measures will substantially lessen the project impacts to special-status plant species for the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.8 Impact BIO #8: Operational Impacts on Special-Status Wildlife Species

Up to 58 special-status wildlife species have the potential to occur in and near the footprint of the Preferred Alternative and as a result may be directly or indirectly impacted by project period activities. Table 3.7-6 of the Final EIR/EIS provides a comparison of estimated potential impacts on suitable habitat for special-status wildlife species within the resource study area. Additionally, Table 3.7-7 of the Final EIR/EIS displays the results of the habitat species modeling used to address potential impacts on federally and state-listed species.

Direct impacts to special-status wildlife species (including amphibians, reptiles, insects, birds, and mammals) and native fauna may occur as a result of permanent conversion of occupied habitat to project infrastructure, direct strikes during operation and maintenance, trampling or crushing, exposure to contaminants, erosion, and sedimentation, etc. These direct impacts to individual special-status wildlife species occur within the limits of disturbance. As a result of project activities, the Preferred Alternative may result in adverse effects on special-status wildlife species through harassment, disturbance, injury, nest abandonment, or death of individuals. These impacts may occur to all life stages (i.e., eggs, young, juveniles, or adults). Ongoing operation and maintenance activities will also take place (e.g., routine inspection and maintenance of the HSR right-of-way) and will similarly involve disturbance from trampling or crushing of native vegetation by vehicle or foot traffic.

Project period indirect impacts on special-status wildlife species (including amphibians, reptiles, insects, birds, and mammals) and native fauna associated with the Preferred Alternative may result from increased noise, light, vibration, and the high wind speeds and turbulence generated by a train moving up to 220 miles per hour.

During operation, maintenance activities could contribute to chemical runoff and pollution of adjacent habitat. Project elements including security fencing and electrical infrastructure may attract predators (e.g., raptors, coyotes) and increase prey on special-status wildlife species.

These impacts may indirectly result in water quality degradation and contamination, hydrological modifications, habitat degradation (through soil compaction, or alteration of vegetation cover), introduce nonnative invasive (noxious) weeds, and in some cases may result in mortality of individuals.

Specifically, the indirect impacts may result in reduced reproductive success, decreased survivorship of these species and their food, abandonment of refugia (e.g., burrows), temporary shifts in foraging patterns or territories (displacement), dispersal movements, changes in behavior (e.g., startling and avoidance), reduced population viability, and increased mortality or predation. These impacts may occur to all life stages (i.e., eggs, young, juveniles, or adults).

The direct and indirect impacts on special-status wildlife species and native fauna during the project period are considered a significant impact under CEQA. Implementation of the following mitigation measures will reduce Impact BIO #8 to less than significant. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#36: Install Aprons or Barriers within Security Fencing**
- **BIO-MM#42: Provide Compensatory Mitigation for Impacts to Habitat for Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson’s Antelope Squirrel**
- **BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson’s Hawk Nesting Trees and Habitat**
- **BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat**
- **BIO-MM#45: Provide Compensatory Mitigation for Impacts to San Joaquin Kit Fox Habitat**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resource**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests**
- **BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat**
- **BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use**
- **BIO-MM#73: Implement Removal of Carrion that may Attract Condors and Eagles**
- **BIO-MM#76: Implement Wildlife Rescue Measures**
- **BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing**
- **BIO-MM#78: Install Wildlife Jump-outs**
- **BIO-MM#79: Mitigation for Desert Tortoise**
- **BIO-MM#81: Provide Compensatory Mitigation for Impacts to Crotch Bumble Bee**
- **BIO-MM#83: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Breeding and Foraging Habitat**
- **BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat**
- **BIO-MM#87: Implement Lighting Minimization Measures for Operations**

Impacts to special-status wildlife species will be reduced by the mitigation measures, which are described under Impacts BIO #1 and #2 (including the compensatory mitigation).

Before the start of operation, exclusionary fencing will be permanently installed along any portion of the permanent right-of-way that is adjacent to natural habitats (e.g., alkali desert scrub, annual grassland) and will be enhanced with a barrier (e.g., fine mesh fencing) that will extend at least 12 inches below-ground and 12 inches aboveground to prevent blunt-nosed leopard lizard from accessing the right-of-way in order to reduce the potential for mortality to a low probability (BIO-MM#36: Install Aprons or Barriers within Security Fencing). The installation of aprons or barriers within the security fencing will prevent access to the HSR thereby reducing impacts to wildlife species and reducing injury and mortality in special-status wildlife species.

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#8: Wildlife Exclusion Fencing.**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**
- **F-B LGA BIO-MM#10: Monofilament Netting.**
- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#12: Entrapment Prevention.**
- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14: “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post Construction Compliance Reports.**
- **F-B LGA BIO-MM#22: Conduct Pre-Construction Surveys for Special Status Reptile and Amphibian Species.**
- **F-B LGA BIO-MM#23: Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance and Relocation.**
- **F-B LGA BIO-MM#29: Conduct Pre-Construction Surveys and Delineate Active Nest Exclusion Areas of Other Breeding Birds.**
- **F-B LGA BIO-MM#30: Conduct Pre-Construction Surveys and Monitoring for Raptors.**
- **F-B LGA BIO-MM#31: Bird Protection.**
- **F-B LGA BIO-MM#32: Conduct Protocol and Pre-Construction Surveys for Swainson’s Hawks.**

- **F-B LGA BIO-MM#33: Swainson’s Hawk Nest Avoidance and Monitoring.**
- **F-B LGA BIO-MM#34: Monitor Removal of Nest Trees for Swainson’s Hawks.**
- **F-B LGA BIO-MM#35: Conduct Protocol Surveys for Burrowing Owl.**
- **F-B LGA BIO-MM#36: Burrowing Owl Avoidance and Minimization.**
- **F-B LGA BIO-MM#37: Conduct Pre-Construction Surveys for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse.**
- **F-B LGA BIO-MM#38: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse.**
- **F-B LGA BIO-MM#40: Conduct Pre-construction Surveys for Special-Status Bat Species.**
- **F-B LGA BIO-MM#41: Bat Avoidance and Relocation.**
- **F-B LGA BIO-MM#42: Bat Exclusion and Deterrence.**
- **F-B LGA BIO-MM#43: Conduct Pre-construction Surveys for American Badger and Ringtail.**
- **F-B LGA BIO-MM#44: American Badger and Ringtail Avoidance.**
- **F-B LGA BIO-MM#45: Conduct Protocol Level Pre-Construction Surveys for San Joaquin Kit Fox.**
- **F-B LGA BIO-MM#46: Minimize Impacts on San Joaquin Kit Fox.**
- **F-B LGA BIO-MM#51: Install Flashing or Slats within Security Fencing.**
- **F-B LGA BIO-MM#58: Compensate for Loss of Swainson’s Hawk Nesting Trees.**
- **F-B LGA BIO-MM#59: Compensate for Loss of Burrowing Owl Active Burrows and Habitat.**
- **F-B LGA BIO-MM#60: Compensate for Destruction of San Joaquin Kit Fox Habitat.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**
- **F-B LGA AVR-MM#1b: Minimize Light Disturbance during Construction.**

There will be no secondary impacts from these mitigation measures. By minimizing and compensating for direct and indirect impacts to special-status wildlife, long-term effects to the future success of special-status wildlife species will be reduced. The Authority finds that the combination of the above-listed mitigation measures will substantially lessen the direct and indirect impacts to special-status wildlife species from project activities and will reduce the impacts to a less-than-significant level under CEQA.

4.6.9 Impact BIO #9: Operation Impacts on Special-Status Plant Communities

As described in Section 3.7.6.4 of the Final EIR/EIS, the project will result in direct and indirect impacts on special-status plant communities that occur within the project footprint. Of the nine plant communities identified as potentially being in the Preferred Alternative footprint, the following seven special-status plant communities will be affected by project construction of the Preferred Alternative: blue oak woodland, desert wash, valley foothill riparian, mixed chaparral, desert riparian, perennial grassland, and Joshua tree woodland (Table 3.7-11 in the Final EIR/EIS). The avoidance of sensitive biological resources was an important consideration during the design and selection of the Preferred Alternative.

Direct impacts on special-status plants near the HSR alignment may result from frequent wind disturbance generated by moving trains. Forceful wind will damage individuals of special-status plant species growing adjacent to the tracks, stunt new growth, and promote desiccation.

Direct temporary operations impacts on special-status plant communities may result from maintenance or any other activities along the project infrastructure that occur infrequently or on an intermittent basis. Accidental clearing or trampling of vegetation communities, thinning of vegetation for access, dust from vehicle and machinery disturbance, and equipment and foot traffic may affect special-status plant communities growing adjacent to maintenance areas.

Indirect impacts could include increasing the potential for introducing and spreading invasive and nonnative species and harmful or devastating pathogens to special-status plant communities.

Direct and indirect impacts on special-status plant communities during the project period are a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #9 to less than significant. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#32: Restore Temporary Riparian Habitat Impacts**
- **BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts to Riparian Habitat**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resource**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat**
- **BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan**

Impacts to special-status plant communities will be reduced by the mitigation measures, which are described under Impacts BIO #1, #2, and #3.

Although the analysis in Section 3.7 of the Bakersfield to Palmdale Final EIR/EIS does not rely on the analysis or mitigation measures in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA determinations, the Authority has also elected to adopt the following mitigation measures from those documents, which are listed in the Final EIR/EIS:

- **F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor.**
- **F-B LGA BIO-MM#2: Regulatory Agency Access.**
- **F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program (WEAP).**
- **F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan.**
- **F-B LGA BIO-MM#5: Prepare and Implement a Biological Resources Management Plan.**
- **F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.**
- **F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field).**
- **F-B LGA BIO-MM#9: Equipment Staging Areas.**

- **F-B LGA BIO-MM#11: Vehicle Traffic.**
- **F-B LGA BIO-MM#13: Work Stoppage.**
- **F-B LGA BIO-MM#14: “Take” Notification and Reporting.**
- **F-B LGA BIO-MM#15: Post-Construction Compliance Reports.**
- **F-B LGA BIO-MM#16: Conduct Protocol Level Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities.**
- **F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species.**
- **F-B LGA BIO-MM#48: Restore Temporary Impacts on Jurisdictional Waters.**
- **F-B LGA BIO-MM#49: Monitor Construction Activities within Jurisdictional Waters.**
- **F-B LGA BIO-MM#50: Mitigation and Monitoring of Protected Trees.**
- **F-B LGA BIO-MM#52: Construction in Wildlife Movement Corridors.**
- **F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species.**
- **F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan.**
- **F-B LGA BIO-MM#63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.**
- **F-B LGA BIO-MM#64: Compensate for Impacts on Protected Trees.**
- **F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation.**

There will be no significant secondary impacts from implementation of these mitigation measures. By minimizing and compensating for direct and indirect impacts to habitats of concern, long-term effects to these habitats of concern will be reduced. The Authority finds that the combination of the above-listed mitigation measures will substantially lessen the direct and indirect impacts to special-status plant communities from project activities and will reduce the impact to a less-than-significant level under CEQA.

4.6.10 Impact BIO #10: Operation Impacts on Aquatic Resources

The design characteristics of the Preferred Alternative include effective IAMFs to identify aquatic resources and delineate ESAs or environmentally restricted areas on final construction plans and in the field. Most of these IAMFs are for construction-related activities and will not be used during operation. Based on the CEQA thresholds identified in Section 3.7.4.7 of the Final EIR/EIS, the impact under CEQA on aquatic resources is significant. This determination is because permanent and temporary disturbance of aquatic resources during project activities could cause a substantial adverse effect by damaging the sensitive ecosystem.

Direct impacts include the permanent conversion of aquatic resources. Direct project impacts on aquatic resources will result from operation and maintenance and also includes the various permanent project components (e.g., embankments, railbed, road overcrossings, and aerial structure footings).

Indirect permanent operations impacts may result from the operation of the train system itself through the deposition of sediment from dust. Train movement through desert or other dust-prone areas could contribute to dust formation in the air, which could deposit on aquatic resources that overlap with the HSR right-of-way, reducing water quality.

Temporary operating and maintenance activities may result in indirect temporary impacts where aquatic resources cross the HSR right-of-way or overlap with temporary maintenance areas. These impacts may include a potential increase in erosion and sediment transport into adjacent

aquatic areas. Chemical spills or leaks of fuel, transmission fluid, lubricating oil, or motor oil from construction equipment could also contaminate waters and degrade their quality.

Direct and indirect impacts to aquatic resources during the project period are a significant impact under CEQA.

Implementation of the following mitigation measure will reduce Impact BIO #10 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**
- **BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts**
- **BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts to Aquatic Resources**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones, Enhancement, or Creation on Mitigation Sites**

Impacts to aquatic resources will be reduced by the mitigation measures that are described, in part, under Impacts BIO #1, #2, and #3. These mitigation measures include measures to avoid and minimize disturbance of aquatic resources, as well as measures that require restoration and revegetation. BIO-MM#47 also requires compensatory mitigation. The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to aquatic resources during the project period from the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.11 Impact BIO #11: Operation Impacts on Wildlife Movement

The design characteristics of the Preferred Alternative include effective IAMFs to minimize the impact on wildlife movement crossings and habitat linkages within the project footprint during construction. Most of these IAMFs will not be used during operation. Based on the CEQA thresholds identified in Section 3.7.4.7 of the Final EIR/EIS, the impact under CEQA is potentially significant because potential disturbance of wildlife crossings and habitat linkages during maintenance activities could cause a substantial adverse effect to areas that did not previously have this type of disturbance.

Direct impacts from daily train operation or regularly scheduled maintenance activities may interfere with wildlife movement between habitats. Regularly passing trains may not provide enough undisturbed time between passes, thus causing wildlife to discontinue use of some or all crossing structures. Regularly scheduled maintenance activities at specific sites may deter wildlife from approaching those areas or using them as part of a wildlife movement corridor, as wildlife may associate them with human presence and disturbance.

Regular train operation or frequent maintenance activities may result in indirect impacts if they restrict movement within wildlife movement corridors. This could lead to a decrease in foraging habitat, restriction of gene flow, and habitat fragmentation.

Direct and indirect impacts to wildlife movement during the project period are a significant impact under CEQA.

Implementation of the following mitigation measures will reduce Impact BIO #11 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#64: Establish Wildlife Crossings**
- **BIO-MM#76: Implement Wildlife Rescue Measures**
- **BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing**
- **BIO-MM#78: Install Wildlife Jump-outs**

- **BIO-MM#87: Implement Lighting Minimization Measures for Operations**

Impacts to wildlife movement will be reduced by the mitigation measures which are described, in part, under Impacts BIO #1, #2, and #3.

The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to wildlife movement during the project period from the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.6.12 Impact BIO #12: Operation Impacts on Protected Trees

The design characteristics of the Preferred Alternative include effective IAMFs that will minimize, but not avoid, the potential impact on protected trees in the project footprint during construction. Most of these IAMFs are for construction-related activities and will not be used during operation. Based on the CEQA thresholds identified in Section 3.7.4.7 of the Final EIR/EIS, the impact under CEQA is significant because disturbance of protected trees for maintenance activities could cause a substantial adverse effect in areas that did not previously have this type of disturbance.

Direct impacts on protected trees in immediate proximity to the tracks may result from constant wind disturbance generated by moving trains. Trees growing adjacent to tracks and stations may be damaged by forceful wind, which will also stunt growth and promote desiccation. Over time, these impacts will become permanent.

Direct temporary operations impacts on protected trees may result from pruning and thinning foliage for access, visibility, and aesthetics. Dust from vehicle and machinery disturbance and equipment and foot traffic may affect individuals of protected trees growing adjacent to maintenance areas. Direct impacts from maintenance activities could result from unintentional contamination, such as chemical leaks and spills, which could affect water or soils used by protected trees. Litter and accidental refuse associated with the HSR system could limit the soil surface area necessary for nutrient intake.

Indirect impacts on protected trees could result from permanent changes in hydrology and topography, which may also affect the soil environment surrounding a tree's roots. Compaction of soil from high foot and vehicle traffic at the proposed stations or in maintenance access areas could inhibit the tree's oxygen and nutrient intake around the root zone. These changes may also alter the level of necessary symbionts in the soil (i.e., mycorrhizae for oaks) or cause fungal infections, root rot, and lack of proper drainage. These factors may ultimately result in the tree's death.

Operations impacts on plant species, either common or special-status, could indirectly affect protected trees if these species provide nitrogen, soil aeration, root protection, seedling protection, and moisture retention. The egress and ingress of machinery and personnel, and of the HSR system itself, could also spread or inadvertently introduce invasive and noxious weeds such as tamarisk and gum. These species could compete with protected trees.

Direct and indirect impacts to protected trees during the project period are a significant impact under CEQA.

Implementation of the following mitigation measure will reduce Impact BIO #12 to a less-than-significant level. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees**
- **BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites**

Impacts to protected trees will be reduced by the mitigation measures that are described, in part, under Impacts BIO #1, #2, and #3.

The Authority finds that the above-listed mitigation measures will substantially lessen the impacts to protected trees during the project period from the Preferred Alternative and will reduce the impacts to a less-than-significant level under CEQA.

4.7 Hydrology and Water Resources

4.7.1 Impact HWR #1: Temporary Construction Impacts to Floodplains and Floodways

Construction in a floodplain could temporarily impede or redirect flood flows because of the presence of construction equipment and materials in the floodplain, depending on the activity taking place within a specific area. Additionally, construction activities will increase the risk of release of sediment or construction pollutants during a storm event by increasing potential for erosion and thorough the presence of construction materials and equipment within the floodplain. (Final EIR/EIS, pp. 3.8-47–3.8-53, 3.8-77–3.8-78, 3.8-85–3.8-86.)

Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **WQ-MM#1: Floodplain Protection: Construction**
- **F-B LGA HWR-MM#1: Implement floodplain protection measures during construction**
- **BIO-MM#32: Restore Temporary Riparian Habitat Impacts**

Impacts to hydrology and water resources associated with implementation of the Preferred Alternative will be less than significant after implementation of Mitigation Measures WQ-MM#1 and BIO-MM#32. Mitigation Measure WQ-MM#1 includes the same requirements that were included in F-B LGA HWR-MM#1 identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS and the Final Supplemental EIR. No impacts will result from implementing Mitigation Measures WQ-MM#1, F-B LGA HWR-MM#1, and BIO-MM#32. Mitigation Measures WQ-MM#1, F-B LGA HWR-MM#1, and BIO-MM#32 will be implemented within the study area, and therefore will not raise the potential for impacts in any area not already analyzed for this project. The proposed mitigation measures, with proper implementation, serve only to reduce potential impacts of the project, and by nature of their design will not result in additional environmental impacts to hydrology and water resources.

The Authority finds that Mitigation Measures WQ-MM#1, F-B LGA HWR-MM#1, and BIO-MM#32 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce the Preferred Alternative's hydrology and water resources impacts associated with the impediment or redirection of flood flows to less-than-significant levels under CEQA.

4.7.2 Impact HWR #3: Temporary Construction Impacts to Surface Water Quality

A Stormwater Pollution Prevention Plan will be prepared to identify project-specific construction best management practices (BMP), such as Erosion and Sediment Control BMPs, designed to minimize erosion and retain sediment on site and Good Housekeeping BMPs to prevent spills, leaks, and discharges of construction debris and waste into receiving waters, as specified in HYD-IAMF#3: Prepare and Implement a Construction Stormwater Pollution Prevention Plan. BIO-IAMF#11 requires preparation of a construction site BMP field manual and implementation of BMPs during construction. As specified in BIO-IAMF#8, equipment staging areas and traffic routes will be established in areas that minimize impacts on sensitive areas, including surface waters. HYD-IAMF#3, BIO-IAMF#8, and BIO-IAMF#11 are included as part of the project design and will be implemented for the Preferred Alternative to avoid or minimize temporary water quality effects associated with construction activities.

Construction activities have the potential to introduce waste or hazardous wastes into receiving waters. HMW-IAMF#8 requires preparation of a hazardous materials and waste plan for hazardous waste handling. HMW-IAMF#6 requires preparation of a CMP to address hazardous

material releases and to ensure cleanup of any hazardous material releases during construction. Waste management and materials pollution controls (as detailed in BIO-IAMF#9 and HMW-IAMF#7) will also be included to ensure trash is properly disposed of on a daily basis and will minimize the impacts on water quality.

Even with implementation of a water diversion plan and temporary stream crossing, there will be a potential for water quality impacts from increased erosion from the dewatering and diversion activities. This will be a significant impact under CEQA.

Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **WQ-MM#2: Regional Dewatering Permits**
- **BIO-MM#34: Monitor Construction Activities within Aquatic Resources**
- **BIO-MM#62: Prepare Plan for Dewatering and Water Diversions**

Impacts to hydrology and water resources associated with implementation of the Preferred Alternative will be less than significant after implementation of Mitigation Measures WQ-MM#2, BIO-MM#34, and BIO-MM#62. No impacts will result from implementing Mitigation Measures WQ-MM#2, BIO-MM#34, and BIO-MM#62. Mitigation Measures WQ-MM#2, BIO-MM#34, and BIO-MM#62 will be implemented within the study area and therefore do not raise the potential for impacts in any area not already analyzed for this project. The proposed mitigation measures, with proper implementation, serve only to reduce potential impacts of the project, and by nature of their design do not result in additional environmental impacts to hydrology and water resources.

The Authority finds that Mitigation Measures WQ-MM#2, BIO-MM#34, and BIO-MM#62 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce the project's hydrology and water resources impacts associated with surface water quality to less-than-significant levels under CEQA.

4.7.3 Impact HWR #4: Temporary Construction Impacts to Groundwater Volume, Quality, and Recharge

Shallow groundwater may be encountered during construction of the concrete columns (piers) associated with the waterbody crossings. Pier construction methods have not yet been finalized and will be based on local conditions. Due to the depth of groundwater and the depth of proposed excavation activities, it is unlikely that dewatering will be required during excavation and grading (other than at the bridge piers). Dewatering during construction activities could reduce the amount of groundwater available in the groundwater basin. The volume of groundwater that will be removed will be relatively minor due to the size of the groundwater basin. The amount of groundwater dewatering is likely to be relatively small and conducted in widely spaced locations. Any effects from groundwater dewatering will be temporary, because dewatering will cease once construction has been completed. Additionally, the Authority will control the amount of groundwater withdrawal and re-inject groundwater at specific locations if necessary (GEO-IAMF#1). Therefore, groundwater dewatering activities from construction of piers are not anticipated to substantially affect groundwater levels or supplies.

Implementation of the following mitigation measure will reduce Impact HWR #4 to a less-than-significant level:

- **WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring**

Impacts to groundwater volume, quality, and recharge associated with implementation of the Preferred Alternative will be less than significant after implementation of Mitigation Measure WQ-MM#3. No impacts will result from implementing Mitigation Measure WQ-MM#3. Mitigation Measure WQ-MM#3 will be implemented within the study area, and therefore will not raise the potential for impacts in any area not already analyzed for this project. The proposed mitigation measure, with proper implementation, serves only to reduce potential impacts of the project, and

by nature of its design will not result in additional environmental impacts to hydrology and water resources.

The Authority finds that Mitigation Measure WQ-MM#3 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project's hydrology and water resources impacts associated with groundwater to less-than-significant levels under CEQA.

4.7.4 Impact HWR #5: Permanent Operation Impacts to Floodplains and Floodways

The Preferred Alternative crosses floodplains as summarized in Table 3.8-13 and shown on Figure 3.8-3 of the Final EIR/EIS. Floodplain crossings are generally perpendicular; however, floodplains in the Antelope Valley cover large areas, and crossings could be perpendicular or longitudinal, depending on the direction of flow within the floodplain.

The design standards detailed in HYD-IAMF#2: Flood Protection will minimize increases in flood elevations so that most areas will not experience an increase greater than 1 foot. However, even with implementation of HYD-IAMF#2 (which requires design measures to reduce increases in floodplain water surface elevation) and compliance with the requirements set forth in U.S. Executive Order 11988 and the Federal Emergency Management Agency (FEMA) regulations during operation of the Preferred Alternative, the increase in water surface elevation of several floodplains will exceed 1 foot. Because the increase will exceed FEMA requirements, this will be considered a significant impact under CEQA.

Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **WQ-MM#4: Floodplain Protection: Operation**
- **F-B LGA HWR-MM#2: Floodplain Protection: Operation**

Mitigation Measure WQ-MM#4 includes the same general requirements that were included in F-B LGA HWR-MM#2 identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS and Final Supplemental EIR, although the measures are location-specific. The Authority finds that Mitigation Measure WQ-MM#4 and F-B LGA HWR-MM#2 have been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project's hydrology and water resources impacts associated with groundwater to less-than-significant levels under CEQA.

4.7.5 Impact HWR #7: Permanent Operation Impacts to Surface Water Quality

During operation and maintenance activities, anticipated pollutants associated with a railway facility include heavy metals, nutrients, sediments, organic compounds, trash and debris, and oil and grease. The technology proposed for the HSR system does not require large amounts of lubricants or hazardous materials for operation. Greases may be used to lubricate switching equipment along the trackway. Additionally, herbicides and/or pesticides may be used along the right-of-way to control weeds and vermin as required by state and federal regulations.

Operation of the HSR system will increase the amount of the pollutants associated with rail operations. Specifically, dust generated by braking will be continuously generated and released by trains. Brake dust consists of particulate metals (primarily iron) but may also include copper, silicon, calcium, manganese, chromium, and barium.

HYD-IAMF#1: Stormwater Management, is included as part of the project design and will be implemented for the Preferred Alternative to avoid or minimize water quality impacts associated with operation of the HSR project. Even with implementation of HYD-IAMF#1 during operation of the Preferred Alternative, impacts on water quality from scour at new bridge piers will still be significant under CEQA.

Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **WQ-MM#4: Floodplain Protection: Operation**

Impacts to surface water quality associated with implementation of the Preferred Alternative will be less than significant after implementation of Mitigation Measure WQ-MM#4. No impacts will result from implementing Mitigation Measure WQ-MM#4. Mitigation Measure WQ-MM#4 will be implemented within the study area and therefore does not raise the potential for impacts in any area not already analyzed for this project. The proposed mitigation measure, with proper implementation, serves only to reduce potential impacts of the project, and by nature of its design will not result in additional environmental impacts to hydrology and water resources.

The Authority finds that Mitigation Measure WQ-MM#4 has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce the project’s hydrology and water resources impacts associated with surface water quality to less-than-significant levels under CEQA.

4.8 Geology, Soils, Seismicity, and Paleontological Resources

4.8.1 Impact Paleo #1: Geologic Units Sensitive to Unknown Paleontological Resources During Construction

As explained in the Final EIR/EIS, the analysis in Section 3.9.7 covers the entire Preferred Alternative and does not rely on the Fresno to Bakersfield documents for the CEQA analysis. While the Final EIR/EIS analyzed the Preferred Alternative as a whole, Section 3.9.7 of the Final EIR/EIS discusses that the Fresno to Bakersfield Section Final Supplemental EIR (Authority 2018a) and Fresno to Bakersfield Section Final Supplemental EIS (Authority 2019b) identified paleontological resource-related mitigation measures that will reduce paleontological impacts to less than significant and will apply to the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street.

In August 2016, the Authority compiled a list of IAMFs consistent with the Statewide Program EIR/EIS (Authority and FRA 2005), the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008), and the Partially Revised Final Program EIR (Authority 2012f). As discussed in Section 2.4.2.1 of the Final EIR/EIS, the Authority will implement these features during project design and construction, as relevant to the HSR project section. In some instances, as is the case with the paleontological resource-related mitigation measures referenced below, some mitigation measures in the Fresno to Bakersfield Project Section environmental documents were included as IAMFs in the Bakersfield to Palmdale Project Section Final EIR/EIS because the Authority updated the list of IAMFs that apply statewide. Section 3.9 of the Final EIR/EIS lists mitigation measures that were identified in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR (see Final EIR/EIS Section 3.9.7). Although the impacts analysis in Section 3.9 does not rely on the mitigation measures from the Fresno to Bakersfield documents for the CEQA determinations, the Final EIR/EIS identifies that they are applicable. In many instances, the mitigation measures from the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR match the mitigation measures in the Final EIR/EIS. For example, F-B LGA GEO-MM#16 through F-B LGA GEO-MM#18 correspond with GEO-IAMF#11, GEO-IAMF#13, and GEO-IAMF#15, respectively. To ensure clarity and consistency with the Final EIR/EIS, the Authority is including and adopting the F-B LGA mitigation measures. Attachment B shows how the mitigation measures from the Fresno to Bakersfield documents correspond with mitigation measures or IAMFs identified in the Bakersfield to Palmdale Project Section Final EIR/EIS.

During construction of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, ground-disturbing activities could disturb sediments with high paleontological sensitivity. Depending on the depth of ground disturbance, construction could directly or indirectly adversely affect a unique paleontological resource. This is considered a potentially significant impact under CEQA. Implementation of the following measures mitigate this

impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA CUL-MM#16: Engage a Paleontological Resources Specialist to Direct Monitoring during Construction (GEO-IAMF#11)**
- **F-B LGA CUL-MM#17: Prepare and Implement a Paleontological Resource Monitoring and Mitigation Plan (GEO-IAMF#13)**
- **F-B LGA CUL-MM#18: Halt Construction When Paleontological Resources Are Found (GEO-IAMF#15)**

None of the mitigation measures is expected to result in secondary effects. Surficial activities such as staging and clearing usually do not affect paleontological resources because the associated disturbance does not extend deep enough to impact paleontological sensitive sediment, but construction activities that may impact paleontological resources include excavation, heavy equipment usage and movement at depth, and drilling. However, with monitoring efforts during construction activities, the preparation and implementation of a monitoring and mitigation plan, and procedures to halt work in the case of the discovery of paleontological resources, construction impacts to significant paleontological resources will be substantially lessened or avoided and will be less than significant with implementation of F-B LGA CUL-MM#16, F-B LGA CUL-MM#17, and F-B LGA CUL-MM#18, which, as noted above, are also required IAMFs for the Preferred Alternative.

As discussed in Section 3.9.8.1 of the Final EIR/EIS, the Preferred Alternative incorporates IAMFs and construction BMPs that will avoid or minimize impacts associated with geology, soils, and seismicity during construction and operation. These IAMFs include features for addressing geological constraints and hazards related to unstable soils, soil settlement, soil erosion, difficult excavations, hazardous gas exposure, encounters with abandoned mines, exposure to hazardous minerals, soils with shrink-swell potential, corrosive soils, slope failure, and seismicity. If paleontological resources are discovered during construction activities, implementation of GEO-IAMF#2, GEO-IAMF#6, GEO-IAMF#7, GEO-IAMF#8, GEO-IAMF#9, GEO-IAMF#12, GEO-IAMF#13, GEO-IAMF#14, and GEO-IAMF#15 will ensure that impacts on paleontological resources will be less than significant under CEQA.

The Authority finds that Mitigation Measures F-B LGA CUL-MM#16, F-B LGA CUL-MM#17, and F-B LGA CUL-MM#18 have been required in the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield and that implementation of these mitigation measures will substantially lessen or avoid the potentially significant impact of construction on paleontological resources; this impact will be less than significant with implementation of these mitigation measures.

4.9 Hazardous Materials and Wastes

4.9.1 Impact HMW #4: Temporary Hazardous Material and Waste Activities in the Proximity of Schools

The Fresno to Bakersfield Section Draft Supplemental EIR/EIS (Authority and FRA 2017a) identified that construction of the F-B LGA could result in impacts related to hazardous materials and wastes. Although Section 3.10 of the Bakersfield to Palmdale Final EIR/EIS summarizes the impacts and mitigation measures identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS, the analysis in the Final EIR/EIS covers the entire Preferred Alternative, including the portion of the alignment from the intersection of 34th and L Streets to Oswell Street in Bakersfield, and does not rely on the Fresno to Bakersfield Project Section documents for the CEQA determinations.

During construction, demolition, and excavation activities, the project will potentially emit hazardous air emissions or handle extremely hazardous wastes above threshold quantities referenced in Public Resources Code section 21151.4 and described in Health and Safety Code Section 25532(j). As explained in the Final EIR/EIS, 16 schools are within 0.25 mile of the project

footprint for the Preferred Alternative alignment, 8 schools are within 0.25 mile of the Bakersfield Station–F Street (F-B LGA), 5 schools are within 0.25 mile of the Palmdale Station, and no schools are within 0.25 mile of maintenance facility sites, the CCNM Design Option, or the Refined CCNM Design Option.

The effect of hazardous materials released to the environment in the unlikely event of a leak or spill as the result of an accident or collision during construction will largely be minor because of the generally small quantities of materials transported or used at any given time and because of the precautions required by existing State and federal regulations. However, in the most unlikely and extreme case, such a release could be a significant impact under CEQA. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools during Construction**
- **HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools during Construction**

The above construction mitigation measures for hazardous materials and wastes are consistent with California Public Resources Code Section 21151.4 and will be effective in reducing the impact to a less-than-significant level. HMW-MM#1 includes the requirements that were included in F-B LGA HMW-MM#1 identified in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS but provides additional detail regarding reporting and monitoring. HMW-MM#1, like F-B LGA HMW-MM#1, prohibits the handling or storage of an extremely hazardous substance (as defined in California Public Resources Code § 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of § 25532 of the Health and Safety Code within 0.25 mile of a school.

The Authority finds that Mitigation Measures F-B LGA HMW-MM#1 and HMW-MM#1 have been required in the Preferred Alternative and that implementation of this mitigation measure will substantially reduce or avoid the project’s impacts associated with temporary hazardous material and waste activities near schools; therefore, with implementation of Mitigation Measures F-B LGA HMW-MM#1 and HMW-MM#1, this impact will be reduced to less than significant under CEQA.

4.10 Safety and Security

4.10.1 Impact S&S #9: Risk of Fire and Secondary Effects from Fire

As discussed in Section 3.11.5.3 of the Final EIR/EIS, the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield includes project elements that have a potential risk of fire and related hazards, including passenger vehicles and traction power and paralleling stations. These elements have electrical equipment and/or combustible materials and represent a fire and explosion risk. The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield design will include a number of layered safety and security systems, including closed-circuit television, access control, intrusion protection, fire warning and suppression systems such as sprinklers, and emergency exits and notification systems consistent with the requirements of the National Fire Protection Association Safety Code and Standard for Fixed Guideway Transit and Passenger Rail Systems, the California Building Standards Code, and the International Building Code.

The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield occupies a parcel that has been identified by the Authority as a potential safety and security concern, specifically with the potential for fire and explosions that could impact the HSR operation. The parcel of concern is the Golden Empire Gleaners Facility (1326 30th Street), which is in the City of Bakersfield.

However, in the event that operations at the facility results in fire or explosion, such an event will result in a significant impact under CEQA. Implementation of the following measure mitigates this

impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA S&S-MM#4: Risk of Fire and Explosions Golden Empire Gleaners Facility (Site Specific)⁶**

The Authority finds that Mitigation Measure F-B LGA S&S-MM#4 will substantially lessen or avoid the safety and security impacts of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield; therefore, with implementation of Mitigation Measure F-B LGA S&S-MM#4, this impact will be reduced to less than significant under CEQA.

4.10.2 Impact S&S #12: Need for Expansion of Existing Fire, Rescue, and Emergency Services Facilities

Although the project would not directly require the need for new or physically altered facilities to maintain acceptable service ratios and response times for fire, rescue, and emergency services, the development and economic activity that would indirectly result from the Palmdale Station will increase the demand for fire and ambulance services above and beyond those currently provided in the service area.⁷ Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **S&S-MM#1: Emergency Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair-Share Cost of Service.**

S&S-MM#1 requires the monitoring of local fire, rescue, and emergency service providers' response to incidents at stations and payment of fair share of cost of services above the average baseline service demand level for the station. Local fire, rescue, and emergency service providers may use the funding for additional emergency response equipment (e.g., additional fire vehicles, on-site defibrillators) or in other ways that would allow the providers to maintain acceptable service ratios, response times, or other performance objectives without the need for new or physically altered facilities. Although funding could also be used for new or expanded facilities, whether that will take place, and whether any environmental impacts would result from such construction, is speculative. Any new or expanded government facilities would be designed and constructed to be consistent with local land use plans and would be subject to separate site-specific analysis under CEQA, including measures to mitigate impacts.

The Authority finds that Mitigation Measure S&S-MM #1 will substantially lessen or avoid the safety and security impacts associated with the Preferred Alternative; therefore, with implementation of Mitigation Measure S&S-MM #1, this impact will be reduced to less than significant under CEQA.

4.11 Socioeconomics and Communities

4.11.1 Impact SO #1: Temporary Disruption to Community Cohesion or Division of Existing Communities from Project Construction

Although construction of the Preferred Alternative alignment will not result in significant disruption to community cohesion or division of existing community impacts (Final EIR/EIS pp. 3.12-100–3.12-102), construction of the Palmdale Station site could temporarily disrupt community

⁶ Mitigation Measure F-B LGA S&S-MM#4 is specific for future operations at the facility at 1326 30th Street, Bakersfield, California.

⁷ F-B LGA S&S-MM#1 is listed in Section 3.11.6.1 of the Final EIR/EIS as an applicable mitigation measure for the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. However, F-B LGA S&S-MM#1 mitigates F-B LGA Impact S&S #8, which evaluated emergency responses to incidents at the Bakersfield F Street Station. The Bakersfield F Street Station was approved by the Authority Board at its October 16, 2018 meeting and measures specific to incidents at the Bakersfield F Street Station have been adopted pursuant to Resolution #HSRA 18-17; therefore, F-B LGA Impact S&S #8 does not apply to the Preferred Alternative and F-B LGA S&S-MM#1 is not required.

circulation patterns. Although access to some neighborhoods will be disrupted and detoured for short periods during construction, a CMP will be prepared for the project (SOCIO-IAMF#1). The CMP will maintain property access for local businesses, residences, and emergency services. In addition, the CMP will include efforts to consult with local transit providers to minimize impacts on local and regional bus routes in affected communities. Any roadways that will need to be moved due to the Preferred Alternative Station right-of-way requirements will be realigned before the closure of the existing roadway to minimize effects. Construction will also require an increase in truck trips that could increase congestion and affect pedestrians, bicyclists, and transit through detours, delays, or increased safety risks. In general, construction will take place primarily outside (but in some areas within or adjacent to) established neighborhoods in areas associated with commercial, industrial, and residential uses. Effects to pedestrian and vehicular circulation are not considered a barrier to interaction because the Palmdale Station site will be primarily adjacent to existing transportation corridors. Preferred Alternative construction will affect residents, businesses, and individual property owners by potentially disrupting convenient access to community facilities.

Implementation of SOCIO-IAMF#1, TR-IAMF#2, NV-IAMF#1, AQ-IAMF#1, and AQ-IAMF#2 will minimize the potential for construction to temporarily disrupt community cohesion or divide existing communities; however, construction will affect residents, businesses, and individual property owners by potentially disrupting convenient access to community facilities. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **SO-MM#3: Implement Measures to Reduce Impacts Associated with the Relocation of Important Facilities**

Mitigation Measure SO-MM#3, which will apply to the Palmdale Station site, requires that the Authority consult with appropriate parties prior to land acquisition to assess potential opportunities to reconfigure buildings and/or relocate affected facilities, as necessary, to minimize any disruptions to activities and services at those facilities.

The Authority finds that Mitigation Measure SO-MM#3 will substantially lessen or avoid the community cohesion or division impacts associated with the Preferred Alternative; therefore, with implementation of Mitigation Measure SO-MM#3, this impact will be reduced to less than significant under CEQA.

4.11.2 Impact SO #4: Permanent Displacement and Relocation of Local Residents from Construction

The portion of the Preferred Alternative from the intersection of 34th Street and L Street and Oswell Street in Bakersfield will result in permanent displacement and relocation of local residents as a result of construction. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#1: Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods**
- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#1 includes plans to conduct outreach activities in affected communities and to consult with property owners; these activities will result in no impacts on the physical environment.

Mitigation Measure F-B LGA SO-MM#3 requires the Authority to consult with the appropriate parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility

activities and services and to provide for relocation that allows the community currently being served to continue to use these services.

The Authority finds that Mitigation Measures F-B LGA SO-MM#1 and F-B LGA SO-MM#3 have been required in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield and that implementation of these mitigation measures will reduce the impact to a less-than-significant level.

4.11.3 Impact SO #5: Permanent Displacement and Relocation of Local Businesses from Construction

4.11.3.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS Summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)

The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will displace up to 192 businesses. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#3 will require the Authority to consult with the appropriate respective parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and also to ensure relocation that allows the community currently served to continue to access these services.

4.11.3.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)

The displacement of local businesses, by itself, is not considered an environmental impact under CEQA, and therefore, a significance conclusion is not required for this type of impact (CEQA Guidelines Section 15064(e)). Although displaced businesses may relocate, the activities associated with such relocation, including the potential locations, are speculative, as is the potential for such relocation to result in significant environmental impacts.

Based on the analysis in the Final EIR/EIS, there appears to be inadequate available business space in the Lancaster-Palmdale area to relocate all of the businesses in Los Angeles County that could be displaced by the Palmdale Station site. An analysis of vacant land in the vicinity of the Cities of Lancaster and Palmdale that is properly zoned for commercial and industrial use suggests that sufficient land is available to accommodate those displaced businesses that are unable to relocate within existing commercial or industrial business space if those parcels are improved at some future date.

The development of new commercial and industrial space on such land is beyond the scope of the HSR project and will be subject to a separate environmental review and public decision-making process undertaken by the jurisdiction(s) with land use planning authority over the subject properties. Because no specific development projects have been proposed to fill the need for adequate replacement business properties, a quantitative analysis of the impacts associated with developing new commercial and industrial use is not possible. However, development of new commercial and industrial space generally will require vegetation removal, grading, trenching, and other ground-disturbing activities; construction of buildings, roads, and infrastructure; and the consumption of water and energy resources. Depending on the construction site, development of new commercial and industrial space may require the removal of native habitat. Construction will also result in the emission of criteria pollutants and GHGs and the generation of noise and vibration, possibly near sensitive receptors. While some additional vehicle miles traveled (VMT) may be generated, if businesses are relocated near their existing locations, operational traffic may be similar to existing conditions. Many of these potential impacts are likely to be avoided

through local land use policies, laws, regulations, and permit requirements. Other impacts are likely to be mitigable; however, because project-specific details cannot be known, it is possible that the construction and operation of new commercial and industrial space could result in significant and unavoidable impacts under CEQA.

Implementation of the IAMFs identified in the Final EIR/EIS will minimize the potential for construction of the Palmdale Station site to relocate businesses outside their existing community; however, the Palmdale Station site will still relocate a substantial number of businesses in Palmdale.

The Authority finds that Mitigation Measure F-B LGA SO-MM#3 has been required in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield and that implementation of this mitigation measure will reduce the project's impacts to the community facilities in that portion of the Preferred Alternative to less-than-significant levels. Development of replacement facilities for displaced businesses, although speculative, could result in significant and unavoidable impacts. Accordingly, the Final EIR/EIS conservatively considered this impact to be significant and unavoidable, and there are no feasible mitigation measures that will lessen the impact to a less than significant level. To the extent that this 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.

4.11.4 Impact SO #7: Permanent Displacement and Relocation of Community Facilities from Construction

4.11.4.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)

The construction of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will result in the displacement of seven community facilities within the City of Bakersfield. These facilities are Golden Empire Gleaners, Iglesia de Dios Pentecostes La Hermosa, Mercado Latino, Bakersfield Homeless Center, Kern County Veteran Affairs, Kern County Parks and Recreation, and a city-owned storage facility. Access to some community facilities could be modified temporarily during construction, with the potential to inconvenience patrons. However, access will not be eliminated (except in cases where facilities will be relocated). Noise, dust, and glare could impact the use of community facilities, including schools and parks. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#3 requires the Authority to consult with the appropriate respective parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and also to ensure relocation that allows the community currently served to continue to access these services.

4.11.4.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)

The Preferred Alternative alignment will displace two community facilities (Grace Resource Center and Solid Rock Bible Church), while the Palmdale Station will displace one community facility (R. Rex Parris High School). Some of the project's potential impacts related to community facility displacements will be minimized by implementation of IAMFs. In the context of CEQA, impacts from the permanent displacement and relocation of community facilities are considered significant if displacements will result in substantial adverse physical impacts associated with the

provision of new or physically altered governmental facilities or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. Grace Resource Center, Solid Rock Bible Church, and R. Rex Parris High School are considered under this threshold. All projects requiring discretionary actions to construct replacement facilities will be subject to environmental review through which impacts associated with these projects will be addressed. Implementation of the following measure will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **SO-MM#3: Implement Measures to Reduce Impacts Associated with the Relocation of Important Facilities**

The Authority finds that Mitigation Measure F-B LGA SO-MM#3 has been required in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. Although compliance with Mitigation Measure SO-MM#3 will further reduce the Palmdale Station site's potential impacts related to community facility displacements, the potential impacts from permanent displacement from construction is considered 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.

4.11.5 Impact SO #8: Permanent Displacement and Relocation of Sensitive Populations from Construction

4.11.5.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS Summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)

The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will require the relocation of the Bakersfield Homeless Shelter, a facility that serves homeless populations in the area. The relocation of this facility could affect sensitive homeless populations if relocation efforts are not coordinated. Impacts relating to the permanent displacement and relocation of sensitive populations from construction in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will have significant impacts under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#3 requires the Authority to consult with the appropriate respective parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and also to ensure relocation that allows the community currently served to continue to access these services.

4.11.5.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)

The Final EIR/EIS (Final EIR/EIS pp. 3.12-134–3.12-136) determined that Impact SO #8 will be less than significant for the portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale and does not require any mitigation.

The Authority finds that Mitigation Measure F-B LGA SO-MM#3 has been required in the F-B LGA portion of the Preferred Alternative and that implementation of this mitigation measure will reduce the project's impacts to the community facilities to less-than-significant levels.

4.11.6 Impact SO #9: Temporary Disruption to Community Facilities from Construction

4.11.6.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS Summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)

Access to some community facilities could be modified temporarily during construction of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, with the potential to inconvenience patrons. However, access will not be eliminated except in the event that community facilities will require relocation. Noise, dust, and glare could impact the use of community facilities, including school. The temporary disruption of community facilities resulting from construction of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will have significant impacts to socioeconomics and community facilities under CEQA. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#3 requires the Authority to consult with the appropriate respective parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and also to ensure relocation that allows the community currently served to continue to access these services.

4.11.6.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)

The Final EIR/EIS (Final EIR/EIS pp. 3.12-136–3.12-139) determined that Impact SO #9 will be less than significant for the portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale and does not require any mitigation.

The Authority finds that Mitigation Measure F-B LGA SO-MM#3 has been required in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield and that implementation of this mitigation measure will reduce the project’s impacts to the community facilities to less than significant levels.

4.11.7 Impact SO #14: Potential for Permanent Physical Deterioration from Construction

4.11.7.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS Summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)

Although the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will cause the displacement of residences, businesses, and/or community facilities, no evidence was found that any of these displacements or the resulting social and economic consequences of the project will result in physical deterioration of communities. In Bakersfield’s Northeast district, the project will ensure that businesses in the Mercado Latino Tianguis are able to continue to operate without considerable disruption while the market is either rebuilt or relocated. Given that the Preferred Alternative will also require special consideration and mitigation for the Mercado Latino Tianguis, the potential effects identified for the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield also will not lead to physical deterioration. In Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#5: Develop measures to minimize the potential for physical deterioration**

Mitigation Measure F-B LGA SO-MM#5 addresses physical deterioration via measures that will design station and non-station structures to allow for contextual design responses to site-specific or unique conditions. The intention of this mitigation measure is to lessen the aesthetic impacts from the introduction of new structures by improving the visual quality of the surroundings.

4.11.7.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)*

The Final EIR/EIS (Final EIR/EIS pp. 3.12-159–3.12-160) determined that Impact SO #14 will be less than significant for the portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale and does not require any mitigation.

The Authority finds that Mitigation Measure F-B LGA SO-MM#5 has been required in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield and that implementation of this mitigation measure will reduce the project's impacts to the potential physical deterioration to less-than-significant levels.

4.11.8 Impact SO #19: Permanent Disruption to Community Facilities from Operation

4.11.8.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.12 of the Final EIR/EIS Summarizing Section 3.12 in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS)*

Noise, dust, and glare could impact the use of community facilities, including schools and parks, in the operational phase of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. Permanent disruption to community facilities from operation of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will have significant impacts to socioeconomic and community facilities under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA SO-MM#1: Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods**
- **F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities**

Mitigation Measure F-B LGA SO-MM#1 includes plans to conduct outreach activities in affected communities and to consult with property owners; these activities will result in no impacts on the physical environment.

Mitigation Measure F-B LGA SO-MM#3 requires the Authority to consult with the appropriate parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and to provide for relocation that allows the community currently being served to continue to use these services.

4.11.8.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.12 in the Final EIR/EIS)*

The Final EIR/EIS (Final EIR/EIS pp. 3.12-171–3.12-173) determined that Impact SO #19 will be less than significant for the portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale and does not require any mitigation.

The Authority finds that Mitigation Measures F-B LGA SO-MM#1 and F-B LGA SO-MM#3 have been required in the portion of the Preferred Alternative from the intersection of 34th Street and L

Street to Oswell Street in Bakersfield and that implementation of these mitigation measures will reduce the impact to a less-than-significant level.

4.12 Agricultural Farmland and Forest Land

4.12.1 Impact AG #5: Permanent Conversion of Important Farmland to Nonagricultural Use

4.12.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.14 of the Final EIR/EIS Summarizing Section 3.14 of the Draft Supplemental EIR/EIS)*

No agricultural farmland or forest land is in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield; therefore, there will be no impacts to agricultural farmland and forest land, and no mitigation will be required.

4.12.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.14 of the Final EIR/EIS)*

The Preferred Alternative will permanently convert approximately 565 acres of Important Farmland (522 acres from project construction and an additional 43 acres converted due to parcel severance) to non-agricultural use to construct HSR infrastructure and ancillary facilities. Important Farmland includes farmland classified as Prime, Unique, Statewide Important, and Locally Important as shown on maps prepared for the Department of Conservation's Farmland Mapping and Monitoring Program. Included within this acreage are remnant parcels identified to be unlikely to continue to support agricultural use due to their size, shape, access, location, or other factors. The permanent conversion of Important Farmland to nonagricultural use is a significant impact under CEQA. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AG-MM#1: Conserve Important Farmland (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland).**

Although implementation of AG-MM#1 will not avoid the significant impact of converting Important Farmland to HSR project use, the Authority nevertheless finds that AG-MM#1 will substantially lessen this impact by providing compensation in the form of permanently preserved Important Farmlands that otherwise may be converted to nonagricultural use. The Authority further finds that these mitigation measures will be effectively implemented based on the strong record of success by the Department of Conservation California Farmland Conservancy Program in securing agricultural conservation easements in the Central Valley, as well as the success of other farmland preservation programs in the Central Valley. The Authority finds, however, because the mitigation measure protects land that is already in agricultural use and will not create new farmland (e.g., convert natural land to agriculture), the mitigation measure will not result in a net increase in agricultural land, thereby offsetting the conversion of Important Farmland to a nonagricultural use. Because Important Farmland is not a renewable resource, and the creation of new Important Farmland is not feasible, the HSR project will cause a net loss of the Important Farmland resource in the southern San Joaquin Valley (which is the state's leading agricultural production region), in the Tehachapi Mountains, and in the rural Antelope Valley. In light of the net loss of the Important Farmland resource, the Authority finds that the conversion of Important Farmland lands to nonagricultural use from the HSR project cannot be mitigated to a less than significant level. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this impact to a less than significant level. To the extent that this 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.

4.12.2 Impact AG #6: Creation of Remnant Parcels of Important Farmland

4.12.2.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.14 of the Final EIR/EIS Summarizing Section 3.14 of the Draft Supplemental EIR/EIS)

No agricultural farmland or forest land is in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield; therefore, there will be no impacts to agricultural farmland and forest land, and no mitigation will be required.

4.12.2.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.14 of the Final EIR/EIS)

The portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale will result in indirect impacts to Important Farmland parcels as a result of parcel severance by the HSR system (i.e., the permanent project footprint). This severance reflects a significant impact. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AG-MM#1: Conserve Important Farmland (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)**
- **SO-MM#4: Provide Access Modifications to Affected Farmlands**

The Preferred Alternative will indirectly and permanently convert Important Farmland to nonagricultural use from parcel severance, and impacts will be significant and unavoidable. To address significant impacts associated with the permanent conversion of Important Farmland to a nonagricultural use from parcel severance, as well as indirect impacts from parcel severance, the Authority will implement Mitigation Measures SO-MM#4 and AG-MM#1. SO-MM#4 requires the Authority to evaluate each partial-property acquisition and determine if the acquisition will impact access to the parcel. If so, the contractor must evaluate opportunities for providing modified access to allow continued use of agricultural lands and facilities, rather than abandoning the agricultural use/facilities on the remnant parcel. AG-MM#1 requires the Authority to fund the purchase of agricultural conservation easements at a ratio of not less than 1:1 for direct impacts to Important Farmland and a ratio of not less than 0.5:1 for Important Farmland within a 25-foot-wide area adjacent to HSR permanently fenced infrastructure and within the same agricultural regions where the impacts occur. However, because the prescribed mitigation measure protects land that is already in agricultural use and will not create new farmland (e.g., convert natural land to agriculture), the mitigation measure will not result in a net increase in agricultural land, thereby offsetting the conversion of Important Farmland to a nonagricultural use. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this impact to a less-than-significant level. To the extent that this 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.

4.12.3 Impact AG #7: Permanent Impacts to Important Farmland under Williamson Act or Farmland Security Zone Contracts, Local Zoning, or Agricultural Conservation Easement Land

4.12.3.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.14 of the Final EIR/EIS Summarizing Section 3.14 of the Draft Supplemental EIR/EIS)

No agricultural farmland or forest land is in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield; therefore, there will be no impacts to agricultural farmland and forest land, and no mitigation will be required.

4.12.3.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.14 of the Final EIR/EIS)*

The portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale will affect land currently under Williamson Act contracts. Specifically, the Authority will acquire right-of-way needed for HSR facilities, and in the process it may split a parcel of land that is currently under a Williamson Act contract in a manner that leaves the private property owner with a privately owned remainder parcel that may be physically farmable, but is now smaller than the minimum qualifying size under county rules for Williamson Act tax benefits. The Final EIR/EIS conservatively identifies the potential for the Preferred Alternative to cause land (including Important Farmland) currently under a Williamson Act contract to no longer qualify for the tax benefits, and to potentially be converted to nonagricultural use, as a significant impact under CEQA. For the Preferred Alternative, there is a possible conversion of 86 acres of Williamson Act contracted land that is also Important Farmland (14 acres of which will be reduced below the minimum parcel size). Implementation of the following measure will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AG-MM#1: Conserve Important Farmland (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)**

The Preferred Alternative will permanently convert Important Farmland acres that are under a Williamson Act contract and/or zoned for an agricultural use to a nonagricultural use as a result of construction of the project, and impacts will be significant and unavoidable. To address Important Farmland that is converted to nonagricultural use from project construction, including Important Farmland under Williamson Act contracts and Important Farmland zoned for agricultural use, the Authority will implement Mitigation Measure AG-MM#1. AG-MM#1 requires the Authority to fund the purchase of agricultural conservation easements at a ratio of not less than 1:1 for direct impacts to Important Farmland and a ratio of not less than 0.5:1 for Important Farmland within a 25-foot-wide area adjacent to HSR permanently fenced infrastructure within the same agricultural regions where the impacts occur. However, because the prescribed mitigation measure protects land that is already in agricultural use and will not create new farmland (e.g., convert natural land to agriculture), the mitigation measure will not result in a net increase in agricultural land, thereby offsetting the conversion of Important Farmland to a nonagricultural use. Therefore, AG-MM#1 will not reduce impacts associated with the permanent conversion of Important Farmland under Williamson Act contracts and Important Farmland zoned to a nonagricultural use from the construction of the Preferred Alternative to a less than significant level, and impacts will be significant and unavoidable pursuant to CEQA.

The Authority further finds that Kern County has jurisdiction over and procedures in place to allow for a variance in minimum parcel size for Williamson Act contracts, depending on the size of the remainder parcel and its proximity to other parcels the owner may have under a separate contract, that have the potential to further minimize the significant impact of additional agricultural land conversion.⁸ The Authority finds that Kern County can and should allow landowners to apply for and receive a variance to maintain Williamson Act contracts where the remainder parcel size falls below the county minimum and above the state’s minimum parcel size, but will otherwise qualify for a variance under each county’s procedures and rules.

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

⁸ Los Angeles County has no land under the Williamson Act contract program and has not had land in the program since 2005.

4.13 Parks, Recreation, and Open Space

4.13.1 Impact PK #1: Temporary Impact Areas, Temporary Facility Closures, or Temporary Detours

4.13.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.15 of the Final EIR/EIS Summarizing Section 3.15 of the Draft Supplemental EIR/EIS)*

Construction of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield could cause temporary (construction-related) disturbances in areas adjacent to parks, recreational areas, open space areas, and school district recreation facilities, which could be a significant impact under CEQA. Specifically, the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will cross over the City of Bakersfield's Weill Park, which is a 1.6-acre park with grass areas and trees. Weill Park will be temporarily closed during construction. The impact and duration of the construction activities on the park is a significant impact under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA PP-MM#1: Temporary Restricted Access to Park Facilities During Construction**

Mitigation Measure F-B LGA PP-MM#1 requires installing detour signage and lighting for alternative pedestrian and bicycle routes. These activities will result in negligible impacts on the physical environment while improving overall park access and public safety (through the provision of clear direction and lighting). The impacts of this mitigation measure will be less than significant under CEQA.

4.13.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.15 of the Final EIR/EIS)*

Construction of the Preferred Alternative could cause temporary (construction-related) disturbances in areas adjacent to the PCT, Dr. Robert C. St. Clair Parkway, and the Hammack Activity Center, which could be a significant impact under CEQA. Multiple construction-related factors affect these resources, including but not limited to noise, aesthetics, and access restrictions. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **PC-MM#1: Temporary Use of Land from Park, Recreation, or School Play Areas During Construction**
- **PCT-MM#1: Temporary and Permanent Effects on the Pacific Crest Trail**
- **PCT-MM#2: Temporary Trail Closures and Detours on the Pacific Crest Trail**

PC-MM#1 sets conditions for the use of land from park, recreation, and school play areas for temporary impact areas during construction of the Preferred Alternative. Those conditions will affect only areas within or immediately adjacent to the temporary impact areas and only temporarily during construction. Those conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described in the Final EIR/EIS.

PCT-MM#1 requires the realignment of a portion of the PCT west of the proposed viaduct under the Preferred Alternative. These changes may require native vegetation removal. The realignment will also represent a permanent change to the trail as a result of construction. The Authority, in consultation with the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM), will be required to obtain a new easement from the private property owner for the trail realignment. These changes are not anticipated to result in any additional impacts under CEQA because the realigned PCT will affect similar types of native vegetation in this area.

PCT-MM#1 also sets conditions specifically for the treatment of the PCT during construction and operation of the HSR project. The actions in this measure include coordination with the private property owner, the USFS, and the BLM for the segment of the PCT that is crossed by the HSR facility, construction specifications, and adherence to best management practices during construction. These conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described in the Final EIR/EIS. PCT-MM#2 sets conditions specifically for temporary closures and detours of the PCT during construction of the Preferred Alternative. The actions in this measure include coordination with the private property owner, the USFS, and the BLM for the segment of the PCT that is temporarily closed and detoured around construction areas. These conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described earlier in the Final EIR/EIS.

The Authority finds that Mitigation Measures F-B LGA PP-MM#1, PC-MM#1, PCT-MM#1, and PCT-MM#2 have been required in the Preferred Alternative and that implementation of Mitigation Measures F-B LGA PP-MM#1, PC-MM#1, PCT-MM#1, and PCT-MM#2 will substantially lessen or avoid impacts associated with the temporary impacts to parks, recreation resources, and school play areas during construction. With the implementation of these mitigation measures, the impacts will be less than significant.

4.13.2 Impact PK #2: Temporary Access, Air Quality, Noise, and Visual Impacts

During construction, park and trail users could experience short-term access (pedestrian and vehicle), air quality, noise, and/or visual effects associated with construction activities, including grading and equipment operations. These potential short-term impacts are described in the Final EIR/EIS in Sections 3.2, Transportation; 3.3, Air Quality and Global Climate Change; 3.4, Noise and Vibration; and 3.16, Aesthetics and Visual Quality. The construction-related activities will potentially result in short-term effects at PCT, Whit Carter Park, Jane Reynolds Park/Webber Pool, Dr. Robert C. St. Clair Parkway, the Hammack Activity Center, Poncitlán Square, Legacy Commons, and La Paz. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AQ-MM#1: Offset Project Construction Emissions Through Off-site Emission Reduction Programs**
- **N&V-MM#1: Construction Noise Mitigation Measures**
- **N&V-MM#2: Construction Vibration Mitigation Measures**
- **AVQ-MM#1: Minimize Visual Disruption from Construction Activities**
- **AVQ-MM#2: Minimize Light Disturbance during Construction**

Prior to mitigation, this impact will be significant to the PCT, Whit Carter Park, Jane Reynolds Park/Webber Pool, Dr. Robert C. St. Clair Parkway, the Hammack Activity Center, Poncitlán Square, Legacy Commons, and La Paz. However, implementation of the above-mentioned mitigation measures will reduce these impacts to less-than-significant levels. AQ-MM#1 will reduce impacts on these resources by requiring emissions to be offset within the air quality districts. N&V-MM#1 and N&V-MM#2 will reduce impacts by requiring the contractor to prepare and implement a noise monitoring program, which will require that construction noise not exceed the FRA standards. AVQ-MM#1 and AVQ-MM#2 will reduce aesthetic impacts by minimizing the visual change of construction areas and reducing lighting impacts are on nearby light-sensitive receptors.

The Authority finds that Mitigation Measures AQ-MM#1, N&V-MM#1, N&V-MM#2, AVQ-MM#1, and AVQ-MM#2 have been required in the Preferred Alternative and that implementation of these mitigation measures will substantially reduce temporary access, air quality, noise, and visual impacts to parks, recreation resources, and school play areas. With mitigation, this impact will be less than significant.

4.13.3 Impact PK#3: Permanent Partial Acquisition of Property from Parks, Recreation, and School Play Area Resources

4.13.3.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.15 of the Final EIR/EIS Summarizing Section 3.15 of the Draft Supplemental EIR/EIS)

The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will result in the acquisition of 0.099 acre of Weill Park for placement of project infrastructure. This is a significant impact under CEQA. The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will pass over Weill Park on an elevated guideway, removing access to a portion of the existing park. The parklands underneath the elevated guideways will remain available for park use in accordance with the Authority's policies. As such, the recreational activities that are currently available in Weill Park will continue to be available once the elevated guideways are installed. However, permanent effects from acquisition for footing placement, will be significant under CEQA. Although the placement of footings will not substantially impair the features of Weill Park because they will not permanently restrict access to the park or change the recreational use of the area crossed by the guideway, the reduction in park property will be significant.

Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA PP-MM#3: Collect Additional Maintenance Funds**

With implementation of Mitigation Measure F-B LGA PP-MM#3, the Authority will work with the affected jurisdictions (City of Bakersfield and County of Kern) to prepare and execute an agreement to provide compensation for the affected areas. These requirements ensure that closures of park and recreation areas resulting from implementation of the project will not result in significant adverse impacts, because compensation will be provided for permanent property acquisition and parties responsible for implementation have been identified.

4.13.3.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.15 of the Final EIR/EIS)

The permanent acquisition of property from parks, recreation, and school play area resources could prevent the use of the remaining recreation resources at those properties. Depending on the size and location of the property acquisition, that acquisition could potentially reduce the capacity, function, and/or value of the resource. The Preferred Alternative will require the permanent acquisition of approximately 4.6 acres from R. Rex Parris High School, including all the recreation areas. Additionally, the Preferred Alternative will require the permanent acquisition of land from Dr. Robert C. St. Clair Parkway for footings for pedestrian overcrossings that connect the Palmdale Station to Sierra Highway. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **PP-MM#1: Permanent Acquisition of Property from Publicly Owned Parks Under the California Park Preservation Act**

As described in the Final EIR/EIS, Mitigation Measure PP-MM#1 requires compensation (financial) and/or land for property or coordinated planning with applicable jurisdictions for planned recreation areas and/or resources that will be permanently acquired for the HSR improvements. Any future development will undergo proper environmental review and potential environmental impacts will be analyzed under appropriate and relevant statutes and guidelines.

The Authority finds that Mitigation Measures F-B LGA PP-MM#3 and PP-MM#1 have been required in the Preferred Alternative and that implementation of this mitigation measure will substantially reduce permanent partial acquisition impacts to parks, recreation resources, and school play areas. With mitigation, this impact will be less than significant.

4.13.4 Impact PK#4: Permanent Acquisition of Property from Publicly Owned Parks

4.13.4.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.15 of the Final EIR/EIS Summarizing Section 3.15 of the Draft Supplemental EIR/EIS)

The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will result in the acquisition of 0.099 acre of Weill Park for the placement of project infrastructure. This will be a significant impact under CEQA. Although the placement of footings will not substantially impair the features of Weill Park because they will not permanently restrict access to the park or change the recreational use of the area crossed by the guideway, the reduction in park property will be significant.

Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA PP-MM#3: Collect Additional Maintenance Funds**

With implementation of Mitigation Measure F-B LGA PP-MM#3, the Authority will work with the affected jurisdictions (City of Bakersfield and County of Kern) to prepare and execute an agreement to provide compensation for the affected areas. These requirements ensure that closures of park and recreation areas resulting from implementation of the project will not result in significant adverse impacts, because alternate access will be provided for temporary impacts or compensation will be provided for permanent property acquisition and parties responsible for implementation have been identified.

4.13.4.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.15 of the Final EIR/EIS)

The permanent acquisition of land from a publicly owned park is a significant impact under the California Park Preservation Act that requires compensation or land, or both, to address the effects of that property acquisition. The Preferred Alternative will require the permanent acquisition of land from Dr. Robert C. St. Clair Parkway for footings for pedestrian overcrossings that connect the Palmdale Station to Sierra Highway. The following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **PP-MM#1: Permanent Acquisition of Property from Publicly Owned Parks Under the California Park Preservation Act**

As described in the Final EIR/EIS, Mitigation Measure PP-MM#1 requires compensation (financial) and/or land for property or coordinated planning with applicable jurisdictions for planned recreation areas and/or resources that will be permanently acquired for the HSR improvements. Any future development will undergo proper environmental review and potential environmental impacts will be analyzed under appropriate and relevant statutes and guidelines.

The Authority finds that Mitigation Measure PP-MM#1 has been required in the Preferred Alternative and that implementation of this mitigation measure will substantially reduce permanent acquisition impacts to parks, recreation resources, and school play areas. With mitigation, this impact will be less than significant.

4.13.5 Impact PK#6: Project Changes to Park or Recreation Facility Use or Character

The operation of the HSR facility in the long term could result in access (pedestrian and vehicle), noise, and/or visual impacts at recreation areas in a park or a school, and/or along a trail. The resource patrons could experience increased noise from HSR train operations and/or visual degradation of views to and from the park, recreation resource, or trail. These potential long-term impacts are described in Sections 3.2, Transportation; 3.4, Noise and Vibration; 3.11, Safety and

Security; 3.16, Aesthetics and Visual Quality, and Chapter 4, Draft Section 4(f) and 6(f) Evaluations. Potential impacts include views of permanent fencing around the HSR facility, views of the elevated HSR facility, views of trains, and access impacts as a result of project improvements. These permanent impacts could have the potential to result in changes in the character of the resource, or the functions and values of the resource. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **N&V-MM#3: Implement Proposed California High-Speed Rail Project Noise Mitigation Guidelines**
- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **PCT-MM#1: Temporary and Permanent Effects on the Pacific Crest Trail**
- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan**

Mitigation Measure N&V-MM#3 will reduce operations-related noise from the proposed HSR project. The installation of sound barriers along the HSR alignment will remain within the construction boundary and within the HSR right-of-way. Secondary impacts could potentially occur at the locations where the project will install sound barriers. The overall changes to visual and aesthetic qualities and the existing environment that might occur because of the installation of these barriers are discussed in Section 3.16, Aesthetics and Visual Resources, of the Final EIR/EIS. Additionally, sound barriers will not be additional obstacles to wildlife movement.

The implementation of Mitigation Measure AVQ-MM#3 is not expected to result in secondary effects. The mitigation measure is typical of visual treatments applied on linear transportation facilities. The measure has been defined to be specific in range and implementable according to context, and it has been designed in coordination with local jurisdictions.

PCT-MM#1 requires the realignment of a portion of the PCT west of the proposed viaduct under the Preferred Alternative. These changes may require native vegetation removal. The realignment will also represent a permanent change to the trail as a result of construction. The Authority, in consultation with the USFS and the BLM, will be required to obtain a new easement from the private property owner for the trail realignment. These changes are not anticipated to result in any additional impacts under CEQA because the realigned PCT will affect similar types of native vegetation in this area. PCT-MM#1 also sets conditions specifically for the treatment of the PCT during construction and operation of the HSR project. The actions in this measure include coordination with the private property owner, the USFS, and the BLM for the segment of the PCT that is crossed by the HSR facility, construction specifications, and adherence to BMPs during construction. These conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described in the Final EIR/EIS.

BIO-MM#6 requires the Project Biologist to monitor restoration activities consistent with provisions in the Restoration and Revegetation Plan (RRP). The impacts of this measure will be beneficial to biological resources because the Authority will implement strategies to avoid temporary impacts during mitigation and restoration activities.

The Authority finds that Mitigation Measures N&V-MM#3, AVQ-MM#3, PCT-MM#1, and BIO-MM#6 have been required in the Preferred Alternative and that implementation of these mitigation measures will substantially reduce project changes to park or recreation facility use or character for all resources except the PCT. With mitigation, this impact will be less than significant for all resources except the PCT. PCT-MM#1 will reduce the contrasting urban appearance of the project with the natural environment near the PCT, but the project will remain highly visible near the crossing and could affect the experience of sensitive viewers. Therefore, even with mitigation, the impact to the PCT will be significant and unavoidable.

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

4.14 Aesthetics and Visual Quality

Implementation of the Preferred Alternative will result in impacts to aesthetics and visual resources during both construction and operation. Construction equipment and activities will temporarily introduce new elements to the landscape, while the operation of the HSR train will include a new and permanent feature to the landscape. In the Final EIR/EIS, analysis of these impacts was broken into landscape units, including East Bakersfield, Edison/Rural Valley, Tehachapi Mountains West, Tehachapi Valley, Tehachapi Mountains East, West Mojave, Rosamond Rural, and Lancaster-Palmdale. Additional impacts will result from introduced light and glare.

As explained in the Final EIR/EIS, the analysis in Section 3.16 covers the entire Preferred Alternative and does not rely on the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA analysis. The Final EIR/EIS nevertheless lists mitigation measures that were identified in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR that apply (see Final EIR/EIS Section 3.16.7). Although the impacts analysis in Section 3.16 does not rely on the Fresno to Bakersfield documents for the CEQA determinations, the Final EIR/EIS identifies that they are applicable. To ensure clarity and consistency with the Final EIR/EIS, the Authority is including and adopting these F-B LGA mitigation measures. Attachment B shows how the mitigation measures from the Fresno to Bakersfield documents correspond with mitigation measures or IAMFs identified in the Bakersfield to Palmdale Project Section Final EIR/EIS.

4.14.1 Impact AVQ #1: Temporary Impacts Associated with Construction Staging, Equipment, Lighting, and Spoils

Highly visible construction activities near public viewpoints and soil stockpiling activities in non-urbanized areas will temporarily degrade the visual quality of the site and its surroundings and introduce new temporary sources of light and glare, which could result in a significant impact under CEQA. Further, construction activities in urbanized areas will also temporarily degrade visual quality near residences and introduce new temporary sources of light and glare, which could conflict with applicable zoning or other regulations governing scenic quality, resulting in a significant impact under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA AVR-MM#1a: Minimize Visual Disruption from Construction Activities**
- **F-B LGA AVR-MM#1b: Minimize Light Disturbance during Construction**
- **AVQ-MM#1: Minimize Visual Disruption from Construction Activities**
- **AVQ-MM#2: Minimize Light Disturbance during Construction**

Implementation of these mitigation measures are not expected to result in secondary impacts.

Although the visual degradation during construction will be more noticeable in urban areas adjacent to residences and parkways, the construction activities are considered temporary, as they will cease after completion.

The Authority finds that Mitigation Measures F-B LGA AVR-MM#1a, F-B LGA AVR-MM#1b, AVQ-MM#1, and AVQ-MM#2 have been required in the Preferred Alternative and that implementation of these mitigation measures will substantially lessen or avoid impacts associated with the visual disturbance during construction; therefore, this impact will be reduced to less than significant under CEQA.

4.14.2 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the East Bakersfield Landscape Unit

The East Bakersfield Landscape Unit extends from the northern terminus of the project section at the intersection of 34th Street and L Street to Vineland Road (Figure 3.16-1 of the Final EIR/EIS). Visual quality in this landscape unit is low to moderate. The topography of this landscape unit is generally flat and the landform is mostly developed with urban structures and infrastructure. Urban development predominates in this landscape unit and the natural environment is limited. Vegetation is composed of urban landscaping, including nonnative, cultivated trees, shrubs, and grasses.

The Preferred Alternative will introduce a new visual element into the East Bakersfield Landscape Unit. KVP 1 (along Sterling Road) represents a key view for all residential viewers within 0.5 mile of the Preferred Alternative. Introduction of a new visual element in this landscape unit will be a significant impact under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA AVR-MM#2a: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context**
- **F-B LGA AVR-MM#2b: Integrate Elevated Guideway into Affected Cities, Parks, Trail, and Urban Core Designs**
- **F-B LGA AVR-MM#2e: Provide Offsite Landscape Screening Where Appropriate**
- **F-B LGA AVR-MM#2f: Landscape Treatments along the HSR Project Overcrossings and Retained Fill Elements of the HSR**
- **F-B LGA AVR-MM#2g: Provide Sound Barrier Treatments**
- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **AVQ-MM#4: Provide Vegetation Screening Along At-grade and Elevated Guideways Adjacent to Residential Areas**

Implementation of the mitigation measure options is not expected to result in secondary effects. The mitigation measures are typical of visual treatments applied on linear transportation facilities; they have been defined to be specific in range and implementable according to context, and designed in coordination with local jurisdictions.

The Authority finds Mitigation Measures F-B LGA AVR-MM#2a, F-B LGA AVR-MM#2b, F-B LGA AVR-MM#2e, F-B LGA AVR-MM#2f, F-B LGA AVR-MM#2g, AVQ-MM#3 and AVQ-MM#4 have been required in the Preferred Alternative, but will not completely avoid or substantially lessen, the permanent impacts on the views, visual character, and visual quality within the East Bakersfield Landscape Unit.

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

4.14.3 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Edison/Rural Valley Landscape Unit

The Edison/Rural Valley Landscape Unit extends from Vineland Road to the base of the Tehachapi Mountains and includes Edison, an unincorporated community approximately 7.5 miles east-southeast of Bakersfield (Figure 3.16-1 of the Final EIR/EIS). Visual quality in this landscape unit is moderate to high. Expansive views of orchards and agricultural land to the south and the foothills of the Tehachapi Mountains to the east contribute to a degree of natural

harmony. However, in the Edison area, the scattered industrial uses consist of disorderly utilitarian structures and warehouses that detract from the cultural order of the residential areas.

The Preferred Alternative will introduce a new visual element into the Edison/Rural Valley Landscape Unit, which consists of agricultural-related light industrial structure and pockets of single-family residences. This will be a significant impact under CEQA. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements**
- **AVQ-MM#7: Provide Sound Barrier Treatments**

Implementation of these mitigation measures is not expected to result in secondary impacts.

The Authority finds Mitigation Measures AVQ-MM#3, AVQ-MM#6, and AVQ-MM#7 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen, the permanent impacts on the views, visual character, and visual quality within the Edison/Rural Valley Landscape Unit. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to less-than-significant levels. To the extent that these significant adverse impacts remain 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.

4.14.4 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Mountains West Landscape Unit

The Tehachapi Mountains West Landscape Unit extends from the base of the Tehachapi Mountains east of Edison to an area northwest of the City of Tehachapi. In the Tehachapi Mountains West Landscape Unit, the alignments cross the Caliente Creek floodplain and begin ascending the Tehachapi Mountains where the foothills meet the San Joaquin Valley floor at an elevation of about 1,000 feet. The alignments continue their ascent from the vicinity of Bealville Road through the remainder of this landscape unit, which ends at a point about 4,000 feet in elevation near Golden Hills in the Tehachapi Valley, a residential area approximately 0.5 mile northwest of the City of Tehachapi.

Tunneling activity in the Tehachapi Mountains will require the temporary storage of removed earthwork at a site immediately to the north of SR 58 and west of Bealville Road. The storage of earthwork at this location will require the removal of trees, which will be replaced or compensated for. While the stockpiles are present, the viewer exposure of SR 58 motorists to the stockpiling site with piles up to 15 feet high will be moderate as the site will be adjacent to the north side of SR 58 but the duration of exposure will be relatively short. Large spoil mounds may disrupt the existing natural harmony of the oak woodland landscape. At the stockpiling site adjacent to SR 58, this could degrade the existing high level of visual quality for viewers with moderate and high sensitivity.

The Preferred Alternative will introduce a new visual element into the Tehachapi Mountains West Landscape Unit, which consists of undisturbed, natural mountain terrain, oak woodland, Keene residences, and the National Register of Historic Places (NRHP) listed La Paz in largely undeveloped hillsides and not in an existing transportation corridor. This will be a significant impact under CEQA. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AVQ-MM#1: Minimize Visual Disruption from Construction Activities**
- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **AVQ-MM#5: Replant Unused Portions of Land Acquired for the HSR**
- **AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements**
- **AVQ-MM#8: Minimize Vertical Cut-Slopes in Tehachapi Mountains with Retaining Walls**

None of the mitigation measures is expected to result in secondary effects. The mitigation measures are typical of visual treatments applied on linear transportation facilities; they have been defined to be specific in range and implementable according to context, and designed in coordination with local jurisdictions.

The Authority finds Mitigation Measures AVQ-MM#1, AVQ-MM#3, AVQ-MM#5, AVQ-MM#6, and AVQ-MM#8 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen, the permanent impacts on the views, visual character, and visual quality within the Tehachapi Mountains West Landscape Unit. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to less-than-significant levels. To the extent that these significant adverse impacts remain 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.

4.14.5 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Valley Landscape Unit

The Tehachapi Valley Landscape Unit extends from the mountains northwest of the City of Tehachapi to just east of Tehachapi Willow Springs Road and the start of the Alta Wind Energy Center. The visual character of the Tehachapi Valley is defined by the contrast between undeveloped slopes and ridges of the surrounding mountains, with the expansive and partially developed, level valley floor. Suburban development on the west and southwest of the valley floor mixes with active agriculture and grazing/open space to the east, and some areas of undeveloped, native grasslands, scattered tree plantings, and riparian habitat, particularly east of Tehachapi Willow Springs Road. Overall visual quality in this landscape unit is moderate to moderately high.

The Preferred Alternative will introduce a new visual element into the Tehachapi Valley Landscape Unit, which consists of native grasslands with scattered tree plantings, Tehachapi ridgelines, the Tehachapi central business district surrounded by residential and agricultural uses, and industrial uses near SR 58 and the Tehachapi Municipal Airport. This will be a significant impact under CEQA. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **AVQ-MM#4: Provide Vegetation Screening Along At-grade and Elevated Guideways Adjacent to Residential Areas**
- **AVQ-MM#5: Replant Unused Portions of Land Acquired for the HSR**

None of the mitigation measure options is expected to result in secondary effects. The mitigation measures are typical of visual treatments applied on linear transportation facilities; they have been defined to be specific in range and implementable according to context, and designed in coordination with local jurisdictions.

The Authority finds Mitigation Measures AVQ-MM#3, AVQ-MM#4, and AVQ-MM#5 have been required in the project and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen the permanent impacts on the views, visual character, and visual quality within the Tehachapi Valley Landscape Unit. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to less-than-significant levels. To the extent that these significant adverse impacts remain 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.

4.14.6 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Tehachapi Mountains East Landscape Unit

The Tehachapi Mountains East Landscape Unit extends from the west side of the Alta Wind Energy Center to the west edge of the Mojave Desert. The rolling hills of the eastern Tehachapi Mountains with ridgetops dominated by scattered large wind turbines (i.e., steel towers or poles with rotating blades used to generate electricity) define the visual character of this landscape unit. This landscape unit is part of the Tehachapi Wind Resource Area and includes a portion of the Alta Wind Energy Center. Intensive wind energy development in the Tehachapi Wind Resource Area is a defining and rapidly growing visual characteristic in these foothills. The natural harmony of the rolling hillsides of the Tehachapi Mountains and desert landscape near the project environment is highly compromised by wind farms with turbines often more than 300 feet in height. Overall, the visual quality is moderate.

The Preferred Alternative will introduce a new visual element into the Tehachapi Mountains East Landscape Unit, which consists of mountain terrain, Oak Creek, wind turbines and associated infrastructure, and the PCT. This will be a significant impact under CEQA. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **PCT-MM#1: Temporary and Permanent Effects on the Pacific Crest Trail**
- **AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements**

PCT-MM#1 requires the Authority to coordinate with the USFS and the BLM to prepare final design documents that will minimize the visual impacts of the HSR future alignment on PCT users, such as through landscaping or other design features. This will reduce the contrasting urban appearance of the project with the natural environment and reduce impacts on visual quality; however, after mitigation the impact will still be significant under CEQA.

PCT-MM#1 sets conditions for the use of land from park, recreation, and school play areas in temporary impact areas during construction of the Preferred Alternative. Those conditions will affect only areas within or immediately adjacent to the temporary impact areas and only temporarily during construction. Those conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described earlier in this section.

PCT-MM#1 requires the realignment of a portion of the PCT west of the proposed viaduct under the Preferred Alternative. These changes may require native vegetation removal. The realignment will also represent a permanent change to the trail as a result of construction. The Authority, in consultation with the USFS and the BLM, will be required to obtain a new easement from the private property owner for the trail realignment. These changes are not anticipated to result in any additional impacts under CEQA because the realigned PCT will affect similar types of native vegetation in this area. PCT-MM#1 also sets conditions specifically for the treatment of the PCT during construction and operation of the HSR project. The actions in this measure include coordination with the private property owner, the USFS, and the BLM for the segment of the PCT that is crossed by the HSR facility, construction specifications, and adherence to best

management practices during construction. These conditions are not anticipated to result in direct or indirect physical effects under CEQA beyond those already described in the Final EIR/EIS.

The Authority finds Mitigation Measures PCT-MM#1 and AVQ-MM#6 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen, the permanent impacts on the views, visual character, and visual quality within the Tehachapi Mountains East Landscape Unit. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to less-than-significant levels. To the extent that these significant adverse impacts remain 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.

4.14.7 Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in the Rosamond Rural Landscape Unit

The Rosamond Rural Landscape Unit extends from Rosamond Boulevard to Avenue H in Lancaster. Figure 3.16-10 in the Final EIR/EIS shows an overview of this landscape unit. In this landscape unit, the Preferred Alternative will pass through lands that are largely uninhabited within 1 mile. Rosamond is a small, unincorporated community in Kern County 12.6 miles south of Mojave and 10.3 miles north of Lancaster. The landform is generally flat and undeveloped, with exposed dirt and sparse native desert vegetation. Residences are mostly one-story, single-family homes scattered throughout the area. Isolated agricultural and industrial structures occur in the landscape unit. The natural environment dominates the background, with clear views of buttes and foothills (such as Willow Springs Butte and Tropico Hill) to the north and the west. However, the features of the cultural environment generally detract from views of natural scenery, resulting in a moderate degree of existing visual quality in this landscape unit.

The Preferred Alternative will introduce a new visual element into the Rosamond Rural Landscape Unit, which consists of level terrain with views of surrounding mountains, hills, and buttes, scattered one-story residences, isolated agricultural and industrial structures, and transmission lines. This will be a significant impact under CEQA. Implementation of the following measures will lessen but not fully avoid this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures**
- **AVQ-MM#4: Provide Vegetation Screening Along At-grade and Elevated Guideways Adjacent to Residential Areas**
- **AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements**

None of the mitigation measure options is expected to result in secondary effects. The mitigation measures are typical of visual treatments applied on linear transportation facilities; they have been defined to be specific in range and implementable according to context, and designed in coordination with local jurisdictions.

The Authority finds Mitigation Measures AVQ-MM#3, AVQ-MM#4, and AVQ-MM#6 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen, the permanent impacts on the views, visual character, and visual quality within the Rosamond Rural Landscape Unit. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to less-than-significant levels. To the extent that these significant adverse impacts remain 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.

4.14.8 Impact AVQ #7: Permanent Impacts from Construction of Electric Power Utility Improvements

The Preferred Alternative will require the transformation and distribution of electricity, which will require the construction of three types of facilities: traction power substations, switching stations, and paralleling stations. Traction power substations will be located next to the HSR alignment at approximately 30-mile intervals. In most cases, these stations will be next to existing utility transmission lines, but in some cases, transmission line extensions may be needed to connect to electrical utilities. The impact on views, visual character, and visual quality from the electric power utility improvements at the traction power substation locations will be significant under CEQA because the addition of an industrial substation feature and transmission lines could have an adverse effect on visual quality. Implementation of the following measure mitigates this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **AVQ-MM#9: Screen Traction Power Distribution Substations and Radio Communication Towers**

Implementation of Mitigation Measure AVQ-MM#9 is not expected to result in secondary effects. The mitigation measure is typical of visual treatments applied on linear transportation facilities; it has been defined to be specific in range and implementable according to context, and designed in coordination with local jurisdictions.

The Authority finds that Mitigation Measure AVQ-MM#9 has been required in the Preferred Alternative and that implementation of this mitigation measure will substantially lessen or avoid impacts associated with the visual disturbance of electric power utility improvements. With mitigation, this impact will be reduced to less than significant under CEQA.

4.15 Cultural Resources

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 consultation with other 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 Final EIR/EIS, 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 Office (SHPO), and consulting parties. The PA provides an overall regulatory framework for conducting the Section 106 process throughout the HSR System and the documentation process for the Bakersfield to Palmdale 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 project 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 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 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 explained in the Final EIR/EIS, the analysis in Section 3.17 covers the entire Preferred Alternative and does not rely on the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR for the CEQA analysis. The Final EIR/EIS nevertheless lists mitigation measures that were identified in the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR that apply (see Final EIR/EIS Section 3.17.7). Although the impacts analysis in Section 3.17 does not rely on the Fresno to Bakersfield documents for the CEQA determinations, the Final EIR/EIS identifies that the mitigation measures are applicable. In many instances, the mitigation measures from the Fresno to Bakersfield Draft Supplemental EIR/EIS and Final Supplemental EIR match the mitigation measures in the Final EIR/EIS. For example, F-B LGA CUL-MM#12 and F-B LGA CUL-MM#13 correspond with CUL-MM#6 and CUL-MM#7, respectively. To ensure clarity and consistency with the Final EIR/EIS, the Authority is including and adopting the F-B LGA mitigation measures. Attachment B shows how the mitigation measures from the Fresno to Bakersfield documents correspond with mitigation measures or IAMFs identified in the Bakersfield to Palmdale Project Section Final EIR/EIS.

4.15.1 Impact CUL#1: Permanent Construction-Period Potential Adverse Impacts on Archaeological Resources Due to Construction Activities

4.15.1.1 *Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.17 of the Final EIR/EIS Summarizing Section 3.17 of the Draft Supplemental EIR/EIS)*

Although the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will not affect any known archaeological resources that are considered historic properties or resources, it could potentially affect unknown archaeological resources. The *Memorandum of Agreement Among the California High-Speed Rail Authority, the Surface Transportation Board, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Bakersfield to Palmdale Project Section of the California High-Speed Rail Program, Kern and Los Angeles Counties, California* (Authority 2021a) for the Bakersfield to Palmdale Project Section requires standardized measures for avoidance and minimization to be implemented before, during, and after construction to ensure that construction activities will reduce these adverse impacts or changes to the extent possible; however, construction activities will still likely cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15065.5 and adverse effects pursuant to the National Historic Preservation Act (36 C.F.R. Part 800.5). The portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield could potentially affect these unknown archaeological resources by disturbing an unknown archaeological site, which will be a significant impact under CEQA for CEQA historical resources or unique archaeological resources. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **CUL-MM#2: Halt Work in the Event of an Archaeological Discovery and Comply with the Programmatic Agreement (PA), Memorandum of Agreement (MOA), Archaeological Treatment Plan (ATP), and all State and Federal Laws, as applicable.**

Mitigation Measures F-B LGA CUL-MM#4 and F-B LGA CUL-MM#5, shown in Table 3.17-5 of the Fresno to Bakersfield Section Supplemental EIR, are both incorporated in CUL-MM#2, described in the Final EIR/EIS. CUL-MM#2 will mitigate impacts to archaeological resources in the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield to less than significant should they be inadvertently discovered during construction.

No ground-disturbing activities or property acquisition will be necessary to comply with Mitigation Measure CUL-MM#2, if the site can be preserved in place. In this case, there will be no impacts on other resources as a result of implementing these mitigation measures. If intentional burial is required, the new burial site will be selected in consultation with the most likely descendant and will be surveyed by qualified archaeologists prior to excavation. A site will be selected that will not result in impacts to any other resource types (e.g., biological). Educational programs, internships, and curation are examples of mitigation measures that do not result in ground-disturbing activities or property acquisition. Therefore, it is anticipated that the impacts of implementing this mitigation measure will be less than significant under CEQA.

4.15.1.2 *Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.17 in the Final EIR/EIS)*

Construction of the portion of the Preferred Alternative from Oswell Street in Bakersfield to Spruce Court in Palmdale could result in possible adverse impacts on known and unknown archaeological deposits from ground-disturbing construction associated with the project section, including areas where permission to enter has not been granted. Unknown archaeological sites might represent the full range of prehistoric or historic activities conducted over time, from prehistoric lithic scatters and village sites to historic-era homestead remains and human burials. Human burials could be either prehistoric or historic, and are always considered archaeological in nature. Although the MOA for the Bakersfield to Palmdale Project Section will require standardized measures for avoidance and minimization to be implemented before, during, and after construction to ensure that construction activities will reduce these adverse impacts or changes to the extent possible, construction activities will still likely cause substantial adverse changes in the significance of an archaeological resource pursuant to the CEQA Guidelines Section 15065.5 and adverse effects pursuant to the National Historic Preservation Act (36 C.F.R. Part 800.5). Therefore, this is considered a potentially significant impact under CEQA. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **CUL-MM#1: Mitigate Adverse Effects to Archaeological and Built Environment Resources Identified During Phased Identification**
- **CUL-MM#2: Halt Work in the Event of an Archaeological Discovery and Comply with the Programmatic Agreement (PA), Memorandum of Agreement (MOA), Archaeological Treatment Plan (ATP), and all State and Federal Laws, as applicable**
- **CUL-MM#3: Other Mitigation for Effects to Pre-Contact Archaeological Sites**

Mitigation Measure CUL-MM#1 will apply to the project site (entirely within the project footprint). This mitigation measure will not trigger additional ground-disturbing activities outside of the project footprint and will not change the character or significantly increase the overall amount of construction activity. Therefore, it is anticipated that the impacts of implementing this mitigation measure will be less than significant under CEQA.

No ground-disturbing activities or property acquisition will be necessary to comply with Mitigation Measures CUL-MM#2 and CUL-MM#3, if the site can be preserved in place. In this case, there will be no impacts on other resources as a result of implementing these mitigation measures. If intentional burial is required, the new burial site will be selected in consultation with the most likely descendant, will be surveyed by qualified archaeologists prior to excavation. A site will be selected that will not result in impacts to any other resource types (e.g., biological). Educational programs, internships, and curation are examples of mitigation measures that do not result in ground-disturbing activities or property acquisition. Therefore, it is anticipated that the impacts of implementing these mitigation measures will be less than significant under CEQA.

The Authority finds that Mitigation Measures CUL-MM#1, CUL-MM#2, and CUL-MM#3 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce construction impacts on archaeological resources to less than significant.

4.15.2 Impact CUL#2: Permanent Construction-Period Potential Adverse Impacts on Built Resources due to Construction Activities

4.15.2.1 Intersection of 34th and L Streets to Oswell Street in Bakersfield (Section 3.17 of the Final EIR/EIS Summarizing Section 3.17 of the Draft Supplemental EIR/EIS)

Construction activities that may cause impacts on historic architectural resources can include excavation, staging, heavy-equipment usage and movement, drilling, demolition, or the need for relocation, as well as increases in vibration levels or introduction of new visual elements. In accordance with the PA, an MOA for the treatment of adverse effects on historic properties in the Bakersfield to Palmdale Project Section of the California HSR System was executed by the Authority, STB, and Advisory Council on Historic Preservation on June 22, 2021. The MOA for the Bakersfield to Palmdale Project Section (which includes the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield) ensures that treatments implemented before, during, and after construction will avoid, minimize, and mitigate these impacts. Nevertheless, the construction of the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield will cause indirect changes to two historical properties or resources (Final EIR/EIS p. 3.17-74). A substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5 is considered a significant impact. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA CUL-MM#12: Prepare and Submit Additional Recordation and Documentation**
- **F-B LGA CUL-MM#13: Prepare Interpretive or Educational Materials**

Neither of these mitigation measures are expected to result in secondary effects.

Execution of the treatments described in the mitigation measures above will avoid, minimize, or mitigate these adverse effects or changes, to the extent possible. Additionally, the MOA for the Bakersfield to Palmdale Project Section (which includes the portion of the Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield) ensures that treatments implemented before, during, and after construction will avoid, minimize, and mitigate these impacts. The PA and the MOA mandate that the BETP will set forth means to avoid, protect, or develop treatment measures to minimize potential adverse impacts.

The project results in effects when the Authority, in consultation with the appropriate agencies, the SHPO, and other MOA signatories, determines that adverse effects cannot be avoided. The BETP will provide specific performance standards to ensure that 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 Interior's standards when implementing the mitigation measures.

The Authority therefore finds that Mitigation Measures F-B LGA CUL-MM#12 and F-B LGA CUL-MM#13 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce impacts on historic architectural resources due to construction activities to less than significant.

4.15.2.2 Oswell Street in Bakersfield to Spruce Court in Palmdale (Section 3.17 in the Final EIR/EIS)

Construction activities that may cause impacts on historic architectural resources can include excavation, staging, heavy-equipment usage and movement, drilling, demolition, or the need for relocation, as well as increases in vibration levels or introduction of new visual elements. Several of the built resources will not be adversely affected. The construction of the proposed project will result in impacts to the Big Creek Vincent Transmission Lines from the removal of a portion of the line (less than 1 percent). However, after proper documentation, there will be no significant impacts to the Big Creek Hydroelectric System as a whole, and recordation/documentation could

be developed and stipulated in the MOA and implemented to mitigate impacts to a less-than-significant level. Implementation of the following measures mitigate this impact. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **CUL-MM#1: Mitigate Adverse Effects to Archaeological and Built Environment Resources Identified During Phased Identification. Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the Programmatic Agreement (PA) and Memorandum of Agreement (MOA)**
- **CUL-MM#7: Prepare Interpretive or Educational Materials**
- **CUL-MM#9: Visual Screening**

Mitigation Measure CUL-MM#1 will apply to the project site (entirely within the project footprint). This mitigation measure will not trigger additional ground-disturbing activities outside of the project footprint and will not change the character or significantly increase the overall amount of construction activity. Therefore, it is anticipated that the impacts of implementing this mitigation measure will be less than significant under CEQA.

No ground-disturbing activities or property acquisition will be necessary to comply with Mitigation Measure CUL-MM#7. Therefore, there will be no impacts under CEQA on other resources as a result of implementing this mitigation measure.

Any alterations to historic properties/historical resources will follow the Secretary of the Interior's guidelines, and will result in less-than-significant impacts. There will be no impacts to other resources as a result of implementing Mitigation Measure CUL-MM#9. This mitigation will result in a less-than-significant impact under CEQA.

The Authority finds that Mitigation Measures F-B LGA CUL-MM#12, F-B LGA CUL-MM#13, CUL-MM#1, CUL-MM#7, and CUL-MM#9 have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce impacts on historic architectural resources due to construction activities to a less-than-significant level.

4.16 Regional Growth (Section 3.18 in the Final EIR/EIS)

In the two-county region (Kern and Los Angeles Counties), employment and population growth attributable to construction and operation of the Preferred Alternative will be limited compared to the overall level of growth that will occur under the No Project Alternative. The number of short-term construction-related jobs are estimated at 39,100 direct, indirect, and induced jobs during the peak construction year, 20,000 of which will be direct jobs in the construction sector. These jobs will comprise approximately 0.7 percent of the total projected jobs in the two-county region and 10.7 percent of the total projected construction jobs in the study area. This increase in short-term employment is not anticipated to attract a large number of workers to the two-county region. Specialty skilled construction workers may come from outside of the two-county region but will work for only short periods during the construction period.

The Preferred Alternative will result in up to 12,300 long-term jobs in the two-county region from operation and maintenance activities and improved accessibility of the region. This employment increase will be approximately 0.2 percent above the 2040 projections. Based on existing city, county, and regional planning documents, there is adequate land development capacity to accommodate planned growth by 2040 as well as HSR-induced growth in the study area. Therefore, the proposed improvements associated with the Preferred Alternative will not induce substantial unplanned employment or population growth or land use consumption.

Operation of the HSR system has the potential to induce additional population growth in exurban communities as a result of providing easier access to lower cost of housing in these communities relative to those in the major employment centers of Los Angeles (Authority 2017). Based on analysis of the tradeoffs between lower housing costs and higher transportation costs afforded by exurban communities with proposed HSR stations, some households may relocate to these areas. Therefore, any such increases in population in these exurban cities will not be growth

stimulated by local economic expansion, but rather a redistribution of existing residents in the study area. Furthermore, it is anticipated that housing constructed in these communities to accommodate such population growth will be consistent with the adopted land use plans, policies, and regulations of local governments.

Pursuant to Senate Bill (SB) 375, “sustainable communities strategies” (SCS) or alternative planning strategies planning in each county will likely rely on HSR system development to help reach its GHG emissions reduction targets of 10 percent by 2035. These planning processes, together with steps the Authority will take to assist with station area planning, are expected to encourage more compact development within the region, particularly around HSR station locations.

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

This section presents the Authority's findings regarding the cumulative effects implementing the Preferred Alternative in combination with other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from the combination of individually minor but collectively significant projects over time (CEQA Guidelines, § 15355). Under CEQA, when a project will contribute to a cumulative impact, an EIR must discuss whether the project's incremental effect is "cumulatively considerable." Cumulatively considerable means that the project's incremental effect is significant when viewed in the context of past, present, and reasonably probable future projects. The discussion of cumulative impacts need not provide as much detail as is provided for the effects attributable to the project alone (CEQA Guidelines, § 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.

5.1 Transportation

The cumulative impact analysis for transportation is based on the planned and potential project lists (Appendix 3.19-A of the Final EIR/EIS), as well as plans/projections listed in Table 3.2-2, Local Plans and Applicable Policies in Section 3.2, Transportation of the Final EIR/EIS.

Construction of cumulative projects will result in a potentially significant cumulative impact on transportation because access and circulation disruptions could occur throughout the construction period at various intensities. However, the proposed improvements within the Bakersfield to Palmdale Project Section will not contribute to this cumulative impact because the design characteristics of the Preferred Alternative and mitigation measure (see Section 4.1 of these Findings and SOC) include effective measures to maintain circulation and adequate access during construction by providing detours that allow 24-hour access. With implementation of this mitigation measure, the contribution of the Preferred Alternative to cumulative local transportation impacts will be reduced to less than cumulatively considerable.

Operation of the Preferred Alternative, in combination with cumulative projects, will improve long-term circulation in the resource study area and accessibility of the area from other parts of the state, which will be a cumulatively beneficial impact under CEQA.

The Authority finds that a transportation mitigation measure has been incorporated into the Preferred Alternative (see Section 4.1 of these Findings and SOC) and that implementation of this mitigation measure will reduce the project's contribution to cumulatively considerable transportation impacts to less-than-cumulatively-considerable levels.

5.2 Air Quality and Global Climate Change

The cumulative impacts analysis for air quality considers the Bakersfield to Palmdale Project Section; the projects identified in Appendix 3.19-A of the Final EIR/EIS, including adjacent HSR project sections (Fresno to Bakersfield and Palmdale to Burbank); and regional growth projections.

Construction of the proposed improvements within the Bakersfield to Palmdale Project Section and cumulative projects will temporarily increase regional emissions of air pollutants and may cause or exacerbate an exceedance of air quality standards. In addition, cumulative projects will have VOC, NO_x, PM₁₀, and PM_{2.5} emissions during construction. Because the San Joaquin Valley Air Basin is currently designated as nonattainment for the federal ozone (O₃) and PM_{2.5} standards and the state O₃, PM_{2.5}, and PM₁₀ standards, and the Mojave Desert Air Basin is currently designated as federal nonattainment for O₃ and state nonattainment for O₃ and PM₁₀, cumulative projects constructed at the same time as the Preferred Alternative will likely exceed an air quality standard or contribute to an existing or projected air quality exceedance for these criteria pollutants.

For the Preferred Alternative, mitigation measures will offset construction and other off-site emissions through a voluntary emissions reduction agreement and the purchase of emission

offsets (see Section 4.2.1 of these Findings and SOC for information on the mitigation measures). The mitigation measures will reduce VOC and NO_x emissions to net zero and will reduce the impact to a less-than-significant level. The Preferred Alternative's contribution to cumulative impacts for these criteria pollutants is therefore reduced to less than cumulatively considerable.

The offset programs are not applicable to CO emissions and CO emission impacts will therefore not be reduced to a less-than-significant level. The Preferred Alternative will have significant and unavoidable criteria pollutant (CO) air quality impacts after mitigation during the construction period. No additional mitigation is available to reduce the cumulative impact other than the mitigation measure for the project already identified in Section 4.2.1 of these Findings and SOC. Therefore, the incremental effect of the proposed improvements within the Preferred Alternative will be cumulatively considerable for CO emissions, and significant and unavoidable.

As described in Section 3.19, Cumulative Impacts, of the Final EIR/EIS, construction of the Preferred Alternative will result in no net increase in GHG emissions overall. Therefore, the incremental effect of the Preferred Alternative will not be cumulatively considerable, and no further mitigation is required.

As discussed in detail in Section 3.3, Air Quality and Global Climate Change, of the Final EIR/EIS, operation of the Preferred Alternative will benefit regional air quality by reducing automobile and airplane emissions, which will reduce criteria pollutants and mobile-source air toxics. Operation of the Preferred Alternative, in combination with cumulative projects, will help the region attain air quality standards and plans and the cumulative effect will be beneficial. Operational GHG impacts will be beneficial because the project will result in a statewide and regional reduction of GHG emissions. Therefore, the operational GHG impacts will not be cumulatively considerable. CEQA does not require further mitigation.

The Authority finds that construction air quality mitigation measures have been incorporated into the Preferred Alternative (see Section 4.2 of these Findings and SOC) and that implementation of these mitigation measures reduces the Preferred Alternative's construction and other off-site emissions to a less than cumulatively considerable level except for CO. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this construction-related impact for CO emissions 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 Noise and Vibration

Construction of the Preferred Alternative will involve activities such as demolishing existing structures; handling, storing, hauling, excavating, and placing fill; and building aerial structures, bridges, HSR electrical systems, and rail beds that include road modifications, and utility upgrades and relocations. All of these activities will introduce new temporary sources of noise from construction equipment, and their associated noise emissions are anticipated to affect sensitive receptors. The Preferred Alternative includes a measure, NV-IAMF#1, Noise and Vibration, requiring the construction contractor to comply with FRA guidelines for noise and vibration (FRA 2012). Implementation of FRA guidelines will partially minimize noise and vibration impacts on sensitive receptors; however, noise and vibration generated by construction activities could still exceed thresholds at nearby sensitive receptors during construction of the Preferred Alternative. Therefore, the Preferred Alternative will implement Mitigation Measure NV-MM#1: Construction Noise Mitigation, which requires the contractor to maintain noise levels below FRA construction noise criteria at sensitive receptors.

Construction of the Preferred Alternative in combination with the cumulative projects listed in Appendix 3.19-A of the Final EIR/EIS will result in temporary and intermittent noise effects from the use of construction equipment. While construction activities will generate noise levels that could result in individual impacts requiring project-specific mitigation, it is not considered likely that these will combine with the noise-generating activities of other projects to result in cumulative

noise impacts. For this to occur, construction of multiple projects generating high noise levels will have to occur simultaneously and very close to sensitive receptors such that they combined to create noise levels that exceeded federal (FRA and Federal Highway Administration) standards (see Section 3.4.4.5, Noise and Vibration, of the Final EIR/EIS for the noise significance thresholds). This scenario is unlikely to occur because the construction of planned projects will be temporary, and the projects do not generally have overlapping or adjacent construction footprints. Therefore, there will not be a cumulative noise impact in the resource study area.

Operation of the Preferred Alternative and cumulative projects will generate noise levels that will exceed standards at sensitive receptors, which will be a significant cumulative impact under CEQA. The Preferred Alternative will severely affect 501 sensitive receptors. The incremental contribution of operation of the Preferred Alternative will be cumulatively considerable. No additional mitigation is available to address cumulative impacts.

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

5.4 Electromagnetic Interference and Electromagnetic Fields

The cumulative impacts analysis for EMI/EMF considers the Bakersfield to Palmdale Project Section; the projects identified in Appendix 3.19-A of the Final EIR/EIS, including adjacent HSR project sections (Fresno to Bakersfield and Palmdale to Burbank); and regional growth projections.

Existing standards for human exposure to EMI or EMF will not be exceeded inside or outside the right-of-way of the Preferred Alternative. During construction and operation, the Preferred Alternative and cumulative projects will comply with standards established to prevent interference and will not combine to result in a significant cumulative EMI/EMF impact under CEQA. Therefore, no further mitigation is necessary.

5.5 Public Utilities and Energy

The cumulative impacts analysis for public utilities and energy considers the Bakersfield to Palmdale Project Section; the projects identified in Appendix 3.19-A of the Final EIR/EIS, including adjacent HSR project sections (Fresno to Bakersfield and Palmdale to Burbank); and regional growth projections.

Given the short duration of interruptions to public services during construction of the proposed improvements within the Bakersfield to Palmdale Project Section and cumulative projects, as well as interruption notification procedures and standard practices for utility identification, the proposed improvements within the Bakersfield to Palmdale Project Section and cumulative projects will not result in a significant cumulative impact on public utilities. Additionally, existing public utilities have adequate capacity and infrastructure to support demand for electricity, water, and solid waste disposal from existing and planned development, including construction of the proposed improvements within the Bakersfield to Palmdale Project Section and cumulative projects. Therefore, CEQA does not require any mitigation.

There are no anticipated significant cumulative operations impacts under CEQA related to public utilities and landfills or to energy systems to which the proposed improvements within the Bakersfield to Palmdale Project Section will contribute, because there is adequate capacity to accommodate project growth. Therefore, CEQA does not require any mitigation.

5.6 Biological and Aquatic Resources

5.6.1 Special-Status Plant and Wildlife Species

Construction of the Preferred Alternative and cumulative projects will result in cumulative impacts on special-status plant and wildlife species as a result of habitat loss, habitat fragmentation, introduction of invasive species, and harassment from increased noise and human disturbance. Construction of cumulative development and transportation projects such as the Tehachapi Walmart project (T-11), Lockheed Martin solar facility (P-5), High Desert Corridor (LA-4), and Northwest 138 Corridor Improvement Plan (LA-5) (see Technical Appendix 3.19-A in the Final EIR/EIS), combined with the Preferred Alternative and adjacent HSR project sections (Fresno to Bakersfield and Palmdale to Burbank), will contribute to the net loss of special-status plant and wildlife species. Additionally, construction of these projects could result in land disturbance, increased vehicle traffic, and topography alteration, which could lead to disturbance, injury, or mortality of various special-status wildlife species and their respective habitats.

However, with implementation of the mitigation measures set for biological resources forth in Section 4.6 of these Findings and SOC, the Preferred Alternative's incremental contribution to this cumulatively significant impact will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's contribution to cumulatively considerable construction impacts to special-status plant and wildlife species to less-than-cumulatively-considerable levels.

Operation of the Preferred Alternative will avoid or minimize the potential for impacts from maintenance activities with the potential to trample or crush plant communities and wildlife. These impacts will be avoided through the IAMFs identified in Section 3.7, Biological and Aquatic Resources, in the Final EIR/EIS, which will require that maintenance personnel attend worker environmental awareness program training to understand and identify sensitive biological resources and associated regulatory requirements. Additionally, with implementation of the mitigation measures for biological resources included in Section 4.7 of these Findings and SOC, the Preferred Alternative's incremental contribution will not be cumulatively considerable. The Preferred Alternative will provide wildlife crossings and includes Mitigation Measure BIO-MM#87, which identifies methods for minimizing nighttime lighting during operations. These mitigation measures will avoid and/or minimize the potential for trampling or inflicting other destruction of special-status plant species or habitat. They will also minimize the potential for impacts on special-status wildlife species by training maintenance personnel to understand environmental compliance issues.

With the implementation of the project-level mitigation measures identified in Section 3.7.7 of the Final EIR/EIS, the incremental contribution from construction of the proposed improvements within the Bakersfield to Palmdale Project Section will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's cumulatively considerable construction impact to habitats of concern to less than cumulatively considerable levels.

5.6.2 Aquatic Resources

Construction activities associated with cumulative commercial and residential development projects, including numerous proposed developments in Bakersfield, Keene, Tehachapi, Rosamond, Lancaster, and Palmdale, are likely to result in construction of culverts in streams, armoring of channels, removal of riparian vegetation, and placement of fill in jurisdictional aquatic resources near similar impacts that result from construction of the proposed improvements within the Bakersfield to Palmdale Project Section. Projects in the Rosamond and Lancaster areas could also alter surface hydrology (sheet flow) and result in the filling of claypan features. These projects include the Northwest 138 Corridor Improvement Plan (LA-5), an automotive recycling yard in Lancaster (L-5), a single-family residence subdivision in Lancaster (L-10), and the Amargosa Creek Specific Plan (L-1), all of which have the potential to influence desert streams and claypans. The Amargosa Creek Specific Plan has already influenced Amargosa Creek,

based on aerial photographs that show a major wash has been undergrounded at that location. The Preferred Alternative will impact 61.78 acres.

However, with implementation of the mitigation measures for biological resources included in Section 4.7 of these Findings and SOC, the Preferred Alternative's incremental contribution to this cumulatively significant impact will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's cumulatively considerable construction impact to habitats of concern to less-than-cumulatively-considerable levels.

Operation of the Preferred Alternative will require maintenance and vehicular activity near jurisdictional aquatic resources. The IAMFs identified in Section 3.7, Biological and Aquatic Resources, in the Final EIR/EIS, require maintenance personnel to attend worker environmental awareness program training to understand and to identify sensitive biological resources and associated regulatory requirements. With these IAMFs in place, the likelihood of accidental spills, introduction of contaminants/pollutants, and the degradation of jurisdictional waters will be minimized. Therefore, Preferred Alternative is not anticipated to contribute to a cumulative impact during operations.

Operations of the Preferred Alternative will avoid or minimize the potential for impacts from maintenance activities to jurisdictional aquatic resources through implementation of IAMFs that require maintenance personnel to attend worker environmental awareness program training, and therefore will not contribute to cumulative impacts on these resources.

5.6.3 Wildlife Movement Corridors

Construction of the Preferred Alternative and cumulative projects such as High Desert Corridor (LA-4) and Northwest 138 Corridor Improvement Plan (LA-5) could result in construction activities and placement of wildlife movement barriers on natural lands such that they will interfere with the movement of wildlife species. Opportunities for wildlife movement in the cumulative study area will be diminished because the HSR project is a linear project, spanning hundreds of miles, which could affect known and modeled wildlife movement corridors. Similarly, the High Desert Corridor and Northwest 138 Corridor Improvement Plan are linear projects that could also restrict wildlife movement corridors.

The Preferred Alternative includes IAMFs that will require the creation of wildlife-crossing features at frequent intervals and along sensitive areas to facilitate wildlife movement and minimize or avoid impacts on wildlife corridors. The incorporation of these IAMFs will reduce the impacts of interfering with established wildlife movement corridors and other impacts relating to the potential for isolation of populations. By including wildlife-crossing features in the project design, the Preferred Alternative is expected to maintain existing wildlife movement corridors within the project footprint. Cumulative projects, including the High Desert Corridor and Northwest 138 Corridor Improvement Plan, could restrict wildlife movement. However, these projects will be subject to environmental review and will be required to address impacts on wildlife movement corridors through incorporation of design features and/or mitigation measures. Additionally, while the Preferred Alternative will impact wildlife movement corridors in the east-west direction, these cumulative projects will impact wildlife movement corridors in the north-south direction. Therefore, these projects will not result in cumulative effects in the same direction of travel. Building structures could also hinder movement depending on their location and size, but these facilities are generally in previously developed areas, and wildlife will probably avoid such structures by moving around them.

Additionally, with implementation of the mitigation measures for biological resources included in Section 4.7 of these Findings and SOC, the Preferred Alternative's incremental contribution to this cumulatively significant impact will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's cumulatively considerable construction impact to habitats of concern to less-than-cumulatively-considerable levels.

During operations, maintenance activities of the Preferred Alternative are not expected to affect wildlife movement corridors because activities will be dispersed over time and location, diluting potential impacts. Impacts on wildlife movement corridors from operations will include disturbance from the passage of trains (e.g., noise, motion, and startle effects). In general, for the Preferred Alternative, these potential effects will be limited as a result of the short duration of train passes and the infrequent use of the wildlife crossings by wildlife.

With implementation of the mitigation measures for biological resources included in Section 4.7 of these Findings and SOC, the incremental contribution of the Preferred Alternative to cumulative impacts will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's contribution to cumulatively considerable operations impacts on wildlife movement corridors to less than cumulatively considerable levels.

5.7 Hydrology and Water Resources

Construction of the Preferred Alternative and cumulative projects will not result in a significant cumulative impact related to:

- Increased risk of release of pollutants from inundation because projects in a floodplain will be expected to implement BMPs in compliance with National Pollutant Discharge Elimination System (NPDES) requirements to minimize release of pollutants in the event flooding occurs during a storm event
- A violation of water quality standards or waste discharge requirements, degradation of surface water quality, addition of polluted runoff to existing or planned stormwater facilities, or conflict with water quality control plans because projects disturbing greater than 1 acre are required to comply with the Construction General Permit and implement Construction BMPs to reduce pollutants in stormwater runoff
- Increased erosion or siltation, increased flooding from changes in drainage patterns, or exceedance of the capacity of existing or planned stormwater facilities because the proposed improvements and cumulative projects will comply the Construction General Permit, which requires BMPs to control and management stormwater runoff during construction
- Decreased groundwater supplies or conflict with sustainable groundwater management plans because there are currently no cumulative projects that will have the potential to degrade groundwater quality, interfere with the groundwater flow systems, cause dewatering of overlying springs and riparian areas, or affect groundwater quality near the Preferred Alternative

The Preferred Alternative will implement project-specific mitigation measures to not contribute to any cumulative reduction in groundwater levels or quality during tunnel construction. Therefore, no further mitigation is required.

The Preferred Alternative and cumulative projects will not result in a significant cumulative impact related to the increased risk of release of pollutants from inundation because projects in a floodplain will be expected to design structures to:

- Minimize impacts associated with erosion and sedimentation and to implement BMPs in compliance with NPDES requirements to minimize release of pollutants in the event flooding occurs during a storm event;
- Not violate water quality standards or waste discharge requirements, degrade surface water quality, contribute polluted runoff to existing or planned stormwater facilities, or conflict with water quality control plans because projects are required to comply with the applicable NPDES Municipal Separate Storm Sewer System permits and implement site-specific BMPs to reduce pollutants in stormwater runoff;
- Not increase erosion or siltation or increase flooding from changes in drainage patterns or related to exceedance of the capacity of existing or planned stormwater facilities because the

Preferred Alternative and cumulative projects will comply with existing laws and permitting processes, including NPDES Municipal Separate Storm Sewer System permits;

- Not decrease groundwater supplies or conflict with sustainable groundwater management plans because the proposed improvements and other cumulative projects will implement BMPs to treat stormwater prior to infiltration.

Additionally, the applicable water agencies account for increased groundwater use that will result from development of the cumulative projects. Therefore, no further mitigation is required.

With implementation of the mitigation measures for hydrology and water resources included in Section 4.7 of these Findings and SOC, the incremental contribution of the Preferred Alternative to cumulative impacts will not be cumulatively considerable. The Authority therefore finds that mitigation measures have been incorporated in the Preferred Alternative that will reduce the Preferred Alternative's contribution to cumulatively considerable impacts to hydrology and water resources to less-than-cumulatively-considerable levels.

5.8 Geology, Soils, Seismicity, and Paleontological Resources

Construction of the proposed improvements within the Preferred Alternative and cumulative projects listed in Appendix 3.19-A in the Final EIR/EIS will require aggregate, ballast rock, concrete, and steel reinforcement, but not all of these materials will originate from the resource study area. Earthwork for construction of the Preferred Alternative will generate 2 to 14 million cubic yards of excess materials. However, the stockpiling of excess material at the soil disposal site will not result in an impact related to geology or soils. Therefore, the Preferred Alternative will not contribute to this cumulative impact.

Construction of cumulative projects in the resource study area could result in a significant cumulative impact on mineral resources under CEQA, as unknown amounts of mineral resources will be needed for cumulative projects. The Preferred Alternative will impact portions of the CalPortland Cement Company's limestone quarries in Mojave. Because the impacted area will be about three percent of the mineral reserves at this site and given the abundance of limestone reserves throughout California, the impact of the Preferred Alternative will not be cumulatively considerable.

Construction of cumulative projects in the resource study area could result in a significant cumulative impact on paleontological resources, a nonrenewable resource. Construction of the Preferred Alternative will not contribute to the cumulative loss of paleontological resources because the Preferred Alternative includes IAMFs that require direct monitoring by a paleontological resource specialist during construction, a paleontological resource monitoring and mitigation plan, and halting construction in the event paleontological resources are found. This will ensure that construction of the Preferred Alternative will not contribute to the cumulative loss of paleontological resources.

The Preferred Alternative will not impact geology, soils, seismicity, paleontological, and mineral resources during operations and will not contribute to a cumulative impact during operation. Therefore, no further mitigation is required.

5.9 Hazardous Materials and Wastes

The projected increase in population and development by 2040 is anticipated to contribute incrementally to the transport, storage, use, and disposal of hazardous materials and wastes in the cumulative resource study area. However, these incremental contributions are tightly controlled by existing regulations and will not result in a cumulatively considerable impact under CEQA.

Construction activities associated with the Preferred Alternative and cumulative projects in the resource study area will temporarily result in an incremental increase in the transportation, storage, use, and disposal of hazardous materials (e.g., construction fuels, oils, paints and solvents, and cement products containing strong basic or acidic chemicals). This incremental increase could result in accidental site-specific spills and releases of hazardous materials. While

hazardous materials handling may occur intermittently during construction, and in some cases may be within 0.25 mile of an existing or proposed school, compliance with federal, state, and local regulations and implementation of IAMFs related to the transport, handling, cleanup, and disposal of hazardous materials and wastes will reduce or avoid the potential for HSR construction activities to result in an impact that could combine with similar impacts of cumulative projects.

As discussed in Section 3.9, Hazardous Materials and Wastes, in the Final EIR/EIS, operational use of hazardous materials will be minimal along the alignment and at stations and will focus on the maintenance facilities where small amounts of hazardous materials (e.g., solvents, paints, vehicle fuels, and pesticides) will be required for maintenance activities. Transport, use, storage, and disposal of hazardous materials and wastes will be in accordance with existing regulations and project IAMFs, reducing the risk of exposure to or release of hazardous materials that could combine to result in a cumulative impact that will be significant under CEQA. Operation of the Preferred Alternative will not contribute to this cumulative impact because effects related to use of hazardous materials are localized.

The Preferred Alternative will not result in hazardous materials and wastes impacts during construction or operations and will not contribute to a cumulatively considerable impact during construction or operation. Therefore, no further mitigation is required.

5.10 Safety and Security

The construction of the Preferred Alternative, in combination with cumulative projects, will require several thousand construction workers per year. The localized temporary increase in population due to the influx of construction workers could temporarily increase the demand for fire protection, law enforcement, and other emergency response services in the project region, which, in turn, could require new or improved facilities, the construction of which could result in adverse effects to the environment. In addition, road closures and detours could result in increased response times for emergency responders. Similar to the Preferred Alternative, the cumulative projects identified in Appendix 3.19-A in the Final EIR/EIS will be required to follow strict Occupational Safety and Health Administration and safety practices. They will also be required to implement standard construction and safety plans, construction transportation plans, and traffic control plans, as necessary, to reduce the need for emergency services and reduce impacts on emergency response times. However, as with other project development, environmental review of specific projects will be required to ensure that impacts are identified and mitigated. Therefore, impacts associated with the demand for public services are project-specific and not cumulative in nature.

The Preferred Alternative, in combination with cumulative projects, will result in construction activities in State Responsibility and Local Responsibility Fire Severity Hazard Severity Zones in Kern and Los Angeles counties. Construction activities in such areas will be required to apply techniques to reduce potential ignition sources, including, but not limited to, designating smoking areas for construction employees, maintaining vegetation clearance around construction areas (defensible space), and using spark arrestors. Environmental review of specific projects will be required to ensure that impacts are identified and mitigated. Therefore, impacts associated with wildfire exacerbation are project-specific and not cumulative in nature.

The Authority finds that there are no significant cumulative construction-related impacts under CEQA associated with safety and security. The Preferred Alternative and cumulative projects will increase the population and workforce in the resource study area and result in an increase in demand for fire protection, law enforcement, and other emergency response services that, in turn, could require new or improved facilities, the construction of which could result in adverse effects to the environment. The Preferred Alternative and cumulative projects will also increase the potential for exacerbation of wildfire risks. However, as with other project development, environmental review will be required for specific public facility projects and projects in State Responsibility and Local Responsibility Areas Fire Hazard Severity Zones to ensure that impacts

are identified and mitigated. Therefore, impacts associated with the demand for public services or exacerbation of wildfire risks are project-specific and not cumulative in nature.

There are no significant cumulative construction-related or operations-related impacts under CEQA associated with demand for public services or exacerbation of wildfire risks to which the Preferred Alternative will contribute because impacts are project-specific. Therefore, no further mitigation is required.

The Authority finds that there are no significant cumulative operations-related impacts under CEQA associated with safety and security.

5.11 Socioeconomics and Communities

Construction of the Preferred Alternative, in combination with cumulative projects, will result in cumulatively significant socioeconomics impacts and established patterns of interaction by directly displacing and/or relocating a number of residents, businesses, and community facilities. With implementation of the mitigation measures for Socioeconomics and Communities described in Section 4.10 of these Findings and SOC, impacts will be reduced, but not to less-than-cumulatively-considerable levels. Therefore, the following mitigation measure will be implemented. (Because of length, mitigation measure text is presented separately in Attachment A, Mitigation Measures, to these CEQA Findings.)

- **F-B LGA CUM-SO-MM#1: Consult with Agencies Regarding Construction Activities**
- **F-B LGA CUM-SO-MM#2: Public Outreach**
- **CUM-SO-MM#1: Coordination with Cumulative Construction Project Sponsors**

With implementation of the above mitigation measures, the cumulative division of communities and displacement of residents, businesses, and community facilities during construction will be somewhat reduced. However, the project's incremental contribution to this impact will remain cumulatively considerable because the Preferred Alternative will permanently disrupt established patterns of interaction among community residents and directly displace residents, businesses, and community facilities. The contribution of the Preferred Alternative to these impacts will remain cumulatively considerable.

The Authority finds that mitigation measures, including Mitigation Measure F-B LGA CUM-SO-MM#1, F-B LGA CUM-SO#2, and CUM-SO-MM#1, have been required in the Preferred Alternative and that implementation of these mitigation measures will reduce, but not completely avoid or substantially lessen, the Preferred Alternative's incremental contribution to the construction impacts associated with the division and/or disruption of communities. The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this incremental contribution 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.

The cumulative impact on communities and the economy from operation of the Preferred Alternative, in combination with cumulative projects, will be less than significant because the project will stimulate redevelopment efforts and improve community cohesion. Therefore, no further mitigation is required.

5.12 Station Planning, Land Use, and Development

The cumulative impact analysis for station planning, land use, and development considers the proposed improvements within the Bakersfield to Palmdale Project Section, the specific projects identified in Appendix 3.19-A, the adjacent HSR project sections (Fresno to Bakersfield and Palmdale to Burbank), and regional growth projections, which, when combined, constitute the cumulative condition. Under the cumulative condition, ongoing growth trends in the cumulative resource study area are expected to continue, resulting in continued conversion of undeveloped land and agricultural land to residential, commercial, and industrial uses and transportation

infrastructure. Generally, this conversion is planned for by the cities and counties in which these projects occur. A cumulative impact for station planning, land use, and development is significant under CEQA if the cumulative growth would result in changes in the pattern and density of land use such that it resulted in incompatible land use patterns.

As discussed in the Final EIR/EIS, Section 3.19.5.13, Station Planning, Land Use, and Development, construction of the Preferred Alternative and cumulative projects will result in a less-than-cumulatively considerable impacts related to station planning, land use, and development. Therefore, no mitigation is required.

The conversion of land uses will take place during the construction phase, and no further impacts to land use will take place during operation of the Preferred Alternative; therefore, impacts will not be cumulatively considerable.

5.13 Agricultural Farmland and Forest Land

Construction of the Preferred Alternative and cumulative projects (e.g., the FRV Orion and Maricopa Sun Solar projects [K-7 and K-2], the High Desert Corridor project [LA-4], and urban development under the Kern County [2007] and Los Angeles County General Plans [2015]) on Important Farmland, Williamson Act Contract Land, or land zoned for agricultural use will contribute to the permanent conversion of Important Farmland, Williamson Act Contract Land, and land zoned for agricultural use to nonagricultural use. This will be a cumulative impact that will be significant under CEQA. The Authority has entered into an agreement with the Department of Conservation's California Farmland Conservancy Program to purchase agricultural conservation easements; however, while this mitigation will permanently preserve existing Important Farmland, Williamson Act Contract Land, and land zoned for agricultural use, it will not create new agricultural land to replace that which was permanently converted to nonagricultural use.

With implementation of the agricultural mitigation measure described in Section 4.12 of these Findings and SOC, impacts will be reduced through the purchase of agricultural conservation easements from willing sellers. However, because Important Farmland is irreplaceable, the contribution of the Preferred Alternative during project operations to cumulative agricultural impacts will remain cumulatively considerable.

The Authority finds that agricultural mitigation has been required in the Preferred Alternative and that implementation of this mitigation measure will reduce, but not completely avoid or substantially lessen, the Preferred Alternative's contribution to the cumulatively considerable operational agricultural impact.

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

5.14 Parks, Recreation, and Open Space

Construction activities associated with the Preferred Alternative in combination with cumulative projects could affect traffic, noise, and/or air quality near parks, recreation, and open space resources in the resource study area and thereby indirectly affect park users. Traffic impacts could interfere with access to parks by causing congestion adjacent to or near parks, thereby increasing transportation time for park users traveling to parks, recreation, and open space resources. Construction noise and reduced air quality could diminish park user experience through a loud noise environment and dust and other pollutants in the air.

Many of the cumulative projects are far enough away from the alignment for the Preferred Alternative or will result in minimal impacts such that it will not be expected to contribute to temporary cumulative traffic, air quality, and/or noise effects on parks, recreation, and open space

resources in the resource study area. Construction activities associated with the Preferred Alternative in combination with cumulative projects could affect traffic, noise, and/or air quality near parks, recreation, and open space resources in the resource study area and thereby indirectly affect park users. Traffic impacts could interfere with access to parks by causing congestion or near parks, thereby increasing transportation time for park users traveling to parks, recreation, and open space resources. Construction noise and reduced air quality could diminish park user experience through a loud noise environment and dust and other pollutants in the air. IAMFs provided in Section 3.15, Parks, Recreation, and Open Space; Section 3.3, Air Quality and Global Climate Change; and Section 3.4, Noise and Vibration in the Final EIR/EIS, will avoid, minimize, and/or mitigate the construction effects associated with the Preferred Alternative. Therefore, construction of the Preferred Alternative in combination with cumulative projects will not result in a cumulatively considerable impact on parks, recreation, and open space (including as related to noise, air quality, aesthetics, and traffic) pursuant to CEQA.

Under CEQA, the Preferred Alternative, in combination with cumulative projects, will not result in a cumulatively considerable construction impact on parks, recreation, or open space. Therefore, no further mitigation is required.

As discussed in Section 3.19, Cumulative Impacts, in the Final EIR/EIS, operation of the Preferred Alternative will not impact parks and therefore will not contribute to a cumulative impact.

5.15 Aesthetics and Visual Resources

Construction of the Preferred Alternative and cumulative projects, including roadway and highway improvement projects and residential, commercial, and industrial developments near the Preferred Alternative, will result in construction activities that will create temporary visual changes from construction staging, equipment, and lighting. Although construction activities for the Preferred Alternative and cumulative projects will be temporary, these activities will overlap and combine to create a cumulative impact on visual quality that will be significant under CEQA due to the scale and the proximity of the cumulative projects.

To reduce potential temporary impacts associated with construction impacts, the Authority will implement AVR-MM#1: Minimize Visual Disruption from Construction Activities, which requires the construction contractor to minimize construction-related aesthetic and visual quality disruption, and to prepare a technical memorandum identifying how the project will minimize construction-related aesthetic and visual quality disruption. To reduce disruption to nearby residents and motorists during the construction period, the construction contractor will also nighttime construction lighting and direct it downward in such a manner to minimize the light that will fall outside the construction site boundaries, as outlined in AVR-MM#2: Minimize Light Disturbance during Construction, and will prepare a technical memorandum to verify its implementation of these measures. With incorporation of these mitigation measures, the Preferred Alternative will not cause or contribute to a cumulative aesthetic and visual resources impact during construction.

The construction of the Preferred Alternative and cumulative projects will not result in a significant cumulative impact on visual quality, as the combination of these projects will not substantially degrade the existing visual quality.

The operational activities of the proposed improvements within the Bakersfield to Palmdale Project Section will not result in impacts on visual quality, as discussed in Section 3.16, Aesthetics and Visual Quality. Operation of the Preferred Alternative, in combination with cumulative projects, will not result in a cumulative impact that will be significant under CEQA.

5.16 Cultural Resources

Under the cumulative condition, cultural resources will continue to be affected in the urbanizing areas of the San Joaquin Valley and Antelope Valley due to growth, changes in land use, and other types of ground disturbance. Development in the urban areas will likely result in further unearthing of sensitive archaeological resources, disturbance of traditional cultural properties, and removal of—or changes to—the historic character and settings of historic resources.

Prehistoric and historic archaeological sites will be affected during project construction activities. Burial sites are sometimes encountered during ground-disturbing activities.

Construction of the Preferred Alternative, in combination with other cumulative projects, will result in a significant cumulative impact on archaeological resources because it will potentially expose and disrupt these resources. Development in the urban areas will likely result in further unearthing of sensitive archaeological resources, disturbance of traditional cultural properties, and removal of—or changes to—the historic character and settings of historic resources. Prehistoric and historic archaeological sites will be affected during project construction activities. Prehistoric sites are common in riverbank and floodplain areas, and burial sites are sometimes encountered during ground-disturbing activities. It is likely that known and unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities associated with the Preferred Alternative and other past, present, and reasonably foreseeable projects. Linear projects that require extensive excavation, such as the Fresno to Bakersfield Section north of the Preferred Alternative and the Palmdale to Burbank Project Section to the south have the potential to cause substantial adverse change to archaeological resources. Significant and unavoidable losses of unique archaeological resources (as defined in Public Resources Code Section 21083.2) or a historical resource (as defined in Section 21083.2 of CEQA and Section 15064.5 of the CEQA Guidelines) could occur if excavation exposes archaeological deposits that cannot be effectively removed or recovered due to the circumstances of their exposure (e.g., in railroad rights-of-way or urbanized settings) or if recovery will not be sufficient to prevent the loss of significant cultural resources. The Preferred Alternative's incremental contribution to this impact will be 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 (Section 8 of this document) support certification of the Final EIR/EIS and approval of the project.

As discussed in Section 3.19, Cumulative Impacts, in the Final EIR/EIS, the operational activities of the Preferred Alternative will not result in impacts on cultural resources.

6 FEASIBILITY OF POTENTIAL ALTERNATIVES

CEQA requires the lead agency, the Authority, to consider a reasonable range of potentially feasible alternatives to the proposed project (Public Resources Code, §§ 21002, 21081; see also CEQA Guidelines, § 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, § 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, § 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 a 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” (Public Resources Code, § 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, § 185030).”
- The purpose of the statewide HSR system 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 Authority’s prior Tier 1 determination that serving Palmdale, rather than bypassing it, is an important component of the statewide HSR system.
- The underlying purpose of the Bakersfield to Palmdale Project Section is to implement the Bakersfield to Palmdale Project Section of the California HSR System to provide the public with electric-powered high-speed rail service that provides predictable and consistent travel times between major urban centers consistent with Proposition 1A, and connectivity to airports, mass transit, and the highway network connecting the San Joaquin Valley to the Antelope 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 overused Interstate highways and commercial airports
 - Meet future intercity travel demand that will 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 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 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

The Findings prepared for the Authority's 2018 decision for the Fresno to Bakersfield Locally Generated Alternative extended from Poplar Avenue in the City of Shafter through the 34th Street and L Street intersection in Bakersfield, including the F Street Station. The Authority intentionally reserved making a decision on the alignment from south of the F Street Station to Oswell Street (F-B LGA alignment) to its future action on the Bakersfield to Palmdale Project Section.

The Draft EIR/EIS thus evaluated the No Project Alternative and Alternatives 1, 2, 3, and 5 (which each included the F-B LGA Segment) and two design options: the CCNM Design Option and the Refined CCNM Design Option. Additionally, the Draft EIR/EIS evaluated three potential double-ended maintenance facility sites for the Bakersfield to Palmdale Project Section: Lancaster North A, Lancaster North B, and Avenue M. Alternatives 1, 3, and 5, the CCNM Design Option, and Lancaster North A and North B sites were not selected for approval and are discussed below. These alternatives and design options are described in detail in Chapter 2 of the Final EIR/EIS.

6.1.1 The No Project Alternative

The No Project Alternative would result in no construction and no operation of the HSR system south of the Bakersfield F Street Station to Palmdale. The No Project Alternative is contrary to the Authority's 2005 programmatic decision to choose the HSR system to meet the state's

transportation demands instead of expanding airports or freeways, or doing nothing. It is also contrary to the Authority's Revised 2020 Business Plan, which emphasizes establishing an interim early HSR service in the Central Valley and expanding to the south. The No Project Alternative would not meet any of the project objectives, would not meet the project's underlying fundamental purpose, and would not allow the Authority to comply with its statutory mandate to "prepare a plan for the construction and operation of a high-speed train network for the state" (Public Utilities Code, §185032) and of Proposition 1A (Streets and Highways Code Section 2704, et seq.) to develop an HSR project. The Authority therefore finds the No Project Alternative is infeasible and rejects it on that basis.

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

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 four B-P Build Alternatives. Furthermore, many impacts on the natural environment and community resources would be the same, or very similar, across all four B-P 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 the four B-P Build Alternatives, to identify a Preferred Alternative, various differentiators were determined based on stakeholder, agency, and community input.

The Authority weighed all of the issues, including natural resource and community impacts, the input of the communities along the route, the views of federal and state resource agencies, project costs, constructability, and differentiators to identify what the Authority believes is the best alternative to achieve the project's Purpose and Need. Table 8-A-1 in Appendix 8-A and Section 8.3.1.2 in the Final EIR/EIS provide a comparison of the various criteria evaluated for the B-P Build Alternatives. Some of these factors include comparable or fewer impacts to natural resources and community impacts along the route. For example, the Preferred Alternative was farther from key community resources in the community of Edison and had fewer grade separation impacts than any other alternative while still having the least or among the least impacts across many other environmental criteria such as natural resources and other community impacts.

6.1.2.1 Alternative 1

Although Alternative 1 would result in the least construction-related property tax revenue losses of the Alternatives evaluated in the Final EIR/EIS and would result in one fewer significant and unavoidable impact related to decreased visual quality along the alignment when compared to the Preferred Alternative, Alternative 1 was rejected as the Preferred Alternative because:

- Alternative 1 would result in 42 more severe residential noise impacts than the Preferred Alternative.
- Alternative 1 would impact 1 more oil well than the Preferred Alternative.
- Alternative 1 would affect more acres of special-status plant and wildlife habitat than the Preferred Alternative.
- Alternative 1 would result in impacts to more modeled federal/state threatened and endangered species habitat than the Preferred Alternative.
- Alternative 1 would impact 1 more potential environmental concern site (hazardous materials) than the Preferred Alternative.
- Alternative 1 would result in 14 more partial agricultural parcel acquisitions than the Preferred Alternative.
- Alternative 1 would result in 4 more temporary road closures than the Preferred Alternative.
- Alternative 1 would result in the conversion of more Important Farmland acreage than the Preferred Alternative.

6.1.3 Alternative 3

Although Alternative 3 would result in the impacts to 1 fewer substation, would impact the fewest acres of special-status plant community habitat acres, would avoid direct impacts to the PCT, and would introduce the least amount of impervious surface to the project area compared to the Preferred Alternative, Alternative 3 was rejected as the Preferred Alternative because:

- Alternative 3 would result in 40 more severe residential noise impacts than the Preferred Alternative.
- Alternative 3 would impact 1 more oil well than the Preferred Alternative.
- Alternative 3 would affect more acreage of special-status plant and wildlife habitat than the Preferred Alternative.
- Alternative 3 would impact 1 more potential environmental concern site than the Preferred Alternative.
- Alternative 3 would result in 1 additional residential displacement than the Preferred Alternative.
- Alternative 3 would result in 14 more partial agricultural parcel acquisitions than the Preferred Alternative.
- Alternative 3 would result in 4 more temporary road closures than the Preferred Alternative.
- Alternative 3 would result in the conversion of more Important Farmland acreage than the Preferred Alternative.

6.1.4 Alternative 5

Although Alternative 5 would result in fewer acres of impact to waters and wetlands, including approximately 5.6 acres of state waters (all of which are artificial watercourses - Ditches and Detention/Retention Basins), would impact fewer potential environmental concern sites, would result in the least construction-related economic effects on agricultural revenue when compared to the Preferred Alternative, Alternative 5 was rejected as the Preferred Alternative because:

- Alternative 5 would result in 140 more severe residential noise impacts than the Preferred Alternative.
- Alternative 5 would impact 1 more oil well than the Preferred Alternative.
- Alternative 5 affect more acreage of special-status plant and wildlife habitat than the Preferred Alternative.
- Alternative 5 would impact the Los Angeles County Sheriff's Department Lancaster Station, requiring the construction of a new Sheriff's Station, which would not be required under the Preferred Alternative.
- Alternative 5 would result in 95 additional residential displacements than the Preferred Alternative.
- Alternative 5 would result in 54 additional business displacements than the Preferred Alternative.
- Alternative 5 would result in 14 more partial agricultural parcel acquisitions than the Preferred Alternative.
- Alternative 5 would displace the Grace Resources Center, University of Antelope Valley, and Iglesia de Cristo, none of which would be displaced under the Preferred Alternative.
- Alternative 5 would displace more *de facto* affordable housing in motels in Lancaster and Palmdale than the Preferred Alternative.
- Alternative 5 would result in 4 more temporary road closures than the Preferred Alternative.

- Alternative 5 would result in approximately \$130,000 in annual construction-related sales tax revenue losses than the Preferred Alternative.
- Alternative 5 would result in the conversion of more Important Farmland acreage than the Preferred Alternative.

6.1.5 César E. Chávez National Monument Design Option

In 2017 and 2018, the Authority and FRA conducted Section 106 consultation for La Paz, and alignment options were studied that would avoid and minimize adverse noise and visual effects on the National Historic Landmark. In 2018, the Authority issued the Avoidance and Minimization Options Screening Memorandum for the César E. Chávez/Nuestra Señora Reina de la Paz National Historic Landmark (Authority and FRA 2018), which evaluates five potential design options (of which the CCNM Design Option was one option) developed to avoid or minimize impacts on the CCNM. This process resulted in the CCNM Design Option for the project section.

The CCNM Design Option is near La Paz in the community of Keene and would diverge from Alternatives 1, 2, 3, and 5 at approximately 1.05 miles northwest of the intersection of East Bear Mountain Boulevard and SR 58 and would rejoin all of the B-P Build Alternatives 0.04 mile northeast of Burnett Road in Tehachapi. In the vicinity of La Paz, the CCNM Design Option would transition from a 0.63-mile tunnel, run at grade for 0.15 mile, and then transition to a 0.42-mile-long viaduct and cross over Woodford-Tehachapi Road. The CCNM Design Option would be 0.31 mile farther east from the property line of La Paz than would Alternatives 1, 2, 3, and 5. The CCNM Design Option would include an approximately 2,800-foot-long, and minimum 12-foot-high sound barrier along the guideways. The CCNM Design Option was rejected as the preferred design option because it did not avoid adverse effects at La Paz.

6.1.6 Lancaster North A and Lancaster North B Maintenance Site

The reasons for the Lancaster North site being rejected as the preferred MOWF location include the following: (1) the Authority's requirement for maintenance facilities to have freight rail access for delivery of materials (Lancaster North is approximately 1 mile west of freight rail and would require a bridge over SR14, leading to higher costs and greater impacts than Avenue M); (2) the southerly location of the MOWF at Avenue M rather than Lancaster North would improve connectivity to the Palmdale Station and HSR project sections to the south of Palmdale; and (3) the Lancaster North would require a permanent footprint of 212 acres compared to Avenue M, which would require 177 acres.

6.1.7 Findings on Final EIR/EIS Alternatives Not Adopted

The selection of the Preferred Alternative reflects a careful balance by the Authority among the factors summarized above and discussed in Chapter 8 of the Final EIR/EIS. The Authority finds Alternatives 1, 3, and 5, the CCNM Design Option, and the Lancaster North A and B Maintenance site do not offer a substantial environmental advantage over the Preferred Alternative. The Authority further finds that the specific economic, social, technological and other considerations discussed in Chapter 8 of the Final EIR/EIS and summarized above make infeasible Alternatives 1, 3, and 5, the CCNM Design Option, and the Lancaster North A and B Maintenance site.

6.2 Alternatives Suggested by Commenters

Comments on the Draft EIR/EIS suggested additional alternatives that the commenters believed merited consideration and analysis in the EIR/EIS. These include the following general proposals:

- Relocation of the F Street Station Platform
- Interstate 5 (I-5) Alternative
- Alternative route through 65th Street in Rosamond
- Tunnel Alternative through Bakersfield

If an EIR contains a reasonable range of alternatives, it is not deficient for excluding analysis of other potential alternatives suggested in comments by members of the public or agencies. The Authority finds that the Final EIR/EIS included a reasonable range of alternatives and that the

range of alternatives was sufficient to permit a reasoned choice. The Authority therefore finds that no further alternatives were required to be evaluated in the Final EIR/EIS beyond those presented in the Draft EIR/EIS and the Final EIR/EIS.

The Authority further finds that the alternatives suggested in comments are not environmentally superior, do not adequately meet the project purpose/objectives, and/or are infeasible considering the policy factors described in Section 6.1, for the reasons summarized below.

- **Relocation of the F Street Station Platform.** Comment 770-378, contained in Chapter 22 of the Final EIR/EIS, suggests that the Authority should consider relocation of the F Street Station platform. The Authority referenced Technical Memorandum 2.1.3, Turnouts and Station Tracks and Technical Memorandum 2.2.4, Station Platform Geometric Design, in determining the feasibility of relocating the F Street Station Platform. The planned length of the F Street Station platform is 1,400 feet. The station tracks that service the platforms will connect to the mainline tracks at a minimum of 2,450 feet from the center of the platform. In addition, there will be high-speed crossovers each side of the station track turnouts. These turnouts and crossovers must be located on tangent (straight) track and cannot be within 1,300 feet of a horizontal curve. Relocation of the station platforms would also require modification of the turnouts and crossovers, potentially resulting in additional residential and commercial displacements. Additionally, on October 16, 2018, the Authority Board certified the Fresno to Bakersfield Section Final Supplemental EIR and approved the portion of the F-B LGA from just north of Poplar Avenue in Kern County south to and including the F Street Station (specifically, to the intersection of 34th Street and L Street in Bakersfield). Additionally, the November 2019 Fresno to Bakersfield Section Final Supplemental EIS and Supplemental Record of Decision approved the F Street Station. The Authority therefore finds that this suggested alternative is not environmentally superior, does not offer a substantial environmental advantage, and would be less capable of meeting the project's underlying fundamental purpose and project objectives than the Preferred Alternative, and therefore rejects this alternative as infeasible.
- **I-5 Alternative.** Comments 778-427, 791-395, and 791-408, contained in Chapter 25 of the Final EIR/EIS, suggest that the Authority should consider an I-5 alignment for the HSR system. As explained in the Final EIR/EIS, Chapter 2, Section 2.3.12.1, an alignment that traveled south from Bakersfield along I-5 was studied in the 2005 Statewide Program EIR/EIS, but not selected to be carried forward for further Tier 2 study. The SR 58/Soledad Canyon Corridor was selected over the I-5 Corridor because although the longer Antelope Valley alignment will add about 10 minutes to express service travel times between Northern and Southern California and will have less intercity ridership (trips between regions) potential than the I-5 alignment option, it will have fewer potential environmental impacts (waters, wetlands, parklands), be less subject to seismic activity, and have considerably less tunneling. Therefore, the SR 58/Soledad Canyon Corridor will have fewer constructability issues and will more effectively increase connectivity and accessibility. In addition, the Authority determined in its Tier 1 decision that an important element of the statewide HSR system involved serving Palmdale with a station. (Authority 2012b). The Authority revisited the I-5 alignment south of Bakersfield in 2011, and determined its prior conclusions remained accurate (Authority 2012c). The Authority finds that this suggested alternative is not environmentally superior, does not offer a substantial environmental advantage, has greater constructability issues, and therefore rejects this alternative as infeasible.
- **Alternative Route through 65th Street in Rosamond.** Comment 796-538, contained in Chapter 26 of the Final EIR/EIS, suggests that the Authority should consider an alternative route through 65th Street in Rosamond. An alternate route through 65th Street in Rosamond would require the relocation of track leading to the 65th Street corridor that would potentially result in additional recreational, biological, and community impacts, including impacts to the Willow Springs International Raceway, which was determined eligible for listing in the NRHP in 2017 and for listing in the California Register of Historical Resources (CRHR) at the state level of significance. The Authority therefore finds that this suggested alternative does not

offer a substantial environmental advantage than the Preferred Alternative, and therefore rejects this alternative as infeasible.

- **Tunneling Alternative through Bakersfield.** Comment 799-676, contained in Chapter 26 of the Final EIR/EIS, suggests that the Authority should consider a below-grade option along Golden State Avenue to a downtown Bakersfield station. A below-grade option would result in additional excavation activities, either for tunneling or trenching, and would require substantial material export, potentially increasing construction-related impacts to issues such as air quality, GHGs, and noise. The Authority therefore finds that this suggested alternative does not offer a substantial environmental advantage than the Preferred Alternative, and therefore rejects this alternative as infeasible.

6.3 Alternatives Previously Considered and Not Carried Forward for Study in the Draft EIR/EIS

The Authority has undergone an extensive screening process for alternatives to study in the Draft EIR/EIS. The many potential alternatives considered but eliminated from detailed study are discussed in Section 2.3.12 of the Final EIR/EIS and summarized in Standard Response BP-Response-GENERAL-01: Alternatives in Chapter 17 of the Final EIR/EIS. The Authority finds that each potential alternative discussed in Chapter 2 and the Standard Response and not carried forward into the Final EIR/EIS for detailed study was appropriately eliminated. Such potential alternatives either failed to adequately meet the project purpose and need/project objectives, failed to offer a substantial environmental advantage to the alternatives studied in the Draft EIR/EIS, and/or were deemed to not be even potentially feasible from a cost, technical, or engineering perspective. The Authority therefore finds all such alternatives to be infeasible.

6.4 Preferred Alternative

The selection of the Preferred Alternative involves a series of tradeoffs and balancing considerations between the four B-P Build Alternatives (Alternatives 1, 2, 3, and 5) and the two design options (CCNM Design Option and Refined CCNM Design Option). Each of the alternatives present different types and degrees of environmental impacts.

Alternative 2 with the Refined CCNM Design Option, the Avenue M maintenance site and MOWF, and the Palmdale Station reflects the Authority’s outreach with local stakeholders to refine the HSR project to achieve positive outcomes for affected communities and the natural environment, while still meeting the overall project objectives consistent with voter-approved Proposition 1A. The Authority identified Alternative 2 with the Refined CCNM Design Option as the Preferred Alternative. The Preferred Alternative reflects the best balance of natural, environmental, and community resource impacts, as provided in Chapter 8 of the Final EIR/EIS and in the following discussion:

- **Community of Edison:**⁹
 - Alternative 2 will not require relocation of SR 58. This results in fewer impacts on access and also reduces the construction time period, which in turn, reduces the duration of construction-related impacts compared to Alternatives 1, 3, and 5.
 - With its location south of SR 58, Alternative 2 will be farther from key community resources, including Edison Middle School, low-income housing, and agricultural packing houses. This will reduce impacts related to noise, vibration, and access.

⁹ Alternatives 1, 3, and 5 have the same alignment in the community of Edison.

- **The Mojave Area, South of Tehachapi:**¹⁰
 - Alternative 2 will require 1 mile less of tunnel and will cross fewer BLM parcels. Furthermore, the alignment for Alternative 2 will avoid more future mining areas owned by the CalPortland Cement Company compared to the Alternative 3 alignment.
- **City of Lancaster:**¹¹
 - Alternative 2 will combine existing rail facilities into a narrower corridor while also providing room for any expansion needed by UPRR or Metrolink. This differentiation will eliminate the need to realign Sierra Highway in Lancaster. As a result, Alternative 2 will have fewer residential and commercial displacements in downtown Lancaster. Furthermore, Alternative 2 will affect fewer motels serving as *de facto* affordable housing in this area compared to Alternative 5.
 - Alternative 2 will also avoid impacts on two Section 4(f) resources in the Lancaster area—Whit Carter Park and Denny’s #30 (Village Grille).

Based on the evaluation of the key differentiators provided above, the Authority determined Alternative 2 is the Preferred Alternative and the best choice for the Bakersfield to Palmdale Project Section.

CEQA Guidelines Section 15126.6(e)(2), states that if the environmentally superior alternative is the No Project Alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives. For the reasons described in the Final EIR/EIS, the environmentally superior alternative is not the No Project Alternative. The HSR alternatives will provide benefits, such as reducing vehicle trips on freeways and reducing regional air pollutants that will not be realized under the No Project Alternative. CEQA does not require a lead agency to select the environmentally superior alternative as its preferred alternative. Nevertheless, the Preferred Alternative is the environmentally superior alternative. Implementing the HSR system will have adverse environmental impacts regardless of which alternative is selected, but overall, the Preferred Alternative is identified as the environmentally superior alternative. Specifically, as compared to Alternatives 1, 3, and/or 5, Alternative 2 will result in fewer impacts on the following resources:

- Section 4(f) properties
- Downtown areas
- Schools
- Disadvantaged communities
- Mining activities

Alternative 2 is more constructible because of the following:

- It does not require relocation of SR 58
- It has fewer miles of tunnel construction
- It has the fewest number of grade separations with local roadways

The Authority finds that the Preferred Alternative is the environmentally superior alternative overall that best meets the project purpose and need and project objectives.

6.5 Conclusion on Alternatives

In summary, the Authority finds that there are no feasible alternatives that will avoid or substantially lessen the significant adverse impacts of the Preferred Alternative that will remain after application of mitigation measures, while still meeting the project’s underlying purpose and project objectives. Because adverse environmental impacts remain, the Authority will adopt a Statement of Overriding Considerations, as discussed in the Chapter 7 of these Findings and SOC.

¹⁰ Alternatives 1, 2, and 5 have the same alignment in the Mojave area.

¹¹ Alternatives 1, 2, and 3 have the same alignment in the City of Lancaster.

7 MITIGATION MEASURES SUGGESTED BY COMMENTERS

Some of the comments on the Bakersfield to Palmdale Project Section Draft EIR/EIS suggested additional mitigation measures and/or modifications to the measures recommended in these documents. Some comments also suggested additions to the project that are not necessarily connected to an adverse environmental impact. The mitigation measures recommended in the Bakersfield to Palmdale Project Section Draft EIR/EIS represent the professional judgment of subject matter experts on reasonable and feasible approaches to reduce significant adverse environmental impacts. Nevertheless, in some instances, the Authority has incorporated suggestions from comments to refine or improve mitigation in the Final EIR/EIS. This discussion explains the reasons for not incorporating certain of the mitigation measures suggested in comments. 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 Bakersfield to Palmdale 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 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 HSR project
- 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 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 Not Caused by the HSR Project

The following mitigation measure was not adopted because the impact will not be caused by the HSR project.

- Mitigation measures that lease tracking rights during off-peak hours for the movement of freight.

The HSR project will not result in insufficient freight capacity on highways and rail. The mitigation measure is therefore not necessary.

7.1.2 Measure Addresses an Impact That is Less Than Significant

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

- The upgrade/reconstruction of bus stations along Sierra Highway affected by the Preferred Alternative.

Under the Preferred Alternative existing Sierra Highway will remain unchanged and will not require rerouting or displacing bus stops. The mitigation measure is therefore not necessary.

7.2 Section 3.4, Noise and Vibration

7.2.1 Measure Relates to a Significant and Unavoidable Environmental Effect of the Project

The following mitigation measure was not adopted because it is similar to, and does not otherwise offer clear environmental benefits over, the mitigation measures already incorporated and adopted by the Authority.

- Acquisition of entire parcel for which a significant and unavoidable noise impact remains after the implementation of proposed mitigation.

The suggested mitigation is similar to the Noise Mitigation Guidelines established by the Authority for the statewide HSR system. The Noise Mitigation Guidelines set forth three categories of mitigation measures to reduce or offset severe noise impacts from HSR operations: sound barriers, sound insulation, and noise easements. If a substantial noise reduction cannot be completed through installation of sound barriers or building sound insulation, the Authority will consider acquiring a noise easement on properties with a severe impact on a case-by-case basis. This would take the form of an easement over the receiver's real property. The suggested mitigation measure does not offer a substantial environmental advantage over the adopted measures in the Noise Mitigation Guidelines.

7.3 Section 3.7, Biological and Aquatic Resources

7.3.1 Measure Addresses an Impact That is Less Than Significant

The following recommended mitigation measure revision was not adopted because the impact was identified as less than significant.

- Provide additional connectivity to maintain genetic connectivity between the Sierra Nevada Mountains and the South and Central Coast region for mountain lions.

Mitigation Measures BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing and BIO-MM#78: Install Wildlife Jump-outs mitigate mountain lion and other species connectivity. Additionally, the Final EIR/EIS identified Mitigation Measures BIO-MM#84: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens, and BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat, which further inform mountain lion movement and compensation for impacts to mountain lion habitat. The mitigation measure is therefore not necessary.

- Provide quantitative and enforceable measures that will reduce the impacts to mountain lions.

Mitigation Measures BIO-MM#37: Minimize Effects to Wildlife Movement Corridors during Construction, BIO-MM#64: Establish Wildlife Crossings, BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing, BIO-MM#78: Install Wildlife Jump-outs, BIO-MM#84: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens, BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat, BIO-MM#86: Implement Lighting Minimization Measures During Construction, and BIO-MM#87: Implement Lighting Minimization Measures for Operations provide mitigation for minimizing effects to wildlife movement during construction and establishing wildlife fencing, jump outs, and preconstruction mountain lion den surveys, core and patch replacement, and minimizing lighting. The commenter's mitigation measure is therefore not necessary.

- Provide measures to assess habitat and avoid take of monarch butterfly.

Mitigation Measure BIO-MM#82: Avoid Direct Impacts to Monarch Butterfly Host Plants and BIO-MM#83: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Breeding and

Foraging Habitat mitigate impacts to monarch butterfly. The mitigation measure is therefore not necessary.

- Provide the creation of new crossing structures incorporate land overcrossings to facilitate movement of mountain lion and other wildlife.

The project design incorporates 39 wildlife crossings located to maintain permeability through the at-grade segments throughout the Bakersfield to Palmdale Project Section consistent with *Wildlife Crossing Structure Handbook* (Clevenger and Huijser 2009) and *Wildlife Crossings Guidance Manual* (Meese et al. 2009) recommendations where feasible. The designated wildlife crossings will be designed consistent with Section 7.3.4 of the Wildlife Corridor Assessment, Appendix I in the *Bakersfield to Palmdale Project Section Biological and Aquatic Resource Technical Report* (Authority 2018c). The mitigation measure is therefore not necessary.

- Provide camera station surveys for mountain lion tracking.

As discussed in the Final EIR/EIS (Response to Comment 988-1263, contained in Chapter 31 of the Final EIR/EIS) and as required by BIO-MM#84, the Authority will consult with CDFW and mountain lion experts to develop survey protocols to effectively identify denning mountain lion and establish appropriate protective disturbance buffers. The mitigation measure is therefore not necessary.

7.3.2 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.

- Increase mitigation ratios cited for compensatory mitigation for various plant and wildlife species.

The compensatory habitat mitigation ratios in the Final EIR/EIS, and supporting documents, are variable, ranging from 0.5:1 to 3:1, depending on the type and quality of the affected habitat. Furthermore, the ratios specified in the Final EIR/EIS are minimums and may be higher depending on the requirements of other permitting agencies, especially the wildlife agencies. The mitigation measure is therefore not necessary.

- Provide mitigation measures to address impacts to Joshua tree woodlands.

BIO-MM#1 requires pre-construction botanical surveys be conducted for special-status species and special-status plant communities (including Joshua tree woodland). Additionally, BIO-MM#2 calls for the implementation of a plan for salvage and relocation of special-status plant species, including but not limited to Joshua trees. The mitigation measure is therefore not necessary.

7.4 Section 3.12, Socioeconomics and Communities

7.4.1 Measure Addresses an Impact That is Less Than Significant

The following recommended mitigation measure revision was not adopted because the impact was identified as less than significant.

- Provide mitigation measures to address community bifurcation.

The impacts will be less than significant because the HSR project will provide adequate roadway overcrossings and undercrossings to facilitate pedestrian, bicycle, and vehicular circulation during construction, and the HSR project will also replace existing at-grade crossings with new grade-separated crossings to enhance mobility in affected communities by eliminating traffic delays. Because the HSR project will result in less-than-significant impacts related to the division of existing communities during construction and operation, mitigation is not required.

7.4.2 Measure Does Not Address an Impact on the Environment

The following mitigation measures were not adopted because the project impacts are not impacts on the environment.

- Develop a state-funded memorial facility/visitors center in Tehachapi
- Hold a “golden spike” ceremony in Tehachapi

The requests are not required to mitigate an environmental impact of the Preferred Alternative. The mitigation measures are therefore not necessary.

7.4.3 Measure Does 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 mitigation measures already incorporated and adopted by the Authority.

- Prepare a “blighting analysis” for the project

Impacts SO #14 and SO #23 in Section 3.12 of the Final EIR/EIS evaluate the project’s potential to result in permanent physical deterioration in communities along the HSR alignment. Impacts SO #14 and SO #23 will be less than significant with the implementation of the mitigation measures identified in Section 4.11 of these Findings and SOC. Furthermore, noise impacts are detailed in the Final EIR/EIS in Section 3.4, Noise and Vibration, visual impacts are detailed in Section 3.16, Aesthetics and Visual Quality, and appropriate mitigation is applied as required under CEQA.

7.5 Section 3.13, Station Planning, Land Use, and Development

7.5.1 Measure Relates to a Significant and Unavoidable Environmental Effect of the Project

The following mitigation measure was not adopted because it is similar to, and does not otherwise offer clear environmental benefits over, the mitigation measures already incorporated and adopted by the Authority.

- Acquisition and rezone of entire parcel for which a significant and unavoidable noise impact remains after the implementation of proposed mitigation.

The suggested mitigation is similar to the Noise Mitigation Guidelines established by the Authority for the statewide HSR system. The Noise Mitigation Guidelines set forth three categories of mitigation measures to reduce or offset severe noise impacts from HSR operations: sound barriers, sound insulation, and noise easements. If a substantial noise reduction cannot be completed through installation of sound barriers or building sound insulation, the Authority will consider acquiring a noise easement on properties with a severe impact on a case-by-case basis. This will take the form of an easement over the receiver’s real property. The mitigation measure does not offer a substantial environmental advantage over the adopted measures in the Noise Mitigation Guidelines.

7.6 Section 3.15, Parks, Recreation, and Open Space

7.6.1 Measure Does 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 mitigation measures already incorporated and adopted by the Authority.

- Provide mitigation measures to reduce visual impacts to the PCT.

Mitigation Measure AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements will be required to reduce impacts in the vicinity of the

PCT. This mitigation measure requires that the Contractor “plant the surface of the ground below overheads (slope-fill overheads), embankments, and retained fill elements with plant species that are consistent with the surrounding landscape (in terms of vegetative type, color, texture, and form) and based on their mature size and shape, growth rate, and drought tolerance.” This measure will ensure that fill slopes along the relocated Tehachapi Willow Springs Road be covered with plant material and planted with vegetation similar to nearby areas. The mitigation measure is therefore not necessary.

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8 STATEMENT OF OVERRIDING CONSIDERATIONS

The Bakersfield to Palmdale Project Section Final EIR/EIS, and the CEQA Findings of Fact conclude that implementing the Preferred Alternative for the Bakersfield to Palmdale 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. This Statement of Overriding Considerations is therefore necessary to comply with CEQA, Public Resources Code Section 21081, and CEQA Guidelines, §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 of implementing the Preferred Alternative, independently of the other described benefits, outweighs 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, the CEQA Findings of Fact contained herein, and 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 to the environment:

- **Air Quality and Global Climate Change¹²**
 - Impact AQ #1: Regional Air Quality Impacts During Construction
 - Impact AQ #2: Compliance with Air Quality Plans During Construction
 - Impact AQ #8: Cumulative Impacts During Construction
- **Noise and Vibration**
 - Impact N&V #3: Moderate and Severe Noise Impacts from Project Operation to Sensitive Receptors
 - Impact N&V #7: Noise from HSR Stationary Facilities
- **Socioeconomics and Communities**
 - Impact SO #5: Permanent Displacement and Relocation of Local Businesses from Construction
 - Impact SO #7: Permanent Displacement and Relocation of Community Facilities from Construction
- **Agricultural Land**
 - Impact AG #5: Permanent Conversion of Important Farmland to Nonagricultural Use
 - Impact AG #6: Creation of Remnant Parcels of Important Farmland
 - Impact AG #7: Permanent Impacts to Important Farmland Under Williamson Act or Farmland Security Zone Contracts, Local Zoning, or Agricultural Conservation Easement Land
- **Parks, Recreation, and Open Space**
 - Impact PK #6: Project Changes to Park or Recreation Facility Use or Character

¹² For some construction years, Impacts AQ #1, AQ #2, and AQ #8 could result in significant and unavoidable impacts for one criteria pollutant, carbon monoxide, within the SJVAPCD and AVAQMD as discussed in Section 4.2 of this Findings document. No exceedances would result during project operations.

- **Aesthetic and Visual Quality**

- Impact AVQ #3: Permanent Impacts Related to Construction of a Large High-Speed Rail Structure in these landscape units:
 - East Bakersfield Landscape Unit
 - Edison/Rural Valley Landscape Unit
 - Tehachapi Mountains West Landscape Unit
 - Tehachapi Valley Landscape Unit
 - Tehachapi Mountains East Landscape Unit
 - Rosamond Rural Landscape Unit

- **Cumulative Impacts**

- Construction of the Preferred Alternative will make a cumulatively considerable contribution to the cumulatively significant air quality impact of CO emissions, for which offset programs are not applicable.
- Operation of the Preferred Alternative will make a cumulatively considerable contribution to cumulatively significant noise impacts.
- Construction of the Preferred Alternative will make a cumulatively considerable contribution to cumulatively significant socioeconomics impacts and established patterns of interaction by directly displacing and/or relocating a number of residents, businesses, and community facilities.
- Construction of the Preferred Alternative will make a cumulatively considerable contribution to the cumulatively significant impact of conversion of Important Farmland to non-agricultural use.
- Construction of the Preferred Alternative will make a cumulatively considerable contribution to cumulatively significant impacts to archaeological resources.

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 Preferred Alternative 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. 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 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 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, and each one 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

As discussed in the Final EIR/EIS, 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 the Final EIR/EIS Section 3.2, Transportation, Section 3.3, Air Quality and Global Climate Change, and Section 3.6, Public Utilities and Energy). These benefits were derived based on the assumption in the Final EIR/EIS that the Bakersfield to Palmdale Project Section will be operational as part of the Phase 1 HSR system between San Francisco and Los Angeles/Anaheim. The following summarizes the conclusions of specific benefits that were disclosed in the Final EIR/EIS.

8.2.1.1 *Benefits from a Reduction in Vehicle Miles Traveled*

The Final EIR/EIS concluded that the HSR Phase 1 system will divert automobile trips to HSR trips, thus reducing statewide, regional, and local VMT. The reduction in both automobile and air travel VMT will provide benefits in the form of reduced congestion on both the state's highway system as well as at airports. Within the Kern and Los Angeles counties project vicinity, the regional VMT reduction was estimated at 1.772 billion daily VMT (2040 medium ridership scenario) to 2.436 billion daily VMT (2040 high ridership scenario), based on an assumption that the Bakersfield to Palmdale Project Section Preferred Alternative would be operating as part of Phase 1. In the Opening Year of Phase 1 HSR operations, VMT reductions will be less than in 2040, but still beneficial (Final EIR/EIS, Section 3.2, Impact TR # 5).

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

The transportation sector is responsible for about 40 percent of California's GHG emissions (CARB 2020). Emissions of criteria pollutants (CO, lead, nitrogen dioxide, particulate matter, O₃, and sulfur dioxide) and GHG emissions from motor vehicles are directly related to the amount of fuel burned and affect air quality in the San Joaquin Valley, Antelope Valley, and eastern Kern County. The San Joaquin Valley Air Basin exceeds federal and state air quality standards for O₃, and PM_{2.5}, and for the state's 1-hour O₃, 8-hour O₃, PM₁₀, and PM_{2.5} standards. The AVAQMD is currently designated as nonattainment for 8-hour O₃ and nonattainment for the state's O₃ (classified as extreme nonattainment) and PM₁₀ standards. The EKAPCD is currently designated nonattainment for federal 8-hour O₃ and nonattainment for the state's 1-hour O₃, 8-hour O₃, and PM₁₀ standards. The projected growth (Section 3.18, Regional Growth) in Kern and Los Angeles Counties will result in an approximately 18.5-percent increase in VMT by 2040 (Section 3.3, Air Quality and Global Climate Change in the Final EIR/EIS). Particulate matter levels are a direct function of the amount of driving, with road dust caused by moving vehicles accounting for 60 to 80 percent of particulate emissions from mobile sources. The continued increase in traffic will exacerbate the existing air quality problem and impede the region's ability to attain state and federal ambient air quality standards. Therefore, offering effective transportation choices (such as the HSR system) that can reduce VMT is critical for reducing these emissions.

Compared to travel by car or by air, an electric-powered HSR System will reduce CO₂ emissions. The HSR System will provide a more energy-efficient travel mode; a trip on the HSR System will use one-third the energy of a similar trip by air, and one-fifth the energy of a trip made by car (Bay Area Council Economic Institute 2008). In addition, the HSR System affords a new opportunity to

serve as the backbone of a comprehensive transportation network with connectivity between the statewide, regional, and local transit systems. Providing an interconnected network of alternative transportation options that support more concentrated development around major transit access points establishes a new framework for the state to integrate land use and transportation decision-making.

The Final EIR/EIS considered the air quality emissions associated with the Bakersfield to Palmdale Project Section Preferred Alternative. As shown in Tables 3.3-40 and 3.3-41 in the Final EIR/EIS, emission results indicate the Preferred Alternative, operating as part of the Phase 1 HSR system, will result in a net regional decrease in emissions of criteria pollutants. These decreases will be beneficial to the San Joaquin Valley Air Basin and the Mojave Desert Air Basin and help the basins meet their attainment goals.

The analysis in the Final EIR/EIS included the estimated change in emissions due to projected reductions of on-road VMT and intrastate air travel, and increases in electrical demand (required to power the HSR system) from Phase 1 HSR operations. Compared to the No Project Alternative in 2040, all air pollution emissions analyzed (i.e., CO, PM₁₀, PM_{2.5}, NO_x, and SO₂) will be substantially reduced at both a statewide and regional level. In the Opening Year of Phase 1 HSR operations, pollutant emissions reductions will be less than in 2040, but still beneficial (Final EIR/EIS, Section 3.3, Impact AQ # 9, Tables 3.3-40 and 3.3-41).

The potential to substantially reduce GHG emissions from the transportation sector was a foundational basis for the HSR system being included in the Assembly Bill 32 Scoping Plan as Measure # T-9 to help the state meet GHG emission reduction targets. The Phase 1 HSR system's statewide reduction in GHG emissions is estimated to be approximately 1.0 to 1.5 million metric tons per year of CO₂ emissions compared to the No Project Alternative in 2040. (Final EIR/EIS, Impact AQ # 10, Table 3.3-43.)

In the Opening Year of Phase 1 HSR operations, GHG emission reductions will be less than in 2040, but still beneficial (Final EIR/EIS, Section 3.3, Impact AQ # 10). The Preferred Alternative will further the GHG emission reductions goals in Assembly Bill 32, and will also be consistent with and help achieve the policy goals of Executive Order S-3-05 and SB 375.

SB 375 is one major tool being used to meet Assembly Bill 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 an SCS that supports the GHG emission reduction targets set by CARB. Because of the potential for increased transit-oriented development-type development and other land use planning benefits from HSR implementation in the project vicinity, the HSR project will be supportive of the Kern Council of Governments Sustainable Communities Strategy document (Kern Council of Governments 2014) and the Southern California Association of Governments Sustainable Communities Strategy document (Southern California Association of Governments 2016) by providing an HSR as a transportation opportunity with its associated benefits to land use patterns, which will contribute to the SCS document goals to meet SB 375 GHG reduction targets. The SCS completed by Kern Council of Governments (2018) and Southern California Association of Governments (2016) includes a California HSR that will connect with a robust network of intercity and commuter rail, subway and light rail, and fixed-route transit systems and therefore includes the analysis performed to demonstrate that *Kern Council of Governments' Regional Transportation Plan/SCS* and *Southern California Association of Governments' Regional Transportation Plan/SCS* meet the GHG emission reduction targets set by the California Air Resources Board per the requirements of SB 375.

8.2.1.3 Benefits from a Reduction in Energy Use

The Final EIR/EIS acknowledges that the Phase 1 HSR system will require electricity to operate, but it will nevertheless result in permanent net reduction in energy use because it will divert trips from transportation modes with higher energy use (commercial air flights and automobiles) to HSR, which has lower energy use.

The net change in energy use associated with the Preferred Alternative, as part of the Phase 1 HSR system, will be an energy savings of 15,503,159.75 million British thermal units per year in 2040 under the medium ridership scenario and 23,952,482.53 million British thermal units per year in 2040 under the high ridership scenario compared to the No Project scenario in 2040. In the Opening Year of Phase 1 HSR operations, energy use reductions will be less than in 2040, but still beneficial (Final EIR/EIS, Section 3.6, Impact PU&E # 17).

8.2.1.4 Other Environmental Benefits

The Authority has planned the Phase 1 HSR system by following existing transportation corridors to the maximum extent feasible as a way to avoid and minimize the potential for environmental impacts while still meeting the project's fundamental purpose and objectives. The Bakersfield to Palmdale Project Section meets the purpose and need and project objectives for improving the state's transportation options and meeting growing transportation demand, 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 2012e; Authority 2019c). The *2019 Equivalent Capacity Analysis Report* found that it will cost an estimated \$122 billion to \$199 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 will provide. Compared to the Phase 1 cost estimates, which range from \$69 billion to \$99 billion, investment in HSR is the more affordable choice (Authority 2019c, pp.1-2). Out of a total of 4,196 lane-miles from San Francisco to Los Angeles, the *2019 Equivalent Capacity Analysis* found California will need to construct over 1,400 lane-miles between Merced and Palmdale to match the people-carrying capacity of HSR.

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

As described in the Final EIR/EIS, Chapter 1, the Phase 1 HSR system, and the Preferred Alternative as part of the Phase 1 HSR system, will meet the need for a safe, reliable mode of travel that will link the major metropolitan areas of the state and deliver predictable, consistent travel times sustainable over time, even as the state's population grows. The capacity of California's intercity transportation system, including within the Bakersfield to Palmdale Project Section vicinity, is insufficient to meet existing and future travel demand. The current and project future transportation system congestion will continue to result in reduced reliability of travel and increased travel times. The transportation system has not kept pace with the tremendous growth in population, economic activity, and tourism in the state, including in the vicinity of the Bakersfield to Palmdale Project Section. The Interstate Highway System and commercial airports are at or near capacity, and will require major public investments to maintain and expand capacity. The feasibility of expanding capacity for major highways and airports is uncertain due to cost, political, and physical constraints (KPIX 2021; The Chronicle 2019; Voice of OC 2020). The HSR mode will divert trips from highway and air travel, and consequently reduce VMT, congestion, and travel delays on freeways and at airports. A key transportation benefit of the Preferred Alternative operating as part of the Phase 1 HSR System is reducing congestion and travel delays including on the SR 58, SR 14, and Sierra Highway corridors. Additionally, the piecemeal connectivity of conventional passenger rail in the state and the lack of a passenger rail connection between the San Joaquin Valley and Antelope Valley currently limits its use and ridership for intercity, statewide travel.

The Preferred Alternative operating as part of the Phase 1 HSR system also will provide quick, competitive travel times between California's major intercity markets. By providing a new intercity, interregional, and regional passenger mode, the Phase 1 HSR system will improve connectivity and accessibility to other existing transit modes and airports. Travel options for areas of the state with limited bus, rail, and air service for intercity trips, such as from the southern San Joaquin

Valley to the Los Angeles area, will be substantially improved. The change from vehicles to HSR will reduce daily auto trips and corresponding vehicle delay and congestion. The HSR System also provides system redundancy in cases of extreme events such as adverse weather or petroleum shortages (HSR trains are powered by electricity, which can be generated from non-petroleum fueled sources; most automobiles and airplanes currently require petroleum). The Phase 1 HSR System will provide a predominantly separate transportation system that will enable the state's transportation network to be less susceptible to many factors influencing reliability such as capacity constraints, congestion, and incidents that disrupt serve on any one model.

The Preferred Alternative operating as part of the Phase 1 HSR system will add capacity to the state's transportation infrastructure and reduce traffic on certain intercity highways and around airports to the extent that intercity trips are diverted to the HSR System. Within the Kern and Los Angeles Counties project area, the VMT reduction was estimated at 1.772 billion to 2.436 billion daily VMT (Final EIR/EIS, Section 3.2, Impact TR # 5). The Phase 1 HSR system also will decrease injuries and fatalities due to diversion of trips from highways, will improve connectivity, and will add a variety of connections to existing modes, additional frequencies, and greater flexibility.

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 the state 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 project forward.

8.2.2.2 Provides Passenger Rail and Transit Connectivity between Northern California and Los Angeles

Another benefit of the Preferred Alternative is that it connects the northern and southern portions of both the statewide rail and statewide HSR system, thereby closing the existing passenger rail gap that exists between Southern California and the rest of the state. This gap exists between the Los Angeles area and the southern San Joaquin Valley. Amtrak California™ does not provide a direct rail connection between Bakersfield and Palmdale. Passengers are required to board Amtrak connecting buses from Los Angeles County to the Amtrak station in Bakersfield, where they can board a train again to travel north. Greyhound offers bus service between Los Angeles and Bakersfield, but passengers must transfer (i.e., passengers traveling between Palmdale and Bakersfield must stop at the Newhall Metrolink Station in Santa Clarita and transfer to the Santa Clarita-Newhall connecting bus service). The frequency and travel times between these cities are not adequate to meet many travel needs. The gap in passenger rail service exists due to topographic challenges with the Tehachapi and San Gabriel mountains, which have made constructing a passenger rail line at a suitable grade difficult (Final EIR/EIS, Section 1.2.4, p. 1-12). The Preferred Alternative will provide Bakersfield, Lancaster, Palmdale, and other communities near the proposed HSR stations in the Bakersfield to Palmdale Project Section access to a new transportation mode, a passenger rail connection between Bakersfield and Los Angeles County. By bridging the state's passenger rail gap between the Central Valley and Antelope Valley, this project section will enable, for the first time, continuous passenger rail travel between Sacramento and Los Angeles County.

8.2.3 Intermodal Opportunities and Land Use Planning Benefits in Palmdale

The HSR Station in Palmdale will be a multimodal transportation hub, vastly enhancing existing transportation options in Palmdale, such as Metrolink and Greyhound bus service, by adding HSR, intercity buses, possible future bus rapid transit, light rail, and local transit under one roof. The HSR station in Palmdale will give residents of Palmdale a faster connection not only to the rest of the state, including the Central Valley and Northern California, but also to closer areas like the San Fernando Valley and Los Angeles. Further, the Palmdale Station provides a unique multimodal opportunity benefit because it will create a link to the anticipated HSR service from

Palmdale to Victorville and Las Vegas through a connection to the planned Brightline West service (City of Palmdale 2020b; Authority 2021b; Brightline West 2021).

These convenient links to other rail services will promote transit-oriented development by increasing ridership and pedestrian activity at these “hub” stations. A high level of accessibility and activity at the stations can make the nearby area more attractive for additional economic activity. HSR stations offer opportunities for host cities to increase infill development and redevelopment of downtown centers, which will reduce pressures for conversion of surrounding agricultural land to nonagricultural uses. The HSR system will promote transit-oriented, higher-density development around transit nodes as the key to stimulate infill development that makes more efficient use of land and resources, can better sustain population growth, and reduces development pressures on the surrounding agricultural lands. The increased density of development in and around urban HSR stations yields the additional public benefit of making public infrastructure improvements more cost-effective. As discussed in Impact AVQ #5 in the Final EIR/EIS, the Palmdale Station is expected to have beneficial indirect effects on visual quality by increasing the potential for new development and redevelopment in nearby areas, similar to what will occur for the Bakersfield F Street Station. This is expected to influence development patterns near the Palmdale Station and could result in new project and urban design improvements that will enhance the visual character and quality of these areas over time.

The City of Palmdale, in partnership with the Authority, has completed station area planning around a future High-Speed Rail Multimodal Transit Station in downtown Palmdale, and in December 2020 adopted the Palmdale Transit Area Specific Plan (City of Palmdale 2020a, 2020b). The City’s vision for the Palmdale Station area is:

The Palmdale HSR Station Area will be a gateway to the 21st Century for the City of Palmdale, bringing together people from Palmdale, the region and the southwestern states, celebrating a lifestyle that embraces the union of transportation, community, and the environment. It will be a vibrant mixed-use center that embodies the sustainable, physical, economic and social development of the area and be the catalyst for a more dynamic diverse and livable Palmdale (City of Palmdale 2021b).

The Palmdale Transit Area Specific Plan lays out important guidelines on how the 746 acres surrounding the future station can be developed to embody sustainable economic and social development, including minimum densities to ensure vacant or underutilized properties near the proposed station develop at a desirable pace. The Palmdale Station will spur economic development and growth for Palmdale by attracting new residential and commercial activities in the station area and helping to create a vibrant city center with active streetscapes that provide a comfortable, safe environment for pedestrians, bicycles, and vehicles, among other forms of transportation.

8.2.4 Economic and Social Benefits

8.2.4.1 Provides Employment and Economic Benefits

The Phase 1 HSR system will 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.

Revenue Benefits

As described in the Final EIR/EIS, construction of the Preferred Alternative will generate sales tax revenue gains for the Bakersfield to Palmdale region over the 8-year construction period that have been estimated at approximately \$25.3 million per year. These sales tax revenue gains will increase local government revenues during the construction period and provide an economic benefit (Final EIR/EIS, Section 3.12, Impact SO #15). During operation, the Preferred Alternative will generate sales tax in the region from both direct and indirect effects. The sales tax generation

associated with operation of the Preferred Alternative will exceed sales tax revenues lost from displacements (Final EIR/EIS, Section 3.12, Impact SO #24).

Economic Growth and Jobs

The Phase 1 HSR system will generate the equivalent of approximately 624,000 job years of employment, \$46 billion in labor income, and nearly \$131 billion in economic output (Authority 2020a, p. 4). Operations and maintenance of the Phase 1 HSR system will directly employ about 3,400 people by 2040 (Authority 2014, p. 60), and the potential statewide creation of about 400,000 long-term permanent jobs. Operation of the Phase 1 HSR system is estimated to create up to 3,800 direct jobs (Authority 2016, p. 90), and overall about 47,500 new jobs within the region. In addition, the HSR System will 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 will be approximately twice the cost of the HSR System to meet the future transportation demand, assuming this type of expansion is even feasible (Authority 2012a, p. 3-15).

Employment from construction of the Preferred Alternative will provide employment benefits in the region. It is estimated that about 154,600 1-year, full-time job equivalents will be created within Kern County and Los Angeles County over the construction period. Direct jobs in the construction sector comprise about 51 percent of the total estimate, or about 79,000 1-year, full-time job equivalents. Job creation is anticipated to be highest during the peak construction years of 2021–2022, requiring 32,300 to 33,700 workers annually, with about 16,500 to 17,200 of these as direct jobs in the construction sector and about 15,800 to 16,500 as indirect and induced jobs in other sectors (Final EIR/EIS, Section 3.18, p. 3.18-21).

Travel Benefits

A study on the impact of the Beijing to Shanghai HSR line found that increase of accessibility to a HSR station is associated with an increase in housing value in all cities. The study found a 10 percent reduction of travel time or distance to an HSR station is associated with a 0.09 and 0.08 percent increase in housing value in small to medium-sized cities, respectively (Authority 2021e). California housing markets in suburban and rural areas are expected to benefit from increased housing values as operations commence.

Additionally, a study of the *Shinkansen* for its first 11 years in operation estimated travelers saved 2,246 million hours of travel, the equivalent of 1 year of standard working time for 1.22 million people. The *Shinkansen* has proven quite effective in competition with air travel due to its more frequent service, lower cost, easier station access, greater reliability, and increased safety (Authority 2021e). HSR will connect remote communities to city centers and provide an alternate form of transportation that will result in decreased travel times.

Economic Advantages Related to Proximity to HSR Stations

Businesses that locate near an HSR station could operate more efficiently than businesses elsewhere (see Final EIR/EIS, Section 3.12). This competitive advantage may be pronounced in high-wage employment sectors that are frequently in high demand in many communities. HSR is a mode of transportation that can strengthen urban centers. In combination with supportive local land use policies, the increased accessibility afforded by the HSR system will encourage more intensive urban development and lead to higher property values around stations.

Experiences in other countries have shown that an HSR system will provide a location advantage to those areas near an HSR station because the HSR system will improve accessibility to labor and customer markets, potentially improving the competitiveness of the state's industries and the overall economy (SPUR Report 2011; Authority 2021e). However, estimating the number, magnitude, and distribution of households that may economically benefit from proximity to an HSR station would be speculative, because it involves many economic factors and individual preferences.

8.2.5 Benefits May Be Lower Initially than in 2040, but Will Build Over Time

The Authority's 2016, 2018 and 2020 Business Plans (Authority 2016, 2018, 2020a) 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 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 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 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 CO₂ equivalent, is projected to be the equivalent of taking 400,000 passenger vehicles off the road every year (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 and 2020 Business Plans (Authority 2018b, 2020a). The environmental benefit of powering the high-speed train with 100 percent renewable energy is substantial in terms of CO₂ 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 2020).

In summary, although benefits of the HSR system in the areas of VMT reduction, air pollution, 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 Merced to Fresno and Fresno to Bakersfield Project Sections

The Preferred Alternative also has numerous benefits that outweigh the unavoidable adverse impacts in the Bakersfield to Palmdale Project Section of the HSR System when considered with the previously approved Merced to Fresno and Fresno to Bakersfield Project Sections, even without considering other portions of the Phase 1 HSR system that are anticipated to be approved and constructed in the future.

8.3.1.1 *Expands the Initial HSR in the Central Valley and Provides Opportunity for Expanded Early Interim Service*

A benefit of the Preferred Alternative, considered in conjunction with the previously approved Merced to Fresno and Fresno to Bakersfield Project Sections, is that it connects to the 171-mile backbone of the system in the Central Valley and extends it another 80 miles. The Authority has construction under way in the southern Central Valley, which forms the foundation of the HSR system (Authority 2012a, 2014). The Authority's 2020 Business Plan and related studies support extending the 119 miles of HSR construction currently underway between Madera and north of Bakersfield to 171 miles of HSR connecting Merced, Fresno, and Bakersfield as part of an early interim HSR service in the southern Central Valley (2020 Business Plan, Chapter 4). Although further planning is needed, the studies indicate an initial HSR service in the Central Valley is a viable interim step toward the Phase 1 HSR system. The Preferred Alternative for the Bakersfield to Palmdale Project Section will contribute to realizing a viable initial HSR service by connecting the Central Valley to Palmdale, where the Palmdale Station will offer Metrolink connections to Los Angeles, even if funding for the HSR system between Palmdale and Los Angeles/Anaheim is not

immediately available (Authority 2021f). The Preferred Alternative for the Bakersfield to Palmdale Project Section thus serves as a critical foundation of the statewide HSR system.

8.3.1.2 Provides a New Expedited and Consistent Travel Option That Connects to Conventional Passenger Rail Service in Palmdale.

As discussed in the Authority's Business Plans, the Central Valley ranks as one of California's most underserved regions for rail transportation. The Central Valley is home to approximately 6 million residents and is becoming more prominent as the state's third regional economic engine. Fresno and Bakersfield, 2 of the 10 most populated cities in California, have experienced 20 percent population growth since 2000. The planned Merced to Bakersfield early interim HSR service will connect the three largest cities in the Central Valley and provide connections to existing and improved passenger rail and bus services to the north, west, and south of the Central Valley, reducing travel times by up to 100 minutes through the heart of California (Authority 2020b).

By connecting to the Merced to Bakersfield early interim HSR service and extending it to Palmdale, where a passenger can connect to Metrolink service to reach the Los Angeles Basin, the Preferred Alternative will provide reduced travel time within the Central Valley and between the southern Central Valley and the Antelope Valley. In addition, the Palmdale Station will provide direct connection to the existing Metrolink Antelope Valley Line providing direct rail service from Lancaster to Santa Clarita, Burbank, Glendale and ultimately Los Angeles Union Station in downtown Los Angeles. The Palmdale Station will also link with other bus providers currently providing services to other Southern California destinations through the Antelope Valley Transit Authority, Amtrak Thruway Bus, and Greyhound services. The new HSR mode will greatly improve transportation options for southern San Joaquin Valley, Antelope Valley, and Los Angeles Basin travelers.

8.3.1.3 Reduces Vehicle Miles Traveled

The Preferred Alternative will provide VMT reduction benefits by connecting to an initial Merced to Bakersfield HSR service even if the operation of the Phase 1 HSR system is delayed. The *California High-Speed Rail Early Train Operator Side-by-Side Study Quantitative Report* (Authority 2020b), Central Valley Segment Scenario 4, which includes operation of the HSR system from Merced to Bakersfield, shows a vehicle mile reduction of 283 million miles per year in the Opening Year (2028; Authority 2020b, p. 97). Based on a preliminary assessment by the Early Train Operator, extending the initial Merced to Bakersfield HSR service to Palmdale will increase reducing VMT by an additional 27.1 million miles per year (Authority 2020b).

8.3.1.4 Improves Air Quality in the Central Valley and Antelope Valley

Based on the statewide analyses, the Central Valley segment (Merced to Bakersfield) shows reductions in all criteria pollutants and GHGs prior to implementation of the full Phase 1 system. The addition of the Bakersfield to Palmdale segment to the Central Valley segment will continue to develop these emissions savings and is a key element to achieving the full emission reductions of the Phase 1 system (Authority 2021c).

8.3.1.5 Provides Economic and Social Benefits by Extending the Central Valley Construction to Palmdale

The Authority's current construction of the HSR alignment in the Central Valley is providing important economic benefits to the region. To date, more than 5,000 well-paying construction jobs have been created for women and men working at 35 construction sites in the Central Valley.

- 77 percent of the people employed on the project live and work in the region.
- More than 600 small businesses are working on the project, including:
 - 192 certified Disadvantaged Business Enterprises
 - 67 Certified Disabled Veteran Business Enterprises

According to an Authority analysis, implementing the Merced and Bakersfield capital program (i.e., the extensions) is projected to generate \$37.9 billion in total economic activity and 203,000

job-years of employment (Authority 2021d). According to Section 3.18.5.3 of the Final EIR/EIS, construction of the Preferred Alternative will generate 156,900 job-years of employment, extending the benefit into Palmdale.

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. The Preferred Alternative also offers considerable benefits when viewed in conjunction with extending the initial HSR service from Merced to Bakersfield to Palmdale. These benefits, however, are further augmented by the benefits that the Preferred Alternative offers on its own.

8.4.1 Transportation, Safety, and Noise Reduction Benefits of Grade Separations

The design of the Preferred Alternative will create a shared rail corridor in Lancaster and Palmdale with three railroads (HSR, Metrolink, and UPRR) operating alongside each other with dedicated track for HSR. To meet HSR design requirements for the Bakersfield to Palmdale Project Section, the Preferred Alternative includes grade separation for 10 existing at-grade roadway/railroad crossings in the Antelope Valley:

- Avenue G (Volume 3, Sheet ST-1022 of the Final EIR/EIS)
- Avenue I (Volume 3, Sheet ST-K1025A-B of the Final EIR/EIS)
- Lancaster Boulevard (Volume 3, Sheet ST-K1026A-C of the Final EIR/EIS)
- Avenue J (Volume 3, Sheet ST-K1028 of the Final EIR/EIS)
- Avenue K (Volume 3, Sheet ST-K1029 of the Final EIR/EIS)
- Avenue M (Volume 3, Sheet ST-K1031 of the Final EIR/EIS)
- Rancho Vista Boulevard (Volume 3, Sheet CV-R4003-PLM of the Final EIR/EIS)
- Sierra Highway (Volume 3, Sheet ST-K1023 of the Final EIR/EIS)
- Palmdale Boulevard (Volume 3, Sheet ST-J1205-PLM of the Final EIR/EIS)
- Avenue R (Volume 3, Sheet ST-J1401-PLM of the Final EIR/EIS)

These grade separations will separate the roadways from not only HSR, but from Metrolink and UPRR as well. The Preferred Alternative eliminates all at-grade railroad crossings from Avenue G to Avenue R, improving traffic flow across the rail corridor (Section 3.2, p. 3.2-61 of the Final EIR/EIS) and reducing noise through the elimination of train horn and crossing-gate noise (Section 3.4, p. 3.4-16 of the Final EIR/EIS). Elimination of the at-grade railroad crossings will also improve the reliability of emergency vehicle response times in Lancaster and Palmdale (Section 3.2, p. 3.2-64 of the Final EIR/EIS). Avenue Q, which does not currently cross the rail corridor, will now be connected across the rail corridor and will thereby provide traffic operational benefits in Palmdale (Table 3.2-22 of the Final EIR/EIS).

In the Marcel area, approximately 1.6 miles of SR 58 will be realigned to provide space for the HSR alignment. The California Department of Transportation (Caltrans) has planned projects to rehabilitate the pavement on this section of SR 58 and also add a truck climbing lane (Appendix 3.19-A, p. 3.19-A-3 of the Final EIR/EIS). The realignment of SR 58 provides an opportunity to make these roadway improvements as part of the HSR construction, which will result in more efficient use of taxpayer dollars.

The Preferred Alternative will also grade separate Morning Drive (SR 184) from the UPRR tracks to the east of Bakersfield. This grade separation will provide traffic, safety, and noise benefits to the local community (Section 3.2, p. 3.2-61 and Section 3.4, p. 3.4-16 of the Final EIR/EIS).

8.4.2 Benefits of Opportunity for Locally Developed Drainage Improvements in Palmdale and Rosamond

A portion of the Preferred Alternative alignment in Palmdale is in an area that is subject to flooding. The Preferred Alternative will include drainage improvements that will reduce the risk of

flooding, which will benefit other areas in Palmdale in addition to the HSR alignment (Section 3.8, p. 3.8-82 of the Final EIR/EIS).

The Preferred Alternative alignment through Rosamond crosses flat desert topography that is subject to sheet-flow flooding during heavy rain events. While the Preferred Alternative is designed to maintain this sheet flow condition, it provides an opportunity for additional flood control improvements to be made on the east (downstream) side of the alignment that could reduce flooding risk to the community of Rosamond.

8.4.3 Benefits of Restoring Oak Creek to a Natural Condition

The Preferred Alternative will realign Tehachapi Willow Springs Road where it crosses Oak Creek. Tehachapi Willow Springs Road currently crosses Oak Creek on an embankment, with a pipe culvert passing flows under the road. The Preferred Alternative will place the realigned Tehachapi Willow Springs Road on a bridge over Oak Creek. The existing embankment will be removed and that section of Oak Creek will be restored to a natural condition (Volume 3, Sheet ST-K1019E of the Final EIR/EIS).

8.5 Conclusion

The Preferred Alternative for the Bakersfield to Palmdale 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 Bakersfield to Palmdale Project Section as part of the Phase 1 HSR system (Section 8.2), in connection with the previously approved Merced to Fresno and Fresno to Bakersfield project sections (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 Alternatives' substantial environmental benefits, which render the unavoidable adverse environmental effects acceptable.

9 REFERENCES

- Bay Area Council Economic Institute. 2008. California High-Speed Rail Economic Benefits and Impacts in the San Francisco Bay Area. October.
- Brightline West. 2021. <https://www.gobrightline.com/west-coast-expansion> (accessed June 2021).
- California Air Resources Board. 2008. *Climate Change Scoping Plan: A Framework for Change Pursuant to AB 32, the California Global Warming Solutions Act of 2006*. October 2008. <https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/psp.pdf>.
- . 2014. First Update to the Climate Change Scoping Plan. https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf (accessed March 2016).
- . 2017. Short-Lived Climate Pollutant Reduction Strategy.
- . 2020. GHG Current California Emission Inventory Data. <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed July 2020).
- California Department of Fish and Wildlife (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. March 2012.
- California Environmental Protection Agency and California Air Resources Board (Cal-EPA and CARB). 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. Sacramento, CA. April 2005.
- California High-Speed Rail Authority (Authority). 2008. 2008 Business Plan. November.
- . 2009. Independent Utility Memorandum. February 10, 2009.
- . 2011. Technical Memorandum 200.6, Aesthetic Guidelines for Non-Station Structures.
- . 2012a. *Revised 2012 Business Plan*, adopted April 12, 2012, and supporting reports.
- . 2012b. Bakersfield to Palmdale Section Supplemental Alternatives Analysis Report Volume 1. February 2012. www.hsr.ca.gov/docs/programs/statewide_rail/proj_sections/Bakersfield_Palmdale/Agenda_Item_5_Attachment_AA_Report_Volume_1.pdf.
- . 2012c. Conceptual Study of I-5 Corridor. January 2012.
- . 2012d. Resolution #HSRA 12-01. January 2012.
- . 2012e. Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes. April. https://hsr.ca.gov/docs/about/business_plans/BPlan_2012CompareEquivalentCapacity.pdf (accessed April 2021).
- . 2014. *2014 Business Plan*, adopted April 10, 2014, and supporting reports.
- . 2016. *2016 Business Plan*, adopted April 28, 2016, and supporting reports.
- . 2017. *Memorandum concerning High-Speed Rail Operating and Maintenance Cost for Use in EIR/EIS Project-level analysis*. From Travel Demand Forecasting Manager, California High-Speed Rail Authority to Regional Consultant Teams, February 6, 2017.f
- . 2018a. Fresno to Bakersfield Section Final Supplemental Environmental Impact Report. October 2018.
- . 2018b. *2018 Business Plan*, June 1, 2018, and supporting reports.
- . 2018c. *Bakersfield to Palmdale Project Section Biological and Aquatic Resources Technical Report*.
- . 2019a. *Bakersfield to Palmdale Project Section Noise and Vibration Technical Report*.
- . 2019b. Fresno to Bakersfield Section Final Supplemental Environmental Impact Statement. October 2019.

- _____. 2019c. *2019 Equivalent Capacity Analysis Report*. December 2019.
- _____. 2020a. *2020 Business Plan: Delivering the Vision*.
- _____. 2020b. *California High-Speed Rail Early Train Operator Side-by-Side Study Quantitative Report*. February 8, 2020. https://hsr.ca.gov/docs/about/business_plans/2020_Business_Plan_Side_by_Side_Study_Quantitative_Report.pdf (accessed April 2021).
- _____. 2021a. *Memorandum of Agreement Among the California High-Speed Rail Authority, the Surface Transportation Board, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Bakersfield to Palmdale Project Section of the California High-Speed Rail Program, Kern and Los Angeles Counties, California*
- _____. 2021b. *Regional Newsletter: Brightline West Moving Fast on High-Speed Rail to Las Vegas*.
- _____. 2021c. *Air Quality Benefits of a Merced-Palmdale HSR System*. Memorandum from Alice Lovegrove and Eddie Tadross to Bryan Porter dated July 7, 2021.
- _____. 2021d. *The Economic Impact of California High-Speed Rail*. https://hsr.ca.gov/wp-content/uploads/2021/04/Economic_Impact.pdf (accessed June 2021).
- _____. 2021e. *HSR Benefits Literature Review*. May 2021.
- _____. 2021f. *Potential Ridership and Revenue Impacts of a Palmdale Extension of the Central Valley Segment*. Memorandum to Stefan Reul. June 2, 2021.
- California High-Speed Rail Authority and Federal Railroad Administration (Authority and FRA). 2005. *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System*. Vol. 1, Report. Sacramento, CA, and Washington, D.C. August 2005.
- _____. 2008. *Bay Area to Central Valley HST Program Environmental Impact Report/Environmental Impact Study*. May 2008.
- _____. 2011. *Programmatic Agreement among the USDOT Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the California High-Speed Train Project*. June 15, 2011. Sacramento, CA.
- _____. 2012. *Bay Area to Central Valley High-Speed Train Partially Revised Final Program Environmental Impact Report (EIR)*. Sacramento, CA. April 2012.
- _____. 2014. *Fresno to Bakersfield Section Final Environmental Impact Report/Environmental Impact Statement*. May 2014.
- _____. 2017a. *Fresno to Bakersfield Section Draft Supplemental Environmental Impact Report/Environmental Impact Statement*. November 2017.
- _____. 2017b. *Fresno to Bakersfield Section Draft Supplemental Environmental Impact Report/Environmental Impact Statement: Noise and Vibration Technical Report*. May 2017.
- _____. 2018. *Avoidance and Minimization Options Screening Memorandum for the César E. Chávez/Nuestra Señora Reina de la Paz National Historic Landmark*. January 2018,
- City of Bakersfield. 2018. *Draft Making Downtown Bakersfield Station Area Vision Plan*. January 2018. http://www.bakersfieldcity.us/gov/depts/community_development/planning_division/making_downtown_bakersfield/plan_documents.htm (accessed December 2020).
- City of Palmdale. 2020a. *Palmdale Transit Station Area Plan Initial Study*.
- _____. 2020b. *Palmdale Transit Area Specific Plan*. October.

- Clevenger, Tony and Marcel P. Huijser. 2009. *Handbook for design and evaluation of wildlife crossing structures in North America*. Western Transportation Institute, Montana State University.
- County of Kern. 2007. Kern County General Plan Land Use, Open Space, and Conservation Element. Kern County Planning & Development.
- County of Los Angeles. 2015. Los Angeles County General Plan 2035. Los Angeles County Department of Regional Planning. October 6, 2015.
- Federal Railroad Administration (FRA). 2012. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. September 2012. Washington, D.C.: U.S. Department of Transportation.
- Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*.
- Kern Council of Governments (Kern COG). 2014. *Regional Transportation Plan/Sustainable Communities Strategy*. Bakersfield, CA. June 19, 2014.
- KPIX. 2021. *Neighbors Fighting Livermore Airport Expansion Due to Potential Noise from 737s*. March 3, 2021.
- KPMG. 2020. California High-Speed Rail Merced to Bakersfield Business Case Study. February 2020. https://hsr.ca.gov/docs/about/business_plans/2020_Business_Plan_Business_Case_Assessment_Study.pdf (accessed April 2021).
- Meese, R.J., Shilling, F.M., Quinn, J.F. 2009. *Wildlife Crossings Guidance Manual*. California Department of Transportation, Sacramento, CA.
- Office of Planning and Research. 2017. *Transportation Impacts (SB 743)*. <http://opr.ca.gov/ceqa/updates/sb-743/> (accessed July 2020).
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2007a. 2007 Ozone Plan. April 2007. www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_Ozone2007.htm (accessed July 2020).
- . 2011. "Emission Reduction Incentive Program." Fresno, CA: SJVAPCD, 2011. http://www.valleyair.org/Grant_Programs/GrantPrograms.htm (accessed July 2020).
- . 2015. Guidance for Assessing and Mitigating Air Quality Impacts. March 19. www.valleyair.org/transportation/GAMAQI_3-19-15.pdf (accessed June 9, 2015).
- Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines. *Society of Vertebrate Paleontology News Bulletin* 163:22–27.
- . 1996. Conditions of Receivership for Paleontologic Salvage Collections. *Society of Vertebrate Paleontology News Bulletin* 166:31–32.
- South Coast Air Quality Management District (SCAQMD). 2017. Final 2016 Air Quality Management Plan. March. <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15> (accessed August 2020).
- Southern California Association of Governments. 2016. *The 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. Diamond Bar, CA. April 2016.
- SPUR Report. 2011. *Beyond the Tracks: The Potential of High-Speed Rail to Reshape California's Growth*. January 2011.
- The Chronicle. 2019. *Locals Oppose New Plans to Expand Burbank Airport*. March 24, 2019.

- USDOT Federal Railroad Administration (FRA), High-Speed Rail Authority (Authority), Surface Transportation Board, U.S. Army Corps of Engineers, Sacramento District, California State Historic Preservation Officer, and Advisory Council on Historic Preservation. 2014. *Memorandum of Agreement Among the USDOT Federal Railroad Administration, California High-Speed Rail Authority, the Surface Transportation Board, the U.S. Army Corps of Engineers, Sacramento District, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Fresno to Bakersfield Section of the California High-Speed Train System in Fresno, Kings, Tulare, and Kern Counties*. May. Washington, D.C.
- U.S. Fish and Wildlife Service (USFWS). 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*.
- . [1999] 2011. *Standardized Recommendations for Protection of the San Joaquin Kit Fox*.
- . 2012. *Survey Protocol for Determining Presence of the Buena Vista Lake Ornate Shrew*.
- . 2013. *Biological Opinion on the California High-Speed Train System: Fresno to Bakersfield Project, Fresno, Tulare, Kings, and Kern Counties*. Sacramento, CA. February 28, 2013.
- Voice of OC. 2020. *OC Supervisors Move Forward on John Wayne Airport Jet Space Plans as Public Concerns Remain*. August 11, 2020; updated December 8, 2020.

ATTACHMENT A: MITIGATION MEASURES

The following presents the full text of each mitigation measure listed and discussed above.

A.1 Fresno to Bakersfield Locally Generated Alternative Mitigation Measures (34th and L Street to Oswell Street in Bakersfield)

A.1.1 Referenced F-B LGA Mitigation Measures for Noise and Vibration

F-B LGA N&V-MM#1: Construction Noise Mitigation Measures. During construction the contractor will monitor construction noise to verify compliance with the noise limits shown in Table 3.4-1 of the Fresno to Bakersfield Final EIR/EIS. The contractor would be given the flexibility to meet the FRA construction noise limits in the most efficient and cost-effective manner. This would be done by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. A noise-monitoring program will be developed to meet required noise limits, and the following noise control mitigation measures will be implemented as necessary, for nighttime and daytime:

- Install a temporary construction barrier near the noise source.
- Avoid nighttime construction in residential neighborhoods.
- Locate stationary construction equipment as far as possible from noise-sensitive sites.
- Re-route construction traffic along roadways that will cause the least disturbance to residents.
- During nighttime work, use smart backup alarms, which automatically adjust the alarm levels based on the background noise level, or switch off back-up alarms and replace with spotters.
- Use low-noise emission equipment.
- Implement noise-deadening measures for truck loading and operations.
- Monitor and maintain equipment to meet noise limits.
- Line or cover storage bins, conveyors, and chutes with sound-deadening material.
- Use acoustic enclosures, shields, or shrouds for equipment and facilities.
- Use high-grade engine exhaust silencers and engine-casing sound insulation.
- Prohibit aboveground jackhammering and impact pile driving during nighttime hours.
- Minimize the use of generators to power equipment.
- Limit use of public address systems.
- Grade surface irregularities on construction sites.
- Use moveable sound barriers at the source of the construction activity.
- Limit or avoid certain noisy activities during nighttime hours.

To mitigate noise related to pile driving, the use of an auger to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.

F-B LGA N&V-MM#2: Construction Vibration Mitigation Measures. Building damage from construction vibration is only anticipated from impact pile driving at very close distances to buildings. If pile driving occurs more than 77 feet from fragile or historic buildings, 55 feet from residential structures, or if alternative methods such as push piling, auger piling, or cast-in-drill-hole can be used, damage from construction vibration is not expected to occur. Other sources of construction vibration do not generate high enough vibration levels for damage to occur. When a construction scenario has been established, preconstruction surveys are conducted at locations within 50 feet of pile driving to document the existing condition of buildings in case damage is

reported during or after construction. The Authority will arrange for the repair of damaged buildings or will pay compensation to the property owner.

F-B LGA N&V-MM#3: Implement Proposed California High-Speed Train Project Noise Mitigation Guidelines. To determine the appropriate mitigation measures for properties experiencing severe noise impacts, noise mitigation guidelines would be applied as follows:

- Prior to operation of the HSR, the Authority will install sound barriers where they can achieve between 5 and 15 A-weighted decibel (dBA) of noise reduction, depending on their height and location relative to the tracks. The primary requirements for an effective sound barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of 4 pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for sound barriers (examples are shown in Figure 3.4-14 of the Final EIR/EIS; diagrams and placement information can be found in Volume III Section H: Record Set PEPD Design Submission Sound Barrier Plans of the Final Supplemental EIR). Depending on the situation, sound barriers can become visually intrusive. Typically, the sound barrier's style is selected with input from the local jurisdiction to reduce the visual effect of barriers on adjacent lands uses. For example, sound barriers could be solid or transparent, and made of various colors, materials, and surface treatments.
- The minimum number of affected sites should be at least 10, and the length of a sound barrier should be at least 800 feet. The maximum sound barrier height would be 14 feet for at-grade sections; however, all sound barriers would be designed to be as low as possible to achieve a substantial noise reduction. Berm and berm/wall combinations are the preferred types of sound barriers where space and other environmental constraints permit. On aerial structures, the maximum sound barrier height would also be 14 feet, but barrier material would be limited by engineering weight restrictions for barriers on the structure. Sound barriers on the aerial structure will still be designed to be as low as possible to achieve a substantial noise reduction. Sound barriers on both aerial structures and at-grade structures could consist of solid, semitransparent, or transparent materials.
- The Authority will work with the communities to identify how the use and height of sound barriers would be determined using jointly developed performance criteria. Other solutions may result in higher numbers of residual impacts than reported herein. Options may be to reduce the height of sound barriers and combine barriers with sound insulation or to accept higher noise thresholds than the FRA's current noise thresholds.
- If sound walls are not proposed or do not reduce sound levels to below a severe impact level, building sound insulation can be installed. Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction is a mitigation measure that can be provided when the use of sound barriers is not feasible in providing a reasonable level (5 to 7 dBA) of noise reduction. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where sound barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dBA) can often be achieved by adding an extra layer of glazing to windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air conditioning so that windows do not need to be opened. Performance criteria would be established to balance existing noise events and ambient roadway noise conditions as factors for determining mitigation measures.
- If sound walls or sound installation is not effective, the Authority can acquire easements on properties severely affected by noise. Another option for mitigating noise impacts is for the authority to acquire easements on residences likely to be impacted by HSR operations in which the homeowners would accept the future noise conditions. This approach is usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.

F-B LGA N&V-MM#4: Vehicle Noise Specification. In the procurement of an HSR vehicle technology, 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), for cars operating at speeds of greater than 45 mph. Depending on the available technology, this could significantly reduce the number of impacts throughout the corridor.

F-B LGA N&V-MM#5: Special Track Work. Because the impacts of HSR wheels over rail gaps at turnouts increases HSR noise by approximately 6 dBA over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the project can use special types of track work that eliminate the gap.

Table 3.4-29 provides additional mitigation measures that would reduce operational vibration levels when the train, railway, and railway structures are already in good condition. As shown in Table 3.4-29, mitigation would take place at the source, sensitive receptor, or along the propagation path from the source to the sensitive receptors. If mitigation measures provided in Table 3.4-29 are not feasible, the Authority would attempt to negotiate a vibration easement with property owners or the Authority would negotiate to relocate the property owner outside of the area subject to significant vibration impacts.

F-B LGA N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design. If final design or final vehicle specifications result in changes to the assumptions underlying the noise and vibration analysis (including analysis regarding resident and business displacements), reassess noise and vibration impacts and recommendations for mitigation and provide supplemental environmental documentation, as required by law.

- **Traffic Noise Impacts.** Several single-family homes will be subject to traffic peak-hour noise levels in excess of 66 dBA equivalent sound level. These noise levels would exceed the Caltrans Noise Abatement Criteria and potentially require the preparation of Noise Study Reports and noise abatement measures. In determining the reasonableness of abatement, FHWA highway traffic noise regulation requires, among other factors, the feasibility of the noise mitigation measure as well as the consideration of the viewpoints of the affected residents and property owners. Feasibility generally deals with considering whether it is possible to build an abatement measure, given site constraints, and whether the abatement measure provides a minimum reduction in noise levels. Feasibility also requires that all of the homes potentially affected face the roadway from which the noise emanates. As a result, noise mitigation measures would be infeasible for any home with a driveway for which access must be maintained. The noise barrier would not be continuous, and subsequently would not provide the minimum 5 dBA of noise reduction. A noise abatement measure is not feasible unless the measure achieves a noise reduction of at least 5 dBA for front-row receivers. Highway noise barriers are designed to protect areas of “frequent human use,” which generally do not include the front yards of homes. Also, Caltrans does not generally put noise barriers across the front yards of homes because they are acoustically infeasible and because most homeowners wish to maintain the views from the fronts of their homes.

F-B LGA N&V-MM#7: Station, Maintenance of Infrastructure Facility and Traction Power Supply Station. In order to reduce the noise from the facilities, the following noise mitigation measures are recommended:

- Enclose as many of the activities within the facility as possible.
- Eliminate windows in the building that would face toward noise-sensitive land uses adjacent to the facility. If windows are required to be located on the side of the facility facing noise-sensitive land uses, they should be the fixed type of windows with a sound transmission class rating of at least 35. If the windows must be operable, they should be closed during nighttime activities.
- Close facility doors where the rails enter the facility during nighttime activities.
- Tracks that cannot be located within the maintenance facility should be located on the far side of the facility from adjacent noise-sensitive receivers.

- For tracks that cannot be installed away from noise-sensitive receivers, install sound barrier along the tracks in order to protect the adjacent noise-sensitive receivers.
- Locate all mechanical equipment (compressors, pumps, generators, etc.) should be located within the facility structure.
- Locate any mechanical equipment located exterior to the facility (compressors, pumps, generators, etc.) on the far side of the facility from adjacent noise-sensitive receivers. If this is not possible, this equipment should be located within noise enclosures to mitigate the noise during operation.
- Point all ventilation ducting for the facility should be pointed away from the adjacent noise-sensitive receivers.

A.1.2 Referenced F-B LGA Mitigation Measures for Biological and Aquatic Resources

F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor. A Project Biologist shall be designated by the Environmental Compliance Manager to oversee regulatory compliance requirements and monitor the restoration activities associated with ground-disturbing activities in accordance with the adopted mitigation measures and applicable laws. The Project Biologist, Regulatory Specialist, and Project Botanist are responsible for the timely implementation of the biological mitigation measures as outlined in the MMEP, construction documents, and pertinent resource agency permits. Resumes for the Designated Project Biologist(s), Regulatory Specialists (Waters), and Project Botanists, and Project Biological Monitors(s) must be submitted to the USFWS during final design. Additional duties of the Project Biologist, Regulatory Specialist (Waters) and Project Botanist include reviewing design documents and construction schedules, determining project biological monitoring needs, and guiding and directing the work of the Project Biological Monitors. The duties of the Project Biological Monitor include monitoring construction crew activities, as needed, to document applicable mitigation measures and permit conditions. The Project Biologist(s), Regulatory Specialist(s) (Waters), Project Botanist(s) and the Project Biological Monitor(s) report to the Mitigation Manager. The Project Biologist(s), Regulatory Specialist(s) (Waters), Project Botanist(s) and/or the Project Biological Monitor(s) may require special approval from the USFWS and CDFW to implement certain mitigation measures. In these circumstances, they are referred to as agency-approved biologist(s)

F-B LGA BIO-MM#2: Regulatory Agency Access. If requested, before, during, or on completion of ground-disturbing activities, the Contractor will allow access by USFWS, USACE, SWRCB, and CDFW staff to the construction site. Because of safety concerns, all visitors will be required to check in with the Contractor before accessing the construction site. If agency personnel access the construction site, the Project Biologist will prepare a memorandum within 1 day of the visit to document agency access and the issues raised during the field meeting. This memorandum will be submitted to the Mitigation Manager. Any non-compliance issues will be reported to the Contractor and Authority.

F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program. Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters) and Project Botanist will prepare and implement a WEAP for construction crews. WEAP training materials will include the following: discussion of the federal Endangered Species Act (federal ESA), the California Endangered Species Act (CESA), the Bald and Golden Eagle Protection Act (BGEPA), the Migratory Bird Treaty Act (MBTA), and the Clean Water Act (CWA); the consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their value; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. In the WEAP, construction timing in relation to species' habitat and life-stage requirements will be detailed and discussed on project maps, which will show areas of planned minimization and avoidance

measures. A fact sheet conveying this information will be prepared by the Project Biologist, Regulatory Specialist (Waters) and Project Botanist for distribution to the construction crews and to others who enter the construction footprint. On completion of the WEAP training, construction crews will sign a form stating that they attended the training, understood the information presented, and will comply with the WEAP requirements. The Project Biologist, Regulatory Specialist (Waters) and Project Botanist will submit the signed WEAP training forms to the Mitigation Manager on a monthly basis. Construction crews will be informed during the WEAP training that, except when necessary as determined in consultation with the Project Biologist, Regulatory Specialist (Waters) and Project Botanist travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved and improved roads.

F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Management Plan. A construction-phase Weed Control Plan and an operation phase Annual Vegetation Control Plan will be developed and implemented. Before the start of ground-disturbing activities, the Project Botanist will prepare and oversee the implementation a Weed Control Plan to minimize or avoid the spread of weeds during ground-disturbing activities. The Weed Control Plan will address the following:

- Schedule for noxious weed surveys to be conducted in coordination with the Biological Resources Management Plan (BRMP) (F-B LGA BIO-MM#5).
- The success criteria for noxious and invasive weed control, as established by a qualified biologist. The success criteria will be linked to the Biological Resources Management Plan [BRMP] (F-B LGA BIO-MM#5) standards for onsite work during construction. In particular, the criteria will limit the introduction and spread of highly invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in areas temporarily impacted by construction activities. If invasive species cover is found to exceed by 10% the pre-disturbance conditions during monitoring—or is 10% more compared with a similar, nearby reference site with similar vegetation communities and management—a control effort will be implemented. If the target, or other success criteria identified in the Comprehensive Mitigation and Monitoring Plan (CMMP), has not been met by the end of the BRMP monitoring and implementation period, the Authority or its designee will continue the monitoring and control efforts, and remedial actions would be identified and implemented until the success criteria are met. Depending on monitoring results, additional or revised measures may be needed to ensure that the introduction and spread of noxious weeds are not promoted by the construction and operation of the project.
- Provisions to ensure that the development of the Weed Control Plan will be coordinated with development of the Restoration and Revegetation Plan (RRP) (F-B LGA BIO-MM#6) so that the RRP incorporates measures to reduce the spread and establishment of noxious weeds, and incorporates percent cover of noxious weeds into revegetation performance standards.
- Identification of weed control treatments, including the use of permitted herbicides, and manual and mechanical removal methods. Herbicide application will be restricted from use in Environmentally Sensitive Areas and on compensatory mitigation sites, which are defined in BIO-MM#7, Delineate Environmentally Sensitive Area and Environmental Restricted Area (on plans and in field).
- Determination of timing of the weed control treatment for each plant species.
- Identification of fire prevention measures. During operation, the Authority will generally follow the procedures established in Chapter C2 of the Caltrans Maintenance Manual to manage vegetation on Authority property (Caltrans 2010). Vegetation would be controlled by chemical, thermal, biological, cultural, mechanical, structural, and manual methods. A separate plan, the Annual Vegetation Control Plan, would also be developed each winter for implementation no later than April 1 of each year. That plan would consist of site-specific vegetation control methods, as outlined below: 1) Chemical vegetation control noting planned usage and 2) Mowing program.

- Other non-chemical vegetation control plans (manual, biological, cultural, thermal (includes the use of propane heat or steam and is not specific to controlled burning) and structural.
- List of sensitive areas.
- Other chemical pest control plans (e.g., insects, snail, rodent).

Only Caltrans-approved herbicides will be used in the vegetation control program. Pesticide application will be conducted in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners by certified pesticide applicators. Noxious/invasive weeds will be treated where requested by County Agricultural Commissioners. The Authority will cooperate in area-wide control of noxious/invasive weeds if established by local agencies. Farmers/landowners who request weed control on state right-of-way that is not identified in the annual vegetation control plan will be encouraged to submit a permit request application for weed control that identifies the target weeds and control method desired. The Contractor will implement the Weed Control Plan during the construction period. The Authority will require that HST maintenance crews follow the guidelines in the Weed Control Plan and Annual Vegetation Control Plan during project operation. The Authority or its designee will appoint the responsible party during the operations period to ensure the Annual Vegetation Control Plan is being carried out appropriately and effectively. A monthly memorandum will be prepared by the Project Botanist to document the progress of the plan and its implementation.

F-B LGA BIO-MM#5: Prepare and Implement a Biological Resource Management Plan.

During final design, the Mitigation Manager, or its designee (Project Biologist, Regulatory Specialist or Project Botanist) will prepare the BRMP and assemble the biological resources mitigation measures. The BRMP will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also include habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. The parameters for the BRMP will be formed with the mitigation measures from this project-level EIR/EIS, including terms and conditions as applicable from the USFWS, USACE, SWRCB, and CDFW permits. The goal of the BRMP is to provide an organized reporting tool to ensure that the mitigation measures and terms and conditions are implemented in a timely manner and are reported on. These measures, terms, and conditions include all avoidance, minimization, repair, mitigation, and compensatory actions stated in the mitigation measures or terms and conditions from the permits referenced above. These measures, terms, and conditions are tracked through final design, implementation, and post-construction phases. The BRMP will help the long-term perpetuation of biological resources within the temporarily disturbed areas and protect adjacent targeted habitats. The BRMP will be submitted to the Contractor and will contain, but not be limited to, the following information:

- A master schedule that shows that construction of the project, Pre-construction surveys, and establishment of buffers and exclusion zones to protect sensitive biological resources.
- Specific measures for the protection of special-status species.
- Identification (on construction plans) of the locations and quantity of habitats to be avoided or removed, along with the locations where habitats are to be restored.
- Procedures for vegetation analyses of temporarily affected habitats to approximate their relative composition and procedures for site preparation, irrigation, planting, and maintenance. This information may be used to determine the requirements of the revegetation areas for both onsite temporary impacts and offsite compensatory sites.
- Sources of plant materials and methods of propagation.
- Identification of specific parameters consistent with mitigation ratios and permit conditions for determining the amount of replacement habitat for temporary disturbance areas.

- Specifications of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas.
- Specification of performance standards for the re-established plant communities within the construction limits.
- Specification of the remedial measures to be taken if performance standards are not met (e.g., a form of adaptive management).
- Methods and requirements for monitoring restoration/replacement efforts, which will be a combination of qualitative and quantitative data consistent with mitigation measures and permit conditions.
- Measures to preserve topsoil and control erosion.
- Design of protective fencing around Environmentally Sensitive Areas (ESA), environmentally restricted areas, and the construction staging areas.
- Specification of the locations and quantities of gallinaceous guzzlers (catch basin/artificial watering structures) and the monitoring of water levels in them.
- Locations of trees to be protected as wildlife habitat (roosting sites) and locations for planting replacement trees.
- Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance within sensitive habitat areas.
- Specific construction monitoring programs for habitats of concern and special-status species, as needed.
- Specific measures for the protection of vernal pool habitat and riparian areas. These measures may include erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.
- Provisions for biological monitoring during ground-disturbing activities to confirm compliance and success of protective measures. The monitoring procedures will (1) identify specific locations of wildlife habitat and sensitive species to be monitored; (2) identify the frequency of monitoring and the monitoring methods (for each habitat and sensitive species to be monitored); (3) list required qualifications of biological monitor(s), and (4) identify the reporting requirements.

F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. During final design, the Project Botanist will prepare a RRP for temporarily disturbed upland communities. (Site restoration will also be conducted to restore temporary impacts on valley foothill riparian areas [F-B LGA BIO-MM#47] and jurisdictional waters [F-B LGA BIO-MM#48].) In the RRP, impacts on habitat subject to temporary ground disturbances that will require decompaction or re-grading will be addressed, if appropriate. The Project Biologist will approve the seed mix. The standards for onsite work during construction will limit highly invasive species, as defined by the California Invasive Plant Council, to less than 10% greater than the pre-disturbance condition or as determined through a comparison with an appropriate reference site with similar natural communities and management. During ground-disturbing activities, the Contractor will implement the RRP in temporarily disturbed areas. The Project Biologist will prepare and submit compliance reports to the Mitigation Manager to document implementation and performance of the RRP.

F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist will verify that ESAs and ERAs are delineated on final construction plans (including grading and landscape plans) and in the field and will update as necessary. ESAs are areas within the construction zone, or on

compensatory mitigation sites, containing suitable habitat for special-status species and habitats of concern that may allow construction activities but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are sensitive areas that are typically outside the construction footprint that must be protected in place during all construction activities. Before and during the implementation of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist, will mark ESAs and ERAs with high-visibility temporary fencing, flagging, or other agency-approved barriers to prevent encroachment of construction personnel and equipment. Sub-meter accurate Global Positioning System (GPS) equipment will be used to delineate all ESAs and ERAs. The Contractor will remove ESA and ERA fencing when construction is complete or when the resource has been cleared according to agency permit conditions in the MMEP and construction drawings and specifications. The Project Biologist, Regulatory Specialist (Waters), and Project Botanist will submit a memorandum regarding the field delineation and installation of all ESAs/ERAs to the Mitigation Manager.

F-B LGA BIO-MM#8: Wildlife Excursion Fencing. The Contractor, under the supervision of the Project Biologist will install wildlife-specific exclusion barriers at the edge of the construction footprint. Exclusion barriers will be made of durable material, regularly maintained, and installed below-grade by the Contractor under the supervision of the Project Biologist. Wildlife exclusion fencing will be installed along the outer perimeter of ESAs and ERAs and below-grade (e.g., 6 to 10 inches below-grade). The design specifications of the exclusion fencing will be determined through consultation with USFWS and/or CDFW. The wildlife exclusion barrier will be monitored, maintained at regular intervals throughout construction, and removed after the completion of major construction activities. The Project Biologist will submit a memorandum to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#9: Equipment Staging Areas. Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist will confirm that staging areas for construction equipment are outside areas of sensitive biological resources, including habitat for special-status species, habitats of concern, and wildlife movement corridors, to the extent feasible. The Project Biologist, Regulatory Specialist (Waters), and Project Botanist will submit a memorandum to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#10: Monofilament Netting. Thirty days before and during the implementation of ground-disturbing activities, the Project Biologist will verify that that the Contractor is not using plastic mono-filament netting (erosion-control matting) or similar material in erosion control materials; acceptable substitutes include coconut coir matting, tackified hydroseeding compounds, rice straw wattles (e.g., Earthsaver wattles: biodegradable, photodegradable, burlap), and other reusable erosion, sediment, and wildlife control systems that may be approved by the regulatory agencies (e.g., ERTEC Environmental Systems products). The Project Biologist will submit memoranda to the Mitigation Manager to document compliance with this measure; the memoranda will be submitted monthly or as appropriate throughout project construction.

F-B LGA BIO-MM#11: Vehicle Traffic. During ground-disturbing activities, the contractor will restrict project vehicle traffic within the construction area to established roads, construction areas, and other designated areas. The contractor will establish vehicle traffic in locations disturbed by previous activities to prevent further adverse effects, require observance of a 15 mile per hour (mph) speed limit for construction areas with potential special-status species habitat, clearly flag and mark access routes, and prohibit off-road traffic. The Project Biologist will submit a memorandum to the Mitigation Manager to document compliance with this measure; memoranda will be submitted on a weekly basis or as appropriate throughout project construction.

F-B LGA BIO-MM#12: Entrapment Prevention. To prevent inadvertent entrapment of protected species, the Contractor, under the guidance of the Project Biologist, will cover all excavated, steep-sided holes or trenches more than 8 inches deep at the close of each work day with plywood or similar materials or provide a minimum of one escape ramp per 10 feet of trenching (with slopes no greater than a 3:1) constructed of earth fill or wooden planks. The Project Biologist will thoroughly inspect holes and trenches for trapped animals before leaving the

construction site each day. The Contractor will either screen, cover, or store more than 1 foot off the ground all construction pipe, culverts, or similar structures with a diameter of 3 inches or greater that are stored at the construction site for one or more overnight periods and these pipes, culverts, and similar structures will be inspected by the Project Biologist for wildlife before the material is moved, buried, or capped. The Project Biologist will clear stored material for common and special-status wildlife species before the pipe is subsequently buried, moved, or capped (covered). The Project Biologist will submit memoranda to the Mitigation Manager to document compliance with this measure; the memoranda will be submitted on a weekly basis or as appropriate throughout project construction.

F-B LGA BIO-MM#13: Work Stoppage. During ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist or Project Biological Monitor will halt work in the event that a special-status wildlife species gains access to the construction footprint. This work stoppage will be coordinated with the resident engineer and/or the Authority or its designee. The Contractor will suspend ground-disturbing activities in the immediate construction area where the potential construction activity could result in “take” of special-status wildlife species; work may continue in other areas. Before construction, the Contractor will obtain written permission from CDFW to capture and relocate any non-listed wildlife species (does not include domesticated animals) from within the project footprint.

F-B LGA BIO-MM#14 “Take” Notification and Reporting. The Project Biologist, Regulatory Specialist (Water), or Project Botanist will immediately notify the Mitigation Manager in the event of an accidental death or injury to a federal- or state-listed species during project activities. The Project Biologist will then notify USFWS and/or CDFW within 24 hours in the event of an accidental death or injury to a federal- or state-listed species during project activities. The Project Biologist will submit a memorandum to the Mitigation Manager to document compliance with this measure. The memorandum will also identify suggested revisions to the construction activities or additional measures that will be implemented to minimize or prevent future impacts.

F-B LGA BIO-MM#15: Post-Construction Compliance Reports. After each construction package, construction phase, permitting phase, or other portion of the HST section as defined by Authority is completed, the Mitigation Manager, or their designee, will submit post-construction compliance reports consistent with the requirements of the protocols of each appropriate agency (e.g., USFWS, CDFW), including compliance with regulatory agency permits. The Mitigation Manager will submit a memorandum to the regulatory agencies to document compliance with this measure. The frequency of the memorandum compilation and submission will be consistent with the requirements in the regulatory agency permits.

F-B LGA BIO-MM#16: Conduct Protocol-Level Pre-Construction Surveys for Special-Status Plant Species and Special Status Plant Communities. Prior to construction, the Project Botanist will conduct protocol-level, pre-construction botanical surveys for special-status plant species and special-status plant communities in all potentially suitable habitats where permission to enter was not granted prior to construction. The surveys will be conducted during the appropriate blooming period(s) for the species before the start of ground-disturbing activities for salvage and relocation activities. The Project Botanist will mark the locations of all special-status plant species and special-status plant communities observed for the Contractor to avoid. Before the start of ground-disturbing activities, all populations of special-status plant species and special-status plant communities identified during pre-construction surveys within 100 feet of the construction footprint will be protected and delineated by the Contractor (directed by the Project Botanist) as ERAs. As appropriate, the Project Botanist will update the mapping of special-status species or habitats of concern within the construction limits based on resource agency permits.

Portions of the construction footprint that support special-status plant species that will be temporarily disturbed will be restored onsite to pre-construction conditions. Before disturbance, pre-construction conditions, including species composition, species richness, and percent cover of key species will be documented, and photo points will be established. If special-status plant species cannot be avoided, mitigation for impacts on these species will be documented (density, percent cover, key habitat characteristics, including soil type, associated species, hydrology,

topography, and photo documentation of pre-construction conditions) and incorporated into a relocation/compensation program, as defined in F-B LGA BIO-MM#17. The Project Botanist will provide verification of survey results and report findings through a memorandum to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special Status Plant Species. The Project Botanist will prepare a plan before the start of ground-disturbing activities to address monitoring, salvage, relocation, and propagation of special-status plant species. The relocation or propagation of plants and seeds will be performed at a suitable mitigation site approved by the appropriate regulatory agencies, and as appropriate per species. Documentation will include provisions that address the techniques, locations, and procedures required for the successful establishment of the plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and the annual reporting requirements. Permit conditions issued by the appropriate resource agencies (e.g., USFWS, CDFW) will guide the development of the plan and performance standards. The Project Botanist will submit a memorandum to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#22: Conduct Pre-Construction Surveys for Special Status Reptile and Amphibian Species. Before the start of ground-disturbing activities, the Project Biologist will conduct pre-construction surveys in suitable habitats to determine the presence or absence of special-status reptiles and amphibian species within the construction footprint. Surveys will be conducted no more than 30 days before the start of ground-disturbing activities and will be phased with project build-out. The results of the pre-construction survey will be used to guide the placement of the environmentally sensitive areas, ERAs, and wildlife exclusion fencing. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#23: Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance and Relocation. During ground-disturbing activities, the Project Biological Monitor will observe all construction activities in habitat that supports special-status reptiles and amphibians. If suitable habitat is present and environmentally sensitive areas are deemed necessary, the Project Biological Monitor will conduct a clearance survey within the area for special-status reptiles and amphibians after wildlife exclusion fencing is installed. If a special-status reptile or amphibian is present during construction, the Contractor will avoid the special-status reptile or amphibian species. Otherwise, the Project Biological Monitor will relocate special-status reptiles or amphibians (other than California tiger salamander) found in the Environmentally Sensitive Area or construction footprint to an area outside the construction area as determined through consultation with USFWS and/or CDFW. If necessary, clearance surveys will be conducted daily. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#29: Conduct Pre-Construction Surveys and Delineate Active Nest Exclusion Areas of Other Breeding Birds. Before the start of ground-disturbing activities, the Project Biologist will conduct visual pre-construction surveys where suitable habitats are present for nesting birds protected by the MBTA if construction and habitat removal activities are scheduled to occur during the bird breeding season (February 1 to August 15). In the event active bird nests are encountered during the pre-construction survey, the Project Biologist in conjunction with the Contractor will establish nest avoidance buffer zones as appropriate. The buffer distances will be consistent with the intent of the MBTA. The Project Biologist will delineate nest avoidance buffers established for ground-nesting birds in a manner that does not create predatory bird perch points in close proximity (150 feet) to the active nest site. The Project Biologist or Biological Monitor will periodically monitor active bird nests. The Project Biologist will maintain the nest avoidance buffer zone until nestlings have fledged and are no longer reliant on the nest or parental care for survival or the nest is abandoned (as determined by the Project Biologist). The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#30: Conduct Pre-Construction Surveys and Monitoring for Raptors. No more than 14 days before the start of ground-disturbing activities, the Project Biologist will conduct visual pre-construction surveys where suitable habitats are present for nesting raptors if construction and habitat removal activities are scheduled to occur during the bird-breeding season (February 1 to August 15). Surveys will be conducted in areas within the construction footprint and, where permissible, within 500 feet of the construction footprint for raptor species (not Fully Protected species) and 0.5 mile of the construction footprint for Fully Protected raptor species. The required survey dates will be modified based on local conditions. If breeding raptors with active nests are found, the Project Biologist in conjunction with the Contractor will establish a 500-foot buffer around the nest to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or the nest fails (as determined by the Project Biologist). If fully protected raptors (e.g., white tailed-kite) with active nests are found, the Project Biologist in conjunction with Contractor will establish a 0.5-mile buffer around the nest to be maintained until the young have fledged from the nest or the nest fails (as determined by the Project Biologist). Adjustments to the buffer(s) will require prior approval by USFWS and/or CDFW. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#31: Bird Protection. During Final Design, the Project Biologist will verify that the catenary system, masts, and other structures such as fencing are designed to be bird- and raptor-safe in accordance with the applicable recommendations presented in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006) and Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012). The Project Biologist will check the final design drawings and submit a memorandum to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#32: Conduct Protocol and Pre-Construction Surveys for Swainson's Hawks. The Project Biologist will conduct pre-construction surveys for Swainson's hawks as described in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). Surveys will be performed during the nesting season (March 1 through August 1) in the year before ground-disturbing activities within the construction footprint and within a 0.5-mile buffer, where access is permitted. The pre-construction nest surveys following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000) will be phased with project build-out. The pre-construction surveys will determine the status (i.e., active, inactive) of observed nests. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#33: Swainson's Hawk Nest Avoidance and Monitoring. If active Swainson's hawk nests (defined as a nest used one or more times in the last 5 years) are found within 0.5 mile of the construction footprint during the nesting season (March 1 to August 1), the active nests within the 0.50-mile buffer of the construction footprint will be monitored daily by the Project Biological Monitor to assess whether the nest is occupied. If the nest is occupied, the health and status of the nest will be monitored until the young fledge or for the length of construction, whichever occurs first. The Project Biologist in conjunction with the Contractor, will implement buffers restricting construction activities, following CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFG 1994). Adjustments to the buffer(s) may be made in consultation with CDFW. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#34: Monitor Removal of Nest Trees for Swainson's Hawks. Before the start of ground-disturbing activities, the Project Biological Monitor will monitor nest trees for Swainson's hawks in the construction footprint following the guidelines and methods presented in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SHTAC 2000). If an occupied Swainson's hawk nest must be removed, the Authority will obtain take authorization through a Section 2081 Incidental Take Permit (including

compensatory mitigation to offset the loss of the nest tree) from CDFW. If ground-disturbing activities or other project activities may cause nest abandonment by a Swainson's hawk or forced fledging within the specified buffer area, monitoring of the nest site by the Project Biological Monitor will be conducted to determine if the nest is abandoned. Removal of nesting trees outside of the nesting season (generally between October 1 and February 1) does not require authorization under the Section 2081 Incidental Take Permit. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#35: Conduct Protocol Surveys for Burrowing Owl. Before the start of ground-disturbing activities a qualified, agency-approved biologist, designated by the Project Biologist, will conduct protocol-level surveys in accordance with CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012). The Project Biologist or designee will conduct these surveys at appropriate timeframes within suitable habitat located in the construction footprint. Results of the surveys will be used to inform F-B LGA BIO-MM#36. These surveys will be conducted within suitable habitat of the construction footprint and within a 150-meter (approximately 500-foot) buffer. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#36: Burrowing Owl Avoidance and Minimization. The Project Biologist will implement burrowing owl avoidance and minimization measures following CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012). During the nesting season (February 1 through August 31) occupied burrowing owl burrows will not be disturbed unless it is verified that either the birds have not begun egg-laying and incubation or the juveniles from the occupied burrows are foraging independently and are capable of independent survival (as determined by the Project Biologist). Unless otherwise authorized by CDFW, the Project Biologist in conjunction with the Contractor will establish buffers (as an ESA) between the construction work area and occupied burrowing owl nesting sites as described in Table 3.7-19. Adjustments to the buffer(s) will require prior approval by CDFW. Eviction of burrowing owls outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFW authorizing the eviction. If burrowing owls must be moved from the project area, the Project Biologist will undertake passive relocation measures, including monitoring, in accordance with CDFW's (CDFG 2012) guidelines. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

Table 3.7-19: California Department of Fish and Wildlife Recommended Restricted Activity Dates and Setback Distances by Level of Disturbance for Burrowing Owls

Location	Time of Year	Level of Disturbance (meters)		
		Low	Medium	High
Nesting Sites	April 1 – Aug 15	200 m	500 m	500 m
Nesting Sites	Aug 16 – Oct 15	200 m	200 m	500 m
Nesting Sites	Oct 16 – March 31	50 m	100 m	500 m

F-B LGA BIO-MM#37: Conduct Pre-Construction Surveys for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. Before the start of construction, the Project Biologist will conduct a habitat assessment in potentially suitable habitat within the project footprint to determine presence of special-status small mammal species burrows or their signs. The habitat assessment surveys will be conducted within 2 years, and no more than 14 days before the start of construction or ground-disturbing activities and may be phased with project build-out. If no burrows or signs of special-status small mammal species are detected, no further measures will be required. The Project Biologist will submit a memorandum,

on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#38: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. If during the habitat assessment, burrows or signs of special-status small mammal species are detected, the Project Biologist will establish non-disturbance exclusion zones (i.e., wildlife exclusion fencing [e.g., a silt fence or similar material]) in areas where special-status small mammal species are believed to be present. Non-disturbance exclusion zones will be established at least 14 days before the start of ground-disturbing activities. The non-disturbance exclusion fence with one-way exit/escape points will be placed to exclude the special-status small mammals from the construction area. The wildlife exclusion fence will be established around burrows in a manner that allows state-listed species to leave the construction footprint. Additional measures such as one or both of the following will be implemented after the exclusion fencing is installed.

- The Contractor will trim and clear vegetation to the ground by hand or using hand-operated equipment to discourage the presence of special-status small mammal species in the construction footprint. The cleared vegetation will remain undisturbed by project construction equipment for 14 days to allow species to passively relocate through the one-way exit/escape points along the wildlife exclusion fencing.
- A qualified, agency-approved biologist, designated by the Project Biologist, will conduct small-mammal trapping and relocation in general accordance with the survey protocols in the California Valley Solar Ranch Project: Plan for Relocation of Giant Kangaroo Rats (*Dipodomys ingens*) (H.T. Harvey & Associates 2011) or as determined in consultation with CDFW and USFWS. The small-mammal trapping surveys will occur within the construction footprint in potentially suitable habitat for special-status small-mammal species. The trapping will be conducted before the start of construction and phased with project build-out; trapping will be limited to the dry, summer months on evenings when the nightly low temperature is forecast to exceed 50°F. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#40: Conduct Pre-construction Surveys for Special-Status Bat Species. Thirty days before the start of ground-disturbing activities, a qualified, agency-approved biologist, designated by the Project Biologist, will conduct a visual and acoustic pre-construction survey for roosting bats. A minimum of one day and one evening will be included in the visual pre-construction survey. The Project Biologist, in coordination with the Mitigation Manager and Authority, will contact CDFW if any hibernation roosts or active nurseries are identified within or immediately adjacent to the construction footprint, as appropriate. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#41: Bat Avoidance and Relocation. During ground-disturbing activities, if active or hibernation roosts are found, the Contractor will avoid them, if feasible, for the period of activity. If avoidance of the hibernation roost is not feasible, the Project Biologist will prepare a relocation plan and coordinate the construction of an alternative bat roost with CDFW. The Contractor, under the direction of the Project Biologist will implement the Bat Roost Relocation Plan before the commencement of construction activities. The Contractor, under the supervision of the Biological Monitors, will remove roosts with approval from CDFW before hibernation begins (October 31), or after young are flying (July 31), using exclusion and deterrence techniques described in F-B LGA BIO-MM#42, below. The timeline to remove vacated roosts is between August 1 and October 31. All efforts to avoid disturbance to maternity roosts will be made during construction activities. The Project Biologist will submit a memorandum to the Mitigation Manager, on a weekly basis or at other appropriate intervals, to document compliance with this measure.

F-B LGA BIO-MM#42: Bat Exclusion and Deterrence. During ground-disturbing activities, if non-breeding or non-hibernating individuals or groups of bats are found within the construction footprint, the Project Biologist will direct the Contractor to safely exclude the bats by either opening the roosting area to change the lighting and air-flow conditions or installing one-way doors or other appropriate methods specified by CDFW. The Contractor will leave the roost undisturbed by project activities for a minimum of 1 week after implementing exclusion and/or eviction activities. The Contractor will not implement exclusion measures to evict bats from established maternity roosts or occupied hibernation roosts. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#43: Conduct Pre-construction Surveys for American Badger and Ringtail. Before the start of ground-disturbing activities, the Project Biologist will conduct pre-construction surveys for den sites within suitable habitats in the construction footprint. These surveys will be conducted no more than 30 days before the start of ground-disturbing activities and phased with project build-out. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#44: American Badger and Ringtail Avoidance. The Contractor, under the direction of the Project Biologist, will establish a 50-foot buffer around occupied dens. The Contractor and Project Biologist will establish a 100-foot buffer around maternity dens through the pup-rearing season (American badger: February 15 through July 1; Ringtail: May 1 through June 15). Adjustments to the buffer(s) will require prior approval by CDFW as coordinated by the Project Biologist, under the supervision of the Mitigation Manager. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#45: Conduct Protocol Level Pre-Construction Surveys for San Joaquin Kit Fox. Before the start of ground-disturbing activities, the Project Biologist will conduct pre-construction surveys in accordance with USFWS' San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999b). Pre-construction surveys for the kit fox will be conducted between May 1 and September 30 within the study area in suitable habitat areas (alkali desert scrub, annual grassland, pasture, barren, and compatible-use agricultural lands) to identify known or potential San Joaquin kit fox dens. Pre-construction surveys will be conducted by a USFWS-approved project biologist within 30 days before the start of construction or ground-disturbing activities and will be phased with project build-out. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#46: Minimize Impacts on San Joaquin Kit Fox. The Contractor, under direction of the Project Biologist, will implement USFWS' Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS [1999] 2011) to minimize ground disturbance-related impacts on this species. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#48: Restore Temporary Impacts on Jurisdictional Waters. During or after the completion of construction, the Contractor, under direction of the Regulatory Specialist (Waters) and Project Botanist, will restore disturbed jurisdictional waters to original topography using stockpiled and segregated soils. In areas where gravel or geotextile fabrics have been placed to protect substrate and minimize impacts on jurisdictional waters, these materials will be removed and affected features will be restored. The Contractor, under supervision of the Project Botanist, will conduct revegetation using appropriate plants and seed mixes. The Authority will conduct maintenance monitoring consistent with the provisions in the RRP (F-B LGA BIO-MM#6). The Project Botanist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#49: Monitor Construction Activities within Jurisdictional Waters. During ground-disturbing activities, the Regulatory Specialist (Waters) and Project Biological Monitor will conduct monitoring within and adjacent to jurisdictional waters, including monitoring of the installation of protective devices (silt fencing, sandbags, fencing, etc.), installation and/or removal of creek crossing fill, construction of access roads, vegetation removal, and other associated construction activities. The Project Biological Monitor will conduct biological monitoring to document adherence to habitat avoidance and minimization measures addressed in the project mitigation measures, including, but not limited to, the provisions outlined in F-B LGA BIO-MM#5, F-B LGA BIO-MM#7, F-B LGA BIO-MM#8, F-B LGA BIO-MM#10, F-B LGA BIO-MM#12 through F-B LGA BIO-MM#15, F-B LGA BIO-MM#47, and F-B LGA BIO-MM#48. The monitor will also document adherence to all relevant conservation measures as listed in the USFWS, CDFW, SWRCB, and USACE permits. The Regulatory Specialist (Waters) will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#51: Install Flashing or Slats within Security Fencing. During construction, the Contractor, under the direction of the Project Biologist, will install permanent security fencing consistent with the final design along portions of the project that are adjacent to wildlife movement corridors and natural habitats (e.g., alkali desert scrub, annual grassland). The security fencing will be enhanced with flashing or slats for 6 inches below ground surface to 12 inches above to prevent special-status reptiles and mammals from moving into the right-of-way. The fencing with flashing or slats will be maintained during operation of the HST project. The Project Biologist will verify that the installation is consistent with the designated terms and conditions in the applicable permits. The design of the reptile and mammal-proof fencing and the exact locations where reptile and mammal-proof fencing will be installed will be determined in consultation with USFWS and CDFW. The Project Biologist will submit a memorandum, on a yearly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.

F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species. Before final design, the Authority will mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion (USFWS 2013) by implementing the following measures: Compensation for federally listed plant species that are observed within the project footprint and that cannot be avoided will be compensated at a 1:1 ratio based on actual acres of direct effects by the following:

- Identification of suitable sites to receive the listed plants.
 - Pixley National Wildlife Refuge, Allensworth Ecological Reserve/State Historic Park, Kern National Wildlife Refuge, Atwell Island, Alkali Sink Ecological Reserve, Semitropic Ecological Reserve, and Kern Water Bank.
 - Authority-proposed permittee-responsible mitigation sites.
 - Other locations approved by USFWS.
- Collection of seeds, plant materials, and topsoil from the project footprint before construction impacts. The Authority or its designee will submit a memorandum to the USFWS and or CDFW to document compliance with this measure.

F-B LGA BIO-MM#58: Compensate for Loss of Swainson’s Hawk Nesting Trees. To compensate for the loss of occupied Swainson’s hawk nesting trees or mortality to offspring, the Authority will provide project specific compensatory mitigation that replaces nesting trees and provides natural lands for foraging. Compensatory mitigation for Swainson’s hawk will be based on the number of trees with “active” nests that are removed by construction activities, or where construction activities create a significant habitat modification that leads to a reduction in reproductive success, or nest abandonment. If project construction occurs within 0.5 mile of a documented or observed active nest, the Authority will acquire and preserve 150 acres of natural habitat, per active nest tree removed by construction activities, or where construction activities create a significant habitat modification that leads to reduce reproductive success or nest

abandonment. At a minimum, the habitat preserved will contain trees suitable to support nesting and natural foraging habitat for Swainson's hawk. The Authority will submit a memorandum to the CDFW to document compliance with this measure.

F-B LGA BIO-MM#59: Compensate for Loss of Burrowing Owl Active Burrows and Habitat.

To compensate for permanent impacts on nesting, occupied, and satellite burrows and/or burrowing owl habitat, the Authority will provide compensatory mitigation based on CDFW's (CDFG 2012) Staff Report on Burrowing Owl Mitigation. The Authority will submit a memorandum to the CDFW to document compliance with this measure.

F-B LGA BIO-MM#60: Compensate for Destruction of San Joaquin Kit Fox Habitat.

The Authority will mitigate the destruction of San Joaquin kit fox habitat by the purchase of suitable, approved habitat (USFWS and CDFW). Habitat will be replaced at a minimum ratio of 1:1 for natural lands and a ratio of 0.1:1 for suitable urban or agricultural lands to provide additional protection and habitat in a location that is consistent with the recovery of the species. The Authority will mitigate the impacts on San Joaquin kit fox in accordance with the USFWS Biological Opinion (USFWS 2013) and/or CDFW 2081(b). The Authority will submit a memorandum to the USFWS and CDFW to document compliance with this measure.

F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan. As part of the USFWS, USACE, SWRCB, and CDFW permit applications and before the start of ground-disturbing activities, the Authority will prepare a CMMP to mitigate for temporary and permanent impacts on biological resources (i.e., special-status wildlife, jurisdictional waters, and riparian areas). In the CMMP, performance standards, including percent cover of native species, survivability, tree height requirements, wildlife utilization, the acreage basis, restoration ratios, and the combination of onsite and/or offsite mitigation will be detailed; preference will be given to conducting the mitigation within the same HUC-8 or HUC-6 watershed where the impact occurs. The Project Biologist will work with the USACE, SWRCB, and CDFW to develop appropriate avoidance, minimization, mitigation, and monitoring measures to be incorporated into the CMMP. The CMMP will outline the intent to mitigate for the lost conditions, functions, and values of impacts on jurisdictional waters and state streambeds consistent with resource agency requirements and conditions presented in Sections 404 and 401 of the CWA and Section 1600 of the CFGC. The CMMP will incorporate the following standard requirements consistent with USACE, SWRCB, and CDFW guidelines:

- Description of the project impact/site.
- Goal(s) (i.e., functions and values or conditions) of the compensatory mitigation project.
- Description of the proposed compensatory mitigation site.
- Maintenance activities during the monitoring period.
- Monitoring for the compensatory mitigation site.
- Completion of compensatory mitigation.
- Financial assurances.
- Contingency measures.

Also, the following will be included at a minimum for the implementation plan:

- Site analysis for appropriate soils and hydrology
- Site preparation specifications based on site analysis, including but not limited to grading and weeding.
- Soil and plant material salvage from impact areas, as appropriate to the timing of impact and restoration as well as the location of restoration sites.
- Specifications for plant and seed material appropriate to the locality of the mitigation site.
- Specifications for site maintenance to establish the habitats, including but not limited to weeding and temporary irrigation.

Habitat preservation, enhancement, and/or establishment or restoration activities will be conducted on some of the compensatory (i.e., selected permittee-responsible) mitigation sites to

achieve the mitigation goals. A detailed design of the mitigation habitats will be created in coordination with the permitting agencies and be described in the CMMP. It is recognized that several CMMPs will be developed consistent with the selected mitigation sites and the resources mitigated at each. The primary engineering and construction Contractor will ensure, through coordination with the Project Biologist, that construction is implemented in a manner that minimizes disturbance of such areas. Temporary fencing will be used during construction to avoid sensitive biological resources that are located adjacent to construction areas and can be avoided. Performance standards are targets for determining the effectiveness of the mitigation and assessing the need for adaptive management (e.g., mitigation design or maintenance revisions). The performance standards are developed so that progress towards meeting final success criteria can be assessed on an annual basis; the standard for each year is progressively closer to the final criteria (e.g. vegetation cover standards may increase annually until reaching the success criteria objective in the final year of monitoring). Success criteria are formal criteria that must be met after a specific timeframe to meet regulatory requirements of the permitting agencies. Where applicable, replacement planting/seeding will be implemented if monitoring demonstrates that performance standards or success criteria are not met during a particular monitoring interval. The performance standards will be used to determine whether the habitat improvement is trending toward sustainability (i.e., reduced human intervention) and to assess the need for adaptive management. These standards must be met for the habitat improvement to be declared successful, both during a particular monitoring year and at the end of the establishment period. These performance standards will be developed in consultation with the permitting agencies and described in the CMMP. The final success criteria will be developed in coordination with the regulatory agencies and presented in the CMMP. Examples of success criteria, which could be included in the CMMP and would be assessed at the end of the monitoring period (assumed to be 5 years or as directed by agencies), include:

- Percent survival of planted trees (65–85%, depending on species and habitat).
- Percent absolute cover of highly invasive species, as defined by the California Invasive Plant Council (<5%).
- Percent total absolute cover of plant species (50-80%, depending on habitat type).
- Designed wetlands will meet U.S. Army Corps of Engineers criteria for hydrophytic vegetation, hydric soils, and hydrology as defined in the “Corps of Engineers wetland delineation manual” (Environmental Laboratory 1987).
- Designed vernal pools and seasonal wetlands will meet inundation and seasonal drying requirements as specified in the design and indicated by agencies.
- Species composition and community diversity, relative to reference sites, and/or as described in the guidelines issued by permitting agencies (e.g., USFWS conservation guidelines for valley elderberry longhorn beetle). Performance standards and success criteria will be provided for each of the years of monitoring and will be specific to habitat types at each permittee-responsible mitigation site. The monitoring schedule will be detailed in the site-specific CMMPs. To be deemed successful, the site will be required to meet the performance standards established for the year in which monitoring is being conducted (e.g., monitoring conducted at intervals with increasing performance requirements). However, if performance standards are not met in specific years, remedial measures, such as regrading, adjustment to modify the hydrological regime, and/or replacement planting or seeding must be implemented and that year’s monitoring must be repeated the following year until the performance standards are met. The success criteria specified must be reached without human intervention (e.g., irrigation, replacement plantings) aside from maintenance practices described in the site-specific CMMPs for maintenance during the establishment period. The Project Biologist will oversee the implementation of all CMMP elements and monitor consistent with the prescribed maintenance and performance monitoring requirements. The Authority, or its designee, will prepare annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the

resource agency permits. The Authority will submit a memorandum to the regulatory agencies to document compliance with this measure.

F-B LGA BIO MM#63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. The Authority will mitigate permanent and temporary wetland impacts through compensation determined in consultation with the USACE, SWRCB, USFWS, and CDFW, in order to be consistent with the CMMP (F-B LGA BIO-MM#62). Regulatory compliance for jurisdictional waters includes relevant terms and conditions from the USACE 404 Permit, SWRCB 401 Permit, and CDFW 1600 Streambed Alteration Agreement. Compensation shall include aquatic resources 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 various natural resource regulatory agencies. The following ratios are proposed as a minimum for compensation for permanent impacts; final ratios will be determined in consultation with the appropriate agencies:
 - Vernal pools: 2:1.
 - Seasonal wetlands: between 1.1:1 and 1.5:1 based on impact type and function and values lost. - 1:1 offsite for permanent impacts. - 1:1 onsite and 0.1:1 to 0.5:1 offsite for temporary impacts.

The Authority will mitigate impacts on jurisdictional waters by replacing, creating, restoring, enhancing or preserving aquatic resource at the ratios presented above or other ratios, as determined in consultation with the appropriate agencies, which compensates for functions and values lost. The Authority will consider modifying the vernal pool mitigation ratios in the final permits based on site-specific conditions and the specific life history requirements of vernal pool branchiopods, California tiger salamander, and western spadefoot toad. Where an HST alternative affects an existing conservation area (e.g., Allensworth ER), the Authority will modify the mitigation ratio to meet the vernal pool mitigation requirement. Either the affected portion of the conservation area will be relocated or compensation will be provided to the holder of Allensworth ER in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended. Through the CMMP reporting program and the applicable terms and conditions from the USACE 404 Permit, SWRCB 401 Permit, and the CDFW 1600 Streambed Alteration Agreement, the Authority, or its designee, will document compliance and submit it to the regulatory agencies.

F-B LGA BIO-MM#64: Compensate for Impacts on Protected Trees. The Authority will compensate for impacts, including removal or trimming of naturally occurring native protected trees and landscape or ornamental protected trees, in accordance with the local regulatory body (city or county government). The local regulations and laws allow for a number of potential mitigation opportunities. The Authority will provide mitigation commensurate with the regulations and laws in that jurisdiction such that the resulting impact on protected trees is less than significant and may include, but is not limited to, the following, depending on the local jurisdiction:

- Transplant directly affected protected trees that are judged by an arborist to be in good condition to a suitable site outside the zone of impact.
- Replace directly affected protected trees at an onsite or offsite location, based on the number of protected trees removed, at a ratio not to exceed 3:1 for native trees or 1:1 for landscape or ornamental trees.

- Contribute to a tree-planting fund. The Authority will submit a memorandum to the local regulatory body to document compliance with this measure.

F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation. Before site preparation at a mitigation site, the Authority will consider the offsite habitat restoration, enhancement, and preservation program and identify short-term temporary and/or long-term permanent effects on the natural landscape. A determination will be made on any effects from the physical alteration of the site to on-site biological resources, including plant communities, land cover types, and the distribution of special-status plant and wildlife. Appropriate seasonal restrictions (e.g., breeding season) on activities that result in physical alteration of the site may be applicable if suitable habitats for special-status species and sensitive habitats exist onsite. Activities resulting in the physical alteration of the site include grading/modifications to on-site topography, stockpiling, storage of equipment, installation of temporary irrigation, removal of invasive species, and alterations to drainage features. In general, the long-term improvements to habitat functions and values will offset temporary effects during restoration, enhancement, and preservation activities. The offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored in ways that are consistent with the terms and conditions of the USACE Section 404 Permit, CDFW 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite. Potential effects on site-specific hydrology and the downstream resources will be evaluated as a result of implementation of the restoration-related activity. Site-specific BMPs and a Storm Water Pollution Prevention Plan (SWPPP) will be implemented as appropriate. The Authority will report on compliance with the permitting requirements. The Authority, or its designee, will be responsible for the monitoring and tracking of the program, will prepare a memorandum of compliance, and will submit it to the appropriate regulatory agency.

A.1.3 Referenced F-B LGA Mitigation Measures for Geology, Soils, Seismicity, and Paleontological Resources

F-B LGA CUL-MM#16: Engage a Paleontological Resources Specialist to Direct Monitoring during Construction. A paleontological resources specialist (PRS) will be designated for the project who will be responsible for determining where and when paleontological resources monitoring should be conducted. Paleontological resources monitors will be selected by the PRS based on their qualifications, and the scope and nature of their monitoring will be determined and directed based on the Paleontological Resource Monitoring and Mitigation Plan (PRMMP). The PRS will be responsible for developing Worker Environmental Awareness Program training. All management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training before beginning work on the project and will be provided with the necessary resources for responding in case paleontological resources are found during construction. The PRS will document any discoveries, as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5.

F-B LGA CUL-MM#17: Prepare and Implement a Paleontological Resource Monitoring and Mitigation Plan. Paleontological monitoring and mitigation measures are restricted to those construction-related activities that will result in the disturbance of paleontologically sensitive sediments. The PRMMP will include a description of when and where construction monitoring will be required; emergency discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; and procedures for reporting the results of the monitoring and mitigation program. The monitoring program will be designed to accommodate site-specific construction of the selected option. The PRMMP will be consistent with Society of Vertebrate Paleontology (SVP 1995) guidelines for the mitigation of construction impacts on paleontological resources. The PRMMP will also be consistent with the Society of Vertebrate Paleontology (SVP 1996) conditions for receivership of paleontological collections and any specific requirements of the designated repository for any fossils collected.

F-B LGA CUL-MM#18: Halt Construction When Paleontological Resources Are Found. If fossil or fossil-bearing deposits are discovered during construction, regardless of the individual making a paleontological discovery, construction activity in the immediate vicinity of the discovery will cease. This requirement will be spelled out in both the PRMMP and the WEAP. Construction activity may continue elsewhere provided that it continues to be monitored as appropriate. If the discovery is made by someone other than a Paleontological resources monitors or the PRS, a Paleontological resources monitors or the PRS will immediately be notified.

A.1.4 Referenced F-B LGA Mitigation Measures for Hazardous Materials and Wastes

F-B LGA HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools during Construction. The Contractor shall not handle or store an extremely hazardous substance (as defined in California Public Resources Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code within 0.25 mile of a school. Prior to construction activities, signage will be installed to delimit all work areas within 0.25 mile of a school, informing the Contractor not to bring extremely hazardous substances into the area. The Contractor would be required to monitor all use of extremely hazardous substances.

A.1.5 Referenced F-B LGA Mitigation Measures for Safety and Security

F-B LGA S&S-MM#4: Risk of Fire and Explosions Golden Empire Gleaners Facility (Site Specific). The following site-specific mitigation shall be implemented in all subsequent property transactions for the Golden Empire Gleaners Facility:

- Upgrade of the fire alarm and suppression system to current fire code regulations, per Office of State Fire Marshal requirements and approval.
- Prohibition of regulated amounts of hazardous materials in the structure.
- Annual inspection by the Office of the State Fire Marshal.
- Public ownership and control of the entire facility. This could be Authority ownership, or City of Bakersfield ownership with restrictions on use and access of the facility to enforce the above mitigations. Note: State-owned property requires additional conditions by the Office of the State Fire Marshal that must be incorporated.
- Restrict access to the facility by uncontrolled or uninspected trucks or step vans.
- Allow audits of security protocols and processes to ensure security measures continue the level of protection warranted.
- Allow HSR security personnel access, with notice, to ensure security measures are being followed.
- Allow only trucks that can be visually verified to be empty may be parked under the F-B LGA viaduct. These trucks include flatbeds and trucks with equipment that would not allow hidden materials.
- Only passenger cars and small trucks and vans can be parked in the employee parking under the structure.
- Any change of use would require reassessment and approval.

A.1.6 Referenced F-B LGA Mitigation Measures for Socioeconomics and Communities

F-B LGA SO-MM#1: Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods. The California High-Speed Rail Authority (Authority) will minimize impacts associated with the F-B LGA in the rural residential areas around the community of Oildale as well as in urban residential areas in Shafter and Bakersfield by

conducting special outreach to affected homeowners and residents to fully understand their special relocation needs. The Authority will make every effort to locate suitable replacement properties that are comparable to those currently occupied by these residents, including constructing suitable replacement facilities if necessary.

In cases where residents wish to remain in the immediate vicinity, the Authority will take measures to purchase vacant land or buildings in the area, and consult with local authorities over matters such as zoning, permits, and moving of homes and replacement of services and utilities, as appropriate. Before land acquisition, 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 high-speed rail (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 sound walls and landscaping, and potential uses for remnant parcels that could benefit the community in the long term).

F-B LGA SO-MM#3: Implement Measures to Reduce Impacts Associated with the Displacement of Key Community Facilities. The Authority will minimize impacts resulting from the disruption to key community facilities including the Golden Empire Gleaners (a food bank), Bakersfield Homeless Center, the Mercado Latino Tianguis, the Golden Living Center (a nursing facility), Kern County Veterans Service Department, and Iglesia de Dios Pentecostes La Hermosa (a religious facility).

The Authority will consult with the appropriate respective parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and also to ensure relocation that allows the community currently served to continue to access these services.

Because many of these community facilities are located in Hispanic communities, the Authority will continue to implement a comprehensive Spanish-language outreach program for these communities as land acquisition begins. This program will facilitate the identification of approaches that would maintain continuity of operation and allow space and access for the types of services currently provided and planned for these facilities. Also, to avoid disruption to these community amenities, the Authority will ensure that all reconfiguring of land uses or buildings, or relocating of community facilities is completed before the demolition of any existing structures.

F-B LGA SO-MM#5: Develop Measures to Minimize the Potential for Physical Deterioration. The Authority will work with the communities on the design of project features consistent with Technical Memorandum 200.6, Aesthetic Guidelines for Non-Station Structures (Authority 2011). The guidelines for station and non-station structures allow for contextual design responses to site-specific or unique conditions, or “context sensitive solutions.” Context sensitive solutions mean structural aesthetics must respond to local settings with concern for the human scale, building scale, and the vantage points from which the structures will be viewed. Included in the Authority’s design principles is the requirement that the structures enhance local environments and community context. Landscaping will be used to visually integrate project structures into the local context with plantings that recreate the natural setting into which they are placed. The aesthetic design of project structures, in combination with landscape and urban design that serve the local community can create a positive contribution to the surrounding visual context and minimize the potential for physical deterioration.

A.1.7 Referenced F-B LGA Mitigation Measures for Parks, Recreation, and Open Space

F-B LGA PP-MM#1: Temporary Restricted Access to Park Facilities During Construction. Prior to temporary restricted access to the park facilities, the contractor will ensure that connections to the unaffected park portions or nearby roadways are maintained. If a proposed linear park closure restricts connectivity, the contractor will provide alternative pedestrian and bicycle access via a temporary detour of the pedestrian walkway using existing roadways or other public rights of way. The contractor will provide detour signage and lighting and will ensure that the alternative routes meet all public safety requirements.

F-B LGA PP-MM#3: Collect Additional Maintenance Funds. The Authority will consult with the affected jurisdiction to identify its share of funding to provide additional maintenance, labor, and repairs for the existing park areas to remedy any potential degradation of existing facilities that may result from increased facility use. Prior to project construction, the Authority will enter into an agreement with the affected jurisdiction that establishes the funding share and describes the relative roles of the Authority and the affected jurisdictions in providing continuous maintenance of existing play areas, or compensation for play areas acquired in order to accommodate the project.

A.1.8 Referenced F-B LGA Mitigation Measures for Aesthetics and Visual Resources

F-B LGA AVR-MM#1a: Minimize Visual Disruption from Construction Activities. The project will adhere to local jurisdiction construction requirements (if applicable) regarding construction-related visual/aesthetic disruption. In order to minimize visual disruption, construction will employ the following activities:

- Minimize pre-construction clearing to that necessary for construction.
- Limit the removal of buildings to those that would obstruct project components.
- When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views.
- After construction, regrade areas disturbed by construction, staging, and storage to original contours and revegetate with plant material similar in replacement numbers and types to that which was removed based upon local jurisdictional requirements. If there are no local jurisdictional requirements, replace removed vegetation at a 1:1 replacement ratio for shrubs and small trees, and 2:1 replacement ratio for mature trees. For example, if 10 mature trees in an area are removed, replant 20 younger trees that after 5 to 15 years (depending upon the growth rates of the trees) would provide coverage similar to the coverage provided by the trees that were removed for construction.
- To the extent feasible, do not locate construction staging sites within the immediate foreground distance (0 to 500 feet) of existing residential, recreational, or other high-sensitivity receptors. Where such siting is unavoidable, staging sites will be screened from sensitive receptors using appropriate solid screening materials such as temporary fencing and walls. Any graffiti or visual defacement of temporary fencing and walls will be painted over or removed within 5 business days.

F-B LGA AVR-MM#1b: Minimize Light Disturbance during Construction. Where construction lighting will be required during nighttime construction, the contractor will be required to shield such lighting and direct it downward in such a manner that the light source is not visible off-site, and so that the light does not fall outside the boundaries of the project site to avoid light spillage offsite.

F-B LGA AVR-MM#2a: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context. During final design of the elevated guideways and the Fresno, Kings/Tulare Regional, and Bakersfield stations, the contractor partnering with the Authority will coordinate with local jurisdictions on the design of these facilities so that they are designed appropriately to fit in with the visual context of the areas near them. This will include the following activities:

- For stations: During the station design process, establish a local consultation process with the Cities of Fresno and Bakersfield, and the cities and communities surrounding the Kings/Tulare Regional Station, as necessary, to identify and integrate local design features into the station design through a collaborative, context-sensitive solutions approach. The process will include activities to solicit community input in their respective station areas. This effort will be coordinated with the station area planning process that will be undertaken by those cities under their station area planning grants.

- For elevated guideways in cities or unincorporated communities: During the elevated guideway design process, establish a process with the city or county with jurisdiction over the land along the elevated guideway to advance the final design through a collaborative, context-sensitive solutions approach. Participants in the consultation process will meet on a regular basis to develop a consensus on the urban design elements that are to be incorporated into the final guideway designs. The process will include activities to solicit community input in the affected neighborhoods.

Actions taken to help achieve integration with the local design context during the context-sensitive solutions process will include the following:

- Design HST stations and associated structures such as elevators, escalators, and walkways to be attractive architectural elements or features that add visual interest to the streetscapes near them.
- Design HST station parking structures and adjacent areas to integrate visually into the areas where they would be located. Where the city has adopted applicable downtown design guidelines, the parking structures and adjacent areas will be designed to be compatible with the policies and principles of those guidelines.
- For the elevated guideways and columns, incorporate architectural elements, such as graceful curved or tapered sculptural forms and decorative surfaces, to provide visual interest. Include decorative texture treatments on large-scale concrete surfaces such as parapets and other portions of elevated guideways. Include a variety of texture, shadow lines, and other surface articulation to add visual and thematic interest. Closely coordinate the design of guideway columns and parapets with station and platform architecture to promote unity and coherence where guideways lie adjacent to stations.
- Integrate trees and landscaping into the station streetscape and plaza plans where possible to soften and buffer the appearance of guideways, columns, and elevated stations. This will be consistent with the principles of crime prevention through environmental design.

For the stations, structures, and related open spaces: incorporate design features that provide interest and reflect the local design context. These features could include landscaping, lighting, and public art. The designs in cities and unincorporated communities will reflect the results of the context-sensitive solutions design process. During the context-sensitive solutions design process, the HST project's obligations and constraints related to planning, mitigation, engineering, performance, funding, and operational requirements will be taken into consideration.

F-B LGA AVR-MM#2b: Integrate Elevated Guideway into Affected Cities, Parks, Trail, and Urban Core Designs. During development of the final design, the Authority will work with the affected cities and counties to develop a project site and landscape design plan for the areas disturbed by the project. As a result of following these plans, the design features identified in F-B LGA AVR-MM#2a and the park mitigation measure F-B LGA PP-MM#3 will be implemented.

F-B LGA AVR-MM#2e: Provide Offsite Landscape Screening Where Appropriate. Where onsite landscape screening measures as described under AVR-MM#2d cannot provide effective screening to significantly affected high-sensitivity receptors such as nearby rural residential areas, provide offsite screening, as appropriate, if desired by affected residential owners.

F-B AVR-MM#2f: Landscape Treatments along HSR Project Overcrossings and Retained Fill Elements of the HSR. Upon the completion of construction, the contractor will plant the surface of the ground supporting the overpasses (slope-fill overpasses) and retained fill elements with vegetation consistent with the surrounding landscape in terms of vegetative type, color, texture, and form. During final design, the Authority will consult with the affected cities and counties regarding the landscaping program for planting the slopes of the overcrossings and retained fill. Plant species will be selected on the basis of their mature size and shape, growth rate, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed if needed. Where wall structures

supporting the overpasses or retained fill are proposed, the structure will employ architectural details and low-maintenance trees and other vegetation to screen the structure, minimize graffiti, and reduce the effects of large walls. Surface coatings will be applied on wood and concrete to facilitate cleaning and the removal of graffiti. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable time after notification.

F-B LGA AVR-MM#2g: Provide Sound Barrier Treatments. The contractor will design a range of sound barrier treatments for visually sensitive areas, such as those where residential views of open landscaped areas would change or in urban areas where sound barriers would adversely affect the existing character and setting (see the description of sound barriers in Table 3.16-2 [of the Fresno to Bakersfield Section Final EIR/EIS]). The Authority will develop the treatments during final design and integrate them into the final project design. The treatments will include, but are not limited to, the following:

- Sound barriers along elevated guideways may incorporate transparent materials where sensitive views would be adversely affected by solid sound barriers.
- Sound barriers will use non-reflective materials and will be of a neutral color.

A.1.9 Referenced F-B LGA Mitigation Measures for Cultural Resources

F-B LGA CUL-MM#12: Prepare and Submit Additional Recordation and Documentation. A BETP will identify specific historical resources that would be physically altered, damaged, relocated, or destroyed by the project that will be documented in detailed recordation that includes photography. This documentation may consist of preparation of updated recordation forms (DPR 523), or may be consistent with the Historic American Building Survey, the Historic American Engineering Record, or the Historic American Landscape Survey programs; a Historic Structure Report; or other recordation methods stipulated in the MOA and described in the BETP. The recordation undertaken by this treatment would focus on the aspect of integrity that would be affected by the project for each historic property subject to this treatment. For example, historic properties in an urban setting that would experience an adverse visual effect would be photographed to capture exterior and contextual views; interior spaces would not be subject to recordation if they would not be affected. Consultation with the SHPO and the consulting parties will be conducted for the historic architectural resources to be documented. Recordation documents will follow the appropriate guidance for the recordation format and program selected. In addition to any copies required by a selected recordation program, additional copies of the documentation will be provided to the consulting parties and offered to the appropriate local governments, historical societies and agencies, or other public repositories, such as libraries. The documentation will also be offered in printed and electronic form to any repository or organization to which the SHPO, the Authority, and the local agency with jurisdiction over the property, through consultation, may agree. The electronic copy of the documentation may also be placed on an agency or organization's website.

F-B LGA CUL-MM#13: Prepare Interpretive or Educational Materials. Based on the finalization of design and the completed inventory, the BETP will identify historic properties and historical resources that will be subject to historic interpretation or preparation of educational materials. Interpretive and educational materials will provide information regarding specific historic properties or historical resources and will address the aspect of the significance of the properties that would be affected by the project. Interpretive or educational materials could include, but are not limited to: brochures, videos, websites, study guides, teaching guides, articles or reports for general publication, commemorative plaques, or exhibits. Historic properties and historical resources subject to demolition by the project will be the subject of informative permanent metal plaques that will be installed at the site of the demolished historic property or at nearby public locations. Each plaque will provide a brief history of the subject property, its engineering/architectural features and characteristics, and the reasons for and the date of its demolition. The interpretive or educational materials will utilize images, narrative history, drawings, or other material produced for the mitigation described above, including the additional recordation prepared, or other archival sources. The interpretive or educational materials should be advertised, and made available to, and/or disseminated to the public. The interpretive

materials may be made available in physical or digital formats, at local libraries, historical societies, or public buildings.

A.1.10 Referenced F-B LGA Mitigation Measures for Cumulative Noise and Vibration

F-B LGA CUM–N&V-MM#1: Consult with agencies regarding construction activities. To minimize the potential overlapping noise-generating construction activities within the same area, the Authority would consult with local city and county planning departments and other agencies as determined necessary. Consultation would entail notifying the departments/agencies regarding the anticipated HSR construction schedule and would allow for adjustment of construction schedules for adjacent projects or projects in close proximity to the HSR alignment, to the extent feasible.

A.2 Bakersfield to Palmdale Project Section Mitigation Measures (Oswell Street in Bakersfield to Spruce Court in Palmdale)

A.2.1 Referenced Mitigation Measures for Transportation

TRAN-MM#2: Earthwork Haul Routes. Prior to commencement of construction, the Authority will ensure that the Contractor reviews and refines earthwork haul routes and identifies the specific locations where flaggers and temporary traffic control personnel are required. Haul routes outside of project right-of-way will be identified.

At a minimum, flaggers will be required at the following intersections:

- SR 184/Weedpatch Highway
- East Brundage Lane
- South Edison Road
- Comanche Drive
- East Tehachapi Boulevard
- Highline Road
- Tehachapi Willow Springs Road (all crossings)
- Rosamond Boulevard
- 60th Street West
- Avenue A
- SR 138
- West Avenue F
- West Avenue G
- West Avenue K
- Columbia Way/East Avenue M
- West Avenue N
- West Avenue O

At a minimum, temporary traffic control personnel will be provided to control the major intersections along SR 138 between 25th Street West and 15th Street.

These requirements will be incorporated into the Construction Transportation Plan (TR-IAMF#2).

A.2.2 Referenced Mitigation Measures for Air Quality and Global Climate Change

AQ-MM#1: Offset Project Construction Emissions through Off-Site Emission Reduction Programs. The Authority shall enter into a contractual agreement with the San Joaquin Valley Air Pollution Control District (SJVAPCD) through a Memorandum of Understanding and a Voluntary Emission Reduction Agreement (VERA). The VERA mitigates (by offsetting) to net zero the project’s actual emissions from construction equipment and vehicle exhaust emissions of volatile organic compound (VOC), NO_x, particulate matter (PM₁₀), and PM_{2.5}. The agreement will provide funds for the SJVAPCD’s Emission Reduction Incentive Program (SJVAPCD 2011) to fund grants for projects that achieve emission reductions, with preference given to highly affected

communities, thus offsetting project-related impacts on air quality. To lower overall cost, funding for the VERA program to cover estimated construction emissions for any funded construction phase will be provided at the beginning of the construction phase. At a minimum, mitigation/offsets will occur in the year of impact, or as otherwise permitted by 40 Code of Federal Regulations (C.F.R.) Part 93 Section 93.163.

The Authority shall also enter into an agreement with the Antelope Valley Air Quality Management District (AVAQMD) and Eastern Kern Air Pollution Control District (EKAPCD) to mitigate (by offsetting) to net zero (to the extent that offsets are available) the project's actual emissions from construction equipment and vehicle exhaust emissions of VOC, NO_x, PM₁₀ and PM_{2.5}. In the AVAQMD, the Authority shall participate in the Air Quality Investment Program, which funds stationary- and mobile-source emission reduction strategies. In the EKAPCD, the Authority shall provide an application for the Emission Banking Certificate Program.

A.2.3 Referenced Mitigation Measures for Noise and Vibration

N&V-MM#1: Construction Noise Mitigation Measures. During construction, the contractor will monitor construction noise to verify compliance with the noise limits shown in Table 3.4-7. Prior to construction (any ground disturbing activities), the contractor shall prepare a noise-monitoring program for Authority approval. The noise-monitoring program shall describe how, during construction, the contractor will monitor construction noise to verify compliance with the noise limits (An 8-hour L_{eq} dBA of 80 during the day and 70 at night for residential land use, 85 for both day and night for commercial land use, and 90 for both day and night for industrial land use) where a noise-sensitive receptor is present. The contractor would be given the flexibility to meet the FRA construction noise limits in the most efficient and cost-effective manner. This can be done by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. In addition, the noise-monitoring program will describe the actions required of the contractor to meet required noise limits. These actions will include the following nighttime and daytime noise control mitigation measures, as necessary:

- Install a temporary construction site sound barrier near a noise source.
- Avoid nighttime construction in residential neighborhoods.
- Locate stationary construction equipment as far as possible from noise-sensitive sites.
- Re-route construction truck traffic along roadways that will cause the least disturbance to residents.
- During nighttime work, use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with spotters.
- Use low-noise emission equipment.
- Implement noise-deadening measures for truck loading and operations.
- Monitor and maintain equipment to meet noise limits.
- Line or cover storage bins, conveyors, and chutes with sound-deadening material.
- Use acoustic enclosures, shields, or shrouds for equipment and facilities.
- Use high-grade engine exhaust silencers and engine-casing sound insulation.
- Prohibit aboveground jackhammering and impact pile driving during nighttime hours.
- Minimize the use of generators to power equipment.
- Limit use of public address systems.
- Grade surface irregularities on construction sites.
- Use moveable sound barriers at the source of the construction activity.
- Limit or avoid certain noisy activities during nighttime hours.

- To mitigate noise related to pile driving, the use of an auger to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.
- The Authority will establish and maintain in operation until completion of construction a toll-free “hotline” regarding the project section construction activities. The Authority shall arrange for all incoming messages to be logged (with summaries of the contents of each message) and for a designated representative of the Authority to respond to hotline messages within 24 hours (excluding weekends and holidays). The Authority shall make a reasonable good faith effort to address all concerns and answer all questions, and shall include on the log its responses to all callers. The Authority shall make a log of the in-coming messages and the Authority’s responsive actions publicly available on its website.

The contractor shall provide the Authority with an annual report by January 31 of the following year documenting how it implemented the noise-monitoring program.

N&V-MM#2: Construction Vibration Mitigation Measures. Prior to construction involving impact pile driving within 50 feet of any building the contractor shall provide the Authority with a vibration technical memorandum documenting how project pile driving criteria will be met. Upon approval of the technical memorandum by the Authority, and where a noise-sensitive receptor is present, the Contractor shall comply with the vibration reduction methods described in that memorandum. Potential construction vibration building damage is only anticipated from impact pile driving at very close distances to buildings. If pile driving occurs more than 25 to 50 feet from buildings, or if alternative methods such as push piling or auger piling are used, damage from construction vibration is not expected to occur. When a construction scenario has been established, pre-construction surveys will be conducted by the Contractor at locations within 50 feet of pile driving to document the existing condition of buildings in case damage is reported during or after construction. The Contractor will arrange for the repair of damaged buildings or will pay compensation to the property owner.

N&V-MM#3: Implement Proposed California High-Speed Rail Project Noise Mitigation Guidelines. Various options exist to address the potentially severe noise effects from high-speed train operations. The Authority has developed Noise Mitigation Guidelines for the statewide HSR system that sets forth three categories of mitigation measures to reduce or offset severe noise impacts from HSR operations: sound barriers, sound insulation, and noise easements. The Guidelines also set forth an implementation approach that considers multiple factors for determining the reasonableness of sound barriers as mitigation for severe noise impacts, including structural and seismic safety, cost, number of affected receptors, and effectiveness. Sound barrier mitigation would be designed to reduce the exterior noise level from HSR operations from severe to moderate, according to the provisions of the FRA noise and vibration manual (FRA 2012) and Figure 3.4-1.

The Noise Mitigation Guidelines, included as Appendix 3.4-B, describe the following mitigation measures and approach:

Sound Barriers

Prior to operation of the HSR, the Authority will install sound barriers where they can achieve between 5 and 15 dB of exterior noise reduction, depending on their height and location relative to the tracks. The primary requirements for an effective sound barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of four pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for sound barriers. Depending on the situation, sound barriers can become visually intrusive. Typically, the sound barrier style is selected with input from the local jurisdiction to reduce the visual effect of barriers on adjacent lands uses, refer to Aesthetic Options for Non-Station Structures, 2017. For example, sound barriers could be solid or transparent, and made of various colors, materials, and surface treatments.

Pursuant to the Noise Mitigation Guidelines, recommended sound barriers must meet the following criteria to be considered a reasonable and feasible mitigation measure:

- Achieve a minimum of 5 decibels (dB) of noise reduction.
- The minimum number of affected sites should be at least 10.
- The length should be at least 800 feet.
- Must be cost-effective.

The maximum sound barrier height would be 14 feet for at-grade sections. Berm and berm/wall combinations are the preferred types of sound barriers where space and other environmental constraints permit. On aerial structures, the maximum sound barrier height would also be 14 feet, but barrier material would be limited by engineering weight restrictions for barriers on the structure. All sound barriers would be designed to be as low as possible to achieve a substantial noise reduction.

As discussed under F-B LGA N&V-MM#6 and N&V-MM#6, below, an updated noise and vibration assessment will be completed in final design prior to the start of construction

Install Building Sound Insulation

If sound barriers are not proposed for receptors with severe impacts, or if proposed sound barriers would not reduce exterior sound levels to below a severe impact level, the Authority would consider building sound insulation as a potential additional mitigation measure on a case-by-case basis. Sound insulation of residences and institutional buildings to improve outdoor-to-indoor noise reduction is a mitigation measure that can be considered when the use of sound barriers is not feasible in providing a reasonable level (5 to 7 dBA) of noise reduction. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where sound barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dBA) can often be achieved by adding an extra layer of glazing to windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air conditioning so that windows do not need to be opened.

Noise Easements

If a substantial noise reduction cannot be completed through installation of sound barriers or building sound insulation, the Authority will consider acquiring a noise easement on properties with a severe impact on a case-by-case basis. An agreement between the Authority and the property owner can be established wherein the property owner releases the right to petition the Authority regarding the noise level and subsequent disruptions. This would take the form of an easement that would encompass the property boundaries to the right-of-way of the rail line. The Authority would consider this mitigation measure only in isolated cases where other mitigation is ineffective or infeasible.

N&V-MM#4: Vehicle Noise Specification. During high-speed rail (HSR) vehicle technology procurement, 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-dB-level standard) operating at speeds of greater than 45 mph.

N&V-MM#5: Special Trackwork. Prior to construction, the Contractor shall provide the Authority with an HSR operation noise technical report for review and approval. The report shall address the minimization/elimination of rail gaps at turnouts. Because the impacts of HSR wheels over rail gaps at turnouts increases HSR noise by approximately 6 dB over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the noise technical report will recommend the use of special types of trackwork that eliminate the gap. The Authority will require the project design to follow the recommendations in the approved noise impact report.

N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design. Prior to construction, the contractor shall provide the Authority with an HSR operation noise technical report for review and approval. If final design or final vehicle specifications result in changes to

the assumptions underlying the noise technical report, the Authority shall prepare necessary environmental documentation, as required by CEQA and NEPA, to reassess noise impacts and mitigation. Table 3.4-37 shows potential vibration mitigation procedures.

N&V-MM#7: Station, Maintenance-of-Way Facility, and Traction Power Substation. In order to reduce the noise from the facilities, the Authority will implement the following noise mitigation measures, which will be accomplished as part of facility design:

- Enclose as many of the activities within the facility as possible.
- Eliminate windows in the building that would face toward noise-sensitive land uses adjacent to the facility. If windows are required to be located on the side of the facility facing noise-sensitive land uses, they should be the fixed type of windows with a sound transmission class rating of at least 35. If the windows must be operable, they should be closed during nighttime activities.
- Close facility doors where the rails enter the facility during nighttime activities.
- Locate tracks that cannot be located within the facility on the far side of the facility from adjacent noise-sensitive receivers.
- For tracks that cannot be installed away from noise-sensitive receivers, install sound barrier along the tracks in order to protect the adjacent noise-sensitive receivers.
- Locate all mechanical equipment (compressors, pumps, generators, etc.) within the facility structure.
- Locate any mechanical equipment located exterior to the facility (compressors, pumps, generators, etc.) on the far side of the facility from adjacent noise-sensitive receivers. If this is not possible, this equipment should be located within noise enclosures to mitigate the noise during operation.
- Point all ventilation ducting for the facility away from the adjacent noise-sensitive receivers.

N&V-MM#8: Startle Effect Warning Signage. The following signage will be posted along the Pacific Crest Trail:

- A passive warning sign at approximately 1,300 feet or farther from the alignment warning of an upcoming train crossing
- An active warning sign at 60+ feet of the alignment warning users of an upcoming train crossing and the approximate time for the crossing (number of minutes)

A.2.4 Referenced Mitigation Measures for Electromagnetic Interference/ Electromagnetic Fields

EMI/EMF-MM#1: Protect Sensitive Equipment. The Authority would contact entities where sensitive equipment is located to evaluate the potential impacts of both HSR Project-related EMF RF and EMI on imaging equipment prior to completion of final design. Where necessary to avoid interference, the final design would include suitable design provisions to prevent EMI. These design provisions may include establishing magnetic field shielding walls around sensitive equipment or installing RF filters into sensitive equipment.

HSR-related EMI may affect highly susceptible, unshielded sensitive RF equipment such as older MRI systems and other measuring devices common to medical and research laboratories. Most of the devices manufactured today have adequate shielding from all potential EMI sources; however, the potential exists for older devices to be affected and require shielding.

A shielded enclosure is very effective at preventing external EMI. Metallic materials are used for shielding (specifically high-conductivity metals for high-frequency interference, such as from HSR operation), and high-permeability metals are used for low-frequency interference. Often either the housing of the affected device is coated with a conductive layer or the housing itself is made

conductive. In some situations, it may be necessary to reduce EMI for a suite of devices by creating a shielded room or rooms.

Attenuation, or the effectiveness of EMI shielding, is the difference between an electromagnetic signal's intensity before and after shielding. Attenuation is the ratio between field strength with and without the presence of a protective medium measured in decibels (dB). This decibel range changes on a logarithmic scale, so an attenuation rating of 50 dB indicates a shielding strength 10 times that of 40 dB. In general, a shielding range between 60 dB and 90 dB represents a high level of protection, while 90 dB to 120 dB is exceptional.

A.2.5 Referenced Mitigation Measures for Public Utilities and Energy

PU&E-MM#1: Reconfigure existing Magunden Substation ancillary components located approximately 250 feet north of the Union Pacific Railroad mainline in Bakersfield, south of Mills Drive.

A.2.6 Referenced Mitigation Measures for Biological and Aquatic Resources

BIO-MM#1: Conduct Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Prior to any ground disturbing activity, the project biologist will conduct presence/absence botanical field surveys for special-status plant species and special-status plant sensitive natural communities in all potentially suitable habitats within a Work Area. The surveys shall be consistent with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018) and Guidelines for Conducting and Report Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2001). The Project Biologist will flag and record in GIS the locations of any observed special-status plant species and special-status plant sensitive natural communities and provide appropriate buffers for avoidance.

This mitigation measure is anticipated to be effective because it identifies, documents, and protects special-status plant species within 100 feet of the project footprint, reducing the potential for disturbance during construction. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species. Prior to any ground disturbing activity, the Project Biologist will collect seeds and plant materials and stockpile and segregate the top four inches of topsoil from locations within the Work Area where species listed as threatened or endangered under the FESA, threatened, endangered, or candidate for listing under CESA, state-designated "Rare" species, and California Rare Plant Rank 1B and 2 species were observed during surveys for use on off-site locations. Suitable sites to receive salvaged material include Authority mitigation sites, refuges, reserves, federal or state lands, and public/private mitigation banks.

If relocation or propagation is required by authorizations issued under the FESA and/or CESA, the Project Biologist will prepare a plant species salvage plan to address monitoring, salvage, relocation and/or seed banking of federal or State-listed plant species

The plan will include provisions that address the techniques, locations, and procedures required for the collection, storage, and relocation of seed or plant material; collection, stockpiling, and redistribution of topsoil and associated seed. The plan will also include requirements related to outcomes such as percent absolute cover of highly invasive species, as defined by the California Invasive Plant Council (less than documented baseline conditions), maintenance, monitoring, implementation, and the annual reporting. The plan will reflect conditions required under regulatory authorizations issued for federal or state-listed species. The Project Biologist will submit the plan to the Authority for review and approval.

This mitigation measure is anticipated to be effective because it salvages unavoidable special-status species within the project footprint; relocates salvaged species to suitable habitat acquired within the region, and monitors relocated species per the Special Plant Species Management

Plan to provide for suitable survival of special-status plant species, reducing the potential for disturbance during construction.

BIO-MM#2 would have a temporary impact on special-status plants through direct disturbance as part of salvage and relocation efforts, but ultimately would be beneficial because the plan would salvage, relocate, and protect special-status plants.

Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside of the project footprint for the purposes of relocating special-status plant species. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion), other biological resources (through direct and indirect impacts on species habitat), and cultural resources (through disturbance of archaeological resources and impacts on historic properties). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50. Impacts on additional environmental resources are not anticipated.

BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Prior to any ground disturbing activity, the Project Biologist will prepare a Restoration and Revegetation Plan (RRP) to address temporary impacts resulting from ground disturbing activities within areas that potentially support special-status species, wetlands and/or other aquatic resources. Restoration activities may include, but not be limited to: grading landform contours to approximate pre-disturbance conditions, re-vegetating disturbed areas with native plant species, and using certified weed-free straw and mulch. The Authority will implement the RRP in all temporarily disturbed areas outside of the permanent right-of-way that potentially support special-status species, wetlands and/or other aquatic resources.

Consistent with section 1415 of the Fixing America's Surface Transportation Act (FAST Act) restoration activities will provide habitat for native pollinators through plantings of native forbs and grasses. The Project Biologist will obtain a locally sourced native seed mix. The restoration success criteria will include limits on invasive species, as defined by the California Invasive Plant Council, to an increase no greater than 10 percent compared to the pre-disturbance condition, or to a level determined through a comparison with an appropriate reference site consisting of similar natural communities and management regimes. The RRP will outline at a minimum:

- a. Procedures for documenting pre-construction conditions for restoration purposes.
- b. Sources of plant materials and methods of propagation.
- c. Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas.
- d. Specification of success criteria for re-established plant communities.
- e. Specification of the remedial measures to be taken if success criteria are not met.
- f. Methods and requirements for monitoring restoration/replacement efforts, which may involve a combination of qualitative and/or quantitative data gathering.
- g. Maintenance, monitoring, and reporting schedules, including an annual report due to the Authority by January 31st of the following year.

The RRP will be submitted to the Authority and regulatory agencies, as defined in the conditions of regulatory authorizations, for review and approval.

This mitigation measure is anticipated to be effective because it creates an RRP to restore, revegetate, and monitor lands that provide suitable habitat for the special-status species affected by the B-P Build Alternatives. The RRP would establish specifications of success criteria to gauge the effectiveness of restoration and function of the mitigation lands. The mitigation lands, their management, and monitoring serve to allow for intended ecologic function of compensation habitat for sensitive plant species and special-status species habitat loss related to the B-P Build Alternatives.

Overall, the impacts of this measure would be beneficial to biological resources because the Authority would further consider impacts and would implement strategies to avoid temporary impacts during mitigation and restoration activities. If land is acquired for off-site mitigation, these lands may be converted from other current uses which could have potential impacts on agricultural resources (through farmland conversion), other biological resources (through direct and indirect impacts on species habitat), and cultural resources (through disturbance of archaeological resources and impacts on historic properties). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species. Prior to any ground disturbing activities, the Project Biologist will conduct pre-construction surveys in suitable habitat to determine the presence or absence of special-status reptiles and amphibian species within the Work Area. These surveys will be conducted in accordance with any required protocols. Surveys will be conducted no more than 30 days before the start of ground-disturbing activities in a Work Area. The results of the pre-construction survey will be used to guide the placement of Environmentally Sensitive Areas (ESAs) or conduct species relocation.

This mitigation measure is anticipated to be effective because it identifies and documents special-status reptile and amphibian species and their habitat within the project footprint, informing methods for the species' avoidance, protective fencing placement, and relocation activities. Implementation of this measure would have temporary impacts on special-status reptiles and amphibians resulting from take (harassment) of a few individuals, if identified during surveys. The sampling is an assessment that would be useful in understanding the species present and would help guide the implementation of the performance standards to be consistent with other mitigation requirements. In general, the surveys are minimally invasive and would not result in physical disturbance outside the project footprint. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species. The Project Biologist will monitor all initial ground disturbing activities that occur within suitable habitat for special-status reptiles and amphibians, and will conduct clearance surveys of suitable habitat in the Work Area on a daily basis. If a special-status reptile or amphibian is observed, the Project Biologist will identify actions, to the extent feasible, sufficient to avoid impacts on the species and to allow it to leave the area on its own volition. Such actions may include establishing a temporary ESA in the area where a special-status reptile or amphibian has been observed and delineating a 50-foot no-work buffer around the ESA. In circumstances where a no-work buffer is not feasible the Project Biologist will relocate any of the species observed from the Work Area. For federal or state-listed species, relocations will be undertaken in accordance with regulatory authorizations issued under the FESA and/or CESA.

This mitigation measure is anticipated to be effective because it implements wildlife exclusion fencing around the construction area, clearance surveys and construction monitoring for special-status reptile and amphibian species, avoidance of the species if present, and relocation of any individuals within the active construction area to areas outside of the footprint that otherwise could be harmed by construction activities. Implementation of this measure would have temporary impacts on special-status reptiles and amphibians resulting from take (harassment) of individuals, if identified during clearance surveys or monitoring. Surveys, construction monitoring, and relocation are minimally invasive and would not result in additional physical disturbance outside the project footprint. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#11: Conduct Surveys for Blunt-Nosed Leopard Lizard. No more than twelve months before the start of any ground disturbing activity, in accordance with authorizations under FESA, a habitat assessment of the project footprint will be conducted by the Project Biologist in suitable habitat for the blunt-nosed leopard lizard to identify all habitat suitable for blunt-nosed leopard

lizard within the project footprint. Within twelve months prior to any ground-disturbing activity, the Project Biologist will conduct surveys for blunt nosed leopard lizard in blunt-nosed lizard suitable habitats (e.g., areas containing burrows) within the Work Area. These surveys will be conducted in accordance with the Approved Survey Methodology for the Blunt-Nosed Leopard Lizard (CDFW 2019), or other more recent guidelines, if available.

In instances where blunt-nosed leopard lizards are observed at any time during presence/absence surveys, pre-construction surveys, or construction monitoring, USFWS and CDFW will be notified of the occurrence within two business days.

This mitigation measure is anticipated to be effective because it identifies and documents blunt-nosed leopard lizard individuals and their habitat within 250 feet of the project footprint, informing the species' avoidance, protective fencing placement, and mitigation. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#13: Implement Avoidance Measures for Blunt-Nosed Leopard Lizard. For Work Areas where surveys confirm that blunt-nosed leopard lizards are absent, the Project Biologist may install Wildlife Exclusion Fencing (WEF) along the perimeter of the Work Area. The WEF will be monitored daily and maintained.

During the non-active season for blunt-nosed leopard lizards (October 16 through April 14), to the extent feasible, ground disturbing activities will not occur in areas where blunt-nosed leopard lizards or signs of the species have been observed and that contain burrows suitable for blunt-nosed leopard lizards. If ground disturbing activities are scheduled during the non-active season, suitable burrows identified during the surveys will be avoided through establishment of 50-foot no-work buffers. The Project Biologist may reduce the size of the no-work buffers if information indicates that the extent of the underground portion of burrows is less than 50 feet.

During the active season when blunt-nosed leopard lizards are moving above-ground (April 15 through October 15), the following measures will be implemented in areas where blunt-nosed leopard lizards or signs of blunt-nosed leopard lizards have been observed:

- Establishment of No-Work Buffers. The Project Biologist will establish, monitor, and maintain 50-foot no-work buffers around burrows and egg clutch sites identified during surveys. The 50-foot no-work buffers will be established around burrows in a manner that allows for a connection between the burrow site and the suitable natural habitat adjacent to the Construction Footprint so that blunt-nosed leopard lizards and/ or hatchlings may leave the area after eggs have hatched. Construction activities will not occur within the 50-foot no-work buffers until such time as the eggs have hatched and blunt-nosed leopard lizards have left the area.
- Fencing of Work Areas. Prior to installing wildlife exclusion fence (WEF), the Project Biologist will confirm that no blunt-nosed leopard lizards are present within a Work Area by conducting focused blunt-nosed leopard lizard observational surveys for 12 days over the course of a 30 to 60-day period. At least one survey session will occur over 4 consecutive days. These observational surveys may be paired with scent detection dog surveys for blunt-nosed leopard lizard scat.
 - Within 3 days of completing these surveys with negative results, WEF will be installed in a configuration that accounts for burrow locations and enables blunt-nosed leopard lizards to leave the Work Area. The following day, the Project Biologist will conduct an observational survey. If no blunt-nosed leopard lizards are observed, the Project Biologist will install additional WEF to further enclose the Work Area. This Work Area will be monitored daily while the WEF is in place.
 - If blunt-nosed leopard lizards are observed prior to installing the last of the WEF, the Project Biologist will continue observational surveys until the lizard is observed leaving

the Work Area or until 30 days elapse with no blunt-nosed leopard lizards observations within the Work Area.

This mitigation measure is anticipated to be effective because it provides for regular surveys and monitoring of blunt-nosed leopard lizard during both active and non-active seasons for this species, thus informing the species' avoidance, protective fencing placement, and mitigation. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds. Prior to any ground-disturbing activity, including vegetation removal, staging, and site visits scheduled to occur during the bird breeding season (February 1 to September 1), the Project Biologist will conduct visual pre-construction surveys within the Work Area for nesting birds and active nests (nests with eggs or young) of non-raptor species listed under the Migratory Bird Treaty Act and/or the Fish and Game Code. These surveys will be conducted in accordance with any required protocols.

In the event that active bird nests are observed during the pre-construction survey, the Project Biologist will delineate no-work buffers. No-work buffers will be set at a distance of 75 feet, unless a larger buffer is required pursuant to regulatory authorizations issued under the FESA and/or CESA. No-work zone buffers will be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival or the Project Biologist determines that the nest has been abandoned. In circumstances where it is not feasible to maintain the standard no-work buffer, the no-work buffer may be reduced, provided that the Project Biologist monitors the active nest during the construction activity to ensure that the nesting birds do not become agitated. Additional measures that may be used when no-work buffers are reduced include visual screens and sound barriers. If established no-work zone buffers cannot be implemented, the Project Biologist will establish a new buffer.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active nests within 500 feet of the proposed construction area, establishes protective buffers from construction around active nests, and monitors the nests until they are inactive. The buffers and subsequent nest monitoring prevent construction activities from disturbing nests while active, allowing young to develop and fledge. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors. If construction or other vegetation removal activities are scheduled to occur during the breeding season for raptors (January 1 to September 1), no more than 14-days before the start of the activities, the Project Biologist will conduct pre-construction surveys for nesting raptors in areas where suitable habitat is present. Specifically, such surveys will be conducted in habitat areas within the Construction Footprint and, where access is available, within 500 feet of the boundary of the Construction Footprint. If breeding raptors with active nests are found, the Project Biologist will delineate a 500-foot buffer (or as modified by regulatory authorizations for species listed under FESA and/or CESA) around the nest to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or until such time as the Project Biologist determines that the nest has been abandoned. Nest buffers may be adjusted if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on nesting raptors. If established no-work zone buffers cannot be implemented, Project Biologist will establish a new buffer.

BIO-MM#15 would have temporary impacts on nesting raptors from the disruption or disturbance required during surveys. Overall, this measure would be beneficial and would allow the B-P Build Alternatives to avoid the removal of occupied nests.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active raptor nests within 500 feet of the proposed construction area, establishes protective buffers from construction around active nests, and monitors the nests until they are inactive. The buffers and subsequent nest monitoring prevent construction activities from disturbing raptor nests while active, allowing young to develop and fledge. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#16: Implement Avoidance Measures for California Condor. During any ground-disturbing activities within the range of the California condor, as delineated in the USFWS database, the Authority will implement the following avoidance measures:

- The Project Biologist will be present for construction activities occurring within two miles of known California condor roosting sites.
- If USFWS informs the Authority or if the Authority is otherwise made aware that California condors are roosting within 0.5 miles of a Work Area, no construction activity will occur during the period between one hour before sunset and one hour after sunrise.
- All construction materials located within Work Areas, including items that could pose a risk of entanglement, such as ropes and cables, will be properly stored, covered, and secured when not in use.
- Littering of trash and food waste is prohibited. All litter, small artificial items (screws, washers, nuts, bolts, etc.), and food waste will be collected and disposed of from Work Areas on at least a daily basis.
- All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations. These materials will be kept in segregated, secured and/or secondary containment facilities as necessary. Any spills of liquid substances that could harm condors will be immediately addressed.
- Avoid the use of ethylene glycol-based anti-freeze or other ethylene glycol-based liquid substances. All parked vehicles/equipment will be kept free of leaks, particularly anti-freeze. Vehicles will be checked daily for leaks.
- Polychemical lines will not be used or stored on-site to preclude condors from obtaining and ingesting pieces of polychemical lines.
- If a California condor(s) lands in any Work Area, the Project Biologist will assess construction activities occurring at the time and determine whether those activities present a potential hazard to the individual California condor. Activities determined by the Project Biologist to present a potential hazard to the California condor will be stopped until the bird has abandoned the area. Methods approved by USFWS for hazing California condors to encourage abandonment of the construction site, Guidance on Hazing California Condors (September 2014), may be used as necessary.
- The Project Biologist will coordinate with USFWS prior to construction-related uses of helicopters to establish that no California condors are present in the area. If California condors are observed in the area in which helicopters will operate, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area.

This mitigation measure is anticipated to be effective because it would restrict construction activities in areas within 0.5 miles of roosting California condors and provides specific measures for keeping the Work Area free of materials that would attract or endanger California condors. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests and Implement Avoidance and Minimization Measures. Surveys must be performed no more than one year prior to the

commencement of construction activities. The Project Biologist will conduct surveys for Swainson's hawk during the nesting season (March through August) within both the Work Area and a 0.5-mile buffer surrounding the Work Area, provided access to such areas is available. No sooner than 30 days prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys of nests identified during the earlier surveys to determine if any are occupied. The initial nesting season surveys and subsequent pre-construction nest surveys will follow the protocols set out in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000), and for the areas within the Antelope Valley, the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (California Energy Commission and California Department of Fish and Game, 2010).

This mitigation measure is anticipated to be effective because it would require identification and documentation of active Swainson's hawk nests within 0.5-mile of the proposed construction area, and establishes protective buffers from construction around active nests. The buffers and subsequent nest monitoring prevent construction activities from disturbing raptor nests while active, allowing young to develop and fledge. Implementation of the mitigation measure would have temporary impacts on Swainson's hawks from the disruption or disturbance required to survey for them. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson's Hawk Nests. Any active Swainson's hawk nests (defined as a nest used one or more times in the last five years) found within 0.5-mile of the boundary of the Work Area during the nesting season (February 1 to September 1) will be monitored daily by the Project Biologist to assess whether the nest is occupied. If the nest is occupied, the Project Biologist will establish no-work buffers following consultation with CDFW and CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's hawks (*Buteo swainsoni*) in the Central Valley of California (CDFG 1994). The status of the nest will be monitored until the young fledge or for the length of construction activities, whichever occurs first. Adjustments to the buffer(s) may be made in consultation with CDFW.

If an occupied Swainson's hawk nest tree is to be removed, an incidental take permit under CESA will be obtained and impacts will be minimized and fully mitigated.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active Swainson's hawk nests within 0.5-mile of the proposed construction area, establishes protective buffers from construction around active nests, and monitors the nests until they are inactive. The buffers and subsequent nest monitoring prevent construction activities from disturbing Swainson's hawk nests while active, allowing young to develop and fledge. Implementation of the mitigation measure would have temporary impacts on Swainson's hawks from the disruption or disturbance required to survey for them. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls. Prior to any ground disturbing activity, the Project Biologist will conduct protocol-level surveys for burrowing owl within suitable habitat located in the Work Area and/or extending 500 feet from the boundary of the Work Area, where access is available. Surveys will be conducted in accordance with guidelines in the CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012c).

BIO-MM#20 would have temporary impacts on burrowing owls from disruption of their normal behavior resulting from conducting surveys. Overall, the measure would be beneficial because it would allow the B-P Build Alternatives to avoid affecting burrowing owls. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for additional impacts on biological or other resources

This mitigation measure is anticipated to be effective because it would require identification and documentation of active burrowing owl burrows and foraging habitat within 500 feet of the proposed construction area to avoid impacts from construction activities, and guides future protective buffer placement and mitigation. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl.

Occupied burrowing owl burrows that will be directly affected by ground disturbing activities will be relocated in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). To the extent feasible, the Project Biologist will establish 600-foot no-work buffers around occupied burrowing owl burrows in the Work Area during the nesting season (February 1 through September 1). If the no-work buffer is not feasible and occupied burrows will be relocated during the nesting season, relocation will occur either before the birds have begun egg-laying and incubation or after the Project Biologist has determined that the juveniles from the occupied burrows are foraging independently and are capable of independent survival.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active burrowing owl burrows, foraging habitat, and nest burrows within 500 feet of the proposed construction area; establishes buffers around active nest burrows; monitors nest burrows to determine when they are no longer active; and evicts owls from non-nest burrows in the project footprint to avoid owl mortality from construction activities. This measure would have temporary impacts on non-nesting burrowing owls because it would allow the B-P Build Alternatives to avoid the loss of burrowing owls by avoiding the removal of occupied burrows outside of the nesting season. The buffers, monitoring, and eviction prevent construction activities from disturbing active nest burrows or occupied non-nest burrows, allowing young to develop and fledge and owls to vacate the project footprint prior to construction disturbance.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#22: Conduct Pre-Construction Surveys for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. Prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys in potentially suitable habitat within the Work Area to identify burrows or signs of presence of Nelson's antelope squirrel, Tipton kangaroo rat, Dulzura pocket mouse, or Tulare grasshopper mouse. The surveys will be conducted within two years of, and at least 14 days before, the start of ground disturbing activities in a Work Area. These surveys will be conducted in accordance with any required protocols.

This mitigation measure is anticipated to be effective because it would require identification and documentation of potential Nelson's Antelope Squirrel, Tipton kangaroo rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse burrows within the Work Area plus a 50-foot buffer to avoid mortality or injury of individuals from construction activities, and guides future protective avoidance and relocation.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#23: Implement Avoidance and Minimization Measures for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. If burrows or signs of Nelson's antelope squirrel, Tipton kangaroo rat, Dulzura pocket mouse, or Tulare grasshopper mouse are observed during pre-construction surveys, the Project Biologist will establish Environmentally Sensitive Areas (ESAs) and install Wildlife Exclusion Fencing at least 14 days before the start of ground disturbing activities in areas where burrows or signs were observed. To the extent feasible, no-work buffers extending 50 feet beyond the ESAs will be

established. The WEF will be installed in a manner that provides for the exclusion of the special-status small mammals from the Work Area, but allows them to exit the area.

After the WEF is installed, the Project Biologist will conduct trapping and relocation for Nelson's antelope squirrel, Tipton kangaroo rat, Dulzura pocket mouse, and Tulare grasshopper mouse, in coordination with CDFW and USFWS regarding appropriate methods and required permits.

This mitigation measure is anticipated to be effective because it identifies and documents Nelson's Antelope Squirrel, Tipton kangaroo rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse within the Work Area and a 50-foot buffer, installs WEF to prevent special-status mammals from entering the Work Area, and if needed, routinely monitors and relocates individuals to suitable habitat outside of the Work Area to avoid mortality or injury of individuals from construction activities. BIO-MM#23 would have temporary impacts on Nelson's Antelope Squirrel, Tipton kangaroo rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse from catching and relocating individuals, which would disrupt their normal behavior and movement patterns. Overall, this measure would minimize the potential of mortality to Nelson's Antelope Squirrel, Tipton kangaroo rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#25: Conduct Pre-construction Surveys for Special-Status Bat Species. No earlier than thirty days prior to the start of ground disturbing activities in a Work Area, the Project Biologist will conduct a visual and acoustic survey (over the course of one day and one evening at a minimum) for roosting bats in the Work Area and extending 500 feet from the boundary of the Work Area, where access is available. Such surveys will be conducted only in those areas in which bridges, abandoned structures, trees with large cavities or dense foliage are present within a half mile of the boundary of the Work Area.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active bat roosts (hibernation and nursery) within and immediately adjacent to the proposed Work Area to avoid impacts from construction activities, and guides future protective avoidance and relocation. This measure would have no impacts on roosting bats because noninvasive survey techniques would be used.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#26: Implement Bat Avoidance and Relocation Measures. Prior to any ground-disturbing activity, the Project Biologist shall survey for active hibernacula or maternity roosts. If active hibernacula or maternity roosts are identified in the Work Area or 500 feet extending from the Work Area during pre-construction surveys, they will be avoided to the extent feasible. Clearing and grubbing will be prohibited adjacent to the roost site. Lighting use near the roost site where it would shine on the roost or interfere with bats entering or leaving the roost will also be prohibited. Operation of internal combustion equipment, such as generators, pumps and vehicles shall be prohibited within 300 feet of the roost site.

If avoidance of a hibernacula is not feasible, through coordination with CDFW, portions of the features that provide naturalized habitat will be maintained to the greatest extent possible. In addition, improvements will be made to existing roost sites and/or new roost sites on buildings or within the project site area will be provided. New roosts will be in place prior to the initiation of project-related activities to allow enough time for bats to relocate.

Additionally, if avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the Work Area. The relocation plan will be submitted to CDFW for review prior to construction activities.

The Project Biologist will implement the relocation plan before the commencement of any ground disturbing activities that will occur within 500 feet of the hibernacula. Removal of roosts will be guided by accepted exclusion and deterrent techniques.

This mitigation measure is anticipated to be effective because it avoids (to the extent feasible) and monitors active bat roosts (hibernation and nursery) within and immediately adjacent to the proposed construction area to avoid impacts from construction activities, requires preparation of a Bat Roost Relocation Plan before construction disturbance; and removes roosts before the hibernation period and after young are volant to avoid bat mortality from construction activities. The avoidance, relocation plan, seasonal restrictions on roost removal, and roost removal prevent construction activities from disturbing active bat roosts, allowing young to develop and bats to vacate the project footprint and immediately adjacent areas prior to construction disturbance. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#27: Implement Bat Exclusion and Deterrence Measures. If non-breeding or non-hibernating individuals or groups of bats are found roosting within the Work Area, the Project Biologist will facilitate the eviction of the bats by either opening the roosting area to change the lighting and airflow conditions, or installing one-way doors or other appropriate methods.

To the extent feasible, the Authority will leave the roost undisturbed by project activities for a minimum of one week after implementing exclusion and/or eviction activities. Steps will not be taken to evict bats from active maternity or hibernacula; instead such features may be relocated pursuant to a relocation plan.

This mitigation measure is anticipated to be effective because it deters (to the extent feasible) bat roosting and evicts bats from the proposed construction area and immediately adjacent areas before the hibernation period and after young are volant to avoid bat mortality prior to construction activities. The bat deterrence, seasonal restrictions on roost removal, and bat eviction prevent construction activities from disturbing active bat roosts, allow young to develop, and permit bats to vacate the project footprint and immediately adjacent areas prior to construction disturbance avoiding bat mortality. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures. Prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys for ringtail and ringtail den sites within suitable habitat located within the Work Area. These surveys will be conducted no more than 30 days before the start of ground disturbing activities in a Work Area. The Project Biologist will establish 100-foot no-work buffers around occupied maternity dens throughout the pup-rearing season (May 1 through June 15) and a 50-foot no work buffer around occupied dens during other times of the year.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active ringtail dens within the project footprint to avoid mortality or injury of individuals from construction activities, and guides future protective avoidance.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures. Prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys for American Badger den sites within suitable habitat located within the Work Area. These surveys will be conducted no less than 14 days and no more than 30 days prior to the start of ground disturbing activities in a Work Area. The Project Biologist will establish a 100-foot no-work buffer around occupied maternity dens throughout the pup-

rearing season (February 15 through July 1) and a 50-foot no-work buffer around occupied dens during other times of the year. If non-maternity dens are found and cannot be avoided during construction activities, they will be monitored for badger activity. If the Project Biologist determines that dens may be occupied, passive den exclusion measures will be implemented for three to five days to discourage the use of these dens prior to project disturbance activities.

This mitigation measure is anticipated to be effective because it avoids occupied and maternity American Badger dens within the project footprint during construction activities to allow young to develop, and badgers to vacate the dens and the project footprint, avoiding mortality or injury of individuals from construction activities.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#30: Conduct Pre-construction Surveys for San Joaquin Kit Fox. Within 30 days prior to the start of any ground disturbing activity, the Project Biologist will conduct pre-construction surveys in modeled suitable habitat, including urban suitable habitat, within the Work Area. The surveys will be conducted in accordance with USFWS' San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999) between May 1 and September 30 for the purpose of identifying potential San Joaquin kit fox dens. If any occupied or potential dens are found during pre-construction surveys, they will be flagged and a 50-foot no-work buffer will be established around the den until the den is cleared, if necessary to allow construction activities to proceed.

This mitigation measure is anticipated to be effective because it identifies and documents active San Joaquin kit fox dens within 250 feet of the project footprint to avoid mortality or injury of individuals from construction activities, and guides future protective avoidance and minimization. Implementation of BIO-MM#30 would have temporary impacts on San Joaquin kit fox as a result of disruption of their normal behavior resulting from conducting surveys. Overall, this measure would be beneficial to San Joaquin kit foxes because it would allow the B-P Build Alternatives to avoid the loss of this species.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#31: Minimize Impacts on San Joaquin Kit Fox. The Authority will implement USFWS' *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011a) to minimize impacts on this species, including:

- Disturbance to all kit fox dens will be avoided to the extent feasible.
- Construction activities that occur within 200 feet of any occupied dens will cease within one-half hour after sunset and will not begin earlier than one-half hour before sunrise, to the extent feasible.
- All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored within the Construction Footprint for one or more overnight periods will be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved.
- If a San Joaquin kit fox is detected within a Work Area during construction, the Project Biologist will request approval from the Service and CDFW to capture and relocate the kit fox if it does not safely leave the area by its own volition.
- To minimize the temporary impacts of WEF and construction exclusion fencing on kit fox and their movement/migration corridors during construction, artificial dens will be installed along the outer perimeter of WEF and construction exclusion fencing. Artificial dens or similar escape structures will also be installed at dedicated wildlife crossing structures to provide

escape cover and protection against predation. The artificial dens will be located on parcels owned by the Authority or at locations where access is available.

This mitigation measure is anticipated to be effective because it identifies and implements BMPs to avoid active San Joaquin kit fox dens within 250 feet of the project footprint to prevent mortality or injury of individuals from construction activities and minimize impacts on individuals from ground disturbance. BIO-MM#31 would have temporary impacts on San Joaquin kit fox as a result of disruption of their normal behavior resulting from conducting protective measures for individuals. Overall, this measure would be beneficial to San Joaquin kit foxes because it would allow the B-P Build Alternatives to avoid causing the loss of individuals of this species.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Within ninety days of completing construction in a Work Area, the Project Biologist will direct the revegetation and recontouring, as necessary, of any riparian areas temporarily disturbed as a result of the construction activities, using appropriate native plants and seed mixes. Native plants and seed mixes will be obtained from stock originating from areas within the local watershed, to the extent feasible. The Project Biologist will monitor restoration activities consistent with provisions in the Restoration and Revegetation Plan (RRP) (BIO-MM#6).

This mitigation measure is anticipated to be effective because it implements the RRP from BIO-MM#6 to restore riparian areas affected by the B-P Build Alternatives. The RRP would establish success criteria to gauge the effectiveness of restoration and function of the riparian habitat that was temporarily disturbed within the Work Area.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. Within ninety day of the completion of construction activities in a Work Area, the Authority will begin to restore aquatic resources that were temporarily affected by the construction. Aquatic resources are those resources considered waters of the U.S under the federal Clean Water Act and/or waters of the state under the Porter-Cologne Act. As set out in the Restoration and Revegetation Plan (RRP), such areas will be, to the extent feasible, restored to their natural topography. In areas where gravel or geotextile fabrics have been installed to protect substrate and to otherwise minimize impacts, the material will be removed and the affected features will be restored. The Authority will revegetate affected aquatic resources using appropriate native plants and seed mixes (from local vendors where available). The Authority will conduct maintenance monitoring consistent with the provisions of the RRP.

This mitigation measure is anticipated to be effective because it implements the RRP from BIO-MM#6 to restore aquatic resources impacted by the B-P Build Alternatives. The RRP would establish success criteria to gauge the effectiveness of restoration and function of the aquatic resources that were temporarily disturbed within the Work Area.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#34: Monitor Construction Activities within Aquatic Resources. The Project Biologist will monitor construction activities that occur within or adjacent to aquatic resources, including activities associated with the installation of protective barriers (e.g., silt fencing, sandbags, fencing), install and/or removal of creek material to accommodate crossings, construction of access roads, and removal of vegetation. As part of this effort, the Project Biologist will document compliance with applicable avoidance and minimization measures including measures set forth in regulatory authorizations issued under the CWA and/or Porter-Cologne.

This mitigation measure is anticipated to be effective because it ensures protection of aquatic resources within or adjacent to the Work Area through compliance with applicable avoidance and minimization measures as set forth in regulatory authorizations issued under the CWA and/or Porter-Cologne. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees. Prior to ground disturbing activities, the Project Biologist will conduct surveys in the Work Area to identify protected trees.

The Project Biologist will establish ESAs around protected trees with the potential to be affected by construction activities, but do not require removal. The ESAs will extend outward five feet from the drip lines of such protected trees.

The Authority will provide compensatory mitigation for impacts on protected trees, including impacts associated with removing or trimming a protected tree. Compensation will be based on requirements set out in applicable local government ordinances, policies and regulations. Compensatory mitigation may include, but is not limited to, the following:

- Transplantation of protected trees to areas outside of the Work Area.
- Replacement of protected trees at an off-site location, based on the number of protected trees impacted, at a ratio not to exceed 3:1 for native trees, 10:1 for heritage trees, or 1:1 for ornamental trees, unless higher ratios are required by local government ordinances or regulations.
- Contribution to a tree-planting fund.

This mitigation measure is anticipated to be effective because it ensures that any protected trees within the work area are either transplanted or replaced. Implementation of this measure may result in some additional physical disturbance outside the project footprint for any protected trees transplanted outside of the Work Area.

BIO-MM#36: Install Aprons or Barriers within Security Fencing. Prior to final construction design the Project Biologist will review the fencing plans along any portion of the permanent right-of-way that is adjacent to natural habitats (e.g., alkali desert scrub, annual grassland) and confirm that the permanent security fencing will be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below ground and 12 inches above ground to prevent special-status reptiles, amphibians and mammals from moving through or underneath the fencing and gaining access to areas within the right-of-way. At the 12-inch depth of the below grade portion of the apron, it will extend or be bent at an approximately 90-degree angle and oriented outward from the right-of-way a minimum of 12-inches, to prevent fossorial mammals, reptiles, and amphibians from digging or tunneling below the security fence and gaining access to the right-of-way. A climber barrier (e.g., rigid curved or bent overhang) will be installed at the top of the apron to prevent reptiles, amphibians and mammals from climbing over the apron.

The Project Biologist will ensure that the selected apron material and climber barrier does not cause harm, injury, entanglement, or entrapment to wildlife species. The Authority will provide for quarterly inspection and repair of the fencing.

The specific design and method for installation of an apron or barrier may vary as required by regulatory authorizations issued under FESA and/or CESA. Prior to operation the Project Biologist will field inspect the fencing along any portion of the permanent right-of-way that is adjacent to natural habitats (e.g., alkali desert scrub, annual grassland) and confirm that the fencing has been appropriately installed. Fencing plan review and field inspection will be documented in a memorandum from the Project Biologist and provided to the Authority.

This mitigation measure is anticipated to be effective because it implements fencing to exclude special-status mammals and reptiles from 250 feet of the project footprint to prevent mortality or injury of individuals from construction activities. BIO-MM#36 would affect wildlife movement

because it would create a new barrier in areas that are currently barrier-free. However, because it would prevent terrestrial wildlife from entering the railroad right-of-way, it would also likely reduce wildlife mortality. In addition, impacts on wildlife movement would be minimized through the creation of wildlife crossing structures near known wildlife corridors.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#37: Minimize Effects to Wildlife Movement Corridors during Construction. To the extent feasible, 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). The Authority will avoid conducting ground disturbing activities in wildlife movement corridors during nighttime hours, to the extent feasible, and will shield nighttime lighting to avoid illuminating wildlife movement corridors in circumstances where avoidance of such activities is not feasible. Steps to minimize lighting effects to wildlife movement corridors during construction will be consistent with BIO-MM#86: Implement Lighting Minimization Measures During Construction.

This mitigation measure is anticipated to be effective because it minimizes construction-related disturbance to terrestrial wildlife using established wildlife movement linkages. By limiting the amount of construction fencing and permanent fencing, the impacts on wildlife movement corridors would be reduced. Furthermore, by reducing the amount of light and noise where construction is required over linkages (e.g., stream crossings), individual animals would be less likely to avoid the area and alter their natural behavioral patterns.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#38: Compensate for Impacts to Listed Plant Species. The Authority will provide compensatory mitigation for direct impacts to federal and State-listed plant species based on the number of acres of plant habitat directly affected. Such mitigation will include the following measures:

- Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts to federally listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under FESA.
- Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts to State-listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under CESA.

Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM# 53

This mitigation measure is anticipated to be effective because it provides a minimum compensatory mitigation standard for special-status plants (i.e., 1:1 ratio). Potential secondary impacts on biological and other resources from this measure would be the same as those described under BIO-MM#50. No other secondary impacts are anticipated.

BIO-MM#42: Provide Compensatory Mitigation for Impacts on Habitat for Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat and Nelson’s Antelope Squirrel. The Authority will provide compensatory mitigation to offset the permanent and temporary loss of suitable habitat for the Tipton kangaroo rat and Nelson’s antelope squirrel. Mitigation will be provided at a ratio of 1:1, unless a higher ratio is required by authorizations issued under FESA for Tipton kangaroo rat or blunt-nosed leopard lizard, or under CESA for Tipton kangaroo rat or Nelson’s antelope squirrel. Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

This mitigation measure is anticipated to be effective because it provides compensatory mitigation at a minimum 1:1 ratio for the Tipton kangaroo rat, Nelson's antelope squirrel, and Blunt-nosed leopard lizard. Potential secondary impacts on biological and other resources from this measure would be the same as those described under BIO-MM#50. No other secondary impacts are anticipated.

BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat. To compensate for permanent impacts on active Swainson's hawk nest trees (i.e., trees in which Swainson's hawks were observed building nests during protocol-level surveys described in BIO-MM#48) and foraging habitat, the Authority would provide project-specific compensatory mitigation that replaces affected nest trees and provides foraging habitat. Lands proposed as compensatory mitigation for Swainson's hawk would meet the following minimum criteria:

- Support at least three mature native riparian trees suitable for Swainson's hawk nesting (i.e., valley oak, Fremont cottonwood, or willow) for each Swainson's hawk nest tree (native or nonnative) removed by construction of the project extent, which results in a 3:1 ratio.
- Support at least one Swainson's hawk nesting territory in the last 5 years.
- Contribute to the project extent's mitigation commitment for Swainson's hawk foraging habitat, which would be calculated based on the following ratios:
 - 1:1 for impacts on Active Primary Foraging Habitat
 - 0.75:1 for impacts on Active Secondary Foraging Habitat
 - 0.5:1 for impacts on Active Tertiary Foraging Habitat.

This mitigation measure is anticipated to be effective because it provides minimum compensatory mitigation standards for nesting Swainson's hawks. Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside of the project footprint for the purposes of providing nesting habitat for Swainson's hawks. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat. To compensate for permanent impacts on nesting, occupied, and satellite burrows for burrowing owls and/or their habitat, the Authority will provide compensatory mitigation at a minimum ratio of 1:1 using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

This mitigation measure is anticipated to be effective because it provides minimum compensatory mitigation standards for burrowing owl. Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside of the project footprint for the purposes of providing habitat for burrowing owls. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#45: Provide Compensatory Mitigation for Impacts on San Joaquin Kit Fox Habitat. The Authority will provide compensatory mitigation for impacts on modeled San Joaquin kit fox habitat through the acquisition of suitable habitat that is acceptable to USFWS and CDFW. Habitat will be replaced at a minimum ratio of 1:1 for natural lands and at a ratio of 3:1 for suitable urban or agricultural lands, unless a higher ratio is required by regulatory authorizations issued under FESA and/or CESA.

Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM# 53.

This mitigation measure is anticipated to be effective because it provides minimum compensatory mitigation standards for San Joaquin kit fox. Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside of the project footprint for the purposes of providing habitat for San Joaquin kit fox. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat.

The Authority will compensate for permanent impacts on riparian habitats at a ratio of 2:1, unless a higher ratio is required by agencies with regulatory jurisdiction over the resource. Compensatory mitigation may occur through habitat restoration, the acquisition of credits from an approved mitigation bank, or participation in an in lieu fee program.

This mitigation measure is anticipated to be effective because it provides minimum compensatory mitigation standards for riparian habitats. Potential secondary impacts on biological and other resources from this measure are not anticipated if mitigation is provided through acquisition of credits from an approved mitigation bank or participation in an in lieu fee program. If mitigation is provided through off-site habitat restoration, then secondary impacts may occur as a result of lands being converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts on Aquatic Resources.

The Authority will prepare and implement a Compensatory Mitigation Plan (CMP) that identifies mitigation to address temporary and permanent loss, including functions and values, of aquatic resources as defined as waters of the U.S. under the federal Clean Water Act (CWA) and/or waters of the State under the Porter-Cologne Act. Compensatory mitigation may involve the restoration, establishment, enhancement, and/or preservation of aquatic resources through one or more of the following methods:

- Purchase of credits from an agency-approved mitigation bank.
- Preservation of aquatic resources through acquisition of property.
- Establishment, restoration, or enhancement of aquatic resources.
- In lieu fee contribution determined through consultation with the applicable regulatory agencies.

The following ratios will be used for compensatory mitigation unless a higher ratio is required pursuant to regulatory authorizations issued under Section 404 of the CWA and/or the Porter-Cologne Act:

- Vernal pools: 2:1.
- Seasonal wetlands: between 1.1:1 and 1.5:1 based on impact type, function and values lost.
- 1:1 off-site for permanent impacts.
- 1:1 on-site and 0.1:1 to 0.5:1 off-site for temporary impacts.

For mitigation involving establishment, restoration, enhancement, or preservation of aquatic resources by the Authority, the CMP will contain the following information:

- Objectives. A description of the resource types and amounts that will be provided, the type of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed or ecoregion.
- Site selection. A description of the factors considered during the term sustainability of the resource.
- Adaptive management plan. A management strategy to address changes in site conditions or other components of the compensatory mitigation project.

- Financial assurances. A description of financial assurances that will be provided to ensure that the compensatory mitigation will be successful.

In circumstances where the Authority intends to fulfill compensatory mitigation obligations by securing credits from approved mitigation banks or in-lieu fee programs, the CMP need only include the name of the specific mitigation bank or in-lieu fee program to be used and the method for calculating credits.

The proposed mitigation ratios are anticipated to be effective because they provide minimum compensatory mitigation standards for aquatic resources and maintain compliance with the no net loss policy. Potential secondary impacts on biological and other resources from this measure are not anticipated if mitigation is provided through acquisition of credits from an approved mitigation bank or participation in an in lieu fee program. If mitigation is provided through off-site establishment, restoration, or enhancement of aquatic resources, then secondary impacts may occur as a result of lands being converted from other current uses, such as agriculture. Ground disturbing restoration activities could have potential secondary environmental impacts on agricultural resources (through farmland conversion), other biological resources (through direct and indirect impacts on species habitat), and cultural resources (through disturbance of archaeological resources and impacts on historic properties). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#50: Implement Measures to Minimize Impacts during Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. Prior to ground disturbing activities associated with habitat restoration, enhancement, and/or creation actions at a mitigation site, the Authority will conduct a site assessment of the Work Area to identify biological and aquatic resources, including plant communities, land cover types, and the distribution of special-status plants and wildlife.

Based on the results of the site assessment, the Authority will obtain any necessary regulatory authorizations prior to conducting habitat restoration, enhancement and/or creation activities, including authorization under FESA or CESA, Fish and Game Code Section 1600 et seq., the Clean Water Act, and the Porter-Cologne Act.

The Authority will implement the following measures to avoid or minimize impacts to species habitat and aquatic biological resources during habitat restoration, enhancement or creation activities:

- IAMF: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
- IAMF: Establish Monofilament Restrictions
- IAMF: Prevent Entrapment in Construction Materials and Excavations
- IAMF: Delineate Equipment Staging Areas and Traffic Routes
- IAMF: Dispose of Construction Spoils and Waste
- IAMF: Clean Construction Equipment
- IAMF: Maintain Construction Sites
- MM: Conduct Pre-construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds
- MM: Conduct Pre-construction Surveys and Monitoring for Raptors
- MM: Restore Temporary Riparian Habitat Impacts
- MM: Restore Aquatic Resources Subject to Temporary Impacts
- MM: Prepare and Implement a Weed Control Plan
- MM: Notify and Report on "Take"
- MM: Delineate Environmentally Sensitive Areas and Install Wildlife Exclusion Fencing

- MM: Limit Vehicle Traffic and Construction Site Speeds
- MM: Work Stoppage

The off-site habitat restoration, enhancement, and preservation program would be designed, implemented, and monitored consistent with the terms and conditions of the federal and State permit authorizations as they apply to their jurisdiction and resources on-site. Potential impacts on site-specific hydrology and the downstream resources would be evaluated as a result of implementation of the restoration-related activity. Site-specific BMPs and a stormwater pollution prevention plan would be implemented as appropriate.

The Authority or its designee would report on compliance with permitting requirements. The Authority, or its designee, would be responsible for the monitoring and tracking of the program, would prepare a memorandum of compliance, and would submit it to the appropriate regulatory agency.

This mitigation measure is anticipated to be effective because it quantifies and compensates for temporary and permanent impacts (i.e., conversion of grassland special-status habitat to wetland) on the natural landscape that would occur from the restoration, enhancement, and preservation program actions at off-site mitigation sites, thereby avoiding a net loss of special-status species habitat.

Other Potential Impacts and Mitigations for Off-Site Mitigation Sites

Environmental impacts on other resource categories (beyond biological resources) are possible through implementing restoration activities at off-site mitigation sites. These impacts would result from transportation to and from the mitigation sites and from ground-disturbing activities on these sites to create habitat. Table 3.7-12 includes a discussion of the different resource categories and the potential for impacts from the off-site restoration activities.

Table 3.7-12 Potential Nonbiological Impacts of Off-Site Mitigation Activities

Resource Type	Potential for Impacts
Transportation	No. During initial restoration of habitat areas, earthmoving equipment and other construction vehicles would be transported to the sites. These trips would be relatively few in number and would not be anticipated to cause traffic congestion near or en route to/from the sites. After restoration, there would be intermittent transportation to and from the mitigation sites. These trips would be intermittent and largely single-vehicle trips and would not be anticipated to cause traffic congestion near or en route to/from the sites.
Air Quality and Global Climate Change	<p>Yes, for criteria pollutant emissions. Construction vehicle exhaust and vehicle trips during management activities would contribute to diesel particulate emissions.</p> <p>Earthmoving, grading, and vegetation removal activities on the mitigation sites would result in fugitive dust during construction. However, the B-P Build Alternatives include application of site BMPs and the inclusion of IAMFs to reduce fugitive dust.</p> <p>Habitat restoration and revegetation would take place on off-site mitigation sites in rural areas, and potential receptors sensitive to localized air impacts are anticipated to be distant. The establishment and management of these mitigation sites do not include any materials or activities that may subject receptors to objectionable odors.</p> <p>Vehicle trips and the use of mowers and other machinery associated with the establishment and management of the mitigation sites would contribute to GHG emissions. However, these activities would be short-term during construction and intermittent afterwards and, as stated in Section 3.3, Air Quality and Global Climate Change, the increase in the construction GHG emissions of the B-P Build Alternatives generated during construction would be offset by the net GHG reductions during operation.</p>

Resource Type	Potential for Impacts
Noise and Vibration	<p>No. Restoration activities may result in noise and vibration impacts from vehicles, heavy equipment, mowers, and other small machinery. These activities would occur in a limited capacity and for a short duration in comparison with the overall construction noise of the B-P Build Alternatives. As these sites are in a rural environment, sensitive receptors are generally distant. Thus, human receptors would not be exposed to the generation of noise levels in excess of established standards or local noise ordinances.</p>
Electromagnetic Interference and Electromagnetic Fields	<p>No. No large electrical equipment would be installed or removed at the mitigation sites and no ongoing radio or electrical transmissions would be required at the mitigation sites. Therefore, no electromagnetic fields would be generated that could cause electromagnetic interference.</p>
Public Utilities and Energy	<p>No. No existing energy infrastructure would be affected or required for the mitigation sites. The removal of existing irrigation systems, the removal of agricultural plantings, and the removal of any existing structures on the mitigation sites would generate small quantities of solid waste. These quantities are expected to be relatively small in the context of the total solid waste generated for construction of the B-P Build Alternatives, and local landfills have adequate capacity to accept any waste materials that would be hauled from the sites.</p> <p>At mitigation sites where irrigation infrastructure is currently in place, the existing irrigation water supply may be temporarily used. Water supply uses may include regular watering of native plantings to facilitate vegetation establishment and growth. Once success criteria have been met, the irrigation system would be removed and the watering efforts would cease.</p> <p>During this period, water use is not expected to exceed current water use patterns required for the existing agricultural uses. After establishment, these sites would not require irrigation water, and as such would increase the amount of water available for downstream uses. No irrigation facility would be removed or added that would affect the existing water supply for downstream water customers.</p> <p>Mitigation sites would not require construction or expansion of wastewater treatment facilities or stormwater drainage facilities.</p>
Hydrology and Water Resources	<p>No. Restoration activities at mitigation sites could result in channel/basin excavation, wetland and upland habitat enhancement and revegetation (hydroseed/plantings), channel enhancement and stabilization (installation of large woody debris, excavation of pools), and installation of erosion measures.</p> <p>As stated in Section 3.8, Hydrology and Water Resources, construction BMPs would be used to minimize or avoid the discharge of sediment from construction activities to waterways.</p> <p>Activities at mitigation sites would not include actions that would deplete groundwater supplies or interfere with groundwater recharge, such as creating an increase in impervious surfaces.</p> <p>Temporary construction activities associated with mitigation measures would not alter drainage patterns to a degree that would result in flooding or exceed the capacity of stormwater drainage facilities.</p>
Geology, Soils, Seismicity, and Paleontological Resources	<p>No. Restoration of the mitigation sites would not expose people or structures to potential impacts from the ruptures of an earthquake, strong seismic shaking, seismic-related ground failure, or landslides because no structures are proposed as part of the mitigation.</p> <p>Excavation and vegetation removal could result in soil erosion. However, erosion control measures would be implemented that would prevent impacts from soil erosion and landslides. No structures are proposed that could be affected by unstable soils, lateral spreading, subsidence, liquefaction, or collapse.</p> <p>Ground-disturbing activities associated with the restoration of mitigation sites could result in impacts on known and previously unknown paleontological deposits. The design of the B-P Build Alternatives includes effective measures to engage a paleontological resource specialist for direct monitoring during construction and provisions to halt construction if paleontological resources are found. These measures would avoid and reduce the potential loss of valuable paleontological resources.</p>

Resource Type	Potential for Impacts
Hazardous Materials and Wastes	<p>No. The establishment and management of off-site mitigation lands, including agricultural infrastructure removal, operation of heavy equipment, and use of herbicides could result in a temporary increase in the transportation, use, and storage of hazardous materials.</p> <p>Demolition of existing structures is unlikely but, if needed, may result in a temporary increase in waste disposal. However, structures likely to be removed would be small in scale, such as agricultural infrastructure involving wood, wire, metal, piping, and concrete materials and are not anticipated to contain large amounts of hazardous materials.</p> <p>Facilities and construction sites that use, store, generate, or dispose of hazardous materials or wastes and hazardous material/waste transporters are required to maintain plans for warning, notification, evacuation, and site security under stringent regulations (Section 3.10, Hazardous Materials and Wastes). Routine transport, use, storage, and disposal of hazardous materials are governed by numerous laws, regulations, and ordinances, thereby reducing the risk of accidental spills or releases.</p>
Safety and Security	<p>No. These mitigation sites would not be open to the public, and there would be no safety and security issues related to their establishment and management.</p>
Socioeconomics and Communities	<p>No. The use of these off-site mitigation sites would not divide an established community or displace housing or businesses. These sites do not presently contain public facilities that would require relocation and would not affect the economy through changes in property tax or sales tax revenues. If these sites are presently in agricultural production, their removal from production may result in minor changes to the agricultural economy and job base.</p>
Station Planning, Land Use, and Development	<p>No. These mitigation sites would not conflict with any applicable land use plans, policies, or regulations. As these sites are presently agricultural or range land, their protection from development to use for biological resource mitigation would not create new incompatible land uses.</p>
Agricultural Farmland and Forest Land	<p>Yes. The partial or complete conversion of these mitigation sites to biological habitat could result in the loss of existing farmland or rangeland, including designated Important Farmland. It is not anticipated that there would be any required changes to Williamson Act contracts because the preservation of the land through the use of conservation easements and acquisition of the property would not threaten or violate the terms of most of the Williamson Act contracts.</p>
Parks, Recreation, and Open Space	<p>No. No impacts on parks and recreation would occur because these measures would not prevent the use of parks or recreation areas, acquire any current public open-space areas, create a barrier to the access of any park or recreation area, result in the acquisition of a recreation resource, increase the use of existing neighborhood and regional parks, or result in the alteration of existing recreational facilities.</p>
Aesthetics and Visual Resources	<p>No. No structures are needed or proposed for the mitigation sites and no lighting would be used. Therefore, none of the mitigation activities would block views or be sources of nighttime glare or light.</p>
Cultural Resources	<p>Yes, for archaeological resources, if such resources were demolished or altered. Ground-disturbing activities associated with the restoration of mitigation sites could result in impacts on known and previously unknown archaeological deposits. These resources may be eligible for the CRHR or the NRHP.</p> <p>The eligibility of historic architectural resources on these mitigation sites has not yet been evaluated and would take place prior to construction. Existing structures, including agricultural outbuildings and irrigation infrastructure, could be found to be eligible for the CRHR or the NRHP. Existing project design features and legal requirements would prevent the destruction or unauthorized alteration of any such architectural resources.</p>

Source: California High-Speed Rail Authority and Federal Railroad Administration, 2019

BMP = best management practice

CRHR = California Register of Historical Resources

IAMF = impact avoidance and minimization feature

GHG = greenhouse gas

NRHP = National Register of Historic Places

For potential air quality impacts related to criteria pollutants, the following IAMFs and mitigation measures would be implemented:

- **AQ-IAMF#4:** Reduce Criteria Exhaust Emissions from Construction Equipment
- **AQ-IAMF#5:** Reduce Criteria Exhaust Emissions from On-Road Construction Vehicles
- **AQ-MM#1:** Offset Construction Emissions through a San Joaquin Valley Air Pollution Control District Voluntary Emission Reduction Agreement

See Section 3.3 of this EIR/EIS for more information on these mitigation. With implementation of these mitigation measures, it is anticipated that criteria pollutant emission association with the off-site mitigation sites would effectively reduce potential impacts.

For potential impacts on agricultural farmland, the following mitigation measures would be implemented:

- **AG-MM#1:** Conserve Important Farmland (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)

While this mitigation measure would reduce the impact of the conversion of farmland at the mitigation sites, it may not completely avoid it and a net loss of Important Farmland may occur. As noted in Section 3.14, agricultural farmland has been converted to nonagricultural uses on a large scale throughout the San Joaquin Valley as a result of development pressures, and because agricultural farmland cannot be created, the loss of any such land is considerable. This impact is unavoidable and no additional mitigation is possible. For more information, refer to Section 3.14 of this EIR/EIS.

The potential impacts on cultural resources are discussed in Section 3.17 of this EIR/EIS. The following mitigation measures would reduce potential impacts of the off-site mitigation sites:

- **CUL-MM#1:** Mitigate Adverse Effects to Archaeological and Built Environment Resources Identified During Phased Identification. Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the PA and MOA
- **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

In conclusion, there are no new impacts or unique impacts associated with the establishment and management of the off-site mitigation areas that have not already been evaluated and addressed in other sections of this EIR/EIS.

BIO-MM#53: Prepare a Compensatory Mitigation Plan (CMP) for Species and Species Habitat. The Authority will prepare a Compensatory Mitigation Plan that sets out the compensatory mitigation that will be provided to offset permanent and temporary impacts to federal and State-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq. of the Fish and Game Code, and certain other special-status species. The CMP will include the following:

- A description of the species and habitat types for which compensatory mitigation is being provided.
- A description of the methods used to identify and evaluate mitigation options. Mitigation options will include one or more of the following:
 - Purchase of mitigation credits from an agency-approved mitigation bank.
 - Protection of habitat through acquisition of fee-title or conservation easement and funding for long-term management of the habitat. Title to lands acquired in fee will be transferred to CDFW and conservation easements will be held by an entity approved in writing by the applicable regulatory agency. In circumstances where the Authority protects habitat through a conservation easement, the terms of the conservation easement will be subject to approval of the applicable regulatory agencies, and the conservation easement will

identify applicable regulatory agencies as third party beneficiaries with a right of access to the easement areas.

- Payment to an existing in-lieu fee program.
- A summary of the estimated direct permanent and temporary impacts to species and species habitat.
- A description of the process that will be used to confirm impacts. Actual impacts to species and habitat could differ from estimates. Should this occur, adjustments will be made to the compensatory mitigation that will be provided. Adjustments to impact estimates and compensatory mitigation will occur in the following circumstances:
 - Impacts to species (typically measured as habitat loss) are reduced or increased as a result of changes in project design,
 - Pre-construction site assessments indicate that habitat features are absent (e.g., because of errors in land cover mapping or land cover conversion),
 - The habitat is determined to be unoccupied based on negative species surveys, or
 - Impacts initially categorized as permanent qualify as temporary impacts.
- An overview of the strategy for mitigating effects to species. The overview will include the ratios to be applied to determine mitigation levels and the resulting mitigation totals.
- A description of habitat restoration or enhancement projects, if any, that will contribute to compensatory mitigation commitments.
- A description of the success criteria that will be used to evaluate the performance of habitat restoration or enhancement projects, and a description of the types of monitoring that will be used to verify that such criteria have been met.
- A description of the management actions that will be used to maintain the habitat on the mitigation sites, and the funding mechanisms for long-term management.
- A description of adaptive management approaches, if applicable, that will be used in the management of species habitat:
 - A description of financial assurances that will be provided to demonstrate that the funding to implement mitigation is assured.

This mitigation measure is anticipated to be effective because it creates a CMP to provide compensatory mitigation to offset permanent and temporary impacts to special status species and habitats. The CMP will provide descriptions for compensatory mitigation to restore, and/or mitigate for suitable habitat affected by the B-P Build Alternatives. The CMP would establish specifications of success criteria to gauge the effectiveness of restoration and function of the mitigation lands. The mitigation lands, their management, and monitoring serve to allow for intended ecologic function of compensation habitat for sensitive plant species and special-status species habitat loss related to the B-P Build Alternatives.

Potential secondary impacts on biological and other resources from this measure are not anticipated if mitigation is provided through acquisition of credits from an approved mitigation bank or participation in an in lieu fee program. If mitigation is provided through off-site establishment, restoration, or enhancement of habitat for federal and State-listed species, then secondary impacts may occur as a result of lands being converted from other current uses, such as agriculture. Ground disturbing restoration activities could have potential secondary environmental impacts on agricultural resources (through farmland conversion), other biological resources (through direct and indirect impacts on species habitat), and cultural resources (through disturbance of archaeological resources and impacts on historic properties). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.

BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan. Prior to the operation and maintenance of the HSR, the Authority will prepare an Annual Vegetation Control

Plan (VCP) to address vegetation removal for the purpose of maintaining clear areas around facilities, reducing the risk of fire, and controlling invasive weeds during the operational phase. The Authority will generally follow the procedures established in Chapter C2 of the Caltrans Maintenance Manual to manage vegetation on Authority property (California Department of Transportation [Caltrans] 2010). Vegetation will be controlled by chemical, thermal, biological, cultural, mechanical, structural, and manual methods. The VCP will be updated each winter and completed in time to be implemented no later than April 1 of each year. The annual update to the VCP would include a section addressing issues encountered during the prior year and changes to be incorporated into the VCP. The plan will describe site-specific vegetation control methods, as outlined below:

- Chemical vegetation control methods
- Mowing program consistent with Section 1415 of the FAST Act
- Other non-chemical vegetation control
- Other chemical pest control methods (e.g., insects, snail, rodent)

Only Caltrans-approved herbicides may be used in the vegetation control program. Pesticide application will be conducted in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners by certified pesticide applicators. Noxious/invasive weeds will be treated where requested by County Agricultural Commissioners. The Authority will cooperate in area-wide efforts to control of noxious/invasive weeds if such programs have been established by local agencies.

This mitigation measure is anticipated to be effective because it implements a VCP for vegetation thereby controlling noxious/invasive weeds around facilities. The VCP would provide information on the previous year's issues encountered and resolved. Overall, the impacts of this measure would be beneficial to biological resources because the Authority would implement strategies to control the spread of noxious/invasive weeds. Potential secondary impacts of this measure could result from any spillage of pesticides; however, these impacts would be avoided or minimized through compliance with procedures stipulated in the Caltrans Maintenance Manual.

BIO-MM#55: Prepare and Implement a Weed Control Plan. Prior to any ground disturbing activity during the construction phase, the Project Biologist will develop a Weed Control Plan (WCP), subject to review and approval by the Authority and the SWRCB. The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground disturbing activities during construction and operations and maintenance.

The WCP will include, at a minimum, the following:

- A requirement to delineate Environmentally Sensitive Areas (ESAs) in the field prior to weed control activities.
- A schedule for weed surveys to be conducted in coordination with the BRMP.
- Success criteria for invasive weed control. The success criteria would be linked to the BRMP standards for on-site work during ground disturbing activities. In particular, the criteria would establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council (Cal-IPC), to less than or equal to the pre-disturbance conditions in the area temporarily affected by ground disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort will be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority will continue the monitoring and control efforts, and remedial actions will be identified and implemented until the success criteria are met.
- Provisions to ensure consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread and/or establishment of invasive species and reflects the same revegetation performance standards as the WCP.

- Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods.
- Timeframes for weed control treatment for each plant species.
- Identification of fire prevention measures.

This mitigation measure is anticipated to be effective because it implements a WCP for vegetation thereby controlling noxious/invasive weeds in areas of disturbance during construction and operations and maintenance. Overall, the impacts of this measure would be beneficial to biological resources because the Authority would implement strategies to control the spread of noxious/invasive weeds. Potential secondary impacts of this measure could result from any spillage of herbicides; however, these impacts would be avoided or minimized through compliance with procedures stipulated in the Caltrans Maintenance Manual.

BIO-MM#56: Conduct Monitoring of Construction Activities. During any initial ground disturbing activity, the Project Biologist will be present in the Work Area to verify compliance with avoidance and minimization measures, to establish ESAs, and install wildlife exclusion fencing (WEF) and construction exclusion fencing (exclusion fencing).

This mitigation measure is anticipated to be effective because it would provide monitoring and reporting during ground disturbance activities. Overall, the impacts of this measure would be beneficial to biological resources because the Authority would implement strategies to avoid temporary impacts during construction activities. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#58: Establish Environmentally Sensitive Areas and Non-Disturbance Zones. Prior to any ground disturbing activity in a Work Area, the Project Biologist will use flagging to mark Environmentally Sensitive Areas (ESAs) that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The Project Biologist will also direct the installation of Wildlife Exclusion Fencing (WEF) to prevent special-status wildlife species from entering Work Areas. The WEF will have exit doors to allow animals that may be inside an enclosed area to leave the area. The Project Biologist will also direct the installation of construction exclusionary fencing (exclusionary fencing) at the boundary of the Work Area, as appropriate, to avoid and minimize impacts to special-status species or aquatic resources outside of the Work Area during the construction period. The ESAs, WEF, and exclusionary fencing will be delineated by the Project Biologist based on the results of habitat mapping or modeling and any pre-construction surveys, and in coordination with the Authority. The ESA, WEF, and exclusionary fencing will be regularly inspected and maintained by the Project Biologist.

The ESA, WEF, and exclusionary fencing locations will be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and WEF will be explained at WEAP training and the locations of the ESA and WEF areas will be noted during worker tailgate sessions.

This mitigation measure is anticipated to be effective because it would provide identification and flagging of sensitive areas during construction activities. Overall, the impacts of this measure would be beneficial to biological resources because the Authority would implement strategies to avoid temporary impacts during construction activities. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Prior to any ground disturbing activities, the Project Biologist will ensure that appropriate measures have been instituted to restrict project vehicle traffic within the Construction Footprint to established roads, construction areas, and other permissible areas. The Project Biologist will establish vehicle speed limits of no more than 15 mph for unimproved access roads and for temporary and permanent construction areas within the Construction Footprint. The Project Biologist will also direct that

access routes be flagged and marked and that measures be adopted to prevent off-road vehicle traffic.

This mitigation measure is anticipated to be effective because it would provide measures and signage of traffic routes and speeds on the project site during construction. In addition, this measure provides for flagging of sensitive areas near construction vehicle routes so that they are not impacted by the movement of construction vehicles. Overall, the impacts of this measure would be beneficial to biological resources because the Authority would implement strategies to avoid temporary impacts from construction vehicles during construction activities. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#61: Establish and Implement a Compliance Reporting Program. The Project Biologist will prepare monthly and annual reports documenting compliance with all IAMFs, mitigation measures, and requirements set forth in regulatory agency authorizations. The Authority will review and approve all compliance reports prior to submittal to the regulatory agencies. Reports will be prepared in compliance with the content requirements outlined in the regulatory agency authorizations.

Pre-activity survey reports will be submitted within 15 days of completing the surveys and will include:

- Location(s) of where pre-activity surveys were completed, including latitude and longitude, Assessor Parcel Number, and HST parcel number.
- Written description of the surveyed area. A figure of each surveyed location will be provided that depicts the surveyed area and survey buffers over an aerial image.
- Date, time, and weather conditions observed at each location.
- Personnel who conducted the pre-activity surveys.
- Verification of the accuracy of the Authority's habitat mapping at each location, provided in writing and on a figure.
- Observations made during the survey, including the type and locations (written and GIS) of any sensitive resources detected.
- Identification of relevant measures from the BRMP to be implemented as a result of the survey observations.

Daily Compliance Reports will be submitted to the Authority via EMMA within 24 hours of each monitoring day. Non-compliance events will be reported to the Authority the day of the occurrence. Daily Compliance Reports will include:

- Date, time, and weather conditions observed at each location where monitoring occurred.
- Personnel who conducted compliance monitoring.
- Project activities monitored, including construction equipment in use.
- Compliance conditions implemented successfully.
- Non-compliance events observed.

Daily Compliance Reports will also be included in the Monthly Compliance Reports, which will be submitted to the Authority by the 10th of each month and will include:

- Summary of construction activities and locations during the reporting month, including any non-compliance events and their resolution, work stoppages, and take of threatened or endangered species.
- Summary of anticipated project activities and Work Areas for the upcoming month.

- Tracking of impacts to suitable habitats for each threatened and endangered species identified in USFWS and CDFW authorizations, including:
 - An accounting of the number of acres of habitats for which we provide compensatory mitigation that has been disturbed during the reporting month, and
 - An accounting of the cumulative total number of acres of threatened and endangered species habitat that has been disturbed during the project period.
- Up-to-date GIS layers, associated metadata, and photo documentation used to track acreages disturbed.
- Copies of all pre-activity survey reports, daily compliance reports, and non-compliance/ work stoppage reports for the reporting month.

Annual Reports will be submitted to the Authority by the 20th of January and will include:

- Summary of all Monthly Compliance Reports for the reporting year.
- A general description of the status of the project, including projected completion dates.
- All available information about project-related incidental take of threatened and endangered species.
- Information about other project impacts on the threatened and endangered species.
- A summary of findings from pre-construction surveys (e.g., number of times a threatened or endangered species or a den, burrow, or nest was encountered, location, if avoidance was achieved, if not, what other measures were implemented).
- Written description of disturbances to threatened and endangered species habitat within Work Areas, both for the preceding 12 months and in total since issuance of regulatory authorizations by USFWS and CDFW, and updated maps of all land disturbances and updated maps of identified habitat features suitable for threatened and endangered species within the project area.
- Written compliance with the reporting requirements established by any WDRs that have been issued.

In addition to the compliance reporting requirements outlined above, the following items will be provided for compliance documentation purposes:

- If agency personnel visit the Construction Footprint in accordance with BIO-IAMF#2, the Project Biologist will prepare a memorandum within one day of the visit that memorializes the issues raised during the field meeting. This memorandum will be submitted to the Authority via EMMA. Any issues regarding regulatory compliance raised by agency personnel will be reported to the Authority and the Contractor.
- Compliance reporting will be submitted to the Authority via EMMA in accordance with the report schedule. The Project Biologist will prepare and submit compliance reports that document the following:
 - Implementation and performance of the Restoration and Revegetation Plan described in BIO-MM.
 - Summary of progress made regarding the implementation of the Weed Control Plan described in BIO-MM.
 - Compliance with work window restrictions described in BIO-IAMF. The memorandum will be provided to the Authority for compliance monitoring documentation purposes.
 - Compliance with BIO-MM: Notify and Report on “Take”.
 - Compliance with BIO-MM: Establish Environmentally Sensitive Areas and Non-Disturbance Zones and Install Wildlife Exclusion Fencing.

- Compliance with BIO-IAMF: Establish Monofilament Restrictions; the Project Biologist.
- Compliance with BIO-IAMF: Prevent Entrapment in Construction Materials and Excavations.
- Compliance with BIO-IAMF: Delineate Equipment Staging Areas.
- Compliance with BIO-IAMF: Clean Construction Equipment.
- Compliance with BIO-MM: Limit Vehicle Traffic and Construction Site Speed.
- Compliance with BIO-IAMF: Design the Project to be Bird Safe.
- Compliance with BIO-IAMF: Dispose of Construction Spoils and Waste has been properly disposed.
- BMP field manual implementation and any recommended changes to construction site housekeeping practices outlined in BIO-IAMF: Maintain Construction Sites.
- Work stoppages and measures taken under BIO-MM: Stop Work and Remove Special Status Species from Construction Sites will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within two business days of the work stoppage.

This mitigation measure is anticipated to be effective because it would provide monitoring and reporting procedures during construction activities to ensure that all IAMFs and Mitigation Measures are implemented. Overall, the impacts of this measure would be beneficial to biological resources because the monitoring and reporting will ensure the ongoing avoidance and minimization of temporary impacts during construction activities. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. Prior to initiating any construction activity that occurs within open or flowing water, the Authority will prepare a dewatering plan, which will be subject to the review and approval by the applicable regulatory agencies. The plan will incorporate measures to minimize turbidity and siltation. The Project Biologist will monitor the dewatering and/or water diversion sites, including collection of water quality data, as applicable. Prior to the dewatering or diverting of water from a site, the Project Biologist will conduct pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In the event that special-status species are detected during pre-activity surveys, the Project Biologist will relocate the species (unless the species is Fully Protected under State law), with any regulatory authorizations applicable to the species.

This mitigation measure is anticipated to be effective because it would provide a dewatering plan to provide measures for minimizing impacts to waters and special-status species within affected waterbodies during construction activities. Overall, the impacts of this measure would be beneficial to aquatic resources because the measure would maintain water quality and ensure no impacts to special-status species within affected waterbodies. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#63: Work Stoppage. In the event that any special-status wildlife species is found in a Work Area, the Project Biologist will have the authority to halt work to prevent the death or injury to the species. Any such work stoppage will be limited to the area necessary to protect the species and work may be resumed once the Project Biologist determines that the individuals of the species have moved out of harm's way or the Project Biologist has relocated them out of the Work Area.

Any such work stoppages and the measures taken to facilitate the removal of the species, if any, will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within two business days of the work stoppage.

This mitigation measure is anticipated to be effective because it would provide procedures for the project biologist to stop work during construction activities to prevent adverse impacts to special-status wildlife species during construction. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#64: Establish Wildlife Crossings. The Authority will create dedicated wildlife crossings to accommodate wildlife movement across permanently fenced infrastructure (consistent with any wildlife corridor assessment prepared), where wildlife movement would be significantly reduced. Prior to final construction design the Project Biologist shall confirm appropriate placement and dimensions of wildlife crossings.

For terrestrial wildlife, all crossings will conform to the minimum spacing and dimensions identified in the Wildlife Corridor Assessment (Appendix I of the *Biological and Aquatic Resources Technical Report*), unless different dimensions are specified in authorizations issued under FESA or CESA.

To the extent feasible, all wildlife crossings created specifically for terrestrial species will include the following features and design considerations:

- Native earthen bottom
- Ledges or tunnels will be incorporated into the design to facilitate safe passage of small mammals
- Unobstructed entrances (e.g., no riprap, energy dissipaters, grates), although vegetative cover, adjacent to and near the entrances of crossings, is permissible
- Openness and clear line of sight from end to end
- Year-round absence of water for a portion of the width of the crossing (i.e., no flowing water)
- Slight grade at approaches to prevent flooding
- Limited open space between crossing and cover/habitat
- Separation from human use areas (e.g., trails, multiuse undercrossings)
- Avoidance of artificial light at approaches to wildlife crossings (Steps to minimize lighting effects to wildlife crossings will be consistent with BIO-MM#86: Implement Lighting Minimization Measures During Construction, and BIO-MM#87: Implement Lighting Minimization Measures for Operations.)
- Implementation of noise minimization measures identified in the Wildlife Corridor Assessment

In addition, the Authority will incorporate features to accommodate wildlife movement into the design of bridges and culverts that are replaced or modified as part of project construction, wherever feasible. Project Biologist review of final construction design for consistency with placement and dimensions of wildlife crossings will be verified in a memorandum provided to the Authority.

This mitigation measure is anticipated to be effective because it describes how to avoid affecting wildlife movement, and methods for creating new barrier-free areas. Fencing to prevent terrestrial wildlife from entering the railroad right-of-way, to reduce wildlife mortality, could obstruct wildlife crossings. Therefore, creating new barrier-free locations along the B-P Build Alternatives would minimize impacts on wildlife through the creation of new wildlife crossing structures near known wildlife corridors.

Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for secondary impacts on biological or other resources.

BIO-MM#65: Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles. At least one year prior to the start of any ground disturbing activities and construction, the Project Biologists will conduct nesting season surveys for eagles. Surveys for bald and golden

eagle nests will be conducted within 4 miles of any construction areas supporting suitable nesting habitat and important eagle roost sites and foraging areas. Surveys will be conducted in accordance with the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (USFWS 2010a), and CDFW's Bald Eagle Breeding Survey Instructions (CDFG 2010), or current guidance. A nesting territory or inventoried habitat will be considered unoccupied by golden eagles only after completing at least two full surveys in a single breeding season. Prior to initial construction activities, the Project Biologist will conduct a pre-construction sweep of the project site for golden eagle use and will provide no-work zone buffers where active nests are identified.

This mitigation measure is anticipated to be effective because it would require identification and documentation of active golden eagle nests within 0.4-mile of the proposed construction area, and establishes protective buffers from construction around active nests. The buffers and subsequent nest monitoring prevent construction activities from disturbing golden eagle nests while active, allowing young to develop and fledge. Implementation of the mitigation measure would have temporary impacts on golden eagles from the disruption or disturbance required to survey for them. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests. Prior to the start of any ground disturbing activity, if an occupied nest (as defined by Pagel et al., 2010) is detected within 4 miles of the work areas, the Authority will implement a 1-mile line-of-sight and 0.5 mile no line-of-sight no work buffer during the breeding season (January 1 through August 31) to ensure that construction activities do not result in injury or disturbance to eagles.

The no work buffer will be maintained throughout the breeding season or until the young have fledged and are no longer dependent upon the nest or parental care that includes nest use for survival. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained and nests monitored until the Project Biologist has determined that young have fledged and are no longer reliant upon the nest or parental care that includes nest use for survival.

Eagle nest exclusion zones may be removed if monitoring reveals the nest to be inactive as determined by the Project Biologist. An inactive eagle nest is one that is "no longer being used by eagles as determined by the continuing absence of any adult, egg, or dependent young at the nest for at least 10 consecutive days prior to, and including, at present" (USFWS 2016). Monitoring to demonstrate inactivity of eagle nests will follow observational procedures described by Pagel et al. (2010).

In bald and golden eagle nesting territories, the Project Biologist will examine debris piles daily and determine if there is a potential to attract prey species. If the Project Biologist determines debris piles may attract prey species and pose a danger to eagles, the debris piles will be removed or moved.

This mitigation measure is anticipated to be effective because it would restrict construction activities in areas within 0.4 miles of active golden eagle nests and provides specific measures for keeping the Work Area free of materials that would attract or endanger the Golden Eagle. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests. If preconstruction surveys identify active eagle nests in the permanent impact area, the Authority, in consultation with the USFWS and the CDFW, will develop a nest relocation or replacement plan for the affected nest(s). The plan will describe why there is no practicable alternative to nest removal while enabling project extent construction. Any relocation or replacement of eagle nests will be in accordance with the Bald and Golden Eagle Protection Act and subject to the following minimum requirements:

- The nest will be relocated, or a suitable nest will be provided, within the same territory to provide a viable nesting option for the affected eagle pair.
- Post construction monitoring to confirm continued nesting within the affected nesting territory will occur for a minimum of 3 years using observation procedures described by Pagel et al. (2010).

This mitigation measure is anticipated to be effective because the high standards of the Bald and Golden Eagle Protection Act will ensure that any practicable alternatives to nest relocation or replacement, such as additional protective measures, will be identified prior to implementation of the last choice option of relocation or replacement. Similarly, the requirement of the Act will ensure that the best scientific information field experience will be utilized to implement relocation or replacement. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#68: Avoid and Minimize Impacts to White-tailed Kite. If construction activities are scheduled to occur between February 1 and August 31, the Project Biologist will conduct surveys for white-tailed kite. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting white-tailed kites are detected, the Project Biologist will establish a 0.25 mile no disturbance buffer unless the Project Biologist determines that smaller buffers would be sufficient to avoid impacts, with agency consultation. Buffers will be maintained until the Project Biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care that includes nest use for survival.

This mitigation measure is anticipated to be effective because it would restrict construction activities in areas within 0.25 mile of active white-tailed kite nests. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies. Prior to initiation of construction at any location within 300 feet of suitable nesting habitat, The Project Biologist with experience surveying for and observing tricolored blackbird will conduct preconstruction surveys to establish use of nesting habitat by tricolored blackbird colonies. Surveys will be conducted in suitable habitat within 300 feet of proposed construction areas, where access allows, during the nesting season (February 1–September 15).

If construction is initiated near suitable habitat during the nesting season, pre-construction nesting surveys will be conducted within 10 days prior to construction. If active tricolored blackbird nesting colonies are identified, construction activities will avoid the nesting colonies during the breeding season (February 1–September 15) to the extent practicable within 300 feet of the colony, consistent with the CDFW’s Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015 (CDFW 2015). This minimum buffer may be reduced in areas with dense forest, buildings, or other habitat features between the construction activities and the active nest colony, or where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance as determined through coordination with CDFW. If tricolored blackbirds colonize habitat adjacent to construction after construction has been initiated, the Authority will coordinate with CDFW to determine the best course of action to avoid impacts.

This mitigation measure is anticipated to be effective because it would outline protocol to conducting surveys prior to construction to locate active nest colonies within 300 feet of the construction Work Area. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Preferred Alternative.

BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat. The Authority will provide compensatory mitigation to offset impacts on tricolored blackbird.

Compensatory mitigation will replace permanent loss of habitat with habitat that is commensurate with the type (nesting, roosting, and foraging) and amount of habitat lost. Suitable tricolored blackbird nesting habitat will be permanently protected or restored and managed at a ratio of 3:1 (protected or restored: affected) at a location subject to CDFW approval, and in close proximity to the nearest breeding colony observed within the past 15 years, if possible. Suitable breeding season foraging habitat will be protected and managed at a ratio of 1:1 (protected: affected) at a location subject to CDFW approval. Suitable roosting habitat will be protected or restored at a ratio of 1:1 (protected: affected) if not occupied, and a ratio of 2:1 (protected: affected) if occupied by tricolored blackbirds.

Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

This mitigation measure is anticipated to be effective because tricolored blackbird roosting and foraging habitat is fairly common and/or easily restored. The primary limiting factor for this species is nesting habitat, but that is easily, preserved, restored or created. This is because nesting colonies of the species often use habitat that is inadvertently created in association with agricultural operations, such as stock ponds or irrigation ponds that support emergent wetland vegetation, that commonly occurs in shallow perennial wetlands. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives, and any off-site habitat creation would consist of conversion of common anthropogenic habitats into higher value, for a number of species.

BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use.

Prior to construction-related uses of helicopters, the Project Biologist will coordinate with USFWS to establish that no California condors are present in the area. If California condors are observed in the area in which helicopters will operate, including the helicopter's flight pattern from its origination, during construction use and the return flight, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area.

This mitigation measure is anticipated to be effective because it would restrict construction-related helicopter use wherever California condors are present; condor presence is easily detected by observation and routine electronic tracking. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor.

Nighttime light disturbance will be minimized in and adjacent to suitable habitat where California condor may be present. In the event that nighttime lighting is required, it will be focused, shielded, and directed away from adjacent suitable habitat including nighttime roost areas. During construction, the Project Biologist will be on site during nighttime light use to determine if the lighting poses a risk or otherwise disturbs or harms condors.

This mitigation measure is anticipated to be effective because it would restrict nighttime light disturbances of roosting California condors and provides specific measures for monitoring during nighttime construction activities. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#73: Implement Removal of Carrion that may Attract Condors and Eagles. During operation and within California condor foraging areas, automated security monitoring and track inspections will be used to detect fence failures and/or the 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 during construction and during operations when the train is not in operation.

This mitigation measure is anticipated to be effective because it provides methods for automated security monitoring for protection of California condors and eagles within the right-of-way.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#74: Implement Bird Nest and Avian Special Status Species Avoidance Measures for Helicopter-Based Construction Activities. For construction activities involving the use of a helicopter, the buffer for nesting birds will be 200-foot horizontal and 150-foot vertical. Buffers will be measured from the location of the nest. If a nest is located on a tower or a tree the vertical buffer begins from the nest location. For raptors, that are not state or federal special status raptors the default buffer is 300-feet.

This mitigation measure is anticipated to be effective because it would provide methods for creating buffers around nesting birds within or adjacent to the construction Work Area. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#75: Minimize Impacts on Kern Primrose Sphinx Moth Host Plants. Prior to ground disturbing activity in areas that Kern primrose sphinx moths are found, the following additional measures will be implemented:

- All Biological Monitors will be trained on the life history and identification of Kern primrose sphinx moth.
- As necessary, conduct an additional survey(s) for Kern primrose sphinx moth host and nectaring plants in areas where adults are observed. To the maximum extent feasible, host and nectaring plants will be flagged and a 25-foot buffer shall be installed to avoid when eggs and/or larvae may be present (February through May). Larval host plants include evening primrose (*Camissonia contorta epilobiodes*) and filaree (*Erodium cicutarium*).
- Initial ground or vegetation disturbing activities will be avoided in areas where Kern primrose sphinx have been observed until the flight and larval seasons (cumulatively, February 1 through May 31) are passed to allow sufficient time for the adults to lay eggs and for the larvae to pupate.

This mitigation measure is anticipated to be effective because it is a multi-faceted approach to both detecting adult moths and avoiding easily detected potential larval host plants during the cumulative flight and larval season. Implementation of this measure would not trigger secondary environmental impacts because, while it may temporarily delay some construction activities, it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#76: Implement Wildlife Rescue Measures. During construction, maintenance and operation if an injured or trapped wildlife species, including but not limited to birds and raptors, are observed the Project Biologist shall be notified immediately to determine if it is appropriate to release or take the wildlife species to the nearest CDFW permitted rehabilitation center. The Project Biologist will follow all relevant guidelines for federal and state listed species. If an injured or trapped bird is incidentally observed during maintenance or construction, personnel will notify the Project Biologist immediately to determine if it is appropriate to release or take the bird to the nearest CDFW permitted rehabilitation center.

This mitigation measure is anticipated to be effective because construction crews will be trained to be alert to such incidents and experienced biological monitors will be present to capture and release or transport injured animals as appropriate. This is a common and intuitive construction minimization measure with which most construction personnel are familiar. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing. Prior to final construction design the Project Biologist shall review the fencing plans to confirm Security

Fencing design will prevent access into the right-of-way and tracks by mountain lion. Security fencing height will be increased to a minimum of 10-feet tall in mountain lion suitable habitat as identified in the Wildlife Corridor Analysis and determined by the Project Biologist. If the fence is placed on a slope, the fence height will be adjusted (increased) to ensure that mountain lion and mule deer cannot jump from an upslope position over the fence; fence height on slopes will be determined by Project Biologist. During the fencing plan review the Project Biologist will evaluate the fence design for the purpose of avoiding harm, injury, entanglement or entrapment to wildlife species. Prior to operation, the Project Biologist will field inspect the fencing along any portion where increased height was determined necessary during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.

This mitigation measure is anticipated to be effective because ever-increasing knowledge of wildlife behavior in the vicinity of linear transportation projects has been generated over the last several decades, due to both safety concerns and a focus on wildlife movement. This knowledge can be used to develop appropriate fencing specifications and ensure that the specifications are practicably and effectively implemented. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#78: Install Wildlife Jump-outs. Prior to final construction design the Project Biologist shall review the fencing plans for placement of wildlife jump-outs. In areas with documented ungulate or other large mammal movement, where terrain or project design (e.g., at-grade crossings) could allow these large animals to enter the right-of-way, features to reduce access (e.g., taller fencing or wildlife barriers at crossings) or features to allow large animals to escape from the fenced right-of-way (e.g., wildlife jump-outs or escape ramps) would be incorporated into the project at these locations. Specific locations of these features would be based on the behavior of target species (e.g. mule deer, mountain lion, black bear), adjacent habitat and terrain, and other design constraints as determined by the Project Biologist and Project Engineer. Prior to operation, the Project Biologist will field inspect the fencing for appropriate placement of jump-outs as determined necessary during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.

This mitigation measure is anticipated to be effective because ever-increasing knowledge of wildlife behavior in the vicinity of linear transportation projects has been generated over the last several decades, due to both safety concerns and a focus on wildlife movement. Experience with implementation of measures to prevent transportation/wildlife conflicts has shown that jumpouts can be an effective tool to minimize collisions, and knowledge gained from their use on other facilities can be used to develop appropriate locations and designs. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#79: Mitigation for Desert Tortoise. In addition to the IAMFs and Standard Biological Mitigation Measures discussed previously in this section and other sections, such as Section 3.3: Air Quality and Global Climate Change and Section 3.8: Hydrology and Water Resources, the following mitigation would be implemented to avoid and minimize effects of the proposed action on desert tortoise during construction and O&M activities. These measures include, worker environmental awareness program (WEAP) trainings; biological monitoring during all ground-and vegetation-disturbing activities; wildlife exclusion barriers and fencing of environmentally sensitive areas; monofilament netting restrictions; specific entrapment avoidance procedures for open holes and trenches; establishment of vehicle traffic routes and construction site speed limits; the authority for the biological monitor(s) to halt work in the event a listed species is identified; and the configuration of wildlife crossing infrastructure. The preparation and implementation of the following plans will also be integrated into the project; Restoration and Revegetation Plan; Biological Resources Management Plan; Annual Vegetation Management Plan; Weed Control Plan; BMP Field Manual for construction site housekeeping that includes trash containment and

disposal; a Fugitive Dust Control Plan; a Construction Management Plan that addresses spill prevention; and a Construction Stormwater Pollution Prevention Plan.

In addition, the following species-specific mitigation measures will be implemented to further avoid and minimize potential adverse effects of the proposed action on desert tortoise;

- Prior to construction activities, a project-specific Desert Tortoise Translocation/Relocation Plan will be prepared for incorporation in to the project’s Biological Resources Management Plan (Plan). The Plan will provide details on desert tortoise clearance surveys and relocation, including procedures to follow in the event that a tortoise becomes trapped. These will be consistent with *Guidelines for Handling Desert Tortoise during Construction Projects*, or other current USFWS guidelines (USFWS 2009). The Plan will also include methodology for visual desert tortoise body condition assessments, in accordance with the Health Assessment Handbook or most up-to-date USFWS guideline.
- Conduct phased, focused pre-activity clearance surveys prior to the start of ground or vegetation disturbing activities in modeled suitable habitat for desert tortoise, or areas of documented occurrences if outside of modeled habitat. The survey(s) shall be conducted by Project Biologist(s) or their designee familiar with desert tortoise and their sign. The surveys shall be conducted in general accordance with the USFWS protocol *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2010). The survey will occur no more than 48 hours before planned activity and may be conducted during any time of year, but preferably during the desert tortoise active period (i.e., early March through early November). It will consist of transect surveys spaced no greater than 15 feet and include a 50-foot buffer.
- All burrows that could provide shelter for desert tortoise will be avoided to the greatest extent practical. If active burrows are identified in the project footprint, a 50-foot non-disturbance buffer will be established, maintained, and monitored. The buffer will be established by routing the ESA fence and wildlife exclusion fencing (WEF) around the active burrows in a manner that allows for desert tortoise to leave the project footprint. Burrows that cannot be avoided will be excavated during the clearance survey by the Project Biologist or their designee.
- Following the pre-activity survey(s):
 - Where construction activities will occur for more than one consecutive month, desert tortoise exclusionary fencing, and barriers will be installed and maintained to avoid take of desert tortoise, including destruction of nests, or their potential habitat within the project footprint. ESA fencing and WEF will be used to delineate the area (in accordance with BIO-MM#36). The WEF will be maintained and monitored daily during the desert tortoise activity period (i.e., early March through early November) to ensure it is maintained in good condition, and to determine if tortoises are “trapped” along the fence searching for a way to access the other side. Outside of the desert tortoise activity period, fence inspections will occur at least once weekly.
 - Where construction activities will be of short duration (i.e., less than one month), full-time monitoring by the Biological Monitor may be used in lieu of fencing. In these situations, a daily pre-activity clearance sweep will be conducted by the Biological Monitor prior to start of daily construction activities.
 - If any project vehicle must drive off established routes in suitable tortoise habitat, the route or work location will be walked immediately prior to, or in front of vehicle being driven by the Biological Monitor. The Biological Monitor shall visually account for 100 percent of the footprint of the route or work location plus a 15-foot buffer on each side.
- Any construction pipe, culvert, or similar structure with a diameter greater than three inches stored less than eight inches aboveground, outside a fenced area of desert tortoise habitat, and left unattended for any length of time during the desert tortoise active period (i.e., early

March through early June, and September through early November) will be inspected for desert tortoise before the material is moved, buried, or capped. As an alternative, all such structures may be capped prior to staging or placed on pipe racks.

- Any time a vehicle or construction equipment is parked for more than 10 minutes outside of the fenced area, the ground under the vehicle will be inspected for the presence of desert tortoise before the vehicle/equipment is moved. If a desert tortoise is present, the vehicle/equipment will not be moved until the desert tortoise moves on its own away from the vehicle/equipment. If it does not move in 15 minutes during construction, the Biological Monitor may capture and relocate the animal to a safe location according to USFWS protocol and in accordance with the Desert Tortoise Relocation Plan. During O&M, trained and approved personnel may move a desert tortoise out of harm's way that does not move on its own, in accordance with the approved Desert Tortoise Relocation Plan.
- To the extent feasible, nighttime light disturbance will be minimized in and adjacent to suitable habitat where desert tortoise may be present. In the event that nighttime lighting is required, the lighting will be focused, shielded, and directed away from adjacent suitable habitat.
- Measures will be implemented to ensure that construction and O&M activities do not attract common ravens to the ROW by providing food or water subsidies, perch sites, roost sites, or nest sites. All activity work areas will be kept free of trash and debris. Particular attention will be paid to remove and avoid accumulation of "micro-trash" (including such small items as screws, nuts, washers, nails, coins, rags, small electrical components, small pieces of plastic, glass or wire, and any debris or trash that is colorful or shiny) and organic waste that may attract or subsidize predators. All trash will be covered, kept in closed containers, or otherwise removed from the project site at the end of each day or at regular intervals prior to periods when workers are not present at the site. Dead and injured wildlife found in the project footprint will be removed, as needed, to reduce attraction of opportunistic predators. Dead and injured wildlife will be handled and removed in accordance with any applicable project permits and plans.
- The ESA fence, the WEF, and the O&M Security Fence Maintenance Plan will include provisions for reptiles and mammals (e.g., enhanced with barriers, such as flashing or slats, for six inches below ground surface to 12 inches above) along portions of the project that are adjacent to modeled suitable habitat to prevent individuals from gaining access to the alignment ROW.
- Water or dust palliatives will be applied to the construction ROW, dirt roads, trenches, spoil piles, and other areas where ground disturbance takes place to minimize dust emissions and topsoil erosion. Dust palliatives will be nontoxic to wildlife and plants. For construction within suitable habitat for listed species, the Biological Monitor will patrol areas of disturbance to ensure that water does not puddle for long periods and attract listed species, common ravens, or other wildlife to the project site. Operational ponding will be avoided through careful grading and hydrologic design.

This mitigation measure is anticipated to be effective because it identifies and documents Desert Tortoise and their habitat within 50 feet of the construction Work Area, informing the actions needed for species' avoidance, protective fencing placement, and other mitigation.

Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the B-P Build Alternatives.

BIO-MM#80: Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee. Surveys for Crotch bumble bee in suitable habitat (identified by species habitat suitability modeling) in the project footprint would be conducted by qualified biologists within 1 year prior to the start of construction. Surveys would be conducted during four evenly spaced sampling periods during the flight season (March–September) (Thorp et al. 1983). For each sampling event, the biologist(s) would survey suitable habitat within the project footprint and, as access outside the footprint permits, a 100-foot buffer surrounding the project footprint using nonlethal

netting methods for 1 person-hour per 3 acres of the highest quality habitat or until 150 bumble bees are sighted, whichever comes first. If initial sampling of a given habitat area indicates that the habitat is of low quality or nonexistent, no further sampling of that area would be required. General guidelines and best practices for bumble bee surveys would follow USFWS' *Survey Protocols for the Rusty Patched Bumble Bee (Bombus affinis)* (USFWS 2019), which are consistent with other bumble bee survey protocols used by The Xerces Society (Hatfield et al. 2017; Washington Department of Fish and Wildlife et al. 2019).

If surveys conducted within 1 year prior to construction identify occupied Crotch bumble bee habitat within the project footprint or the 100-foot buffer, the project biologist would then conduct additional pre-construction surveys of such habitat for active bee nest colonies and associated floral resources (i.e., flowering vegetation on which bees from the colony are observed foraging) no more than 30 days prior to any ground disturbance between March and September. The purpose of this pre-construction survey would be to identify active nest colonies and associated floral resources outside of impact areas that could be avoided by construction personnel. The project biologist would establish, monitor, and maintain no-work buffers around nest colonies and floral resources identified during surveys. The size and configuration of the no-work buffer would be based on best professional judgment of the project biologist. At a minimum, the buffer would provide at least 50 feet of clearance around nest entrances and maintain disturbance-free airspace between the nest and nearby floral resources. Construction activities would not occur within the no-work buffers until the colony is no longer active (i.e., no bees are seen flying in or out of the nest for three consecutive days, indicating the colony has completed its nesting season and the next season's queen has dispersed from the colony).

BIO-MM#81: Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee Habitat.

The Authority would provide compensatory mitigation for impacts on occupied habitat for Crotch bumble bee. Impacts on occupied habitat (confirmed through surveys as described in BIO-MM#80) would be compensated for at a ratio of 3:1, unless a higher ratio is required pursuant to an authorization issued under CESA, through the purchase of CDFW-approved bank credits (if available) or through preservation of habitat in perpetuity, including suitable habitat currently preserved by the Authority.

BIO-MM#82: Avoid Direct Impacts on Monarch Butterfly Host Plants. Prior to any ground-disturbing activities, the Project Biologist would survey for monarch butterfly larval host plants (native milkweed species) within suitable habitat. If host plants are found, the Project Biologist would conduct surveys for adult butterflies during the peak flight period for Southern California (approximately October 1 through March 15) to determine presence/absence or whether presence may be assumed. Where adult butterflies are present or assumed to be present, construction personnel would avoid host plants outside of permanent impact areas where feasible.

BIO-MM#83: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Breeding and Foraging Habitat. The Authority would provide compensatory mitigation to offset impacts on breeding and foraging habitat for monarch butterfly at a ratio of 2 to 1. Compensatory mitigation could include one or more methods as described in BIO-MM#53.

BIO-MM#84: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens. Prior to any ground-disturbing activity, regardless of the time of year, the Project Biologist would conduct pre-construction surveys for known or potential mountain lion dens within suitable habitat located within the work area and within 2,000 feet of the work area, where access is permitted. These surveys would be conducted no less than 14 days and no more than 30 days prior to the start of ground-disturbing activities in a work area.

The definition for known and potential mountain lion den types is as follows;

- **Known Den.** Any existing natural den or human-made structure that is used or has been used at any time in the past by a mountain lion. Evidence of use may include historical records; past or current radio telemetry or tracking study data; mountain lion sign, such as

tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a mountain lion;

- **Potential Den.** Any thick vegetation, boulder piles, rocky outcrops, or undercut cliffs within the species' range for which available evidence is insufficient to conclude that it is being used or has been used by a mountain lion. Potential dens will include the following characteristics:
 - 1) refuge from predators (coyotes, golden eagles, other mountain lions) or 2) shielding of the litter from heavy rain and hot sun.

The Project Biologist will use location-specific survey methods to identify known and potential dens. The survey method will consider topography, vegetation density, safety, and other factors. Surveys will be conducted by a qualified biologist (i.e., a biologist with demonstrated experience in mountain lion biology, identification, and survey techniques) and may involve the establishment of camera stations, scent stations, pedestrian surveys (looking for tracks, caches, etc.), or other appropriate methods. Survey methods used will be designed to avoid the disturbance of known or potential dens, to the extent feasible.

If known, or potential, mountain lion dens are identified or observed during pre-construction surveys, mountain lion dens will be assumed to have kittens present until the Project Biologist can document that they are not present and/or that the den is not being used. A nondisturbance buffer of at least 2,000 feet will be established around the known or potential den until the Project Biologist can document and confirm that the den is not occupied. If the den is determined to be occupied, the 2,000-foot nondisturbance buffer will be maintained until the den is confirmed abandoned by the Project Biologist. Construction may proceed if the Project Biologist determines that the den is not being used by mountain lions. However, ground disturbance would be limited to those days between October 1 and January 31 within 2,000 feet of known or potential dens to the extent feasible. Mountain lions can breed year-round; however, most breeding activity and births occur during the spring and summer months between February 1 and September 30.

BIO-MM#85: Provide Compensatory Mitigation for Impacts on Mountain Lion Core and Patch Habitat. The Authority would provide compensatory mitigation for impacts on mountain lion core and patch habitat through the preservation of suitable habitat that is acceptable to CDFW. Habitat would be replaced at a minimum ratio of 2:1 for permanent impacts on breeding/foraging habitat and high-priority foraging and dispersal habitat, and at a ratio of 1:1 for low-priority foraging and dispersal habitat, unless a higher ratio is required by regulatory authorizations issued under the California Endangered Species Act. Compensatory mitigation would be provided using one or more of the methods described in BIO-MM#53 and would, where feasible and acceptable to CDFW, contribute to preserving important movement lands across the HSR alignment.

BIO-MM#86: Implement Lighting Minimization Measures During Construction. The Authority would avoid conducting ground-disturbing activities within known wildlife habitat during nighttime hours, to the extent feasible. If nighttime work is necessary, the Authority would minimize impacts to adjacent habitat by:

- Conducting night work only within the boundaries of previously disturbed, cleared and grubbed areas
- Shielding and directing nighttime lighting to avoid illuminating wildlife habitat, including movement corridors
- Using the minimum lighting levels approved by OSHA (29 C.F.R. 1926.56) for general construction (i.e., 5 foot-candles or 54 lux)
- Minimizing the direction of construction vehicle headlights towards offsite locations and use low beams or turn off headlights when safety considerations permit
- Minimizing the duration of lighting by using remote monitoring systems or other methods to ensure security of the construction site during hours it is not in use

BIO-MM#87: Implement Lighting Minimization Measures for Operations. To address the permanent and intermittent impacts from lighting, the Authority would 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, to the extent feasible:

- Outdoor lighting at operational facilities would be consistent with minimum OSHA requirements established by 29 C.F.R. 1926.56 when the facilities are in use. To the extent feasible, the Authority would minimize the duration of lighting at operational facilities by using methods other than lighting (e.g., remote monitoring systems), to ensure security of facilities during nighttime hours they are not in use,
- Nighttime lighting will have shields or cowls (or other devices to limit lighting) installed to direct the light downward to reduce the standard luminous intensity distribution curve to contain the light to the boundaries of the project site to the extent practicable,

Train headlights would use the minimum standard allowed by the FRA under 49 C.F.R. 229.125 (a single headlight of at least 200,000 candelas) within non-tunnel portions of the project section.

A.2.7 Referenced Mitigation Measures for Hydrology and Water Resources

WQ-MM#1: Floodplain Protection: Construction. The Bakersfield to Palmdale Project Section would implement the following measures during the construction period:

- Standard floodplain measures would be implemented, including revegetation BMPs during construction. BMPs may include preservation of existing vegetation to the maximum extent practicable, limiting the number of equipment trips across floodplain crossing, selecting equipment that exerts the least amount of ground surface pressure, use of vegetated buffers on slopes, application of hydraulic mulch on disturbed streambanks, and restoration of floodplains impacted by construction activities.

Weather would be monitored by construction works for heavy storms and potential flood flows. If a heavy storm or flood event is identified, construction equipment would be relocated outside of the floodplain.

WQ-MM#2: Regional Dewatering Permits. The Bakersfield to Palmdale Project Section would be required to comply with statewide and regional Dewatering Permits per SWRCB and RWQCB requirements. For portions of the project section under the jurisdiction of the Central Valley RWQCB, the Central Valley RWQCB Dewatering Permits would apply:

- The Central Valley RWQCB's Order No. R5-2013-0074, NPDES No. CAG995001, Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters, allows discharges provided they do not contain significant quantities of pollutants and either (1) the discharge is four months or less in duration, or (2) the average dry-weather discharge does not exceed 0.25 million gallons per day.
- The Central Valley RWQCB's Resolution No. R5-2013-0145, Approving Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region, covers discharges to land from dewatering activities.
- For portions of the project section under the jurisdiction of the Lahontan RWQCB, the Lahontan RWQCB Dewatering Permits would apply:
- The Lahontan RWQCB's Order No. R6T-2014-0049, NPDES No. CAG996001, Renewed Waste Discharge Requirements and General Permit for Limited Threat Discharges to Surface Waters, encourages the disposal of wastewater on land, where practicable, and requires applicants for this general permit to evaluate land disposal as the first alternative. This general permit covers discharges provided that the discharge does not contain significant quantities of pollutants.

- The Lahontan RWQCB's Order No. R6T-2010-0024, NPDES No. CA G916001, Waste Discharge Requirements for Surface Water Disposal of Treated Groundwater, covers discharges of water from a groundwater treatment unit to surface waters.

WQ-MM#3: Tunnel Constructability and Hydrogeological Monitoring. The Authority would implement the following measures during tunnel construction:

- Excavation of the tunnels would include continuous probing ahead of the tunnel face to assess the ground and groundwater conditions.
- Pre-excavation grouting would be used to control groundwater inflows and provide face stability where applicable
- All tunnels would be waterproofed.
- The tunneling and lining methods chosen, the pretreatment of the ground mass, and the tunnel lining design, would be implemented to reduce groundwater inflows.
- The tunnel lining would be inspected regularly throughout the construction phase to monitor for potential leaks. Should leaks be found, the lining would be repaired immediately and assessed for future integrity. Any freestanding water that leaks into the tunnel would be treated prior to discharge to minimize impacts from pollutants such as sediment or other contamination.
- All construction water shall be captured and treated prior to discharge to minimize impacts from pollutants such as sediment or other contamination.
- In the event that any active wells would be affected by tunnel construction activities, the wells would be re-drilled deeper to reach the groundwater level, relocated to different location, or the water reinjected.
- Hydrogeological modeling would be conducted to assess the potential impacts of removing groundwater from bedrock storage during construction (including long term drainage into the tunnel).
- Groundwater depth, flow, and quality would be monitored at nearby domestic wells, springs, and seeps prior, during, and after construction. Monitoring of groundwater, if impacted, would continue until the water system has normalized to pre-construction conditions.
- The Authority would implement a Groundwater Adaptive Management and Monitoring Program (AMMP) to minimize potential impacts on water resources supported by groundwater resources, including springs and seeps, as well as from surface water resources supported by groundwater, the Authority proposes to implement a long-term Groundwater Adaptive Management and Monitoring Program (AMMP), which will include ongoing monitoring, management, and reporting activities to detect, address, and remedy groundwater and hydrology impacts that may arise during and after tunneling in a timely manner.

The AMMP would advance a flexible strategy to respond to monitoring information that indicates changes to existing conditions resulting from project activities. In addition, if monitoring demonstrates that adaptive management actions taken to address such changes are not achieving the intended outcomes, management actions will be modified, or other strategies implemented to meet the objectives. The AMMP would include the following components, at a minimum, to avoid or minimize and address impacts on water resources supported by groundwater, including seeps/springs:

- **Groundwater Modeling:** —The Authority would develop a groundwater model that can be used to predict where groundwater and surface water impacts are likely to occur. The model would be updated during construction with additional geological information generated during tunnel construction, and the updated model would be used to predict potential changes in groundwater conditions and anticipate adaptive management needs.

- **Monitoring Program:** —The Authority would develop a monitoring program to detect real-time changes in groundwater and surface water conditions and vegetation cover and special-status species habitat most likely to be affected by tunnel construction during and after construction through comparison to baseline conditions and use of paired reference sites.
- **Numeric Triggers:** —The Authority would establish numeric triggers that require implementation of adaptive management measures to avoid or reduce impacts on groundwater and surface water resources and associated habitat for special-status species during construction. Adaptive management measures may include modifying construction methods, providing supplemental water to affected resources, and other feasible measures that would reduce or avoid a predicted impact.
- **Water Quality Treatment:** —To the extent feasible, the Authority would provide water quality treatment for groundwater inflows and beneficially reuse groundwater inflows as part of the adaptive management program or discharge treated groundwater to receiving waterbodies.

WQ-MM#4: Floodplain Protection: Operation. The project would be designed to remain operational during flood events and to minimize increases in base flood elevations. Measures for floodplain protection would include the following:

- HSR system sites and critical facilities would be located above the 500-year flood elevation.
- If the floodplain cannot be spanned, a Conditional Letter of Map Revision and Letter of Map Revision would be required to be processed through the Central Valley Flood Protection Board and FEMA during final design where the increase in water surface elevation exceeds a 1-foot rise in the 100-year base flood elevation. All floodplain crossings would be analyzed in more detail for FEMA compliance during subsequent engineering phases.
- Embankment fill would be protected with slope protection such as rock-slope protection or gabions.
- A Spill, Prevention, Containment and Control Plan would be implemented to reduce the amount of sediment deposited within 100-year floodplains and reduce the potential for released chemicals to migrate into flood zones during operation.
- In cases where piers or column support structures would need to be placed within the flow channel to support the aerial or bridge structure, analysis of the flow within the channel and analysis of the scour at the piers would be performed. The results of this analysis would determine the optimal shape and depth of the piers and pier footings to mitigate the impacts flood waters would have on the structure supports. Backwater would be minimized by optimizing the pier’s shape and minimizing the number of piers within the channel.

A.2.8 Referenced Mitigation Measures for Hazardous Materials and Wastes

HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools during Construction. Prior to construction, the Contractor will prepare a memorandum regarding hazardous materials best management practices related to construction activity for approval by the Authority. The memorandum will confirm that the Contractor will not handle or store an extremely hazardous substance (as defined in California Public Resources Code § 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of § 25532 of the Health and Safety Code within 0.25 mile of a school. The memorandum will acknowledge that prior to construction activities, signage would be installed to delimit all work areas within 0.25 mile of a school, informing the Contractor not to bring extremely hazardous substances into the area. The Contractor would be required to monitor all use of extremely hazardous substances. The above construction mitigation measure for hazardous materials and wastes is consistent with California Public Resources Code § 21151.4. The memorandum will be submitted to the Authority prior to any construction involving an extremely hazardous substance.

A.2.9 Referenced Mitigation Measures for Safety and Security

S&S-MM#1: Emergency Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair-Share Cost of Service. During the first three years of operation and maintenance, the Authority shall begin monitoring response of local fire, rescue, and emergency service providers to incidents at stations and provide a fair share of cost of service. Monitoring also should begin 1 year prior to opening of an HSR station. Service levels consist of the monthly volume of calls for fire and police protection, as well as county, city- or fire protection district-funded emergency medical technician (EMT)/ambulance calls that occur in the station site service areas.

Prior to operation of the stations for HSR service, the Authority will enter into an agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share the cost of services above the average baseline service demand level for the station and LMF service areas (as established during the monitoring period). The fair share will be based on projected passenger use for the first year of operations, with a growth factor for the first 5 years of operation. This cost-sharing agreement will include provisions for ongoing monitoring and future negotiated amendments as the stations are expanded or passenger use increases. Such amendments will be made on a regular basis for the first 5 years of station operation, as will be provided in the agreement. To ensure that services are made available, impact fees will not constitute the sole funding mechanism, although they may be used to fund capital improvements or fixtures (a police substation, additional fire vehicles, on-site defibrillators, etc.) necessary for service delivery.

After the first 5 years of operation, the Authority will enter into a new or revised agreement with the public-service providers of fire, police, and emergency services to fund the Authority's fair share of services on an ongoing basis. The fair share will take into account the volume of ridership, past record and trends in service demand at the stations and LMF site, new local revenues derived from station area development, and any services that the Authority may be providing at the station.

A.2.10 Referenced Mitigation Measures for Socioeconomics and Communities

SO-MM#3: Implement Measures to Reduce Impacts Associated with the Relocation of Important Facilities. Prior to Construction, the Authority will minimize impacts resulting from the acquisition, displacement, and/or relocation of key community facilities

The Authority will consult with the appropriate parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities and services, and to provide for relocation that allows the community currently being served to continue to use these services.

The Authority will continue to implement a comprehensive non-English speaking language outreach program as land acquisition begins. This program will facilitate the identification of approaches that would maintain continuity of operation and allow space and access for the types of services currently provided and planned for these facilities. To avoid disruption to these community amenities, the Authority will provide for reconfiguring land uses or buildings, or relocation of community facilities is completed before the demolishing existing structures. The Authority shall document compliance with this measure through annual reporting.

SO-MM#4: Provide Access Modifications to Affected Farmlands. Prior to Construction in cases where partial-property acquisitions result in division of agricultural parcels by the HSR alignment or facilities, the Authority will evaluate with the property owner's input modified access, including the effectiveness of providing overcrossings or undercrossings of the HSR track to allow continued use of agricultural lands and facilities. This could include the design of overcrossings or undercrossings to allow farm equipment passage. The Contractor shall prepare a technical memorandum for Authority review and approval detailing outreach to affected property owners, evaluation results and what measures were implemented to address bifurcated agricultural properties.

A.2.11 Referenced Mitigation Measures for Agricultural Farmland and Forest Land

AG-MM#1: Conserve Important Farmland (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland). The Authority has entered into an agreement with the Department of Conservation California Farmland Conservancy Program to implement agricultural land mitigation for the California High-Speed Rail Project. The Authority will fund the California Farmland Conservancy Program’s work to identify suitable agricultural land for mitigation of impacts and to fund the purchase of agricultural conservation easements from willing sellers. The performance standards for this measure are to preserve Important Farmland in an amount commensurate with the quantity and quality of the converted farmlands, within the same agricultural regions as the impacts occur, at a replacement ratio of not less than 1:1 for lands that are permanently converted to non-agricultural use by the project.

In addition to mitigation for Important Farmlands that are permanently converted to nonagricultural use, the Authority will fund the purchase of an additional increment of acreage for agricultural conservation easements at a ratio of not less than 0.5:1 for Important Farmland within a 25-foot wide area adjacent to HSR permanently fenced infrastructure. The Authority shall document implementation of this measure through issuance of a compliance memorandum annually.

A.2.12 Referenced Mitigation Measures for Parks, Recreation, and Open Space

PC-MM#1: Temporary Use of Land from Park, Recreation, or School Play Areas During Construction.

- **Temporary Impact Areas**—During final design, the California High-Speed Rail Authority’s (Authority) Project Engineer shall evaluate all proposed temporary impact areas in parks, recreation resources, and school play areas and shall identify opportunities to further reduce the sizes of those temporary impact areas. All temporary impact areas in parks, recreation resources, and school play areas shown on the project plans and specifications would specify that the Design-Build Contractor cannot increase the size of any of those areas without consultation with and approval by the Project Engineer.
- **Temporary Impact Areas**—The Authority would compensate for the temporary loss of parks, recreation resources, and school play areas caused by temporary impact areas during construction using one or more of the following methods: (1) providing substitute land for comparable recreational uses; or (2) providing financial compensation for the development of land suitable for comparable recreational uses; or (3) enhancing the unaffected land to ensure that the property retains equivalent usefulness. During final design, the Authority’s Project Engineer shall consult with the affected jurisdictions and property owners to discuss the temporary impact areas needed for construction of the High-Speed Rail (HSR) project and to determine the appropriate level of compensation for the use of land from park, recreation, or school play areas for the temporary impact areas. The Authority shall provide compensatory mitigation to fully mitigate the loss of recreational resources during project construction. It is anticipated that the compensation shall be payments for the temporary use of land from those resources for the period of time that land is used for temporary impact areas during project construction.
- **Access Restrictions at Temporary Impact Areas**—The Authority’s Project Engineer shall require the Design-Build Contractor to fence and gate all land in parks, recreation facilities, and school play areas used for temporary impact areas. The temporary impact areas would be appropriately signed to restrict access to those areas by park and recreation resource patrons and users of school play areas. The Authority’s Project Engineer would require the Design-Build Contractor to maintain the fencing throughout the time period each temporary impact area is used and to remove the fencing only after all construction activity in an area is completed, the temporary impact area is no longer needed, and the land is ready to be returned to the property owner.
- **Signing of Fenced Temporary Impact Areas**—The Authority’s Project Engineer shall require the Design-Build Contractor to provide signing at each temporary impact area

explaining why the area is fenced and access to the temporary impact area is restricted, the anticipated completion date of the use of the land for the temporary impact area, and contact information (for both the Authority's Project Engineer and the Design-Build Contractor) for the public to solicit further information regarding the temporary impact area and the project.

- **Modifications to Recreation Uses**—In the event a temporary impact area requires the temporary use of land at a park, recreation resource, or school play area, and it is determined that the loss will be compensated for by providing replacement uses, the Authority's Project Engineer shall consult with the property owner/operator (1) on whether the property owner/operator wants those recreation uses replaced temporarily or permanently elsewhere on the property, and (2) if temporary or permanent replacement of those recreation uses is desired, on modifications that could be made to the remaining recreation area on the property to temporarily or permanently replace the recreation uses displaced by the temporary impact area. Any modifications to recreation areas outside the limits of a temporary impact area would be constructed/implemented prior to fencing and use of the temporary impact area.

PCT-MM#1: Temporary and Permanent Effects on the Pacific Crest Trail.

- The Authority would continue to work with the U.S. Forest Service (USFS), the Bureau of Land Management (BLM), and Pacific Crest Trail Association to advance the final design through a collaborative, context-sensitive solutions approach. Participants in the consultation process would meet on a regular basis to develop a consensus on the urban design elements to be incorporated into the final guideway design. The process would include activities to solicit community input in the affected trail segment.
- The Authority would realign approximately 2,110 linear feet of the 2,650-mile-long trail west of the proposed viaduct to allow the trail to cross under the bridge structure at one location under Alternatives 1, 2, and 5. This proposed realignment is based on consultation to date with the USFS, the BLM, and the Pacific Crest Trail Association and is shown on Figure 3.15-4, Proposed Pacific Crest Trail Realignment. Figure 3.15-4 delineates the permanent and temporary impact areas for the project in purple and yellow, respectively. It also depicts the proposed trail realignment.
- Use construction best management practices to control dust and noise (Section 3.3, Air Quality and Global Climate Change; Section 3.4, Noise and Vibration) during construction.
- Where exposed to trail users, screen stockpiled material and construction excavations through the use of temporary construction barriers and other screens. Restore areas affected by construction to preconstruction conditions immediately after construction. Use native plant materials for revegetation where appropriate.
- During construction, the Design-Build Contractor would monitor construction noise to verify compliance with the established FRA construction noise limits. The Contractor would be given the flexibility to meet the FRA construction noise limits in the most efficient and cost-effective manner. Compliance with these limits can be accomplished by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise-control measures to meet the noise limits. The following noise control mitigation measures would be implemented as necessary for nighttime and daytime construction:
 - Install a temporary construction site sound barrier near a noise source.
 - Locate stationary construction equipment as far as possible from noise-sensitive sites.
 - Use low-noise-emission equipment.
 - Implement noise-deadening measures for truck loading and operations.
 - Monitor and maintain equipment to meet noise limits.
 - Line or cover storage bins, conveyors, and chutes with sound-deadening material.
 - Use acoustic enclosures, shields, or shrouds for equipment and facilities.

- Use high-grade engine exhaust silencers and engine-casing sound insulation.
 - Minimize the use of generators to power equipment.
 - Limit the use of public address systems.
 - Grade surface irregularities on construction sites.
 - Use moveable sound barriers at the source of the construction activity.
 - Limit or avoid certain noisy activities during nighttime hours.
 - To mitigate noise related to pile driving, the use of an auger to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.
 - In the procurement of a HSR vehicle technology, the Authority would require bidders to meet the federal regulations (40 Code of Federal Regulations 201.12/13) at the time of procurement for locomotives (currently a 90-decibel standard) for cars operating at speeds greater than 45 miles per hour.
- Coordinate with the private property owner, the USFS, and the BLM regarding compensation for the maintenance easement to access the HSR facility and the areas under the viaduct during operation of the HSR project.
 - Work with the USFS and the BLM to prepare final design documents that minimize the visual impacts of the HSR future alignment on the Pacific Crest Trail users. This could include landscaping or other acceptable design features.
 - Use sound-attenuating measures along the guideway to minimize noise during operation of the HSR project.
 - Make the area under the viaduct accessible for equestrian use during operation of the HSR project. The area under the viaduct will provide at least 50 feet of vertical clearance to ensure equestrian accessibility during operation of the HSR project.
 - Vegetation of the artificial slope planned for the vicinity of Tehachapi Willow Springs Road will conform to Mitigation Measure BIO-MM#6. This will require a Project Biologist to prepare a Restoration and Revegetation Plan to address impacts resulting from ground-disturbing activities.
 - The timing of construction adjacent to the PCT should avoid the 6-week peak-use time by through hikers and equestrians (April through mid-May) to the extent feasible.
 - Specific mitigation (N&V-MM#8) would be implemented to reduce startle effect impacts on equestrian users on the PCT by providing advance warning signage ahead of the PCT crossing under the HSR viaduct.
 - The Authority will enter into an agreement with the USFS, as identified in the USFS concurrence letter, to provide compensatory mitigation for impacts to the PCT from the trail realignment, the HSR project crossing the PCT once, and the maintenance easement.

PCT-MM#2: Temporary Trail Closures and Detours on the Pacific Crest Trail.

- The trail shall remain open to hikers and equestrian users during construction by providing detours to maintain connectivity if construction requires temporary closures with collaboration between the USFS, BLM, and Authority. Provide clear signage and direction for alternative access routes and access points, and coordinate with local groups and jurisdictions using a variety of media to communicate the construction schedule and anticipated closures and detours.
 - During final design, the Authority's project engineer would require the design-build contractor to develop a Trail Facilities Plan addressing the short-term project impacts on the segment of the PCT within the construction limits of the project. That plan would address:

- Identification of trail segments that would be closed temporarily and detoured during construction
- Preparing a public awareness and notification plan
- Temporarily closing trails during construction
- Developing and implementing detours for the temporarily closed trail segment
- Phasing of temporary trail closures to allow for effective detours to maintain connectivity of the facility around the construction areas
- Coordinating the trail closures and detours with the USFS and BLM
- Criteria for identifying detour routes and facilities
- Information signing for closures and detours
- Maintaining signing for closures and detours throughout the closure period and replacing lost or damaged signing
- Restoring trail segments to their original or better condition at the completion of project construction as outlined in the Pacific Crest Trail Design and Construction Standards found at: <https://www.pcta.org>.
- Accommodation for hiker and equestrian use of the selected detour routes

Timing of construction should avoid the 6-week peak-use time by through-hikers and equestrians (April through mid-May) to the extent feasible

- Prior to any temporary closures of the PCT, the Authority's project engineer would require the design-build contractor to coordinate with the USFS and BLM directors, or their representatives, to review the location of and need for each temporary trail closure. The Authority's project engineer would require the design-build contractor to develop detours for each closure in consultation with the USFS and BLM directors or their representatives. Prior to and during construction activities that would require the temporary closure of the trail, the Authority's project engineer would require the design-build contractor to comply with and implement the procedures in the Trail Facilities Plan, described above, for the affected PCT segment.
- Signing for Trail Detours and Closures. The Authority's project engineer would require the design-build contractor to develop detour signs, in consultation with the USFS and BLM, notifying trail users of the upcoming temporary facility closure and directing the trail users to the temporary detour routes with estimated time frames. Appropriate directional and informational signage would be provided by the project design-build contractor prior to each closure and far enough in advance of the closure so trail users would not have to backtrack to get to the detour routes.
- Contact Information at Trail Detours. The Authority's project engineer would require the design-build contractor to provide detour signing that includes contact information for the Authority's project engineer and the design-build contractor, and that informs trail users to contact the project engineer and/or the design-build contractor with questions or concerns regarding upcoming or active temporary trail closures.
- Restoration of Impacted Trail Segments. The Authority's project engineer would require the design-build contractor to return trail segments closed temporarily during construction to their original, or better, condition after completion of construction, prior to their return to the control of the USFS and BLM. After project construction, the Authority's project engineer would require the design-build contractor to document that access to and connectivity of the affected trails were restored.
- Compliance with the Trails Facilities Plan. Compliance with the Trails Facilities Plan would be documented in the environmental commitments record with text, photographs, maps, and correspondence, as appropriate.

PP-MM#1: Permanent Acquisition of Property from Publicly Owned Parks Under the California Park Preservation Act. Per Public Resources Code Division 5, Chapter 2.5, Section 5401 of the California Park Preservation Act, the Authority would provide compensation or land, or both, for all permanent acquisitions of property for HSR improvements from publicly owned parks, consistent with the requirements of the California Park Preservation Act of 1971. The California Park Preservation Act requires that the compensation or land, or both, for the taking of the park land and facilities be equal to one of the following:

- The cost of acquiring substitute park land of comparable characteristics, substantially equal size, and condition
- Substitute park land of comparable characteristics, substantially equal size, and condition
- Any combination of substitute park land and compensation in an amount sufficient to provide substitute park land of comparable characteristics, substantially equal size, and condition

During the right-of-way acquisition process, the Authority would consult with the public agency with jurisdiction over any publicly owned park from which the Authority requires permanent acquisition of property regarding the specific conditions of acquisition and compensation for, or replacement or enhancement of, other park property for the land that would be acquired.

A.2.13 Referenced Mitigation Measures for Aesthetics and Visual Quality

AVQ-MM#1: Minimize Visual Disruption from Construction Activities. Prior to Construction (any ground-disturbing activity), the Contractor shall prepare a technical memorandum identifying how the project would minimize construction-related visual/aesthetic disruption and include the following activities:

- Minimize pre-construction clearing to that necessary for construction.
- Limit the removal of buildings to those that would obstruct project components.
- When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views.
- After construction, regrade areas disturbed by construction, staging, and storage to original contours and revegetate with plant material similar in numbers and types to that which was removed, based upon local jurisdictional requirements. If no local jurisdictional requirements exist, replace removed vegetation at a 1:1 replacement ratio for shrubs and small trees, and 2:1 replacement ratio for mature trees. For example, if the Contractor removes 10 mature trees in an area, replant 20 younger trees that after 5 to 15 years (depending upon the growth rates of the trees) would be of a height and spread to provide visual screening similar to the visual screening provided by the trees that were removed for construction. Replaced shrubs shall be a minimum 5 gallon and replaced trees shall be a minimum 24-inch box in size and minimum 8 feet in height. Trees should be maintained and periodically monitored by the Authority for five to seven years to ensure survival and their continued health as they mature.
- To the extent feasible, do not locate construction staging sites in the immediate foreground distance (0 to 500 feet) of existing residential neighborhoods, recreational areas, or other land uses that include high-sensitivity viewers. Where such siting is unavoidable, screen staging sites from viewers using appropriate solid screening materials such as temporary fencing and walls. Paint over or remove any graffiti or visual defacement of temporary fencing and walls within five business days of it occurring.

The technical memorandum shall be submitted to the Authority for review and approval.

AVQ-MM#2: Minimize Light Disturbance during Construction. Prior to Construction (any ground disturbing activity requiring nighttime construction), the Contractor shall prepare a technical memorandum verifying how the Contractor shall shield nighttime construction lighting and direct it downward in such a manner to minimize the light that falls outside the construction site boundaries. The technical memorandum shall be submitted to the Authority for review and approval.

AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures. Prior to Construction (any ground-disturbing activity), the Contractor shall work with the Authority and local jurisdictions to incorporate the Authority-approved aesthetic preferences for non-station structures into final design and construction. Refer to Aesthetic Guidelines for Non-Station Structures (Authority 2011). This shall include the following activities:

- During the elevated guideway design process, establish a process with the affected jurisdiction over the land along the elevated guideway to advance the final design through a collaborative, context-sensitive solutions approach. Participants in the consultation process shall meet on a regular basis to develop a consensus on the urban design elements that are to be incorporated into the final guideway designs. The process shall include activities to solicit community input in the affected neighborhoods.

Actions taken to help achieve integration with the local design context during the context-sensitive solutions process shall include the following:

- Incorporate architectural elements, such as graceful curved or tapered sculptural forms and decorative surfaces, to provide visual interest. Include decorative texture treatments on large-scale concrete surfaces such as parapets and other portions of the elevated guideways. Also include a variety of textures, shadow lines, and other surface articulations to add visual and thematic interest. Closely coordinate the design of guideway columns and parapets with station and platform architecture to promote unity and coherence where guideways lie adjacent to stations.
- Integrate trees and landscaping where possible to soften and buffer the appearance of guideways, columns, and elevated stations. This will be consistent with the principles of crime prevention through environmental design.
- The designs in cities and unincorporated communities shall reflect the results of the context-sensitive solutions design process. During the context-sensitive solutions design process, the HSR project's obligations and constraints related to planning, mitigation, engineering, performance, funding, and operational requirements shall be taken into consideration.

The technical memorandum shall be submitted to the Authority to document compliance.

AVQ-MM#4: Provide Vegetation Screening Along At-grade and Elevated Guideways Adjacent to Residential Areas. Prior to operation and maintenance of HSR, the Contractor shall plant trees (minimum 24-inch box and 8 feet in height) or other vegetation along the edges of the HSR rights-of-way in locations adjacent to residential areas to visually screen the elevated guideway and the residential area. The species of trees to be installed shall be selected based on their mature size and shape, growth rate, hardiness, and drought tolerance. Trees shall be visually consistent with surrounding vegetation in terms of vegetative type, color, texture, and form. No species on the Invasive Species Council of California's list of invasive species shall be planted. Upon maturity, the crowns of trees used shall be tall enough to partially, or fully, screen views of the elevated guideway from adjacent at-grade areas. Upon maturity, trees shall allow ground-level views under the crowns (with pruning if necessary) and will not interfere with the 15-foot clearance requirement for the guideway. The trees shall be maintained and periodically monitored by the Authority for five to seven years to ensure survival and their continued health as they mature. Irrigation systems shall be installed within the tree planting areas.

The Contractor shall prepare a technical memorandum within 90 days of completing any construction section or segment documenting the species of trees that were incorporated into the edges of the HSR right-of-way adjacent to residential uses. The technical memorandum shall be submitted to the Authority to document compliance.

AVQ-MM#5: Replant Unused Portions of Land Acquired for the HSR. Prior to operation and maintenance, the Contractor shall plant vegetation within land acquired for the project (e.g., shifting roadways) that are not used for the HSR or related supporting infrastructure, or other higher or better use. Plantings shall allow adequate space between the vegetation and the HSR

alignment and catenary lines. All street trees and other visually important vegetation removed in these areas during construction shall be replaced with similar vegetation that, upon maturity, shall be similar in size and character to the removed vegetation. Replaced shrubs shall be minimum 5 gallon and trees shall be minimum 24-inch box and 8 feet in height. The Authority shall provide for continuous maintenance with appropriate irrigation systems. The Contractor shall install the irrigation system within the planting areas. No species listed on the Invasive Species Council of California's list of invasive species shall be planted.

AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements. During final design, the Authority shall consult with the affected local jurisdictions regarding the landscaping program for planting the slopes of overheads, embankments, and retained fill elements. Within 90 days from the completion of construction, the Contractor shall plant the surface of the ground below overheads (slope-fill overheads), embankments, and retained fill elements with plant species that are consistent with the surrounding landscape (in terms of vegetative type, color, texture, and form) and based on their mature size and shape, growth rate, and drought tolerance. No species on the list from the Invasive Species Council of California shall be planted. The landscaping shall be continuously maintained and appropriate irrigation systems shall be installed if needed.

Where wall structures supporting the overheads or retained fill are proposed, the structure shall employ architectural details and low-maintenance trees and other vegetation to screen the structure, minimize graffiti, and reduce the effects of large walls. Surface coatings shall be applied on wood and concrete to facilitate cleaning and the removal of graffiti. Any graffiti or visual defacement or damage of fencing and walls shall be painted over or repaired within a reasonable time (approximately 10 business days) after notification.

The Contractor shall prepare a technical memorandum documenting implementation and submit it to the Authority to demonstrate compliance.

AVQ-MM#7: Provide Sound Barrier Treatments. Prior to Construction (any ground-disturbing activity), the Contractor shall design a range of sound barrier treatments for visually sensitive areas, such as those areas where residential views of open landscaped areas would change or in urban areas where sound barriers would adversely affect the existing character and setting. The Contractor shall develop the treatments during the final design process and integrate them into the final project design. The treatments shall include, but are not limited to, the following:

- Sound barriers along elevated guideways that may incorporate transparent materials where sensitive views would be adversely affected by opaque sound barriers.
- Sound barriers made with nonreflective materials and of a neutral color.
- Surface design enhancements and vegetation appropriate to the visual context of the area shall be installed with the sound barriers. Vegetation shall be installed consistent with the provisions of Project Mitigation Measure AVQ-MM#5. Surface enhancements shall be consistent with the design features developed for Project Mitigation Measure AVQ-MM#3 and shall include architectural elements (e.g., stamped pattern, surface articulation, decorative texture treatment), as determined acceptable to the local jurisdiction. Surface coatings shall be used on wood and concrete sound barriers to facilitate cleaning and the removal of graffiti.

The Contractor shall prepare a technical memorandum documenting implementation and submit it to the Authority to demonstrate compliance.

AVQ-MM#8: Minimize Vertical Cut-Slopes in Tehachapi Mountains with Retaining Walls. Where high-sensitivity views or viewers could be strongly affected by tall, highly exposed, vertical cut slopes needed to accommodate at-grade segments in the Tehachapi Mountains, the Contractor shall incorporate retaining walls to avoid or reduce those impacts. Locations where this measure could be considered include cut-slopes in the vicinity of the Tehachapi Loop (station 18685), Golden Hills (station 18925), and Tehachapi Valley (station 19010). Where such walls are implemented, wall texture and color treatments shall be applied to minimize visual contrast and reflectivity and to blend with the surrounding setting. The Contractor shall prepare a technical

memorandum documenting implementation and submit it to the Authority to demonstrate compliance.

AVQ-MM#9: Screen Traction Power Distribution Substations and Radio Communication Towers. Within 90 days of completing traction power substation or radio tower construction, the Contractor shall screen from public view the traction power substations (located at approximately 30-mile intervals along the HSR guideway), including radio towers where required, through the use of landscaping or solid walls/fences. This shall consist of context-appropriate landscaping of a type and scale that does not draw attention to the station or feature. Plant species shall be selected based on their mature size and shape, growth rate, hardiness, and drought tolerance. Planted shrubs shall be a minimum 5 gallon and trees shall be a minimum 24-inch box and 8 feet in height. No species on the Invasive Species Council of California's list shall be planted. The landscaping shall be continuously maintained and appropriate irrigation systems shall be installed within the landscaped areas. Walls shall be constructed of cinderblock or similar material and shall be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it shall include slats in the fencing.

Any graffiti or visual defacement or damage of fencing and walls shall be painted over or repaired within a reasonable period, as agreed between the Authority and the local jurisdiction.

The Contractor shall prepare a technical memorandum documenting how the requirements in this measure were implemented. The technical memorandum shall be submitted to the Authority to document compliance.

A.2.14 Referenced Mitigation Measures for Cultural Resources

CUL-MM#1: Mitigate Adverse Effects to Archaeological and Built Environment Resources Identified During Phased Identification. Once parcels are accessible and surveys have been completed, including consultation as stipulated in the MOA, additional archaeological may be identified. Unless design advances during the design-build phase require the APE to be modified, all built resources surveys were completed for the Bakersfield to Palmdale Project Section. For newly identified eligible properties that would be adversely affected, the following process would be followed, which would be presented in detail in the BETP and ATP:

- The Authority would consult with the MOA signatories and concurring parties to determine the preferred treatment of the properties/resources and appropriate mitigation measures.
- For CRHR-eligible archaeological resources, the Authority shall determine if these resources can feasibly be preserved in place, or if data recovery is necessary. The methods of preservation in place shall be considered in the order of priority provided in CEQA Guidelines § 15126.4(b)(3). If data recovery is the only feasible treatment the Authority shall adopt a data recovery plan as required under CEQA Guidelines § 15126.4(b)(3)(C).
- Should data recovery be necessary, the Contractor's Principal Investigator (PI), in consultation with the MOA signatories and consulting parties, would prepare a data recovery plan, for approval from the Authority and in consultation with the MOA signatories. Upon approval, the Contractor's PI would implement the plan.
- For archaeological resources the Authority shall also determine if the resource is a unique archaeological site under CEQA. If the resource is not a historical resource but is an archaeological site, the resource shall be treated as required in California Public Resources Code 21083.2 by following protection, data recovery, and/or other appropriate steps outlined in the ATP. The review and approval requirements for these documents would be outlined in the ATP.

For historic built resources, the Contractor's PI would amend the BETP to include the treatment and mitigation measures identified by the Authority in consultation with the MOA signatories and concurring parties. The Contractor's PI would implement the treatment and mitigation measures accordingly.

CUL-MM#2: Halt Work in the Event of an Archaeological Discovery and Comply with the Programmatic Agreement (PA), Memorandum of Agreement (MOA), Archaeological Treatment Plan (ATP), and all State and Federal Laws, as applicable. During construction (any ground disturbing activities, including clearing and grubbing) should there be an unanticipated discovery, the Contractor shall follow the procedures for unanticipated discoveries as stipulated in the PA, MOA, and associated ATP. The procedures must also be consistent with the following: the SOI Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-42), as amended (National Park Service); and Guidelines for the Implementation of CEQA, as amended (Title 14 CCR Chapter 3, Article 9, Sections 15120–15132). Should the discovery include human remains, the Contractor, the Authority, and the FRA shall comply 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 (§3(c)(d)); California Health and Safety Code, Section 8010 et seq.; and CPRC Section 5097.98; and consult with the Native American Heritage Commission, tribal groups, and the SHPO.

In the event of an unanticipated archaeological discovery, the contractor would cease work in the immediate vicinity of the find, based on the direction of the archaeological monitor or the apparent location of cultural resources if no monitor is present. If no qualified archaeologist is present, no work can commence until it is approved by the qualified archaeologist in accordance with the MOA, ATP, and monitoring plan prepared for the specific archaeological discovery. The contractor's qualified archaeologist would assess the potential significance of the find and make recommendations for further evaluation and treatment as necessary. These steps may include evaluation for the CRHR and NRHP and necessary treatment to resolve significant effects if the resource is an historical resource or historic property. If, after documentation is reviewed and approved by the Authority, and they determine it is a historic property, and the SHPO concurs that the resource is eligible for the NRHP, or the Authority determines it is eligible for the CRHR, preservation in place shall be considered by the Authority in the order of priority provided in CEQA Guidelines § 15126.4(b)(3) and in consultation with the signatories and consulting parties to the MOA. If data recovery is the only feasible mitigation the contractor's qualified Principal Investigator (PI) shall prepare a data recovery plan as required under CEQA Guidelines § 15126.4(b)(3)(C), the MOA, and ATP, for the Authority's approval.

The contractor shall notify the Authority, who shall notify the California State Lands Commission (CSLC), if the find is a cultural resource on or in the submerged lands of California and consequently under the jurisdiction of the CSLC. The Authority would comply with all applicable rules and regulations promulgated by CSLC with respect to cultural resources in submerged lands.

If human remains are discovered on state-owned or private lands the contractor shall contact the relevant County Coroner to allow the Coroner to determine if an investigation regarding the cause of death is required. If no investigation is required and the remains are of Native American origin the Authority shall contact the Native American Heritage Commission to identify the most likely descendant (MLD). The MLD shall be empowered to reinter the remains with appropriate dignity. If the MLD fails to make a recommendation, the remains shall be reinterred in a location not subject to further disturbance and the location shall be recorded with the Native American Heritage Commission and relevant information center of the California Historical Resources Information System.

If human remains are part of an archaeological site, the Authority and contractor shall, in consultation with the MLD and other consulting parties, consider preservation in place as the first option, in the order of priority called for in CEQA Guidelines Section 15126.4(b)(3).

In consultation with the relevant Native American Tribes, the Authority may conduct scientific analysis on the human remains if called for under a data recovery plan and amenable to all consulting parties. The Authority would work with the MLD to satisfy the requirements of California Public Resources Code Section 5097.98. Performance tracking of this mitigation measure would be based on successful implementation and approval acceptance of the documentation by the SHPO and appropriate consulting parties.

CUL-MM#3: Other Mitigation for Effects to Pre-Contact Archaeological Sites. Due to limited access to private properties during the environmental review phase of this project, the FRA's and Authority's ability to fully identify and evaluate archaeological resources within the APE has, correspondingly, also been limited. Thus, the majority of the project APE has not been subject to archaeological field inventories. As pedestrian field surveys are a necessary component of the archaeological resource identification and evaluation effort, the commitment to complete the field surveys, prior to ground disturbing activities associated with the project, are codified in the Memorandum of Agreement (MOA) that has been executed as a condition of this Final EIR/EIS.

Access to previously-inaccessible properties to complete the archaeological resource identification effort is expected to be available after the Record of Decision, during the design-build phase of the project. However, due to the design constraints associated with constructing a high-speed train, the ability to shift the alignment to avoid any newly identified archaeological resources at this late phase of the project delivery process is substantially limited and/or unlikely, as the alignment is already established. As such, impacts/effects to as-yet-unidentified significant archaeological resources as a result of this project are anticipated; however, the nature and quantity of such effects remains unknown until completion of the archaeological field identification and evaluation effort.

Protocols for the identification, evaluation, treatment, and data-recovery mitigation of as-yet-unidentified archaeological resources are addressed in the MOA and Archaeological Treatment Plan. Efforts to develop meaningful mitigation measures for effects to as-yet-unidentified Native American archaeological resources that cannot be avoided will be negotiated with the tribal Consulting Parties. Measures that are negotiated among the MOA signatories and tribal Consulting Parties will be the responsibility of the Authority to implement.

CUL-MM#7: Prepare Interpretive or Educational Materials. The MOA and BETP would identify historic properties and historical resources that would be subject to historic interpretation or preparation of educational materials. Interpretive and educational materials would address the significance of the properties that would be affected by the project. Interpretive or educational materials could include, but are not limited to: brochures, videos, websites, study guides, teaching guides, articles or reports for general publication, commemorative plaques, or exhibits. The agreed-upon method of interpretation would be specified in the BETP for each property, resulting from consultation with the State Historic Preservation Officer (SHPO), MOA signatories and concurring parties. The contractor would be responsible for assembling the appropriate interdisciplinary team to fulfill the mitigation. The required professionals and their qualifications would be specified in the BETP.

In the preparation of the interpretive or educational materials, the contractor's team would utilize previous research included in the environmental technical documents, images, narrative history, drawings, or other material produced for the mitigation described above. The interpretive or educational materials should be made available to the public in physical or digital formats, at local libraries, historical societies, or public buildings, as specified in the BETP.

CUL-MM#9: Visual Screening. The MOA and BETP would identify historic properties and historical resources that would be subject to visual screening. Visual screening would be installed by the Contractor and consist of plant material that would minimize the view of the project from the property subject to mitigation. This treatment would minimize adverse effects on historic properties/historical resources. Plant species would be selected by the Contractor's interdisciplinary team of architectural historians and landscape architects based on species' mature size and shape, growth rate, appropriateness to the historic property, fire resistance, and drought tolerance. The design and recommended plant make-up of the screen would be reviewed and approved by the Authority in consultation with the MOA signatories and land owner or land-owning agency. No species that is listed on the Invasive Species Council of California's list of invasive species would be planted. The Contractor would arrange to have the landscaping continuously maintained for a period specified in the plan and appropriate irrigation systems would be installed if the landscape architect determines it is needed. The plan would define the terms of replacement should the plants die.

A.2.15 Referenced Mitigation Measures for Cumulative Socioeconomics and Communities

CUM-SO-MM#1: Coordination with Cumulative Construction Project Sponsors. During construction of the HSR project section, coordination would occur with the project sponsors or other entities, including local or regional governments, to coordinate construction schedules and potential closures, detours, and other elements of construction, to the greatest extent feasible, in order to minimize impacts on surrounding communities. Such coordination would include planning for vehicular, pedestrian, and bicycle detours; performing community outreach to ensure residents and businesses are aware of potential issues in advance; and allowing for public input and feedback in planning for construction.

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ATTACHMENT B: FRESNO TO BAKERSFIELD LOCALLY GENERATED ALTERNATIVE MITIGATION MEASURES/ IMPACT AVOIDANCE AND MINIMIZATION MEASURES COMPARED TO BAKERSFIELD TO PALMDALE MITIGATION MEASURES/IMPACT AVOIDANCE AND MINIMIZATION FEATURES

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
Section 3.2 Transportation	
F-B LGA TR-MM#2: Modify signal phasing. Modify traffic signal phasing sequence to improve operations at a signalized intersection, in consultation with the appropriate jurisdiction to ensure the peak hour re-timing of the signal.	Collectively, the F-B LGA MMs correspond to B-P TRAN-MM#3: Intersection and Roadway Segment Improvements.
F-B LGA TR-MM#3: Add signal to intersection to improve LOS/operation. Add traffic signals to affected non-signalized intersections surrounding the proposed F Street station location to improve LOS and intersection operation.	
F-B LGA TR-MM#4: Restripe intersections. Restripe specific intersections surrounding the proposed F Street station location to improve LOS and intersection operation.	
F-B LGA TR-MM#5: Revise signal cycle length. Revise signal cycle length at specific intersections surrounding the proposed F Street station location to improve LOS and intersection operation in consultation with the local appropriate jurisdiction.	
F-B LGA TR-MM#6: Widen approaches to intersections. Widen approaches to allow for additional turning or through-lanes to improve LOS and intersection operation.	
F-B LGA TR-MM#7: Add exclusive turn lanes to intersections. Add exclusive turn lanes at specific intersections to improve LOS and intersection operation.	
F-B LGA TR-MM#8: Add new lanes to roadway. Add additional roadway lanes to improve LOS and intersection operation.	
F-B LGA TR-MM#9: Restripe roadway segment. Restripe specific roadway segments in the vicinity of the proposed F street station location to improve LOS and roadway segment operation.	
F-B LGA TR-MM#10: Convert intersection stop control. Convert intersection stop-control from a two-way stop to an all-way stop.	
Section 3.3 Air Quality and Global Climate Change	
F-B LGA AQ-MM#1: Reduce Criteria Exhaust Emissions from Construction Equipment.	AQ-IAMF#3: Renewable Diesel
F-B LGA AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment.	AQ-IAMF#5: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment
F-B LGA AQ-MM#3: Reduce the potential impact of concrete batch plants.	AQ-IAMF#6: Reduce the Potential Impact of Concrete Batch Plants

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA AQ-MM#4: Offset Emissions Through the VERA Program.	AQ-MM#1: Offset Project Construction Emissions through Off-Site Emission Reduction Programs
F-B LGA AQ-MM#5: Purchase Offsets for Emissions Associated with Hauling Ballast Material in Certain Air Districts (i.e., Mojave Desert AQMD, BAAQMD, and the South Coast AQMD).	
Section 3.4 Noise and Vibration	
F-B LGA N&V-MM#1: Construction noise mitigation measures.	N&V-MM#1: Construction Noise Mitigation Measures
F-B LGA N&V-MM#2: Construction vibration mitigation measures.	N&V-MM#2: Construction Vibration Mitigation Measures.
F-B LGA N&V-MM#3: Installation of noise barriers, installation of building insulation, or full property acquisition for noise impacts from HSR operations.	N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines
F-B LGA N&V-MM#4: Vehicle Noise Specification.	N&V-MM#4: Vehicle Noise Specification
F-B LGA N&V-MM#5: Special Track Work.	N&V-MM#5: Special Trackwork
F-B LGA N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design.	N&V-MM#6: Additional Noise and Vibration Analysis Following Final Design
F-B LGA N&V-MM#7: Station, Maintenance of Infrastructure Facility, and Traction Power Supply Station noise mitigation measure.	N&V-MM#7: Station, Maintenance-of-Way Facility, and Traction Power Substation
Section 3.5 Electromagnetic Interference and Electromagnetic Fields	
<i>No EMI/EMF mitigation measures were identified for the portion of the F-B LGA from the 34th Street and L Street intersection through Oswell Street.</i>	
Section 3.6 Public Utilities and Energy	
<i>No public utilities and energy mitigation measures were identified for the portion of the F-B LGA from the 34th Street and L Street intersection through Oswell Street.</i>	
Section 3.7 Biological and Aquatic Resources	
F-B LGA BIO-MM#1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor(s)	BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors
F-B LGA BIO-MM#2: Regulatory Agency Access	BIO-IAMF#2: Facilitate Agency Access
F-B LGA BIO-MM#3: Prepare and Implement a Worker Environmental Awareness Program	BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
F-B LGA BIO-MM#4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan	BIO-IAMF#4: Conduct Operation and Maintenance Period WEAP Training

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA BIO-MM#5: Prepare and Implement a Biological Resource Management Plan	BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan
F-B LGA BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan	BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
F-B LGA BIO-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field)	BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan
F-B LGA BIO-MM#8: Wildlife Exclusion Fencing	BIO-IAMF#4: Conduct Operation and Maintenance Period WEAP Training
F-B LGA BIO-MM#9: Equipment Staging Areas	BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes
F-B LGA BIO-MM#10: Mono-Filament Netting	BIO-IAMF#6: Establish Monofilament Restrictions
F-B LGA BIO-MM#11: Vehicle Traffic	BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes
F-B LGA BIO-MM#12: Entrapment Prevention	BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations
F-B LGA BIO-MM#13: Work Stoppage	Removed with Revision Cycle 15
F-B LGA BIO-MM#14: “Take” Notification and Reporting	Removed with Revision Cycle 15
F-B LGA BIO-MM#15: Post-Construction Compliance Reports	Revision Cycle 15 removed compliance reporting BIO-IAMFs.
F-B LGA BIO-MM#16: Conduct Protocol-Level Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities	BIO-MM#1: Conduct Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities
F-B LGA BIO-MM#17: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special-Status Plant Species	BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species
F-B LGA BIO-MM#22: Conduct Preconstruction Surveys for Special-Status Reptile and Amphibian Species	BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species
F-B LGA BIO-MM#23: Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance, and Relocation	BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species
F-B LGA BIO-MM#26: Conduct Protocol-Level Surveys for Blunt-Nosed Leopard Lizard	BIO-MM#11: Conduct Surveys for Blunt-Nosed Leopard Lizard
F-B LGA BIO-MM#27: Phased Preconstruction Surveys for Blunt-Nosed Leopard Lizard	BIO-MM#11: Conduct Surveys for Blunt-Nosed Leopard Lizard
F-B LGA BIO-MM#28: Blunt-Nosed Leopard Lizard Avoidance	BIO-MM#13: Implement Avoidance Measures for Blunt-Nosed Leopard Lizard
F-B LGA BIO-MM#29: Conduct Preconstruction Surveys and Delineate Active Nest Exclusion Areas for Other Breeding Birds	BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds
F-B LGA BIO-MM#30: Conduct Preconstruction Surveys and Monitoring for Raptors	BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors
F-B LGA BIO-MM#31: Bird Protection	BIO-IAMF#12: Design the Project to be Bird Safe

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA BIO-MM#32: Conduct Protocol and Preconstruction Surveys for Swainson’s Hawks	BIO-MM#17: Conduct Surveys for Swainson’s Hawk Nests and Implement Avoidance and Minimization Measures
F-B LGA BIO-MM#33: Swainson’s Hawk Nest Avoidance and Monitoring	BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson’s Hawk Nests
F-B LGA BIO-MM#34: Monitor Removal of Nest Trees for Swainson’s Hawks	Removed with Revision Cycle 15.
F-B LGA BIO-MM#35: Conduct Protocol Surveys for Burrowing Owls	BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls
F-B LGA BIO-MM#36: Burrowing Owl Avoidance and Minimization	BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl
F-B LGA BIO-MM#37: Conduct Surveys for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse	BIO-MM#22: Conduct Pre-Construction Surveys for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse
F-B LGA BIO-MM#38: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse	BIO-MM#23: Implement Avoidance and Minimization Measures for Nelson’s Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse
F-B LGA BIO-MM#40: Conduct Preconstruction Surveys for Special-Status Bat Species	BIO-MM#25: Conduct Pre-construction Surveys for Special-Status Bat Species
F-B LGA BIO-MM#41: Bat Avoidance and Relocation	BIO-MM#26: Implement Bat Avoidance and Relocation Measures
F-B LGA BIO-MM#42: Bat Exclusion and Deterrence	BIO-MM#27: Implement Bat Exclusion and Deterrence Measures
F-B LGA BIO-MM#43: Conduct Preconstruction Surveys for American Badger and Ringtail	BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures
F-B LGA BIO-MM#44: American Badger and Ringtail Avoidance	BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures
F-B LGA BIO-MM#45: Conduct Preconstruction Surveys for San Joaquin Kit Fox	BIO-MM#30: Conduct Pre-construction Surveys for San Joaquin Kit Fox
F-B LGA BIO-MM#46: Minimize Impacts on San Joaquin Kit Fox	BIO-MM#31: Minimize Impacts on San Joaquin Kit Fox
F-B LGA BIO-MM#47: Restore Temporary Riparian Impacts	BIO-MM#32: Restore Temporary Riparian Habitat Impacts
F-B LGA BIO-MM#48: Restore Temporary Jurisdictional Waters Impacts	BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA BIO-MM#49: Monitor Construction Activities within Jurisdictional Waters	BIO-MM#34: Monitor Construction Activities within Aquatic Resources
F-B LGA BIO-MM#50: Mitigation and Monitoring of Protected Trees	BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees
F-B LGA BIO-MM#51: Install Flashing or Slats within Security Fencing	BIO-MM#36: Install Aprons or Barriers within Security Fencing
F-B LGA BIO-MM#53: Compensate for Impacts on Special-Status Plant Species	BIO-MM#38: Compensate for Impacts to Listed Plant Species
F-B LGA BIO-MM#57: Compensate for Impacts on Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson’s Antelope Squirrel	BIO-MM#42: Provide Compensatory Mitigation for Impacts on Habitat for Tipton Kangaroo Rat and Nelson’s Antelope Squirrel
F-B LGA BIO-MM#58: Compensate for Loss of Swainson’s Hawk Nesting Trees	BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson’s Hawk Nesting Trees and Habitat
F-B LGA BIO-MM#59: Compensate for Loss of Burrowing Owl Active Burrows and Habitat	BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat
F-B LGA BIO-MM#60: Compensate for Destruction of San Joaquin Kit Fox Habitat	BIO-MM#45: Provide Compensatory Mitigation for Impacts on San Joaquin Kit Fox Habitat
F-B LGA BIO-MM#62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan	Removed with Revision Cycle 15
F-B LGA BIO-MM#63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters	BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan (CMP) for Impacts on Aquatic Resources
F-B LGA BIO-MM#64: Compensate for Impacts on Protected Trees	BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees
F-B LGA BIO-MM#65: Offsite Habitat Restoration, Enhancement, and Preservation	BIO-MM#50: Implement Measures to Minimize Impacts during Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites
Section 3.8 Hydrology and Water Resources	
F-B LGA HWR-MM#1: Implement floodplain protection measures during Construction.	WQ-MM#1: Floodplain Protection: Construction
F-B LGA HWR-MM#2: Floodplain Protection: Operation.	WQ-MM#4: Floodplain Protection: Operation (the measures are geographically specific because they require preparation of a Conditional Letter of Map Revision.
Section 3.9 Geology, Soils, Seismicity, and Paleontological Resources	
F-B LGA CUL-MM#16: Engage a Paleontological Resources Specialist to Direct Monitoring during Construction	GEO-IAMF#11: Engage a Qualified Paleontological Resources Specialist

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA CUL-MM#17: Prepare and Implement a Paleontological Resource Monitoring and Mitigation Plan	GEO-IAMF#13: Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan (PRMMP)
F-B LGA CUL-MM#18: Halt Construction When Paleontological Resources Are Found	GEO-IAMF#15: Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found
Section 3.10 Hazardous Materials and Wastes	
F-B LGA HMW-MM#1: Limit use of extremely hazardous materials near schools during construction.	HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools During Construction
Section 3.11 Safety and Security	
F-B LGA S&S-MM#1: Monitor response of local fire, rescue, and emergency service providers to incidents at the Bakersfield F Street Station and provide a fair share cost of service.	S&S-MM#1: Emergency Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair-Share Cost of Service
F-B LGA S&S-MM#4: Site-specific mitigation for the continued operation of the Golden Empire Gleaners Facility.	Site-specific. No corresponding B-P mitigation measure(s).
Section 3.12 Socioeconomics and Communities	
F-B LGA SO-MM#1: Disruption to community cohesion and division of existing rural communities during operation.	No corresponding B-P MM or IAMF.
F-B LGA SO-MM#3: Implement measures to reduce impacts associated with the displacement of key community facilities.	SO-MM#3: Implement Measures to Reduce Impacts Associated with the Relocation of Important Facilities
F-B LGA SO-MM#5: Physical deterioration via measures that will design station and non-station structures to allow for contextual design responses to site-specific or unique conditions.	No corresponding B-P MM or IAMF.
Section 3.13 Station Planning, Land Use, and Development	
<i>No station planning, land use, and development mitigation measures were identified for the portion of the F-B LGA from the 34th Street and L Street intersection through Oswell Street.</i>	
Section 3.14 Agricultural Farmland and Forest Land	
<i>No agricultural farmland and forest land mitigation measures were identified for the portion of the F-B LGA from the 34th Street and L Street intersection through Oswell Street.</i>	
Section 3.15 Parks, Recreation, and Open Space	
F-B LGA PP-MM#1: Provide Alternate Pedestrian and Bicycle Access During Temporary Closures of Portions of Park Property During Construction.	PR-MM#1 Temporary Restricted Access to Park Facilities During Construction PR-MM#2: Providing Park Access

Mitigation/IAMF from LGA Applicable to “LGA Stub”	Corresponding MM/IAMF for B-P
F-B LGA PP-MM#3: Collect Additional Maintenance Funds.	The language included in this MM identifies City of Bakersfield and Kern County. This would be a site-specific measure.
Section 3.16 Aesthetics and Visual Resources	
F-B LGA AVR-MM#1a: Minimize visual disruption during construction activities.	AVQ-MM#1: Minimize Visual Disruption from Construction Activities
F-B LGA AVR-MM#1b: Minimize light disturbance during construction.	AVQ-MM#2: Minimize Light Disturbance during Construction
F-B LGA AVR-MM#2a: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context	AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures
F-B LGA AVR-MM#2b: Integrate Elevated Guideway into Affected Cities, Parks, Trail, and Urban Core Designs	AVQ-MM#6: Plant Landscape Treatments along the HSR Project Overheads, Embankment, and Retained-Fill Elements
F-B LGA AVR-MM#2e: Provide Offsite Landscape Screening Where Appropriate	AVQ-MM#4: Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas
F-B LGA AVR-MM#2f: Landscape Treatments Along the HSR Project Overcrossings and Retained Fill Elements of the HSR	AVQ-MM#6: Plant Landscape Treatments Along the HSR Project Overheads, Embankment, and Retained-Fill Elements
F-B LGA AVR-MM#2g: Provide Sound Barrier Treatments	AVQ-MM#7: Provide Sound Barrier Treatments
Section 3.17 Cultural Resources	
F-B LGA CUL-MM#4: Comply with State and Federal Law for Human Remains	Regulatory requirements.
F-B LGA CUL-MM#5: Conduct Additional Testing and Recovery	CUL-MM#1: Mitigate Adverse Effects to Archaeological and Built Environment Resources Identified During Phased Identification. Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the Programmatic Agreement (PA) and Memorandum of Agreement (MOA)
F-B LGA CUL-MM#12: Prepare and Submit Additional Recordation and Documentation	CUL-MM#6: Prepare and Submit Additional Recordation and Documentation
F-B LGA CUL-MM#13: Prepare Interpretive or Educational Materials	CUL-MM#7: Prepare Interpretive or Educational Materials
Section 3.18 Regional Growth	
<i>No regional growth mitigation measures were identified for the portion of the F-B LGA from the 34th Street and L Street intersection through Oswell Street.</i>	
Section 3.19 Cumulative Impacts	
F-B LGA CUM-N&V-MM#1: Consult with agencies regarding construction activities.	Not required for B-P.
F-B LGA CUM-SO-MM#1: Consult with agencies regarding construction activities.	CUM-SO-MM#1: Coordination with Cumulative Construction Project Sponsors
F-B LGA CUM-VQ-MM#1: Consult with agencies on the HSR project design.	AVQ-IAMF#2: Aesthetic Review Process.

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ATTACHMENT C: FRESNO TO BAKERSFIELD SECTION DRAFT SUPPLEMENTAL EIR/EIS APPENDIX 2-H

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California High-Speed Rail Authority

Fresno to Bakersfield *Section*

Draft Supplemental
Environmental Impact
Report/Environmental
Impact Statement

Appendix 2-H
Functions of Impact Avoidance and
Minimization Measures

October 2017



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TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	2-H-iii
APPENDIX 2-H: FUNCTIONS OF IMPACT AVOIDANCE AND MINIMIZATION MEASURES.....	2-H-4
2-H-1 Descriptions of How Impact Avoidance and Minimization Measures (IAMMs) Avoid or Minimize Effects.....	2-H-4

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AG	agricultural
AQ	air quality
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
Authority	California High-Speed Rail Authority
AVR	aesthetics and visual quality
BIO	biological resources
BMP	best management practice
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDSM	cement deep soil mixing
C.F.R.	Code of Federal Regulations
CHA	collision hazard analysis
CIDH	cast-in-drilled hole
CMP	compensatory mitigation plan or Construction Management Plan
CMS	Changeable message signs
CTP	Construction Transportation Plan
CUL	cultural resources
CVFPB	Central Valley Flood Protection Board
EMCPP	Electromagnetic Compatibility Program Plan
EMF	electromagnetic field
EMI	electromagnetic interference
EQ	earthquake
FPP	Flood Protection Plan
FRA	Federal Railroad Administration
GEO	geologic resources
HMW	hazardous materials and waste
HSR	high-speed rail
HST	high-speed train
HYD	hydrology and water resources
IAMM	impact avoidance and minimization measures
IBC	International Building Code

ISEP	Implementation Stage Electromagnetic Compatibility Program Plan
LU	land use and development, station planning
MOA	Memorandum of Agreement
NV	noise and vibration
OSHA	Occupational Safety and Health Administration
PHA	preliminary hazard analysis
PRO	parks, recreation and open space
PUE	public utilities and energy
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SOCIO	socioeconomics and communities
SR	State Route
SS	safety and security
SSMP	Safety and Security Management Plan
SWMTP	Stormwater Management and Treatment Plan
SWPPP	Stormwater Pollution Prevention Plan
TR	transportation
TVA	threat and vulnerability assessment
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended
UPRR	Union Pacific Railroad
U.S.	United States
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
VOC	volatile organic compound

APPENDIX 2-H: FUNCTIONS OF IMPACT AVOIDANCE AND MINIMIZATION MEASURES

Descriptions of How Impact Avoidance and Minimization Measures (IAMMs) Avoid or Minimize Effects

This table describes measures that would avoid or minimize potential impacts to construct and operate the Fresno to Bakersfield Locally Generated Alternative (F-B LGA) of the High Speed Rail (HSR) Project. These measures were developed by the Federal Railroad Administration (FRA) and the California High-Speed Rail Authority (Authority) in consultation with appropriate agencies, as well as with input from the public, to meet the requirements of National Environmental Policy Act and the California Environmental Quality Act.

The HSR project incorporates design features and Best Management Practices (BMPs) identified in this Supplemental Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and described in detail in a series of technical reports that accompany preparation of the environmental document. As a result of applying these design features and BMPs, the F-B LGA will avoid potential adverse environmental impacts in several resource areas, including electromagnetic interference/electromagnetic fields (EMI/EMF), hydrology and water resources, geology and soils, and hazardous materials and wastes. In addition, the project’s compliance with the regulatory requirements, including permitting and coordination with regulatory agencies for many project-related activities, provide additional assurance that potential adverse environmental impacts will not occur. Representative agencies include the United States (U.S.) Fish and Wildlife Service, the U.S. Army Corps of Engineers (USACE), and the U.S. Environmental Protection Agency with jurisdiction under the Federal Endangered Species Act and the Clean Water Act, respectively. Like the mitigation measures described in Technical Appendix 2-G of this Supplemental EIR/EIS, the project design features (below) and compliance with regulatory requirements are a condition of project approval and must be implemented by the Authority during design, construction, and operation of the HSR project.

These measures are listed by resource, and resources are listed alphabetically for ease of reference. IAMMs demarked by an asterisk (*) are applicable to the portion of the Bakersfield to Palmdale Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. IAMMs demarked by a double asterisk (**) indicate that while the F-B LGA IAMM is applicable to the portion of the Bakersfield to Palmdale Preferred Alternative from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, the IAMM has been superseded by a comparable, updated version in Appendix 2-E of the Bakersfield to Palmdale Project Section Final EIR/EIS.

IAMM	Description
AGRICULTURAL FARMLAND AND FOREST LAND	
AG-IAMM#1: Restoration of Land Used for Temporary Staging Areas	This action reduces temporary impacts on Important Farmland by conserving agricultural land top soil through temporary stockpiling and then using that soil to restore agricultural lands to pre-project conditions after construction is completed. By stockpiling topsoil (the rich upper layer in which most plants have their roots) the agricultural productivity of the restored agricultural lands would be comparable to pre-project conditions.
AG-IAMM#2: Farmland Consolidation Program	This measure reduces impacts on agricultural farmland by administering a farmland consolidation program to sell remnant agricultural parcels to neighboring landowners for combining with adjacent farmland properties and continued agricultural productivity. Program implementation will reduce the amount of agricultural lands affected by HSR construction and operation.

IAMM	Description
AG-IAMM#3: Permit Assistance	This commitment reduces permanent impacts to agricultural operations (confined animal facility) by providing land use and regulatory agency permit assistance to landowners needing to obtain new or amended permits to continue operation of a confined animal facility whose operations would be modified or facilities relocated resulting from high-speed rail (HSR) construction and operation. Obtaining land use and regulatory permits for modified or relocated confined animal facilities can be a lengthy and arduous process that can result in the inability to modify or relocate such facilities in a timely manner. By providing permitting assistance, the Authority can reduce potential impacts on agricultural operations.
AIR QUALITY	
AQ-IAMM#1: Truck Equipment*	This action reduces construction related air quality emissions by requiring the covering of all materials (truck beds) transported on public roads.
AQ-IAMM#2: Fugitive Dust Emissions**	This action reduces construction related air quality emissions by requiring the preparation of a fugitive dust control plan. This plan identifies the minimum features that will be implemented during ground disturbing activities. Examples of these include covering all materials (truck beds) transported on public roads, watering exposed graded surfaces, limiting vehicle speed on the construction site, suspending operations during high wind events, stabilizing all disturbed graded areas, wetting of exterior surfaces of structures during demolition, and removing any accumulation of mud or dirt from adjacent public streets. These types of construction best management practices are proven methods of minimizing fugitive dust generation associated with ground disturbing and demolition construction activities. Each air district traversed by the HSR has adopted rules and/or regulations requiring dust control plans for construction activities. These dust control plans are a part of each district's overall strategy for compliance with federal and state air quality standards.
AQ-IAMM#3: Trackouts*	This action reduces construction related air quality emissions by requiring the removal of any accumulation of mud or dirt from adjacent public streets.
AQ-IAMM#4: Material Selection**	This commitment reduces overall construction emissions by limiting the type of paint to those containing volatile organic compound (VOC) of less than 10 percent (low) to be used during construction. Using paint that releases fewer organic compounds into the air after application is an air quality management measure effective in reducing construction emissions and achieving federal and state air quality standards.
AESTHETICS AND VISUAL QUALITY	
AVR-IAMM#1: Design Standards**	<p>This measure reduces the aesthetic and visual impacts of the HSR infrastructure components, including stations and elevated guideways, by applying design approaches to integrate structures within a community and to reduce the intrusiveness of large, elevated structures. It will also provide some consistency in the HSR design throughout the program.</p> <p>This action reduces the aesthetic and visual impacts of the HSR by providing urban design guidelines to be evaluated and applied increasing the compatibility of the HSR infrastructure within an existing, specific local design context.</p>

IAMM	Description
BIOLOGICAL RESOURCES	
BIO-IAMM #1: Environmental Design*	<p>At multiple locations, the route of the alternative alignments was altered to avoid impacts and effects to biological resources.</p> <p>During project design and construction, the Authority and FRA would implement measures to reduce impacts on air quality and hydrology based on applicable design standards. Implementation of these measures would also reduce impacts to biological resources. The design standards applicable to the project are listed in Appendix 2-D and the measures to be applied are summarized in Section 3.3, Air Quality and Global Climate Change and Section 3.8, Hydrology and Water Resources.</p>
CULTURAL RESOURCES	
CUL-IAMM#1: Protective Measures*	<p>This measure reduces potential cultural resource impacts by providing training on measures to avoid or protect built historic resources, and to recognize archaeological resources that may be encountered, and mandatory procedures to follow should potential cultural resources be exposed during construction. The training also provides project avoidance and mitigation features to project construction crews. Regularly updated mandatory training reduces potential impacts on cultural resources by producing a well-informed construction crew versed in operational procedures that must be followed during construction activity. This reduces the potential for unplanned impacts to cultural resources during construction activities.</p> <p>This measure calling for a Pre-Construction Conditions Assessment, Plan for Protection of Historic Built Resources and Repair of Inadvertent Damage reduces potential impacts on historic cultural resources by identifying techniques to minimize inadvertent damage. If damage occurs, the plan calls for establishing standards of repair consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties.</p> <p>This commitment to stabilize and protect historic buildings and structures susceptible to damage during construction reduces potential impacts on cultural resources. Temporary stabilization and protection measures will be removed after construction is completed. Properties will be restored to their pre-construction condition.</p> <p>Committing to prepare an archaeological sensitivity monitoring plan that identifies and maps areas of archaeological sensitivity reduces impacts on cultural resources by developing a systematic approach to cultural resource monitoring. The sensitivity of such areas is based on one or a combination of any of the following: known locations of archaeological sites, tribal consultation, landforms, depositional processes, distance to water, or historic mapping. This commitment to implement the plan by conducting archaeological and tribal monitoring during construction activities reduces impacts to cultural resources by providing assurances that construction activities will be conducted in a manner consistent with HSR cultural resource protocols procedures. Oversight by the Cultural Resource Compliance Manager and monitoring by qualified cultural resource and tribal monitors of construction activities near archaeologically sensitive areas reduces the potential for inadvertent construction impacts to cultural resources.</p> <p>This commitment to prepare and implement a built environment monitoring plan will reduce potential impacts on cultural resources by detailing an implementation strategy for monitoring historic structures and tying implementation of the measures to discrete steps in the construction process. The monitoring plan will define responsibilities and timing (spot check versus full time monitoring) to verify that monitoring occurs in an appropriate manner consistent with HSR cultural resource protocols and procedures.</p>

IAMM	Description
CUL-IAMM#2: PA*	<p>The PA established the framework for the development and implementation of measures to avoid, minimize, and/or mitigate adverse effects on historic properties caused by the HSR System, in compliance with Section 106 and NEPA.</p> <p>As stipulated in the Section 106 programmatic agreement for the HSR program, implementation of a MOA is required for each project section, to be negotiated and agreed upon among the Authority, Federal Railroad Administration (FRA), and State Historic Preservation Officer (SHPO), and other signatories and consulting parties. The purpose is to reduce impacts on cultural resources by identifying agreed upon resources that will or may be adversely affected by the project. The MOA requires archaeological and built environment treatment plans to be prepared and include requirements that specify how commitments to the protection of cultural resources will be implemented for each HSR construction segment.</p>
EMI/EMF STANDARDS	
EMI/EMF-IAMM #1: EMCPP Design Features**	<p>This measure reduces potential exceedances to electromagnetic interference/electromagnetic field (EMI/EMF) standards by requiring the Contractor to work with railroad engineering departments and apply standard design practices to prevent interference with the electronic equipment operated on parallel railroad facilities.</p> <p>This measure reduces potential exceedances to EMI/EMF standards by requiring the Contractor to design the HSR to international guidelines and comply with federal and state laws and regulations related to electromagnetic fields/electromagnetic interference. Prior to construction, the Contractor will prepare an electromagnetic field/electromagnetic interference technical memorandum for review and approval by the Authority. Project design will follow the Implementation Stage Electromagnetic Compatibility Program Plan (ISEP) to avoid EMI and to provide for HSR operational safety.</p> <p>Similarly, project design will follow the EMCPP to avoid EMI and to ensure HST operational safety. Some features of the EMCPP include:</p> <ul style="list-style-type: none"> ▪ During the planning stage through system design, the Authority will perform EMC/EMI safety analyses, which will include identification of existing nearby radio systems, design of systems to prevent EMI with identified neighboring uses, and incorporation of these design requirements into bid specifications used to procure radio systems. ▪ Pipelines and other linear metallic objects that are not sufficiently grounded through the direct contact with earth would be separately grounded in coordination with the affected owner or utility to avoid possible shock hazards. For cases where metallic fences are purposely electrified to inhibit livestock or wildlife from traversing the barrier, specific insulation design measures would be implemented. ▪ HST standard corrosion protection measures would be implemented to eliminate risk of substantial corrosion of nearby metal objects.

IAMM	Description
GEOLOGIC RESOURCES	
<p>GEO-IAMM #1: General Guidelines to be Followed**</p>	<ul style="list-style-type: none"> ▪ 2010 American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design Bridge Design Specifications and the 2009 AASHTO Guide Specifications for Load and Resistance Factor Design Seismic Bridge Design: These documents provide guidance for characterization of soils, as well as methods to be used in the design of bridge foundations and structures, retaining walls, and buried structures. These design specifications will provide minimum specifications for evaluating the seismic response of the soil and structures. ▪ Federal Highway Administration Circulars and Reference Manuals: These documents provide detailed guidance on the characterization of geotechnical conditions at sites, methods for performing foundation design, and recommendations on foundation construction. These guidance documents include methods for designing retaining walls used for retained cuts and retained fills, foundations for elevated structures, and at-grade segments. Some of the documents include guidance on methods of mitigating geologic hazards that are encountered during design. ▪ American Railway Engineering and Maintenance-of-Way Association Manual: These guidelines deal with rail systems. Although they cover many of the same general topics as AASHTO, they are more focused on best practices for rail systems. The manual includes principles, data, specifications, plans, and economics pertaining to the engineering, design, and construction of railways. ▪ California Building Code: The code is based on 2009 International Building Code (IBC). This code contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. ▪ IBC and American Society of Civil Engineers (ASCE)-7: These codes and standards provide minimum design loads for buildings and other structures. They would be used for the design of the maintenance facilities and stations. Sections in IBC and ASCE-7 provide minimum requirements for geotechnical investigations, levels of earthquake ground shaking, minimum standards for structural design, and inspection and testing requirements. ▪ Caltrans Design Standards: Caltrans has specific minimum design and construction standards for all aspects of transportation system design, ranging from geotechnical explorations to construction practices. These amendments provide specific guidance for the design of deep foundations that are used to support elevated structures, for design of mechanically stabilized earth walls used for retained fills, and for design of various types of cantilever (e.g., soldier pile, secant pile, and tangent pile) and tie-back walls used for retained cuts. ▪ Caltrans Construction Manuals: Caltrans has a number of manuals including Field Guide to Construction Dewatering, Caltrans Construction Site Best Management Practices (BMPs) Manual and Construction Site Best Management Practice (BMP) Field Manual and Troubleshooting Guide that provide guidance and Best Management Practices for dewatering options and management, erosion control and soil stabilization, non-storm water management, and waste management at construction sites. ▪ American Society for Testing and Materials (ASTM): ASTM has developed standards and guidelines for all types of material testing- from soil compaction testing to concrete-strength testing. The ASTM standards also include minimum performance requirements for materials. Most of the guidelines and standards cited above use ASTM or a corresponding series of standards from AASHTO to assure that quality is achieved in the constructed project.

IAMM	Description
GEO-IAMM#2: Groundwater Withdrawal*	This measure reduces potential impacts on geologic resources by requiring the Contractor to prepare a Construction Management Plan (CMP) which would address groundwater withdrawal. The CMP outlines how HSR engineering design appropriately addresses these geologic constraints.
GEO-IAMM#3: Monitor Slopes**	The measure calls for slope monitoring that will reduce potential impacts from geologic conditions by establishing an operation and maintenance procedure for locations identified in the CMP where potential for long-term instability exists. Such instability could result in loss of track support or where slope failure could result in additional earth loading to foundations supporting elevated structures. The monitoring program will provide a mechanism supplying early detection of potential slope instability.
GEO-IAMM#4: Geotechnical Inspections*	Prior to and throughout construction, conduct geotechnical inspections to verify that no new, unanticipated conditions are encountered, and to determine the locations of unstable soils in need of improvement.
GEO-IAMM#5: Improve Unstable Soils*	The CMP would address unstable soils. The CMP outlines how HSR engineering design appropriately addresses these geologic constraints. This measure reduces impacts to geologic resources by requiring the Contractor to incorporate established engineering design guidelines and standards during the HSR design phase so HSR facilities are constructed to accepted engineering standards.
GEO-IAMM#6: Improve Settlement-Prone Soils*	The CMP would address subsidence. The CMP outlines how HSR engineering design appropriately addresses these geologic constraints. This measure provides for subsidence monitoring as part of HSR design and will reduce potential impacts resulting from geologic conditions by providing a remote monitoring program. Trains with autonomous equipment for daily track surveys will monitor and detect reduced track tolerance resulting in changed operations until track tolerances are restored to design specifications.
GEO-IAMM#7: Prevent Water and Wind Erosion*	The CMP would address water and wind. The CMP outlines how HSR engineering design appropriately addresses these geologic constraints.
GEO-IAMM#8: Modify or Remove and Replace Soils with Shrink-Swell Potential and Corrosion Characteristics*	The CMP would address soils with shrink-swell potential. The CMP outlines how HSR engineering design appropriately addresses these geologic constraints.
GEO-IAMM#9: Evaluate and Design for Large Seismic Ground Shaking**	This measure reduces impacts from geologic conditions by requiring evaluation and design for large seismic ground shaking in the engineering of all HSR components.
GEO-IAMM#10: Secondary Seismic Hazards*	As discussed above, various ground improvement methods can be implemented to mitigate the potential for liquefaction, liquefaction-induced lateral spreading or flow of slopes, or post-earthquake settlement. Ground improvement around CIDH piles improves the lateral capacity of the CIDH during seismic loading. CDSM, stone columns, EQ drains or jet-grouting develop resistance to lateral flow or spreading of liquefied soils.
GEO-IAMM#11: Suspend Operations During or After an Earthquake**	This commitment requires motion-sensing instruments be part of HSR design and will reduce potential impacts resulting from geologic conditions by providing a control system to shut down HSR operations temporarily during or after a potentially damaging earthquake.

IAMM	Description
HAZARDOUS MATERIALS AND WASTE	
HMW-IAMM#1: Transportation of Materials**	This action reduces potential impacts because of hazardous materials and waste by requiring a written hazardous materials and waste plan describing responsible parties and procedures for hazard waste transport. This reduces the likelihood of hazardous waste spills.
HMW-IAMM#2: Property Acquisition**	This action reduces potential impacts resulting from hazardous materials and waste by requiring completion of a Phase 1 environmental site assessment during the right-of-way acquisition phase. If documentation exists about potential hazardous waste on any parcel to be acquired, appropriate testing and remediation (if necessary) will be conducted in coordination with state and local agency officials.
HMW-IAMM#3: Landfill**	This measure reduces potential impacts resulting from hazardous materials and waste by requiring additional methane protection construction procedures for work within 1,000 feet of a landfill including detection systems and personnel training.
HMW-IAMM#4: Work Barriers**	This action reduces potential impacts resulting from hazardous materials and waste by requiring additional construction procedures that limit the potential release of subsurface containments during construction.
HMW-IAMM#5: Undocumented Contamination **	This measure reduces potential impacts because of hazardous materials and waste by requiring preparation of a CMP addressing procedures for disturbing undocumented contaminated soil. The Contractor will work closely with state and local agencies to resolve any such encounters and address necessary clean-up or disposal.
HMW-IAMM#6: Demolition Plans**	<p>This commitment reduces potential impacts resulting from hazardous materials and waste by requiring a demolition plan for the safe dismantling and removal of building components and debris including a plan for lead and asbestos abatement which can be prevalent in older structures.</p> <p>This measure reduces potential impacts resulting from hazardous materials and waste through preparation of a hazardous materials business plan addressing HSR operations.</p>
HMW-IAMM#7: Spill Prevention**	<p>This measure reduces potential impacts because of hazardous materials and waste by requiring a written CMP including a construction period spill prevention plan. The plan will identify construction best management procedures designed to contain and prevent accidental spills, including procedures to clean up any accidental hazardous material release.</p> <p>This measure reduces potential impacts resulting from hazardous materials and waste through preparation of a spill prevention, control and countermeasure plan addressing HSR operations.</p>
HMW-IAMM#8: Storage of Hazardous Materials*	This measure reduces potential impacts resulting from hazardous materials and waste by requiring a written hazardous materials and waste plan describing responsible parties and procedures for hazard waste transport containment and storage best management practices. This reduces the likelihood of hazardous waste spills.
HMW-IAMM#9: Material Selection*	This requirement reduces potential impacts resulting from hazardous materials and waste through implementation of an annual review of hazardous materials used during construction and operation, and determining if there are acceptable nonhazardous materials substitutes.

IAMM	Description
HYDROLOGY AND WATER RESOURCES	
HYD-IAMM#1: Storm Water Management and Treatment**	This obligation reduces potential impacts to hydrology and water resources by requiring the preparation of a stormwater management and treatment plan (SWMTP). Implementation of the SWMTP reduces potential stormwater management impacts by evaluating each receiving storm water system's capacity to accommodate project runoff and identifying stormwater management designed to capture runoff and provide treatment prior to discharge of pollutant-generating surfaces. Such surfaces include station parking areas, access roads, new road over- and underpasses, reconstructed interchanges, and new or relocated roads and highways. Constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters), vegetated swales and grass filter strips, will be used where appropriate. If needed storm water infiltration or detention facilities will be built in compliance with the design standards.
HYD-IAMM#2: Flood Protection**	This measure reduces potential impacts to hydrology and water resources by requiring the Contractor to prepare a Flood Protection Plan (FPP) for Authority review and approval. Through implementation of the FPP the project will be designed to both remain operational during flood events and to minimize increases in 100-year or 200-year flood elevations, as applicable to locale.
HYD-IAMM#3: Construction Stormwater Pollution Prevention Plan**	This action reduces potential impacts to hydrology and water resources by requiring the Contractor to prepare a construction period Stormwater Pollution Prevention Plan (SWPPP). Implementation of the SWPPP will provide BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs will include measures to provide permeable surfaces where feasible and to retain or detain and treat stormwater onsite.
HYD-IAMM #4: Regional Dewatering Permit**	The Central Valley RWQCB, Order No. R5-2008-0081, Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters, is a permit that covers construction dewatering discharges and some other listed discharges that do not contain significant quantities of pollutants, and that either (1) are 4 months, or less, in duration, or (2) have an average dry-weather discharge that does not exceed 0.25 million gallons per day.
HYD-IAMM #5: Flood Protection**	The CVFPB regulates specific river, creek, and slough crossings for flood protection. These crossings must meet the provisions of Title 23 of the CCR. Title 23 requires that new crossings maintain hydraulic capacity through such measures as in-line piers, adequate streambank height (freeboard), and measures to protect against streambank and channel erosion. Section 208.10 requires that improvements, including crossings, be constructed in a manner that does not reduce the channel's capacity or functionality, or that of any federal flood control project. The CVFPB reviews applications for encroachment permits for approval of a new channel crossing or other channel modification. For a proposed crossing or placement of a structure near a federal flood control project, the CVFPB coordinates review of the encroachment permit application with USACE pursuant to assurance agreements with USACE and the USACE Operation and Maintenance Manuals under Title 33 C.F.R, Section 208.10 and Title 33 U.S.C., Section 408. Under Section 408 of the Rivers and Harbors Act, the USACE must approve any proposed modification that involves a federal flood control project. A Section 408 permit would be required if construction modifies a federal levee. A Section 208.10 permit would be required where the project encroaches on a federal facility but does not modify it.

IAMM	Description
HYD-IAMM#6: Industrial Stormwater Pollution Prevention Plan**	This commitment reduces potential impacts to hydrology and water resources by requiring the Contractor to prepare an industrial facility SWPPP. The industrial facility SWPPP will include best management practices to control stormwater runoff from HSR industrial facilities such as vehicle maintenance yards. The SWPPP will include a monitoring plan for stormwater discharged from industrial facilities.
STATION PLANNING, LAND USE, AND DEVELOPMENT	
LU-IAMM#1: Zone of Responsibility*	This measure will reduce potential land use impacts by implementing sound design principles within the “zone of responsibility” around each HSR station. The Authority prepared Urban Design Guidelines (2011) to provide urban planning assistance to achieve great place making in the station areas. The application of sound urban design principles to the HSR system will help to maximize the performance of the transportation investment, enhance the livability of the communities it serves, create long-term value, and sensitively integrate the project into the communities along the HSR system corridor.
LU-IAMM #2: Construction Management Plan*	Project design features would reduce some of the temporary land use impacts from project construction. These features are described in Section 3.12.6, Socioeconomics, Communities, and Environmental Justice, and in Section 3.3.8, Air Quality and Global Climate Change. They include implementation of a construction management plan to minimize temporary impacts on adjacent land uses and implementation of dust control measures during project construction.
NOISE AND VIBRATION	
NV-IAMM#1: General Construction Guidelines – Noise and Vibration**	This measure will reduce potential noise and vibration impacts from construction by requiring the Contractor to document how federal guidelines for minimizing noise and vibration will be employed when construction is occurring near sensitive receptors (such as hospitals, residential neighborhoods and schools).
PARKS, RECREATION AND OPEN SPACE	
PRO-IAMM#1: Design Standards**	This measure will reduce potential impacts on parks, recreation and open space by requiring the Contractor to incorporate design features into HSR design that provide for safe and attractive access to present park and recreation facilities. It also requires the Contractor to provide sufficient separation of the HSR guideway system to maintain the intended user experience (passive or active recreation or wilderness experience) to the extent feasible.

IAMM	Description
PUBLIC UTILITIES AND ENERGY	
PUE-IAMM#1: Minimization of Utility Interruption**	<p>This measure requires that when relocating an irrigation facility is necessary, if feasible the Contractor will provide a new operational facility prior to disconnecting the original facility where feasible. Irrigation facility relocation preferences are included in the design-build contract and reduce unnecessary impacts to continued operation of irrigation facilities.</p> <p>This obligation reduces impacts to public utility interruptions by coordinating planned interruptions providing utility users an opportunity to plan appropriately for the service interruption. Prior to construction in areas where utility service interruptions are unavoidable, the Contractor will notify the public through a combination of communication media (e.g., by phone, email, mail, newspaper notices, or other means) within that jurisdiction and the affected service providers of the planned outage. The notification will specify the estimated duration of the planned outage and would be published no less than seven days prior to the outage. Construction will be coordinated to avoid interruptions of utility service to hospitals and other critical users. The Contractor will submit the public communication plan to the Authority in advance of the work for verification that appropriate notification was provided.</p> <p>This measure reduces impacts to public utility interruptions by coordinating planned interruptions providing utility providers an opportunity to plan appropriately for the service interruption. Prior to construction the Contractor shall prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions, including upgrades of existing power lines to connect the HSR System to existing utility substations.</p>
SAFETY AND SECURITY	
SS-IAMM#1: Emergency Vehicle Access*	This action reduces potential safety and security impacts by requiring the Contractor to prepare a construction transportation plan that describes the Contractor's coordination efforts with local jurisdictions for maintaining emergency vehicle access during HSR construction.
SS-IAMM#2: Operation and Transportation Hazards**	This action reduces potential safety and security impacts by requiring the Contractor to prepare a preliminary hazard analysis (PHA), collision hazard analysis (CHA), and threat and vulnerability assessment (TVA). The PHA follows the U.S. Department of Defense's System Safety Program Plan Requirements (MIL-STD-882) to identify and determine the facility hazards and vulnerabilities so that they can be addressed by and either eliminated or minimized through system design. CHAs follow the FRA's Collision Hazard Analysis Guide: Commuter and Intercity Passenger Service (FRA 2007) which provides a step-by-step procedure on how to perform a hazard analysis and how to develop effective mitigation strategies that will improve passenger rail safety. TVAs establish provisions for the deterrence and detection of, as well as the response to, criminal and terrorist acts for rail facilities and system operations.
SS-IAMM#3: Criminal and Terrorist Acts**	TVAs establish provisions for the deterrence and detection of, as well as the response to, criminal and terrorist acts for rail facilities and system operations.
SS-IAMM#4: Construction Safety Plan**	The SSMP will include construction safety and security plans to establish minimum safety and security guidelines during construction and security programs that address the safety of passengers and employees during emergency response.

IAMM	Description
SS-IAMM#5: Fire/Life Safety Programs**	The SSMP will include construction safety and security plans to establish minimum safety and security guidelines during construction and fire/life safety and security programs that address the safety of passengers and employees during emergency response.
SS-IAMM#6: System Security Plans**	The PHA follows the U.S. Department of Defense’s System Safety Program Plan Requirements (MIL-STD-882) to identify and determine the facility hazards and vulnerabilities so that they can be addressed by and either eliminated or minimized through system design. CHAs follow the FRA’s Collision Hazard Analysis Guide: Commuter and Intercity Passenger Service (FRA 2007) which provides a step-by-step procedure on how to perform a hazard analysis and how to develop effective mitigation strategies that will improve passenger rail safety.
SS-IAMM#7: Operating Procedure**	The SSMP will reduce potential impacts on safety and security by requiring the Contractor to document how various federal (FRA), state Occupational Safety and Health Administration (OSHA) and Authority (design guidelines), plans, programs and guidelines were considered in HSR design, construction and eventual operation to protect the safety and security of construction workers and users of the HSR.
SS-IAMM#8: FRA Requirements**	The SSMP will reduce potential impacts on safety and security by requiring the Contractor to document how various FRA plans, programs and guidelines were considered in HSR design, construction and eventual operation to protect the safety and security of construction workers and users of the HSR.
SS-IAMM#9: Worker Safety**	This measure requires the Contractor to prepare a Safety and Security Management Plan (SSMP). It will reduce potential impacts on safety and security by requiring the Contractor to document how various federal (FRA), state Occupational Safety and Health Administration (OSHA) and Authority (design guidelines), plans, programs and guidelines were considered in HSR design, construction and eventual operation to protect the safety and security of construction workers and users of the HSR.
SS-IAMM#10: Environmental Design*	PHAs identify and determine the facility hazards and vulnerabilities so that they can be addressed by and either eliminated or minimized through system design; CHAs follow the FRA’s Collision Hazard Analysis Guide: Commuter and Intercity Passenger Service (FRA 2007) which provides a step-by-step procedure on how to perform a hazard analysis and how to develop effective mitigation strategies that will improve passenger rail safety. TVAs establish provisions for the deterrence and detection of, as well as the response to, criminal and terrorist acts for rail facilities and system operations.
SOCIOECONOMICS AND COMMUNITIES	
SOCIO-IAMM#1: Construction Management Plan**	This measure will reduce potential impacts to neighborhoods and communities by requiring the Contractor to prepare a Construction Management Plan that includes measures that minimize impacts on community residents and businesses. The plan will include actions pertaining to communications, visual protection, air quality, safety controls, noise controls, and traffic controls.

IAMM	Description
SOCIO-IAMM#2: Uniform Relocation Assistance and Real Property Acquisition Policies Act. Compliance**	<p>This action identifies how compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended (Uniform Act) would reduce potential impacts to socioeconomic and communities. The provisions of the Uniform Act, a federally mandated program, would apply to all acquisitions of real property or displacements of persons resulting from this federally assisted project. The Uniform Act requires provision of relocation benefits to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits to which eligible owners or tenants may be entitled are determined on an individual basis and explained in detail by an assigned right-of-way specialist. Implementation of the Uniform Act reduces potential socioeconomic impacts by providing relocation assistance for people displaced through right of way acquisition.</p> <p>This measure will reduce potential impacts to property owners by requiring the Authority to develop a relocation mitigation plan, specific to the issues of each project section, to minimize the economic disruption related to relocation.</p>
TRANSPORTATION	
TR-IAMM#1: Off-Street Parking for Construction-Related Vehicles**	This measure will reduce potential impacts to transportation by requiring the Contractor to identify adequate off-street parking for all construction-related vehicles and use these spaces throughout the construction period thereby reducing impacts to local on-street parking supply.
TR-IAMM#2: Maintenance of Pedestrian Access**	This action will reduce potential impacts to transportation by requiring the Contractor to prepare and implement specific construction management plans to address maintenance of pedestrian access during the construction period.
TR-IAMM#3: Maintenance of Bicycle Access**	This measure will reduce potential impacts to transportation by requiring the Contractor to prepare and implement specific construction management plans to address maintenance of bicycle access during the construction period.
TR-IAMM#4: Restriction on Construction Hours**	This commitment will reduce potential impacts to transportation by limiting construction material deliveries and the number of construction employees arriving or departing the site during peak period travel resulting in reduced impacts on roadway performance levels.
TR-IAMM#5: Construction Truck Routes**	This measure will reduce potential impacts to transportation by requiring the Contractor to deliver all construction-related equipment and materials on the appropriate truck routes avoiding impacts on streets not designed to accommodate truck traffic.
TR-IAMM#6: Protection of Public Roadways during Construction**	This obligation will reduce potential impacts to transportation by requiring the Contractor to provide a photographic survey documenting the condition of the public roadways along truck routes providing access to the construction sites. The Contractor shall be responsible for the repair of any structural damage to public roadways caused by HSR construction or construction access, returning any damaged sections to their original pre HSR construction structural condition, or better.
TR-IAMM#7: Maintenance of Public Transit Access and Routes**	This action will reduce potential impacts to transportation by requiring the Contractor to prepare and implement specific construction management plans to address maintenance of public transit access during the construction period, including bus and rail transit service, stops, stations, and layover facilities.

IAMM	Description
TR-IAMM#8: Construction Transportation Plan**	This commitment will reduce potential impacts to transportation by requiring the Contractor to prepare a detailed Construction Transportation Plan (CTP) for minimizing the impact of construction and construction traffic on adjoining and nearby roadways. The CTP will address, in detail, the activities to be executed in each construction phase, with the requirement of maintaining traffic flow during peak travel periods. Such activities include, but are not limited to, the routing and scheduling of materials deliveries, materials staging and storage areas, construction employee arrival and departure schedules, employee parking locations, and temporary road closures, if any.
TR-IAMM#9: Construction during Special Events**	This action will reduce potential impacts to transportation by requiring the Contractor provide a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic or other special events that substantially (10 percent or more) increase traffic on roadways affect by Project construction activities.
TR-IAMM#10: Protection of Freight and Passenger Rail during Construction**	This measure will reduce potential impacts to transportation by requiring the Contractor to repair any structural damage to freight or public railways, and return any damaged sections to their original structural condition. If necessary, during construction, a “shoofly” track would be constructed to allow existing train lines to bypass any areas closed for construction activities.
TR-IAMM #11: Additional Features in the Cities of Fresno and Bakersfield*	<p>In addition to the measures listed above, the Authority will also perform the following in the cities of Fresno and Bakersfield:</p> <ul style="list-style-type: none"> ▪ Maintain detection at signalized intersections where alignment changes or widening is necessary, in order that the traffic signal does not need to be placed on recall (fixed timing). ▪ Changeable message signs (CMS) will be employed to advise motorists of lane closures or detours ahead. The CMSs will be deployed seven days before the start of construction at that location. ▪ Where project construction would cause delays on major roadways during the construction period, the project will provide for a network of CMS locations to provide adequate driver notification. For example, construction-related delays at the railroad grade separations that lead to SR 99 interchanges will require CMS placement to the east to allow drivers to make alternate route decisions. In the case of work on Shaw Avenue, recommended placement would be a CMS at Shaw Avenue just east of SR 41 and a CMS at Shaw Avenue just east of Palm Avenue. Similar CMS usage will be required along Ashlan Avenue, Clinton Avenue, McKinley Avenue, Olive Avenue, and Belmont Avenue. ▪ The Authority, in conjunction with the City of Fresno Public Works Department and City of Bakersfield Public Works Department, will develop a traffic management plan for the surface transportation network to minimize potential impacts on public safety services. ▪ During project construction, alignment of roadways to be grade-separated and freeway overpasses to be reconstructed will be offset from the existing alignment to facilitate staged construction, wherever possible. <p>The Authority will also include the following measures specific to the city of Fresno:</p> <ul style="list-style-type: none"> – Clinton Avenue over SR 99 and Ashlan Avenue over the Union Pacific Railroad (UPRR) will be offset from their existing alignments to allow the existing roadway to remain open while the new structure is being built. It is recognized by the city that this type of staging may necessitate temporary ramps to and from SR 99 during various phases of construction. Four travel lanes will be maintained from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m. on Shaw Avenue from Cornelia to Blythe

IAMM	Description
	<p>Avenue (at UPRR), on Ashlan Avenue from Parkway to Valentine Avenue (at UPRR), and on Clinton Avenue from Marks Avenue to Weber Avenue (at SR 99).</p> <ul style="list-style-type: none"> <li>– The Veterans Boulevard overpass and construction of new alignments of Golden State Boulevard and Bullard Avenue will be completed and open to traffic prior to the closure of the Carnegie Avenue at-grade railroad crossing. <li>– One lane of traffic in each direction must be maintained at all times for Olive Avenue and McKinley Avenue for construction of the proposed grade separations. No full closures of these crossings will occur, with the exception of short duration closures of less than 72 hours not more than once per month. <li>– During any Belmont Avenue closures that are determined to be necessary, the adjacent crossings of Olive Avenue and Divisadero Street will remain open with no lane closures at the two crossings. <li>– Two of the three crossings will remain open at any given time at the existing railroad crossings at Divisadero, Tuolumne, and Stanislaus

AASHTO = American Association of State Highway and Transportation Officials
 ASCE = American Society of Civil Engineers
 ASTM = American Society for Testing and Materials
 Authority = California High-Speed Rail Authority
 BMP = Best Management Practices
 Caltrans = California Department of Transportation
 CCR = California Code of Regulations
 CDSM = cement deep soil mixing
 C.F.R. = Code of Federal Regulations
 CHA = collision hazard analysis
 CIDH = cast-in-drilled hole
 CMP = Construction Management Plan
 CMS = Changeable message sign
 CTP = Construction Transportation Plan
 CVFPB = Central Valley Flood Protection Board
 EMCPP = Electromagnetic Compatibility Program Plan
 EMI = electromagnetic interference
 EMF = electromagnetic fields
 EQ = earthquake
 FPP = Flood Protection Plan
 FRA = Federal Railroad Administration
 HSR = high-speed rail
 HST = high-speed train
 IBC = International Building Code
 ISEP = Implementation Stage Electromagnetic Compatibility Program Plan
 MOA = Memorandum of Agreement
 OSHA = Occupational Safety and Health Administration
 PHA = preliminary hazard analysis
 RWQCB = Regional Water Quality Control Board
 SHPO = State Historic Preservation Officer
 SR = State Route
 SSMP = Safety and Security Management Plan
 SWMTP = stormwater management and treatment plan
 SWPPP = Stormwater Pollution Prevention Plan
 TVA = threat and vulnerability assessment
 Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended
 UPRR = Union Pacific Railroad
 U.S. = United States
 USACE = United States Army Corps of Engineers
 U.S.C. = United States Code
 VOC = volatile organic compound