17 STANDARD RESPONSES FOR PALMDALE TO BURBANK FINAL EIR/EIS

During circulation of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for public review from September 2 to December 1, 2022, the California High-Speed Rail Authority (Authority) received 481 written comment submissions and verbal comments, containing 2,489 individual comments. Twenty-six of the submissions were received following the close of the comment period. While these submissions were received past the formal close of the comment period, these letters were processed and responses have been provided in Volume 4 of this Final EIR/EIS. Many of the comments received during and after the public comment period raised similar issues about the project and its environmental impacts. The Authority has therefore prepared a chapter of standard responses to address the most frequently raised issues. The standard responses in this chapter provide a comprehensive response to an issue so that multiple aspects of the same issue are addressed in an organized manner in one location. This reduces any repetition of responses. When an individual comment raises an issue discussed in a standard response, the response to the individual comment includes a cross reference to the appropriate standard response. Some individual comments raise multiple issues that cross-reference multiple applicable standard responses.

Impact Avoidance and Minimization Features (IAMFs) and Mitigation measures (MMs) are referenced throughout the standard responses. The full text of the IAMFs that are applicable to the Palmdale to Burbank Project Section is provided in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features of the Draft EIR/EIS. The full text and titles of the MMs that are applicable to the Palmdale to Burbank Project Section are provided in Volume 2, Appendix 3.1-C, Standard Mitigation Measures, and the applicable resource chapter of this Final EIR/EIS.

17.1 General Standard Responses

17.1.1 PB-Response-GEN-1: Frequently Asked Questions

Commenters asked a number of frequently asked questions, including the following:

- What is the status of the project and what are the next steps?

- What is the purpose of the Draft EIR/EIS and what analysis does it include?

- What is the public review process, and what has transpired subsequent to the release of the Draft EIR/EIS?

Project Status and Next Steps

The project is currently in the state and federal environmental analysis phase. The California High-Speed Rail Authority (Authority) released the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) on September 2, 2022 for public review. This Final EIR/EIS includes responses to comments received during the 90-day review period. The Authority received 481 written comment submissions and verbal comments, containing 2,489 individual comments. While comments were received past the formal close of the comment period, 26 letters received after the close of the comment period were also processed and responses have been provided in Volume 4 of this Final EIR/EIS. After review and evaluation of comments received is complete and the Final EIR/EIS is published, the Authority's Board of Directors will consider whether to approve the project at a public meeting. Section 2.9 of the Draft EIR/EIS, specifically Section 2.9.3, outlines the next steps of project development following the Authority's issuance of a Record of Decision, including procurement of design services, initiation of right-of-way acquisition, and procurement of construction services to oversee physical construction of the project. Design and construction of this project section may be divided into several procurement packages, such as civil/structural, trackwork, and core systems, which could be developed simultaneously. See Tables 2-35 and 2-36 of the Draft EIR/EIS for estimated construction timelines and durations.

Purpose of and Analysis in the Draft EIR/EIS

An EIR and EIS are documents required under California and federal laws, respectively, that inform the public and public agency decision-makers of environmental effects of a proposed project, identify possible ways to mitigate those effects, and describe reasonable alternatives for those projects. The documents

examine the impacts of a proposed project on the physical, cultural, and human environments within the project area. Please refer to Section 3.1.1 in Section 3.1, Introduction, of the Draft EIR/EIS for further information on the federal and State regulatory context regarding the preparation of this environmental document.

Chapter 3 of the Draft EIR/EIS includes analysis of a wide range of topic areas, including: transportation; air quality and global climate change; noise and vibration; electromagnetic interference and electromagnetic fields; 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, while Chapters 4 and 5 include analysis of Section 4(f) and 6(f) and environmental justice effects, respectively.

Public Review Process

The public had an opportunity to review and comment on the Draft EIR/EIS from September 2, 2022, to December 1, 2022. The full document in electronic format was available for download from the Authority's website. Digital files via USB format were also available upon request. As permitted and as facilities were able to remain open, paper and/or electronic copies of the Draft EIR/EIS were available at multiple repository locations (public information counters) throughout the Palmdale to Burbank Project Section area (please refer to Section 10.1 in Chapter 10, of this Final EIR/EIS for the list of repository locations).

Formal public comments on the Draft EIR/EIS were submitted online, via email and postal mail, direct phone line at (800) 630-1039, and/or at the formal public hearing held on October 18, 2022. Following the close of the comment period, the Authority prepared responses to all comments received, which are included in Volume 4 of this Final EIR/EIS. Refer to PB-Response-GEN-3 for additional information on public outreach.

17.1.2 PB-Response-GEN-2: Project Costs and Funding

Commenters expressed concern regarding project costs, the availability of funding for construction and operation, and the potential for project cost overruns.

Cost

Chapter 6, Project Costs and Operations, of both the Draft and Final EIR/EIS summarizes the estimated capital, operations, and maintenance costs for each Build Alternative and design option, including funding and financial risk. Table 6-1 in Chapter 6 of the Draft EIR/EIS shows the estimated capital costs for each Palmdale to Burbank Project Section Build Alternative. Each Build Alternative cost estimate includes the costs of the Palmdale Station and the Maintenance Facility, which overlaps with the project section to the north (Bakersfield to Palmdale), and the Burbank Airport Station, which overlaps with the project section to the south (Burbank to Los Angeles). For details regarding the specific costs for the Palmdale to Burbank Project Section, and associated cost estimates for each of the six Build Alternatives refer to Chapter 6, Project Costs and Operations of the Draft EIR/EIS.

Additionally, Volume 2 Appendix 6-B, *Palmdale to Burbank Project Section PEPD Set Capital Cost Estimate Report*, of the Draft and Final EIR/EIS contains further analysis of the cost via the cost estimate report developed by the Authority.

Regarding comments that assert HSR is a waste of money and that California should be investing in other means of transportation, there are no other transportation options that can provide the same capacity as HSR for statewide travel. As presented in the Authority’s Fact Sheet on Construction, the state would need “4,200 new highway lane miles, 91 additional airport gates, 2 new airport runways costing between $122 billion and $199 billion, not including operations and maintenance costs; significantly more expensive than the $77 billion to $113 billion range for the high-speed rail system” to provide the same capacity as HSR from San Francisco to Los Angeles (Authority 2020).

Several commenters questioned the cost associated with the potential for acquisition of some or all of the Avion Burbank Development. Based on the Authority’s Capital Cost Estimating Methodology for the 15% Design Level TM 1.1.19 (Authority 2014), following preparation of the 15% Design level estimates, cost

estimates will advance through a validation process that involves assembling subject matter experts in the areas of engineering, construction, and estimating to perform an independent review of the scope, assumptions, and basis used to prepare the cost estimate. This process will provide a thorough vetting of each cost estimate before it is finalized. It is important that the methodology used in estimating project costs is flexible enough to be applied at each point in the project development process, and additional guidelines will be developed to prepare cost estimates for subsequent phases of the HSR project. At this stage of project design, a 10% contingency is included for the purchase or lease of real estate. The more detailed the design becomes in subsequent phases, the more detailed the cost estimate should be. Therefore, the capital costs provided in Chapter 6 of the Draft EIR/EIS are preliminary in nature and will be refined in the next phase of project design. Moreover, the Notice of Preparation of the Draft EIR for the Avion Burbank Project had not been published at the time studies were initiated in 2015 for the Palmdale to Burbank Project Section; therefore, the project was not considered reasonably foreseeable at that time. The Authority acknowledges that the Avion Burbank Project is now fully entitled and constructed. Once the Authority's design is final and the exact nature of impacts to the Burbank Avion Development is defined, the Authority will coordinate with the property owner and follow the procedures described in the Right-of-Way Manual (Authority 2019).

Some commenters asserted that no HSR track has been laid, suggesting that the overall Project costs are inaccurate. As noted in the Authority's 2023 Project Update Report, 119 miles of the Central Valley Segment is under construction. This initial segment will serve as a test track for high-speed trains. Advanced design is proceeding on stations and the 52 miles of extensions into downtown Merced and downtown Bakersfield (Authority 2023).

Funding

The financial analysis of the California HSR System, described in the 2016 Business Plan (Authority 2016, pages 96 through 98), the 2020 Business Plan (Authority 2020, page 143), and the 2022 Business Plan (Authority 2022, page 91), shows that the projected ridership and revenues for the Phase 1 HSR system will be able to cover the costs of operating the system, meaning that no operational subsidy for Phase 1 HSR operation between San Francisco and Los Angeles/Anaheim would be required.

Construction of the California HSR System started in 2014 and is ongoing throughout the State. It is anticipated that construction of the California HSR System will continue to be financed through a combination of federal, State, and private funds. To date, the Authority has secured funding through the Federal Railroad Administration's (FRA's) High-Speed Intercity Passenger Rail Program, California Proposition 1A's Safe, Reliable High-Speed Passenger Train Bond Act adopted by state voters in November 2008, and proceeds from California's Cap and Trade program. (In 2014, the Legislature established a continuous funding source for the California HSR System from the State's Cap and Trade Program. In 2017, the Legislature extended the Cap and Trade Program through 2030.) Through these funding sources, California has identified approximately $9 billion to invest in the development of its California HSR System through Proposition 1A, approximately $3.5 billion in federal grant funds obligated through Cooperative Agreements with FRA, and between $500 and $750 million in Cap and Trade funds through 2030 (Authority 2020, page 85).[1]

Potential for Cost Overruns

As discussed in Section 2.9.3 of the Draft and Final EIR/EIS, the Authority would begin implementing its construction plan for the Palmdale to Burbank Project Section after receiving the required environmental approvals and permits, securing funding, and acquiring the necessary right-of-way for the project. The general approach outlined below would help avoid potential cost overruns by waiting to issue procurement packages for final design and construction until after funds are secured and right-of-way is

[1] The analysis presented in this Final EIR/EIS was initiated using the 2016 Business Plan. Given that there are minimal differences between the Authority's 2016 Business Plan, 2018 Business Plan, 2020 Business Plan, and 2022 Business Plan the costs included in this document rely on the 2016 Business Plan. The Authority released a Draft 2024 Business Plan in February 2024 for public review and comment. The Draft 2024 Business Plan projected Valley to Valley ridership for the Phase 1 systemwide forecast is roughly 30 percent lower than what was presented in the 2020 or 2022 Business Plans, primarily because of a decrease in California population projections. The 2040 Phase 1 medium ridership is now forecast at 28.4 million. Despite this meaningful reduction, the Authority continues to conclude that building the electrified system in California remains economically beneficial (Draft 2024 Business Plan, Chapter 5

acquired. Given the size and complexity of the California HSR System, the design and construction work could be divided into several procurement packages. In general, the procurement would address the following:

- Civil/structural infrastructure, including design and construction of passenger stations, maintenance facilities, wayside facilities, utility relocations, and roadway modifications
- Trackwork, including design and construction of direct fixation track and sub-ballast, ballast, ties and rail installation, switches, and special trackwork
- Core systems, such as traction power, train controls, communications, the operations center, and the procurement of trainsets

17.1.3 PB-Response-GEN-3: Public Outreach on the Draft EIR/EIS

Commenters are concerned with the public involvement process conducted leading up to the publication of the Draft EIR/EIS, indicating that the outreach was inadequate for a project of this size and scope. Several commenters requested an extension of the public comment period for reviewing the Draft EIR/EIS. Some of those requests asked for a minimum 30-day extension.

Public and Agency Involvement Program

The Authority has conducted an extensive public and agency involvement program as part of the environmental review process. In engaging the public and agency representatives, the Authority has exceeded the public and agency involvement requirements of CEQA and NEPA (CEQA Guidelines Sections 15080–15088 and 40 C.F.R. 1506.6[c] [2016]). Public involvement and outreach included development and provision of informational materials such as fact sheets, informational and scoping meetings (including town hall meetings), public and agency meetings, meetings with individuals and groups, as well as presentations and briefings to interested and/or affected organizations and associations.

Agency involvement included agency scoping meetings, Interagency Working Group meetings with agency representatives, and other agency consultation. Tables 9-2 through 9-5 of the Draft EIR/EIS list the key stakeholder outreach meetings held as part of the Authority's outreach efforts associated with the Palmdale to Burbank Project Section development process. Public and agency outreach also included notification and circulation of the Draft EIR/EIS, consistent with the requirements of CEQA and NEPA. Chapter 9 of the Final EIR/EIS describes the public and agency involvement efforts conducted during the preparation, and after publication, of the Draft EIR/EIS.

Requests for Extension of Comment Period

The Authority was the CEQA and NEPA lead agency for the Draft EIR/EIS. As such, public noticing of the availability of the Draft EIR/EIS for public review was conducted by the Authority. The CEQA Guidelines provide:

"The public review period for a draft EIR shall not be less than 30 days nor should it be longer than 60 days except under unusual circumstances. When a draft EIR is submitted to the State Clearinghouse for review by state agencies, the public review period shall not be less than 45 days, unless a shorter period, not less than 30 days, is approved by the State Clearinghouse." (14 Cal. Code Regs. § 15105)

Likewise, the Authority, in its role as NEPA lead agency, circulated the Draft EIR/EIS consistent with Section 13(c)(9) of the FRA Procedures for Considering Environmental Impacts, which provides: "The Draft EIS shall be made available for public and agency comment for at least 45 days from the Friday following the week the draft EIS was received by EPA (U.S. Environmental Protection Agency). The time period for comments on the draft EIS shall be specified in a prominent place in the document, but comments received after the stated time period expires should be considered to the extent possible." FRA, Procedures for Considering Environmental Impacts, section 13(c)(9), 64 Fed. Reg. 28545, 28553 (May 26, 1999).

The Authority initially allotted the maximum public review period under the CEQA regulatory framework (60 days), which also encompasses the minimum NEPA review period (45 days). The Draft EIR/EIS was originally made available for review and comment for a 60-day public review beginning on September 2,

2022, and ending on November 1, 2022, pursuant to CEQA and NEPA. In response to agency and stakeholder comments the Authority extended the comment period by 30 days to end on December 1, 2022. The Authority believes the time provided, including the 30-day comment period extension, was sufficient for the public to review and provide comments on the Palmdale to Burbank Project Section Draft EIR/EIS.

Circulation and Notice of Availability

Per the requirements set out by the CEQA Guidelines Sections 15086 and 15087 and FRA's Procedures for Considering Environmental Impacts, 64 Fed. Reg. 28545, and the Council on Environmental Quality's (CEQ) NEPA regulations (40 CFR parts 1500–1508 [2016]), the Authority provided widespread notice of the availability of the Draft EIR/EIS to ensure that members of the public; local, State, and federal agencies; and tribes had the opportunity to review and provide comments on the Draft EIR/EIS. As required by CEQA Guidelines Section 15087, CEQA lead agencies are to provide public notice of the availability of an EIR. Notices are to "be mailed to the last known name and address of all organizations and individuals who have previously requested such notice in writing." The Authority satisfied this requirement as indicated by the fourth bullet in the list below. Additionally, noticing must include one of the following: (1) one time publication in a newspaper of general circulation, (2) posting notice on and off site where the project would be located, and (3) direct mailings to the owners/occupants of contiguous parcels. As indicated by the list below that provides greater detail, the Authority exceeded the minimum noticing requirements by including publication of notices in 10 local newspapers of general circulation, publication of the Draft EIR/EIS on the Authority's website (https://hsr.ca.gov/programs/environmental-planning/project-section-environmental-documents-tier-2/palmdale-to-burbank-environmental-documents/) and publication of availability of the Draft EIR/EIS on the Authority's website and various social media platforms, and mailing of notices to property owners and occupants 500-1,200 feet from the project footprint.

Similarly, Section 9, Citizen Involvement of the FRA Procedures for Considering Environmental Impacts, provides that NEPA lead agencies must 1) develop a list of interested parties during which preparation of the EIS should be consulted, 2) publish in the Federal Register, 3) circulate the Draft EIS and place the document in repositories such as public libraries, 4) issue a press release and publish in local newspapers of general circulation, and 5) host a hearing at least 30 days subsequent to the Draft EIS publication. In accordance with these requirements, the Authority prepared a list of interested parties, which was incorporated into Chapter 10, Draft EIR/EIS Distribution of the Draft EIR/EIS, published in the Federal Register on September 2, 2022, provided electronic and/or printed copies of the Draft EIR/EIS to 10 area libraries, published notices in 10 local newspapers of general circulation, and hosted a public hearing 46 days after the release of the Draft EIR/EIS.

The Authority provided broad notice of the availability of the Draft EIR/EIS in the following ways:

- Publication in the legal section of three local newspapers of general circulation (CEQA Guidelines Section 15087[a][1] and Section 9]b][4] of the FRA Procedures for Considering Environmental Impacts) (The Antelope Valley Press – English, LA Daily News – English, and La Opinion – Spanish)
- Publication of display ads in 10 local newspapers of general circulation (CEQA Guidelines Section 15087[a][1] and Section 9[b][4] of the FRA Procedures for Considering Environmental Impacts) (Acton Agua Dulce Weekly News – English, The Antelope Valley Times [online only] – English, Asbarez News – Armenian, Glendale News Press – Armenian, Beirut Times – Arabic, The Burbank Leader – English, The Foothills Paper – English, San Fernando Valley El Sol – Spanish, San Fernando Valley Sun – English, and Santa Clarita Valley Signal – English)
- E-mail to all individuals/organizations who had previously registered to receive information via e-mail about the Draft EIR/EIS (approximately 5,800 recipients) (CEQA Guidelines Section 15087[b]). Access to the Notice of Availability (NOA) was provided in the distributed email. The NOA included notice of an online Open House on October 6, 2022, as well as an online Public Hearing on October 18, 2022. (CEQA Guidelines Section 15087[i] and Section 9[b][5] of the FRA Procedures for Considering Environmental Impacts)

- Direct mailing of the NOA to those on the project mailing list and those that had requested notice in writing (CEQA Guidelines Section 15087[a]), owners/occupants of property within 1,000 feet of the project alternative footprints for unincorporated areas, within 500 feet of the project footprint for incorporated areas, and within 1,200 feet of the HSR station footprint(s) (CEQA Guidelines Section 15087[a][3]), agencies, elected officials, and tribes (CEQA Guidelines Section 15087[b] and Section 9[b][1] of the FRA Procedures for Considering Environmental Impacts), and schools, educational facilities, and school districts within one-fourth mile of the project footprint (CEQA Guidelines Section 15087[b] and Section 9[b][1] of the FRA Procedures for Considering Environmental Impacts). A total of 44,000 direct mailings were sent to addresses throughout the Build Alternative area.
- Filed electronic notices with the Los Angeles County Clerks Office (CEQA Guidelines Section 15087[d])
- Submitted copies to the State Clearinghouse (CEQA Guidelines Section 15087[f])
- Publication in the Federal Register (Section 9[b][2] of the FRA Procedures for Considering Environmental Impacts)
- Notification through various Authority social media channels (CEQA Guidelines Section 15087[b] and Section 9[b][1] of the FRA Procedures for Considering Environmental Impacts)

The Authority provided access to the Draft EIR/EIS in the following ways: the entire Draft EIR/EIS, Volumes 1 through 3, were made available on the Authority's website; electronic media containing these documents were made available to anyone who requested them via the Authority's website, free of charge; paper and electronic copies of the Draft EIR/EIS were available for public review at repositories (as explained in more detail below), and electronic media and printed copies were made available for public review in the Authority's Los Angeles office and Headquarters office in Sacramento. In the months prior to the September 2, 2022, Draft EIR/EIS publication date, the Authority maintained regular contact with public libraries in the vicinity of the project regarding their capacity to serve as repositories to receive and maintain the distribution materials for public review. Electronic media and printed copies of the Draft EIR/EIS were made available to the public at 10 public libraries in the vicinity of the project. Printed and/or electronic copies of the Draft EIR/EIS were made available at the following repository locations during facility operating hours.

- Los Angeles County Library, Acton/Agua Dulce Library
  33792 Crown Valley Road, Acton, CA 93510
- Los Angeles County Library, San Fernando Library
  217 North Maclay Avenue, San Fernando, CA 91340
- Los Angeles Public Library, Lake View Terrace Branch Library
  12002 Osborne Street, Lake View Terrace, CA 91342
- Los Angeles Public Library, Pacoima Branch Library
  13605 Van Nuys Boulevard, Pacoima, CA 91331
- Los Angeles Public Library, Sun Valley Branch Library
  7935 Vineland Avenue, Sun Valley, CA 91352
- Los Angeles Public Library, Sylmar Branch Library
  14561 Polk Street, Sylmar, CA 91342
- Los Angeles Public Library, Sunland-Tujunga Branch Library
  7771 Foothill Boulevard, Tujunga, CA 91042
- Palmdale City Library
  700 East Palmdale Boulevard, Palmdale, CA 93550
- Santa Clarita Public Library, Canyon Country Jo Anne Darcy Library
  18601 Soledad Canyon Road, Santa Clarita, CA 91351

- Burbank Public Library, Northwest Branch Library
  3323 West Victory Boulevard, Burbank, CA 91505

Public Hearing and Meeting Notices

As discussed above, the NOA was mailed directly to property owners and occupants in the area of the Build Alternatives as well as other stakeholders included in the Palmdale to Burbank Project Section Contact and Distribution List and emailed to all individuals/organizations who had previously registered to receive information about the Draft EIR/EIS. The NOA included notice of an online Open House on October 6, 2022, as well as an online Public Hearing on October 18, 2022.

In addition to notification efforts described above in the Circulation and Notice of Availability section, the Authority also posted the NOA on the Palmdale to Burbank Project Section webpage with a link from the Authority's homepage.

To facilitate the online Open House and Public Hearing, various publications and materials were developed in English, Spanish, Armenian, and Arabic. These documents included the Fact Sheets, the Palmdale to Burbank Project Section Executive Summary, and the NOA. In addition, the Authority website includes information about the HSR system, the proposed HSR route, the Authority's Business Plans since 2008, newsletters, press releases, Authority Board of Directors' meetings, recent developments, status of the environmental review process, Authority contact information, and related links. The online Open House was held in both English and Spanish with simultaneous language interpretation in both languages, and the online Public Hearing was held in English with simultaneous Spanish language interpretation.

In addition to the Open House and Public Hearing, in-person meetings were held to provide the public with additional opportunities to learn about the project. These in-person meetings included two information sessions held on October 8, 2022, in Acton and October 12, 2022, in Pacoima. Notification efforts included an e-blast, notification through social media channels, promotion through local newspapers in English and Spanish, and providing information during the online Open House. The information sessions were held in English and simultaneous Spanish language interpretation was made available, if needed. For more information on the Open House and Public Hearing, please refer to the Authority's website at: https://hsr.ca.gov/high-speed-rail-in-california/project-sections/palmdale-to-burbank/.

17.1.4 PB-Response-GEN-4: General Opinions, Opposition or Support

Commenters expressed opinions about, opposition to, or support for the statewide HSR System, including the Palmdale to Burbank Project Section.

CEQA and NEPA require a Final EIR/EIS, respectively, to evaluate environmental issues in comments received on a Draft EIR/EIS and to respond to all substantive comments received on significant environmental issues (see 14 CCR §15088[a], 40 CFR §1503.4, and 64 Fed. Reg. 28545 [May 26, 1999]). The comments express the commenters' views on high-speed rail generally and/or the Palmdale to Burbank Project Section, but do not relate to a specific environmental issue. Please note that opinion-based comments do not require a response under CEQA (CEQA Guidelines, Section 15088[a]) as they do not raise significant environmental issues. However, a response is drafted for every public comment the Authority received and are included as part of the record for consideration by the Authority Board of Directors.

Comments were received expressing opposition to the HSR project, including both the statewide and Palmdale to Burbank Project Section. CEQA and NEPA require a final EIR and EIS, respectively, to evaluate environmental issues in comments on a Draft EIR/EIS and to respond to the comments received on significant environmental issues (see 14 CCR §15088[a] and FRA Procedures for Considering Environmental Impacts 14[s]). The comments express the commenters' views on high-speed rail generally, and/or the Palmdale to Burbank Project Section, but do not address an environmental issue in the Draft EIR/EIS.

Comments were received in support of the statewide HSR project and/or the Palmdale to Burbank Project Section and included comments in support of reducing the carbon footprint from automobiles, availability of transit options, and a fast and efficient mode of transportation throughout the state.

As discussed in Chapter 1 of the Draft EIR/EIS, the California High-Speed Rail System would bring significant benefits to California, both in the near term and in the long run. Benefits would encompass both economic and environmental concerns. California's population is growing and, unless new transportation solutions are identified, traffic and congestion will only worsen, and airport delays will continue to increase. The proposed California HSR System would offer service competitive with automobile and air travel due to the growing demand for intercity and intrastate travel and capacity constraints as the total automobile travel time increases statewide because of congestion on highways used for intercity travel. It would increase mobility, while reducing air pollution, decreasing dependence on fossil fuels and protecting the environment by reducing GHG emissions. The California HSR System would result in a net reduction in GHG emissions for each year that the California HSR System is operational after the initial 4 to 6 months of operations. These long-term reductions are consistent with statewide GHG reduction goals specified in Senate Bill 32.

17.1.5 PB-Response-GEN-5: Impacts on Una Lake

Commenters expressed concern about impacts on Una Lake, a sag pond located south of the city of Palmdale, from nearby construction and wildlife crossings. Commenters expressed concerns about impacts to biological resources and habitat associated with Una Lake as well as impacts that some Build Alternatives would have by filling in a portion of the lake. Lastly some commenters expressed concerns regarding the visual effects the project would have in this area.

Page 3.8-21 of the Draft EIR/EIS describes Una Lake as a sag pond (a body of fresh water collected in the lowest parts of a depression formed between two sides of an active fault zone) located south of the city of Palmdale along Sierra Highway. The lake is privately owned, enclosed by fencing, and is not available for public use. Una Lake has been identified as a water of the United States, subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. It is considered an important biological resource, because it provides potential breeding habitat for California red-legged frog and provides habitat for migratory birds during the spring and fall migration windows. The lake is located east of Lake Palmdale and appears to have been separated from Lake Palmdale prior to 1915 when Sierra Highway was constructed.

Development of Alternatives

The Authority's originally proposed alignments for the Build Alternatives (Refined SR14, E1 and E2) would pass directly through Una Lake. South of the city of Palmdale, the Refined SR14, E1, and E2 Build Alternatives follow the UPRR/Metrolink tracks and Sierra Highway through this area and would require filling a portion of Una Lake to construct the HSR corridor.

As part of the Checkpoint process, the Authority discussed with the USACE and EPA various ways to reduce or avoid impacts to Una Lake. As a result of the discussions with USACE and EPA during the Checkpoint B process, the Authority developed three new alternatives with alignments that avoid Una Lake (SR14A, E1A, and E2A). These new Build Alternatives were evaluated in the Draft EIR/EIS along with the three Build Alternatives that would directly affect Una Lake (Refined SR14, E1, and E2). The Checkpoint B Report reflects the USACE's and EPA's concurrence with this range of alternatives. A major constraint affecting the development of alternatives in the Una Lake area is the presence of the San Andreas fault which runs in an east/west direction just south of the city of Palmdale. The San Andreas fault is classified as a hazardous fault with the potential to create a 20-foot lateral displacement. The Authority evaluated options for the HSR alignment to traverse around Una Lake either to the east or to the west.

Alignments West of Una Lake

As documented in the Checkpoint B Summary Report (Authority 2020), alignments that would avoid Una Lake that routed the project to the west were found to not be feasible because the topography would require the alignment to be underground where the alignments would cross the San Andreas fault. A tunnel through a fault of this magnitude was determined to not be feasible for engineering and safety

reasons. One alignment to the west of Una Lake would allow for an aboveground crossing of the fault zone but would require relocating the Palmdale station. This was deemed infeasible, as it would not be consistent with all prior planning efforts and would result in other impacts such as displacement of businesses and residents. For these reasons, none of the alignment alternatives to the west of Una Lake were considered feasible.

Alignments East of Una Lake

As shown in Figure 3.1-33 of the Checkpoint B Summary Report (Authority 2020), the Authority also evaluated alignments to the east of Una Lake, including a "far east" option that would move the alignment more than 1.25 miles east to avoid Una Lake as well as associated aquatic features immediately to the east of Una Lake. However, this "far east" alignment option would also require tunneling through the San Andreas fault zone because of topographic reasons and was considered not to be feasible.

Based on the Authority's analysis and consultation with the USACE and EPA, a feasible alignment alternative was developed that would avoid Una Lake by traversing around the lake 300 feet to the east. However, this alignment would impact several smaller aquatic features in the area. This alignment was referred to as the "east of Una Lake" alignment, which was then incorporated into each of the original Build Alternatives (Refined SR14, E1, and E2 Build Alternatives) to create the SR14A, E1A and E2A Build Alternatives. These "A" alternatives were considered to be superior to the original Build Alternatives because they would avoid fill of Una Lake and be sufficient distance to the east to reduce and avoid potential indirect effects as well. While these "A" alternatives would result in some impact to aquatic features near Una Lake, they would result in far less of an overall impact to aquatic resources than the original Build Alternatives. They would also fully avoid impacts to Una Lake (as shown on [pages 33 [E1A], 65 [E2A], and 109 [SR14A] of Appendix 3.1-A of the Draft EIR/EIS]). The Authority has selected SR14A as its Preferred Alternative, with one of the key reasons for that being the complete avoidance of fill in Una Lake.

Evaluation of Impacts

Commenters questioned whether the Build Alternatives would result in impacts to Una Lake. Even though the Authority's Preferred Alternative (SR14A) would avoid direct impacts to Una Lake, several of the other Build Alternatives (Refined SR14, E1, and E2) would result in direct impacts and all of the Build Alternatives may result in some indirect effects such as visual and aesthetic effects. These potential effects and how they are evaluated in the EIR/EIS and specific mitigation requirements are discussed further below.

A discussion of biological, aquatic, hydrological, and visual impacts to Una Lake resulting from construction and operation of the Build Alternatives is provided below. Refer to Sections 3.7, Biological and Aquatic Resources, Section 3.8, Hydrology and Water Resources, and Section 3.16, Aesthetics and Visual Quality, in the Draft EIR/EIS for additional details regarding impacts to Una Lake.

Biological and Aquatic Resources

As discussed in Section 3.7.5.6 of the Draft EIR/EIS, Una Lake is adjacent to Lake Palmdale and the two lakes have intermittent connection during rain events. Because of historic and current hydrologic connectivity, USACE issued an approved jurisdictional determination that identified Una Lake as a water of the United States in June 2013 (USACE 2013). Una Lake hosts several biological and aquatic resources, such as lacustrine wetlands, and provides habitat suitable for California red-legged frog, western pond turtle, and tricolored blackbird. Between Avenue M and the California Aqueduct, HSR trackway and ancillary facilities associated with the Refined SR14, E1, and E2 Build Alternatives would directly affect Una Lake through the placement of fill; however, in response to the habitat present at Una Lake and through consultation with regulatory agencies, the Authority developed Build Alternatives that avoid direct impacts to Una Lake (SR14A, E1A, E2A). The Refined SR14, E1, and E2 Build Alternatives would directly affect suitable habitat for special-status amphibian, reptile, bird, and mammal species. While implementation of the mitigation measures identified in Table 3.7-37 of the Draft EIR/EIS and further described in Section 3.7.7 of the Draft EIR/EIS, would reduce surface construction impacts to special-status amphibian, reptile, bird, and mammal species to a less than significant level for the six Build Alternatives, as shown in Tables 3.7-13, 3.7-14, 3.7-15 and 3.7-20 of the Draft EIR/EIS, the SR14A,

E1A, and E2A Build Alternatives would result in a lesser acreage of suitable habitat impact for most species when compared to the Refined SR14, E1, and E2 Build Alternatives.

Hydrology and Water Resources

The Refined SR14, E1, and E2 Build Alternatives would cross Una Lake on an embankment, as shown on Figure 3.8-A-26, Figure 3.8-A-56, and Figure 3.8-A-78 in Volume 2 of the Draft EIR/EIS. The embankment structure within Una Lake would require 4.63 acres fill of this waterbody; however, a small portion of the lake would continue to exist east of the embankment. In contrast, the SR14A, E1A, and E2A Build Alternatives would avoid Una Lake entirely by constructing an alignment approximately 300 feet east of Una Lake, as shown on Figure 3.8-A-41, Figure 3.8-A-67, and Figure 3.8-A-88 in Volume 2, Appendix 3.8-A of the Draft EIR/EIS. The SR14A (Preferred Alternative), E1A, and E2A Build Alternatives would avoid Una Lake, pursuing a more easterly course approximately 300 feet east of Una Lake, thereby eliminating the placement of fill in Una Lake and impact to the waterbody.

Aesthetics and Visual Quality

Una Lake is considered to be a natural visual resource and is the central feature in Key Viewpoint (KVP) 1.2 (shown in Figure 3.16-A-2 in Appendix 3.16-A, Photographs of Existing Conditions and Visual Simulations with the Project, of the Draft EIR/EIS). At this KVP, the topography is mostly flat, allowing views of the sky and the distant San Gabriel Mountains. Under existing conditions, a metal chain-link fence located between the lake and Sierra Highway detracts from the view by adding a non-natural form to the foreground. The existing visual quality is moderate (please refer to Section 3.16.4.3, Methods for CEQA and NEPA Impact Analysis, of the Draft EIR/EIS for further discussion of the methodology for the assessment of existing visual quality). The filling of Una Lake associated with the Refined SR14, E1, and E2 Build Alternatives would diminish the natural harmony of the view, introducing an embankment for the HSR tracks and catenary lines. The degree of change to visual quality surrounding Una Lake would be adverse for the Refined SR14, E1, and E2 Build Alternatives. The Build Alternatives would be subject to AVQ-IAMF#1 (Aesthetic Options) and AVQ-IAMF#2 (Aesthetic Review Process), which require that the Authority's construction contractor document how the Authority's aesthetic guidelines and review process have been employed to minimize visual impacts from HSR structures and non-station area structures. The Authority will also evaluate compatibility with project-wide aesthetic goals, include recommended aesthetic approaches in the construction procurement documents, and work with contractors and local jurisdictions to review designs and local aesthetic preferences and incorporate them into final design and construction. Additionally, Mitigation Measures 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), and AVQ-MM#6 (Screen Traction Power Supply Stations and Radio Communication Towers), as described in Section 3.16, Aesthetics and Visual Quality, of the Draft EIR/EIS, would reduce impacts on visual quality. These measures require landscape screening adjacent to residential areas, landscape treatments along the embankment, and planting of vegetation within land acquired for the Build Alternatives that is not used by supporting infrastructure. Implementation of these measures would reduce the prominence of the embankment and project features. Nonetheless, with the implementation of IAMFs and mitigation measures, the Refined SR14, E1, and E2 Build Alternatives would still reduce visual quality from moderate to moderately low at this KVP, resulting in a significant and unavoidable impact.

However, given the moderate existing visual quality of KVP 1.2 and the minimal visual changes associated with the SR14A (Preferred Alternative), E1A, and E2A Build Alternatives, the degree of change to the visual quality would be neutral because these alignments would be at-grade and more than 300 feet east of Una Lake. However, the views of Una Lake from KVP 1.2 with the development of SR14A (Preferred Alternative), E1A, and E2A Build Alternatives (Figure 3.16-A-2.c) would retain the view of Una Lake but the HSR train would be visible on embankment in the middleground. As concluded in Section 3.6.6.5 of the Draft EIR/EIS, the SR14A (Preferred Alternative), E1A, and E2A Build Alternatives would not substantially degrade the visual character or quality of public views of the site and its surrounding in a non-urbanized area and impacts would be less than significant.

Given the placement of the HSR embankment beyond the footprint of Una Lake under the SR14A (Preferred Alternative), E1A, and E2A Build Alternatives, the visual impacts would be less than significant.

Comparatively, the visual impact under the Refined SR14, E1, and E2 Build Alternatives would result in a significant and unavoidable impact.

17.1.6 PB-Response-GEN-6: Impacts on the Santa Clara River

Commenters expressed concern regarding impacts on the Santa Clara River and its tributaries. Specifically, commenters raised issues regarding impacts to surface waters associated with the river and its tributaries, to groundwater which may support flow rate and quantity to other aquatic resources associated with the river, and to designated Significant Ecological Areas (SEAs) including the Santa Clara River SEA. Commenters requested more information regarding the IAMFs and mitigation measures set forth to minimize impacts to aquatic resources.

The Santa Clara River Watershed is one of the three major watersheds within the Palmdale to Burbank Project Section surface hydrology and water quality RSA (along with the Antelope Valley Watershed and Los Angeles River Watershed). The Santa Clara River Watershed encompasses 786 square miles within Los Angeles County (as well as 243 square miles within Ventura County, and 1 square mile within Kern County). Approximately 43 percent of lands within the Santa Clara River Watershed are developed. This watershed contains the Santa Clara River, the largest natural river remaining in Southern California.

The Santa Clara River originates in Los Angeles County in the San Gabriel Mountains and flows approximately 100 miles to discharge to the Pacific Ocean in Oxnard (Ventura County). The entire Santa Clara River drains approximately 1,200 square miles and is the receiving watercourse for numerous ephemeral streams and rivers draining rainwater in canyons throughout the San Gabriel Mountains.

A discussion of impacts on biological resources and hydrology and water resources associated with the Santa Clara River is provided below. Refer to Sections 3.7, Biological and Aquatic Resources, and 3.8, Hydrology and Water Resources, in the Draft EIR/EIS for additional details.

Hydrology and Water Resources

Surface Waters

As discussed in Section 3.8.5.2 of the Draft EIR/EIS, the E1, E1A, E2, and E2A Build Alternatives would cross under the Santa Clara River (i.e., Upper Soledad Canyon) in a bored tunnel. The E1, E1A, E2, and E2A Build Alternatives would cross several tributaries of the Santa Clara River at-grade south of the existing Vincent Substation. For more information about the waterbody crossings and the type of construction, refer to Appendix 3.8-B, Major Waterbodies Crossed Table, of the Draft EIR/EIS. Refer to Appendix 3.8-A, Hydrology and Water Resources Figures, Part 2, of the Draft EIR/EIS for the locations of surface water crossings for the E1, E1A, E2, and E2A Build Alternatives.

As discussed in Section 3.8.6.3 of the Draft EIR/EIS, the Refined SR14 and SR14A Build Alternatives would cross the main channel of the Santa Clara River near Lang Station Road on viaduct. The Refined SR14 and SR14A Build Alternatives would also cross (either at-grade, on viaduct, or tunneled) 14 tributaries to the Santa Clara River. For more information about the waterbody crossings and the type of construction, refer to Appendix 3.8-B, Major Waterbodies Crossed Table, of the Draft EIR/EIS. For a depiction of the surface water crossings associated with the Refined SR14 and SR14A Build Alternatives, refer to Appendix 3.8-A, Hydrology and Water Resources Figures, Part 1, of the Draft EIR/EIS.

Construction activities within the Santa Clara River and its tributaries could require water diversion or dewatering, which would temporarily impact surface water hydrology. The placement of fill or removal of material within the Santa Clara River and its tributaries during construction would modify channel capacity and water flow height and increase erosion and sedimentation potential by redirecting water flow. Grading and earthmoving within the Santa Clara River and its tributaries would alter upland topography, which could directly influence the direction and timing of stormwater flow toward receiving waters. Construction-induced erosion within the Santa Clara River and its tributaries could also redistribute soil in a water system temporarily increasing sedimentation throughout the construction period.

Additionally, and as discussed in Section 3.8.10.2 of the Draft EIR/EIS, the Vulcan Mine site would serve as a deposition site for spoils materials generated by tunnel boring associated with the Refined SR14 and SR14A Build Alternatives. Surface waters located in the vicinity of the Vulcan Mine site include the Santa Clara River, over which the HSR alignment would cross on a viaduct outside the boundaries of the ANF.

Within the ANF, the Refined SR14 Build Alternative would affect one ephemeral tributary of the Santa Clara River. Depending on the construction technique used to construct the Refined SR14 Build Alternative, water may be redirected or removed from the ephemeral tributary of the Santa Clara River. Redirecting the flow in a watercourse would alter drainage patterns and increase the potential for erosion along new drainage paths.

To avoid direct impact to the Santa Clara River under all Build Alternatives, the Authority would use a no-water-contact approach to construction of temporary and permanent structures within the Santa Clara River. Construction activities would be restricted to the dry season (i.e., June 1 to September 30), when flow is minimal, and the channel is confined. Activities would be restricted spatially to keep permanent structures out of the 25-year flood limits.

In some areas, E1, E1A, E2, and E2A Build Alternatives would cross the Santa Clara River tributaries in a bored tunnel. The tunnel construction would have no direct impact to surface waters. The tunnel boring machines (TBM) will be equipped with specific features designed to reduce or prevent groundwater inflows that could affect surface water. These measures are identified in HYD-IAMF#5 (TBM Design Features), HYD-IAMF#6 (Tunnel Lining Systems), and HYD-IAMF#7 (Grouting). Based on these design features (described in more detail below), groundwater inflow into the tunnels and the lowering of groundwater levels would be minimized during construction, therefore, impacts to surface water would be less than significant.

HYD-IAMF#1 and HYD-IAMF#2, described on page 3.8-11 in the Draft EIR/EIS, require that surface water crossings for the project maintain preconstruction hydraulic capacity, through the implementation of on-site stormwater management best management practices, which would provide runoff dispersion, infiltration, detention, and evaporation. The incorporation of these IAMFs into project design would reduce impacts on hydraulic capacity by minimizing alterations to watercourses, implementing erosion control best management practices, and maintaining existing stormwater patterns. HYD-IAMF#3, which involves the preparation and implementation of a stormwater pollution prevention plan (SWPPP), would avoid and minimize changes to drainage, stormwater, and erosion patterns during construction at the Santa Clara River and its tributaries.

With implementation of HYD-IAMF#1 through HYD-IAMF#3, construction of the Build Alternatives would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surface, in a manner that would (1) result in substantial erosion or siltation on- or off-site, (2) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, nor (3) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

Groundwater

Commenters asked why tunnel construction and associated changes in groundwater levels are not expected to affect the Santa Clara River SEA.

As discussed under Impact HWR#5, tunnel construction may impact surface water within the Santa Clara River by lowering the groundwater levels and thereby reducing the amount of surface water available in the Santa Clara River. All six Build Alternatives include construction of twin side-by-side tunnels. Tunnels could provide a conduit for groundwater to seep into excavated areas as the advancing tunnel construction intersects subsurface fractures and faults in bedrock that contain water. Where groundwater is present, it may, under certain circumstances, leak from the rock mass into the tunnels. To minimize groundwater inflow into the tunnels, IAMFs will be implemented as described below.

The Authority will utilize state-of-the-art design features and construction methods to avoid and minimize impacts to surface water of the Santa Clara River SEA, including through the use of Tunnel Boring Machines (TBMs) equipped with specific features designed to reduce or prevent inflows and grouting and tunnel-lining approaches that have been proven effective at controlling water seepage. TBMs would be used to mine the tunnels. Mining of the tunnels may also include conventional mining methods, which would involve the installation of a preliminary lining concurrent with the excavation process in combination with grouting. Under the conventional approach, various measures will be implemented to avoid and minimize tunnel inflows. The tunnel lining system would also be important in controlling water flows both

during and after construction and will consist of either a single-pass or two-pass lining system, depending on groundwater pressures.

In areas where groundwater is present, HYD-IAMF#5 (Tunnel Boring Machine Design Features), HYD-IAMF#6 (Tunnel Lining Systems), and HYD-IAMF#7 (Grouting) will be implemented to dissipate the pressure on the TBM and to control the volume of groundwater inflow into the tunnel. Pre-excavation grouting from the TBM can be performed to reduce or prevent groundwater seepage into the tunnels during construction. Pre-excavation grouting can be implemented through a TBM with built-in capability, including grout ports through the TBM cutter-head and through the shield. Grouting methods from the TBM will be used to reduce the groundwater pressure on the TBM and potential water inflows into the tunnel during construction, as explained in HYD-IAMF#7. Pre-excavation grouting creates a permanent strengthened, very low permeability circular crown around the TBM, that in conjunction with the first-pass tunnel lining will minimize or prevent potential water inflows into the tunnel. For proper implementation of this approach, additional detailed site-specific geotechnical and hydrogeological characterization would be carried out for the selected preferred alternative to ensure effective control of water flow into the tunnels. A multi-phase grouting program would be implemented during the construction of the tunnels. A primary objective of the grouting program would be to reduce or prevent potential groundwater flows into the tunnels during construction. With the IAMFs described above, groundwater inflow into the tunnels and the lowering of groundwater levels would be minimized during construction, therefore, impacts to surface water would be less than significant.

Aquatic Resources

As described above, the aquatic RSA includes three watersheds, including the Santa Clara River Watershed. The Refined SR14 and SR14A Build Alternative trackway and ancillary facilities would affect modified natural streams associated with the Santa Clara River, as well as natural streams, modified natural streams, and earthen constructed watercourses within Soledad Canyon and Vulcan Mine. The E1, E1A, E2, and E2A Build Alternative trackway and ancillary facilities would affect riparian habitat within the Santa Clara River crossing near the existing Vincent Substation. For all Build Alternatives, these aquatic resources are subject to Clean Water Act Sections 401 and 404, California Fish and Game Code Section 1600 et seq., and/or the Porter-Cologne Water Quality Control Act.

Direct permanent effects on aquatic resources, including riparian vegetation, under the jurisdiction of federal and State resources agencies would occur as a result of construction of bridges and elevated structures (e.g., viaducts) over regulated areas, including those associated with the Santa Clara River at the areas described above for each of the six Build Alternatives. These effects would include shading regulated areas by elevated structures (where the elevated structure is near the ground), placement of piles to support the elevated structures and bridges, and permanent removal of vegetation. These effects may result in disruption of hydrology, vegetation, fish and wildlife use, water quality, and other biological functions provided by rivers and streams and other aquatic resources. Several IAMFs will be incorporated into the Palmdale to Burbank Project Section design to reduce direct and indirect impacts on aquatic resources. Through implementation of BIO-IAMF#1, BIO-IAMF#2, BIO-IAMF#3, and BIO-IAMF#5 through BIO-IAMF#11 (described in Section 3.7.4.2 of the Draft EIR/EIS), IAMFs would be applied in a timely manner, so that all Palmdale to Burbank Project Section temporary construction areas and associated construction activities appropriately identify biological resources and avoid and minimize direct and indirect impacts on applicable resources, to the extent feasible.

Prior to ground disturbing activity in aquatic resources, the Authority would obtain permits and authorizations that would include additional avoidance, minimization and mitigation requirements to compensate for effects on aquatic resources, including regulated riparian resources, determined in consultation with USACE, SWRCB, and/or CDFW. Compensation methods to mitigate effects on aquatic resources, which includes riparian resources regulated by CDFW, are outlined in the proposed mitigation measures discussed in Section 3.7.9, CEQA Significance Conclusions, Section 3.7, Biological and Aquatic Resources. The Authority would document compliance and submit documentation to the regulatory agencies. Refer to Section 3.7.4.2 for the full text of IAMFs that would be employed during construction activities.

Although implementation of the IAMFs listed above would avoid and minimize direct and indirect surface construction impacts, construction of each of the six Build Alternatives would have a substantial adverse

effect on fish and wildlife species dependent on rivers streams, and other aquatic resources, including riparian habitat. Implementation of the mitigation measures listed below would reduce surface construction impacts and compensate for unavoidable impacts on resources regulated under Sections 404 and 401 of the Clean Water Act, the Porter-Cologne Water Quality Control Act and/or CFGC Section 1600 et seq. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

Implementation of BIO-MM#6 (Prepare and Implement a Restoration and Revegetation Plan), BIO-MM#32 (Restore Temporary Riparian Habitat Impacts), BIO-MM#33 (Restore Aquatic Resources Subject to Temporary Impacts), BIO-MM#34 (Monitor Construction Activities within Jurisdictional Waters), BIO-MM#46 (Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat), BIO-MM#47 (Prepare and Implement a CMP for Impacts on Aquatic Resources), BIO-MM#50 (Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites), BIO-MM#53 (Prepare and Implement a CMP for Species and Species Habitat), BIO-MM#55 (Prepare and Implement a Weed Control Plan), BIO-MM#56 (Conduct Monitoring of Construction Activities), and BIO-MM#62 (Prepare Plan for Dewatering and Water Diversions) (described in Section 3.7.7.1 in the Draft EIR/EIS) would produce and require implementation of, revegetation, weed-control, habitat restoration, habitat replacement, habitat enhancement, monitoring, construction management, and contingency plans. These measures would collectively mitigate for direct and indirect surface construction impacts such that direct and indirect impacts from project construction would not result in a substantial adverse effect on aquatic resources, including regulated riparian resources, regulated under Sections 404 and 401 of the Clean Water Act, the Porter-Cologne Water Quality Control Act and/or CFGC Section 1600 et seq, including those associated with the Santa Clara River. Implementation of these mitigation measures would require development and implementation of plans that detail the restoration of temporarily impacted aquatic resources, including riparian resources; the development of compensatory mitigation plans for impacts to aquatic resources, including riparian resources, and the implementation of those plans. These measures would provide compensation for temporary and permanent impacts to aquatic resources, including riparian resources. The measures also include construction monitoring measures for offsite mitigation, development and implementation of a weed control plan, and development and implementation of a dewatering and/or water diversion plan; these measures would result in avoidance or minimization of impacts to aquatic resources, including riparian resources.

Special-Status Fish

Direct effects on special-status fish species would result from construction activities in suitable habitat that could disturb, injure, or kill individuals if waters are disturbed, degraded, or polluted by sedimentation or construction equipment spills or leaks. Indirect effects on special-status fish would include changes in water quality, which would lead to temporary shifts in foraging and reproductive habitats. The construction of viaduct support structures within occupied or tributary drainages would cause changes in downstream morphology of special-status fish habitats. Ground disturbance associated with construction would increase erosion and sedimentation into nearby creeks, rivers, and other waters. Tunnel boring activities could change water quality or the hydrology pattern or hydroperiod of streams. Project components such as security fencing, electrical infrastructure, and elevated structures could attract predators by providing artificial perch sites in the landscape, resulting in increased predation on fish. Therefore, implementation of mitigation measures is proposed to mitigate impacts on biological and aquatic resources associated with the Santa Clara River, including BIO-MM#84 (Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback), BIO-MM#85 (Establish Construction Zones and Environmentally Sensitive Areas for Unarmored Three-spine Stickleback and its Habitat), BIO-MM#86 (Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions), BIO-MM#87 (Prepare and Implement Spill Prevention and Containment Measures), BIO-MM#88 (Implement Construction or Maintenance Activity Debris Prevention Measures), BIO-MM#89 (Implement Construction Measures for unarmored three- spine Stickleback Avoidance), BIO-MM#90 (Prepare a Construction Groundwater Dewatering Plan), BIO-MM#92 (Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River), and BIO-MM#98 (Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement) (described in Section 3.7.7.1 of the Draft EIR/EIS).

These measures include the implementation of a worker environmental awareness program for the Unarmored Three-spine Stickleback in the Santa Clara River (BIO-MM#84), the establishment of

construction zones and environmentally sensitive areas to avoid contact with and disturbance of the Santa Clara River wetted channel (BIO-MM#85), weather related and seasonal work restrictions regarding construction and maintenance activities in proximity to the Santa Clara River (BIO-MM#86), preparation and implementation of spill prevention and containment measures, including to the wetted channel of the Santa Clara River (BIO-MM#87), implementation of construction and maintenance activity debris prevention measures for the Santa Clara River (BIO-MM#88), implementation of construction measures for Unarmored Three-spine Stickleback avoidance (BIO-MM#89), preparation of a Construction Groundwater Dewatering Plan including for the Santa Clara River (BIO-MM#90), implementation of avoidance measures for the Santa Clara River during operations and maintenance (BIO-MM#92), and implementation of measures such as pigeon wire and pole barriers to minimize permanent intermittent impacts on aerial species wildlife movement (BIO-MM#98). Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect construction impacts on special-status fish. As a result, construction impacts would be less than significant for the six Build Alternatives.

Significant Ecological Areas

Significant Ecological Areas (SEAs) are officially designated areas within Los Angeles County identified as having irreplaceable biological resources, representing the wide-ranging biodiversity of the county. As depicted on Figure 3.7-36 in the Draft EIR/EIS, there are several SEAs within the core habitat RSA, including the Santa Clara River SEA (as well as the San Andreas SEA and Tujunga Valley/Hansen Dam SEA).

The Refined SR14 and SR14A Build Alternatives would use at-grade, viaduct, and tunnel profiles through the Santa Clara River SEA between the SR 14 crossing and Lang Station Road. An at-grade utility corridor associated with the SR14-A1 adit would also be located along Little Tujunga Canyon Road within the Santa Clara River SEA. Key biological resources in this area include riparian areas and wildlife corridors that provide connectivity across the Santa Clara River between the western and eastern highland areas of the San Gabriel Mountains. Construction of the Refined SR14 and SR14A Build Alternatives would alter hydrologic patterns, riparian resources, and wildlife corridors within this portion of the Santa Clara River SEA. Therefore, the biotic viability of the Santa Clara River SEA would be degraded as riparian resources and wildlife corridors would be affected by the alteration of hydrologic patterns, degradation of riparian resources, and addition of barriers/constraints to wildlife movement.

The E1, E1A, E2, and E2A Build Alternatives would use at-grade, viaduct, and tunnel profiles through the Santa Clara River SEA, which encompasses Aliso Canyon, Arrastre Canyon, and habitat south of the Vincent Substation. Key biological resources in this area include riparian areas and wildlife corridors that provide connectivity across the Santa Clara River between the western and eastern highland areas of the San Gabriel Mountains. Construction of the E1, E1A, E2, and E2A Build Alternatives would alter hydrologic patterns, riparian resources, and wildlife corridors within this portion of the Santa Clara River SEA. Alteration of hydrologic patterns and other construction activities within the SEA would affect river corridor and linkage zones of the Santa Clara River SEA. These river corridors and linkage zones are considered essential to connectivity and maintaining resource values within the historical movement zones for local wildlife species. Therefore, the biotic viability of the Santa Clara River SEA would be degraded.

Prior to ground disturbing activities in aquatic resources, the Authority would obtain authorization that would include mitigation requirements to compensate for effects on aquatic and other biological resources determined in consultation with agencies such as the USACE, SWRCB and/or CDFW. Compensation methods to mitigate effects on aquatic resources are outlined in the proposed mitigation measures discussed in Section 3.7.9 CEQA Significance Conclusions in Section 3.7, Biological and Aquatic Resources. The Authority would document compliance and submit documentation to the regulatory agencies. Refer to Section 3.7.4.2 for the full text of IAMFs that would be employed during construction activities.

Implementation of BIO-IAMF#1 (Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors), BIO-IAMF#2 (Facilitate Agency Access), BIO-IAMF#3 (Prepare WEAP Training Materials and Conduct Construction Period WEAP Training), and BIO-IAMF#5 (Prepare and Implement a Biological Resources Management Plan), BIO-IAMF#6 (Establish

Monofilament Restrictions), BIO-IAMF#7 (Prevent Entrapment in Construction Materials and Excavations), BIO-IAMF#8 (Delineate Equipment Staging Areas and Traffic Routes), BIO-IAMF#9 (Dispose of Construction Spoils and Waste), BIO-IAMF#10 (Clean Construction Equipment), BIO-IAMF#11 (Maintain Construction Sites), and BIO-IAMF#12 (Design the Project to be Bird Safe) (described in Section 3.7.4.2 of the Draft EIR/EIS) is required in a timely manner such that all Palmdale to Burbank Project Section temporary construction areas and associated construction activities comply with regulatory procedures intended to avoid and minimize impacts on applicable resources, to the extent feasible. Additionally, implementation of Mitigation Measures BIO-MM#6 (Prepare and Implement a Restoration and Revegetation Plan), BIO-MM#47 (Prepare and Implement a CMP for Impacts on Aquatic Resources), BIO-MM#50 (Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites), and BIO-MM#53 (Prepare and Implement a CMP for Species and Species Habitat) (described in Section 3.7.7.1 of the Draft EIR/EIS) will mitigate for impacts such that the project would no longer result in a substantial adverse effect on SEAs including the Santa Clara River SEA, for all six Build Alternatives. These measures are consistent with the mitigation requirements under Los Angeles County's SEA Ordinance Implementation Guide (2020) to "lift" ecological values, including avoidance of sensitive biological resources to the extent feasible, and restoration of habitat or compensatory mitigation where avoidance is not feasible. With implementation of these mitigation measures, the biotic viability of SEAs to function as habitat for wildlife and plant species would be preserved and would be consistent with the development standards and mitigation requirements associated with the SEA program.

17.1.7 PB-Response-GEN-7: Access to Technical Reports

Commenters requested information on how they could access the Technical Reports developed in support of the Palmdale to Burbank Project Section EIR/EIS.

The following Palmdale to Burbank Project Section Technical Reports provide technical details and serve as sources for the Draft and Final EIR/EIS analysis.

- Transportation Technical Report
- Air Quality and Global Climate Change Technical Report
- Noise and Vibration Technical Report
- Biological and Aquatic Resources Technical Report
- Aquatic Resources Delineation Report
- Wildlife Corridor Assessment Report
- Hydrology and Water Resources Technical Report
- Geology, Soils, and Seismicity Technical Report
- Paleontological Resources Technical Report
- Hazardous Materials and Wastes Technical Report
- Community Impact Assessment
- Visual Impact Assessment
- Historic Architectural Survey Report
- Findings of Effects Report
- Draft Relocation Impact Report

These Technical Reports are relied upon as source documents in the EIR/EIS. The Draft and Final EIR/EIS provide clear roadmaps within individual chapters and sections to relevant information in the technical reports, and adequately summarizes and/or describes the information where appropriate. The Reports were made available for public inspection and review during the draft document's public comment period. The Authority's Notice of Availability (NOA), published with release of the Draft EIR/EIS,

noted how members of the public could obtain electronic copies of the technical reports, by calling the Authority office at (800) 630-1039. In addition, all technical reports were available in electronic form by request via the Authority's website portal. The Authority promptly provided the documents on request and commenters were able to, and did, review and comment on the information during the public review period. Electronic versions of the Technical Reports remain available by submitting a request on the Authority's website portal (available at: https://hsr-ca.nextrequest.com/).

17.2 Alternatives

17.2.1 PB-Response-ALT-1: Alternatives Selection and Evaluation Process

Commenters raised concerns regarding the alternative development process, including alternatives considered and reasons they were or were not carried forward. Commenters requested more information regarding why the Preferred Alternative was chosen over other alternatives, including the No Project Alternative.

Alternatives Analysis Process Requirements

Under CEQA, the alternatives are to include a No Project Alternative and a range of potentially feasible alternatives that would (1) accomplish most of the project's basic objectives and (2) avoid or substantially lessen one or more of the project's significant adverse effects (14 Cal. Code Regs. Title 14, § 15126.6[c]). In determining the alternatives to be examined in the EIR, the lead agency should also describe its reasons for excluding other potential alternatives. (See Cal. Code Regs. Title 14, § 15126.6[c]). The range of alternatives to be studied in an EIR is governed by the "rule of reason." Under the "rule of reason," an EIR is required to study a sufficient range of alternatives in order to permit a reasoned choice (Cal. Code Regs. Title 14, § 15126.6[f]). It is not required that all possible alternatives be studied (Cal. Code Regs. Title 14, § 15126.6[a]).

Under NEPA, an EIS is required to analyze reasonable alternatives to the proposed action, including the No Action Alternative (40 C.F.R. § 1502.14). Pursuant to Section 14(l) of the FRA's Procedures for Considering Environmental Impacts (64 Fed. Reg. 28545, 28554), these include "all reasonable alternative courses of action that could satisfy the [project's] purpose and need" (Federal Register, Volume 64, Page 28546). The range of alternatives should include those that are technically and economically practical and feasible. There is no minimum number of alternatives that must be considered in an EIS.

As indicated in a footnote in Section 2.4.1.2, Summary of High-Speed Rail Project-Level Alternatives Development Process Introduction, "*No Action Alternative* is a NEPA term and *No Project Alternative* is a CEQA term. For this document, the *No Project Alternative* is being used to also refer to the *No Action Alternative*."

Alternatives Development

The evaluation of six Build Alternatives in the EIR/EIS was based on extensive consideration of alignment and station development alternatives at both Tier 1 and Tier 2 and in compliance with the requirements of CEQA and NEPA, as discussed further within this response. Definition of alternatives began with the corridor(s) and station locations selected by the Authority and FRA in the 2005 Statewide Program EIR/EIS, and included the identification of the Preferred Alternative in the Draft EIR/EIS. The alternatives that were not carried forward for detailed analysis had greater direct and indirect environmental impacts, were impracticable, infeasible, or failed to meet the project purpose, need, and objectives. While the alternatives analysis process considered multiple criteria, the project objective to maximize the use of existing transportation corridors and available rights-of-way to the extent feasible was emphasized as a way of minimizing impacts otherwise caused by creating an entirely new linear transportation corridor. Additionally, the engineering, geologic, and grade-requirement challenges within this project section have influenced the alternative alignments.

Alternatives Considered but Rejected as Part of the Tier 1 Statewide Program EIR/EIS

CEQA Guidelines Section 15168 defines program EIRs and specifies that they "may be prepared on a series of actions that can be characterized as one large project and are related" in any one of several ways, including for actions that are related as logical parts in the chain of contemplated actions, as in the

case of the California HSR Project. The CEQA Guidelines also describe several advantages of using a program EIR, one of which is that a program EIR can provide "an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action."

The CEQ's NEPA regulations encourage agencies to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (40 C.F.R. § 1502.20 (1978). CEQ's guidance "Effective Use of Programmatic NEPA Reviews" (December 2014) indicates that among other purposes, "a programmatic NEPA review can also be an effective means to narrow the consideration of alternatives and impact discussion in a subsequent tiered NEPA review." The use of a programmatic NEPA review is appropriate in several scenarios, one of which is a decision to proceed with multiple projects that are temporally or spatially connected and that will have associated concurrent or subsequent decisions, like the statewide HSR project.

The Authority has used a tiered environmental review process to support decision-making on the HSR system. A broad program was addressed in Tier 1 documents, and Tier 2 documents are then subsequently used to analyze the project-level details within the context of decisions made in Tier 1.

Given the frameworks provided by CEQA and NEPA to use programmatic reviews and the interrelationship of each individual HSR project section to the overall statewide HSR system, in 2001 the Authority and FRA proceeded with the development and preparation of the Statewide Program EIR/EIS (also known as the Tier 1 document) for the statewide high-speed rail system, which was approved in 2005. In the Statewide Program EIR/EIS, the Authority and FRA identified preferred HSR corridors and general alignments, general station locations, and other project elements to guide future development of the HSR system at the Tier 2 project level. The decisions made during the Statewide Program EIR/EIS process were intended to focus the subsequent phases of project development and environmental review on those alignment and station options likely to yield acceptable site-specific solutions that best meet the overall project objectives identified by the Authority. In Chapter 3 of the Statewide Program EIR/EIS, the Authority defined key design criteria and aspects that would avoid and minimize potential negative environmental consequences, including the following:

- Minimize impact footprint and associated direct impacts to farmlands, parklands, and biological and water resources through maximum use of existing transportation corridors.
- Minimize impacts associated with growth through the selection of multimodal transportation hubs for potential HSR station locations that would maximize access and connectivity, as well as provide for efficient (transit-oriented) growth centered on these station locations.
- The Authority is committed to pursuing agreements with existing owners/rail operators to place the HSR alignment within existing rail rights-of-way, which would avoid and/or minimize potential impacts to agricultural resources and other natural resources.
- Constructability and practicability of alignments were also considered as they related to tunneling, construction issues, capital costs, and right-of-way constraints.

In the Statewide Program EIR/EIS, the Authority evaluated the No Project Alternative, the HSR Alternative, and the Modal Alternative. The Modal Alternative consisted of feasible transportation infrastructure improvements representing a possible response to projected intercity travel demand that would not be met by the No Project Alternative. Improvements were capacity-oriented and included over 2,970 additional highway lane-miles, as well as over 90 additional gates and five new runways at airports across the state. The HSR Alternative included general corridors and station locations for implementing a statewide high-speed rail system.

Chapter 2 of the Statewide Program EIR/EIS described technology, system performance criteria, alignment, and station options for the HSR Alternative, some of which were considered in the Statewide Program EIR/EIS and others that had been removed from further consideration.

Technology Alternatives Initially Considered and Not Carried Forward for Tier 1 Study

Four primary HSR technology groups were initially considered in the Statewide Program EIR/EIS. These included electrified very-high-speed (VHS) steel-wheel-on-steel-rail, magnetic levitation or maglev, high-

speed steel-wheel-on-steel-rail, and non-electrified steel-wheel-on-steel-rail (or conventional rail). The Statewide Program EIR/EIS focused on the VHS steel-wheel-on-steel-rail technology. High-speed steel-wheel-on-steel-rail and non-conventional steel-wheel-on-steel-rail were removed from further consideration as the maximum speed range those technologies are capable of reaching (100 to 150 miles per hour [mph]) is inconsistent with the Authority's enabling legislation (Senate Bill 1420), which specified the HSR technology would be capable of sustained speeds of 200 mph or greater. Further, although the overall capital cost of high-speed/conventional and VHS would be similar, the faster travel times afforded by VHS technology would result in more riders, more annual revenue, and an overall ability for HSR service to compete with air transportation. Maglev and steel-wheel-on-steel-rail fully dedicated service were also removed from further consideration, as the need for a fully separated and dedicated train technology using a separate track/guideway would preclude direct HSR service to heavily constrained terminus sections with extensive urban development and severely constrained right-of-way. In order to provide direct service without passenger transfer, the HSR system needed to be compatible with existing passenger rail services. The installation of exclusive guideway alignments in these heavily constrained areas introduced major construction issues and served to increase capital costs, whereas a shared-use configuration taking advantage of the existing rail infrastructure would be less costly and result in fewer environmental impacts.

Corridor Alternatives Initially Considered and Not Carried Forward for Tier 1 Study

Chapter 2 of the Statewide Program EIR/EIS also summarized previously considered alternative corridor options that were reconsidered and rejected. The primary considerations for elimination included construction (engineering and construction complexity, costs that would render the project impracticable, logistical constraints), environment (considerable impacts to natural resources in a manner that would fail to meet project objectives), incompatibility (local land use incompatibility in a manner that would fail to meet project objectives), right-of-way (lack of available right-of-way or extensive right-of-way needs resulting in high acquisition costs or delays), connectivity/accessibility (limited connectivity with other modes of transport in a manner that would fail to meet the project purpose), and ridership/revenue (longer trip times and/or suboptimal operating characteristics in a manner that would fail to meet the project purpose). Among those alternative corridor options relevant to the Palmdale to Burbank Project Section were SR 138, Aqueduct, I-5 via Comanche Point, I-5 (2.5 percent maximum grade), and I-5 (3.5 percent maximum grade). As a result of the screening evaluation, the SR 138, Aqueduct, I-5 via Comanche Point, and I-5 (2.5 percent maximum grade) Corridors were eliminated from further study in the Statewide Program EIR/EIS. These alignments were eliminated based on seismic constraints because each would have required long tunnels through seismic zones, either crossing active faults in long tunnels or paralleling them for long distances. The Statewide Program EIR/EIS therefore studied two corridors for Bakersfield to Sylmar: the SR 58/Soledad Canyon corridor and the I-5 3.5 percent maximum grade corridor.

Corridor and Station Alternatives Studied in the Statewide Program EIR/EIS but Not Selected

Between Sylmar and Los Angeles Union Station (LAUS), the Statewide Program EIR/EIS examined corridors that would generally follow the I-5 freeway or the Metro/Metrolink Antelope Valley Line. Station options at Sylmar, Burbank, and Los Angeles were evaluated. The Authority determined at the time that sharing existing commuter and freight tracks would not meet the California HSR System's purpose and that dedicated track would be necessary to achieve the performance goals of the California HSR System.

Based on the Statewide Program EIR/EIS, the Authority and FRA selected the SR 58/Soledad Canyon corridor (Antelope Valley) and MTA/Metrolink corridors to advance for further Tier 2 (project-level) study, with stations in Palmdale, Sylmar, Burbank, and Los Angeles.

In terms of environmental impacts, the Antelope Valley alignment was estimated to affect more cultural resources than the I-5 alignment options and to have slightly more impacts on biological resources. However, the Antelope Valley alignment would have less water-related impacts because the impacts are related to the relatively small seasonal streams in Soledad Canyon, and based on information available at the time, the alignment was considered to not encroach on lakes, including Una Lake. The Antelope Valley corridor also had fewer impacts on wetlands and non-wetland waters than the I-5 corridor. In addition, the Antelope Valley option was forecast to have fewer growth-inducing impacts on urbanized land and farmland conversion than the I-5 options because the I-5 options would result in more growth in

the Central Valley. The most significant difference with regard to environmental impacts between the Antelope Valley option and the I-5 alignments was related to major parklands. The Antelope Valley corridor would not go through major parks or national forests. In contrast, the I-5 corridor would affect Fort Tejon Historic Park, Angeles National Forest (ANF), Los Padres National Forest, the Hungry Valley State Vehicular Recreation Area, Pyramid Lake, and other local parks.

The Antelope Valley corridor traversed less challenging terrain than the I-5 corridor, which, based on the information available at the time, would result in considerably less tunneling overall (13 miles of tunneling for the Antelope Valley option versus 23 miles for the I-5 options), and considerably shorter tunnels (maximum length of 3.4 miles for the Antelope Valley option versus two tunnels longer than 5 miles for the I-5 option), which would, in turn, result in fewer constructability issues. Although the Antelope Valley option is about 35 miles longer than the I-5 alignment options, it was determined to be slightly less expensive to construct as a result of less tunneling through the Tehachapi Mountains. In addition, because of its gentler gradient, geology, topography, and other features, the SR 58/Soledad Canyon Corridor offered greater opportunities for potential alignment variations, particularly through the mountainous areas of the corridor, to avoid impacts on environmental resources. In contrast, the more challenging terrain of the I-5 corridor greatly limits the ability to avoid sensitive resources and seismic constraints.

The Final Statewide Program EIR/EIS identified the MTA/Metrolink alignment as the preferred alternative for several reasons. The relatively wide corridor had less potential for environmental impact and fewer constructability issues than the Combined I-5/Metrolink alignment (primarily related to tunneling). The MTA/Metrolink alignment had fewer impacts to local and regional parks than the Combined I-5/Metrolink alignment, which may have impacted Griffith Park, Elysian Park, the Cornfield property owned by California State Parks, and Taylor Yard. Furthermore, the City of Burbank opposed the Combined I-5/Metrolink alignment due to potential impacts to established residential neighborhoods. The Program EIR/EIS also identified preferred station locations at Burbank Metrolink Media City (Downtown) and Los Angeles Union Station.

Tier 2 Palmdale to Los Angeles Alternatives Analysis Process

The 2005 Tier 1 decisions formed the basis for scoping and alternatives development for the Palmdale to Los Angeles Project Section between 2007 and 2014, as reflected in the Palmdale to Los Angeles Project Section Scoping Report, the Palmdale to Los Angeles Project Section Preliminary Alternatives Analysis (PAA) Report and Addendum, and the Palmdale to Los Angeles Project Section Supplemental Alternatives Analysis (SAA) Reports.

Following scoping, the Authority and FRA developed potential alignment alternatives between Palmdale and Los Angeles and station options in Palmdale, the San Fernando Valley, and Los Angeles through an extensive outreach and engineering effort. Developing potential alternatives in the mountain passes that could achieve HSR performance criteria, including crossing major faults at-grade, presented a particular challenge. The Authority identified alternatives in consideration of design requirements and environmental constraints.

In consideration of the varying setting and terrain covered in the 2010 PAA Report, the Palmdale to Los Angeles Project Section was divided into four subsections (described in Section 2.4.2.1 of the Draft EIR/EIS), and multiple alignment alternatives were carried forward for each subsection for further evaluation (see Figure 2-34 in Chapter 2 of the Draft EIR/EIS):

- Sylmar to Palmdale Subsection
  - SR14 East—Alignment passes close to the SR 14 highway through the Acton area and east of Palmdale Lake to follow the existing railroad right-of-way into Palmdale.
  - SR14 West—Alignment passes close to the SR 14 highway through the Acton area and west of Palmdale Lake before rejoining the existing railroad right-of-way in Palmdale north of the Palmdale Transit Center (TC).
- SR 2 to Sylmar Subsection
  - Alignment ESS—HSR would run within the existing Metrolink/Union Pacific Railroad (UPRR) railroad corridor, sharing the right-of-way, with the dedicated HSR tracks placed to the east and the Metrolink/freight tracks relocated to the west. This alignment would allow for progressively

increasing speeds to the north as it follows the existing Metrolink/UPRR corridor. It would run predominantly at-grade, with the following profiles to deal with existing at-grade road crossings:

- Elevated Profile A—HSR would be selectively elevated to create grade separations.
- At-grade Profile B1—Roads would be elevated to cross over HSR, which would be at-grade.
- At-grade Profile B2—Roads would be depressed to cross under HSR, which would be at-grade.
- Trench Profile C—HSR would be selectively depressed to create grade separations.
- Metrolink CMF to SR 2 Subsection
  - San Fernando Road Alignment—A partially covered trench would run along San Fernando Road along the east side of Rio de Los Angeles State Park.
  - Metrolink Trench Alternative—A partially covered trench would run in the existing Metro right-of-way along the west side of Rio de Los Angeles State Park.
- LAUS to Metrolink CMF Subsection
  - Alternative LAPT1
  - Alternative LAPT2
  - Alternative LAPT3
  - Alternative LAP1C
- Station Options
  - Los Angeles—LAUS (as defined for the Los Angles to Anaheim Project Section).
  - San Fernando Valley—Single station between LAUS and Palmdale at one of the following locations:
    - Burbank Buena Vista Alternative—In the city of Burbank between North Buena Vista Street and Hollywood Way, in proximity to Hollywood Burbank Airport.
    - Branford Alternative—Between Tujunga Wash and Branford Street in the city of Los Angeles/Pacoima.
    - Pacoima Wash Alternative—Between the SR 118 freeway and the Pacoima Wash, in the city of Los Angeles/Pacoima and immediately adjacent to the city of San Fernando.
    - Sylmar/San Fernando Alternative—Between Maclay Street and Hubbard Avenue in the city of San Fernando.
  - Palmdale—Station at one of the following locations:
    - Palmdale Station Option 1—Near the Palmdale TC, in conjunction with the SR14 East alignment alternative.
    - Palmdale Station Option 2—Near Avenue P west of the Palmdale TC, in conjunction with the SR14 West alignment alternative.

Through the 2010 PAA Report, the Authority determined that several potential alignment and station alternatives did not merit continued consideration. Between Sylmar and Palmdale, the SR14 South and Soledad Canyon alignments were eliminated from further consideration based on greater environmental impacts, along with greater route mileage and journey time, as compared to the SR14 East and SR14 West alternatives that were carried forward (see Figure 2-34 in Chapter 2 of the Draft EIR/EIS). The Soledad Canyon alignments would traverse areas granted by the Bureau of Land Management for mineral extraction and negatively impact the ANF. The SR 14 South alignment would negatively impact the existing visual setting and also traverse areas granted by the Bureau of Land Management for mineral extraction. Additionally, USEPA and other resources agencies raised concerns regarding impacts on sensitive resources in the Soledad Canyon and Santa Clara River environments.

A potential station in Santa Clarita was eliminated from further consideration based on comparatively higher residential displacements. A potential station in Lancaster was eliminated based on not sufficiently meeting the project purpose and objectives of providing transportation connectivity as compared to station sites in Palmdale. Between Sylmar and SR 2, alternatives that would have placed HSR outside the existing right-of-way to the east and west were eliminated from further consideration due to high displacement of residential, commercial, and industrial properties, and an alternative that would have required several long viaducts sharing the existing right-of-way was eliminated due to the complexity and visual intrusiveness of the long viaducts. The use of the existing right-of-way would also reduce train

travel times. Non-HSR trains between Palmdale and downtown Burbank currently have a run time that varies from 1 hour 24 minutes to 1 hour 53 minutes. Proposition 1A travel time objectives for HSR travel from San Francisco to Los Angeles of 2 hours and 40 minutes would not be achievable if the section between Palmdale and Burbank required this much time to traverse.

Potential stations at Burbank North and South, Hollywood Way, Sunland Boulevard, and Sylmar North were eliminated from further consideration based on location/proximity to other stations, constructability issues and costs, and environmental impacts compared to the station alternatives carried forward.

Alternatives Considered and Rejected in the 2011 Los Angeles Supplemental Alternatives Analysis Report: LAUS to Sylmar (2011 SAA Report)

The 2011 SAA Report refined alignment corridors and station sites in the southern portion of the Palmdale to Los Angeles corridor between Sylmar and LAUS, utilizing the three separate "subsections" as presented in the 2010 PAA Report: Sylmar to SR 2, SR 2 to Metrolink Central Maintenance Facility (CMF), and Metrolink CMF to LAUS. The 2011 SAA Report introduced the following refinements to alternatives and eliminated other alternatives (mapped on Figure 2-35 in Chapter 2 of the Draft EIR/EIS):

- LAUS to Metrolink CMF Subsection:
  - Alternative LAPT1
  - Alternative LAPT2
  - Alternative LAPT3—If the gradient were increased and the track layout adjusted in the approach to LAUS, Alternative LAPT3 could be made consistent with the elevated LAUS option and a bored tunnel under the Los Angeles State Historic Park. LAPT3 was recommended to be carried forward.
  - Alternative LAP1C—Alternative LAP1C was unchanged from the 2010 PAA Report and was recommended to be carried forward.
- Metrolink CMF to SR 2 Subsection:
  - Following comments from stakeholders, a variation of the tunnel alternatives was considered with a bored tunnel extended under Rio de Los Angeles State Park and the new high school, emerging into a trench north of the school and rising to pass through the SR 2 bridge at-grade. This tunnel alternative was recommended to be carried forward.
  - Following further discussions with existing train operators and the California Department of Parks and Recreation, the at-grade option on the Metrolink alignment, not carried forward in the 2010 PAA Report, was re-evaluated and was recommended to be carried forward in preference to the trench alignments along the Metrolink alignment or along San Fernando Road.
- SR 2 to Sylmar Subsection:
  - The seismic risk associated with the Verdugo Fault restricted the profile options between Hollywood Burbank Airport and San Fernando to an at-grade alignment, which would allow the quickest service recovery time should a major seismic event occur.
  - The Authority Board requested evaluation of a station located in downtown Burbank at the existing Burbank Metrolink station. A nonstandard layout to bring the tracks closer to the existing right-of-way, reducing some of the impacts illustrated in the 2010 PAA Report, was considered. As a result of the remaining impacts of this station location on the surrounding area and the need to reconstruct the existing bridges over the alignment, this alternative was not recommended to be carried forward for evaluation.
  - The seismic risk associated with the Verdugo Fault, the impacts on new development south of SR 118, and the construction challenges and visual impact associated with the elevated Pacoima Wash Station were reasons the LAUS to Sylmar alternative was no longer recommended to be carried forward. An alternative at-grade Pacoima Wash option was not recommended to be carried forward due to extensive adverse impacts on adjacent freeways and intersections.

Alternatives Considered and Rejected in the 2012 Palmdale to Los Angeles Supplemental Alternatives Analysis Report, Sylmar to Palmdale (2012 SAA Report)

The 2012 SAA Report split the Palmdale to Sylmar Subsection as previously included in the 2010 PAA Report into the Santa Clarita Subsection and the Palmdale Subsection and further evaluated potential alignment alternatives within these two new subsection limits. The 2012 SAA Report focused solely on the Santa Clarita and Palmdale Subsections (see Figure 2-36 in Chapter 2 of the Draft EIR/EIS) and made no other changes to the alignment or station options within other subsections carried forward from the previous 2012 SAA Report.

The 2012 SAA Report refined the SR14 East and the SR14 West Alignments to create an East/West Hybrid option. The 2012 SAA Report recommended that the alternatives described below be carried forward for further study.

Palmdale Subsection

Because of concerns of residents in the areas of Acton and Agua Dulce regarding noise and visual impacts, impacts on schools, and general community impacts, the 2012 SAA Report investigated options to refine the SR14 East and the SR14 West alignments to reduce impacts. The 2012 SAA Report explained that an alternative suggested by stakeholders that would follow the SR 14 median would require slow train speeds and would not meet the project purpose or objectives of providing HSR service and was therefore eliminated from consideration. An alternative that would join tunnels in the area to create a roughly 12-mile tunnel through Acton was eliminated due to operational, maintenance, and safety issues and high capital and operational costs associated with tunnels. Based on the 2012 SAA Report, three alignments were carried forward for continued consideration.

- SR14 East Option—Refined to avoid direct impacts on Vasquez High School.
- SR14 West Option—Refined to avoid the Ward Road interchange bridge.
- SR14 East/West Hybrid Option—Developed in response to public concerns raised by residents of Acton and Agua Dulce related to noise, vibration, and visual impacts.

Santa Clarita Subsection

In response to concerns in the Sand Canyon area and suggestions from stakeholders, the 2012 SAA Report explained that alternatives that would closely follow SR 14 or the Metrolink corridor through Sand Canyon would have slow train speeds and would not meet the project purpose or objectives of providing HSR service. An alternative that would extend the tunnel through Sand Canyon was considered infeasible and not reasonable at the time due to operational and safety issues, along with high capital and operational costs. The 2012 SAA Report also eliminated an alternative that would have traversed the Santa Clara River at-grade, due to high environmental impacts. Based on the 2012 SAA Report, two alignments through Sand Canyon were carried forward for continued consideration:

- Sand Canyon Preliminary AA Option—Renamed Santa Clarita North
- Sand Canyon Metrolink 200 Option—Renamed Santa Clarita South

Alternatives Considered and Rejected in the 2014 Palmdale to Los Angeles Supplemental Alternatives Analysis Report (2014 SAA Report)

The 2014 SAA Report recommended that the Palmdale to Los Angeles Project Section would be better advanced if divided into two project sections (Palmdale to Burbank and Burbank to Los Angeles). In addition, the 2014 SAA Report evaluated project alternatives from the 2012 SAA Report in light of California HSR System phasing in the Authority's 2012 and 2014 Business Plans. Both Business Plans called for an Initial Operating Segment (IOS) with a temporary terminus station in the San Fernando Valley that would be fully integrated with the existing metropolitan rail infrastructure, to provide connections to all of Southern California while construction of the California HSR System to LAUS and beyond continued. The Business Plans' phased implementation strategy contained the following goals intended to make the best use of existing railroad infrastructure:

- A commitment to a blended system that focuses on new high-speed infrastructure development between the State's metropolitan regions while using, to the maximum extent possible, existing regional and commuter rail systems in urban areas.
- A commitment to blended operations at all phases of development that seeks to use new and existing rail infrastructure more efficiently through coordinated delivery of services, including interlining of trains from one system to another as well as integrated scheduling to create seamless connections.
- An IOS to connect the Central Valley to the Los Angeles Basin in the San Fernando Valley, integrating high-speed infrastructure with existing modes of transportation and closing the rail gap between Bakersfield and Palmdale.
- Making early investments in the "bookends," defined as San Francisco and the Los Angeles Basin, to upgrade existing services, build ridership, and lay the foundation for expansion of the California HSR System.

The 2014 SAA Report also considered new information that had developed since the 2012 SAA Report, including the emergence of the Brightline West HSR project (Brightline West Project) from Las Vegas to Victorville, the addition of the high-speed rail corridor of the High Desert Corridor project from Victorville to Palmdale, the incorporation of a Transit Village Specific Plan into the Palmdale General Plan, and planning for land use and transportation by the City of Burbank and the Burbank-Glendale-Pasadena Airport Authority around the Hollywood Burbank Airport.

The 2014 SAA Report recommended certain alternatives for further investigation (mapped on Figure 2-37 in Chapter 2 of the Draft EIR/EIS) and eliminated others.

Palmdale Subsection

The Palmdale West Station Option and its connecting SR14 West alignment were eliminated from consideration because the station would not be supported by land uses that emphasize transit-oriented development (TOD) and would not support the proposed High Desert Corridor project and a future HSR connection with Brightline West HSR service to Las Vegas. Furthermore, the Palmdale West Station Option and the SR14 West Alignment would not connect to Metrolink or the existing bus network at the Palmdale TC, and therefore did not offer interconnectivity with the existing transportation system. The Palmdale West Station Option would require the construction of tunnels or viaduct through the San Andreas Fault Zone.

This portion of the San Andreas Fault Zone is likely to experience a seismic event during the operational lifetime of the California HSR System. The placement of tunnels or viaduct within the San Andreas Fault Zone would not be practicable because HSR engineering criteria prohibits the alignment to be elevated or underground across Hazardous Faults to all practical extent. Tunnel or viaduct structures in a Hazardous Fault Zone would pose an unacceptably high seismic public safety risk. Moreover, in the event of seismic activity at the fault resulting in catastrophic failure, the time necessary to rebuild HSR tunnels or viaduct would render the system inoperable for a protracted period of time and jeopardize the financial viability of the California HSR System. For the above reasons, this station option and its associated alternative (SR14 West) were withdrawn from further consideration. The remaining Palmdale Subsection alignment alternatives—the SR14 East alignment alternative and the SR14 E/W Hybrid were carried forward for further evaluation, along with a station at the Palmdale TC, which would support intermodal connectivity and TOD.

Santa Clarita Subsection

The 2012 SAA Report recommended two alignment alternatives to be studied in future environmental documents: Santa Clarita North and Santa Clarita South. The 2014 SAA Report recommended no changes to Santa Clarita South; however, the Santa Clarita North configuration in the 2012 SAA Report did not meet the requirements of a standing Authority Technical Memorandum (2.1.2) for curvature or speed. The 2014 SAA Report therefore revaluated and updated the Santa Clarita North profile to eliminate nonstandard alignment features and meet geometric standards for curvature and segment lengths. Both the Santa Clarita South and Santa Clarita North alignment alternatives were recommended for further evaluation.

San Fernando Valley Subsection

This subsection (previously called the Sylmar to SR 2 Subsection) contained two alternative alignments originally evaluated in the 2010 PAA Report: the alignment on the west side of the Metrolink corridor and the alignment on the east side of the Metrolink corridor. Both alignment alternatives were carried forward for further consideration without refinements.

The San Fernando Valley Subsection station options were examined with the intention of blending systems and operations with existing infrastructure. The central criteria for each station option were intermodal connectivity, the potential for TOD, and avoiding significant environmental impacts. The Burbank Airport Station Option (formerly called Buena Vista Station) was carried forward because it provided the best intermodal connectivity of all three San Fernando Valley Subsection station options as a result of its proximity to the Hollywood Burbank Airport, connection to Metrolink, and planned Regional Intermodal Transportation Center. Additionally, there were more than 100 acres near this station option under examination for potential TOD opportunities. The San Fernando and Branford Street station options were eliminated from further consideration because of their lack of consistency with the 2012 and 2014 Business Plans' criteria and goals.

Los Angeles Subsection

The 2014 SAA Report consolidated two adjacent subsections analyzed in previous SAA Reports (Metrolink CMF to LAUS and SR 2 to Metrolink CMF) into the Los Angeles Subsection, which included three alignment alternatives: one surface alignment alternative (LAP1C, renamed "Surface Alternative") and two tunnel alternatives (LAPT1 and LAPT3).

The Surface Alternative and LAPT3 remained unchanged in the 2014 SAA Report. However, LAPT1 was refined to utilize a higher platform at LAUS. This refinement provided flexibility to match the preferred high-speed rail platform location proposed by the LAUS Master Plan developed by Metro (Metro 2014). Therefore, the Surface Alternative, LAPT3, and LAPT1 were carried forward for further evaluation in the Los Angeles Subsection.

Alternatives Considered and Rejected in the Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (2015 SAA Report)

Informed by the 2014 scoping process, the Authority and FRA continued to refine and consider alternatives between Palmdale and Burbank, including refining the SR 14 corridor and introducing alternatives on the east corridor. Figure 2-39 in Chapter 2 of the Draft EIR/EIS shows the alignment and station alternatives carried forward from the 2015 Palmdale to Burbank Project Section SAA Report.

SR 14 Corridor

The 2015 SAA Report reevaluated all alignment alternatives and station options of the SR 14 corridor. The 2015 SAA Report shifted the proposed station in Palmdale to begin near Avenue O, which would avoid Lake Palmdale (requiring relocation of Una Lake) and minimize impacts in the community of Acton. The report also refined the Santa Clarita North option (now known as Santa Clara Long Tunnel) to have the same horizontal location as the Santa Clarita South alignment and withdrew consideration of HSR tracks east of the Metrolink corridor in the San Fernando Valley Subsection. Alignment alternatives along the SR 14 corridor were analyzed on an end-to-end basis by combining the Palmdale Subsection options (East, West, and Hybrid), the Santa Clarita Subsection options (Santa Clarita South and Santa Clara Long Tunnel), and the San Fernando Valley Subsection alignment options (HSR aligned west of the Metrolink corridor).

The 2015 SAA Report made the following recommendations along the SR 14 Corridor:

- SR 14-1 (Hybrid/Santa Clara Long Tunnel/Santa Clarita North [SCN]/San Fernando West) – carried forward
- SR 14-2 (Hybrid/Santa Clarita South [SCS]/San Fernando West) – carried forward
- SR 14-3 (East/Santa Clara Long Tunnel/SCN/San Fernando West) – withdrawn
- SR 14-4 (East/SCS /San Fernando West) – withdrawn

Figure 2-40 in Chapter 2 of the Draft EIR/EIS shows the SR 14 Corridor alignment alternatives considered in the 2015 SAA Report. SR 14-3 and SR 14-4 encountered the most schools located within a 1.25-mile radius of the alignment (21). In particular, these alignments passed near Vasquez High School and High Desert Middle School in the community of Acton with an at-grade profile. High Desert Middle School serves a variety of functions for the small, rural community of Acton, and thus, these alignments would result in substantial community impacts. As such, SR 14-3 and SR14-4 were not carried forward. Figure 2-39 in Chapter 2 of the Draft EIR/EIS shows SR 14 corridor alignments, East Corridor alignments (discussed below), and station options carried forward in the 2015 SAA Report.

East Corridor

The 2015 SAA Report also introduced additional alignments that generally follow a second proposed corridor, the East Corridor, through a portion of the San Gabriel Mountains. The East Corridor alignments were introduced to reduce travel time, avoid surface impacts along the SR 14 Corridor, and respond to public comments for consideration of more direct routes between Palmdale and Burbank by way of the ANF, including the SGMNM. East of the community of Acton, these routes would enter a tunnel beneath the ANF, including the SGMNM, emerging at the surface in the northeast San Fernando Valley to share an aboveground corridor with the existing Metrolink Antelope Valley Line. These alignments were developed to use deep tunnels beneath the San Gabriel Mountains to avoid surface impacts within the ANF, including the SGMNM, and the Magic Mountain Wilderness Area. The 2015 SAA Report proposed six new East Corridor alignments: E1a, E1b, E2a, E2b, E3a, and E3b. The E3 alignments were proposed as the easternmost alignments, and the E1 alignments were proposed as the westernmost alignments. The East Corridor alignments would be constructed through the east side of the community of Acton, cross the ANF, including the SGMNM, and enter the northeast San Fernando Valley, eventually sharing the corridor with the existing Metrolink Antelope Valley Line.

Station Options

The 2015 SAA Report identified a Burbank Airport Station as the proposed station alternative within the San Fernando Valley. Station Option A shifted the station location northwest within the existing railroad right-of-way to improve connectivity with the Hollywood Burbank Airport. Station Options B and C were proposed to accommodate the East Corridor alignment alternatives. These Burbank Airport Station Options, along with the previously analyzed Palmdale TC, were carried forward for further evaluation.

Alternatives Considered and Rejected in the Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (2016 SAA Report)

The 2016 Palmdale to Burbank Project Section SAA Report reevaluated all SR 14 Corridor and East Corridor alignment alternatives and station options carried forward from the 2015 SAA Report (see Figure 2-41 in Chapter 2 of the Draft EIR/EIS). The 2016 SAA Report incorporated alignment and station refinements originally presented in the 2015 SAA Report to reduce environmental impacts and improve operational performance and travel time. Furthermore, the SR 14 and East Corridor alignments were further refined to minimize surface encounters with sensitive community and environmental resources by tunneling in a more direct route between Palmdale and Burbank. In coordination with USFS, geotechnical investigations were completed within the ANF, including the SGMNM, to obtain subsurface field data to help evaluate potential environmental impacts (i.e., groundwater, hydrogeology, and surface water resources), design constraints, and construction considerations for the tunnel portions of alignments.

SR 14 Corridor

The 2016 SAA Report evaluated the two SR14 alternatives carried forward in the 2015 SAA Report (SR 14-1 and SR 14-2) and introduced the Refined SR14 Build Alternative. The Authority reviewed the critical environmental issues associated with SR 14-1 and SR 14-2, especially the strong potential for environmental justice effects on communities in the northeast San Fernando Valley (including the city of San Fernando). Furthermore, adhering closely to the SR 14 freeway corridor through this area increased the mileage and travel time between Palmdale and Burbank, particularly relative to the Eastern Corridor alignments that took a more direct route underground. The 2016 SAA Report withdrew SR 14-1 and SR 14-2 and proposed SR14 Refined for further evaluation based on the following key criteria:

- SR14 Refined would tunnel under the ANF, including the SGMNM, resulting in fewer residential and business displacements, fewer impacts on minority or environmental justice communities, fewer noise and vibration effects on residential properties and schools, and fewer visual impacts than SR 14-1 or SR 14-2.

East Corridor

The E1 Refined alternative introduced in the 2016 SAA Report was designed to improve constructability by reducing tunnel grade and depths. Overall travel time would be reduced under E1 Refined in comparison to the SR14 alternatives proposed because of reduced track curvature (which would allow for higher travel speeds). The 2016 SAA Report withdrew E1a and E1b and proposed E1 Refined for further evaluation based on the following key criteria:

- E1 Refined would be approximately 1 mile longer than E1a or E1b. However, near the Arrastre Canyon area, E1 Refined would include an additional 4 to 6 miles of trackway within tunnels compared to the extent of tunnels in E1a and E1b. This would reduce the amount of at-grade or elevated alignment overall. E1 Refined would tunnel beneath the ANF, including the SGMNM, thereby reducing potential surface effects.
- In comparison to the E1a and E1b alignments, E1 Refined would avoid impacts on critical biological habitat of the arroyo toad. The number of miles of elevated and at-grade alignment within a floodplain or within 1 mile of perennial streams or springs would be reduced.
- Less of the E1 Refined alignment would fall within a fire hazard area, and E1 Refined would cross fewer faults in comparison to the E1a and E1b alternatives.

The E2 Refined alternative introduced in the 2016 SAA Report was designed to reduce surface impacts by increasing tunnel length and avoiding the Big Tujunga Wash Mitigation Area.[2] The 2016 SAA Report withdrew E2a and E2b and proposed E2 Refined for further evaluation based on the following key criteria:

- The overall length of E2 Refined would be similar to the length of E2a and E2b. However, an additional 2 miles would be within tunnels near Arrastre Canyon in the E2 Refined alternative, reducing the amount of at-grade or elevated alignment overall. E2 Refined would also tunnel beneath the ANF, including the SGMNM, thereby reducing surface effects, including reduced impacts on critical biological habitat, wetlands, streams, creeks, and canals; it would also have fewer visual impacts due to less aboveground alignment.
- Less of the E1 Refined alignment would fall within a fire hazard area compared to the E2a and E2b alternatives.
- E2 Refined would optimize the Big Tujunga Wash crossing design to avoid crossing over a designated mitigation area within the wash that is owned by the Los Angeles County Flood Control District.
- Although E2 Refined would potentially displace more businesses than E2a and E2b, E2 Refined would potentially displace fewer residences than E2a and E2b.

During the refinement process, the Authority explored possible modifications to improve E3a and E3b. The potential E3 Refined alignment considered by the Authority had the same key design, constructability, and operational issues as the E3a and E3b alternatives. Although the potential E3 Refined alignment would have followed the most direct route of the alternative alignments explored during the refinement process, it would have had the deepest tunnels, the most constrained design, the longest construction schedule, major restrictions during operation, and increased maintenance costs. Therefore, the E3 corridor was not carried forward for further consideration.

[2] The Big Tujunga Wash Mitigation Area was purchased by the Los Angeles County Flood Control District in 1998 to compensate for habitat loss from regional projects. The Mitigation Area is approximately 210 acres and is located in the City of Los Angeles-Sunland area.

Una Lake Avoidance Alternatives (2019)

The Authority has worked continuously with public agency and community stakeholders to incorporate refinements to the project design that further avoid or minimize potential impacts to existing facilities, land uses, environmental resources, and communities. Through these efforts and building on the Alternatives Analysis process and consultation with USACE and USEPA, the Authority explored additional options to avoid or minimize impacts to Una Lake, which is a water of the State and the U.S. As a result of this process, the Authority developed the SR14A, E1A, and E2A Build Alternatives. These were included in the Draft EIR/EIS, and are shown in Figure 2-2 in Chapter 2 of the Draft EIR/EIS. Therefore, the Authority evaluated these Build Alternatives in the Draft EIR/EIS along with the Refined SR 14, E1, and E2 Build Alternatives. As a result, the EIR/EIS evaluates six Build Alternatives. USACE and USEPA concurred on December 17, 2020, and December 16, 2020, respectively, with the range of alternatives recommended in the Checkpoint B Summary Report (Authority 2020) for consideration in the EIR/EIS. A number of alternatives were considered to avoid waters but were determined to not be practicable, as discussed in the Checkpoint B Summary Report.

Summary of Alternatives and Sections Screening Process

Based on the foundational efforts in the 2010 PAA Report, the 2012 SAA Reports, and the 2014 SAA Report, followed by the refinements and new alternatives evaluated in the 2015 SAA Report, the 2016 SAA Report, and the Una Lake Avoidance Alternatives described in the Checkpoint B Summary Report, the alignment and station alternatives proposed within the limits of the Palmdale to Burbank Project Section (first defined in the 2014 SAA Report) carried forward for detailed evaluation in the EIR/EIS and those eliminated from further study are listed below.

Alignment Alternatives

- Alignment ESS—not carried forward
- Aqueduct—not carried forward
- SR14-1—not carried forward
- SR14-2—not carried forward
- SR14-3—not carried forward
- SR14-4—not carried forward
- SR14 East Option—not carried forward
- SR14 West Option—not carried forward
- SR14 East/West Hybrid Option—not carried forward
- SR14 Refined—carried forward as “Refined SR14 Build Alternative”
- SR14A—carried forward
- SR14 East—not carried forward
- SR14 West—not carried forward
- SR 58/Soledad Canyon—not carried forward
- SR 138—not carried forward
- Sand Canyon Preliminary AA Option—not carried forward
- Sand Canyon Metrolink 200 Option—not carried forward
- E1a—not carried forward
- E1b—not carried forward

- E1 Refined—carried forward as “E1 Build Alternative”
- E1A—carried forward
- E2a—not carried forward
- E2b—not carried forward
- E2 Refined—carried forward as “E2 Build Alternative”
- E2A—carried forward
- E3a—not carried forward
- E3b—not carried forward
- E3b—not carried forward

Station Alternatives

- Palmdale TC (termed the “Palmdale Station”)—carried forward
- Palmdale Station Option 1—not carried forward
- Palmdale Station Option 2—not carried forward
- Burbank Airport Station Option A—not carried forward
- Burbank Airport Station Option B—carried forward
- Burbank Airport Station Option C—not carried forward
- San Fernando Valley—not carried forward

Palmdale Station

Palmdale Station elements were analyzed in the Bakersfield to Palmdale Project Section Final EIR/EIS and are included in certain sections of the Draft EIR/EIS for context, for reference, and to provide additional information. The Palmdale Station concept was first evaluated in the 2014 SAA Report. The Palmdale Station was approved as part of the Bakersfield to Palmdale Project Section in August 2021.

Burbank Airport Station

The Burbank Airport Station was evaluated as part of the Burbank to Los Angeles Project Section Final EIR/EIS and approved in January 2022 as part of the Burbank to Los Angeles Project Section. Information about the Burbank Airport Station is included in the Draft EIR/EIS for context and reference only.

The Palmdale to Burbank Project Section Draft EIR/EIS considered several Burbank Airport Station options, which were analyzed in the 2016 SAA Report. The 2016 SAA Report evaluated three station options in Burbank: Option A, which featured mostly at-grade and above-grade facilities within the city of Burbank and the Sun Valley community; Option B, which featured both at-grade and underground facilities within the city of Burbank; and Option C, which featured both at-grade and underground facilities aligned in a north-south orientation parallel to North Hollywood Way, within the city of Burbank. Upon further evaluation of the three Burbank Airport Station options, the 2016 Palmdale to Burbank SAA carried forward Option A and Option B due to the corresponding Palmdale to Burbank alignment alternatives carried forward, while Option C was withdrawn, as the associated Palmdale to Burbank alignment alternative was also withdrawn in this SAA. The engineering within the Palmdale to Burbank Project Section was advanced sufficiently to make it practical for the proposed Palmdale to Burbank alignment alternatives to connect to either Burbank Airport Station Platform Configuration Option A or Option B.

In 2018, the Authority withdrew Option A based on the analysis done in the Burbank Airport Station Option Screening Report (Authority 2018), primarily due to community and potential environmental justice concerns. Option A had the greatest amount of residential and business displacements and

noise/vibration and visual impacts, and it also had the least viable intermodal connections. Station Option B was carried forward as part of the HSR Build Alternatives, and then further refined to minimize impacts (see Figure 2-43 in Chapter 2 of the Draft EIR/EIS). Option B Refined was then designed to locate the platforms closer to the future location of the Hollywood Burbank Airport relocated terminal, reduce the station depth, improve constructability, reduce commercial and industrial property takes, and eliminate the tunnel length underneath residential neighborhoods to the south.

Refer to Section 2.4 in Chapter 2 of the Draft EIR/EIS for additional information regarding the potential alternatives that were evaluated against the HSR system screening criteria contained in the Authority's Technical Memorandum for the *Alternatives Analysis Methods for Project-Level EIR/EIS* (Authority 2011) (such as travel time, route length, intermodal connections, capital costs, operating costs, and maintenance costs and other criteria) and for the reasons for selecting the alternatives included in the Draft EIR/EIS.

Identification of the Preferred Alternative

As discussed in Section 2.4.1.2 in Chapter 2 of the Draft EIR/EIS, an EIR/EIS is required to analyze the environmental impacts of a range of reasonable alternatives (California Code of Regulations [Cal. Code Regs.] Title 14, §15126.6; Code of Federal Regulations [C.F.R.] Title 40, Part 1502.14[a]).

As discussed in Section 8.4 in Chapter 8 of the Draft EIR/EIS, the Authority identified the SR14A Build Alternative as the Preferred Alternative in 2020 because it best balanced benefits and impacts, by having the:

- Best constructability and lowest risk related to tunnels, hydrogeologic, and geologic conditions;
- Lowest risk of unexpected conditions or circumstances that could impact the cost to build the project or the schedule to complete it;
- Shortest tunnel length within the ANF and the SGMNM;
- Lowest risk to impacting surface or groundwater and wildlife within the ANF; and
- Avoidance of impacts to the Pacific Crest Trail.

The 2010 PAA presented and evaluated the initial alignment alternatives using established criteria. As discussed above, two subsequent SAA Reports, prepared in 2011 and 2012, further developed the alignment alternatives and station options based on stakeholder feedback. The 2014 SAA accounts for the alignment alternatives and station options, including the Palmdale Transit Center Station and the Burbank Airport Station locations, and discusses evaluating Palmdale to Burbank and Burbank to Los Angeles as two separate project sections. The 2016 Alternatives Analysis included a 2015 Alternatives Screening Memorandum that consolidated subsection options into six Build Alternatives. For further discussion regarding the identification of the Preferred Alternative for the Palmdale to Burbank Project Section, as well as figures depicting each of the six Build Alternative alignments, please refer to Chapter 8, Preferred Alternative and Station Sites, of the Draft EIR/EIS.

No Project Alternative

Under the No Project Alternative, it is assumed that the Palmdale to Burbank Project Section would not be constructed. The No Project Alternative considers the impacts of conditions forecast by current plans for land use and transportation in the vicinity of the Palmdale to Burbank Project Section and is presented to disclose what would happen if the proposed project is not built (see CEQA Guidelines Section 15126.6[e][1]), and NEPA regulation 40 C.F.R. 1502.14(d). The No Project Alternative is explained more in Section 2.5.1 in Chapter 2 of the Draft EIR/EIS.

17.2.2 PB-Response-ALT-2: Unique Tunnel Elements – Windows, Adits, Tunnel Boring Machines, etc.

Commenters requested information about elements associated with tunneling, such as adits, intermediate windows, tunnel boring machines (TBMs), tunnel portals, and tunnel access roads. A discussion of each tunnel element is provided below.

Adits

Adits, described in more detail in Chapter 2, Section 2.3.5.1 of the Draft EIR/EIS, are intermediate access shafts to facilitate construction of bored tunnels. An adit can serve as a TBM entry or exit point and can enable the use of multiple TBMs to shorten construction time. Adits may also facilitate construction of fault chambers and other similar design requirements that increase safety for HSR operations and maintenance in seismically active areas. After construction is completed, a small permanent structure and associated power facilities for emergency egress, maintenance, and ventilation equipment could be installed at selected adit locations.

Several potential adit location options have been identified for each Build Alternative. These sites were selected based on engineering and feasibility considerations, including the presence of existing access roads, location of known faults and fault traces, available space for construction staging, opportunities to shorten the construction duration, and potential use as a starting point for conventional construction methods (i.e., if the adit is in a fault zone, it could be more convenient to build a portion of the tunnel with mined methods, because this technique allows for better and easier execution of ground treatments than other methods). Specific adit locations cannot be chosen at this time because ventilation requirements have yet to be established for the tunnel alternatives. Potential adit locations for each of the six Build Alternatives are provided in Section 2.5.3 of the Draft EIR/EIS.

Intermediate Windows

An intermediate window is a vertical shaft connecting to an underground construction area that comprises an elevator and gantry cranes to provide access, water, power, ventilation, and other support during construction. After construction is complete, a small structure for permanent access, and possibly ventilation equipment, would remain at the surface.

Similar to the approach for adits, several intermediate window locations are identified for each Build Alternative, as shown in Section 2.5.3 in Chapter 2 of the Draft EIR/EIS. In some instances, an intermediate window location cannot yet be identified in the EIR/EIS because the level of tunnel design needed to determine ventilation requirements has not been completed; therefore, the most suitable locations are included in the footprint for evaluation in the EIR/EIS. Refer to Chapter 2, Alternatives, Figure 2-21, in Section 2.3.5.2 of the Draft EIR/EIS for the design of a typical intermediate window.

Tunnel Boring Machines

Use of a TBM allows for rapid advance rates, significantly faster than the rates achieved by conventional (mined) tunneling under similar ground conditions. The TBM excavation procedure is generally appropriate in the following cases:

- Long tunnels (more than 3 miles long)
- Tunnels with constant cross section
- Tunnels with good accessibility to construction staging areas close to tunnel portals or temporary adits or shafts

Using these criteria, TBM use is the most suitable excavation method for the long-bored tunnels required under the ANF, the areas near Acton, and in the foothills of the San Gabriel Mountains.

Tunnel portals would be constructed prior to tunnel excavation, providing access points for TBM and mining equipment to launch into the tunnel shafts. Adits and intermediate windows are proposed in various locations to provide additional access points to assemble, launch, and disassemble TBM equipment. It is assumed that TBMs would run 24 hours a day for 7 days a week because the TBM can jam if stopped during use.

Tunnel Portals

Tunnel portals provide a transition from tunneled sections to cut, at-grade, or elevated sections. During construction, tunnel portals are the primary access to the tunnels. During operation and in the permanent tunnel configuration, facilities and infrastructure elements would be located at the portals to support HSR tunnel operations, including all provisions needed to meet first responder, fire and life safety, and ventilation requirements. Portals would be constructed prior to tunnel excavation, providing an access point for TBM and mining equipment to launch into the tunnel shafts. Excavation of the tunnel portals would create spoils that would require off-hauling to re-use or disposal sites. High-Speed Train Tunnel Portal Facilities, Technical Memorandum 2.4.6 (Authority 2010a, as cited in Section 3.8, Hydrology and Water Resources, of the Draft EIR/EIS) describes the permanent structures associated with the tunnel portals for the Palmdale to Burbank Project Section, including a representative layout of these elements. It also provides general guidance to determine which elements of the portal infrastructure are required; the principal factors influencing these decisions are tunnel length, accessibility, and environmental impacts. Section 2.3.4.6 in Chapter 2 of the Draft EIR/EIS provides a list and description of major infrastructure elements incorporated in tunnel portal design, and Section 2.5.3 describes the proposed tunnel portals for each of the six Build Alternatives.

Tunnel Access Roads

Access roads to provide emergency and maintenance access from public roadways to HSR facilities would be required. Access roads would be constructed at portal facilities as listed for the six Build Alternatives in Section 2.5.3 in Chapter 2 of the Draft EIR/EIS. Access roads within the HSR right-of-way would be paved, and they would be restricted to use by authorized HSR personnel and emergency responders, with a minimum width of 22 feet to allow for ease of access for authorized users. Use of access roads would only be unrestricted for the portion between public roads and the HSR right-of-way. All public and privately owned parcels near the HSR alignment would have roadway access or would be acquired if access to the parcel cannot reasonably be otherwise provided. Access roads not within HSR right-of-way would require obtaining the necessary right-of-way or a permanent-access easement across private and managed lands. Access roads to portals are intended for both construction access and for tunnel maintenance and emergency access during operation. While Section 2.5.3 generally describes where access road would be around tunnel portals, precise access road locations cannot yet be chosen because the level of design needed to determine locations for auxiliary features has not been completed. However, as also noted in Section 2.3.5, “Each of the six Build Alternative footprints includes ancillary features such as equipment storage areas, temporary and permanent access roads, TPSS, switching stations and PSs, train signaling and communication facilities, temporary and permanent access roads, grade separations (overcrossings and undercrossings), intrusion protection barriers, and wildlife crossing structures.”

As described in Section 3.1.4.4, Methods for Evaluating Impacts, all of the above facilities and features within the Build Alternatives footprints are included in the impacts analysis.

17.3 Transportation

17.3.1 PB-Response-TRA-1: Temporary Traffic Associated with Construction

Commenters expressed concern about temporary traffic impacts as a result of road closures, detours, and the duration of construction activities. Commenters expressed concern about temporary disruptions to the surrounding transportation network and possible damage to elements of the roadway system due to construction activities.

Temporary traffic impacts related to road closures, detours, and the length of construction of the California HSR System are addressed in Section 3.2.6.3 of the Draft EIR/EIS under Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit. A summary of major road impacts that have been identified by public comments follows.

Road Closures and Detours during Construction

Construction of the California HSR System could require temporary lane or road closures, underground utility work, or construction-related trips that could interfere with vehicles, pedestrians, bicyclists, transit

routes, and local access throughout the Palmdale to Burbank Project Section. Construction vehicles and construction easements in Pacoima between Montague Street and the Hansen Dam Spillway would be required for approximately 39 months. Grade separations and roadway modifications in Sun Valley along Sheldon Street, Tuxford Street, Penrose Street, Olinda Street, and Sunland Boulevard would require construction vehicles and easements and are expected to last six years. The realignment of San Fernando Boulevard, associated with the E2 and E2A Build Alternative alignments, would take approximately 60 months. As required by TR-IAMF#7 (Construction Truck Routes), all construction truck traffic would use designated truck routes within the Palmdale to Burbank Project Section region. A Construction Transportation Plan (CTP) (TR-IAMF#2 [Construction Transportation Plan]) will outline transportation detours and plans to accommodate emergency service routes. The CTP will also address construction employee arrival and departure schedules, employee parking locations, and temporary road closures, if any.

The Authority would minimize traffic impacts during construction by requiring trips generated by construction workers to occur outside of the peak hours for freeway and street traffic (TR-IAMF#6 [Restriction on Construction Hours]). The movement of heavy construction equipment such as cranes, bulldozers, and dump trucks to and from the site would generally occur during off-peak hours on designated truck routes (TR-IAMF#6 [Restriction on Construction Hours] and TR-IAMF#7 [Construction Truck Routes]). The contractor will be responsible for identifying adequate off-street parking for construction-related vehicles and, if necessary, designating remote parking areas for these workers, with shuttles to bring them to and from the construction area if the remote parking areas are distant from the project site (TR-IAMF#3 [Off-Street Parking for Construction-Related Vehicles).

The contractor will prepare and implement specific Construction Management Plans (CMPs) to ensure safe transit, pedestrian, and bicycle access during the construction period (TR-IAMF#4 [Maintenance of Pedestrian Access], TR-IAMF#5 [Maintenance of Bicycle Access], TR IAMF#11 [Maintenance of Transit Access], and TR-IAMF#12 [Pedestrian and Bicycle Safety]). Several IAMFs are incorporated into the California HSR System design to help avoid and minimize temporary impacts on circulation and access during construction. The full text of the IAMFs that are applicable to the Palmdale to Burbank Project Section is provided in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features.

Construction of the grade separations may require temporary closures of parking areas, roadway travel lanes, transit routes, pedestrian facilities, bicycle lanes, and paths. Temporary construction impacts would also occur at-grade crossings where permanent new grade separations would not be built, but where existing structures would be modified. Construction of modified undercrossings at these locations would require temporary long-term lane or roadway closures during pier foundation, column, and pier cap construction or roadway closures during construction of support segments and decking. Depending on the duration of these closure operations, drivers traveling through the construction area would experience delays when partial lane capacity is provided. As discussed in Section 3.2.7, Mitigation Measures of the Draft EIR/EIS, TR-MM#12 (Prepare a Transportation Construction Management Plan) requires the development of a transportation CMP to address circulation connections for vehicles, bicycles, pedestrians, and buses during construction duration. Typical CMP measures include the following facets related to temporary construction closures to facilitate the flow of traffic in and around the construction zone:

- Schedule a majority of construction-related travel during off-peak hours
- Relocate spoils collection areas and access to minimize delays during peak hours
- Develop detour routes to facilitate traffic movements through construction zones without substantially increasing cut-through traffic in adjacent residential neighborhoods
- Temporarily restripe roadways to maximize vehicular capacity at locations affected by construction closures, where feasible
- Temporarily remove on-street parking to maximize vehicular capacity, transit capacity, and bicycle circulation at locations affected by construction closures, where feasible
- Station traffic control officers at major intersections to minimize delays during peak hours, where feasible

- Develop alternative routes to reduce the number of trucks on sensitive facilities without substantially increasing cut-through traffic in adjacent residential neighborhoods
- Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures
- Develop and implement a program with business owners to minimize impacts on businesses during construction activity

Construction activities could also lead to temporary disruption of transportation system operations and possible damage to elements of the roadway system such as pavement and bridges. Upon completion of construction, parking areas, roadway lanes, pedestrian facilities, signage, and bicycle lanes would be restored to a condition equivalent to or better than their pre-project condition (TR-IAMF#1 [Protection of Public Roadways During Construction]).

Impacts on emergency services resulting from construction of the Palmdale to Burbank Project Section are discussed in more detail in Section 3.11.6.2 of the Draft EIR/EIS. The Authority will adhere to SS-IAMF#1 (Construction Safety Transportation Management Plan) that will incorporate emergency vehicle access procedures. These procedures would avoid impacts on the accessibility of emergency service providers, response times, or other emergency service performance objectives through coordination with local jurisdictions to maintain emergency vehicle access and by establishing detour provisions for temporary road closures and routes for construction traffic. The Construction Safety Transportation Management Plan would include provisions to maintain 24-hour access for emergency vehicles. In addition, the plan will describe the contractor's coordination efforts with local jurisdictions for maintaining emergency vehicle access, which would ensure that the California HSR System does not affect emergency vehicle access during the construction period. Implementation of the following IAMFs would avoid or minimize potential impacts on access and emergency access associated with construction activities:

- SS-IAMF#1: Construction Safety Transportation Management Plan (CSTMP)
- SS-IAMF#2: Safety and Security Management Plan
- TR-IAMF#2: Construction Transportation Plan
- HMW-IAMF#8: Permit Conditions
- PUE-IAMF#3: Public Notifications

Impacts from Detour Traffic

The Authority's policy is to provide roadway overpasses approximately every 2 miles during construction, resulting in no more than 1 mile of out-of-direction travel for vehicles, including school buses, to cross the HSR tracks. As presented in Section 3.2.6 of the Draft EIR/EIS, construction of the project would degrade LOS to unacceptable levels at some roadway segments and intersections. TR-IAMF#2 (Construction Transportation Plan) requires a CTP be developed that will outline transportation detours, plans to accommodate emergency service routes, and outreach activities to manage expectations and traffic constraints, among other items. It should be noted that LOS is analyzed in the EIR/EIS for NEPA purposes; however, because of California's shift in transportation impact analysis from a focus on automobile delay (most commonly analyzed in terms of level-of-service or LOS), to a focus on vehicle miles travelled (VMT), the CEQA analysis focuses on VMT. This shift is intended to promote the reduction of GHG emissions from transportation, the development of multimodal transportation networks, and a diversity of land uses.

Mitigation measures for road closure and property access effects are identified in Section 3.2.7 of the Draft EIR/EIS. TR-MM#1 (Add Lanes to the Segment), TR-MM#2 (Modify Signal Timing), TR-MM#3 (Modify Signal Phasing), TR-MM#4 (Provide a Traffic Signal), TR-MM#5 (Restripe Intersection), TR-MM#6 (Widen Intersection), TR-MM#7 (Add Exclusive Turn Lanes), and TR-MM#8 (Reconfigure Intersection) would improve LOS at roadways and intersections during construction by adding additional travel lanes, modifying signal timing, and reconfiguring intersections, among other measures.

Duration of Construction

Circulation (including emergency access) in the vicinity of the construction activities or the construction zone as well as streets crossing the existing rail corridor may be affected during construction of the California HSR System. The California HSR System would be built at varying locations during different time periods over an anticipated 8 to 9.25-year period; therefore, the access restrictions and other circulation impacts would occur within the project vicinity over that period. Additionally, emergency vehicle access for police and fire protection services would be maintained at all times (by ensuring shoulder areas are clear and remain open for emergency access).

Impacts to Bicycles and Pedestrians

Given the anticipated operating speeds of the HSR system, the HSR alignment for the Palmdale to Burbank Project Section would be entirely grade-separated, meaning that the HSR system would not interrupt or interface with other modes of transport, including vehicle, transit, bicycle, and pedestrian. As a result, the potential hazards of at-grade crossings would be eliminated. Because the entire project would be fully grade-separated, motor vehicles, bicycles, and pedestrians would be prevented from crossing the tracks to avoid potential collisions with trains. During construction, implementation of a CSTMP (SS-IAMF#1 [Construction Safety Transportation Management Plan]) would minimize exposure of motor vehicle drivers, pedestrians, and bicyclists to new traffic hazards resulting from temporary road closures, detours, and construction activities. Effective coordination with local jurisdictions, implementation of emergency vehicle access procedures and a traffic control plan, staggered road closures, and vehicle and bicycle traffic and pedestrian safety project features would minimize impacts on the safety of motor vehicle drivers, pedestrians, and bicyclists.

17.3.2 PB-Response-TRA-2: Impacts of Tunnel Spoils Off-Haul/Deposition

Commenters expressed concerns regarding impacts to the transportation network associated with tunnel spoils off-haul/deposition. Commenters requested more information regarding the IAMFs set forth to minimize impacts on roadway segments and intersections during spoils hauling, and impacts associated with the increase in traffic on the roadway network due to construction generated spoil haul trips.

As discussed in Section 3.2.6.3 of the Draft EIR/EIS, spoils hauling associated with the six Build Alternatives would increase truck traffic at roadway segments and intersections throughout the project area during construction. Tables 3.2-20 through 3.2-25 in Section 3.2, Transportation, of the Draft EIR/EIS summarize the locations where spoils hauling would degrade level of service (LOS) at affected roadway segments and intersections to unacceptable levels. While automobile delay no longer constitutes a significant environmental impact under CEQA, this effect would be considered an adverse effect under NEPA. TR-IAMF#1 (Protection of Public Roadways during Construction), TR-IAMF#2 (Construction Transportation Plan), TR-IAMF#6 (Restriction on Construction Hours), TR-IAMF#7 (Construction Truck Routes), and TR-IAMF#8 (Construction during Special Events), discussed in more detail in Section 3.2.4.2 of the Draft EIR/EIS, will minimize impacts on roadway segments and intersections during spoils hauling. Implementation of Mitigation Measure TR-MM#12 (Prepare a Transportation Construction Management Plan) would further reduce spoils hauling impacts by requiring the Authority to prepare a Transportation Construction Management Plan to better maintain the flow of traffic and buses in and around construction zones associated with the project. However, even with incorporation of these IAMFs and mitigation measure, several affected roadway segments and intersections may still operate at unacceptable LOS.

Spoils haul trips added to the roadway network would increase the length of freeway ramp queues depending on location and Build Alternative; however, increased traffic volumes would not exceed storage capacity at off-ramps. As shown in Tables 3.2-26, 3.2-27, and 3.2-28 of the Draft EIR/EIS, all study freeway ramp locations within the spoils hauling RSA for the six Build Alternatives have adequate storage during both peak hours for northbound and southbound haul routes.

Spoils hauling would affect LOS on the freeway segments listed in Table 3.2-29 through Table 3.2-31 in Section 3.2, Transportation, of the Draft EIR/EIS. These freeway segments currently operate at unacceptable LOS levels under existing conditions. Along affected freeway segments, the addition of

spoils-hauling trucks would represent a relatively small increase in the number of vehicles (i.e., the volume-to-capacity ratios would range from 0.027 to 0.051). Therefore, the increase in spoils-hauling trucks associated with the project would be within the typical daily variation in traffic volumes along affected freeway segments. As discussed under Impact TRA#4, this increase in trucks would not substantially affect the overall vehicle mix. As a result, the potential for new safety impacts would be minimal. TR-IAMF#2 (Construction Transportation Plan), TR-IAMF#6 (Restriction on Construction Hours), TR-IAMF#7 (Construction Truck Routes), and TR-MM#12 (Prepare a Transportation Construction Management Plan) would further reduce impacts associated with haul route traffic by preparing a transportation plan for construction, restricting construction hours, and establishing appropriate truck routes. However, impacts associated with spoils hauling such as temporary increases in automobile delay and travel times along affected freeway segments may still occur during construction.

As described above, spoils hauling associated with the six Build Alternatives would increase truck traffic at roadway segments and intersections throughout the project area, which could result in travel delays where transit services overlap spoils hauling routes. Such transit delays could result in conflicts with the goals of regional and local transportation plans described in Section 3.2.2.3 of the Draft EIR/EIS. However, spoils hauling is a limited subset of the construction period, would occur for a maximum of 6.4 years of the 8- to 9.25-year construction period, depending on location and Build Alternative, and would not permanently interfere with the transit system. Truck traffic induced by spoils hauling could adversely affect the efficiency of Antelope Valley Transit Authority Local Transit Service routes and several of the Los Angeles County Beach Bus summer schedule routes. Spoils hauling could also interfere with transit operations of Metro Route 169 and the Metrolink Antelope Valley Line, which operate on San Fernando Road in the Burbank Subsection (for a description of the Central Subsection and Burbank Subsection for each of the six Build Alternatives, please refer to Section 2.5.3 of the Draft EIR/EIS). Spoils hauling during peak hours could affect these transit services by slowing down service such that schedules during peak periods may not be able to be maintained. However, the transit operations would not need to be rerouted to accommodate spoils-hauling trucks. Spoils hauling near transit routes in the Burbank Subsection would occur for a maximum of 3.2 years, depending on location (Authority 2019, as cited in Section 3.2, Transportation, of the Draft EIR/EIS). TR-IAMF#2 (Construction Transportation Plan), TR-IAMF#6 (Restriction on Construction Hours), TR-IAMF#7 (Construction Truck Routes), TR-IAMF#8 (Construction during Special Events), and TR-IAMF#11 (Maintenance of Transit Access) will reduce impacts associated with haul route traffic. Further, mitigation measure TR-MM#12 (Prepare a Transportation Construction Management Plan) (discussed in Section 3.2.6.3, Impact TRA#1 and Impact TRA#6) would be effective in reducing impacts associated with haul route traffic as it would relocate spoils collection areas and access to minimize delays during peak hours. These traffic IAMFs may not completely avoid impacts on public transit services, but any impacts on transit services resulting from spoils hauling would be minimal and temporary, and would not permanently conflict with regional and local transit plans.

Spoils hauling associated with the six Build Alternatives would not result in permanent modifications to the circulation network that would affect nonmotorized modes. Spoils hauling could increase truck traffic at roadway segments and intersections, resulting in travel delay at freeway ramps and freeway segments to motorized transportation modes. Additionally, increased truck traffic from spoils hauling along roadway segments and at intersections would cause travel delays for pedestrians and bicyclists to and from pedestrian and bicycle facilities during the construction period. The addition of spoils-hauling trucks during peak hours could cause congestion that would block or slow bicycle and pedestrian movement. The addition of large trucks to the roadway network could also create safety concerns for bicyclists on shared-lane and on-street bike lane facilities. However, the project would include several IAMFs specifically intended to reduce these construction period impacts. 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#11 (Maintenance of Transit Access), and TR-IAMF#12 (Pedestrian and Bicycle Safety) will minimize hazardous conditions that would substantially interfere with pedestrian or bicycle movements or access during spoils hauling. These IAMFs, as described below, would minimize impacts on non-motorized modes during spoils hauling:

- TR-IAMF#4: Maintenance of Pedestrian Access—TR-IAMF#4 will require the contractor to prepare and implement specific CMPs to address maintenance of pedestrian access during the construction period.

- TR-IAMF#5: Maintenance of Bicycle Access—TR-IAMF#5 will require the contractor to prepare and implement specific CMPs to address maintenance of bicycle access during the construction period.
- TR-IAMF#6: Restriction on Construction Hours—TR-IAMF#6 will limit 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-IAMF#7: Construction Truck Routes—TR-IAMF#7 will require the contractor to deliver construction-related equipment and materials on the appropriate truck routes, avoiding impacts on streets not designed to accommodate truck traffic.
- TR-IAMF#11: Maintenance of Transit Access— TR-IAMF#11 will require the contractor to prepare specific construction management plans to address maintenance of transit access during the construction period.
- TR-IAMF#12: Pedestrian and Bicycle Safety— TR-IAMF#12 will require the contractor to prepare a technical memorandum describing how pedestrian and bicycle accessibility will be provided and supported across the HSR corridor.

In addition, as part of the Final EIR/EIS, the total volume of spoils that would be generated by construction of the Build Alternatives has been refined and the total amount of spoils would be reduced. The reduction in spoils generation would result in less activity at the study intersections, roadway segments, freeway on-ramps, and freeway segments, as a result of fewer construction spoils hauling trucks per hour, fewer hours per day when hauling would occur, and shorter construction durations. In addition, this reduction would not change any of the haul routes assumed in the analysis. Overall, there would be no change in effects disclosed in the Draft EIR/EIS analysis but the reduction in the spoils quantity would have a general result of reducing the severity of the effects associated with spoils hauling.

17.3.3 PB-Response-TRA-3: Construction Traffic/Truck Impacts in the San Fernando Valley

Commenters expressed concern about construction traffic and truck impacts in the San Fernando Valley. Commenters requested more information regarding the IAMFs and mitigation measures set forth to reduce impacts from construction-generated traffic associated with spoils hauling and other construction activities.

The San Fernando Valley is located at the southern end of the Palmdale to Burbank Project Section region and consists of several dense urban areas (Glendale, Burbank, San Fernando, Panorama City, North Hollywood, and Van Nuys).

Given their location within Southern California, roadways and freeways within these cities and neighborhoods in the San Fernando Valley often carry heavy volumes of traffic. As discussed in Section 3.2.6.3, in Section 3.2 of the Draft EIR/EIS, spoils hauling would degrade LOS and volume / capacity (V/C) ratios to unacceptable levels at the roadway segments listed in Table 3.2-20 through Table 3.2-22 in Section 3.2 of the Draft EIR/EIS, depending on location and Build Alternative. Additionally, spoils hauling would degrade LOS and vehicle delay to unacceptable levels at the intersections listed in Table 3.2-23 through Table 3.2-25. While automobile delay no longer constitutes a significant environmental impact under CEQA, this effect would be considered an adverse impact under NEPA. TR-IAMF#1 (Protection of Public Roadways during Construction), TR-IAMF#2 (Construction Transportation Plan), TR-IAMF#6 (Restriction on Construction Hours), TR-IAMF#7 (Construction Truck Route), in addition to TR-MM#12 (Prepare a Transportation Construction Management Plan), which requires the development of a transportation Construction Management Plan (CMP) to address circulation and connections for modes of travel during the construction duration, would reduce construction-related spoils hauling traffic effects during peak hours, but there is still a possibility that these measures would not achieve adequate LOS, V/C ratios, or vehicle delay at affected roadway segments and intersections.

The Build Alternatives Existing (2015) Plus Construction Conditions would degrade LOS and V/C ratios to unacceptable levels at the roadway segments listed in Table 3.2-32 through Table 3.2-34 in the Draft EIR/EIS. Mitigation Measure TR-MM#1 (Add Lanes to the Segment) (described in Section 3.2.7 of the Draft EIR/EIS) would add travel lanes to affected roadway segments, thereby increasing capacity and

improving roadway segment operations to an adequate LOS. The Build Alternative Existing (2015) Plus Construction Conditions would degrade LOS and automobile delay to unacceptable levels at the intersections listed in Table 3.2-35 through Table 3.2-37. Mitigation Measures TR-MM#2 (Modify Signal Timing), TR-MM#3 (Modify Signal Phasing), TR-MM#4 (Provide a Traffic Signal), TR-MM#5 (Restripe Intersection), TR-MM#6 (Widen Intersection), and TR-MM#8 (Reconfigure Intersection) (discussed in Section 3.2.7 of the Draft EIR/EIS) would reduce this adverse effect, improving intersection operations during construction by modifying signal timing and phasing and reconfiguring intersections.

In addition, as part of the Final EIR/EIS, the total volume of spoils that would be generated by construction of the Build Alternatives has been refined and the total amount of spoils would be reduced. In addition, the disposal locations of Class I/Class II Hazardous/Designated Waste facilities has been identified (Buttonwillow, California). Overall, there would be no change in effects disclosed in the Draft EIR/EIS analysis with respect to construction spoils hauling, but the reduction in the quantity of spoils materials (including hazardous materials) would have a general result of reducing the severity of the effects associated with spoils hauling. In addition, the location of the disposal sites near Buttonwillow, California, would not affect the routing of trucks, as the technical analysis conducted for the Draft EIR/EIS already assumed construction spoils haul trucks traveling along I-5 to the north of the Project.

17.3.4 PB-Response-TRA-4: VMT Analysis

Commenters requested a detailed vehicle miles traveled (VMT) analysis. Commenters requested more information about the project's impact on VMT.

The VMT impact analysis is presented under Impact TRA#19 in Section 3.2.6.3 of the Draft EIR/EIS. As described in the analysis, both Phase 1 of the California HSR System and the Palmdale to Burbank Project Section Build Alternatives would provide benefits to the regional transportation system by reducing vehicle trips on the freeways through the diversion of intercity trips from road trips to HSR as compared to the No Project Alternative. Total VMT in Los Angeles County would be reduced compared with baseline conditions, with the California HSR System in operation. VMT would be reduced with the commencement of HSR operations, and VMT reductions would be expected to continue with each year of operation. Table 3.2-40 through Table 3.2-42 in Section 3.2 of the Draft EIR/EIS show the reductions in VMT associated with both Phase 1 of the California HSR System and the Palmdale to Burbank Project Section Build Alternatives. As shown in Table 3.2-42, implementation of the Palmdale to Burbank Project Section Build Alternatives would result in a net annual reduction in regional VMT ranging from more than 1,937 million to more than 2,670 million miles in 2040, resulting in a beneficial impact on VMT. Please refer to Appendix 3.2-A, Vehicle Miles Traveled Methodology, for more information on VMT analysis.

As discussed throughout Section 3.2, Transportation, of the Draft EIR/EIS, the Build Alternatives would generate vehicle trips during construction, including spoils hauling, which could result in a relatively minor increase in VMT during construction. These trips would be intermittent and temporary, and would cease when construction activities are completed. Moreover, as discussed in Section 3.2.4.2 in Section 3.2, Transportation of the Draft EIR/EIS, TR-IAMF#2 (Construction Transportation Plan) requires the preparation of a Construction Management Plan (CMP) for the purpose of minimizing the impact of construction and construction traffic. An element of this CMP could be the encouragement of rideshare for construction workers. This would likely be most effective in areas where there would be a substantial concentration of workers, such as at the tunnel portals. In addition, the CMP could encourage alternative modes of travel, such as walking, biking, and taking transit, where feasible, which could result in reduced VMT during construction. Even with construction related VMT, implementation of the Palmdale to Burbank Project Section Build Alternatives would result in a net annual reduction in regional VMT and would provide a beneficial impact on VMT.

The Draft EIR/EIS analysis includes both roadway LOS per Federal Railroad Administration, Procedures for Considering Environmental Impacts, section 13(n)(13), 64 Fed. Reg. 28545, 28556 (May 26, 1999) (NEPA) and VMT metrics per CEQA Guidelines Section 15064.3. Specific construction-related traffic detours were evaluated for the construction period using the LOS metrics. The VMT metric considers the Project Section's reduction in VMT as a result of diversion of regional trips and airline flights, as well as the Project Section's contribution to statewide VMT reduction. VMT analyses consider regional and statewide reductions, while LOS is location-specific and still required for NEPA analysis to characterize

the transportation setting and identify consequences of the project action and determine the significance of the action as a whole.

17.3.5 PB-Response-TRA-5: Connection to Existing Transportation Infrastructure

Commenters expressed concern about how the HSR would connect to local transit modes during operation, including connections to Metrolink and the Hollywood Burbank Airport. Commenters also requested more information about paratransit services for people with disabilities. Additionally, commenters expressed concern about the existing transportation facilities' capacity to accommodate the potential increase in transit ridership during project operation.

The Authority's goals are to support HSR ridership by promoting, in partnership with local agencies, transit-oriented development (TOD) around HSR stations and the expansion of multimodal access to the California HSR System; this includes the expansion of local transit to bring riders to HSR stations. As discussed in Section 2.6.3 in Chapter 2 of the Draft EIR/EIS, research suggests that the percentage of transit passengers arriving at transit stations by car and needing to park decreases as land use development and population around stations increase.

As discussed in Section 2.3.3.2, in Chapter 2 of the Draft EIR/EIS, station sites in Palmdale and Burbank provide safe and efficient access for pedestrians, bicycles, transit, and personal vehicles to and from the station. Pick-up and drop-off zones offer direct and convenient access for taxis, ride hailing/sharing services, shuttles, transit, and private and commercial vehicles. Within the transportation resource study area (RSA), several local and regional transit agencies provide services, including bus and rail, as described in Section 3.2.5 of the Draft EIR/EIS. The following transit providers connect the Palmdale and Burbank Airport station areas to the regional transit network. A discussion of connectivity from and the list of regional transit providers that will provide connection to the Palmdale and Burbank Airport station areas, respectively, is provided below.

Palmdale

The existing Palmdale Transit Station is a multimodal transportation center that serves as a Metrolink rail station, a local bus hub, a commuter bus hub in the City of Palmdale, and a potential connection with the proposed Brightline West HSR service to Las Vegas via the future High Desert Corridor. The Palmdale HSR Station will enhance 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 (Authority 2021). A separate proposed project, the High Desert Corridor, would provide HSR service between Victorville and the California HSR System at Palmdale. 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). Pedestrian access is currently provided on roads adjacent to the existing Palmdale Transit Station; however, as part of the California HSR System, LU-IAMF#1 (HSR Station Area Development: General Principles and Guidelines) requires the Authority coordinate with local agencies to develop facilities that enhance joint development opportunities at or near stations, and support a comprehensive and extensive local transit and shuttle system, bicycle and pedestrian paths, and related amenities that can serve the local communities as well as provide access to and egress from HSR stations. Further, as shown on Figure 2-52 of the Bakersfield to Palmdale Project Section Final EIR/EIS, the Palmdale Station will include bicycle improvements in and around the station (page 2-83).

As noted in the Palmdale Transit Area Specific Plan (Page 6), the Palmdale Station will provide connections to Metrolink, Greyhound, Amtrak Thruway, and the Antelope Valley Transit Authority buses, and will serve as the main transportation hub in Palmdale. Rail and bus services currently serving the Palmdale Transportation Center area include, but are not limited to, the following:

- Metrolink—Metrolink offers a large network of commuter rail services between Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties, providing intercity rail service along 7 lines and to 61 stations covering over 538 route miles. All lines originate from or end at Los Angeles Union Station. The Antelope Valley Metrolink Line serves the Palmdale Station area.

- Greyhound Bus—Greyhound Bus service serves more than 3,800 stops nationwide, including one at the Palmdale Transportation Center. Greyhound provides one daily trip between Palmdale and Los Angeles. Greyhound services many stations in the Los Angeles metropolitan area, including downtown Los Angeles, North Hollywood, El Monte, and San Fernando.
- Antelope Valley Transit Authority (AVTA), Local and Regional—AVTA operates local and regional transit in the Antelope Valley/Palmdale area. AVTA operates a network of 13 local transit routes, four commuter routes, and one supplemental school route. Three AVTA commuter routes connect the Palmdale Transportation Center to downtown Los Angeles, West Los Angeles, and West San Fernando Valley. Local transit routes 1, 3, 7, and 8 provide stops to the existing Palmdale Transportation Center.
- Antelope Valley Transit Authority, Long-Distance Express—AVTA offers two long-distance express bus services to Town Center Plaza in Lake Los Angeles, east of Lancaster. The Lake LA/Lancaster Express bus service transports riders between Owen Memorial Park and Town Center Plaza in 55 minutes during the a.m. commute period and 53 minutes during the p.m. commute period. Service is available Monday through Sunday. The Lake LA/Palmdale Express transports travelers between the Palmdale Transportation Center and Town Center Plaza in 50 to 56 minutes during the a.m. commute and 50 to 54 minutes during the p.m. commute. Similar to the Lake LA/Lancaster service, the Lake LA/Palmdale40 service between the Palmdale Transportation Center and Town Center Square is available Monday through Sunday.
- Los Angeles County Beach Bus—The Los Angeles County Department of Public Works runs a seasonal bus service from the Palmdale Transportation Center to the Santa Monica Pier from late May through early September.

HSR riders wishing to board the train at the Palmdale Station could access the station entry plaza and thereby the station platforms via a variety of modal options (Figure 2-52 of the Bakersfield to Palmdale Project Section Final EIR/EIS):

- Pickup/drop-off zone: The pickup/drop-off zone at the Palmdale Station will be located north of and adjacent to the station entry plaza, providing direct access to the station amenities including the platforms. The pickup/drop-off zone has been designed to accommodate 50 automobiles/taxis/transportation network company vehicles (Page 11 of the Palmdale to Burbank Project Section, Palmdale Station Plan Set published with the Bakersfield to Palmdale Project Section Final EIR/EIS);
- Transit plaza: Pedestrian access to the station would be provided through a transit plaza (Page 2-82 of the Bakersfield to Palmdale Project Section Final EIR/EIS). The transit plaza at the Palmdale Station has been designed to accommodate 14 bus/transit shuttle bays (Page 11 of the Palmdale to Burbank Project Section, Palmdale Station Plan Set published with the Bakersfield to Palmdale Project Section Final EIR/EIS), and the Authority will continue to coordinate with local jurisdictions and transit providers to provide direct connectivity to the Palmdale Station. The transit plaza will be located approximately 200 feet northwest of the station plaza;
- Pedestrian bridges: The Palmdale Station will include up to four pedestrian bridges that cross HSR, UPRR, and Metrolink tracks and provide access from Sierra Highway. These overheads would connect the train station/platforms to surrounding parking areas;
- Dedicated bicycle facilities: As shown in Figure 2-52 of the Bakersfield to Palmdale Project Section Final EIR/EIS, bicycle facilities will be developed along 5th Street to the west of the station and along Sierra Highway to the east. The bicycle facilities along 5th Street will provide direct access to the station plaza, while cyclists traveling from Sierra Highway can ride directly to the pedestrian bridges to access the station plaza and platforms;
- Metrolink rail: At the Palmdale Station, the Metrolink tracks will be located parallel to and east of the HSR tracks. Movement between the Metrolink platform and HSR platforms will occur via the two central pedestrian bridges. Depending on the rider's ultimate destination, the walk between the Metrolink platform and the HSR platform will be between 100 and 400 feet in length; and

- Surface parking lots: Patrons traveling via their personal vehicle could park in one of seven parking lots. The closest parking spots will be located at station entrances, while the farthest parking spots will be within 0.5 mile of a station entrance (Page 2-82 of the Bakersfield to Palmdale Project Section Final EIR/EIS).

As discussed in Section 3.2.6.3 of the Draft EIR/EIS, the Palmdale to Burbank Project Section would add approximately 64 peak hour transit riders to bus and rail services at the Palmdale Station during 2040 Plus Project Conditions for all six Build Alternatives. Rail passengers would transfer between the HSR and Metrolink trains at the Palmdale Station. Metro, AVTA, and other bus operators would provide bus transit service to the Palmdale Station. Based on existing transit ridership data, the overall average weekday transit ridership near the Palmdale Station is approximately 9,000 riders. Although transit ridership at the Palmdale Station will increase by 2040, the additional 64 peak hour transit riders associated with the California HSR System represent a small percentage of overall ridership in this area. Therefore, existing and planned transit facilities and services serving the proposed Palmdale Station would adequately meet the California HSR System demand in 2040.

Burbank

As discussed in Section 8.5 of the Burbank to Los Angeles Project Section Final EIR/EIS, the Burbank Airport Station will have both underground and aboveground facilities and will include train boarding platforms, a station building, pickup/drop-off facilities for private automobiles, a transit center for buses and shuttles, and surface parking areas. The station site has been designed to be walkable, with two pickup/drop-off areas that will be located within 0.25 mile of the station plaza entrance. Additionally, walking paths from the Burbank Airport terminals are approximately 1.0 mile or less. The Burbank Airport Station will be a multimodal transportation hub and will provide linkage with local and regional transit, such as Metro bus routes 169, 222, and 294, which include a stop at the N Hollywood Way/Tulare Way intersection. Based on Google Aerial Imagery and Street View, pedestrian and bicycle access to and from the N Hollywood Way/Tulare Way bus stop will be provided by existing pedestrian facilities and dedicated bicycle lanes along the east and west sides of N Hollywood Way (approximately 1,000 feet east of the station entrance) and the north and south sides of Tulare Way (the access road into the station site).

- Bus services provided by Metro feature a variety of services, including express, rapid, and local/limited bus routes. Metro routes serving the Burbank Airport Station include, but are not limited to, the following:
    - Route 169 is a predominantly east-west running service route that runs along Saticoy Street and connects the Hollywood Burbank Airport to the Van Nuys Airport and Woodland Hills. Route 169 includes a stop at the N Hollywood Way/Tulare Way intersection, which is adjacent to the Burbank Airport Station area.
    - Route 222 connects Sunland to Hollywood/Vine, and runs through Burbank along Sunland Boulevard, San Fernando Road, and Hollywood Way. This route includes a stop at the Hollywood Burbank Airport. Route 222 includes a stop at the N Hollywood Way/Tulare Way intersection, which is adjacent to the Burbank Airport Station area.
    - Route 294 connects Sylmar (located northwest of Burbank) to Burbank, traveling along San Fernando Road within the Burbank area. Route 294 includes a stop at the N Hollywood Way/Tulare Way intersection, which is adjacent to the Burbank Airport Station area.
- Metrolink—Metrolink offers a large network of commuter rail services between Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties, providing intercity rail service along 7 lines and to 61 stations covering over 538 route miles. All lines originate from or end at Los Angeles Union Station. The Antelope Valley Metrolink Line serves the Burbank Airport Station area and provides a stop along San Fernando Boulevard (Metrolink´s Burbank Airport-North Station) adjacent to the Burbank Airport Station. The Ventura County Metrolink Line also serves the Burbank Airport Station area along Empire Avenue (Metrolink´s Burbank Airport-South Station). Commuters could walk 1 mile to the Burbank Airport Station or commission a ride-share or taxi.
- Amtrak—Amtrak offers two rail services in the Los Angeles area: Pacific Surfliner and Coast Starlight. The Pacific Surfliner provides passenger rail service from San Luis Obispo to San Diego. Amtrak

Coast Starlight is an intercity passenger train that travels 1,400 miles between Los Angeles and Seattle, Washington. Both trains serve an existing station (Metrolink´s Burbank Airport-South), within the Burbank Airport Station area, which is shared with Metrolink services. Amtrak also provides a thruway bus service from the Palmdale Transportation Center.

HSR riders wishing to board the train at the Burbank Airport Station could access the station entry plaza and thereby the station platforms via a variety of modal options (Figure 2-29 of the Burbank to Los Angeles Project Section Final EIR/EIS):

- Pickup/drop-off zone: The station site has been designed to be walkable as three pickup/drop-off areas will be located within 0.25 mile of the station plaza entrance (Figure 2-29 of the Burbank to Los Angeles Project Section Final EIR/EIS);
- Transit plaza: The transit plaza at the Burbank Airport Station has been designed to accommodate 15 bus/transit shuttle bays (Page 2 of the Burbank to Los Angeles Project Section, Burbank Airport Station Plan Set published with the Burbank to Los Angeles Project Section Final EIR/EIS), and the Authority will continue to coordinate with local jurisdictions and transit providers to provide direct connectivity to the Burbank Airport Station. The transit plaza will be located east of and adjacent to the station plaza, providing direct pedestrian access;
- Airport access: As discussed in Section 3.2.5.2 in the Burbank to Los Angeles Project Section Final EIR/EIS (pages 3.2-38 and 3.2-39), general access from the Burbank Airport to the Burbank Airport Station will be provided primarily by N Hollywood Way. Airport Way provides the main entrance into the Burbank Airport property. HSR passengers would be able to access the planned new Airport terminal by a short walk across the street from the Burbank Airport Station (see Figure 2-54);
- Pedestrian/bicycle facilities: As discussed above, pedestrian and bicycle access to and from the N Hollywood Way/Tulare Way bus stop will be provided by existing pedestrian facilities and dedicated bicycle lanes along the east and west sides of N Hollywood Way (approximately 1,000 feet east of the station entrance) and the north and south sides of Tulare Way (the access road into the station site);
- Metrolink rail: At the Burbank Airport Station, the Metrolink platform will be located north of the station site parallel to San Fernando Road (Figure 2-29 of the Burbank to Los Angeles Project Section Final EIR/EIS). Riders traveling on the Metrolink line will need to walk an approximate 1,000-foot pedestrian path to the HSR Station building; and
- Surface parking lots: Patrons traveling via their personal vehicle could park in one of eight parking lots. The closest parking spots will be located at station entrances, while the farthest parking spots will be within 0.35 mile of a station entrance (Figure 2-29 of the Burbank to Los Angeles Project Section Final EIR/EIS).
- Given the proximity of the above-referenced features to the HSR Station and the variety of modal options presented to HSR riders, the HSR would serve as a center for transit connectivity and would increase individuals' mobility.

The Palmdale to Burbank Project Section would add approximately 430 peak hour transit riders to bus and rail services at the Burbank Airport Station during 2040 Plus Project Conditions. Rail passengers would transfer between the HSR and Metrolink trains at the Metrolink´s Burbank Airport-South Station (on the Ventura County line) and the Metrolink´s Burbank Airport-North Station (on the Antelope Valley line). The Metrolink stations would be adjacent to the Burbank Airport Station; riders traveling on the Metrolink line will need to travel an approximate 1,000-foot pedestrian path to the HSR Station building. Metro, Burbank Bus, and other bus operators would provide transit service to the Burbank Airport Station. Based on existing transit ridership data, the overall average weekday transit ridership near the Burbank Airport Station is approximately 23,400 riders (or 1,670 peak hour transit riders). Although transit ridership at the Burbank Airport Station would increase by 2040, the additional 430 peak hour transit riders associated with the California HSR System represent a 25 percent increase in the overall ridership in this area. With the implementation of TR-MM#9 (Transit Coordination Plan), which requires coordination with affected transit providers to ensure revisions needed to routes, stops, and schedules are implemented to address potential increases in service to accommodate HSR riders, existing and planned transit facilities serving

the proposed Burbank Airport Station would adequately meet the California HSR System demand in 2040.

Aviation

Hollywood Burbank Airport

Hollywood Burbank Airport is located adjacent to the proposed Burbank Airport Station. Pedestrians could use accessible sidewalks from Airport Way to N Hollywood Way to access the Burbank Airport Station property from the Hollywood Burbank Airport. HSR passengers would be able to access the planned new Airport terminal by a short walk across the street from the Burbank Airport Station (see Figure 2-54). The Burbank Airport Station would introduce an alternate mode of transportation to move local, regional, and Statewide riders to their ultimate destination increasing mobility.

The Burbank-Glendale-Pasadena Airport Authority manages this publicly owned facility. As of 2015, the airport served approximately 3.8 million passengers annually over 118,543 aircraft operations. The airport has access to the Burbank Airport-South Metrolink Station on the Ventura County Line, with an adjacent transit center served by Burbank City Bus. An on-site parking structure currently provides paid short- and long-term parking for airport travelers. When considered with the approximately 1,640 spaces that would be available at the start of operations of the selected HSR Preferred Alternative (Page 2-104 of the Draft EIR/EIS) and the 3,210 surface parking spaces that would serve the Burbank Airport Station by 2040, the facilities' parking options would accommodate the additional HSR users.

Palmdale Regional Airport

The Palmdale Regional Airport (owned and managed by the City of Palmdale) is located approximately 2.5 miles northeast of the proposed Palmdale Station. This airport shares its runway with Plant 42, operated by the U.S. Air Force. Commercial passenger service to the airport ended in 2008. As of April 2008, the airport served 64,433 flight operations per year—less than 2 percent of which were by air carrier, 2 percent by air taxi, 16 percent general aviation, and 80 percent military. The airport is not currently accessible through fixed-route transit. The City of Palmdale has explored opportunities to resume commercial passenger service at the airport (City of Palmdale 2019). At such time as commercial passenger service is resumed at the Palmdale Regional Airport, transit connections between the airport and the Palmdale Station will be considered.

Accessibility Services

The ADA requires public transit agencies that offer fixed-route service to provide "complementary paratransit" service to people with disabilities who cannot use the fixed-route bus or rail service because of a disability. Access is the service name of the ADA complementary paratransit service for functionally disabled individuals in Los Angeles County. Access transportation service is available for ADA paratransit-eligible individuals to any location within 0.75 mile of any fixed bus route operated by the Los Angeles County public fixed route bus operators and within 0.75 mile around Metro rail stations during the hours that the systems are operational. Each bus transit agency operating in Los Angeles County provides their own Access transportation service. The Authority would provide paratransit services to HSR stations as required by the ADA or through agreements with other agencies that provide these services (e.g., Access, by LA Metro).

The Authority will need to comply with all federal and State regulations regarding people with disabilities. The Authority has developed technical memoranda that guides development of NFPA 130 and ADA-compliant facilities. Specifically, in designing the Palmdale and Burbank Airport stations, the Authority has consulted and implemented guidance from the following technical memoranda:

- TM 2.2.2 – Station Program Design Guidelines: This technical memorandum provides guidance related to station design and accommodations for disabled person.
- TM 2.2.4 – HS Train Station Platform Geometric Design: This technical memorandum states that ADA mandates that all new rail vehicles and platforms provide level boarding, or that "rail-to-platform height in new stations shall be coordinated with the floor height of new vehicles so that the vertical difference, measured when the vehicle is at rest, is within plus or minus 5/8 inch under normal passenger load conditions" (ADA Accessibility Guidelines, 10.3.1[9]).

- TM 2.8.1 – Safety and Security Design Requirements for Infrastructure Elements: This technical memorandum identifies basic infrastructure elements necessary to support safe and secure operation of the HSR, including compliance with ADAAG: ADA Guidelines for Buildings and Facilities and consistency with ADA, CPUC, NFPA 130, and CFR Title 29, Part 1910 standards and guidance.

As discussed on the Authority's website, "Accessibility of high-speed rail platforms is being designed to meet and exceed current national standards for train stations. High-speed rail station and platform features will be designed to support disabled individuals. Visual and audio warning will give notice to passengers with different abilities." Therefore, future HSR operations will be designed such that passengers with disabilities can easily board and disembark at the station platforms.

17.4 Air Quality

17.4.1 PB-Response-AQ-1: Construction-Period Emissions

Commenters expressed concern about construction emission impacts and requested more information regarding the IAMFs and mitigation measures (including the purchase of offsets) identified to reduce emissions from construction activities.

As noted in Section 3.3.4.2, in Section 3.3 of the Draft EIR/EIS, the project incorporates standardized features to avoid and minimize impacts (IAMFs) which would be implemented during project construction. Air quality IAMFs would require the Authority or its contractors to prepare a dust control plan and employ measures to minimize fugitive dust emissions (AQ-IAMF#1 [Fugitive Dust Emissions]), use low-volatile organic compound (VOC) paint that complies with SCAQMD Rule 1113 to limit VOC emissions (AQ-IAMF#2 [Selection of Coatings]), use renewable diesel fuel in equipment and vehicles to reduce exhaust emissions from all heavy-duty diesel-fueled construction equipment and on-road diesel trucks during construction (AQ-IAMF#3 [Renewable Diesel]), use Tier 4 engines on all heavy-duty off-road construction diesel equipment to reduce exhaust emissions of criteria pollutants (including NOx and CO) and toxic air contaminants (TACs) (AQ-IAMF#4 [Reduce Criteria Exhaust Emissions from Construction Equipment]), use model year 2020 or newer on-road trucks (AQ-IAMF#5 [Reduce Criteria Exhaust Emissions from On-Road Construction Equipment]), and site concrete batch plants consistent with Authority criteria (AQ-IAMF#6 [Reduce the Potential Impact of Concrete Batch Plants]).

As discussed in Section 3.3.6 of the Draft EIR/EIS and as noted by several commenters, the project would result in construction-related emissions impacts that have the potential to affect sensitive receptors in proximity to the HSR project. Without mitigation, the temporary construction impacts of all six Build Alternatives would result in exceedances of the South Coast Air Quality Management District's (SCAQMD's) construction duration CEQA significance thresholds for emissions of oxides of nitrogen (NOx) and carbon monoxide (CO). Without mitigation, the temporary construction impacts of the E2A Build Alternative also would result in exceedances of the Antelope Valley Air Quality Management District's (AVAQMD's) CEQA significance thresholds for emissions of NOx.

To further reduce construction-related emissions (including NOx), in response to comments from SCAQMD on other HSR project sections, the Authority added mitigation measure AQ-MM#3 (Construction Emissions Reductions – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment), which reflects the Authority's policy to require the construction contractor to use 25 percent, with a goal of 100 percent, zero-emissions or near zero-emissions trucks during construction (e.g., material delivery trucks and soil import/export). Any emissions not reduced through AQ-MM#3 (Construction Emissions Reductions – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment) would be reduced, to the extent feasible, through the purchase of emission credits from the construction emissions offset program required under mitigation measures AQ-MM#1 (Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs) and AQ-MM#2 (Offset Project Construction Emissions through AVAQMD Emissions Offsets Programs). Mitigation Measure AQ-MM#1 (Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs) would require the purchase of emission offsets, to the extent feasible, through an anticipated contractual agreement between the Authority and SCAQMD. If the E2A Build Alternative is selected, Mitigation Measure AQ-MM#2 (Offset Project Construction Emissions through AVAQMD Emissions Offsets Programs) would require the purchase of emission offsets through an anticipated contractual agreement between the Authority and AVAQMD. The

purchase of offset credits would off-set and/or decrease NOx emissions by funding emission reduction projects throughout the South Coast Air Basin. Offsets procured through AQ-MM#1 (Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs) may also be used to mitigate CO exceedances (if such offsets are available), in addition to NOx, to below the SCAQMD CEQA thresholds. However, until such agreement is in place and offsets are purchased, effects related to regional air quality during construction would remain adverse after mitigation.

Since publication of the Draft EIR/EIS, new analysis was developed regarding emissions from recycled water trucking and hazardous spoils hauling. Due to the possibility of multiple dry years, and other unknown variables in long-term water supply, recycled water may need to be trucked to the construction sites to operate the TBMs. As discussed under Impact AQ#2: Regional Air Quality Impacts during Construction, in the Final EIR/EIS, the addition of recycled water truck trips to the SR14A Build Alternative would not result in a new exceedance of General Conformity *de minimis* levels or CEQA thresholds, or substantially increase the exceedances that were identified in the Draft EIR/EIS.

The Draft EIR/EIS identified that the SR14A Build Alternative of the Palmdale to Burbank Section would generate 9.2 million cubic yards of hazardous materials waste (see page 3.10-22 of the Draft EIR/EIS). The air quality analysis for the Draft EIR/EIS used the default trip length in CalEEMod of 20 miles. Since preparation of the Draft EIR/EIS, the Authority has refined these assumptions such that the hazardous materials that would be hauled to Class I/II Hazardous, Designated Waste and Class III Non-Hazardous, Contaminated Waste facilities. The total amount of hazardous waste materials was reduced from 9.2 million cubic yards to 6.8 million cubic yards. The Class I/II Hazardous/Designated Waste spoils would be transported to a Class I/Class II Hazardous/Designated Waste landfill site near Buttonwillow, located 127 miles away from the SR14A Build Alternative. The Class III Non-Hazardous, Contaminated Waste spoils would be transported to Class III Non-Hazardous, Contaminated Waste landfills, located an average distance of 40 miles away from the SR14A Build Alternative. Please note that there are facilities closer to the SR14A Build Alternative than 40 miles; therefore, this is a conservative analysis. As discussed in Impact AQ#2 Regional Air Quality Impacts during Construction, of the Final EIR/EIS, the refined analysis of hazardous material truck trips for the SR14A Build Alternative would not result in a new exceedance of General Conformity *de minimis* levels or CEQA thresholds, or substantially increase the exceedances that were identified in the Draft EIR/EIS.

As discussed in the Draft EIR/EIS under Impact AQ#3: Compliance with Air Quality Plans during Construction, all six Build Alternatives would result in the exceedance of General Conformity *de minimis* thresholds for NOx and CO in the South Coast Air Basin during construction. Within the Mojave Desert Air Basin, only construction of the E2A Build Alternative would result in exceedance of the NO_x General Conformity *de minimis* threshold. These exceedances could conflict with or complicate implementation of locally adopted air quality plans, which have been prepared to attain NAAQS and CAAQS. Section 3.3 of the Draft EIR/EIS considers both local AQMD CEQA significance thresholds and the General Conformity *de minimis* thresholds in the analysis of regional air quality impacts, consistent with local and federal guidance. As offset credits are not available for CO, the Authority has confirmed with the SCAQMD that microscale (AERMOD) modeling can be performed to assure that there are no exceedances of the applicable CO ambient air quality standards (Sun 2020). As shown in Table 3.3-32 of the Draft EIR/EIS, the CO emissions from construction would not exceed either the California or National Ambient Air Quality Standards (CAAQS/NAAQS). Through AQ-MM#1 and AQ-MM#2, the Authority would offset NOx emissions for those years in which NOx emissions exceed the applicable General Conformity *de minimis* thresholds (after implementation of AQ-MM#3).

The air district CEQA significance thresholds have been developed to prevent further deterioration of ambient air quality, which is influenced by emissions generated by projects within a specific air basin. The project-level CEQA significance thresholds consider relevant past, present, and reasonably foreseeable future projects within the project area. The air district CEQA significance thresholds therefore represent the maximum emissions a project may generate before it would result in a cumulatively considerable contribution to existing air quality conditions. For example, emissions generated by the Build Alternatives in the South Coast Air Basin in excess of SCAQMD's CEQA significance thresholds would result in a significant CEQA impact on regional air quality. Because the air district CEQA significance thresholds

define the level above which a project would cumulatively contribute to regional air quality impacts, reducing or offsetting emissions to below the numeric threshold level would reduce the impact to a less-than-significant level under CEQA.

The General Conformity *de minimis* thresholds are established by the General Conformity Rule (40 CFR Part 93, Subpart B), which ensures that federal actions comply with the NAAQS. In order to meet this Clean Air Act requirement, a federal agency must demonstrate that every action that it undertakes, approves, permits, or supports will conform to the appropriate state implementation plan (SIP). SIPs are adopted to achieve or maintain regional compliance with the NAAQS. Projects that conform to the SIP therefore would not adversely affect regional air quality. In creating the General Conformity *de minimis* emission thresholds, EPA sought to limit the need to conduct general conformity determinations for actions with minimal emission increases. Thus, unlike air district CEQA significance thresholds, the General Conformity *de minimis* thresholds do not define a level above which air quality effects of a proposed action would be adverse. Rather, they are a trigger for further analysis through which the lead agency would assess if the proposed action conforms with the SIP. Pursuant to 40 CFR §93.158(a)(2) and §93.158(a)(5)(iii), projects may demonstrate SIP conformance for ROG, NOx, and PM if the total of direct and indirect emissions from the action are fully offset. Thus, because the General Conformity *de minimis* thresholds are merely a trigger for a general conformity determination, offsetting emissions to below the numeric threshold level would not demonstrate SIP conformance or mitigate the adverse regional air quality effect. The analysis must show that the total annual net emissions increase of relevant pollutants would be offset to achieve a zero net emission increase above the baseline emissions of that pollutant (i.e., the “no build” scenario) for the same year in which the *de minimis* thresholds are equaled or exceeded.

AQ-MM#1 (Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs) and AQ-MM#2 (Offset Project Construction Emissions through AVAQMD Emissions Offsets Programs) identified in Section 3.3 of the Draft EIR/EIS would mitigate project emissions consistent with applicable CEQA significance thresholds, as well as to achieve compliance with the General Conformity Rule. Emissions not above the General Conformity *de minimis* thresholds, but above local air district CEQA thresholds, would be reduced to quantities below the air district’s thresholds to the extent feasible.

17.4.2 PB-Response-AQ-2: Health Risks and Impacts

Commenters raised concern about air quality and health impacts (for example, respiratory diseases) due to fugitive dust emissions caused by the operation of the Palmdale to Burbank Project Section.

As discussed under Impact AQ #8 of the Draft EIR/EIS, the California HSR System would be electrically powered, and operation of the Palmdale to Burbank Project Section would not generate direct combustion emissions along the railways that would cause substantial health concerns, such as asthma or other respiratory diseases. Additionally, because the HSR system would provide an alternative mode of transportation that would reduce the number of vehicles traveling on highways and area roads, the amount of emissions generated by vehicles would decrease proportional to the VMT reductions (see Impact AQ#6). Therefore, the Build Alternatives would not expose sensitive receptors to substantial pollutant concentrations during operation.

However, the operation of California HSR System’s trains creates an aerodynamic wake behind the train that results in airflow in the general direction of the moving train, which can generate fugitive dust. A detailed analysis of existing credible scientific evidence related to evaluating impacts from induced winds from California HSR System trains is included in Appendix E of the Air Quality Technical Report (Authority 2020). The analysis found that the amount of fugitive dust suspended beyond 10 feet from the HSR tracks would be negligible. Therefore, project-generated dust related impacts to receptors would be minimal and would not pose any health risk.

17.4.3 PB-Response-AQ-3: Construction Air Quality/Truck Impacts

Commenters expressed concern about air quality impacts during construction. Commenters requested more information regarding the IAMFs and mitigation measures set forth to reduce and offset construction exhaust emissions. Commenters expressed concern about the health impacts associated with TAC emissions from construction activities.

As discussed in Section 3.3.6.3, in Section 3.3 of the Draft EIR/EIS, construction activities associated with each of the Build Alternatives would result in criteria pollutant emissions from construction equipment in both the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD), and the portion of the Mojave Desert Air Basin (MDAB) that is under the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). Construction activities associated with the Build Alternatives would increase toxic air contaminant (TAC) concentrations at certain receptor locations due to the operation of diesel-fueled off-road construction equipment and heavy-duty trucks. AQ-IAMF#3 (Renewable Diesel), AQ-IAMF#4 (Reduce Criteria Exhaust Emissions from Construction Equipment), and AQ-IAMF#5 (Reduce Criteria Exhaust Emissions from On-Road Construction Equipment) would be incorporated to control construction exhaust emissions from all heavy-duty diesel-fueled construction equipment and diesel trucks by requiring the use of renewable diesel fuel, requiring that all heavy-duty equipment used during construction meet Tier 4 final engine requirements, and requiring that on-road trucks used for hauling be model year 2020 or newer. More details on these IAMFs can be found in Section 3.3.4.2 of the Draft EIR/EIS. While the IAMFs will reduce emissions, construction emissions in exceedance of applicable SCAB de minimis levels would still occur. Where a project exceeds an air district's regional thresholds, there is the potential for adverse health effects to occur. However, because adverse health effects resulting from regional criteria pollutants depend on many variables (e.g., concentrations, local atmospheric conditions, number of exposed individuals, etc.), and because some pollutants are transported over long distances before resulting in adverse health effects, the specific health effects resulting from regional pollutants generated by a single project are difficult to determine. Mitigation Measures AQ-MM#1 (Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs), AQ-MM#2[3] (Regional Air Quality Impacts during Construction), and AQ-MM#3 (Requirements for use of Zero Emission and/or Near Zero Emission Vehicles and off-road equipment), all of which are discussed in detail in Section 3.3.7, in Section 3.3 of the Draft EIR/EIS, would be implemented to reduce and offset emissions.

Since publication of the Draft EIR/EIS, new analysis was developed regarding emissions from recycled water trucking and hazardous spoils hauling. Due to the possibility of multiple dry years, and other unknown variables in long-term water supply, recycled water may need to be trucked to the construction sites to operate the TBMs. As discussed under Impact AQ#2: Regional Air Quality Impacts during Construction, in the Final EIR/EIS, the addition of recycled water truck trips to the SR14A Build Alternative would not result in a new exceedance of General Conformity de minimis levels or CEQA thresholds, or substantially increase the exceedances that were identified in the Draft EIR/EIS.

The Draft EIR/EIS identified that the SR14A Build Alternative of the Palmdale to Burbank Section would generate 9.2 million cubic yards of hazardous materials waste (see page 3.10-22 of the Draft EIR/EIS). The air quality analysis for the Draft EIR/EIS used the default trip length in CalEEMod of 20 miles. Since preparation of the Draft EIR/EIS, the Authority has refined these assumptions such that the hazardous materials that would be hauled to Class I/II Hazardous, Designated Waste and Class III Non-Hazardous, Contaminated Waste facilities. The total amount of hazardous waste materials was reduced from 9.2 million cubic yards to 6.8 million cubic yards. The Class I/II Hazardous/Designated Waste spoils would be transported to a Class I/Class II Hazardous/Designated Waste landfill site near Buttonwillow, located 127 miles away from the SR14A Build Alternative. The Class III Non-Hazardous, Contaminated Waste spoils would be transported to Class III Non-Hazardous, Contaminated Waste landfills, located an average distance of 40 miles away from the SR14A Build Alternative. Please note that there are facilities closer to the SR14A Build Alternative than 40 miles; therefore, this is a conservative analysis. As discussed in Impact AQ#2 Regional Air Quality Impacts during Construction, of the Final EIR/EIS, the refined analysis of hazardous material truck trips for the SR14A Build Alternative would not result in a new exceedance of

[3] For the E2A Build Alternative only.

General Conformity de minimis levels or CEQA thresholds, or substantially increase the exceedances that were identified in the Draft EIR/EIS.

Additionally, as discussed under Impact AQ#4 in Section 3.3 of the Draft EIR/EIS, construction activities associated with the Build Alternatives would increase TAC concentrations at certain receptor locations due to the operation of diesel-fueled off-road construction equipment and heavy-duty trucks. DPM is the primary TAC released from construction activities. Because DPM emissions from diesel-fueled machinery can present increased cancer risk and other health hazards, an HRA was performed (see Appendix C of the Air Quality Technical Report [Authority 2020] for the detailed HRA). The HRA considers both acute (short-term) and chronic (long-term) noncancer health hazards and increased cancer risk resulting from exposure of sensitive receptors (e.g., schools, residences, hospitals, etc.) to DPM concentrations associated with the construction activities.

Six discrete areas (or "cases") were chosen to represent the worst-case scenarios for construction-related air quality and health risk impacts on the maximum number of sensitive receptors along the Build Alternative alignments. These cases were designed to represent the worst-case scenarios in terms of construction-related air quality and health risk impacts. The worst-case scenarios are those that have a large amount of construction activity with emissions near the most concentrated sensitive receptors along the Build Alternatives. The six cases are located in southern Palmdale, Acton, the City of San Fernando, near Hanson Dam Open Space, and along the approach to the Burbank Airport Station. The locations of the six cases are presented on Figure 3.3 3 of the Final EIR/EIS.

Table 3.3-31 of the Final EIR/EIS indicates that none of the cases would result in exceedances of applicable thresholds for cancer risk and for chronic and acute noncancer health impacts. The California Public Resources Code, Section 21151.4, sets requirements for construction of any facility within 0.25 mile (1,320 feet) of a school that emits TACs in quantities that pose a health or safety hazard to humans at the school. Table 3.3-31 of the Final EIR/EIS shows that predicted health risks at the maximally exposed receptor location (within 1,000 feet of the project footprint) near any school would be zero or less than one for cancer risk and for chronic and acute noncancer health impacts.

AQ-IAMF#1 (Fugitive Dust Emissions), AQ-IAMF#2 (Selection of Coatings), AQ-IAMF#4 (Reduce Criteria Exhaust Emissions from Construction Equipment), and AQ-IAMF#5 (Reduce Criteria Exhaust Emissions from On-Road Construction Equipment) implement the lowest-emitting construction equipment technology and adopt best management practices to minimize construction-period emissions. As stated in AQ-MM#3 (Requirements for use of Zero Emission and/or Near Zero Emission Vehicles and off-road equipment), the Authority and all project construction contractors shall have the goal that a minimum of 25 percent of all heavy-duty on-road vehicles (e.g., for hauling, material delivery, and soil import/export) associated with the project use zero emission or near zero emission technology. All feasible DPM control measures (i.e., renewable diesel, Tier 4-compliant construction equipment, and 2020 or newer truck fleet) will be implemented as IAMFs. Project construction is not predicted to exceed applicable thresholds for cancer risk and for chronic and acute noncancer health impacts.

17.4.4 PB-Response-AQ-4: Greenhouse Gas Emissions

Commenters expressed concern regarding payback period for greenhouse gases generated from construction. The commenter requested more information regarding GHG emissions generated from project operation.

As shown in Table 3.3-43 in Section 3.3 of the Draft EIR/EIS, total construction GHG emissions for the Palmdale to Burbank Project Section would range from 134,297 metric tons (MT) to 179,164 MT of carbon dioxide equivalent (CO_2e), depending on Build Alternative. However, as shown in Table 3.3-46 in Section 3.3, operation of the project would remove approximately 1.4 million MT to 1.8 million MT CO_2e per year in the opening year, depending on ridership scenario, primarily through the diversion of trips from air and auto travel. As such, the total increase in construction GHG emissions for each Build Alternative would be offset in less than a year by the net GHG reductions from Palmdale to Burbank Project Section operations.

Table 3.3-44 of the Final EIR/EIS shows that the total increase in construction GHG emissions for each Build Alternative would be offset in less than a year by the net GHG reductions from Palmdale to Burbank

Project Section operations, due to emission reductions from reduced auto and aircraft trips. Emissions are predicted to be almost fully offset after 4 to 6 months of operations (depending on the ridership scenario and Build Alternative). After a maximum of 6 months, operation of the Build Alternatives would result in net GHG emissions reductions and a GHG benefit.

17.5 Noise and Vibration

17.5.1 PB-Response-N&V-1: Operational Noise and Impacts to Sensitive Receptors

Commenters expressed concern about noise impacts during operation, and inquired about the need for contour mapping. Some commenters suggested the methods used to evaluate noise impacts were inappropriate. Commenters have asked why the Authority did not use local noise standards or noise analysis methodologies used by local agencies.

Operational Noise

As discussed in Section 3.4.4 of the Draft EIR/EIS, the Authority used both current FRA and Federal Transit Administration (FTA) manuals to assess the potential impacts and necessary mitigation measures for the HSR project. The Authority used the High-Speed Ground Transportation Noise and Vibration Impact Assessment (FRA 2012, aka FRA Guidance Manual) as the methodology for analyzing HSR operations related to noise and vibration within the Draft EIR/EIS. For evaluation of non-HSR noise and vibration, such as stations, maintenance facilities, and construction, methodology from the FTA Transit Noise and Vibration Impact Assessment Guidance Manual (FTA 2018) was used The FRA criteria (and FTA, which are identical) used for the Authority's analysis have been used for 30 years on projects throughout the country. The criteria were developed over many years, with input and review from both a technical and policy perspective by the FRA and by consulting a myriad of technical resource documents, “for the assessment of potential noise and vibration impacts resulting from proposed high-speed ground transportation (HSGT) projects, including high-speed trains...” (FRA Guidance Manual, p. 1-1; see also footnotes throughout manual with references to resource documents). The criteria are based on the best available data on human response to both absolute noise levels and changes in noise levels and are appropriate for urban, suburban, and rural areas.

As discussed in Section 3.4.4.4 of the Draft EIR/EIS, the FTA and FRA guidance define noise impacts according to three potential classifications: severe impact, moderate impact, or no impact. A severe noise impact occurs when there is a change in noise level (existing without project levels versus existing with project noise levels) that would be noticeable to most people and likely to generate strong, adverse reactions. A moderate noise impact occurs when there is a change in noise level that would be noticeable to most people but may not be sufficient to generate strong, adverse reactions. Figure 3.4-12 in Section 3.4 of the Draft EIR/EIS illustrates these impact classifications.

In the analysis, noise-sensitive land uses were identified within the 1,200-foot screening distance or RSA (resources study area) to evaluate potential noise impacts. This screening distance has been established by the FRA for noise impact analysis in quiet suburban and rural areas but was used in all settings for the purposes of analysis (see Draft EIR/EIS, Table 3.4-14; see also FRA Guidance Manual, pp. 4-2 to 4-3). The Draft EIR/EIS took the additional step of assessing potential impacts up to 1,800 feet in areas in which noise impacts were identified extending to the 1,200-foot distance (see Draft EIR/EIS, p. 3.4-38). Noise- and vibration-sensitive land is categorized according to FTA guidelines, as described in Section 3.4.4 of the Draft EIR/EIS. Noise-sensitive areas (NSA) along the project corridor and within the established screening distances were determined based on existing land use and noise levels. A total of 12 NSAs were identified for the Refined SR14 Build Alternative, 10 for the SR14A Build Alternative, 12 for the E1 Build Alternative, 12 for the E1A Build Alternative, 12 for the E2 Build Alternative, and 12 for the E2A Build Alternative.

Existing noise levels were determined throughout the Palmdale to Burbank Project Section by taking field noise measurements at certain noise-sensitive receptors following the FRA methodology (see FRA Guidance Manual, Chapter 4). Noise measurements were taken at specific noise-sensitive locations near the alignment in the study area that were considered representative of conditions throughout the study area and which the Authority had permission to access (see Figure 3.4-13 and Figure 3.4-14 of the Draft EIR/EIS). The quantity of noise measurements gathered was dependent on various factors. For example,

in an area with many different existing noise sources and multiple rows of shielding between potential receptors and sources of noise, a higher concentration of measurements was gathered. Similarly, an area with few existing noise sources or less shielding would require fewer noise measurements to accurately represent the existing noise environment. Specific measurement locations were selected based on their land use category and physical location along the proposed HSR Project within the noise RSA. Noise levels measured at these locations are representative of certain existing noise conditions. Section 3.4.5.1 of the Draft EIR/EIS provides the details on the noise measurement locations. For the locations of sensitive receivers surrounding the alignment, refer to Figures 3.4-17 through 3.4-35 in Section 3.4, Noise and Vibration.

Operational Noise in Comparison to Other Train Types

At similar speeds, HSR would generate a substantially less noise event than existing commuter and freight trains. Even at higher speeds, HSR also generates less of a noise event than commuter and freight trains. This is primarily due to the duration of the HSR noise event and the use of electric power instead of diesel engines, higher quality track interface, and smaller, lighter and more aerodynamic trainsets. HSR trains would not have the engine rumble associated with diesel-powered locomotives. While wheel/track interface is a significant source of train noise, HSR track beds and rails are designed and maintained to very high geometric tolerances and standards that greatly minimize the track noise that is associated with existing commuter/freight tracks throughout the study area. At the highest speeds for HSR (above 180 mph, which mostly occurs in tunnels in the Palmdale to Burbank Project Section), while the maximum noise levels can be higher than commuter and freight trains (with horn sounding), HSR trains would result in shorter-duration noise events compared with conventional commuter trains and significantly shorter duration noise events as compared to freight trains (a few seconds for HSR as compared with up to 10 minutes for slow moving freight trains). Because the FRA Guidance Manual noise criteria are based on the total exposure to noise, the duration of the noise event is important in determining the total noise generated by a train event. See Section 3.4.1.1 of the Draft EIR/EIS for a discussion of the noise metrics used in the assessment.

As well, freight and commuter trains sound horns with regularity in certain locations, such as at-grade crossings, where the noise levels can be 20-30 dB higher than high-speed trains, even high-speed trains traveling at very high speeds. The HSR system, however, would be different from current freight and commuter trains in that the HSR system would be fully grade-separated in the Palmdale to Burbank Project Section with no need to sound horns regularly at-grade crossings (because there would be no grade crossings).

Impact Mapping

Some commenters questioned why “contour mapping” (or the equivalent) was not included in the Draft EIR/EIS. As shown in Figures 3.4-17 through 3.4-35 (as well as in Appendix E of the Noise and Vibration Technical Report), the Authority mapped severe and moderate impacts identified during the project analysis. These receptor locations are further defined in Tables 3.4-31 through 3.4-33. The figures and supporting tables included in the Draft EIR/EIS provide graphical illustrations of potential noise impacts that are required by the FRA Guidance Manual, which, notably, does not require noise contour maps and only mentions them as one potential option (see FRA Guidance Manual, p. 5-25, emphasis added [“Illustrate the areas of Impact and Severe Impact on maps or aerial photographs. This illustration *could* consist of noise impact contours on the maps or aerial photographs...”]). Notwithstanding, the figures and tables provide the better information than that which would be provided by contour maps. Contours only provide ranges of impacts, and at the scale of the maps, would not provide a way for the reader to determine impact locations in specific areas. The assessment pinpoints each impact (moderate and severe) at all locations to show both the location of impacts, but also the number of impacts at each location, so the reader can identify impact locations and the magnitude of the impact in a particular location. Tables 3.4-31 through 3.4-33 provide detailed information on the projected HSR noise levels (with additional detail in Chapter 6 of the Noise and Vibration Technical Report) and the impact criteria to show the detailed information regarding the magnitude of the impacts.

Local Noise Policies and Regulations

The project is being undertaken by a state agency (the Authority) and will require several federal approvals. The project must conform to the policies and objectives of the statutes and regulations under which the Authority and FRA operate. Because an agency of the State of California is the project proponent, the project is not subject to local government general plan policies or zoning regulations. The state's immunity from local regulations is an extension of the concept of sovereign immunity. The Authority, as the proponent of a "sovereign activity of the State," is not subject to local land use regulations (see, e.g., *Town of Atherton v. Superior Court* [1958] 159 Cal.App.2d 417, 428, citing to *Hall v. Taft* [1956] 47 Cal.2d 177, 183; *Lawler v. City of Redding* [1992] 7 Cal.App.4th 778, 784.) Unless the Legislature expressly waives this immunity in a statute, which it has not done here, the general rule is that a local agency cannot regulate State activities (See *Del Norte Disposal, Inc. v. Department of Corrections* (1994) 26 Cal.App.4th 1009, 1013). Moreover, although CEQA requires that EIRs discuss inconsistencies with applicable plans (see Section 2.4.3), even then, an inconsistency by itself is not considered an environmental impact.

Nevertheless, the Authority recognizes that the project can be most successful if designed in a manner that is as sensitive as possible to the local environment through which it must travel, while still meeting the unique design constraints of HSR service. Through meetings with local agency staff and direct discussions with individual local government officials and staff, the Authority has endeavored to develop a project design that minimizes local impacts and is made as consistent with local plans as possible. Consistent with CEQA and NEPA requirements, the project's consistency with local general plans and zoning regulations as it pertains to noise and vibration is discussed in the Draft EIR/EIS in Section 3.4.3. As noted in the Draft EIR/EIS, the Palmdale to Burbank Project Section would be inconsistent with certain provisions of local and regional plans and policies that include local noise standards and limits (see Table 3.4-2). Mitigation measures outlined in Section 3.4.7 of the Draft EIR/EIS would ensure that construction effects associated with the Build Alternatives would be reduced to the extent feasible.

As discussed previously, the Authority used both current FRA and FTA manuals to assess the potential impacts and necessary mitigation measures for the HSR project. The FRA and FTA criteria used for the Authority's analysis have been used for 30 years on projects throughout the country. The criteria were developed over many years, with input and review from both a technical and policy perspective by the FRA. The criteria are based on the best available data on human response to both absolute noise levels and changes in noise levels. The Authority applied this methodology because it has been used for 30 years and is widely accepted.

17.5.2 PB-Response-N&V-2: Noise Mitigation and Selection of Proposed Sound Barriers

Commenters inquired about proposed sound barrier locations and how other noise abatement/mitigation were determined, and how it will be implemented. Commenters requested more information regarding the mitigation measures set forth to reduce visual effects of barriers on adjacent land uses.

In order to determine where sound barrier mitigation would be considered reasonable and feasible, potential noise impacts have been assessed at sensitive receptors, as identified in Section 3.4.6 of the Draft EIR/EIS. Each potentially feasible noise barrier is described and evaluated for reasonableness as shown in Table 3.4-48. For a noise barrier to be considered reasonable and feasible for implementation, pursuant to the California High-Speed Rail Project Noise and Vibration Mitigation Guidelines, they must achieve a minimum of five dB of noise reduction; affect a minimum number of 10 sites; be at least 800 feet in length; be cost-effective; and should be approved by the 75 percent of all affected parties in a given community where a noise barrier id being recommended (see Draft EIR/EIS, p. 3.4-132). These criteria will ensure that a substantial noise reduction will be achieved using existing and available materials while minimizing visual impacts and ensuring cost effectiveness (see Draft EIR/EIS, Appendix 3.4-C, Section 3.4-C-3). Refer to Section 3.4.7 of the Draft EIR/EIS for a discussion of additional types of noise impact mitigation measures that the Authority would consider reducing "severe" noise impacts in addition to sound barriers, and the circumstances when those additional measures would be considered. The Noise and Vibration Mitigation Guidelines also were used to determine whether mitigation would be

reasonable and feasible for areas of potential severe noise impact. These guidelines require consideration of all mitigation measures that are reasonable, physically feasible, practical, and cost-effective to reduce severe noise impacts (i.e., impacts where a significant percentage of people would be highly annoyed by the HSR project's noise according to FRA impact thresholds).

The Draft EIR/EIS proposes sound barriers in areas of severe noise impacts resulting from the project, where the barriers meet the cost-effectiveness criteria consistent with the Authority's Noise and Vibration Mitigation Guidelines (Authority, December 2018; see also Draft EIR/EIS, Appendix 3.4-C, Section 3.4-C-3). To meet the cost-effectiveness criteria, the noise barriers must provide between 5 dB and 15 dB of exterior noise reduction to a minimum of 10 affected sites with a minimum barrier length of 800 feet. A receptor that receives at least a 5-dBA noise reduction due to the modeled barrier is considered a benefitted receptor. N&V-MM#3 (Implement California High-Speed Rail Project Noise Mitigation Guidelines) requires the Authority to work with local jurisdictions regarding the height and design of sound barriers using jointly developed performance criteria, prior to operation and when the vertical and horizontal location have been finalized as part of the final design of the project infrastructure (see Appendix 3.4-C of the Draft EIR/EIS). Sound barriers may consist of solid or transparent material or both, but will never contain more than 6-feet-high of solid material (see Draft EIR/EIS, Appendix 3.4-C, Section 3.4-C-3). As stated in the Draft EOR/EIS, "[t]ypically, the noise barrier style is selected with input from the local jurisdiction to reduce the visual effects of barriers on adjacent lands uses..." (Draft EIR/EIS, p. 3.4-132).

In addition to the potential use of sound barriers, other forms of noise impact mitigation may include improvements to the structure itself to reduce the levels by at least 5 dBA. Such mitigation could include installing acoustically treated windows, extra insulation, and mechanical ventilation as detailed in Section 3.4.7 of the Draft EIR/EIS. The Authority would refine mitigation for individual homes with residual severe noise impacts (i.e., severe impacts that remain after provisions of sound barriers) and address them on a case-by-case basis. These types of measures would not reduce exterior noise levels but would be effective at reducing interior noise.

If the Authority certifies this Final EIR/EIS and approves the project, the Authority would proceed with construction of the project and implement all mitigation measures as construction occurs. Noise mitigation measures that address impacts from HSR operations would be adopted and committed to in conjunction with project approval, but they would be implemented closer in time to the commencement of project operations and in consultation with affected property owners.

17.5.3 PB-Response-N&V-3: Noise Impacts on Domestic Animals/Wildlife

Commenters expressed concerns related to animal effects from noise, including effects on production and breeding and animal responses to startle. Commenters requested more information regarding the mitigation measures set forth to reduce startle effects on hikers, domestic animals, and wildlife.

Research on noise effects on wildlife and livestock is limited but suggests that noise levels above 100 decibels (dBA) Sound Exposure Level (SEL) (the total A-weighted sound experienced by a receiver during a noise event, normalized to a 1-second interval) may cause animals to alter behavior. Accordingly, the updated 2012 High-Speed Ground Transportation Noise and Vibration Impact Assessment considers an SEL of 100 dBA the most appropriate threshold for disturbance effects on wildlife and livestock of all types (FRA 2012, Table 3-3). The level is based on a summary of the research and studies referenced in the FRA Guidance Manual in Appendix A.

Table 3.4-13 in Section 3.4 of the Draft EIR/EIS presents the screening distances to the HSR tracks within which the level would exceed the criteria and therefore may affect animals for both at-grade and elevated structures. The criterion for assessing potential noise impact on wildlife and domestic animals is an SEL of 100 dBA from HSR pass-by events. This criterion is based on research and studies into potential effects from HSR noise on animals. These potential effects include relocation, running, physiological effects such as changes in hormones or blood composition, and startle.

The noise exposure of an SEL of 100 dBA would be limited to locations within 40 to 50 feet of the aboveground alignment centerline, which is typically within the fenced right-of-way. Such fencing would

preclude domestic animals and wildlife from approaching the alignment. As noted in the Draft EIR/EIS Section 3.4.4.3, the majority of domestic animals within the RSA would be within fenced areas that are located further than 50 feet from trains.

Although the Authority generally applied the 100 A-weighted decibels sound threshold, for special-status nesting birds a 65 A-weighted decibels threshold was used. To reduce the effects of intermittent operational noise on special-status nesting birds, the Authority will implement BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat). This mitigation measure requires the installation of sound barriers in locations where special-status bird habitat would be exposed to 65 A-weighted decibels of permanent intermittent noise impact outside the fenced right-of-way. Sound barriers will be designed with the goal of minimizing exposure to noise produced by HSR trains by providing a 10 A-weighted decibel attenuation of sound, as measured 50 feet from the noise barrier. Typically, this level of sound attenuation may require a 10- to 17-foot-tall sound barrier. As described in BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat), the location, length and height of the barriers will be determined based on detailed noise modeling for areas of high-quality special-status bird habitat, and measurement of existing conditions so that the noise-attenuating effects of topography and other existing features can be accounted for during the final design phase. Sound barriers implemented by BIO-MM#101 would not adversely affect wildlife movement. In locations where the rail alignment is at-grade, the sound barriers would be location in close proximity to the rail alignment in order to achieve the desired noise reduction. This would result in the sound barriers being located within the already fenced right-of-way. In locations where the alignment is above-ground on a viaduct, the sound barriers would be located on the viaduct and wildlife movement would still be possible underneath the overhead structure. In areas where the alignment is in tunnel, no noise effects or barriers to wildlife movement would occur. With implementation of BIO-MM#101 effects of noise on wildlife would be less than significant.

Construction of the Build Alternatives would create noise and vibration impacts which could affect domestic animals. As described in Impact AG#6, installation of wildlife exclusion fencing during the construction period would preclude grazing animals, primarily cattle, from approaching the alignment at a proximity of 40 to 50 feet, where noise and vibration impacts would be the greatest. Implementation of AG-IAMF#4 through AG-IAMF#6 will ensure agricultural property owners are notified of noise impacts that could occur as a result of construction activities and would provide temporary livestock and equipment crossings during project construction. Additionally, livestock would not be in a confined area and could move away from construction noise and vibration sources. Therefore, impacts to domestic and grazing animals during construction would be less than significant and no mitigation is required.

Operation of the Refined SR14 and SR14A Build Alternatives would have some noise effects on hikers and horses using the Pacific Crest Trail and Vasquez Rocks Natural Area Park. Operation of the E2 and E2A Build Alternatives would have some noise effects for users and horses in the Hansen Dam Recreation Area and the Stonehurst Park and Recreation Center. This would be a significant impact of these Build Alternatives and would require Mitigation Measure N&V-MM#8 (Startle Effect Warning Signage) (discussed in Section 3.4.7, Mitigation Measures), which will reduce startle effects by requiring active and passive warning signs to be posted along the Pacific Crest Trail and in Vasquez Rocks Natural Area Park, the Hansen Dam Recreation Area, and Stonehurst Park and Recreation Center. These signs will be posted to warn users of an upcoming train crossing and the approximate time for the crossing. Users accompanied by domestic animals will have appropriate warning in order to reduce startle effects on animals. The E1 and E1A Build Alternative alignments would not pass by the public equestrian trails or facilities discussed above. The Refined SR14 Build Alternative and the SR14A Build Alternative (the Preferred Alternative) would avoid impacts to the Hansen Dam Recreation Area and Stonehurst Park and Recreation Center. The E2 and E2A Build Alternatives would avoid impacts to the Pacific Crest Trail and Vasquez Rocks Natural Area Park. With implementation of Mitigation Measure N&V-MM#8 (Startle Effect Warning Signage), described above, noise impacts on domestic animals would be less than significant under CEQA after mitigation.

As described in the Draft EIR/EIS 3.7.6.3, vibration during construction could have impacts to special-status species, such as burrowing owl through the collapse of burrows or displacement of burrowing owls. Effects of vibration during construction would be reduced to less than significant levels through the establishment of environmentally sensitive areas under BIO-MM#56 and limits on vehicle traffic and

construction site speeds under BIO-MM#60. As described in the Draft EIR/EIS, Page 3.7-215-216, vibration associated with operations has the potential to adversely affect special-status species, particularly amphibians and reptiles. However, the duration of vibration caused by each train pass by is brief; a train would take approximately 2 seconds to pass any given point, or 3 seconds if vibration impacts are assumed to extend up to 150 feet in front of and behind the train and at a maximum of 217 trains per day that amounts to a total exposure of about 11 minutes per day, or 0.8 percent of the time. Additionally, train passages would occur primarily during the day, while most activity by vulnerable wildlife receptors is nocturnal. Under BIO-MM#36, aprons or barriers within security fencing would be installed and these features, which are intended to enhance permanent security fencing, would also reduce the potential for project operation to displace species as a result of vibration by precluding access to the HSR right-of-way, thereby reducing wildlife exposure to these types of stimuli.

17.5.4 PB-Response-N&V-4: Tunneling Impacts (Noise and Vibration) under Homes and Businesses

Commenters expressed concern about noise and vibration impacts caused by constructing tunnels under homes and businesses associated with each of the Build Alternatives. Commenters expressed concern about vibration impacts from the tunnels under homes and businesses during operation. Commenters requested more information regarding mitigation measures set forth to reduce vibration impacts associated with project operation.

Section 3.4, Noise and Vibration, of the Draft EIR/EIS evaluates noise and vibration impacts associated with tunnel construction and operation.

Ground-Borne Noise

The discussion of ground-borne noise impacts during construction and operation is the same as the discussion related to construction and operation vibration impacts. See the discussion below in this standard response under the “Vibration” subheading.

Vibration

Construction

As discussed under Impact N&V#3, Construction Vibration Impacts on Sensitive Receivers of the Draft EIR/EIS, TBM operations for tunnel construction could cause perceptible vibrations in residences and other vibration-sensitive buildings above which tunneling would occur. The potential for vibration impacts is highly variable and dependent on the depth of the tunneling and the ground composition. Vibration prediction methods for TBMs are not covered by FTA or FRA guidance manuals and such calculation would require several assumptions regarding soil type, TBM specifications and other unknown parameters. However, any such vibration would be transitory in any one location as tunneling progresses and would likely affect any given location for approximately one week or less. In addition, conveyors would be used for transporting excavated material from the TBMs, avoiding the use of muck trains (high-powered wheelbarrows), which are typically the major concern regarding vibration impacts from tunneling operations. The short-term vibration and ground-borne noise impacts (see above) from TBM operations are site-specific in that they would be dependent on depth of tunneling activities, soil composition, and distance to the nearest sensitive receptor. In most cases, vibration levels from TBM would be below the impact thresholds. The highest ground-borne noise levels would typically be caused by very localized underground features such as cobbles; however, given the depth at which tunnels would be bored, it is unlikely vibration would be perceptible. Additionally, the vibration and ground-borne noise from TBM operations during construction would be of short duration (i.e., approximately one week) at any one location. The project would use conveyors for transporting excavated materials from tunnels. This would eliminate the potentially more significant and longer lasting vibration and ground-borne noise effects. The project would avoid the use of muck trains, which are a major source of vibration and ground-borne noise due to their rigid structure and the effects can potentially last for years, depending on the location and number of sites where material is removed from the tunnel.

As discussed on Page 3.4-73 of the Draft EIR/EIS, the Build Alternatives will incorporate NV-IAMF#1 (Noise and Vibration), which requires the contractor to prepare a noise and vibration technical memorandum documenting how the FTA and FRA guidelines for minimizing construction vibration

impacts will be employed when work is being conducted within 1,000 feet of sensitive receivers. Although NV-IAMF#1 would reduce construction vibration, construction-related activities would generate excessive ground-borne vibration exceeding federal criteria for annoyance and building damage. This represents a significant impact under CEQA, and mitigation is required. However, in any given location along the Build Alternative alignments, construction vibration would be temporary and intermittent and would cease once work is complete. Mitigation Measure N&V-MM#2 (Construction Vibration Mitigation Measures) (described in Section 3.4.7, Mitigation Measures), requires the contractor, prior to construction activity, to create a vibration technical memorandum stipulating vibration-reduction methods for pile driving. With the implementation of Mitigation Measure N&V-MM#2, the impact would be less than significant under CEQA and no adverse effect under NEPA for the six Build Alternatives.

Operation

Operational impacts associated with ground-borne noise and vibration, discussed under Impact N&V#8 in Section 3.4 of the Draft EIR/EIS, were determined by looking at “maximum train speeds” and “the proximity of the receivers to the proposed track (or aerial structure)” (Draft EIR/EIS, p. 3.4-108; see also Table 3.4-36, 3.4-38, 3.4-40, and 3.4-42) using methodology in the FRA Guidance Manual (see Draft EIR/EIS, pp. 3.4-26 to 3.4-32). For all build alternatives, it was determined that, where the train would “continue in a tunnel...operations would not produce perceptible vibration and ground-borne noise impacts aboveground” (Draft EIR/EIS, pp. 3.4-109, 3.4-120). This is because HSR trains traveling in tunnels with maximum depths ranging from 250 feet to 2,200 feet would be well outside the screening distances for ground-borne noise and vibration (see Draft EIR/EIS, Table 3.4-3) and, regardless, any ground-borne noise or above-ground vibration near potential receptors would be absorbed by the many hundreds of feet of earth between the train and the surface. So, although it was determined that operations along certain portions of the Refined SR14, SR14A, E1, and E1A Build Alternative alignments would exceed FRA-recommended ground-impact thresholds for institutional uses and residential receivers during operation, and that those impacts are significant impact under CEQA and an adverse effect under NEPA, and require mitigation, that determination reflects only impacts at or near above-ground track sections, *not* underground sections, as is discussed here.

Notably, however, during operation of the Refined SR14, SR14A, E1 and E1A Build Alternatives, impacts at or near above-ground tracks would exceed vibration impact criteria for residential receivers only in the area between Osborne Street and Montague Street in Pacoima and limited to only 23 residential receivers in this area (see Tables 3.4-35 and 3.4-39 in Section 3.4 of the Draft EIR/EIS). This is an area where the underground tunnels would be transitioning to the surface near the Hansen Spreading Grounds facility. Also notably, only two locations in particular have been preliminarily identified as requiring vibration mitigation (see Draft EIR/EIS, p. 3.4-142). Other areas along the Refined SR14, SR14A, E1, and E1A Build Alternative alignments would result in less than significant ground-borne noise and vibration impacts pursuant to CEQA and no adverse effect pursuant to NEPA. Operation of the E2 and E2A Build Alternatives would not exceed ground-borne noise and vibration impact criteria at any location; therefore, this impact would be less than significant under CEQA and would result in no adverse effect under NEPA for these build alternatives, and no mitigation is required.

To reduce ground-borne noise and vibration impacts from above-ground train operations at the aforementioned specific location between Osborne Street and Montague Street, Mitigation Measure N&V-MM#7, Implement Operation Vibration Mitigation Measures, would be implemented to require the incorporation of design considerations to lessen above-ground ground-borne vibration levels by at least 4 dB and 2 dB, respectively (see discussion in Section 3.4.7 of the Draft EIR/EIS). This measure would effectively reduce vibration and ground-borne noise levels at or near above-ground tracks below threshold levels.

17.5.5 PB-Response-N&V-5: Impacts of Spoils Hauling (Noise)

Commenters expressed concern about noise impact generated from spoils hauling associated with each of the Build Alternatives, especially in the vicinity of the tunnel portals and adjacent to schools. Commenters requested more information regarding the IAMFs and mitigation measures set forth to reduce the noise impacts from truck traffic along spoils haul routes.

Impact N&V#2 in the Draft EIR/EIS presents the findings associated with the noise assessment conducted to determine the impacts of spoils-hauling trucks operating on roadways between the tunnel portals and major roadways connecting to the disposal site. The assessment indicated that there would be noise impacts from trucks on the haul routes for all six Build Alternatives. Table 3.4-27 summarizes severe noise impacts from truck traffic on spoils haul routes for each of the six Build Alternatives. Spoils hauling would be required within the ANF to haul spoils from HSR construction sites to deposition areas.

Since publication of the Draft EIR/EIS, new analysis was developed regarding hazardous spoils hauling. The Draft EIR/EIS identified that the SR14A Build Alternative of the Palmdale to Burbank Section would generate 9.2 million cubic yards of hazardous materials waste (see page 3.10-22 of the Draft EIR/EIS). Since preparation of the Draft EIR/EIS, the Authority has refined these assumptions such that the hazardous materials that would be hauled to Class I/II Hazardous, Designated Waste and Class III Non-Hazardous, Contaminated Waste facilities. The total amount of hazardous waste materials was reduced from 9.2 million cubic yards to 6.8 million cubic yards. The Class I/II Hazardous/Designated Waste spoils would be transported to a Class I/Class II Hazardous/Designated Waste landfill site near Buttonwillow, located 127 miles away from the SR14A Build Alternative. The Class III Non-Hazardous, Contaminated Waste spoils would be transported to Class III Non-Hazardous, Contaminated Waste landfills, located an average distance of 40 miles away from the SR14A Build Alternative. Please note that there are facilities closer to the SR14A Build Alternative than 40 miles; therefore, this is a conservative analysis. The access points for spoils hauling, and the haul routes from the access points to major roadways for the locations described above have not changed since the assessment for the Draft EIR/EIS for the locations identified above. The volume of material to be hauled would not increase at each of the access points described above. Therefore, the spoils haul route noise impact assessment for those locations described above would be the same or slightly less than what is presented in the Draft EIR/EIS. There are no severe impacts identified at any of the locations described in the Draft EIR/EIS and there would be no severe impacts at any locations as a result of this change.

As discussed on Page ES-2 of the Noise and Vibration Technical Report (Authority 2019), under the Refined SR14 Build Alternative, only one area would experience severe noise effects along Big Springs Road outside of Acton due to trucks on the haul routes. No severe or significant construction noise impacts from spoils hauling are anticipated for the SR14A Build Alternative. Under the E1, E1A, E2, and E2A Build Alternatives, sensitive receivers south of Palmdale would experience noise impacts along Aliso Canyon Road, Soledad Canyon Road, and Crown Valley Road. Additionally, under the E1 and E1A Build Alternatives sensitive receivers would experience noise impacts from hauling spoils from the San Gabriel Adit along Sand Canyon Road and Placerita Canyon Road in the ANF. Under the E2 Build Alternative and the E2A Build Alternative, sensitive receivers would experience noise impacts from hauling tunnel portal spoils along Wheatland Avenue and Foothill Boulevard in the Shadow Hills and Lake View Terrace neighborhoods. While noise reduction measures would be implemented, some receivers would still experience noise in exceedance of acceptable noise thresholds. Therefore, the E2 and E2A Build Alternatives would have the potential to impact the greatest density of sensitive receivers from hauling of construction spoils.

NV-IAMF#1 (Noise and Vibration), which would apply to all the Build Alternatives and is discussed in Section 3.4.4.2 of the Draft EIR/EIS, would reduce construction noise, but noise impacts from truck traffic along spoils haul routes would temporarily or periodically substantially increase ambient noise levels in the project vicinity above levels existing without the project. Mitigation Measure N&V-MM#1 (Construction Noise Mitigation Measures) (discussed in Section 3.4.7) will require the contractor to prepare a noise-monitoring program describing how the contractor will monitor construction noise and noise from truck traffic to verify compliance with the noise limits. The noise-monitoring program will describe the actions required of the contractor to meet required noise limits of 80 dBA Leq during daytime hours and 70 dBA Leq during nighttime hours. In addition, the noise-monitoring program will describe the actions required of

the contractor to meet required noise limits. However, due to spoils haul routes proximity to sensitive receivers, some receivers may still experience noise in exceedance of acceptable noise limits. While there would be other haul routes within the ANF boundaries, the proposed haul route that would access the intersection of Sand Canyon Road and Placerita Canyon Road would be the only haul route that would result in severe noise impacts. The other haul routes would not result in severe noise impacts. See Appendix H of the Palmdale to Burbank Project Section Noise and Vibration Technical Report (Authority 2019). Mitigation Measure N&V-MM#1 requires the Authority to establish and maintain (until construction is completed) a toll-free hotline for construction-related activities. This hotline would also apply for noise associated with hauling trucks. The Authority will 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 incoming messages including the Authority's responsive actions publicly available on its website.

17.5.6 PB-Response-N&V-6: Construction Noise/Truck Impacts

Commenters expressed concern about noise/truck impacts during construction. Commenters requested more information regarding the IAMFs and mitigation measures set forth to reduce noise and vibration impacts from spoils hauling.

As discussed under Impact N&V#1, construction of each of the six Build Alternatives would include mobilization, site preparation and roadway construction, earthmoving, cut-and-cover structure construction, demolition, tunneling, retaining wall construction, station construction, grade-separation construction, aerial track structure construction, at-grade track construction, railway systems construction, and demobilization. Each construction phase would use a unique set of construction equipment. Although the duration, location, and intensity of construction noise would vary according to the Build Alternative, impacts would be consistent among all six Build Alternatives. NV-IAMF#1 (Noise and Vibration) requires the Authority's construction contractor to prepare a noise and vibration technical memorandum documenting how the FTA and FRA guidelines for minimizing construction noise impacts will be employed when work is being conducted within 1,000 feet of sensitive receivers. Although NV-IAMF#1 would reduce construction noise, residences within the screening distances would be exposed to construction noise that exceeds the recommended FRA construction noise criteria. Mitigation Measure N&V-MM#1 (Construction Noise Mitigation Measures) (discussed in Section 3.4.7 of the Draft EIR/EIS) will require the Authority's construction contractor to prepare a noise-monitoring program describing how the contractor will monitor construction noise and noise from truck traffic to verify compliance with the noise limits. In addition, the noise-monitoring program will describe the actions required of the contractor to meet required noise limits. In addition, Mitigation Measure N&V-MM#1 requires the Authority to establish and maintain (until construction is completed) a toll-free hotline for construction-related activities. The Authority will 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 incoming messages including the Authority's responsive actions publicly available on its website. Due to the Build Alternatives' proximity to sensitive receivers, some receivers may still experience noise in exceedance of acceptable noise limits.

Since publication of the Draft EIR/EIS, new analysis was developed regarding hazardous spoils hauling. The Draft EIR/EIS identified that the SR14A Build Alternative of the Palmdale to Burbank Section would generate 9.2 million cubic yards of hazardous materials waste (see page 3.10-22 of the Draft EIR/EIS). Since preparation of the Draft EIR/EIS, the Authority has refined these assumptions such that the hazardous materials that would be hauled to Class I/II Hazardous, Designated Waste and Class III Non-Hazardous, Contaminated Waste facilities. The total amount of hazardous waste materials was reduced from 9.2 million cubic yards to 6.8 million cubic yards. The Class I/II Hazardous/Designated Waste spoils would be transported to a Class I/Class II Hazardous/Designated Waste landfill site near Buttonwillow, located 127 miles away from the SR14A Build Alternative. The Class III Non-Hazardous, Contaminated Waste spoils would be transported to Class III Non-Hazardous, Contaminated Waste landfills, located an average distance of 40 miles away from the SR14A Build Alternative. Please note that there are facilities closer to the SR14A Build Alternative than 40 miles; therefore, this is a conservative analysis. The access points for spoils hauling, and the haul routes from the access points to major roadways for the locations described above have not changed since the assessment for the Draft EIR/EIS for the locations identified above. The volume of material to be hauled would not increase at each of the access points described

above. Therefore, the spoils haul route noise impact assessment for those locations described above would be the same or slightly less than what is presented in the Draft EIR/EIS. There are no severe impacts identified at any of the locations described in the Draft EIR/EIS and there would be no severe impacts at any locations as a result of this change.

17.6 Public Utilities and Energy

17.6.1 PB-Response-PUE-1: Energy Use and Consumption

Commenters asked which providers would supply the energy to power the HSR system. Commenters suggested the Chapter S1 Summary should clarify the statement that the HSR system would be powered by clean, renewable energy. Commenters requested clarification on how the Authority would obtain clean, renewable energy to power the HSR system. Commenters requested more information about the sources and methods the Authority used to analyze potential project impacts of each of the six Build Alternatives on energy infrastructure and energy resources.

Section 3.6.4.3 of the Draft EIR/EIS describes the sources and methods the Authority used to analyze potential project impacts of each of the six Build Alternatives on public utilities and energy resources. As discussed in Impact PUE#6, energy used during construction of the project would represent a one-time, nonrecoverable energy cost, and the temporary demand for energy utilized during construction would not require additional permanent electricity transmission capacity nor increase peak- or base-period demands for electricity from the electrical grid system. Table 3.6-23 in the Draft EIR/EIS provides the total construction energy use assumptions and payback information for all six Build Alternatives. Depending on the Build Alternative selected and the medium or high ridership scenario, the payback period for energy consumed during construction would range from 0.11 year (1 month and 10 days) for the, which discuss high ridership scenario to 0.21 year (2 months and 17 days) for the medium ridership scenario.

The Authority calculated operation energy consumption for medium and high ridership scenarios for the Phase 1 HSR system. The medium and high ridership scenarios are based on the 2040 level of ridership as presented in the Authority's 2016 Business Plan. The complete statewide analysis is included in Appendix 3.6-B, with detailed calculations on the reduction in energy consumption from transportation (vehicles and aircraft). Section 3.6.5.10 in the Draft EIR/EIS presents existing and projected statewide energy demand for the State of California, including with the implementation of each of the Build Alternatives.

Impact PUE#11 in the Final EIR/EIS discusses the project's consistency with adopted Authority policy goals of utilizing renewable energy sources to operate the HSR system. The Authority's policy goal is to use 100 percent clean, renewable electricity for the operation of the HSR system. Commenters suggested that the text in Section S.8.1 and Section 3.6 of the Draft EIR/EIS provided conflicting statements about the Authority's commitment to powering the HSR trains with 100 percent renewable energy. In response to comments received on the Draft EIR/EIS, Section 3.6 in this Final EIR/EIS has been revised to clarify the Authority's commitment to power the HSR system with 100 percent renewable energy. Further, the HSR system in California will run entirely on electricity generated from renewable sources, such as solar, wind, geothermal and bioenergy. Not only will the trains use 100 percent renewable energy, but the stations and maintenance facilities have been designed to be sustainable (Authority 2020). For example, PUE-IAMF#1 (Design Measures) requires that project design incorporates utilities and design elements that minimize electricity consumption (e.g., using regenerative braking, energy-saving equipment on rolling stock and at station facilities, implementing energy saving measures during construction, and automatic train operations to maximize energy efficiency during operations). The design elements are included in the design build contract. Additionally, the Authority has adopted a sustainability policy that establishes project design and construction requirements that avoid and minimize impacts.

Senate Bill (SB) 1078, passed in 2002, required California utilities to achieve a state-mandated 33 percent renewable portfolio by 2020. The passage of SB 100 in 2018 reaffirmed California's commitment to the Renewable Portfolio Standards previously defined in SB 1078. Specifically, SB 100 requires that California increase the amount of electricity procured from renewable energy sources from 33 percent to 60 percent by 2030 and 100 percent by 2045. The passage of SB 1020 in 2022 further accelerated

California's Renewable Portfolio Standards previously defined in SB 100. Specifically, SB 1020 requires that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by 2035 and 95 percent of all retail sales of electricity to California end-use customers by 2040. Further, SB 1020 requires all state agencies to rely on 100 percent renewable energy and zero-carbon resources to serve their own facilities by 2035. The requirement that utility providers supply electricity procured from 100 percent renewable energy sources will help with operating the HSR system with 100 percent renewable energy. Impact PUE#11 notes that, in September 2008, the Authority adopted a policy goal of utilizing renewable energy for all traction power. An industry survey in April 2013 indicated that there is sufficient renewable energy capacity to meet the system demand. Under the 2013 Policy Directive POLI-PLAN-03, the Authority has adopted a goal to purchase 100 percent of the HSR system's power from renewable energy sources. The Authority has designated staff working to collaborate with utilities and renewable energy developers (who may construct facilities that contribute wind, solar, or other renewable sources to the power grid). The utilities coordination staff have a strong understanding of HSR system electricity demands and of how these demands impact negotiations with utilities and renewable energy developers. Furthermore, the Authority is developing a strategic renewable energy procurement plan that requires extensive collaboration and can be supported through stakeholder engagement, internal and external working groups, and creation and selection of efficient and effective instruments for power procurement. The Authority will continue to gather and synthesize information to develop this plan for the California HSR System. The Authority's 2022 Sustainability Report also described its progress in confirming details of a preferred approach regarding renewable energy. In that report (Authority 2022), the Authority dates, "Staff are further refining the steps for power generation and renewable power purchases where necessary. The most promising strategy is to use land owned by the Authority for solar generation and battery storage resources. We will finalize the procurement strategy, continue socialization and coordination with regulatory bodies, and possibly seek additional grant funding in 2022. All this work will be done in coordination with the track and systems procurement and contract timeline."

Further, the Authority has entered into a Memorandum of Understanding (MOU) for Achieving an Environmentally Sustainable High-Speed Train System in California in 2011 with FRA, HUD, FTA, and EPA to support common sustainability goals. These include minimizing air and water pollution, energy usage, and other environmental impacts. This MOU is located on the Authority's website (https://www.hsr.ca.gov/wp-content/uploads/docs/about/partnerships/mou/HST_Sustainability_MOU_Signed.pdf). The signatory agencies recognize that construction and operation of the HSR system would require a large amount of energy.

17.6.2 PB-Response-PUE-2: Impacts to Existing Utilities/Infrastructure

Commenters expressed concern about effects to existing utility lines from construction of the project.

The Palmdale to Burbank Project Section includes a commitment to minimize or avoid utility service interruptions by providing that construction activities be coordinated with service providers to minimize or avoid interruptions, and upgrading existing power lines to connect the HSR system to existing utility substations (PUE-IAMF#4 [Utilities and Energy]). In addition, California Government Code Section 4216 establishes procedures for identifying buried utilities prior to excavation. Given the standard precautions that would be instituted prior to and during construction, the Palmdale to Burbank Project Section would be unlikely to result in accidental disruption of utility systems.

The HSR right-of-way would be fenced and secured after construction. Underground utilities that conflict with (i.e., that are within or cross) the HSR right-of-way would be relocated or reinforced underneath the HSR right-of-way inside a casing pipe strong enough to carry the California HSR System utilities, and that would allow for utility maintenance access from outside the HSR right-of-way. Underground wet utilities such as water, sewer, storm drains, gas, and petroleum lines are conveyed inside pipeline material with a service life that is typically 50 years or more. Dry utilities such as electrical, fiber optics, and telephone lines are encased in a durable pipeline—for example, one made of steel—that protects the dry utilities from deterioration and has a service life of 50 years or more. If the utility conveyance pipeline needs repair or replacement, the casing pipe would stay in place so that HSR operations would continue while

the utility agency maintained the line. Before field visits, it is common practice for utility agencies to coordinate with the owner of the property in which their facilities lie. With the inclusion of standard casing and maintenance access requirements for utilities located underneath the HSR right-of-way, impacts associated with reduced access to existing utility lines would be less than significant as disclosed in Impact PUE#7, Permanent Reduced Access to Existing Utilities.

17.6.3 PB-Response-PUE-3: Water Demand and Usage

Commenters expressed concern regarding effects to water supply from construction of the project. Commenters requested more information regarding the mitigation measures set forth to minimize demand for water supplies and on where the project would procure its construction, and to some extent its operational, water supply. AVEK, a water supplier, also brought up concerns around the project's location outside its service area.

Water Demand

Tunneling

Construction of the Build Alternatives would require temporary water use for the following activities: soil optimization for tunneling, dust control; preparing concrete; and re-seeding disturbed areas. Table 3.6-21 under Impact PUE#3, in Section 3.6, Public Utilities and Energy of the Draft EIR/EIS, depicts the estimated water demand required for construction activities associated with the project. The differences in water demand among the Build Alternatives is a function of the total trackway length and tunneling excavation amounts, with the SR14A Build Alternative having the highest water demand overall (approximately 1,371 acre-feet per year, consisting of 1,266 acre-feet per year for the Central Subsection, which involves tunneling and 105 acre-feet per year for the Burbank Subsection) because it would utilize the most tunnel boring machines (TBMs) operating at the same time. The specific type of TBM used for construction would be determined as part of the tunnel design process. Identification of a TBM type would depend on geotechnical conditions, the type of tunnel, and the presence of surface features that could be impacted by the tunnel; however, it is anticipated that the selected TBMs would require cooling with recirculated water. Both non-potable and untreated water are acceptable for tunnel construction purposes.

Supplemental Water for Groundwater-Related Impacts

Refer to Standard Response PB-Response-HYD-3: Impacts of Tunnels on Wells, which describes how the project would minimize impacts on groundwater resources, including wells. As documented in Impact HWR#5 in Section 3.7, Hydrology and Water Resources of the Draft EIR/EIS, the Authority would implement state-of-the-art design features and construction methods to avoid and minimize impacts on hydrologic resources, including through the use of TBMs equipped with specific features designed to reduce or prevent inflows and grouting and tunneling-lining approaches that have been effective at controlling water seepage (as required by HYD-IAMF#5 [Tunnel Boring Machine Design and Features], HYD-IAMF#6 [Tunnel Lining Systems], and HYD-IAMF#7 [Grouting]). With these design features and construction methods, tunnel construction is not expected to result in groundwater-related impacts to surface resources or wells, and the need for supplemental water for habitat restoration and for private wells is highly unlikely.

Nonetheless, the EIR/EIS includes a mitigation measure (HYD-MM#4) that requires an Adaptive Management and Monitoring Plan (AMMP). The AMMP requires the implementation of a comprehensive monitoring program to establish baseline conditions regarding surface and subsurface water resources in the ANF and to allow for the detection of any changes in groundwater and surface water conditions related to tunnel construction to ensure timely implementation of remedial measures. The AMMP is set out in Appendix 3.8-C of the EIR/EIS. A supplemental water demand analysis was conducted as part of the Draft EIR/EIS and was included as Appendix 3.8-D to discuss the options, logistics, and feasibility of implementing the response actions that may be implemented in accordance with the AMMP. Specifically, this analysis discusses various scenarios for the E1 and E2 Build Alternatives that would necessitate supplemental water, the potential sources of supplemental water, and the logistical considerations regarding the conveyance and delivery of supplemental water. Appendix 3.8-D has been revised in the Final EIR/EIS to include the High Risk Area for the Refined SR14 and SR14A Build Alternatives. As they

relate to habitat needs, the Supplemental Water Demand Analysis for Potential Impacts provides examples of supplemental water volumes for three High Risk Areas ranging in size. That is, these are hypothetical examples and are not meant to depict a reasonably foreseeable scenario. Given the effectiveness of IAMFs at preventing and minimizing groundwater impacts in the first place, it is unlikely that supplemental water would be needed. The AMMP also identifies other remedial actions that would not require supplemental water. Moreover, in the unlikely event that supplemental water would be needed to mitigate impacts, the locations and amount of water that might be needed is speculative. As a result, supplemental water is not included in the total construction water demand. However, given the construction techniques and IAMFs that would be utilized to eliminate or minimize impacts, even assuming that some supplemental water would be needed, the amount of water would be minimal in relationship to total water needs for project construction, For SR14A and the Refined SR14 Build Alternatives, any supplemental water needed to mitigate impacts could be provided by the sources identified for construction water. As noted under Impact HWR#5 in the Draft EIR/EIS, the Refined SR14 and SR14A alignments would cross the fewest identified risk areas compared to the other two alignments. Within those risk areas, no known seeps, springs, intermittent or perennial streams are present. As such, the Refined SR14 and SR14A Alternatives pose the least risk of hydrologic impacts occurring among the Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be of less severity than the other Build Alternatives, and therefore less likely to require supplemental water. As explained under Impact HWR#5 in the Draft EIR/EIS, the probability that hydrologic resources would be affected even in High-Risk Areas (where impacts are most likely to occur), is minimal. (Draft EIR/EIS, pp. 3.8-52 – 3.8-53). Accordingly, for the Refined SR14 and SR14A alignments, the probability that supplemental water would be needed to mitigate impacts to hydrologic resources is minimal.

For the same reasons discussed above, it is unlikely that tunnel construction would result in groundwater impacts that affect private wells (see Standard Response PB-Response-HYD-3: Impacts of Tunnels on Wells). Pursuant to HYD-IAMF#8, private water supply wells that would be directly affected by tunnel construction would be identified and relocated prior to construction to the extent feasible. The Authority will not cut off access until a replacement well has been provided and is fully operational. It is anticipated that any replacement wells would be relocated as close as reasonably possible to the existing well. See Standard Response PB-Response-HYD-3: Impacts of Tunnels on Wells for more details. It is anticipated that impacts to wells would be addressed with the implementation of HYD-IAMF#8, which includes replacement wells and other potential options to effectively minimize and avoid impacts if they occur.

Water Supply

The discussion of water supply is divided into two geographic segments: roughly the eastern extent of the alignment and the western extent of the alignment, based on the location of water and recycled water service providers.

Eastern Extent of Project Section

Potable water providers in the eastern extent of the project section include Antelope Valley-East Kern Water Agency (AVEK) and Palmdale Water District. Los Angeles County Sanitation Districts 14 and 20 are recycled water providers.

Antelope Valley – East Kern Water Agency

AVEK's water supply is provided in Table 3.6-21 of the Final EIR/EIS and reproduced below in this standard response. AVEK receives the majority of its water supplies from the State Water Project (SWP), and AVEK is able to purchase additional SWP supplies from DWR when available. AVEK uses a variety of SWP water types. AVEK's imported water supply is also composed of SWP turnback pool water, other SWP water, and other non-SWP water.[4] These delivery types can be sources of AVEK water for the project. SWP turnback pool water is Table A[5] water that Department of Water Resources has allocated to SWP contractors in the current year but exceeds the needs of SWP contractors (i.e., AVEK and others who have contracts to purchase SWP water). SWP contractors may offer a portion of their Table A to a

[4] AVEK. 2016. 2015 Urban Water Management Plan. June. Available: https://www.avek.org/files/4f9de0772/UWMP+2015.pdf.

5 Once the total amount of water to be delivered is determined for the year, all available water is allocated in proportion to each contractor's annual maximum SWP Table A amount.

"turnback pool," where another contractor may purchase it. However, SWP water supplies can be unreliable in that receiving contracted Table A water is not guaranteed. Actual water available is dependent on allocations from DWR, which are difficult to predict and can fluctuate year-to-year. As examples, in 2022 the final allocation was 5 percent of Table A contracted water, while in 2023 the allocation was 100 percent.[6] In 2022, AVEK had no surplus water available and had to rely on customers to use their own sources to make deliveries to critical areas.[7]

To prepare for scenarios when AVEK's supplies from the SWP and groundwater do not meet demand during dry years, excess water can be imported from AVEK and "banked" in the local groundwater basin to use for future dry years. Water banking involves storing imported water in the aquifer when excess supplies are available in wet years or low-demand periods and then subsequently recovering it in periods of drought or high demand. In addition to banking its own supplies, AVEK can bank supplies purchased by others for later recovery. However, capacity to bank water is limited. For example, in 2023, AVEK is using its entire capacity to bank water for itself and has no surplus capacity to bank water for others. Additionally, water purchased by others from the SWP would also be subject to DWR allocations. Therefore, even a purchase of 3,000 acre-feet would be limited to delivery of 300 acre-feet in a year where allocation is 10 percent. Further complicating the evaluation of water supply, AVEK has a good idea of water the water year looks like in October, though the final water allocation is in May.[8] As a result, predicting water supply availability years ahead of time is difficult.

Additionally, AVEK's Water Shortage Contingency Plan ordinance would affect distribution of water during water shortages. The ordinance outlines the allocation of SWP water in the event of a water shortage. AVEK's Water Shortage Contingency Plan also notes that the SWP's physical conveyance infrastructure enables AVEK to convey any of its supplemental SWP purchases to augment drought year supplies. Water would be allocated based on historical taxes paid to AVEK by entities in each county and the amount of SWP water received relative to the amount of SWP water received by other AVEK customers. The HSR project would comply with this ordinance. However, temporary construction water uses would likely be the first kind of use to be curtailed in terms of addressing a water shortage.[9]

AVEK typically provides water only to its service area. AVEK's service area is roughly triangular in shape extending from a point around the Los Angeles County/Ventura County/Kern County lines east to the boundary between Los Angeles County and San Bernardino County. Many of the tunnel portals are close to but not within the service area. For example, the SR14A Build Alternative Tunnel Portal 1A and 2A are not within AVEK service area, nor are all remaining portals going south. The Acton Intermediate Window is within the AVEK service area, as is some of the underground portion of the section. This is consistent with AVEK's comment on the Draft EIR/EIS that the tunnel portals are not within its service area. However, it is uncertain what component of the project would be used to determine if the project is within the AVEK service area, whether it be the location of the TBM or the entrance to the tunnel being used, given the tunnel is in and out of AVEK's service area.

LA County Waterworks District No. 40

LA County Waterworks District No. 40 purchases water from AVEK and is AVEK's largest municipal customer. Water purchased from AVEK also makes up the majority of its supply, which also includes

[6] DWR. 2023. State Water Project, Historical Table A Allocations, Water Years 1996 – 2023. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/SWP-Water-Contractors/Files/1996-2023-Allocation-Progression-rev3-042023.pdf. Accessed September 21, 2023.

[7] Justin Livesay, Engineering Manager and Joe Roberts, Senior Engineer, AVEK. 2023. Meeting with Kristi Black, Leo Mena, and Scott Steinwert, Authority Regional Consultant. September 7, 2023.

[8] Justin Livesay, Engineering Manager and Joe Roberts, Senior Engineer, AVEK. 2023. Meeting with Kristi Black, Leo Mena, and Scott Steinwert, Authority Regional Consultant. September 7, 2023.

[9] Justin Livesay, Engineering Manager and Joe Roberts, Senior Engineer, AVEK. 2023. Meeting with Kristi Black, Leo Mena, and Scott Steinwert, Authority Regional Consultant. September 7, 2023.

groundwater.[10] As a result, LA County Waterworks District No. 40 ‘s water supply is subject to the same uncertainties described above related to SWP water availability. Table PUE-3.1 contains the 2015 Urban Water Management Plan projections about water supply and demand for normal, dry, and multiple dry years in 2020, excluding recycled water supply and demand.[11]

Table PUE-3.1 LA County Waterworks District No. 40 Water Projections

Water Supply – Normal Water Year 2020 (ac-ft/yr)	Water Supply – Single Dry Year 2020 (ac-ft/yr)	Water Supply – Multiple Dry Years 2020 (ac-ft/yr)	Predicted Annual Demand 2020 (ac-ft/yr)
110,090	88,290	88,290	88,290

Source: Los Angeles County Waterworks District, 2017

As with AVEK, LA County Waterworks District No. 40 indicated that in times of water shortages, construction water would be the first to be curtailed. LA County Waterworks District No. 40 not only provides water to their service area but can also serve its sphere of influence.[12]

Palmdale Water District

Palmdale Water District obtains its potable water from a mix of groundwater, surface water, and imported water. Projections show that the SWP would be its single largest source of water, but amounting to about a little more than half of its total reasonably available volume (both as Table A water and SWP water obtained through the Butte Transfer Agreement). As a result, this portion of Palmdale Water District’s supply would be subject to the same SWP-related uncertainties as described above for AVEK. Table PUE-3.2 contains the 2015 Urban Water Management Plan projections about water supply and demand for normal, dry, and multiple dry years in 2020, excluding recycled water supply and demand.[13]

Table PUE-3.2 Palmdale Water District Water Projections

Water Supply – Normal Water Year 2020 (ac-ft/yr)	Water Supply – Single Dry Year 2020 (ac-ft/yr)	Water Supply – Multiple Dry Years 2020 (ac-ft/yr)	Predicted Annual Demand 2020 (ac-ft/yr)
34,689	18,680	25,580	20,800

Source: Palmdale Water District, 2016

As indicated in the table, for 2020, Palmdale Water District projected a surplus of 13,880 acre-feet per year in a normal water year, a deficit of 2,120 acre-feet per year in a single dry year, and a surplus of 4,780 acre-feet per year in a multiple dry year.

Palmdale Water District supplies construction water but it can only be used within Palmdale Water District’s service boundaries. Portal 1A is within the Palmdale Water District service area. However, it is notable that construction water uses can include underground utility construction, dust control, finish

[10] Los Angeles County Waterworks District No. 40. 2017. 2015 Urban Water Management Plan for District 40. February. Available: https://dpw.lacounty.gov/wwd/web/Documents/2015%20Integrated%20Urban%20Water%20Management%20Plan%20for%20the%20Antelope%20Valley.pdf.

[11] Los Angeles County Waterworks District No. 40. 2017. 2015 Urban Water Management Plan for District 40. February. Available: https://dpw.lacounty.gov/wwd/web/Documents/2015%20Integrated%20Urban%20Water%20Management%20Plan%20for%20the%20Antelope%20Valley.pdf.

[12] Aracely Jaramillo, Water Resources and Development, LA County DPW. 2023. Meeting with Kristi Black, Leo Mena, and Scott Steinwert, Authority Regional Consultant. September 6, 2023.

[13] Palmdale Water District. 2016. 2015 Urban Water Management Plan for Palmdale Water District. June. Available: https://www.palmdalewater.org/wp-content/uploads/2016/10/PWD_2015UWMP_Final_June2016.pdf.

grade earthwork but limited rough grading projects. Construction water for rough grading is limited to single lot projects (see Palmdale Water District Rules and Regulations, Article 9, Section 9.04 for requirements) and is not available for multiple lot projects due to the large quantities required for rough grading operations and the potential for several multiple lot projects being constructed at one time which could adversely affect the availability of water necessary to meet normal domestic demands.[14] While tunneling is not rough grading, this restriction may nonetheless provide insight into the availability of the large quantities of water needed for tunneling.

Los Angeles County Sanitation Districts 14 and 20

Los Angeles County Sanitation District's Lancaster Water Reclamation Plant (WRP) and Palmdale WRP treat wastewater to levels suitable for non-potable uses, including project construction. Sanitation District 14 serves the cities of Palmdale and Lancaster and unincorporated territory and operates the Lancaster WRP. Sanitation District 20 serves the City of Palmdale and unincorporated territory and operates the Palmdale WRP. The LACSD's 33rd Annual Status Report on Recycled Water Use, FY 2021–22,[15] states the following regarding recycled water production and reuse from the WRPs:

- Lancaster WRP: This plant produced 15,683 acre-feet per year and had 15 reuse sites and 11 temporary reuse sites. Of the 15,683 acre-feet per year, 12,432 acre-feet per year were reused, for a surplus of 3,251 acre-feet per year.
- Palmdale WRP: This plant produced 9,301 acre-feet per year and had 6 reuse sites and 14 temporary reuse sites. Of the 9,301 acre-feet per year, 7,817 acre-feet per year were reused, for a surplus of 1,484 acre-feet per year.

Over this period and included within these statistics, some private water trucks hauled recycled water to short-term construction sites. These volumes have been available even as wastewater flows in the LACSD system have decreased since 2006 as a result of water conservation actions and drought emergency declarations. Influent flow to the Antelope Valley WRPs has stayed relatively consistent since 2011.[16]

The percentage of reuse from these WRPs is approximately 81 percent of recycled water produced. LACSD notes that the differences between the volume of recycled water production and reuse for the Antelope Valley WRPs is the effect of evaporation from recycled water storage reservoirs and changes in storage rather than water discharged to a waterway. The Antelope Valley is a closed basin and there is no available discharge point. As a result, essentially all recycled water produced and available in the service area was put to beneficial use.[17] To explore what of the unused water lost to evaporation could be reused and to characterize the available recycled water going forward, the Authority obtained more information from LACSD, and LACSD indicated that recycled water is a viable option for planning for the proposed project. LACSD indicated that Palmdale WRP is closer and that going forward there are contractual agreements for use of about half the effluent from Palmdale WRP, so there is some coordination that would have to occur among existing contract holders as well as a projected larger scale project that could come on line in 2028 or 2029. Lancaster WRP is also an option to provide water for construction, though it would require greater travel distance.[18]

[14] Palmdale Water District. 2023. Construction Water. https://www.palmdalewater.org/development-services/construction-water/. Accessed September 21, 2023.

[15] LACSD. 2022. 33rd Annual Status Report on Recycled Water Use, FY 2021 – 22. Available: https://www.lacsd.org/home/showpublisheddocument/10811/638216328766870000.

[16] LACSD. 2022. 33rd Annual Status Report on Recycled Water Use, FY 2021 – 22. Available: https://www.lacsd.org/home/showpublisheddocument/10811/638216328766870000.

[17] LACSD. 2022. 33rd Annual Status Report on Recycled Water Use, FY 2021 – 22. Available: https://www.lacsd.org/home/showpublisheddocument/10811/638216328766870000.

[18] Holly Jones, Project Engineer and Matt Bao, Supervising Engineer, LACSD, Antelope Valley Water Reclamation Plants. 2023. Meeting with Kristi Black and Scott Steinwert, Authority Regional Consultant. September 13, 2023.

Lahontan Regional Water Quality Control Board (RWQCB) Order No. R6V-2009-0141 allows use of recycled water from the Lancaster WRP (Sanitation District 14) in a defined permit area. According to Lahontan RWQCB Order No. 2012-0002, the Palmdale WRP has the same permit area. Portal 1A and the Acton Intermediate Window are within the permit area. Portal 2A is on the border of the Permit Area. Similar to AVEK, there is some lack of clarity around what component of the project would be used to determine if the project is within the permit area, whether it be the location of the TBM or the entrance to the tunnel being used to start the TBM, and they have not encountered a scenario of reuse outside the permit area. [19]

Western Extent of Section

Potable water providers in the western extent of the project section include Santa Clarita Valley Water District and Los Angeles Department of Water and Power (LADWP). In addition, Burbank Water and Power is a recycled water provider.

Santa Clarita Valley Water District

Santa Clarita Valley Water District's water comes from a variety of sources, including ground water and imparted water (largely from the SWP). As a result, some of the Santa Clarita Valley Water District's supply would be subject to the same SWP-related uncertainties as described above for AVEK. Table PUE-3.3 contains the 2015 Urban Water Management Plan projections about water supply and demand for normal, dry, and multiple dry years in 2020, excluding recycled water supply and demand.[20]

Table PUE-3.3 Palmdale Water District Water Projections

	Normal Water Year 2020 (ac-ft/yr)	Single Dry Year 2020 (ac-ft/yr)	Multiple Dry Years 2020 (ac-ft/yr)
Water Supply	103,402	77,082	98,597
Predicted Annual Demand	76,700 68,900 (with active conservation)	84,400 75,800 (with active conservation)	84,400 75,800 (with active conservation)

Source: Santa Clara Valley Water District, 2017

As indicated in the table, for 2020, Santa Clarita Valley Water District projected a surplus of 26,702 to 34,502 acre-feet per year in a normal water year, a surplus of 1,282 acre-feet per year to a deficit of 7,318 acre-feet per year in a single dry year, and a surplus of 14,197 to 22,797 acre-feet per year in a multiple dry year.

Portal 4A and Portal 9 are within the Santa Clarita Valley Water District service areas. Temporary water service is generally provided for 6 months or less but can be extended with a written extension of time. Temporary service can be provided when no undue hardship is caused to customers.[21]

Los Angeles Department of Water and Power

Intermediate Windows IW-1 or IW-2, Portal 10, and Adit SR14-A2 or SR14-A3 are within the LADWP service area. LADWP's Urban Water Management Plan indicates a balancing out of supply and demand

[19] Holly Jones, Project Engineer and Matt Bao, Supervising Engineer, LACSD, Antelope Valley Water Reclamation Plants. 2023. Meeting with Kristi Black and Scott Steinwert, Authority Regional Consultant. September 13, 2023.

[20] Santa Clara Valley Water District. 2017. 2015 Urban Water Management Plan for Santa Clarita Valley. June. Available: https://yourscvwater.com/sites/default/files/SCVWA/2015-FINAL-Urban-Water-Management-Plan-for-Santa-Clarita-Valley_16JUN2017-1.pdf.

[21] SCV Water. 2022. Policies, Rules, and Regulations: Customer Service Policy. December. Available: https://yourscvwater.com/sites/default/files/SCVWA/customer-care/Customer-Service-Policy-Feb-2023.pdf.

for all water year types; that is, there is no projected surplus, although the City notes that recycled water is used for dust control.[22]

City of Burbank

On the western end, Burbank Water and Power generates approximately 6,000 to 7,000 acre-feet per year of recycled water and uses approximately 3,300 acre-feet per year of that supply, leaving a surplus of 2,700 to 3,700 acre-feet per year.[23] These numbers are consistent with the production numbers from 2020, which indicate that 6,940 acre-feet were treated and 3,150-acre feet were recycled within and outside the service areas. This indicates that 3,790 acre-feet of recycled water were discharged and not put to reuse.[24] Burbank Water and Power has provided recycled water for both tunneling and tunnel grout in the past, and also has some future commitments in the planning stage that are not yet concrete. The place of use for recycled water needs to be where the receiving or launching point is in Burbank, or through building conveyance to a recycled water pipe. Use outside of the City would require regulatory approval.[25]

Revisions to EIR/EIS

Section 3.6, Public Utilities and Energy has been revised in the Final EIR/EIS to include additional information about the additional water supplies listed above. Specifically, Impact PUE#3 and PUE-MM#1 has been revised in the Final EIR/EIS to reflect this additional information.

Impacts of Water Demand and Supply

The Draft EIR/EIS evaluated impacts of construction of infrastructure that would convey water from existing infrastructure to its place of use (see, e.g., Section 2.5.4.2 that states that “To the extent feasible, water pipelines to support construction activities would be co-located, on a temporary basis, within the footprint of existing roads within the ANF.”). With the potential for use of recycled water, trucking of water could instead be needed.

The Authority conducted an evaluation of air quality emissions from the haul trucks required to transport recycled water to various construction sites within the Palmdale to Burbank study area. Table PUE-3.4 summarizes the peak daily construction emissions that were included in the Draft EIR/EIS for the SR14A Build Alternatives within the SCAQMD. Table PUE-3.5 summarizes the peak daily construction emissions for the SR14A Build Alternatives with the use of recycled water.

Table PUE-3.4: Draft EIR/EIS Peak Daily Emissions (SR14A Build Alternative) (lb/day)

Construction Year	Emissions					
	VOC	NO_X	CO	SO_2	PM_{10}[1]	$PM_{2.5}$[1]
1	17.0	197.0[2]	594.0	60.0	20.0	2.0
2	25.0	362.0	610.0	74.0	20.0	3.0
3	35.0	490.0	851.0	110.0	31.0	3.0
4	32.0	417.0	832.0	94.0	27.0	3.0
5	23.0	311.0	590.0	59.0	17.0	2.0

[22] LADWP. 2016. 2015 Urban Water Management Plan. April. Available: https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/M217.pdf.

[23] Jared Lee, Civil Engineer, Burbank Water and Power. 2023. Meeting with Kristi Black, Authority Regional Consultant. October 3, 2023.

[24] City of Burbank Water and Power. 2021. 2020 Urban Water Management Plan. June. Available: https://www.burbankwaterandpower.com/images/administrative/downloads/BWP_2020UWMP_Final.pdf.

[25] Jared Lee, Civil Engineer, Burbank Water and Power. 2023. Meeting with Kristi Black, Authority Regional Consultant. October 3, 2023.

Construction Year	Emissions					
	VOC	NO_X	CO	SO_2	PM_{10}[1]	$PM_{2.5}$[1]
6	12.0	168.0	386.0	38.0	11.0	1.0
SCAQMD Threshold	75	100	550	150	55	150

[1] Emissions consist of exhaust and fugitive dust emissions.
[2] Underlined values exceed daily threshold.
CO = carbon monoxide; NO_X = nitrogen oxide; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; SCAQMD = South Coast Air Quality Management District
SO_2 = sulfur dioxide; VOC = volatile organic compound

Table 3.5: SR14A Build Alternative Peak Daily Emissions with Recycled Water Trucks (lb/day)

Construction Year	Emissions					
	VOC	NO_X	CO	SO_2	PM_{10}[1]	$PM_{2.5}$[1]
1	17.0	197.7[2]	594.1	60.1	20.0	2.0
2	25.0	364.9	610.5	74.6	20.2	3.0
3	35.2	502.2	853.1	112.3	31.7	3.1
4	32.2	428.6	833.9	96.2	27.6	3.1
5	23.2	321.9	591.8	61.1	17.6	2.1
6	12.1	177.7	387.5	39.9	11.6	1.1
SCAQMD Threshold	75	100	550	150	55	150

[1] Emissions consist of exhaust and fugitive dust emissions.
[2] Underlined values exceed daily threshold.
CO = carbon monoxide; NO_X = nitrogen oxide; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; SCAQMD = South Coast Air Quality Management District
SO_2 = sulfur dioxide; VOC = volatile organic compound

As shown in Table PUE-3.5, the addition of the recycled water truck trips emissions to the construction of the SR14A Build Alternative would not result in any new exceedances of the SCAQMD's daily thresholds or substantially increase the exceedances that were identified in the Draft EIR/EIS.

The additional truck trips that could be used to transport recycled water, if necessary, would similarly not result in new or more severe significant impacts in other resource categories. The number of additional trips would be relatively small, and would not alter the analysis and conclusions for other impacts in the EIR/EIS.

Groundwater

The Authority received comments from the public expressing concern related to the use of groundwater for the project, including from those in Acton and Agua Dulce. The Authority would not drill wells to extract groundwater for construction or operation. As indicated above, the sources of water for the Project could be a combination of potentially numerous potable and recycled water suppliers. As such, the Authority would not directly use groundwater. While the Authority could indirectly use groundwater by using water from a potable water supplier that obtains parts of its supply from groundwater, the decision about the kind of water that would be provided to the Authority would be made by that supplier and would be consistent with any of their policies and regulations about groundwater use.

Adequacy of Water Supply Analysis

CEQA Guidelines section 15155(f) reflects the requirements for a water supply analysis in an EIR. Those requirements are:

(1) Sufficient information regarding the project's proposed water demand and proposed water supplies to permit the lead agency to evaluate the pros and cons of supplying the amount of water that the project will need.

(2) An analysis of the reasonably foreseeable environmental impacts of supplying water throughout all phases of the project.

(3) An analysis of circumstances affecting the likelihood of the water's availability, as well as the degree of uncertainty involved. Relevant factors may include but are not limited to drought, salt-water intrusion, regulatory or contractual curtailments, and other reasonably foreseeable demands on the water supply.

(4) If the lead agency cannot determine that a particular water supply will be available, it shall conduct an analysis of alternative sources, including at least in general terms the environmental consequences of using those alternative sources, or alternatives to the project that could be served with available water.

This section of the response to comment reviews how the Final EIR/EIS complies with this requirement of CEQA. As demonstrated below, the discussion meets these requirements.

Sufficient information regarding the project's proposed water demand and proposed water supplies to permit the lead agency to evaluate the pros and cons of supplying the amount of water that the project will need.

The water analysis as shown in this response to comment and as shown in Section 3.6, Public Utilities and Energy of the Final EIR/EIS provides sufficient information related to water demand and water supplies. With the information in this response and in Section 3.6, Public Utilities and Energy of the Final EIR/EIS, the Authority is able to evaluate the pros and cons of supplying the amount of water that the project will need.

An analysis of the reasonably foreseeable environmental impacts of supplying water throughout all phases of the project.

The water analysis as shown in this response to comment demonstrates there is sufficient water under all water year scenarios. However, as the analysis explains, due to fluctuating water circumstances in California leading to some level of unpredictability in this water supply, Mitigation Measure PUE-MM#1 (Water Supply Analysis for Construction) would require verification of these water supplies once additional information is known about schedule and other design details. The impacts of this mitigation measure are discussed in the EIR/EIS, as described above.

An analysis of circumstances affecting the likelihood of the water's availability, as well as the degree of uncertainty involved. Relevant factors may include but are not limited to drought, salt-water intrusion, regulatory or contractual curtailments, and other reasonably foreseeable demands on the water supply.

The water analysis above discusses the likelihood of water's availability. All supply sources for the Central Subsection are evaluated during normal, single dry, and multiple dry water years. Ultimately, even during years where potable water suppliers show shortages, there is sufficient recycled water available to serve the project. Additionally, the analysis recognizes general uncertainties about water supply planning for a project of this nature and this size far in advance of construction by requiring application of Mitigation Measure PUE-MM#1 (Water Supply Analysis for Construction).

If the lead agency cannot determine that a particular water supply will be available, it shall conduct an analysis of alternative sources, including at least in general terms the environmental consequences of using those alternative sources, or alternatives to the project that could be served with available water.

The water analysis as shown in this response to comment considers multiple sources and demonstrates there is sufficient water under all water year scenarios. Note that WRP could supply the entire Central Subsection's water needs. The impacts of the potential use of this other source of water are discussed in the Final EIR/EIS, as described above. However, as the analysis explains, due to fluctuating water circumstances in California leading to some level of unpredictability in this water supply and general

uncertainties about water supply planning for a project of this nature and this size far in advance of construction, Mitigation Measure PUE-MM#1 (Water Supply Analysis for Construction) would require verification of these water supplies once additional information is known about the schedule and other design details.

Summary

To summarize, based on review of all the water providers in the project area, including through review of existing plans such as UWMPs and through personal communication with staff at water agencies, the Authority has identified a portfolio of water supplies that could meet the project's temporary water demand during construction during normal years, as well as dry and multiple dry years. The Authority acknowledges the uncertainty of potable water availability during dry and multiple dry years, and as indicated in this response, the Authority acknowledges that potable water for construction may be curtailed during dry and multiple dry years to prioritize serving existing customers. However, as demonstrated above, the Authority has identified recycled water providers with available supply during dry and multiple dry years that can be used in the event of water curtailment for the project. The Authority has revised the Final EIR/EIS to clarify this additional information.

17.6.4 PB-Response-PUE-4: Coordination with Local Government Entities and Utility Owners

Several commenters requested that the Authority comply with locally adopted requirements when it addresses construction impacts on local government facilities or relocation of utilities.

As stated in Section 3.6.3, Consistency with Plans and Laws, of the Draft EIR/EIS, the Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, the Authority has endeavored to design and construct the California HSR System so that it is consistent with land use regulations. The Authority has coordinated with local government entities and utility owners throughout the alternatives analysis and development of the Draft EIR/EIS phases of the project. The Authority will continue this coordination through the final design and engineering phases. The Authority utilizes memoranda of understanding (MOUs) and cooperative agreements to establish its working relationships with local government entities along the HSR alignment in each project section as it moves forward with project implementation. Similarly, the Authority uses master agreements with utility companies that set out the working relationship and terms on how to relocate existing affected utilities. The utility agreements executed with local government agencies and utility companies specify the terms and precise standards to relocate or protect in place existing affected facilities or utilities and provide the obligations for the parties on engineering design, construction, costs, invoicing procedures, and coordination. These agreements also set forth the mutual expectations of the parties to the agreement as to the consultation and review role of the local government entity or utility company over the course of design development.

Many of the specific utility connection issues and relocation sites cannot be known until the Authority is closer to final design and the utility or municipal services providers share information on the interface of the selected Build Alternative on their existing facilities. During the development of the final design, the Authority will coordinate with utility owners and local districts and agencies to refine this information. Additional utilities and facilities will be identified and evaluated during the final design phase. The development of the final design would follow all applicable state laws requiring use of a utility locator service and manual probing for buried utilities within the construction footprint prior to initiating ground-disturbing activities. The Authority would coordinate with utility owners during final engineering design and construction of the selected Build Alternative to remove, realign, relocate, or otherwise modify utilities within the right-of-way, protect them in place, or abandon them in place within the right-of-way. Please refer to PUE-IAMF#3 (Public Notifications) and PUE-IAMF#4 (Utilities and Energy) in Volume 2, Appendix 2-E of the Draft EIR/EIS.

The Authority uses industry standard practices for addressing local government and utility company facilities and utilities. The Authority generally ensures that overall local government/utility company facilities and utilities function in a materially equivalent manner as prior to the relocations or impact. The Authority also generally ensures that the design of the relocations or repair/replacement of facilities and utilities meets the local government entity's or utility company's (as applicable) published (or, if not

published, established) design standards in place at a certain point in time (usually the time of agreement execution or the time of final design), and subject to the Authority's evaluation of whether the relocations or replacements have resulted in some sort of upgrade or justify cost sharing.

17.7 Biological Resources and Wetlands

17.7.1 PB-Response-BIO-1: Impacts in Bee Canyon

Commenters expressed concern regarding impacts to biological resources from construction and operation of SR14A in Bee Canyon, despite application of mitigation measures, and requested that the project design be revised so that the alignment is not at-grade in Bee Canyon.

The SR14A Build Alternative would pass through Bee Canyon on an at-grade (above ground) alignment. Bee Canyon contains suitable habitat for several special-status plant and wildlife species, including slender-horned spineflower (spineflower), which is a federally endangered species, and coastal California gnatcatcher (gnatcatcher), which is a federally threatened species, and the southern California/Central Coast Evolutionary Significant Unit of mountain lion (mountain lion).[26]

In response to comments raising concerns for impacts to species in Bee Canyon and requesting an underground alternative, the Authority conducted an assessment of the feasibility of tunneling through Bee Canyon, thereby avoiding impacts to suitable habitat for special-status species. The Authority examined two tunneling options, the first of which would cross in tunnel under Bee Canyon and the Santa Clara River. The second option would tunnel under the northern portion of Bee Canyon and emerge from tunnel to cross over the Santa Clara River on viaduct. The Authority concluded that both tunneling options conflict with engineering design requirements such that they are not feasible. Construction of a tunnel in the Bee Canyon area and under Santa Clara River is not feasible because it would require a vertical profile for HSR that exceeds the maximum allowable grade of 2.5 percent. Constructing the HSR alignment in tunnel in the northern portion of Bee Canyon and then emerging from tunnel to cross over the Santa Clara River with a viaduct would also not be feasible because HSR alignment requirements and the topography of the area do not allow for maintaining the minimum vertical clearance of the HSR viaduct over Soledad Canyon Road.

Following public circulation of the Draft EIR/EIS and through consultation with resource agencies, the Authority developed a design refinement in the vicinity of Bee Canyon and Pacoima Wash that minimized the temporary and permanent footprint for the Refined SR14 and SR14A Build Alternatives. In Bee Canyon, the temporary and permanent footprint along this 2.4 mile stretch of the alignment was reduced from 144.97 acres to 105.78 acres for the Refined SR14 Build Alternative, and from 141.92 acres to 100.87 acres for the SR14A Build Alternative, as described in Section 2.5.3, High-Speed Rail Build Alternatives – Detailed Description in Chapter 2, Alternatives.

The Draft EIR/EIS fully evaluated potential impacts to biological resources in Bee Canyon that would result from construction and operation of an at-grade segment. Mitigation measures outlined in Section 3.7.8.2 of the Draft EIR/EIS would avoid, minimize, and offset construction and operation impacts on special-status plants and animals, including spineflower, gnatcatcher, and mountain lion such that the impacts would be less than significant.

Spineflower

The Authority reviewed species information for spineflower including the most recent USFWS 5-Year Review (USFWS 2010) and the CNDDB (CDFW 2023). Data analyzed included known occurrence records and habitat and range information relative to the proposed action and 2023 survey efforts, including field verification using a rare plant survey protocol, *USFWS* Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2000) and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Natural Resources Agency 2009).

[26] The mountain lion is a candidate for State listing as threatened and protected by Cal. Fish and Game Code Section 4800-4810 as a specially protected mammal.

The closest reported extant occurrence is located approximately 80 feet northwest of the construction footprint in Bee Canyon Wash, just southeast of SR14 and north of Soledad Canyon Road. Due to the presence of modeled core suitable habitat and the proximity of the presumed extant occurrence, spineflower has the potential to occur in the construction footprint in Bee Canyon. Figure 3.7-17, in Section 3.7, Biological and Aquatic Resources, depicts suitable spineflower habitat within the special-status plant resource study area.

The species' habitat suitability model characterized spineflower habitat as either core suitable habitat (alluvial landforms with preferred soil textures) or potentially suitable habitat (other areas where the species may occur based on vegetation, elevation, and known occurrences). Although the at-grade section located in Bee Canyon intersects core suitable modeled habitat for spineflower, portions of the project footprint in Bee Canyon are located outside of vegetation community mapped as desert wash, instead occurring in vegetation community areas mapped as chamise red-shank chaparral, where spineflower is less likely to occur.

Impacts from the project on special-status plants, including spineflower, are fully evaluated in Impact BIO#1, Section 3.7 of the Draft EIR/EIS. Construction of at-grade track through Bee Canyon would result in the permanent removal of suitable modeled habitat for spineflower, but the construction footprint, namely the permanent and temporary impact footprint consisting of the rail alignment and fenced facilities and the construction staging and laydown areas, is sufficiently distant (approximately 80 feet) from the known population in Bee Canyon such that effects to the known population could be avoided.

The Authority acquired permission to enter public and private lands within Bee Canyon and conducted a botanical floristic survey of a 60-acre area just northeast of Soledad Canyon Road in May 2023 to determine the extent of the spineflower population. The results of the survey were negative for the presence of spineflower, and no suitable habitat was observed in the construction footprint within the 60-acre survey area. While seasonal variation in conditions may affect the detectability of the species, the lack of suitable habitat in the construction footprint of the 60-acre area surveyed indicates that no direct effects to spineflower would occur in this area. However, protocol-level surveys of all modeled suitable habitat areas will be conducted prior to construction to determine whether this species is present in the plant study area (the construction footprint and 100-foot plant indirect effect area). The protocol-level survey(s) will be conducted by a biologist(s) familiar with the distinguishing characteristics of the species during the species' bloom period (see BIO-MM#1 [Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities]).

Observation of spineflower during protocol surveys would require the Authority to reinitiate Section 7 consultation with USFWS. The Authority would implement mitigation measures to reduce and compensate for impacts, specifically BIO-MM#2 (Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species) and BIO-MM#38 (Compensate for Impacts on Listed Plant Species). Compensatory mitigation would be provided for temporary and permanent impacts to suitable spineflower habitat. Other mitigation measures applicable to spineflower and other special-status plant species that would be implemented to avoid and minimize impacts from construction include: preparation and implementation of a restoration and revegetation plan (BIO-MM#6 [Prepare and Implement a Restoration and Revegetation Plan]), preparation and implementation of a compensatory mitigation plan (BIO-MM#53 [Prepare a Compensatory Mitigation Plan for Species and Species Habitat]), preparation and implementation of annual vegetation control plan (BIO-MM#54 [Prepare and Implement an Annual Vegetation Control Plan]), preparation and implementation of a weed control plan (BIO-MM#55 [Prepare and Implement a Weed Control Plan]), monitoring of construction activities (BIO-MM#56 [Conduct Monitoring of Construction Activities]), and establishment of environmentally sensitive areas (BIO-MM#58 [Establish Environmentally Sensitive Areas and Nondisturbance Zones]). The distance from the known population to the construction footprint, combined with the extensive mitigation program provides a high level of confidence that the species will be protected from project-related impacts.

Ongoing operations and maintenance activities can directly or indirectly affect spineflower and special-status species individuals through increased human activity related to the maintenance of the California HSR System equipment and facilities and by exposure to accidental spills, including contaminants or pollutants. Train operation and maintenance activities would avoid and/or minimize direct and/or indirect impacts to previously restored areas by limiting activities to the fenced right-of-way. Implementation of

BIO-IAMF#4 (Operation and Maintenance Period Worker Environmental Awareness Program Training), HYD-IAMF#1 (Stormwater Management), HMW-IAMF#9 (Environmental Management System), and HMW-IAMF#10 (Hazardous Materials Plans) have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status species and associated habitat during operation. However, operation of each of the six Build Alternatives could have a substantial adverse effect on special-status species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact because habitat for special-status species and special-status plant communities would still be affected by operation of the six Build Alternatives. Therefore, the Build Alternatives would implement mitigation measures to reduce HSR operations impacts on special-status species and communities to less than significant, as identified in the following paragraph.

The six Build Alternatives would implement the following mitigation measures: BIO-MM#53 (Prepare a Compensatory Mitigation Plan for Species and Species Habitat), BIO-MM#54 (Prepare and Implement an Annual Vegetation Control Plan), BIO-MM#55 (Prepare and Implement a Weed Control Plan), and BIO-MM#88 (Implement Construction or Maintenance Activity Debris Prevention Measures). With implementation of the mitigation measures referenced above, all six Build Alternatives would result in less than significant impacts on special-status plant species and special-status plant communities.

Gnatcatcher

Modeled suitable gnatcatcher habitat in the area, where direct and indirect effects would occur for the S14A Build Alternative, consists of 21.0 acres of moderate quality habitat and 217.5 acres of low value habitat. Figure 3.7-20 in Section 3.7, Biological and Aquatic Resources, depicts suitable gnatcatcher habitat within the core habitat resource study area. The coastal sage scrub habitat in Bee Canyon is considered occupied by gnatcatcher. Impacts to gnatcatcher from construction are fully evaluated in Impact BIO#3, Section 3.7.6.3 of the Draft EIR/EIS. The Authority would implement measures to avoid, minimize, and mitigate for impacts to gnatcatcher. BIO-MM#14 (Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds) and BIO-MM#79 (Conduct Surveys for Coastal California Gnatcatcher) would require nesting bird surveys and establishment of adequate buffers around gnatcatcher nests. Through BIO-MM#53 (Prepare a Compensatory Mitigation Plan for Species and Species Habitat), the Authority would offset impacts to occupied gnatcatcher habitat through the protection and long-term management of in-kind habitat. To address intermittent operational noise, BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat) would require installation of sound barriers. BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat) provides that “the location, length and height of the barriers will be determined based on detailed noise modeling for areas of suitable special-status bird habitat, and measurement of existing conditions so that the noise-attenuating effects of topography and other existing features can be accounted for during the final design phase.” Based on detailed noise modeling, the Authority would implement a 14-foot sound barrier in Bee Canyon, which would substantially minimize noise impacts to gnatcatcher and other special-status animal species. The noise modeling shows that the sound barriers would generally limit intermittent noise to areas within the permanent right-of-way. For further information on noise effects, please see PB-Response-N&V-3: Noise Impacts on Domestic Animals/Wildlife.

Additional mitigation measures would also be implemented to reduce the effects of operations, including: wildlife rescue measures (BIO-MM#76 [Implement Wildlife Rescue Measures]), spill prevention and containment measures (BIO-MM#87 [Prepare and Implement Spill Prevention and Containment Measures]), construction or maintenance activity debris prevention measures (BIO-MM#88 [Implement Construction or Maintenance Activity Debris Prevention Measures]), and implementation of avoidance measures during operations (BIO-MM#92 [Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River]).

Mountain Lion

Potential impacts to mountain lion and mountain lion movement in the Palmdale to Burbank Project Section, including in Bee Canyon, would be reduced through the implementation of general and specific mitigation measures applicable to mountain lion. The general measures include establishment of wildlife crossings (BIO-MM#64 [Establish Wildlife Crossings]), implementation of wildlife height requirements for enhanced security fencing (BIO-MM#77 [Implement Wildlife Height Requirements for Enhanced Security Fencing]), installation of wildlife jump-outs (BIO-MM#78 [Install Wildlife Jump-outs]), and implementation

of measures to reduce, avoid and minimize effects on wildlife movement (BIO-MM#83 [Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement]). The specific measures include preconstruction surveys and implementation of avoidance and minimization measures for mountain lion dens (BIO-MM#96 [Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens]), and compensatory mitigation for impacts to mountain lion habitat (BIO-MM#97 [Provide Compensatory Mitigation for Impact on Mountain Lion Habitat]). BIO-MM#53 (Prepare a Compensatory Mitigation Plan for Species and Species Habitat) requires the preparation and implementation of a compensatory mitigation plan inclusive of all compensatory mitigation MMs and sets out details required to be in the compensatory mitigation plan. In addition, BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat) is anticipated to require noise barriers to be installed along the above-ground portions of the rail alignment in Bee Canyon. These barriers would also reduce train operational noise effects on mountain lion.

As discussed in Section 3.7, Biological and Aquatic Resources, impacts to special-status plants and animals from construction of SR14A, including in the Bee Canyon area, were determined to be less than significant after application of the mitigation measures.

17.7.2 PB-Response-BIO-2: Construction and Operations Impacts to Special-Status Plants and Wildlife

Commenters expressed concern about project construction and operations impacts to special-status plants and wildlife and habitat and questioned determinations regarding level of significance after mitigation measures.

As discussed in Section 3.7.5 of the Draft EIR/EIS, all six Build Alternatives would affect a variety of special-status plants or plant communities and wildlife between Palmdale and Burbank. All Build Alternatives would affect the same 3 FESA-listed plant species, 41 non-FESA–listed special-status plant species, and 7 special-status plant communities (please refer to Table 3.7-7, in Section 3.7 of the Draft EIR/EIS). Installation of project infrastructure, such as trackway, tunnel portals, access roads, bridges, and other permanent facilities, would permanently remove some habitat and could impact special-status plants or plant communities.

As discussed in Section 3.7.6.3 of the Draft EIR/EIS, 5 special-status amphibian species, 19 special-status bird species, 4 special-status fish species, 5 special-status invertebrates, and 14 non-FESA listed special-status mammal species have the potential to occur in all six Build Alternative footprints due to the presence of suitable habitat. Impacts to special-status wildlife species are discussed below, but for a complete discussion of wildlife movement impacts, refer to Standard Response PB-Response-BIO-3: Wildlife Movement Corridors. For indirect effects related to tunnel construction, refer to Standard Response PB-Response-HYD-2: Hydrogeologic Impacts in the Angeles National Forest/Tunneling Impacts in the Angeles National Forest.

Impacts to Special-Status Plants and Plant Communities were Fully Evaluated and Mitigated

Direct impacts to special-status plants or plant communities would be limited to the non-urbanized sections of the Project between Palmdale and Burbank, which are isolated to discrete sections where potential habitat exists and intersect areas in the project footprint. Beginning on page 3.7-95, the Draft EIR/EIS assesses and quantifies the project's potential to impact special-status plants and sensitive natural plant communities using habitat modeling and other methodologies that typically conservatively overestimate actual impacts.

Beginning on Page 3.7-101, the Draft EIR/EIS discusses the potential impacts on special-status plant species and sensitive natural communities[27] from construction. Direct impacts would result from the removal of vegetation for the installation of permanent infrastructure. Impacts would also result from construction vehicles and personnel disturbing vegetation through trampling, covering, undercutting, unearthing, crushing, or damaging the roots of individual plants; or clearing, excavating, or grubbing suitable potential habitat for special-status plant species. Soil compaction and placement of fill would

[27] Sensitive natural communities are considered "special-status" and terminology may be used interchangeably with "special-status vegetation communities."

directly affect special-status plant species by causing decreased fitness or death by root compaction. Temporary impacts would result from construction vehicle traffic, use of land for staging and access, and other construction-related activities (e.g., grubbing, grading, tree removal, excavation, and off-road driving) that would allow plant populations to re-establish after the construction period. Indirect impacts on special-status plant species and sensitive natural communities would include: erosion, siltation, and runoff into natural and constructed watercourses; soil and water contamination from construction equipment leaks or chemical spills; construction dust reducing plants' photosynthesis capability; altered hydrology that would change the wetland functions of aquatic habitats; increased risk of fire (e.g., from construction equipment and construction workers smoking); habitat degradation through fragmentation and changes in habitat heterogeneity; and introduction of invasive plant species.

The Project includes 12 biological resources IAMFs, which are incorporated into the project design and construction to avoid or minimize the impacts on biological and aquatic resources. The BIO-IAMFs are the first step in a multi-pronged effort to avoid and minimize impacts to biological resources. They include designation of project biologists (BIO-IAMF#1 [Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors]), employee training on biological resources and impact avoidance (BIO-IAMF#3 [Prepare WEAP Training Materials and Conduct Construction Period WEAP Training] for construction and BIO-IAMF#4 [Conduct Operation and Maintenance Period WEAP Training] for operations and maintenance), delineation of equipment staging areas and traffic routes (BIO-IAMF#6 [Establish Monofilament Restrictions]), and construction site BMPs (BIO-IAMF#9 [Dispose of Construction Spoils and Waste], BIO-IAMF#10 [Clean Construction Equipment], and BIO-IAMF#11 [Maintain Construction Sites]).

The Authority conducted a thorough analysis of the impacts with implementation of the associated IAMFs and where it was determined that the impacts were significant after application of IAMFs, the Authority developed mitigation measures (MMs) to further reduce impacts. These MMs cover all aspects of the project and include general measures as well as species-specific measures. For special-status plants and special-status plant communities, surveys under BIO-MM#1 (Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities) would identify the location of special-status plants and would map the extent of the associated special-status plant community, which would be followed up by the preparation of a plan for salvage, relocation, and/or propagation of special-status plant species and the associated special-status plant community (BIO-MM#2 [Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species]), establishment of environmentally sensitive areas and nondisturbance zones (BIO-MM#58 [Establish Environmentally Sensitive Areas and Nondisturbance Zones]), preparation and implementation of a restoration and revegetation plan (BIO-MM#6 [Prepare and Implement a Restoration and Revegetation Plan]), and preparation and implementation of a weed control plan (BIO-MM#55 [Prepare and Implement a Weed Control Plan]). Additional measures to address impacts to plant species include MMs for vernal pools (BIO-MM#4 [Implement Seasonal Vernal Pool Work Restriction] and BIO-MM#5 [Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas]).

The Authority disagrees with commenters' assertion that some impacts to biological resources, including impacts to special-status plants and plant communities, are not adequately mitigated. Collectively, the above MMs would provide avoidance, minimization, and compensatory mitigation for direct and indirect construction impacts on special-status plants and plant communities. With implementation of MMs, the Build Alternatives would not result in a substantial adverse effect to special-status plants and special-status plant communities as a result of construction, and this impact is therefore less than significant for all six Build Alternatives and would result in no adverse effect under NEPA.

Impacts to Wildlife were Fully Evaluated and Mitigated

The Draft EIR/EIS provides a thorough and comprehensive discussion of impacts to wildlife in Impact BIO#2 through Impact BIO#7 beginning on page 3.7-95. As noted above, the impacts are isolated to discrete sections between Palmdale and Burbank where potential habitat exists and intersect areas in the project footprint. Direct effects on special-status wildlife species would result from construction activities in suitable habitat that could kill, injure, or harass special-status wildlife. Construction would also temporarily destroy, degrade, fill, or pollute habitats. Direct effects also include the permanent conversion or fragmentation of occupied habitats resulting from installation of project infrastructure. Indirect construction

effects would include changes in water quality, changes in hydrology, habitat abandonment, and temporary shifts in foraging patterns or territories.

IAMFs incorporated into the Palmdale to Burbank Project Section designed to reduce impacts to wildlife species include designation of project biologists (BIO-IAMF#1 [Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors]), employee training on biological resources and impact avoidance (BIO-IAMF#3 [Prepare WEAP Training Materials and Conduct Construction Period WEAP Training] for construction and BIO-IAMF#4 [Conduct Operation and Maintenance Period WEAP Training for operations and maintenance], delineation of equipment staging areas and traffic routes (BIO-IAMF#6 [Establish Monofilament Restrictions]), construction site BMPs (BIO-IAMF#9 [Dispose of Construction Spoils and Waste], BIO-IAMF#10 [Clean Construction Equipment], and BIO-IAMF#11 [Maintain Construction Site]), and project design to avoid bird electrocution and collision (BIO-IAMF#12 [Design the Project to be Bird Safe]).

The Authority conducted a thorough analysis of the impacts and the associated IAMFs and where it was determined that the impacts to wildlife were still significant under CEQA and adverse under NEPA, the Authority developed a suite of MMs to further reduce the impacts. These MMs are general in nature and also species-specific. The identification and the location of wildlife species within the Project footprint aids in the implementation of MMs, as applicable. Presence is determined through the implementation of general and species-specific surveys included in the following: BIO-MM#7 (Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species), 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 Non-Special Status Raptors), BIO-MM#17 (Conduct Surveys for Swainson's Hawk Nests), BIO-MM#20 (Conduct Protocol Surveys for Burrowing Owls), BIO-MM#25 (Conduct Pre-construction Surveys for 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#52 (Conduct California Glossy Snake, California Legless Lizard, Coast Patch-Nosed Snake, Coastal Rosy Boa, Coastal Whiptail, Blainville's Horned Lizard, San Bernardino Ringneck, San Bernardino Mountain Kingsnake, South Coast Garter Snake, Two-Striped Garter Snake, and Western Pond Turtle Monitoring, and Implement Avoidance and Minimization Measures), BIO-MM#65 (Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles), BIO-MM#69 (Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies), BIO-MM#79. (Conduct Surveys for Coastal California Gnatcatcher), BIO-MM#80 (Conduct Surveys for Least Bell's Vireo), BIO-MM#81 (Conduct Surveys for Southwestern Willow Flycatcher), BIO-MM#82 (Conduct Surveys for Western Yellow-billed Cuckoo), BIO-MM#96 (Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens), and BIO-MM#102 (Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee). These survey MMs often include no-work buffers and seasonal work restrictions. After presence or absence is determined through survey, the next suite of MMs outlines specific avoidance and minimization steps for certain species and/or activities, if presence is confirmed. These include the following: BIO-MM#6 (Prepare and Implement a Restoration and Revegetation Plan), BIO-MM#8 (Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species), 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#26 (Implement Bat Avoidance and Relocation Measures), BIO-MM#27 (Implement Bat Exclusion and Deterrence Measures), 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 Nondisturbance Zones), BIO-MM#61 (Establish and Implement a Compliance Reporting Program), BIO-MM#62 (Prepare Plan for Dewatering and Water Diversions), BIO-MM#66 (Implement Avoidance Measures for Active Eagle Nests), BIO-MM#68 (Avoid Impacts on White-tailed Kite), 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#73 (Implement Removal of Carrion that may Attract Condors and Eagles), BIO-MM#74 (Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities), BIO-MM#84 (Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback), BIO-MM#85 (Establish Construction Zones and Environmentally Sensitive Areas for Unarmored Three-spine Stickleback and its Habitat), BIO-

MM#86 (Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions), BIO-MM#89 (Implement Construction Measures for unarmored three-spine Stickleback Avoidance), BIO-MM#93 (Adaptive Management Plan for Groundwater Effects on Species and Habitat), BIO-MM#94 (Avoid Direct Impacts on Monarch Butterfly Host Plant), and BIO-MM#104 (Implement Scour Avoidance Features Around Bridge Piers).

There are also a variety of general MMs such as restoration of riparian habitat and aquatic resources (BIO-MM#32 [Restore Temporary Riparian Habitat Impact], BIO-MM#33 [Restore Aquatic Resources Subject to Temporary Impacts]), monitoring of construction restoration activities within waters that may include species habitat (BIO-MM#34 [Monitor Construction Activities within Jurisdictional Waters]), installation of barriers within security fencing (BIO-MM#36 [Install Aprons or Barriers within Security Fencing]), measures to minimizing secondary impacts form off-site restoration (BIO-MM#50 [Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites]), requirements for construction site vehicles (BIO-MM#60 [Limit Vehicle Traffic and Construction Site Speeds]), requirements in the event that special-status wildlife is found in the work area (BIO-MM#63 [Work Stoppage]), removal of carrion (BIO-MM#73 [Implement Removal of Carrion that may Attract Condors and Eagles]), height requirements for security fencing (BIO-MM#77 [Implement Wildlife Height Requirements for Enhanced Security Fencing]), wildlife rescue measures (BIO-MM#76 [Implement Wildlife Rescue Measures] and BIO-MM#78 [Install Wildlife Jump-outs]), spill prevention and containment measures (BIO-MM#87 [Prepare and Implement Spill Prevention and Containment Measures]), construction or maintenance activity debris prevention measures (BIO-MM#88 [Implement Construction or Maintenance Activity Debris Prevention Measures]), and preparation of a dewatering plan to ensure river flow is not affected (BIO-MM#90 [Prepare a Construction Groundwater Dewatering Plan]). Impacts associated with lighting would be minimized through BIO-MM#99 (Implement Lighting Minimization Measures During Construction).

To offset direct impacts from construction, compensatory mitigation is provided through the following mitigation measures: BIO-MM#39 (Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat), 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#46 (Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat), BIO-MM#47 (Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources), BIO-MM#53 (Prepare and Implement a Compensatory Mitigation Plan 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#95 (Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat), BIO-MM#97 (Provide Compensatory Mitigation for Impact on Mountain Lion Habitat), and BIO-MM#103 (Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee Habitat). BIO-MM#53 (Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat) requires the preparation and implementation of a compensatory mitigation plan inclusive of all compensatory mitigation MMs and sets out details required to be in the compensatory mitigation plan.

Collectively, the above MMs would avoid and minimize direct and indirect construction impacts on special-status wildlife species. Remaining direct construction impacts on special-status species would be offset with the implementation of compensatory mitigation. With implementation of MMs, the Build Alternatives would not result in a substantial adverse effect to special-status wildlife species as a result of construction, and this impact would therefore be less than significant for all six Build Alternatives and would result in no adverse effects under NEPA.

Operations Impacts were Fully Evaluated and Mitigated

As comprehensively discussed in the Draft EIR/EIS beginning on page 3.7-199, ongoing operations and maintenance activities (e.g., routine inspection and maintenance of the HSR right-of-way) can directly or indirectly affect special-status species and habitat as activities may occur in areas where impacts on special-status species habitat had previously been restored. Train operation and maintenance activities would avoid and/or minimize direct and/or indirect impacts to previously restored areas by limiting activities to the fenced right-of-way.

Operational activities have the potential to indirectly degrade suitable habitat for wildlife species at at-grade and elevated portions of the HSR alignment. MMs implemented during operations will help reduce impacts and include preparation and implementation of an annual vegetation control plan (BIO-MM#54 [Prepare and Implement an Annual Vegetation Control Plan]), preparation and implementation of a weed control plan (BIO-MM#55 [Prepare and Implement a Weed Control Plan]), removal of carrion (BIO-MM#73 [Implement Removal of Carrion that may Attract Condors and Eagles]), wildlife rescue measures (BIO-MM#76 [Implement Wildlife Rescue Measures]), spill prevention and containment measures (BIO-MM#87 [Prepare and Implement Spill Prevention and Containment Measures]), construction or maintenance activity debris prevention measures (BIO-MM#88 [Implement Construction or Maintenance Activity Debris Prevention Measures]), implementation of avoidance measures during operations (BIO-MM#92 [Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River]). Artificial light at night (ALAN) has the potential to deter wildlife from habitat in proximity to the Build Alternative alignment and affect movement corridors. Because of the frequency and speed of trains, noise created by train operations has the potential to affect wildlife movement and use of habitat.

Maintenance activities are expected to be dispersed over time and location and are not expected to be of an intensity or duration to result in substantial impacts on wildlife movement or habitat use. The majority of the Build Alternative alignment in the ANF, including the SGMNM would occur underground in a tunnel. As such, the likelihood for wildlife habitat and movement to be affected by operational noise is low. Train passages would occur primarily during the day, while most activity by vulnerable wildlife receptors is nocturnal and other than maintenance activity, operational impacts between midnight and 6:00 am are expected to be low. To address lighting and noise impacts, the Authority developed BIO-MM#98 (Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement) which includes an array of deterrent and diversion features for avian species. Under BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat), the Authority will build sound barriers to minimize or avoid such impacts in locations where suitable special-status bird habitat would be exposed to 65 A-weighted decibels (dBA) of permanent intermittent noise impact outside the fenced right-of-way. Sound barriers will be designed with the goal of minimizing exposure to noise produced by HSR trains. Under BIO-MM#100 (Implement Lighting Minimization Measures for Operations), the Authority will implement measures to minimize the intensity and duration of operational lighting of permanent facilities (e.g., traction power facilities, radio sites, and maintenance facilities), as well as intermittent train lighting.

Collectively, the above MMs would avoid and minimize, operational impacts. With implementation of MMs, the Build Alternatives would not result in a substantial adverse effect to wildlife species as a result of operations, and this impact is therefore less than significant for all six Build Alternatives and would result in no adverse effect under NEPA.

17.7.3 PB-Response-BIO-3: Wildlife Movement Corridors

Commenters expressed concern about project effects on wildlife movement corridors and questioned determinations regarding permeability of the Refined SR14/SR14A Build Alternatives and the role of existing barriers in the Wildlife Corridor Analysis. Commenters requested more information about the impediments/impacts to wildlife movement as a result of the project and what design features and mitigation measures would be adopted to minimize these impacts. Commenters asserted that significant individual and cumulative impacts remain for the Refined SR14/SR14A Build Alternatives after application of mitigation measures. Commenters also requested more information about the locations of the proposed wildlife crossings and how they were chosen for each Build Alternative.

Maintaining habitat connectivity among the natural lands that exist in the Antelope Valley, the San Gabriel Mountains, and the San Bernardino Mountains is recognized as a key means to ensuring the long-term population viability of special-status and non-special-status species. The Authority recognizes that this is a high conservation priority identified by both regulatory agencies and conservation groups. In recognition of this conservation priority, the Authority is committed to addressing wildlife connectivity based on the best available science and based on input from knowledgeable stakeholders in the region. The Authority undertook an extensive review of information on regional wildlife movement and integrated substantial wildlife crossing opportunities into the project design. Since circulation of the Draft EIR/EIS, the Authority has actively engaged with various Agencies and Stakeholders concerning wildlife movement corridors.

The Authority held discussions with the CDFW on February 27, 2023, to address the wildlife connectivity in Bee Canyon. Furthermore, a follow-up meeting was conducted on November 21, 2023, to present the findings of the Authority's assessment of the wildlife crossing across the SR-14 Freeway and the Refined SR14/SR14A Build Alternative alignment within Bee Canyon. In addition, early in 2023, the Authority met with the Mountains Recreation and Conservation Authority to discuss their recommendations for improving wildlife connectivity in Bee Canyon.

Methodology for Conducting the Evaluation of Impacts to Wildlife Movement

Focal Species Evaluated for Wildlife Movement Impacts

The Palmdale to Burbank Project Section Wildlife Corridor Assessment Report (WCA; Authority 2019)[28] and the Palmdale to Burbank Project Section SR14A, E1A, and E2A Build Alternative Supplement to Wildlife Corridor Assessment Report (WCA Supplement; Authority 2020) analyzed wildlife movement within the Wildlife Connectivity Study Area, which extends up to 10 miles outward from the Build Alternative footprint, encompassing the areas analyzed for impacts on wildlife movement corridors and wildlife habitat linkages. The WCA analyzed wildlife movement for five focal species: American badger (*Taxidea taxus*), desert kit fox (*Vulpes macrotis*), desert tortoise (*Gopherus agassizii*), mountain lion (*Puma concolor*), and mule deer (*Odocoileus hemionus*). This ensured species movement was represented across the entire project alignment and across all three major geographic regions—the Antelope Valley (which includes the Palmdale metropolitan area), the San Gabriel Mountains, and the Los Angeles Basin and two ecoregions, the Mojave Desert Ecoregion and the South Coast Ecoregion. Movement cost models available for these species from previous studies were incorporated into the WCA analysis. The previous studies included: modeled regional least-cost corridors (LCC) for American badger, mountain lion, and mule deer in the South Coast Missing Linkages: A Linkage Design for the San Gabriel-Castaic Connection by Penrod et al. (2004) and modeled regional LCCs for desert tortoise and desert kit fox in A Linkage Network for the California Deserts by Penrod et al. (2012) and the BLM (2016).

These focal species were selected because they are representative of a number of species of varying sizes, with diverse ranges that occur in the various geographic areas and habitat types across the project. Four of the focal species have special status. SC Wildlands provided focal species model parameters and other supporting spatial data layers (Penrod et al. 2004) and (Penrod et al. 2012). This ensured there was representation of species movement across the entire project section and across the two ecoregions (Mojave and South Coast).

Data Sources and Approach

Habitat linkages, which are defined as movement between areas used for breeding and feeding purposes, have been identified in state- and regional-level studies addressing wildlife connectivity and wildlife movement in California. The Missing Linkages: Restoring Connectivity to the California Landscape Conference Proceedings identified habitat linkages at a landscape scale throughout California (Penrod et al. 2001). The South Coast Missing Linkages: A Linkage Design for the San Gabriel-Castaic Connection (Penrod et al. 2004) and the California Essential Habitat Connectivity Project (Spencer et al. 2010) used multi-criteria geographic information systems (GIS) modeling to define habitat linkages in the Tehachapi Mountains and throughout California.

To identify potential regional impacts to wildlife movement due to the proposed action, the WCA analyzed the proportion of each of the focal species' core-and-patch[29] habitats in the analysis area that were crossed by the project at-grade, in tunnels, or by viaducts. Core-and-patch habitats were determined using the same parameters that SC Wildlands models used such as minimum patch size requirements

[28] For the purpose of this discussion, references to the WCA apply analogously to the Wildlife Corridor Assessment Report (WCA; Authority 2019) and the Supplement to Wildlife Corridor Assessment Report (WCA Supplement; Authority 2020).

[29] Core-and-patch habitat refers to the analysis of the size and configuration of suitable habitat patches that were used in the South Coast Missing Linkages study (Penrod et al. 2004). To identify areas of suitable habitat that were large enough to provide a significant resource for individuals in the linkage, the study conducted a patch size analysis. The size of all suitable habitat patches in the planning area were identified and marked as potential cores, patches, or less than a patch. Potential core areas were defined as the amount of contiguous suitable habitat necessary to sustain at least 50 individuals. A patch was defined as the area of contiguous suitable habitat needed to support at least one male and one female, but less than the potential core area.

and movement cost thresholds. A Local Permeability Analysis was completed to analyze the change in local movement for each focal species due to the project for two scenarios:

- Existing conditions
- Project at-grade or surface segments

The Local Permeability Analysis used SC Wildlands' movement cost data (land cover, elevation, road density, and topographic position) that developed their LCCs to calculate the costs of changes in movement for the five focal species. The Local Permeability Analysis used an accumulative average of movement costs across a 1.9-mile buffer from the project centerline (3.7-mile-wide movement analysis area) and a moving window average (295-foot radius) (Figures 4-1, 4-6, and 4-7 in the WCA) to determine the change in wildlife permeability for each of the focal species. Effects to regional wildlife connectivity, including at-grade, elevated, below-grade segments, were also analyzed in the WCA. The Refined SR14/SR14A Build Alternatives would cross the LCC for the San Gabriel-Castaic Connection focal species and San Gabriel-Castaic Linkage Design (Penrod et al. 2004). The SR 14 freeway already presents a significant barrier to wildlife movement; however, the modeled LCCs and Linkage Design route wildlife across the freeway based on adjacent habitat and not at the existing freeway undercrossings. This Local Permeability Analysis combined the culmination of the WCA analyses, field survey and literature reviews, topography, and various GIS data layers. GIS layers and other data sources that were reviewed including the following:

- Esri aerial image and streets map, Los Angeles County imagery (Esri 2016)
- Existing Caltrans culvert locations (associated with SR14 freeway)
- Proposed culvert locations for the Palmdale to Burbank Project Section
- South Coast Wildlife Missing Linkage Project: A Linkage Design for the San Gabriel-Castaic Connection (including data sets from South Coast Wildlands Least Cost Corridor data for "species overlap" mountain lion, mule deer, and American badger) (Penrod et al. 2004)
- A Linkage Network for the California Deserts (desert tortoise and desert kit fox habitat data) (Penrod et al. 2012)
- National Hydrography Dataset (USGS 2016b)
- Fractured Genetic Connectivity Threatens a Southern California Puma (Puma concolor) Population (Ernest et al. 2014)
- Performance of a Freeway Underpass as a Regional Wildland Linkage of Mammals (Almaleh et al. 2013)
- Wildlife Use of the Los Piñetos Underpass (Freidin 2011)
- Wildlife Crossing Structure Handbook Design and Evaluation in North America (Federal Highway Administration 2011)
- California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (Spencer et al. 2010)
- Wildlife Crossing Guidance Manual (Caltrans 2009)
- Best Management Practices for Wildlife Corridors (Beier et al. 2008)
- Wildlife Corridor Assessment Report: Ventura SR 118 (LSA Associates, Inc. 2004)
- Use of Highway Undercrossings by Wildlife in Southern California (Ng et al. 2004)
- Los Angeles County General Plan 2035 (Los Angeles County 2015)
- A Checklist for Evaluating Impacts to Wildlife Movement Corridors (Beier and Loe 1992)

The WCA assessed potential effects of the project on wildlife movement, at both local and regional scales and considered how these effects can be avoided, minimized, and compensated. At-grade sections were

considered impermeable, and tunnels and viaducts were assumed to be permeable. The evaluation uses the terms “permeability” and “movement cost” to discuss the results of the Local Permeability Analysis. Movement cost and permeability are inversely related. The higher the movement cost, the lower the permeability, and the lower the movement cost, the greater the permeability.

The Refined SR14 and SR14A Build Alternatives were analyzed to determine how much of the at-grade rail segments would affect each of the focal species regional least-cost corridors, as well as the San Gabriel-Castaic Linkage Design. The distance was then converted into a percentage to determine approximately how much of this regional linkage would be disrupted.

The parameters used to develop the minimum core-and-patch habitat polygons (WCA Table 4-2) within the focal species range were analyzed to evaluate how the Build Alternatives would interrupt the species’ natural habitat(s) outside of the urban areas. A summary of the length of core-and-patch habitat that would be crossed by rail type and Build Alternative (WCA Table 6-5 and WCA Supplemental Table 2-12) and discussion of each focal species is provided in the WCA and WCA Supplement.

Existing Baseline Conditions for Wildlife Movement

Commenters criticized the evaluation and weight given to existing barriers, which is a fundamental piece of the analytical approach embodied in the WCA for this project section as well as in the WCAs prepared for Bakersfield to Palmdale Project Section (Authority 2017) and the San Jose to Merced Project Section (Authority 2020a). For instance, commenters stated that “existence of State Route 14 does not have a bearing on the Project’s individual impact on wildlife connectivity”, and that “animals can move under fences.”

The SR-14 freeway is one of the primary existing barriers to wildlife movement in the vicinity of the Refined SR14 and SR14A Build Alternatives. SR-14 is a 65-mile-per hour six-to-eight-lane freeway, divided by a concrete k-rail. The lack of vegetative cover, the width, the topographical approach, the speed, and traffic volume associated with the SR-14 freeway creates a considerable deterrent for wildlife and for all practical purposes serves as a barrier to wildlife movement, with crossing opportunities limited to existing freeway undercrossings and culverts. The SR-14 freeway, as well as other existing barriers, are part of the existing baseline conditions and appropriate to include in the impact analysis. The Authority agrees that as a preliminary matter, however, the individual impact of the project should be evaluated and disclosed separately from existing barriers to movement such as the SR 14 freeway, and that is in fact how the analysis in the WCA was conducted. The local permeability analysis did not factor the SR 14 freeway into the calculations of reduced permeability; if it had done so, the result would have been a reduction in permeability lower than the 1 percent disclosed. However, once the impact of the project is understood, it is important to add an analysis of how the existing condition of the SR 14 freeway restricts wildlife movement to specific areas to understand where and whether installation of crossings under the Project would provide biological benefit.

Clevenger and Huijser (2009) suggest that high-traffic-volume roads, such as those with an annual average daily traffic volume (AADT) over 10,000, are likely to repel wildlife due to the almost constant level of disturbance and heavy traffic volume. AADT is the total traffic volume for the year divided by 365 days. The 2014 Caltrans traffic data for the SR-14 freeway is provided in Table 5-5 of the WCA. The 2014 AADT ranges between 71,000 and 99,000 vehicles in Palmdale and Santa Clarita, respectively. This represents traffic volume that is between 7 and 10 times greater than the level that is “likely to repel wildlife.”

Numerous bridges and culverts provide potential crossing opportunities under the SR-14 freeway. The WCA documented nineteen (19) crossing opportunities, none of which are where the alignment is at-grade in Bee Canyon. As shown on page 4-10 of the WCA, the crossing opportunities consisted of the following undercrossings and culverts:

- California Aqueduct undercrossing of the SR-14 freeway
- SR-14 freeway undercrossing south of California Aqueduct
- Sierra Highway-SR-14 freeway undercrossing
- Mountain Springs Road-SR14 overcrossing

- Sierra Highway-SR-14 freeway overcrossing
- Santiago Road-SR-14 freeway undercrossing
- Crown Valley Road-SR-14 freeway undercrossing
- Red Rover Mine Road-SR-14 freeway undercrossing
- Culvert under SR-14 freeway near Red Rover Mine Road
- Ward Road-SR-14 freeway undercrossing
- Culvert under SR-14 freeway near Ward Road
- Puritan Mine Road-SR-14 freeway undercrossing
- Escondido Canyon Road-SR-14 freeway overcrossing
- Pacific Crest Trail SR-14 freeway undercrossing
- Culvert under SR-14 freeway near Vasquez Rocks
- Agua Dulce Canyon Road-SR-14 freeway undercrossing
- Culvert under SR-14 freeway near Agua Dulce Canyon Road
- Stone Crest Road-SR-14 freeway undercrossing
- Soledad Canyon Road-SR-14 freeway undercrossing

Caltrans District 7 was contacted for information on planned and programmed projects on the adjacent SR-14 freeway that could affect wildlife movement. Natural Environment Study reports for Caltrans projects specific to the vicinity were also requested. The results of these inquiries were used to establish baseline conditions and identify opportunities and constraints for locating wildlife crossings. Caltrans does not collect roadkill data for the SR-14 freeway. Given the existing traffic volume on the SR-14 freeway, it is likely that wildlife movement is occurring primarily through the existing undercrossings. Many of the viaducts and tunnels associated with the Refined SR14 and SR14A Build Alternatives would align with these existing undercrossings on the SR-14 freeway.

Results of the Evaluation

Approximately 46 percent (6.31 miles) of the San Gabriel-Castaic Linkage Design would be obstructed by nine fenced at-grade segments associated with the Refined SR14/SR14A alignments. The Refined SR14 and SR14A Build Alternatives would closely parallel the SR-14 freeway along this section, which is an existing barrier for wildlife movement. The nine segments of at-grade segments within the Linkage Design would include alternating segments of elevated-on-viaduct segments or underground in tunnel segments where wildlife can cross the alignment. Of the 3.18 miles of Linkage Design crossed by the SR14 alignment, 0.68 miles (21 percent) is at-grade and of the 3.55 miles of the Linkage Design crossed by the SR14A alignment, 1.33 miles (37 percent) is at-grade.

The Refined SR14 and SR14A Build Alternatives would cross 22.8 and 21.5 miles, respectively, of core-and-patch mountain lion habitat that stretches across the San Gabriel Mountains outside of urban areas, of which 2.9 and 3.2 miles (13 and 14 percent, respectively) would be at-grade segments. The remaining percentage of the alignment that would cross core-and-patch habitat would be elevated on viaducts or underground in tunnels and could be crossed by mountain lion and other wildlife species.

Local permeability between modeled core-and-patch habitats for each focal species was assessed within a 6-kilometer corridor (3-kilometer buffer of the proposed HSR alignment). The resulting movement cost models were compared at two local scales using two methods. The first method used the change of the accumulative mean (average) of the entire 6-kilometer movement cost model analysis area (model sum divided by the total number of pixels) to compare the existing condition, the project, and the project with wildlife crossings to determine overall effects to movement cost for each focal species (WCA Table 6-7; Figure 6-6 through Figure 6-20). The Refined SR14 Build Alternatives would reduce permeability for mountain lion by 1.25 percent compared to the existing condition. The SR14A Build Alternative would not be substantially different from the Refined SR14 Build Alternative results.

The mountain lion's range (CWHRS 2016) crosses the proposed project alignment between Post Mile (PM) 5.5 and PM 30.8 for the Refined SR14 and SR14A Build Alternatives. The area in the center of the San Gabriel Mountains, which has the lowest movement cost, is in the mosaic of oak woodland and scrub habitats. The project, without additional wildlife crossings, would increase movement cost across the 6-kilometer-wide corridor by 1.3 percent for the Refined SR14 Build Alternative. The SR14A Build Alternative would have similar results.

While project design features and mitigation measures do not completely eliminate the effects of the project, they do minimize the effects to a less-than-significant level. More specifically, wildlife movement conditions for each wildlife movement guild would not be substantially different than the existing condition. This is primarily due to the extensive use of tunnel and viaduct, which do not represent barriers to movement at ground level.

Based on engineering limitations, landscape constraints, and adjacent connectivity, two wildlife crossing opportunities, one near Una Lake and the other located at the California Aqueduct, were identified for the SR14A Build Alternative. In areas where the SR-14 freeway does not have a crossing opportunity, it does not provide biological benefit to locate a crossing structure in the alignment at that location. Wildlife crossings are relatively narrow and would need to align with another crossing opportunity on the adjacent SR-14 freeway to be effective. Portions of the Build Alternative alignment that occur on viaducts or in tunnels, which would be permeable to wildlife movement, are much more open in expanse and directionality in comparison and do not need to be aligned as precisely to be effective.

The primary approach for addressing the potential effects of the proposed Build Alternatives on wildlife movement and habitat connectivity is to maintain local permeability through design features and mitigation measures that include:

- Placing segments underground in tunnels
- Ensuring that planned viaduct structures are designed to help facilitate wildlife movement
- Siting and constructing wildlife under/overcrossing structures in areas that facilitate (local) animal movement between suitable habitat areas and across the (regional) landscape

In addition, the Authority would prioritize mitigation land acquisition for species such as mountain lion in the Linkage Design and at or near wildlife crossings to minimize future development and maintain the natural and rural land cover types in wildlife movement corridors (see BIO-MM#53 [Prepare a Compensatory Mitigation Plan for Species and Species Habitat]).

With respect to the Palmdale to Burbank Project Section, the Authority disagrees with commenter's assertion that, for the Refined SR14 and SR14A Build Alternatives, some impacts to wildlife movement are unmitigated.[30] Despite the extensive tunnel and viaduct segments, the Authority determined impacts to wildlife movement would be significant. Therefore, the Authority developed BIO-MM#64 (Establish Wildlife Crossings) to require installation of one wildlife crossing south of the California Aqueduct (Soledad Siphon) and one wildlife crossing east of Una Lake to improve the permeability of SR14A and Refined SR14. Other mitigation measures were also developed to further reduce impacts, including: preparation and implementation of a restoration and revegetation plan (BIO-MM#6 [Prepare and Implement a Restoration and Revegetation Plan]); installation of aprons or barriers within security fencing (BIO-MM#36 [Install Aprons or Barriers within Security Fencing]); minimize effects on wildlife movement corridors during construction (BIO-MM#37 [Minimize Effects on Wildlife Movement Corridors During Construction]); establish environmentally sensitive areas (BIO-MM#58 [Establish Environmentally Sensitive Areas and Nondisturbance Zones]); limit vehicle traffic and construction site speeds (BIO-MM#60 [Limit Vehicle Traffic and Construction Site Speeds]); implement wildlife height requirements for enhanced security fencing (BIO-MM#77 [Implement Wildlife Height Requirements for Enhanced Security Fencing]); install wildlife jump-outs (BIO-MM#78 [Install Wildlife Jump-outs]); and implementation of measures intended to reduce, avoid and minimize effects on wildlife movement (BIO-MM#83 [Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement]).

Cumulative Impacts

The Authority disagrees with commenters' assertion that the at-grade sections in and near Bee Canyon associated with the Refined SR14 and SR14A Build Alternatives would result in a cumulative impact to wildlife movement, particularly for mountain lion.

[30] The WCA was prepared prior to the development of the "A" alternatives to avoid impacts to Una Lake. The results of the analysis in the WCA for the Refined SR14 Build Alternative would nearly be identical to the SR14A Build Alternative, such that the results of the WCA can be applied to SR14A. For this reason, except for the discussion of added crossings for each Build Alternative, this standard response discusses the Refined SR14 Build Alternative and the SR14A Build Alternative together.

The mitigation measures described above would work together with design features to minimize, avoid, or mitigate impacts on wildlife movement during project construction and operation. Incorporation of design features along with implementation of mitigation would reduce interference with established wildlife movement corridors and potential impacts related to isolation of populations. By incorporating wildlife-crossing features into the project design such as use of the extensive lengths of tunnels and viaducts that align with existing undercrossings at the SR14 freeway, the Palmdale to Burbank Project Section is expected to maintain the existing wildlife movement corridors. The project design would provide opportunities for wildlife to cross the alignment, and by maintaining wildlife connectivity, the project would maintain gene flow connectivity. Therefore, while disturbance to wildlife corridors from operations could combine with other regional projects' impacts, the design features and proposed project-level mitigation measures would ensure that the Refined SR14 and SR14A Build Alternatives' contribution to cumulative impacts is less than considerable.

Locations of the Proposed Wildlife Crossings and how they were Chosen for each Build Alternative

An extensive analysis was performed to determine the location and sizes of proposed wildlife crossings and the full analysis was provided in Section 4.6 (Table 4-3) of the WCA and Section 2.2 (Table 2-6) of the WCA Supplement. The first step involved the analysis of the HSR centerline and the lengths of at-grade segments were quantified to determine which segments would not conform to the desired maximum at-grade segment of no more than 1.0 mile between large structures (overcrossing or 20-foot arch undercrossing) and no more than 0.31 mile between small crossing structures (6-foot arch undercrossing) (Clevenger and Huijser 2009; Meese et al. 2009). The at-grade segments were reviewed to identify additional opportunities to reduce the length of these segments consistent with the wildlife crossing spacing criteria. The number and length of at-grade segments that would exceed the recommended permeability intervals were also analyzed and locations were identified that could meet the wildlife crossing spacing criteria. Storm drain structures were also analyzed to verify if they could be converted to a dual-purpose wildlife crossing with some design modifications. Potential crossings were reviewed for engineering feasibility (15 percent design stage) of ideal crossing dimensions (length, width, height, and approach) and compatibility with surrounding land uses, vegetation communities, species range, topography, and other fenced barriers, adjacent freeways/highways, structural design restrictions associated with known earthquake faults, etc. Several rounds of feasibility review and local permeability models were completed to develop the refined list of preliminarily proposed wildlife crossing locations. Most of the alignment would be underground in tunnels and those "at-grade" segments that exceeded the criteria would primarily be in urban areas, be relatively short, or not be located in an area that would be advantageous to cross the adjacent barrier. As the number and locations of crossings were refined, most potential crossings were eliminated due of the following: close proximity to a tunnel or viaduct section, incompatible configuration of the adjacent freeway, or developed urban areas that lacked suitable habitat, limited value because the "at-grade" segment was relatively short compared to the length of opening on either side, etc.

Section 3.7.8.7 of the Draft EIR/EIS outlined that four at-grade Refined SR14 Build Alternative segments, two SR14A Build Alternative segments, and three at-grade E1, E1A, E2, and E2A Build Alternative segments exceeded the recommended crossing interval lengths of 1.0 mile for large crossings and 0.31 mile for small crossings, indicating that certain segments of the Build Alternatives do not provide wildlife sufficient opportunities to traverse the Palmdale to Burbank Project Section alignment. The Draft EIR/EIS indicated the Authority would install one wildlife crossing south of the California Aqueduct (Soledad Siphon) and one wildlife crossing east of Una Lake to improve the permeability of the SR14A and E2A Build Alternatives. The Authority would also construct one wildlife crossing at Una Lake for the E1, E1A, E2 Build Alternatives. Of the remaining nonurban at-grade segments that exceed the recommended crossing interval threshold length mentioned above, none would benefit from wildlife crossings because they would be subject to existing constraints, making crossing opportunities neither feasible nor beneficial.

As a result of the comments received on the Draft EIR/EIS, the Authority considered alternative design options that would increase the permeability of the Build Alternative alignments to wildlife movement in the Bee Canyon area. This design option would involve moving the alignment into a tunnel in Bee Canyon. Construction of a tunnel in the Bee Canyon area and under Santa Clara River is not feasible

given that it would require a vertical profile for HSR to return to grade that exceeds the maximum allowable grade of 2.5 percent as defined in CHSR's Technical Memorandum (TM) 2.1.2 Section 3.3.1. Furthermore, constructing the HSR rail alignment in tunnel in the northern portion of Bee Canyon and then emerging from tunnel only for the portion crossing over the Santa Clara River with a viaduct would not be feasible. The alignment requirements and the topography of the area do not allow for maintaining the minimum vertical clearance of the rail viaduct over Soledad Canyon Road. In addition, this approach would result in deeper cut sections in the southwestern part of the Canyon, which could result in a larger environmental footprint in this area and a net increase in excavated volume.

17.8 Hydrology

17.8.1 PB-Response-HYD-1: Impacts on the Hansen Dam and Hansen Spreading Grounds

Commenters expressed concern about impacts on the Hansen Dam and Hansen Spreading Grounds, which is part of the Tujunga Wash, a major tributary to the Los Angeles River. Hansen Dam functions, in part, as a flood control facility and the Hansen Spreading Grounds serve as a groundwater recharge area. Commenters requested more information on how groundwater recharge would be impacted by the Project. Commenters also expressed concern regarding the potential visual impacts to the Hansen Dam and Hansen Spreading Grounds as result of the construction and operation of the project.

The Hansen Dam and Reservoir were built by the Los Angeles District of the USACE and completed in September 1940. The Dam and Reservoir are located along the northeastern edge of the San Fernando Valley and provide flood risk management to portions of the San Fernando Valley and areas contiguous to the Los Angeles River. The Hansen Reservoir is also authorized for recreation, and release of waters from the Reservoir contribute to water conservation efforts when operated in conjunction with Los Angeles County through their spreading grounds just downstream from the Dam (USACE n.d.). The use of spreading grounds such as the Hansen Spreading Grounds permits water to percolate into groundwater basins for later pumping.

Groundwater Recharge

The Refined SR14, SR14A, E1, and E1A Build Alternatives alignments cross the Hansen Spreading Grounds. The Hansen Dam Spreading Grounds consist of a groundwater recharge facility where the Los Angeles County Flood Control District applies water within basins which allow the water to percolate into the San Fernando Groundwater Basin below. The Hansen Spreading Grounds is comprised of 7 compartments (20-foot-deep small basins) in which surface water is diverted into so that the water can percolate through their porous floors and into the subsurface. Water percolation occurs in each compartment independently, that is, all the compartments need not be filled with water for percolation to occur. Water is released from Hansen Dam and diverted into the first compartment. When the water level reaches a certain level in the compartment it flows into the adjacent compartments through a drainage pipe. This process continues until the last compartment, (adjacent to San Fernando Road) is filled. The surface water percolates nearly vertical into the groundwater aquifer approximately 250-300 feet deep. Excess flow is released into Tujunga Wash through an outfall structure located adjacent to the last compartment.

Creation of new impervious surfaces within the Spreading Grounds could interfere with groundwater recharge in the San Fernando Groundwater Basin because the HSR guideway would be placed on embankment that would reduce pervious surface area. Culverts would be incorporated into the embankment, allowing water to flow uninterrupted into a portion of the last compartment and the outfall structure. Nonetheless, the placement of the embankment within the spreading grounds could lead to the reduction of ground water resources over time if the amount of water that could infiltrate into the groundwater basin below was to be reduced.

To address this impact, and as discussed in Section 3.8.7, Mitigation Measures, in the Draft EIR/EIS, HWR-MM#3 (Compensation for Impacts on Hansen Spreading Grounds) requires that the Authority provide replacement groundwater recharge areas in the vicinity of existing recharge ponds within the Hansen Spreading Grounds to ensure no net loss in recharge area or capacity. Based on a review of GIS

data, the Refined SR 14, SR14A, E1, and E1A Build Alternatives alignments would result in the loss of approximately 8.9 acres of land in the Hansen Spreading Grounds; however, land directly adjacent to the Hansen Spreading Grounds appear to be suitable for replacement groundwater recharge areas. For instance, there is an area of approximately 18.6 acres of project footprint south of Branford Street and east of San Fernando Road, which is located adjacent to the Hansen Spreading Grounds, that could be used for groundwater recharge purposes. Modifications to accommodate a new recharge area may include culvert extensions under the existing embankment within the Palmdale to Burbank Project Section footprint. Because replacement recharge areas would be located adjacent to the Hansen Spreading Grounds, those areas would be integrated into the existing facility and management and maintenance requirements for the spreading grounds would not be expected to increase.

In response to comments received on the Draft EIR/EIS and based on further coordination with Los Angeles County Flood Control District, HWR-MM#3 (Compensation for Impacts on Hansen Spreading Grounds) has been revised to provide further clarification regarding the measures that will be taken to compensate for any loss of recharge area or capacity of the Hansen Spreading Grounds:

- For the Refined SR14, SR14A, E1, E1A Build Alternatives the reduction in capacity of the Hansen Spreading Grounds would be mitigated as listed below or by an equally effective option to prevent loss in recharge area capacity:
    - The Authority would provide replacement groundwater recharge areas to compensate for the HSR footprint within the Hansen Spreading Grounds and to allow for no net loss in recharge area or capacity. New recharge areas would be placed in the vicinity of existing recharge ponds.

With implementation of HWR-MM#3 (Compensation for Impacts on Hansen Spreading Grounds), the groundwater recharge function and capacity of the Spreading Grounds would not change substantially.

Visual Impacts

In regard to potential visual impacts, Key Viewpoint 1.27 is located at Glenoaks Boulevard (see Figure 3.16-A-27, in Appendix 3.16-A in Volume 2 of the Draft EIR/EIS), looking southwest over the Hansen Dam Spreading Grounds. The view is dominated by the Hansen Dam Spreading Grounds with its slanting striated cement surface, water, and a mix of dirt and rock. The asymmetrical linear profile of the San Gabriel Mountains is visible in the background. An amalgamation of irregular rectangular buildings, vegetation, and vertical utility poles also contributes to the background of the view. The existing visual quality is low. The Refined SR14, SR14A, E1, and E1A Build Alternatives would introduce at-grade HSR trackway after emerging from a tunnel to the north (right-hand side of view). Project features would generally be visually subordinate to the setting and would not introduce substantial change to the viewshed. The most prominent project feature visible from the Hansen Dam Spreading Grounds would be passing HSR trains, which would temporarily dominate views; however, the duration of passing trains would be fleeting. Visual quality would remain low. The primary viewers would be motorists traveling on Glenoaks Boulevard and commercial and industrial neighbors, both of whom have a low sensitivity to visual changes. Overall, the degree of change to visual quality would be neutral for the Refined SR14, SR14A, E1, and E1A Build Alternatives. The E2 and E2A Build Alternatives would not result in visual impacts on the Hansen Dam Spreading Grounds because project features associated with the E2 and E2A Build Alternatives would not be visible from that location.

17.8.2 PB-Response-HYD-2: Hydrogeologic Impacts in the Angeles National Forest/Tunneling Impacts in the Angeles National Forest

Commenters expressed concern about hydrologic impacts that could potentially result from tunneling under the Angeles National Forest (ANF) including areas within the San Gabriel Mountains National Monument (SGMNM). Commenters requested more information on the methodology and general assumptions used to evaluate potential effects on surface and subsurface water resources. Commenters requested more information regarding the methodology used to identify areas that may be at risk of impacts as a result of tunneling. Commenters requested more information on how tunneling would impact hydrology, hydrogeology, and water resources and what IAMFs and mitigation measures would be set forth to avoid and minimize any such impacts, including the efforts that would be undertaken to further

study both geologic and hydrologic conditions along the project alignment and to monitor resources that may be affected by tunneling. Commenters requested additional information regarding how tunneling may impact groundwater-dependent ecosystems and what IAMFs and mitigation measures would be set forth to avoid and minimize any such impacts to biological and aquatic resources. Commenters also raised questions regarding the potential effects of tunneling under the ANF on mineral resources and paleontological resources.

As shown in Figure 2-2 of the Draft EIR/EIS, each of the six Build Alternatives would involve traversing the ANF, including the SGMNM, through tunnels. Bored-tunnel construction methods would be used for tunnel construction in the ANF. Because of the high mountains, faulting, hard rock formations, and potentially high-water pressures that could be encountered, tunnel construction under the ANF could alter hydrogeological conditions and cause inflows of groundwater into tunnel cavities and affect groundwater levels. Additionally, in circumstances where water flows into the tunnel excavation, water pressures outside the tunnel would decrease and, consequently, groundwater present at shallower depths would tend to flow downward from shallower aquifers toward the tunnel, potentially affecting both water chemistry of the deeper groundwater and surface water resources connected to shallow groundwater. As such, and as discussed under Impact HMW#5 starting on Page 3.8-49 in the Draft EIR/EIS, changes to hydrogeological conditions at depth may propagate upward and result in impacts to shallow subsurface and surface hydrologic resources. The surface impacts may include loss or reduction in water available to streams, springs, seeps, and water supply wells. Hydrogeological effects from tunnel construction within the ANF may potentially occur in areas within the water resource study area (RSA), established to be within 1 mile of the centerline of each of the six Build Alternatives.

Groundwater Quality

As described in section 3.8.10.2, tunneling could pose risks to groundwater quality. Impact HWR#2 (Construction Activities Required for the Build Alternatives) addresses the potential for groundwater contamination from construction activities. As described in greater detail in Impact HWR#2, construction activities, such as trenching and installation of bridge piers, could require dewatering to remove groundwater from the construction site. Dewatering activities could degrade groundwater through the introduction of sediment or potential release of contaminated groundwater. As summarized for groundwater below, local water inflows during portal and tunnel excavations are expected in some areas. Disposal of water flow into the tunnel could release water contaminated with drilling muds, sediments, and lubricants used during the tunneling activities. Water quality may be affected by the construction method. In accordance with HYD-IAMF#3 (Prepare and Implement a Construction Stormwater Pollution Prevention Plan), a construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared that will establish best management practices (BMPs) to minimize water quality impacts caused by short-term sedimentation throughout construction. HMW-IAMF#5 (Demolition Plans), HMW-IAMF#6 (Spill Prevention), HMW-IAMF#7 (Storage and Transport of Materials), HMW-IAMF#8 (Permit Conditions), and HMW-IAMF#9 (Environmental Management System) would minimize risks associated with use, transportation, storage, and disposal of hazardous materials. Although these measures and the construction-related SWPPP (HYD-IAMF#3 [Prepare and Implement a Construction Stormwater Pollution Prevention Plan]) will minimize water quality impacts related to channel dewatering, the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives could still substantially degrade groundwater quality during tunnel construction and, therefore, result in a significant impact.

Mitigation

The Final EIR/EIS, Section 3.8.7, requires Mitigation Measure HWR-MM#1 (Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction) to be implemented. HWR-MM#1 (Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction) provides measures pertaining to groundwater monitoring during tunnel construction and, if necessary, isolation of groundwater to prevent contamination. HWR-MM#1 (Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction) will also include treatment of the water in the event of contamination. Impacts would be less than significant with implementation of mitigation.

Groundwater Volume

Approach and Assumptions

As discussed on Page 3.8-15 of the Draft EIR/EIS, the general approach to evaluating potential effects on subsurface (e.g., groundwater, including domestic water wells) and surface (springs, seeps, and streams) water resources in the San Gabriel Mountains due to tunneling is based on an assessment of known hydrogeologic and hydrologic conditions of the western San Gabriel Mountains; the professional judgment of experts in the field of hydrogeology, hydrology, and tunnel construction in southern California; and reviews of case studies of similar types of tunnel construction projects. The information and data are derived in part from preliminary geotechnical investigations conducted by the Authority for the Palmdale to Burbank Project Section (Authority 2019a and 2019b). The case studies of tunnel construction occurring under similar conditions included documented effects on surface water and other water resources, particularly the Inland Feeder Arrowhead Tunnels case study (USFS 2012). These case studies are described in "Section 4.1 Historical Tunnel Projects in National Forests" included in the Geotechnical Tunnel Feasibility Evaluation for High-Speed Rail Tunnels Beneath the Angeles National Forest (Authority 2019) and evaluated in the Preliminary Floodplain Impacts Assessment Report prepared by the Authority in 2020. The analysis focused on the number and location of known mapped faults intersected by the alignments of the six Build Alternatives, the groundwater pressures associated with the tunnel alignments, and the evidence of surface water manifesting as springs or seeps and streams close to the alignment.

The following general assumptions form the basis of the evaluation of potential impacts on subsurface, surface, and other water resources in the ANF, including areas within the SGMNM, due to tunnel construction[31]:

- The greatest potential for groundwater to flow into tunnels exists at locations where tunnel construction intersects faults and fractures in the bedrock because the faults and fractures could provide conduits for groundwater movement through the relatively impermeable rock mass. The nature and extent of faults were evaluated and discussed in Section 3.8, Hydrology and Water Resources and Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources of the Draft EIR/EIS, and in the Geotechnical Tunnel Feasibility Evaluation for High-Speed Rail Tunnels Beneath the Angeles National Forest (Authority 2019). Fault locations are presented on Figures 3.9-15 through 3.9-17 of the Draft EIR/EIS.
- The potential for water to flow into tunnels during construction, as well as the rate and volume of any such flows, is greatest in areas of high-water pressure, assumed for purposes of the analysis to be greater than 25 bar, as this threshold would present conditions that pose a greater risk of inflow during tunnel construction compared to areas subject to less than 25 bar.
- Proximity of the tunnel construction to water resources influences the severity of the water loss. Closer proximity of a water resource to the tunnel excavation may result in greater impact because it is more likely that there is a hydrological connection between the location of tunneling and the feature.
- Springs, intermittent and perennial streams, and water supply wells along or close to faults are most vulnerable to impacts when tunnel construction intersects faults, areas of high-water pressure, and water within fractures that seeps into the tunnel excavation because the faults provide a path in which water that is connected to surface features can move and the tunnel provides a low exit point for that water.

Methodology

Based on observations of groundwater occurrence and flow behavior described in Section 3.8.4.5, Hydrology and Water Resources Methodology, potential risk areas were identified and mapped in the tunnel construction RSA in the ANF, with relative rankings of High Risk, Moderate Risk, and Low/No Risk

[31] Construction of adits for the tunnels would be conducted using conventional mining methods, including pre-exploratory grouting, tunnel liners, and check grouting, to minimize effects on groundwater.

of impacts on subsurface, surface, and other water resources. The risk areas have been delineated based on the general criteria detailed below:

- High Risk Area:
  - The tunnel for a Build Alternative intersects a fault where groundwater pressures are estimated to be above 25 bar at the tunnel depth.
  - The lateral extent of surface and groundwater impacts for a High-Risk Area is defined as the length of the fault out to 1 mile from where the tunnels intersect the fault and the area that encompasses the approximate width of the fault zone and associated fractured rock because this is the area where surface features are more likely to be connected to nearby faults or fractures below ground.
- Moderate Risk Area:
  - The tunnel for a Build Alternative intersects a fault where groundwater pressures are estimated to be equal to or below 25 bar at the tunnel depth.
  - Areas with no mapped faults, but with known springs within 0.5 mile of the tunnel alignment where groundwater pressures are estimated to be above 25 bar at the tunnel depth. These areas are moderate risk because the absence of faults indicates a lower likelihood of connection between surface features and the subterranean location of proposed tunneling.
  - The lateral extent of surface and groundwater impacts for a Moderate Risk Area is defined as the length of the fault out to 0.5 mile from where the tunnels intersect the fault and the area that encompasses the approximate width of the fault zone and associated fractured rock.
- Low/No Risk Area:
  - All other areas within 1 mile of the centerline of the tunnel alignments on each side of the alignment. The distance of these areas from the tunnel alignments would present lower risks of groundwater inflows during tunnel construction.

Sections 3.7, Biological and Aquatic Resources, and 3.8, Hydrology and Water Resources, of the Draft EIR/EIS provide additional detail on the methodology used for evaluating hydrogeological impacts.

Potential Tunneling Impacts to Groundwater Dependent Surface Water

The Authority recognizes that tunnel construction may affect hydrogeological conditions which may result in impacts to surface aquatic resources. Tunnels may provide a conduit for groundwater to seep into excavated areas as the advancing tunnel construction intersects subsurface fractures and faults in bedrock that contain water. Where groundwater is present, it may, under certain circumstances, leak into the tunnels. In such cases, groundwater inflows may temporarily affect the hydrology of streams, springs, water supply wells, and other waterbodies. Potential impacts to hydrological resources related to tunnel construction will be addressed through the implementation of state-of-the-art design features and construction methods sufficient to avoid and minimize such impacts, including through the use of tunnel boring machines (TBMs) with features to reduce or prevent inflows and grouting and tunnel-lining approaches that have proven effective at controlling water seepage. Additional site-specific investigations of surface and subsurface conditions would be conducted in advance of final tunnel design, including geotechnical investigations along the tunnel alignment to characterize the differing rock types (strength, fracturing, in-situ stresses, etc.), groundwater pressures at tunnel depth, potential flow quantities, and structural geology along the tunnel alignment, including faults and gouge zones. Data and other information also will be gathered to support the development of a groundwater model.

Groundwater pressure is also assumed to have a direct influence on potential groundwater flow rates and volumes as well as the capacity of tunnel boring methods and technologies to control flows into the tunnel. As pressures increase, the driving force to push groundwater through fractured ground increases. This results in higher potential flow rates at greater depths. Areas of pressure above 25 bar were mapped based on the depth of the tunnel below the ground surface using data derived from the geotechnical investigations, which roughly correlate pressure versus depth data in the six completed exploratory bore

holes (Authority 2019a). The higher pressures occur where a greater thickness of rock above the tunnel is saturated (i.e., greater depth below the groundwater table).

A 25-bar groundwater pressure was selected as a cut off to represent the maximum pressure gaskets used for construction of one-pass water-tight tunnels are designed to withstand over the long-term (Swartz et al 2002). In sections where groundwater pressures are above 25 bar, a second lining will be installed to ensure that the tunnels are water-tight tunnels over the long-term. Notwithstanding the high-pressure conditions above 25 bar, no significant water seepage into the tunnels is expected to occur once the first pass lining has been put in place. Pre-excavation grouting creates a permanent strengthened very low permeability circular crown around the TBM, that in conjunction with the first-pass tunnel lining takes on the water pressure until the second lining is installed (Mechanized Shield tunnelling. 2nd Edition. B. Maidl, M. Herrenknecht, U. Maidl, G. Wehrmeyer, 2012).

As set out in HYD-IAMF#5 (Tunnel Boring Machine Design and Features), HYD-IAMF#6 (Tunnel Lining Systems), and HYD-IAMF#7 (Grouting), various measures will be implemented to avoid and minimize tunnel inflows. HYD-IAMF#5 (Tunnel Boring Machine Design and Features) requires the use of closed-mode operations to effectively prevent water seepage from occurring at the TBM cutterhead area, with ports for drilling horizontal probe holes through the TBM cutterhead, and angled probe holes through the TBM shields. These holes will allow for water pressures and flow rates to be measured ahead of the TBM, and further allow for pre-excavation grouting ahead of the TBM to cut-off groundwater inflows into the tunnel. HYD-IAMF#6 (Tunnel Lining Systems) involves the installation of a single segmental, precast, concrete lining with bolted and gasketed joints where groundwater pressures are 25 bar or less. In sections where groundwater pressures are above 25 bar, a second tunnel lining will be installed to ensure watertight seals over the long-term. HYD-IAMF#7 (Grouting) involves pouring coarse mortar into various narrow cavities along the tunnel lining. Several grouting methods will be used during the construction of the tunnels to avoid and minimize groundwater flows into the tunnels, including pre-excavation grouting, backfill grouting with two-component grout, and check grouting. The TBMs will be fitted with equipment for grouting, in order to be able to tunnel through problematic geological formations and unexpected faults, or to control water ingress. Pre-excavation grouting creates a permanent strengthened very low permeability circular crown around the TBM that takes on the water pressure. The potential high-water pressure is therefore borne by the improved ground, and not by the TBM.

Note that TBMs are capable of operating in areas with pressures above 30 bar when other boring techniques, such as pre-excavation grouting, are applied. These techniques provide for a reduction of pressures on the TBM. Pre-excavation grouting can be performed from a TBM with built-in capability including grout ports through the TBM cutter-head and through the shield. During tunnel construction, groundwater inflow risk mainly occurs between boring and installation of the first pass lining. Excavation and installation of the first lining precast segments are concurrent operations with the erection of the precast segments taking place right behind the cutterhead inside the TBM shield.

Where groundwater is present, HYD-IAMF#5 (Tunnel Boring Machine Design and Features), HYD-IAMF#6 (Tunnel Lining Systems), and HYD-IAMF#7 (Grouting) will be implemented as discussed above to dissipate the pressure on the TBM and to control the volume of groundwater inflow into the tunnel. Examples of high groundwater mountain pressure expected but well managed during construction with TBMs are all Alpine base tunnels and include: St. Gotthard (200 bar measured), Lötschberg (110 bar measured locally), Lyon-Turin (under construction). Pre-excavation grouting will provide further reinforcement against tunnel seepage. Grouting will be applied to form a permanent strengthened very low permeability circular crown around the TBM that, in conjunction with the first-pass tunnel lining, will take on the high-water pressures until a second lining is installed.

This analysis assumes that areas where each of the Build Alternative tunnel alignments intersect faults and are subject to water pressures greater than 25 bar, present a considerably greater risk of water flows into the tunnel during, and potentially for a short period after, tunnel construction compared to areas subject to 25 bar or less. Such groundwater flows into the tunnel, while not anticipated to be substantial, could reduce groundwater levels and result in adverse effects to surface water resources.

While the inflow of groundwater into tunnels beneath the ANF is not considered a significant impact under CEQA, this inflow could result in lower groundwater pressures which could potentially impact surface water features (e.g., seeps, springs, intermittent and perennial streams) and water levels in wells that are

connected to groundwater resources. Impacts to these surface features (including wells) could be significant and could occur with any of the six Build Alternatives. However, the level of risk potential varies. The Refined SR14 and SR14A Build Alternatives, as compared to the other Build Alternatives, would have the lowest potential risk and lowest potential impacts on surface resources (see Table 3.8-12), because the alignments traverse areas with lower groundwater pressures and no known groundwater dependent resources within the identified Risk Areas. The E2 and E2A Build Alternatives would have the highest risk and highest potential impacts on hydrologic resources when compared to the other Build Alternatives because of the comparatively higher groundwater pressures and greater prevalence of springs and streams within the identified Risk Areas.

To address any impacts to surface aquatic resources or wells associated with tunnel construction within the ANF, the Authority will implement an Adaptive Management Monitoring Plan (AMMP) (see HWR-MM#4 [Implement a Water Resources Adaptive Management and Monitoring Plan Including Compensatory Mitigation Measures as Necessary]).

The purpose of the AMMP is to ensure that adverse effects on subsurface and surface water resources and associated habitat within the ANF caused by tunnel construction activities are identified and that appropriate responses to address those effects are expeditiously implemented. The AMMP will require the implementation of a comprehensive monitoring program to establish baseline conditions for surface water resources and to allow for the detection of changes in groundwater conditions related to tunnel construction to ensure timely implementation of remedial measures. The monitoring program would continue for up to 10 years after the completion of construction. This AMMP involves a multi-step iterative process to comply with U.S. Forest Service (USFS) standards, which includes remedial measures. The remedial measures include actions such as establishing adaptive management triggers for each water resource being monitored, implementation of compensatory mitigation for any affected surface water resource and water supply wells, and the minimization of effects on water resources–associated species as a result of tunnel construction. For a full list of USFS standards for remedial measures, see Appendix 3.8-C, *Adaptive Management and Monitoring Plan for Potential Hydrologic Effects within the Angeles National Forest*. The AMMP also will include provisions for augmenting water supplies for surface water resources and wells and will establish performance standards that the remedial actions must achieve to approximately match baseline conditions. As a result, HWR-MM#4 (Implement a Water Resources Adaptive Management and Monitoring Plan Including Compensatory Mitigation Measures as Necessary) will effectively mitigate impacts on affected water resources, including wells from tunneling.

Potential Impacts to Surface Water Ecosystems

Surface and subsurface water resources were evaluated in the Draft EIR/EIS in Section 3.7, Biological and Aquatic Resources and Section 3.8, Hydrology and Water Resources. To conduct the evaluation, applicable laws and regulations, existing water resource conditions, and the potential for construction to impact these water resources were taken into consideration. If potential impacts to water resources were identified, then appropriate measures were developed and included in the EIR/EIS to reduce these potential impacts.

Tunnel construction under the ANF has the potential to alter hydrogeological conditions, resulting in inflows of groundwater into the tunnel and the subsequent change in groundwater levels, as discussed above. Changes in groundwater levels for aquifers could affect the hydrology of groundwater-dependent ecosystems, resulting in effects on plant and animal species. Groundwater-dependent species were determined through a review of the literature and an assessment of species habitat requirements, especially those habitats that are riparian in nature and have greater sensitivity to changes in surface water availability. As described in Section 3.8, Hydrology and Water Resources, areas potentially subject to changes in groundwater levels as a result of tunnel construction were identified based on hydrogeological and hydrological information and were divided into “No/Low Risk”, “Moderate Risk”, and “High Risk” areas. All at-risk areas are encompassed within the 2-mile-wide tunnel construction RSA. For special-status plant species, species were considered to be groundwater dependent if they require aquatic or riparian conditions to exist.

Wildlife species were considered to be groundwater dependent if they require aquatic or riparian conditions to exist and complete a significant part or portion of their life cycle. For all species determined to be groundwater dependent, the habitat suitability models developed for the project section were

overlaid with the tunnel construction RSA and Risk Areas to review the amount of modeled suitable habitat that could be adversely affected for each species. All modeled suitable habitat within the Risk Areas was quantified and considered to be potentially affected.

For the purposes of the aquatic resource analysis, intermittent streams, perennial streams, and springs/seeps were considered to be potentially affected by changes in groundwater levels. Streams and springs/seeps were identified using the most recently available data derived from the National Hydrography Dataset (USGS 2015). Since the extent to which groundwater contributes flow to individual intermittent or perennial streams or stream segments is unknown, the linear length of streams within Risk Areas and the number of springs and seeps within Risk Areas were calculated and considered to be potentially affected. Within these areas of effect, it was assumed that the aquatic feature would be subjected to an altered hydrological regime and could dry out or partially dry out if changes in groundwater levels occurred due to tunnel construction.

Indirect effects from tunnel construction associated with the Build Alternatives could have substantial adverse effects on special-status species through conversion or degradation of habitat. The Refined SR14 and SR14A Build Alternative alignments would cross the fewest identified Risk Areas compared to the other two alignments (E1/E1A and E2/E2A). Within those Risk Areas, no known seeps, springs, intermittent or perennial streams are present. As such, the Refined SR14 and SR14A Build Alternatives pose the least risk of hydrologic impacts occurring among the Build Alternatives.

While actions would be implemented during construction to reduce the indirect impacts on special-status species and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat. To address this impact, the Authority will implement an AMMP. BIO-MM#93 (Adaptive Management Plan for Groundwater Effects on Species and Habitat) will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4 (Implement a Water Resources Adaptive Management and Monitoring Plan Including Compensatory Mitigation Measures as Necessary), which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring in a timely manner. If the Authority determines, through direct monitoring or data interpretation, that substantial disruption (i.e., loss of 0.5 acre or greater) to habitat supporting special-status species has likely occurred during or after construction and that habitat restoration efforts did not achieve success criteria or that restoration was determined unfeasible, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect on special-status species and habitat as a result of indirect impacts from tunnel construction.

Refer to Section 3.7, Biological and Aquatic Resources, of the Draft EIR/EIS for a detailed analysis of the potential for each species and aquatic feature to be affected by altered hydrogeological conditions.

Impacts to Mineral Resources

Subsurface tunneling under the ANF could result in the reduced availability of mineral resources. As discussed under Impact GSSP#14, a known oil/natural gas field is approximately 0.25 mile from the Refined SR14 and E1 Build Alternatives mineral and energy resource RSAs (approximately in Pacoima) but outside the permanent HSR construction footprint (see Figure 3.9-31) and outside of the ANF. As discussed under Impact GSSP#12 of the Draft EIR/EIS, the Build Alternative alignments traverse MRZ-2 areas between Agua Dulce and Sand Canyon and around the urbanized areas of the San Fernando Valley. As indicated in Section 3.9.5.8, there are MRZ-2 and/or MRZ-3 areas within the ANF in each Build Alternative alignment. Earthmoving activities in MRZ-2 areas could directly remove aggregate material and/or temporarily prevent mineral recovery during construction period. Although each of the six Build Alternatives would convert MRZ-2 areas to a transportation use, such areas would be minimal considering the available MRZ-2 lands within Los Angeles County. Los Angeles County has a total MRZ-2 inventory of 119,268 acres. Out of all six Build Alternatives, the SR14A Build Alternative would require the greatest permanent conversion of MRZ-2 areas (up to 674 surface acres and 95 subsurface acres). Thus, the six Build Alternatives would permanently convert a maximum of 0.6 percent of Los Angeles County's total MRZ-2 areas. As discussed in the Draft EIR/EIS, this impact would be less than significant under all six Build Alternatives.

Impacts on Paleontological Resources

Subsurface tunneling under the ANF could potentially damage unique paleontological artifacts. As discussed under Impact GSSP#15, destruction or alteration of paleontological resources is possible during ground-disturbing activities, including tunneling through paleontologically sensitive geologic units. Although surface activities (such as vegetation removal and construction staging) generally would not disturb fossil-bearing geologic units, excavation, grading, and other ground-disturbing construction activities would affect paleontologically sensitive geologic units in the Refined SR14, E1, and E2 Build Alternative paleontological RSAs. As discussed in Section 3.9.5.9, there is varying paleontological sensitivity throughout the ANF. The project will incorporate GEO-IAMF#11 (Engage a Qualified Paleontological Resources Specialist), GEO-IAMF#12 (Perform Final Design Review and Triggers Evaluation), GEO-IAMF#13 (Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan [PRMMP]), GEO-IAMF#14 (Provide WEAP Training for Paleontological Resources), and GEO-IAMF#15 (Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found), which require the preparation and implementation of paleontological monitoring and recovery plans to protect paleontological resources encountered during surficial construction activities. While adherence to these measures will avoid or reduce some paleontological impacts, tunnel boring could result in significant impacts that may directly or indirectly destroy a unique paleontological resource or site that could be encountered during tunneling activities for the Build Alternatives. There is no feasible mitigation to reduce this impact, which would remain significant and unavoidable for the six Build Alternatives.

17.8.3 PB-Response-HYD-3: Impacts of Tunnels on Wells Outside the Angeles National Forest

Commenters expressed concern about the impacts of proposed tunnel construction on existing water supply wells. Commenters requested more information on how tunneling would impact groundwater levels and the ongoing availability of water supply from these wells. Commenters requested more information on how their active wells would be impacted. Commenters requested more information regarding the IAMFs and mitigation measures set forth to avoid and minimize impacts to groundwater recharge and wells.

Well Identification

The locations of active public wells within the tunnel construction resource study area (RSA), established to be within 1 mile of the centerline of the Build Alternatives, are displayed in Figure 3.8-A-21 through Figure 3.8-A-23 in Appendix 3.8-A, Hydrology and Water Resources Figures Part 1, in Volume 2 of this Final EIR/EIS. In total, there are 30 active groundwater wells within 1 mile of the Refined SR14 and SR14A Build Alternatives, 24 active groundwater wells for the E1 and E1A Build Alternatives, and 22 active groundwater wells for the E2 and E2A Build Alternatives.

The Authority understands that there may be additional private wells located near the Build Alternatives that were not shown in the Draft EIR/EIS. Private well owners are not required to provide locational information for their wells, as part of public records. The Authority's analysis includes all wells for which locational data was available through the public records. The Authority's analysis of impacts, however, is not limited solely to wells identified in the Draft EIR/EIS and explains that wells within 1 mile of the tunnels could experience potential impacts. To clarify, the Authority would not use water directly from private residential wells or install new wells to augment its construction water supplies. See also PB-Response-PUE#3 for information about water supply.

Water Quality

Impacts

Impact HWR#2 (Construction Activities Required for the Build Alternatives) addresses the potential for groundwater contamination from construction activities. The Refined SR14 Build Alternative would require footprint within four groundwater basins: the Antelope Valley, the Santa Clara River Valley East Sub-basin, the Acton Valley, and the San Fernando Valley. The E1 and E2 Build Alternatives would require footprint within Antelope Valley and San Fernando Valley groundwater basins. One optional adit (E1-A2) for the E1 Build Alternative would require the construction of a utility easement within the Santa Clara River Valley East Sub-basin. As described in greater detail in Impact HWR#2, construction activities, such

as trenching and installation of bridge piers, could require dewatering to remove groundwater from the construction site. Dewatering activities could degrade groundwater through the introduction of sediment or potential release of contaminated groundwater. As summarized for groundwater below, local water inflows during portal and tunnel excavations are expected in some areas. Disposal of water flow into the tunnel could release water contaminated with drilling muds, sediments, and lubricants used during the tunneling activities. Water quality may be affected by the construction method. In accordance with HYD-IAMF#3, a construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared that will establish best management practices (BMPs) to minimize water quality impacts caused by short-term sedimentation throughout construction. HMW-IAMF#5 through HMW-IAMF#9 in Section 3.10, Hazards and Hazardous Materials, would minimize risks associated with use, transportation, storage, and disposal of hazardous materials. These measures and the construction-related SWPPP (HYD-IAMF#3) would minimize water quality impacts related to channel dewatering during construction of the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives. Accordingly, with implementation of these IAMFs, tunnel construction outside the Angeles National Forest (ANF) is not anticipated to adversely affect the groundwater quality in the existing private water wells within 1 mile of the centerline of the Build Alternatives. Nevertheless, the Authority will implement Mitigation Measure HWR-MM#1, as discussed below.

Mitigation

The Final EIR/EIS, Section 3.8.7, requires Mitigation Measure HWR-MM#1 to be implemented. HWR-MM#1 provides measures pertaining to continuous monitoring of groundwater quality or condition in private water supply wells before, during, and after tunnel construction and, if necessary, isolation of groundwater to prevent contamination. HWR-MM#1 would also provide for timely detection of changes in the geochemistry of the groundwater and, if necessary, appropriate remediation in the event of contamination. Impacts would remain less than significant with implementation of Mitigation Measure HWR-MM#1.

Water Volume

Impacts

Potential impacts on groundwater wells during construction outside the ANF are discussed under Impact HWR#4 (Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives), under the subheading for Groundwater Recharge Impacts from Tunnel Construction. Refer to PB-Response-HYD-2 for a discussion of impacts within the ANF. Tunnel construction could affect groundwater levels during construction of all six Build Alternatives due to groundwater seepage into tunnels. Groundwater wells near tunnel construction (both public wells and private wells) could be affected by a reduction in groundwater availability.

As described in the impact discussion, outside the ANF tunnel depths would be shallower than in the ANF and the tunnels would not encounter high water pressures during construction; therefore, the issues related to high water pressures for the ANF in PB-Response-HYD-2 are not expected to occur outside the ANF. The primary issues associated with tunneling outside the ANF is the tunnel depth relative to the groundwater table and tunneling through alluvial soils. When tunnel depths are above the known groundwater table, effects on groundwater and groundwater dependent resources would be minimal to none. Where tunnel depths may coincide with the groundwater table, there could be impacts to groundwater volume.

The Build Alternatives pass through groundwater basins as follows, as shown in Table 3.8-5:

- **Refined SR 14:** Antelope Valley, Santa Clara River Valley (East sub-basin), Acton Valley, and San Fernando Valley
- **SR 14A:** Antelope Valley, Santa Clara River Valley (East sub-basin), and San Fernando Valley
- **E1:** Antelope Valley and San Fernando Valley
- **E1A:** Antelope Valley and San Fernando Valley
- **E2:** Antelope Valley and San Fernando Valley

- **E2A:** Antelope Valley and San Fernando Valley

Within the Antelope Valley Groundwater Basin (in which Acton is part of as shown in Figure 3.8-A-20), tunneling activities required for each of the six Build Alternatives could encounter shallow groundwater south of the California Aqueduct and north of the ANF. Where each of the Build Alternative alignments passes through foothills of the San Gabriel Mountains, tunnels would likely be constructed above the groundwater table. However, not enough groundwater information is available at this time to identify the extent to which the tunnels may be below the water table. There may be perched groundwater or seasonal springs in the vicinity of these tunnels (Figure 3.8-A-21). South of the ANF, tunnels would likely be constructed above the groundwater table of the San Fernando Valley Groundwater Basin. However, tunnels could also encounter perched groundwater or seasonal springs in the vicinity of these tunnels (Figure 3.8-A-21 and Figure 3.8- A-23). In these areas outside the ANF, groundwater pressures are expected to be less than 25 bar. In such conditions, the implementation of IAMFs as described below is expected to be adequate to control water inflow into the tunnels.

While the areas outside the ANF are not characterized generally by the same high pressures as within the ANF, for all excavation methods, excessive groundwater pressures might generate some seepage into the tunnel during construction, but tunnel design and construction methods implemented during construction, such as pre-grouting, would effectively prevent or greatly minimize seepage. Effects on groundwater basins that support water supply wells would be avoided through tunnel design and construction methods outlined in the IAMFs that are part of each Build Alternative. Implementation of HYD-IAMF#5 (Tunnel Boring Machine Design and Features), HYD-IAMF#6 (Tunnel Lining Systems), and HYD-IAMF#7 (Grouting) would ensure the Authority's commitment to tunnel construction methods would that avoid and minimize groundwater seepage into tunnels, including Tunnel Boring Machine (TBM) specifications tailored to avoid and minimize the potential for seepage into tunnel cavities to occur. HYD-IAMF#6 (Tunnel Lining Systems) would employ different types of tunnel system lining that would be used under varying circumstances, including circumstances where risk of seepage into tunnel cavities is moderate or high. Additionally, HYD-IAMF#7 (Grouting) would employ various methods and approaches to grouting that would be used to avoid and minimize seepage into tunnel cavities. A network of piezometers, as described in HYD-IAMF#7, would be used to monitor the effectiveness of the construction methods in preventing a decline in groundwater levels. Design features such as the mining methods to be employed, the specific type of TBM to be used when construction by TBM is selected, the type of grouting approaches to be implemented to control water flows, and the lining systems to be installed would be further refined during the pre-construction phase of the selected Build Alternative after detailed field investigations are completed and would be implemented during construction.

The circumstances under which these approaches would be employed would be guided by site-specific geotechnical and hydrogeological characterizations that would be developed during the preconstruction phase of the selected Preferred Alternative. Such studies would include geotechnical investigations along the tunnel alignment for the selected Preferred Alternative to characterize the differing rock/soil types (e.g., strength, fracturing, in-situ stresses), groundwater pressures at tunnel depth, potential flow quantities, and structural geology, including faults and gouge zones. Additional geotechnical borings would be converted to piezometers or fitted with vibrating pressure transducers for measuring water pressure changes along the alignment to establish seasonal baseline conditions for deep groundwater and near surface water. Such instrumentation would also be used as the early warning system for pressure and groundwater level changes occurring in the subsurface along the alignment of the selected Preferred Alternative during tunnel construction. However, because of the shallow depth of the tunnels, and the correspondingly relative low water pressures at those depths, effects on groundwater would be avoided through tunnel design and construction methods outlined in the IAMFs. The Build Alternatives would therefore not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that they may impeded sustainable groundwater management of the basin.

Potential for Direct Impacts to Private Water Supply Wells from Tunnel Construction

Private wells occur within 1 mile of each of the six Build Alternatives outside the ANF (Figure 3.8-A-21, Figure 3.8-A-22, and Figure 3.8-A-23). Changes in groundwater during tunnel construction could affect water supply to these private supply wells.

Section 3.8, Hydrology and Water Resources, of Final EIR/EIS has been revised to expressly clarify commenters' concerns related to private water supply wells. Specifically, Impact HWR#4, Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives, was clarified regarding the potential for direct impacts to private water supply wells from tunnel construction. As stated in the Final EIR/EIS, because only limited information is available regarding the location of private water supply wells, there is the potential that tunnel construction could result in the destruction of private water supply wells, including wells that have not been identified, if any wells are located directly in the path of the tunnels.

Mitigation

No mitigation is necessary related to groundwater quality, as the Build Alternatives would not adversely affect or significantly impact groundwater supplies or interfere substantially with groundwater recharge.

Pursuant to HYD-IAMF#8, private water supply wells that would be directly affected by tunnel construction would be identified and relocated prior to construction to the extent feasible. The Authority will not cut off access until a replacement well has been provided and is fully operational. It is anticipated that any replacement wells would be relocated as close as reasonably possible to the existing well. The relocated well would be functionally equivalent to the well being replaced and would not reduce the pumping capacity or diminish the water quality compared to the existing well. Any replacement wells would also be constructed in compliance with applicable regulations, including regulations by the Department of Water Resources, the State Water Resources Control Board, and the Department of Toxic Substances Control. Pursuant to HYD-IAMF#8, if replacing a well is not feasible, the Authority will identify an alternative water source for the affected property, which may include water supply wells on other properties or connecting to other water providers, to provide a water supply that is equivalent in quantity and quality to pre-existing conditions, to the extent feasible. The Authority will not cut off access until a replacement water source has been provided and is fully operational. If it is not feasible to provide a replacement well or alternative water source that is of equivalent quality and quantity, impacts to water supply wells may necessitate acquisition of the property, in which case the acquisition will occur in compliance with the Authority's Right-of-Way Manual and Uniform Relocation Assistance and Real Property Acquisition Policies Act. Accordingly, this impact would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives

The revisions and clarifications provided in Section 3.8, Hydrology and Water Resources, of the Final EIR/EIS do not change the impact conclusions pertaining to hydrology and water resources presented in the Draft EIR/EIS.

17.9 Geological and Paleontological Resources

17.9.1 PB-Response-GSSP-1: Risk and Impacts Associated with Seismic Events

Commenters expressed concern over possible risk (e.g., construction may cause a fault rupture; an earthquake may damage trains and/or injure passengers) of seismic events (i.e., earthquakes, fault ruptures) throughout the San Fernando Valley (Sylmar, Mountain Glen) during construction and operation of the project.

The Palmdale to Burbank Project Section is in one of the most seismically active areas in the U.S., crossing major active fault zones. Thus, geology-related risks are of particular concern in this region, and the Authority has considered potential seismic impacts when selecting and further designing alternatives carried forward as part of the alternatives development process. As discussed in Chapter 2 of the Draft EIR/EIS, the Statewide Program EIR/EIS initially defined a broad corridor between Bakersfield and Los Angeles, which was further divided into two segments: (1) Sylmar to Los Angeles (Figure 2-32 of the Draft EIR/EIS) and (2) Bakersfield to Sylmar (Figure 2-33 of the Draft EIR/EIS). Among those alternative corridor options relevant to the Palmdale to Burbank Project Section were SR 138, Aqueduct, I-5 via Comanche Point, I-5 (2.5 percent maximum grade), and I-5 (3.5 percent maximum grade). As a result of the screening evaluation, the SR 138, Aqueduct, I-5 via Comanche Point, and I-5 (2.5 percent maximum grade) Corridors were eliminated from further study in the Statewide Program EIR/EIS. These alignments were eliminated based on seismic constraints because each would have required long tunnels through

seismic zones, either crossing active faults in long tunnels or paralleling them for long distances. The Statewide Program EIR/EIS therefore studied two corridors for Bakersfield to Sylmar: the SR 58/Soledad Canyon (Antelope Valley) corridor and the I-5 3.5 percent maximum grade corridor.

Considering the two remaining alternatives between Bakersfield and Sylmar, the Antelope Valley corridor traversed less challenging terrain than the I-5 corridor, and, based on the information available at the time, would result in considerably less tunneling overall (13 miles of tunneling for the Antelope Valley option versus 23 miles for the I-5 options), and considerably shorter tunnels (maximum length of 3.4 miles for the Antelope Valley option versus two tunnels longer than 5 miles for the I-5 option), which would, in turn, result in fewer constructability issues. Although the Antelope Valley option is about 35 miles longer than the I-5 alignment options, it was determined to be slightly less expensive to construct as a result of less tunneling through the Tehachapi Mountains. In addition, because of its gentler gradient, geology, topography, and other features, the Antelope Valley Corridor offered greater opportunities for potential alignment variations, particularly through the mountainous areas of the corridor, to avoid impacts on environmental resources. In contrast, the more challenging terrain of the I-5 corridor greatly limits the ability to avoid sensitive resources and seismic constraints.

The Authority, in its alternatives development process, defined key design criteria and aspects that would avoid and minimize potential negative environmental consequences, including constructability and practicability of alignments as they related to tunneling, capital costs, and right-of-way constraints. As discussed previously in Standard Response ALT-1 of this Final EIR/EIS, alternatives were eliminated and/or refined during the alternatives development process due to safety, constructability, and cost constraints associated with seismic conditions. For example, during the 2012 SAA an alternative that would create a roughly 12-mile tunnel through Acton was eliminated due to operational, maintenance, and safety issues and high capital and operational costs associated with tunnels. Additionally, during the 2014 SAA, the Palmdale West Station Option was eliminated because it would require the construction of tunnels or viaduct through the San Andreas Fault Zone, which would pose an unacceptably high seismic public safety risk.

As discussed above, geology-related risks are of particular concern in this region and were considered during development of the six Build Alternatives. The dramatic changes in elevation along with other topographical features pose challenges to meet engineering standards for each of the six Build Alternative alignments. A direct route across the San Gabriel Mountains would exceed the established vertical gradient and pose a danger from landslides for the Build Alternatives and their immediate surroundings. Additionally, the earthquake faults in the Palmdale to Burbank Project Section region create a hazard for potential alignments. To reduce seismic risks associated with earthquakes, the alignment must achieve appropriate gradients and must include design features to minimize hazards resulting from seismic activity, particularly at fault crossings. To define the design features necessary to minimize hazards resulting from seismic activity, the Authority has prepared technical memoranda that provide guidelines for the identification, characterization, design consideration, and mitigation of seismic impacts encountered during the design process:

- TM 2.4.5, High-Speed Train Tunnel Structures: requires an individual site-specific seismic assessment.
- TM 2.8.1, Safety and Security Design Requirements for Infrastructure Elements: identifies basic infrastructure elements necessary to support safe and secure operation of the HSR.
- TM 2.9.3, Geologic and Seismic Hazard Analysis Guidelines: provides guidance for geologic and seismic hazard screening evaluations, including but not limited to screening for surface rupture along hazardous faults, liquefaction, and other seismically induced ground deformation, and seismically triggered and slope stability.
- TM 2.9.6, Interim Ground Motion Guidelines: provides guidelines for development and implementation of interim ground motions consistent with HSR seismic design criteria.
- TM 2.9.10, Geotechnical Analysis and Design Guidelines: outlines liquefaction analysis and design criteria for HSR infrastructure.

- TM 2.10.6, Fault Hazard Analysis and Mitigation Guidelines: provides guidelines for the identification, characterization, and mitigation of fault displacement. Section 3.4 of this TM identifies mitigation strategies to reduce seismic risk, including but not limited to placement of an at-grade alignment with ballasted track, widening the required right-of-way with large widths of level ground on each side of the tracks, and placement of compacted fill with retained fill options.

The Authority has considered and applied the standards and guidelines identified in the TMs listed above to reduce seismic risk associated with construction and operation of the HSR system in the Palmdale to Burbank Project Section.

Regarding comments about the risk of seismic events, the HSR system project design includes several components that would be implemented as part of GEO-IAMF#6 (Ground Rupture Early Warning Systems), which would minimize the effects of seismic events and the potential safety risks from seismic events. These include a train control system with earthquake early warning detection systems and operational responses to notification of a seismic event including stopping or slowing of trains and inspection of infrastructure. This would help identify situations where fault creep or rupture have the potential to damage facilities and enable control of trains in a manner that would reduce the potential for accidents. GEO-IAMF#7 (Evaluate and Design for Large Seismic Ground Shaking) will require documentation through preparation of a technical memorandum, which evaluates large seismic ground shaking, and GEO-IAMF#10 (Geology and Soils) will implement engineering and safety protocols to limit fault rupture and ground shaking hazards during construction. These risks and impacts are analyzed in detail in Section 3.9, Geology, Soils, Seismicity and Paleontological Resources, specifically in Impact GSSP#7 (Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction) and Impact GSSP#16 (Effects of Geologic Hazards During Operations) of this Final EIR/EIS.

The Authority understands that there are risks associated with undergoing construction in a seismically active location. These risks and impacts are analyzed in detail in Section 3.9, Geology, Soils, Seismicity and Paleontological Resources. The project design incorporates IAMFs such as the preparation of a Construction Management Plan that requires a topographic survey and an assessment of geotechnical conditions prior to construction (GEO-IAMF#1 [Geologic Hazards]). The technical memoranda listed above set specific standards that the project must comply with to promote safety during construction and operations. Additionally, GEO-IAMF#6 (Ground Rupture Early Warning Systems) ensures that project design would incorporate early warning systems to track strong ground motion associated with fault rupture. Early warning systems are in use in Japan, South Korea, and Taiwan and have proven effective at reducing seismic damage to the rail system during earthquake events (Chen and Huang 2017). The purpose of the earthquake early warning detection system is to lower the risk of casualties produced by an earthquake, warning the locations that will be hit by the waves of an already detected earthquake several seconds or minutes before they arrive, depending on the distance to the epicenter. The California HSR will link the train control system to the CA EEWS in a similar way as has been done in Japan for decades, triggering an emergency brake order to the trains that are assumed to be in the danger zone. The objective is to minimize the risk of derailment due to ground shaking, or minimize its consequences, trying to get the train to a complete halt or at least to a low speed when the waves hit the area. The main objective of the EEWS is therefore to prevent injury or death. As a secondary benefit, minimizing the risk of a derailment or at least reducing the speed of the train when it happens would also reduce the amount of damage that is produced to the tracks.

As identified in the Statewide Program EIR/EIS, the Authority held a technical tunneling conference in December 2001 that focused on gaining additional insights and input regarding feasibility, construction methods, and cost assumptions associated with proposed tunneling for the HSR system. At the conference, the Authority received input from industry experts, including tunneling contractors, specialized tunnel engineers, and geologists/geotechnical engineers. The collaborative conference resulted in an objective to cross major faults at-grade (Authority and FRA 2005, Chapter 2, p. 2-10 Authority 2004 p. 2-41). The technical findings of the conference were documented in the Authority's Tunneling Issues Report (Authority 2004). While the Tunneling Issues Report identified that major faults could be feasibly crossed in tunnel, they would require expensive fault chambers. As shown in Table 3.9-4, all Build Alternatives cross the San Gabriel Fault Zone, Western Sierra Madre Fault Zone, San Fernando Fault Zone, and Verdugo Fault Zone in a tunnel. The potential for seismic impacts to damage

tracks is addressed under Impact GSSP#16 in the Final EIR/EIS, and the discussion explains that the tunnel design at the San Gabriel and Sierra Madre Fault Zones would have fault chambers. For additional information related to the alternatives selection process, refer to PB-Response-ALT-1: Alternatives Selection and Evaluation Process.

The Authority has developed an emergency access plan for operation of the California HSR System pursuant to National Fire Protection Association Standard (NFPA) Standard 130: Standard for Fixed Guideway Transit and Passenger Rail Systems, the principal guidance document. The plan includes emergency access provisions with regard to fire and safety for stations, tunnels, ventilation systems, procedures, control systems, communication, and vehicles. As a general rule of thumb, access and egress points for all alignment configurations shall be provided at 3.32 mile intervals and will alternate sides of the trainway where possible. The interval distance shall be reduced for trench and tunnel sections in accordance with NFPA 130 recommendations.

In the event of the need to evacuate passengers, the elevated-track portion includes a walking surface and lateral safety railing in accordance with standard engineering design requirements (Authority and FRA 2005). In addition to access/egress stairways at nominal 2.5-mile intervals (meaning riders would have to walk no more than 1.25 miles to reach an access/egress location), alignments with restricted access to the right-of-way through the fence (elevated viaducts, trench structures) require additional opportunities for emergency access. Access to elevated viaduct structures by aerial ladder trucks shall be afforded at nominal 2,500 feet intervals with a maximum interval of 3,000 feet.[32] The design would also include ground access for the shorter elevated tracks at regular intervals along the elevated structure, allowing for emergency passenger evacuation if needed, as well as for routine track maintenance. The emergency response along elevated tracks would be conducted swiftly and efficiently because of the incorporation of design features into the track to facilitate safe evacuation of individuals.

The HSR design would also include tunnels in various locations along the Palmdale to Burbank Project Section. These below-ground sections could be difficult to evacuate and difficult for emergency responders to reach in case of emergencies during which a train is stopped. Emergency egress for single bore tunnels would be provided every 2,500 feet via lateral or vertical exits to the surface and for twin bored tunnels every 800 feet via cross passages. The tunnel portion would include walkways located along the tunnel walls on the same side as the access/egress points or cross-passageways where possible. Walkways would be illuminated to provide safe passage in the event of an evacuation, in accordance with the requirements of NFPA Standard 130. Emergency egress for long, twin-bore tunnels like the tunnels proposed in ANF is expected to be done by the passengers and crew from one tunnel to the other through the cross passages, that will be located every 800 feet. These cross passages will serve as safe zones too, as they will be equipped with self-closing fire protected doors (rated for 1.5 h), ventilation, communications, and other facilities. The typical procedure for evacuees will be to wait inside these cross passages until a rescue train is able to reach the incident section, or at least until the traffic on the other tunnel has been confirmed to have stopped by the control center to perform a self-rescue walking along the tunnel to the nearest portal. The emergency egress route will always be ADA compliant at least up the first safe zone, such as inside the nearest cross passage or the entrance to the emergency exit (safe zones). From those safe zones, disabled passengers would either be able to continue with their own self evacuation, or wait until emergency responders reach them, depending on the situation. These procedures will be detailed in the Emergency Response Plan in later stages of the project.

Because of the incorporation of design features into the track to facilitate safe evacuation of individuals, the impact on emergency evacuation associated with seismic events would be less than significant under CEQA and would result in no adverse effect under NEPA.

[32] California High-Speed Rail Authority. *Technical Memorandum, Safety and Security Design Requirements for Infrastructure Elements TM 2.8.1.* https://hsr.ca.gov/wp-content/uploads/docs/programs/eir_memos/TM%202.8.1%20Safety%20and%20Security%20Design%20Requirements%20R0%20120312no%20sigs.pdf (accessed November 2023).

17.9.2 PB-Response-GSSP-2: Impacts on Paleontological Resources

Commenters expressed concern for destruction or alteration of paleontological resources from construction. Commenters requested more information regarding the IAMFs and mitigation measures set forth to protect paleontological resources.

As noted in Section 3.9, Geology, Soils, Seismicity and Paleontological Resources, of the Draft EIR/EIS, destruction or alteration of paleontological resources is possible during ground-disturbing activities, including tunneling through paleontologically sensitive geologic units. Surface activities, such as vegetation removal and construction staging, would generally not disturb fossil-bearing geologic units; excavation, grading, and other ground-disturbing construction activities would likely affect paleontologically sensitive geologic units for all Build Alternatives.

Impacts on paleontological resources are analyzed in detail in Section 3.9, Geology, Soils, Seismicity and Paleontological Resources, specifically in Impact GSSP#15 (Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources) of the Draft EIR/EIS. Geologic units underlying the paleontological RSA for all Build Alternatives through Palmdale to the San Andreas Fault Zone generally exhibit low potential to yield fossil resources (Figure 3.9-32, Section 3.9, Geology, Soil, Seismicity, and Paleontological Resources, of the Draft EIR/EIS). Through Acton and Agua Dulce Canyon, the Refined SR14, E1, and E2 Build Alternatives would be located in a tunnel that passes through multiple geologic units that exhibit no, low, and high paleontological sensitivity (Figure 3.9-32 and Figure 3.9-33, Section 3.9, Geology, Soil, Seismicity, and Paleontological Resources, of the Draft EIR/EIS). As outlined in GEO-IAMF#11 (Engage a Qualified Paleontological Resources Specialist), GEO-IAMF#12 (Perform Final Design Review and Triggers Evaluation), GEO-IAMF#13 (Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan [PRMMP]), GEO-IAMF#14 (Provide WEAP Training for Paleontological Resources), and GEO-IAMF#15 (Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found), the construction contractor will implement measures to protect paleontological resources. GEO-IAMF#11 (Engage a Qualified Paleontological Resources Specialist) (Section 3.9.4.2) will require the contractor to retain a Paleontological Resources Specialist (PRS) tasked with developing the Paleontological Resource Monitoring and Mitigation Plan (PRMMP) that will require pre-construction surveys for surveyed geologic units with high or low paleontological sensitivity. The PRS would analyze the 90 percent design plans, as required by GEO-IAMF#12 (Perform Final Design Review and Triggers Evaluation), to evaluate the location, extent, and anticipated depth of disturbance to inform paleontological monitoring. GEO-IAMF#13 (Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan [PRMMP]) will require the PRS to prepare and implement a Paleontological Resource Monitoring and Mitigation Plan (PRMMP) that would outline the use of construction monitoring and emergency discovery procedures in project construction. The PRMMP would also establish protocols for preconstruction surveys and procedures for fossil specimen recovery. GEO-IAMF#14 (Provide WEAP Training for Paleontological Resources) will require the contractor to provide training to workers involved in ground-disturbing activities to increase workers' awareness of paleontological resources procedures. GEO-IAMF#15 (Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found) will require a protocol for addressing the unexpected discovery of paleontological resources, which will include a halt to construction to allow for evaluation of discovered resources.

As discussed in Section 3.9.4, paleontological field surveys were limited to areas with public access, so there could be undocumented fossils at or near the ground surface in paleontologically sensitive units within the Build Alternative footprints. GEO-IAMF#15 (Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found) would require the prompt notification of the PRS (prior to the close of work the same day as the find), and the PRS will evaluate the find and prescribe appropriate treatment as soon as feasible. In the judgment of the PRS, construction may continue in other areas of the construction site while evaluation (and, if needed, treatment) takes place. The PRMMP (GEO-IAMF#13 [(Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan {PRMMP}]) would require pre-construction surveys for surveyed geologic units with high or low paleontological sensitivity, as determined by the PRS, and the project-specific PRMMP will identify provisions for sampling and recovery of unearthed fossils consistent with SVP Standard Procedures (SVP Impact Mitigation Guidelines Revision Committee 2010) and the SVP Conditions of Receivership (SVP Conformable Impact Mitigation Guidelines Committee 1996). Additionally, GEO-IAMF#13 (Prepare and Implement

Paleontological Resources Monitoring and Mitigation Plan [PRMMP]) includes provisions for the preparation, identification, and analysis and curation of fossil specimens and data recovered, consistent with the SVP Conditions of Receivership (SVP Conformable Impact Mitigation Guidelines Committee 1996) and any specific requirements of the designated repository institutions.

While adherence to these IAMFs would avoid or reduce some paleontological impacts, tunnel boring could result in significant impacts that may directly or indirectly destroy a unique paleontological resource or site that could be encountered during tunneling activities for all Build Alternatives. There is no feasible mitigation to reduce this impact, which would remain significant and unavoidable for all Build Alternatives pursuant to CEQA and would result in an adverse effect pursuant to NEPA.

17.10 Hazardous Materials

17.10.1 PB-Response-HAZ-1: Materials Hauling and Transportation of Hazardous Materials

Commenters expressed concern about materials hauling during construction. Commenters also expressed concern about the transport and handling of materials in close proximity to schools and the potential for spills and contamination.

Materials Hauling

As discussed in Section 3.10 of the Draft EIR/EIS, construction of the Build Alternatives would temporarily increase the regional transport, use, storage, and disposal of hazardous materials and petroleum products (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals). The increased use of hazardous materials could, in turn, result in an incremental increase in hazardous waste generation. As detailed in Section 3.10 of the Draft EIR/EIS, compliance with various federal, State, and local regulations would minimize the risk of a spill or accidental release of hazardous materials, and therefore impacts are not anticipated. HMW-IAMF#7 (Storage and Transport of Materials) would require a hazardous materials and waste plan to ensure that hazardous materials and waste are transported properly off-site. HMW-IAMF#8 (Permit Conditions) would require the proper transport, labeling, containment, cover, and other best management practices for storage of hazardous materials during construction. HMW-IAMF#9 (Environmental Management System) would ensure hazardous substances are identified, avoided, and minimized in the material selection process for construction of the California HSR System. HMW-IAMF#10 (Hazardous Materials Plans) would require hazardous materials plans that prescribe appropriate hazardous materials handling procedures. With incorporation of these IAMFs, impacts would be less than significant under CEQA and would not result in an adverse effect under NEPA.

Additionally, under the design-build contract, the Contractor will prepare and implement a detailed Construction Transportation Plan (CTP) (TR-IAMF#2 (Construction Transportation Plan); see Section 3.2.4.2 of the Draft EIR/EIS), and the Construction Management Plan (HMW-IAMF#4 (Known, Suspected, and Unanticipated Contamination); see Section 3.10.4.2, Project Design Features) will be prepared as the project progresses into the final design phase and more details are developed regarding construction plans. CTPs are a standard means of minimizing traffic conflicts during construction and, depending on the type and extent of construction, typically include detours and lane control features such as signage, lighting, and flag persons.

The CTP will address in detail the activities to be carried out in each construction phase, such as 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. The CTP will address temporary road closures; detour provisions; allowable routes; and provisions for emergency access, school transportation, and farm equipment. Extensive coordination with the local public agencies, including school districts, will be conducted during the CTP development process, and measures will be included in the CTPs to address the impacts to local roads.

Hazardous Materials and Schools

Construction

As shown in Table 3.10-6 and mapped in Figure 3.10-A-1 through Figure 3.10-A-18 in Appendix 3.10-A of Volume 2 of the Draft EIR/EIS, up to 26 schools are located within the RSAs of the Build Alternatives. As discussed in Section 3.10.6.3, of the Draft EIR/EIS (Impact HMW#3), construction of each of the six Build Alternatives could involve the handling of hazardous materials within 0.25 mile of educational facilities, thereby posing a potential health and safety hazard to students or employees. HMW-MM#1 (Limit Handling of Extremely Hazardous Materials Near education Facilities), described in Section 3.10.7, would require the Authority to prepare a memorandum confirming that the construction contractor will not handle or store an extremely hazardous substance within 0.25 mile of a school. Signage will be installed prior to construction to delimit work areas within 0.25 mile of a school, informing contractors not to bring extremely hazardous substances into the area. With implementation of HMW-MM#1 (Limit Handling of Extremely Hazardous Materials Near education Facilities), the contractor will be prohibited from handling or storing extremely hazardous substances in a quantity equal to or greater than the state threshold (Health and Safety Code Section 25532) within 0.25 mile of a school, and the contractor will be required to monitor all use of extremely hazardous substances.

The Build Alternatives also include several IAMFs that would ensure construction would not result in a potential health and safety hazard to students or employees (HMW-IAMF#1 (Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments, Additional Preconstruction Investigations, and Associated Actions to Control Site Contamination), HMW-IAMF#4 (Known, Suspected, and Unanticipated Environmental Contamination), HMW-IAMF#5 (Demolition Plans), HMW-IAMF#6 (Spill Prevention). The IAMFs will require the preparation of Phase I and Phase II Environmental Site Assessments, preparation of a construction management plan (CMP) prior to construction addressing provisions related to the disturbance and handling of undocumented contamination, safe dismantling and removal of building components (i.e., lead, asbestos), spill prevention, and compliance with applicable federal and State regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act, during construction. As discussed under Impact HMW#3, with implementation of the IAMFs, and with the addition of HMW-MM#1 (Limit Handling of Extremely Hazardous Materials Near Education Facilities), construction-related impacts associated with handling and storing hazardous materials within 0.25 mile of a school would be less than significant under CEQA and would result in no adverse effect under NEPA.

Operations

Table 3.10-6 and Figure 3.10-A-1 through Figure 3.10-A-18 in Appendix 3.10-A of Volume 2 of the Draft EIR/EIS, identify up to 26 schools within the RSAs of the Build Alternatives. As required by California Public Resources Code Section 21151.4, the Authority is coordinating and will continue to coordinate with local school districts that have schools within 0.25-mile of the proposed Build Alternative alignments. As discussed in Impact HMW#8, in Section 3.10, Hazardous Materials and Wastes, of the Draft EIR/EIS, no 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 would be handled within 0.25 mile of a school during project operations. As discussed in Impact HMW#8, operation of the Build Alternatives is not anticipated to require the transport or handling of significant quantities of hazardous materials within 0.25 mile of schools. However, HMW-MM#1 (Limit Handling of Extremely Hazardous Materials Near Education Facilities) would require the Authority to prepare an operations plan and coordinate with the educational facilities to document compliance with the operations materials handling plan. As discussed under Impact HMW#8, the impact associated with handling and storage of hazardous materials within 0.25 mile of a school would be less than significant after mitigation.

17.10.2 PB-Response-HAZ-2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction

Commenters expressed concerns about hazards related to HSR construction on or in proximity to potential environmental concern (PEC) sites including interference with ongoing remediation efforts. Commenters requested more information regarding the IAMFs set forth to minimize impacts to PEC sites.

As discussed in Impact HMW#2 in Section 3.10, Hazardous Materials and Wastes, of the Draft EIR/EIS, each of the six Build Alternatives would encompass known or suspected potential environmental concern (PEC) sites where the possibility of a past or current release of hazardous materials or waste exists, as defined in in the California Department of Transportation's Initial Site Assessment Guidance document, and the California Office of State's Project Development Procedures Manual, Chapter 18. This includes PEC sites on the Cortese List (per the Cortese List Statue [California Government Code, Section 65962.5] which outlines the requirements for the Department of Toxic Substances Control to compile and maintain lists of potentially contaminated sites located throughout the state). Such sites could contain hazardous soil, soil vapor, or groundwater contamination. Construction activities could encounter contaminants or interfere with ongoing remediation efforts. Exposure to hazardous wastes would generally be limited to immediate excavation, handling, and storage areas. For this reason, the individuals most at risk would be those in the immediate vicinity (i.e., construction workers) during excavation, transportation, or storage of hazardous wastes during construction.

HSR construction will be coordinated with site remediation activities to avoid damaging or interfering with remediation site controls such as soil containment areas or groundwater remediation facilities. Each of the six Build Alternatives would require tunneling through areas underlying remediation sites. Surface infrastructure, such as stations, ancillary facilities, and track construction, could require grading, trenching, and other earth-disturbing activities in remediation sites. Interference with ongoing remediation activities could increase the risk of a release of contaminants or interrupt cleanup; thus, coordination with regulatory agencies would be required before construction could advance at known potentially hazardous sites (HMW-IAMF#6 (Spill Prevention), HMW-IAMF#7 (Storage and Transport of Materials), and HMW-IAMF#8 [Permit Conditions]).

HMW-IAMF#1 (Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments, Additional Preconstruction Investigations, and Associated Actions to Control Site Contamination) will require PEC site investigation and remediation throughout the property acquisition and construction phases of each of the six Build Alternatives. During the right-of-way acquisition phase, Phase I ESAs will be conducted to identify parcels that would require a Phase II ESA (e.g., soil, groundwater, and soil vapor subsurface investigations). If the Phase II ESA concludes the site was affected, remediation or corrective action will be conducted in compliance with applicable federal and State regulations.

HMW-IAMF#6 (Spill Prevention), HMW-IAMF#7 (Storage and Transport of Materials), and HMW-IAMF#8 (Permit Conditions) (discussed in Section 3.10.4.2, in Section 3.10, Hazardous Materials and Wastes, of the Draft EIR/EIS) would reduce risks associated with excavation, storage, transportation, and release of contaminants or contaminated media during construction by requiring the Authority to prepare hazardous materials and waste plans to address spill prevention and establish procedures for the handling of various hazardous wastes, such as excavated soils, generated during remediation activities.

17.10.3 PB-Response-HAZ-3: Impacts of Spoils Hauling (Hazardous Materials and Waste)

Commenters expressed concern regarding the safe handling of potentially hazardous materials during construction. Commenters requested more information about the transport of potentially contaminated spoils materials to ensure hazardous materials are properly handled and there are no adverse environmental or safety impacts.

As discussed in Section 3.10.6.3 of the Draft EIR/EIS, excavation and tunneling associated with each of the six Build Alternatives in the San Fernando Valley would generate different quantities of potentially contaminated spoil materials associated with PEC sites and previous industrial uses that would require

extraction, transport, and safe disposal. The quantities for each of the six Build Alternatives are listed below:

- Refined SR14 and SR14A Build Alternatives—6.8 million cubic yards (mcy) of contaminated spoil materials
- E1 and E1A Build Alternatives—3.0 mcy of contaminated spoil materials[33]
- E2 and E2A Build Alternatives—3.8 mcy of contaminated spoil materials[34]

As discussed in Section 3.10 of the Draft EIR/EIS, the Authority will be responsible for the transport and disposal of spoils generated by the Palmdale to Burbank Project Section. As will be required by the project IAMFs, hazardous materials would be handled in accordance with the Certified Unified Program Agencies[35] regulations and disposed of off-site at a properly licensed/maintained facility located within California. The transportation, use, and disposal of construction-related hazardous materials and wastes would be subject to State and federal regulations described in Section 3.10.2, Laws, Regulations, and Orders, of the Draft EIR/EIS. All hazardous materials, soils, drums, trash, and debris generated during construction would be handled and disposed of in accordance with these regulations. Compliance with existing regulations would protect the public and environment from exposure to substantial hazards. The Build Alternatives would include several IAMFs to reduce potential impacts resulting from the routine transport, use, or disposal of hazardous materials and wastes during construction through the following mechanisms. The project will incorporate HMW-IAMF#4 (Known, Suspected, and Unanticipated Environmental Contamination) and HMW-IAMF#6 (Spill Prevention) (see Section 3.10.4.1 of the Draft EIR/EIS), which require that the contractor prepare plans for the safe handling of hazardous materials during construction, including those materials associated with contaminated soils or groundwater, construction chemicals, and demolition of structures to ensure hazardous materials are properly handled and there are no adverse environmental or safety impacts. With Authority approval of the plans identified in HMW-IAMF#4 (Known, Suspected, and Unanticipated Environmental Contamination), HMW-IAMF#5 (Demolition Plans), and HMW-IAMF#6 (Spill Prevention), the Authority's construction contractor would implement these plans, cooperating with local agencies to safely identify, handle, and dispose of contamination encountered during project construction. Additionally, the project will incorporate HMW-IAMF#7 (Storage and Transport of Materials), which requires the preparation of the plans that provide procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases and would be implemented prior to commencement of construction of the Build Alternatives. The project will also incorporate HMW-IAMF#8 (Permit Conditions), which requires the contractor to comply with federal and State regulations to further reduce risks from handling and disposing of hazardous materials during construction activities, and HYD-IAMF#3 (Prepare and Implement a Construction Stormwater Pollution Prevention Plan), which will incorporate measures to avoid release of hazardous materials due to stormwater flow.

The State of California enforces standard accident and hazardous materials recovery training and procedures. Private state-licensed, certified, and bonded transportation companies and contractors follow these procedures when dealing with situations involving hazardous materials. Further, pursuant to 40 C.F.R. 112, a Spill Prevention, Control, and Countermeasure (SPCC) plan (or, for smaller quantities, a

[33] The amount of hazardous spoils for the E1 and E1A Build Alternatives is expected to be less than 3.0 mcy. The 3.0 mcy volume is based on the assumption that 100 percent of the spoils in the Burbank area would be hazardous; however, the percentage of spoils that would be hazardous in the Burbank area is closer to 42 percent (see Section 3.10.4.3). The 3.0 mcy volume has not been updated in the Final EIR/EIS because the update would not change any significance conclusions and because the Final EIR/EIS quantitatively analyzes a conservative scenario with the SR14A and Refined SR14 Build Alternatives.

[34] The amount of hazardous spoils for the E2 and E2A Build Alternatives is expected to be less than 3.8 mcy. The 3.8 mcy volume is based on the assumption that 100 percent of the spoils in the Burbank area would be hazardous; however, the percentage of spoils that would be hazardous in the Burbank area is closer to 42 percent (see Section 3.10.4.3). The 3.8 mcy volume has not been updated in the Final EIR/EIS because the update would not change any significance conclusions and because the Final EIR/EIS quantitatively analyzes a conservative scenario with the SR14A and Refined SR14 Build Alternatives.

[35] Senate Bill 1082, passed in 1993, created the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six state environmental and emergency response programs. The California Environmental Protection Agency and other state agencies set the standards for their programs, and local governments implement the standards. These local implementing agencies are called Certified Unified Program Agencies (CUPA).

spill prevention and response plan that identifies BMPs for spill and release prevention) is required. As required under State and federal law, plans for notification and evacuation of site workers and local residents in the event of a hazardous materials release would be implemented throughout the construction period.

Through the RCRA (discussed in Section 3.10.2.1 of the Draft EIR.EIS), Congress directed the USEPA to develop regulations to manage hazardous waste from "the cradle to the grave." Under this mandate, the USEPA has created strict requirements for all aspects of hazardous waste management, including the recycling, treatment, storage, and disposal of hazardous waste. Facilities that provide recycling, treatment, storage, and disposal of hazardous waste are referred to as treatment, storage, and disposal facilities (TSDFs). Regulations pertaining to TSDFs are designed to prevent the release of hazardous materials into the environment.

The project IAMFs require the contractor to transport, use, and dispose of hazardous materials following procedures that avoid or reduce the potential for releases and foreseeable upset conditions that would expose persons or the environment to substantial hazards.

17.11 Safety and Security

17.11.1 PB-Response-S&S-1: Wildfire

Commenters expressed concern about the potential for wildfire resulting from construction activities and operations associated with the project. Commenters requested more information about the identification of Fire Hazard Severity Zones (FHSZs) throughout the study area and what kind of project features would be found within those areas.

The Build Alternatives would traverse California Department of Forestry and Fire Protection (CAL FIRE) designated Fire Hazard Severity Zones (FHSZs) throughout urban and rural portions of the study area. The following aboveground HSR facilities would encounter FHSZs (mapped on Figure 3.11-4, in Section 3.11 of the Draft EIR/EIS):

- Refined SR14, SR14A, E1, E1A, E2, and E2A surface trackway and ancillary facilities south of Palmdale
- Refined SR14 surface trackway and ancillary facilities between Acton and Agua Dulce and in the Soledad Canyon/Vulcan Mine area of the ANF, including the SGMNM
- SR14A surface trackway and ancillary facilities between 0.75 mile east of Agua Dulce Canyon Road and the Soledad/Canyon/Vulcan Mine area of the ANF, including the SGMNM
- E1, E1A, E2, and E2A tunnel portal and ancillary facilities near Angeles Forest Highway and in Aliso Canyon
- Refined SR14/SR14A, E1/E1A, and E2/E2A optional adit facilities within the ANF along Little Tujunga Canyon Road (described further in Section 3.11.10)
- Refined SR14/SR14A adit options SR14-A2 and SR14-A3, located south of Pacoima Dam
- Refined SR14, SR14A, E1, and E1A Build Alternative intermediate window options near the State Route 118/Interstate 210 interchange
- The E2 and E2A tunnel portal and alignment near Pacoima and Lake View Terrace

Table 3.11-16 in Section 3.11 of the Draft EIR/EIS summarizes the permanent surface footprint of the Build Alternatives in Very High FHSZs for state responsibility areas within the ANF.

As described above, permanent HSR infrastructure within FHSZs would include overhead catenary systems (OCS), traction power substations, adit structures, water utility corridors, access roads, switching and paralleling stations, and electrical interconnections. The presence of adit structures and water utility corridors would not pose a fire risk because they would not contain flammable materials. Additionally, HSR infrastructure would be co-located with existing infrastructure of a similar nature and located in disturbed areas where possible, in order to reduce wildfire risks. The project design includes fire warning systems, as well as emergency exits and notification systems, consistent with the requirements of the

Nation Fire Protection Association (NFPA) Safety Code and Standard for Fixed Guideway Transit and Passenger Rail Systems, the California Building Standards Code, and the International Building Code.

Fire risks would be minimized through the application of SS-IAMF#1 (Construction Safety Transportation Management Plan) and SS-IAMF#2 (Safety and Security Management Plan), which will require the development and incorporation of a fire and life safety program into the design and construction of the Palmdale to Burbank Project Section. The fire and life safety program is coordinated with local emergency response organizations to provide them with an understanding of the rail system, facilities, and operations, and to obtain their input for modifications to emergency response operations and facilities, such as evacuation routes. Fire risks would also be reduced by the Authority's formation of a statewide Fire and Life Safety and Security Committee (FLSSC) through implementation of SS-IAMF#2 (Safety and Security Management Plan), which will be composed of representatives from fire, police, and local building code agencies. The purpose of the FLSSC will be to review issues that are critical to fire and life safety and security, to acquire input and concurrence from the state and local authorities having jurisdiction over the proposed designs to meet code requirements, and to comply with state and local fire code standards or fire and life safety hazard programs during the design phase of the project. The fire and life safety program will include regional FLSSCs who will focus on the fire and life safety characteristics specific to the Palmdale to Burbank Project Section and provide input on local building codes or requirements that align with the emergency response characteristics and capabilities of the local agencies for the Palmdale to Burbank Project Section. Representation and operations of the statewide FLSSC and regional FLSSCs will be coordinated with local emergency response organizations to provide an understanding of the California HSR System and its facilities and operations, and to obtain their input for modifications to emergency response operations and facilities. These programs and coordination activities would allow for a rapid response by local emergency responders in the case of an accident, reducing the potential for uncontrolled wildfire events.

As described above, HSR infrastructure including OCS, traction power substations, switching and paralleling stations, and electrical interconnections would be co-located with existing infrastructure of a similar nature, and would be located in disturbed areas where possible to minimize wildfire risks, including during operations; furthermore, OCS along the project alignment would be contained within HSR right-of-way and inspected daily, minimizing wildfire risks. Operation of the HSR trains would be fully electric and would not carry flammable fuel or freight. In addition, HSR trains would only carry passengers. Incorporating sprinklers and warning systems into the train design would further prevent trains from creating fire hazards. Moreover, a basic design feature of HSR systems is to contain trainsets within the right-of-way, further reducing any at-risk footprint during operations.

17.11.2 PB-Response-S&S-2: Accidents and Explosions

Commenters expressed concern about accident and explosion risks associated with project construction and operation. Commenters are concerned with the increased risk of accidents occurring as a result of the project. Commenters requested more information regarding the IAMFs described in the EIR/EIS to minimize the risk of workplace accidents, potentially resulting in accidental injuries and deaths during construction and operations.

Construction

As described under Impact S&S#6 in Section 3.11 of the Draft EIR/EIS, construction would increase the risk of exposure to construction equipment and activity hazards that could result in workplace accidents, potentially resulting in accidental injuries and deaths to construction workers and also potentially to the public in the event of a workplace accident, such as a fire or explosion, that resulted in off-site consequences. Construction activities could also result in exposure of construction workers to hazardous chemicals.

Worksite safety in California, including construction worksite safety, is regulated by provisions of Title 8 of the Cal. Code Regs. and is overseen by Cal-OSHA. Title 8 requires compliance with standard procedures to prevent construction worksite accidents and requires a written workplace injury and illness prevention program to be in place (Cal-OSHA 2013a, 2013b). Construction activities will also be subject to standards included in California HSR Standard Safety Procedures (Authority 2014). In addition to legal requirements, the contractor will manage potential exposure to workplace hazards through

implementation of Construction Safety and Health Plans for each phase of project construction (SS IAMF#2 [Safety and Security Management Plan]). Each of these plans will establish the minimum safety and health standards for contractors of, and visitors to, project construction sites. Each of these plans will require the contractor to develop and implement site-specific measures that address regulatory requirements protective of human health and property at each construction site. Standard implementation of a Construction Safety and Health Plan during construction in compliance with legal requirements would reduce risks to human health during construction by establishing protocols for safe construction operations, including daily safety awareness meetings and training to establish a safety culture among the construction workforce.

The Authority will develop and implement an SSMP (SS-IAMF#2 [Safety and Security Management Plan]), which includes construction worker safety standards, worker safety and health plans, fire and life safety programs, construction on-site security plans, and emergency response and evacuation procedures to maintain the safety of construction workers and the public during HSR construction. Through the implementation of SS-IAMF#2 (Safety and Security Management Plan), which includes safety programs and safety standards, impacts from construction site hazards and accident risks that could compromise the safety or health of workers or nearby community members would be minimized.

The Palmdale to Burbank Project Section area is an active oil-producing region. The Authority will develop and implement design standards requiring the contractor to identify and inspect active and abandoned oil and natural gas wells prior to construction (SS-IAMF#4 [Oil and Gas Wells]). In the event that oil and natural gas wells are discovered during construction activities, active wells will be abandoned or relocated in accordance with the California Department of Conservation, Geologic Energy Management Division standards and in coordination with the well owners. Implementation of safety procedures regarding spill prevention and transportation of materials, as well as adherence to state regulations regarding the handling of hazardous waste, would further avoid or minimize impacts (HMW-IAMF#6 (Spill Prevention), HMW-IAMF#7 (Storage and Transport of Materials), and HMW-IAMF#8 (Permit Conditions).

Operations

As described under Impact S&S#13 in Section 3.11 of the Draft EIR/EIS, high-risk facilities (e.g., oil and natural gas pipelines, dams, electrical substations, and bulk fuel storage facilities) and tall structures are within the vicinity of the Build Alternatives. High-risk facilities represent a potential hazard to project operations; an incident (e.g., fire, explosion) at a high-risk facility could disrupt operations. Tall structures (including bridges overcrossing the track) represent a potential hazard to operations of the project; a tall structure damaged by an incident (e.g., severe weather) could deposit debris in the right-of-way and obstruct HSR train operations (refer to Section 3.6 of the Draft EIR/EIS for further discussion of high-risk utilities).

Potential environmental concern (PEC) sites located within the vicinity of the Build Alternatives are identified and discussed in Section 3.10 of the Draft EIR/EIS. These PEC sites potentially contain contaminated hazardous materials and may also contain aboveground and below-ground bulk storage tanks or other bulk hazardous material storage on-site. Additional analyses for impacts from high-risk PEC sites and oil and natural gas pipelines within the vicinity of each Build Alternative as they relate to the construction and operations of the Build Alternatives are provided in Section 3.6 and Section 3.10 of the Draft EIR/EIS.

Implementation of SS-IAMF#2 (Safety and Security Management Plan) and SS-IAMF#3 (Hazard Analysis) will address hazards from high-risk facilities and tall structures. Potential hazards would be identified and avoided and a Safety and Security Management Plan (SSMP) will maintain the safety of employees, passengers, and the public.

17.11.3 PB-Response-S&S-3: Effects on Local and Regional Evacuation Plans

Commenters expressed concern about project effects on existing local and regional emergency evacuation plans, especially during construction. Commenters requested more information regarding the implementation of IAMFs to reduce impacts on the accessibility of emergency service providers, response times, or other emergency service performance objectives.

As discussed in Section 3.11.2, in Section 3.11 of the Draft EIR/EIS, State and local agencies have developed a variety of policies, plans, and programs to address safety and security, including emergency response plans, evacuation plans, and plans to address bicycle safety, among others. Because these policies, plans, and programs have been developed specifically to minimize safety and security risks, a conflict would generally indicate a significant impact related to safety and security. At-grade crossings of evacuation routes and railway tracks could result in potential delays for emergency response and evacuation in locations where train crossing gates would temporarily block regionally significant roads when trains are passing. Regionally significant roads (identified in Section 3.2 of the Draft EIR/EIS) are typically identified as emergency evacuation routes in the county and city general response plans and emergency response plans. See Figure 3.2-2 and Figure 3.2-3 of the Draft EIR/EIS for regionally important roadways in Palmdale and Burbank, respectively. In the study area, regionally significant roads that cross railroads at-grade include Columbia Way/E Avenue M in the city of Palmdale. Impact S&S#1 and Impact S&S#3 in Section 3.11 of the Draft EIR/EIS discuss the potential for construction and operations of the project to affect established evacuation routes in the study area.

Construction activities associated with the Build Alternatives would require the temporary closure of roads and roadway travel lanes, construction detours adjacent to highways, and changes in traffic routes along closures. Out-of-direction travel resulting from detours would typically be limited to 1 or 2 miles. The Build Alternatives would each require the same types of closures, but there would be differences in the locations of the potential temporary road closures. These closures, which are summarized in Table 3.11-12 in Section 3.11 of the Draft EIR/EIS, could increase emergency response and emergency evacuation times, and the exceedance of performance objectives of emergency service providers, including law enforcement, fire departments, and emergency medical services. See Appendix 3.11-A, Safety and Security Data, for emergency services response times and Appendix 3.11-B, Existing and Proposed Railroad Crossing Definitions, for specific road crossings in the Palmdale to Burbank Project Section.

The Authority will develop and implement a construction safety transportation management plan (SS-IAMF#1 [Construction Safety Transportation Management Plan]) that will incorporate emergency vehicle access procedures. These procedures would avoid impacts on the accessibility of emergency service providers, response times, or other emergency service performance objectives through coordination with local jurisdictions to maintain emergency vehicle access and by establishing detour provisions for temporary road closures and routes for construction traffic. A construction transportation plan will be implemented that establishes procedures for temporary road closures including maintaining 24-hour access by emergency vehicles, maintaining access to residences and businesses during construction, lane closure, signage and flag persons, temporary detour provisions, alternative bus and delivery routes, and pedestrian access (TR-IAMF#2 [Construction Transportation Plan]). Construction road closures will be staggered so that the next adjacent road to the north and south of a road temporarily closed for construction would remain open to accommodate detoured traffic. This will typically limit out-of-direction travel to 1 or 2 miles during temporary road closures. Effective coordination, implementation of emergency vehicle access procedures and a traffic control plan, and staggered road closures would minimize temporary construction impacts on emergency service providers and their ability to meet established service ratio goals, response times, and performance objectives for emergency service providers.

During project operations, each Build Alternative would operate within an access-controlled right-of-way. The Build Alternatives would not include at-grade road crossings, thereby preventing vehicles, bicycles, and pedestrians from crossing the tracks. Because the entire project would be grade-separated, there would be no point, other than controlled pedestrian access at the station, where motor vehicles, bicycles, or pedestrians could cross the tracks. Therefore, there would be no impact to emergency response delays associated with at-grade crossings.

Emergency service providers (medical, fire, and police) could need to access this right-of-way, as well as the Burbank Airport Station, in the event of an accident or other emergency situation. The Build Alternatives each include provisions for emergency service access to the access-controlled right-of-way including, but not limited to, the following:

- Permanent access roads would be built to provide at least one access portal for each tunnel to support tunnel operations and maintenance activities. Tunnel portal areas would include areas for staging of emergency response vehicles and personnel and safe evacuation and assembly of passengers.
- For tracks in trenches and tunnels, passenger walkways would be incorporated to allow emergency access and evacuation routes. Passenger walkways would be located along the trench/tunnel walls on the same side as the access/egress points, where possible, and would be illuminated to provide safe passage along those walkways in the event of an emergency.
- Tunnel design would include a central, fire-rated dividing wall that would separate the two tracks of each single tunnel into two independently ventilated railways to allow access in the event of an emergency. Safety egress would be achieved via fire-rated doorways through the tunnel dividing wall (Authority 2010a). In a tunnel such as one in the ANF, the typical procedure will be to wait inside these cross passages until a rescue train is able to reach the incident section, or at least until the traffic on the other tunnel has been confirmed to have stopped by the control center to perform a self-rescue walking along the tunnel to the nearest portal. These procedures will be detailed in the Emergency Response Plan in later stages of the project.

The Authority will incorporate additional safety and security measures into California HSR System operating procedures, including a fire and life safety program and a security and emergency response plan (SS-IAMF#2 (Safety and Security Management Plan). SS-IAMF#2 (Safety and Security Management Plan) will also require the Authority to prepare a System Safety Program Plan (SSPP) in compliance with California Public Utilities Commission (CPUC) General Order 164-E and other CPUC safety and security requirements (CPUC 2018), as well as a Safety and Security Management Plan (SSMP) prior to commencement of operations. The Authority will coordinate with local emergency service providers in developing and implementing the SSPP and SSMP to establish an efficient and coordinated response protocol, systems, and procedures across the multiple agencies that may be involved in responding to an emergency incident, including establishing coordinated procedures for emergency responder access to the HSR access-controlled right-of-way, aerial track, trenches, and tunnels.

17.12 Socioeconomics

17.12.1 PB-Response-SOCIO-1: Parcel Acquisitions and Relocations

Commenters opposed the route passing near their houses or through their communities. They expressed concern that the eminent domain process would insufficiently compensate them—especially when the train would pass next to their properties. Commenters expressed concern that, if the project required relocation, they would not have enough money to buy new houses. They asked for a timeline of when the Authority would pay just compensation. Commenters opposed removing affordable housing, residences, businesses, hospitals, libraries, and other displacements. Commenters requested information on how well the eminent domain process has worked on other HSR segments.

Parcel Acquisitions and Relocations

The Authority has worked closely with government agencies, businesses, individuals, and nonprofit organizations to refine the HSR Palmdale to Burbank Project Section project footprint to avoid or minimize impacts, including property acquisitions, to the maximum extent feasible. This project refinement would continue throughout final design for the selected alternative. The HSR Build Alternatives would generally result in similar types of socioeconomic and community impacts, with differences in the severity or location of impacts depending on the proximity of the Build Alternative footprint to residential and commercial/industrial areas.

As described in Section 3.12.4.3 of the Draft EIR/EIS, the project would traverse a number of communities, ranging from rural residential areas to more densely populated suburban and urban areas. Where ancillary features (e.g., access roads) would be necessary, existing infrastructure would be used whenever feasible. Within the cities of Palmdale and Los Angeles, portions of the project would be located along existing rail corridors. In other areas, engineering constraints and avoidance of environmental impacts require deviation from these corridors, and the Build Alternatives would traverse existing neighborhoods and communities. In many cases, the project alignment would be able to cross underneath communities in bored tunnels. In some locations, deviation from existing rail corridors would require property acquisitions, at-grade construction, and relocation of households, businesses, or community facilities.

Land use displacements were determined by evaluating the extent to which the project would impact land uses within the project footprint and identifying those properties where the current use would not be able to continue after construction. For this analysis, project design files showing the extent of the project were imported into a geographic information systems (GIS) dataset along with parcel boundary data from the Los Angeles County Assessor to identify situations where the proposed project facilities would affect a building, driveway, parking lot, or other key feature of a property in a way that may affect that feature's viability after construction. Based on the nature of impacts, the Authority determined where a full acquisition, partial acquisition[36], permanent easement (surface, subterranean, or aerial), temporary easement, or some combination of these would be required. These decisions were based on Authority experience acquiring properties affected by other regional transportation projects. Generally, full acquisitions were designated where a significant portion of the structure or structures comprising the property's principal dwelling or business facility would be within the area to be acquired for the HSR right-of-way or for an extended period during construction. For the "partial acquisition" parcels identified, this analysis assumed that the decrease in land and improvement value from a partial acquisition would be equal to the actual land area ratio being acquired (Authority 2019a). Similarly, where a property's structures would not be affected, but any physical component critical to a property's intended use (such as parking, access, or open space used for storage of goods or equipment) would be acquired, the acquisition would be considered a full acquisition.

If the area required for the project appeared not to be critical to the property's primary function as a residence or business and/or the remaining portion of the property could be reconfigured to continue serving its purpose without significant disruption to occupants, a partial acquisition was determined. In some instances, aerial or subsurface rights for utility facilities or support structures were required, but little to no impact on surface operations would persist after construction (i.e., no displacement). In some circumstances, temporary rights might be required from property owners for materials storage, construction activities, or access, but these activities would not impact the primary function of the property or cause undue disruption to the occupants, and the area could revert to its former use after construction activities were completed. In all cases, depending on the acquisition required from each property, the Authority determined whether the acquisition would result in the displacement of some or all of the land uses. These determinations were added to the impacted parcels GIS layer for use in later identifying the number and type of displacements.

Summary of Residential, Community Facility, and Business Displacements

Section 3.12.6.3, in Section 3.12 of the Draft EIR/EIS, addresses community and economic impacts associated with each of the six Build Alternatives.

As discussed under Impact SOCIO#4 (Permanent Displacement of Residences from Construction) in Section 3.12.6.3, each of the Build Alternatives would result in the displacement of both Single-Family Residential (SFR) and Multi-Family Residential (MFR) units. Residential displacements that would result from project implementation are depicted on Figure 3.12-19 through Figure 3.12-29, in Section 3.12 of the Draft EIR/EIS. Table 3.12-16 in Section 3.12 of the Draft EIR/EIS quantitatively summarizes SFR and

[36] A partial acquisition is determined when the area required for the project appeared not to be critical to the property's primary function as a residence or business and/or the remaining portion of the property could be reconfigured to continue serving its purpose without significant disruption to occupants.

MFR displacement impacts for each Build Alternative; Table 3.12-17 through Table 3.12-23 quantitatively summarize available replacement housing in nearby communities and cities.

Construction of the Build Alternatives would result in displacement of 24 to 64 total residential units, depending on the adit and window options selected. See Table 3.12-17 through Table 3.12-23 of the Draft EIR/EIS, for residential displacements and available replacement housing for each Build Alternative. Southeast Antelope Valley and Lake View Terrace would likely have insufficient replacement housing under the Refined SR14, E2, and E2A Build Alternatives if the households displaced by the Palmdale to Burbank Project Section desired to remain in the same community; however, adequate replacement housing appears to be available in nearby communities. It is therefore unlikely that the displacement of the limited number of residential units in these areas would necessitate the construction of additional housing elsewhere. Furthermore, SOCIO-IAMF#2 (Compliance with Uniform Relocation Assistance and Real Property Acquisitions Act) will provide relocation assistance for persons displaced through right-of-way acquisition; SOCIO-IAMF#3 (Relocation Mitigation Plan) will require the Authority to develop a relocation mitigation plan which will establish an appraisal, acquisition, and relocation process to minimize economic disruption related to relocation in consultation with affected property owners. Additionally, prior to construction, fulfillment of SOCIO-MM#1 (Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods) will require special outreach efforts to affected residential neighborhood and community residents to better determine relocation needs and locate suitable replacement properties and facilities.

Additionally, as described under Impact SOCIO#5 (Permanent Displacement and Relocation of Sensitive Residential Populations from Construction) in Section 3.12.6.3, the displacement of residential units from the construction of the Palmdale to Burbank Project Section could affect households with sensitive populations, including the elderly (over age 65), the disabled, low-income residents, female heads of households, and linguistically isolated residents. Table 3.12-6 in Section 3.12 of the Draft EIR/EIS provides a breakdown of the sensitive population percentages in Los Angeles County and each of the cities within the study area. More than likely residential impacts under all of the Build Alternatives would require acquisition of some residential units that could affect these sensitive populations. The comparisons shown in Table 3.12-6 suggest residential displacements associated with each of the six Build Alternatives could affect sensitive populations at a higher rate in the City of Palmdale (low-income and female heads of households), the City of Los Angeles (low-income, linguistically isolated residents, and female heads of households), and the City of Burbank (the elderly). Relocation plans and resources provided would take these sensitive populations into account during the acquisition process. SOCIO-IAMF#2 (Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act) will provide relocation assistance to persons and the owners/occupants of said properties displaced by the Build Alternative in compliance with the Uniform Act, and SOCIO-IAMF#3 (Relocation Mitigation Plan) will establish an appraisal, acquisition, and relocation process in consultation with affected cities, counties, and property owners.

As described under Impact SOCIO#3 (Permanent Displacement of Community Facilities from Construction) in Section 3.12.6.3, implementation of the Refined SR14, SR14A, E1, and E1A Build Alternatives would not result in the displacement of community facilities, and would therefore not result in impacts related to the provision of replacement public facilities. The E2 and E2A Build Alternatives would displace one community facility, the Los Angeles County Department of Public Social Services in Sun Valley. Community facilities include airports and heliports, places of worship, education facilities, government facilities, health and mental health facilities, libraries, parks and recreation, public safety facilities, shopping centers, social services, and transit sites.[37]Project impacts related to displacements and relocations would be minimized through compliance with SOCIO-IAMF#2 (Compliance with Uniform Relocation Assistance and Real Property Acquisitions Act) and SOCIO-IAMF#3 (Relocation Mitigation Plan). SOCIO-IAMF#2 (Compliance with Uniform Relocation Assistance and Real Property Acquisitions Act) will provide relocation assistance for social service activities in the building that would be displaced through right-of-way acquisition, and SOCIO-IAMF#3 (Relocation Mitigation Plan) will require the Authority to develop a relocation mitigation plan to establish an appraisal, acquisition, and relocation

[37] This is a general definition with the propose of defining what types of community facilities would be impacted. This is not a list of the facilities that will be impacted as a result of the project.

process in consultation with affected cities, counties, and property owners. Impacts would remain significant and CEQA would require mitigation. SOCIO-IAMF#3 (Implement measures to reduce impacts associated with the relocation of important community facilities) (discussed in Section 3.12.7, in Section 3.12 of the Draft EIR/EIS) will ensure the continued availability of community services provided by this facility through reconfiguration of land uses and buildings and/or ensure the relocation of the affected social services prior to demolition. Nearby communities, including North Hollywood and the City of Burbank, would likely have sufficient replacement properties such that the construction of any replacement facility would not be required (please refer to Table 3.12-35 in Section 3.12 of the Draft EIR/EIS). With implementation of mitigation, impacts would be less than significant for the E2 and E2A Build Alternatives. As noted in Table 3.12-43 in the Draft EIR/EIS, Impact SOCIO#3 would not result in an adverse effect with the implementation of SOCIO-MM#3.

As discussed in Impact SOCIO#6 in Section 3.12.6.3, each of the six Build Alternatives would result in the displacement of commercial and industrial businesses, which is summarized in Table 3.12-24, in Section 3.12 of the Draft EIR/EIS. The replacement availability analysis shown in Table 3.12-25 through Table 3.12-36 in Section 3.12 of the Draft EIR/EIS, shows that several affected communities including Pacoima and Sun Valley would have insufficient vacant industrial properties to accommodate displaced businesses. Many of these businesses would likely need to relocate outside of their existing communities. The displacement of local businesses is not considered an environmental impact under CEQA (CEQA Guidelines Section 15064[e]); however, as discussed in Section 5.7.2.8 of the Draft EIR/EIS, this would be an adverse effect under NEPA, as the Los Angeles neighborhoods of Pacoima and Sun Valley would experience a deficit of replacement sites for displaced industrial businesses to relocate within their same communities. Since February 2015 the Authority has conducted extensive outreach to community groups and organizations along the Palmdale to Burbank Project Section alignment, including 11 events in Pacoima and 11 events in Sun Valley (Table 5-4 of the Draft EIR/EIS). Members of the community raised concerns about impacts to the communities, including relocation impacts, which would be addressed through implementation of SOCIO-IAMF#2 (Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act). 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. The development of new commercial and industrial space is beyond the scope of the project and would 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.

Opposition to Displacement of Affordable Housing, Residences, Businesses, Hospitals, and Libraries

Commenters expressed opposition to displacing affordable housing, residences, businesses, hospitals, and libraries. The Authority has worked closely with government agencies, businesses, individuals, and nonprofit organizations to refine the HSR Palmdale to Burbank Project Section project footprint to avoid or minimize impacts, including property acquisitions. The Authority will also continue to work closely with these stakeholders, local communities, and affected individuals who may be displaced or whose property may be acquired to address concerns with respect to adequate relocation. A response is provided in this EIR/EIS for every public comment the Authority received and these responses are included as part of the record for consideration by the Authority Board of Directors. Additionally, where commenters' concerns relate to environmental issues studied under CEQA or NEPA, the Authority has evaluated the effects of any potential displacements in the EIR/EIS, after consideration of input from communities that may be affected by such displacements; the Authority has also assessed whether certain community-perceived effects of the project may be likely.

By way of example, commenters suggested that the Pacifica Hospital in Sun Valley would be displaced by project construction. As shown on Map 27 of Appendix 3.1-A of the Draft EIR/EIS, Pacifica Hospital in Sun Valley would not be displaced; however, the parcel on which the hospital is located would experience permanent roadway impacts associated with driveway access modification. None of the six Build Alternatives would displace or relocate hospital facilities.

Identifying potential replacement sites for residential, commercial, and industrial displacements required a search for properties currently for sale or lease within the project's replacement area cities. Available units

were tallied for each city within the replacement area and compared with the number of displacements in those cities. This process is referred to here as a "gap analysis." For the purposes of this analysis, a larger number of replacement sites that may be available to accommodate the displacements constitutes a surplus; an insufficient number of replacement sites is a deficit. For further discussion of the methodology used to analyze displacement and relocation, refer to Section 4.2 of the Draft Relocation Impact Report (Authority 2019b).

Right-of-Way Acquisition and Relocation Process

The Authority has prepared informational pamphlets describing the right-of-way acquisition process. Specifically, "Private Property and High-Speed Rail: Your Questions Answered" describes the process and general timeline by which an appraiser and right-of-way agent will coordinate with property owners of parcels affected by the HSR alignment. This pamphlet is available on the Authority's website (available at https://hsr.ca.gov/wp-content/uploads/docs/programs/private_property/ROW-Private-Property-Questions-Factsheet.pdf). This pamphlet also offers guidance for property owners of parcels that would not require acquisition but for which the property owner believes their property value has been affected. In those cases, property owners who believe they have suffered a loss may file a claim with the State of California Government Claims Board. This process typically occurs during the detailed design phase, prior to the start of construction.

The Authority's acquisition and relocation assistance and advisory services would include, but not be limited to, measures, facilities, or services that may be necessary or appropriate to determine the needs and preferences of each household, business, and nonprofit organization to be displaced. The Authority would provide current information on the availability, purchase prices, and rental costs of comparable replacement residential units. Other benefits and compensation may include payment of residential moving expenses and replacement housing payments, nonresidential moving expenses, and reestablishment expenses. The Authority's acquisition and relocation assistance documents in Appendix 3.12-A of the Draft EIR/EIS describe compensation and acquisition procedures in detail. For any properties acquired for the project, the Authority would comply with appropriate provisions of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S. Code 4601 et seq.) (Uniform Act) and implementing regulations (49 C.F.R. Part 24). Property owners whose entire or partial property would be acquired by the Authority would receive compensation for their land and improvements. The California Relocation Assistance Act essentially mirrors the Uniform Act and also ensures consistent and fair treatment of owners, expedited acquisition of property by agreement to avoid litigation, and promotion of confidence in the public land acquisitions process. However, if there is federal funding on the project, as there is for the HSR project, the Uniform Act takes precedence.

The Authority would acquire the land of property owners whose land is directly affected by the project in accordance with the Uniform Act. The Uniform Act establishes minimum standards for treatment and compensation of individuals whose property is acquired for a federally funded project. For all acquisition of real property, the Uniform Act requirements include the following:

- Appraisal of the property before negotiation begins
- Invitation to the property owner to be present when the appraiser visits the property
- Preparation of a written offer of compensation and a summary of what is being acquired
- Payment for the property before taking possession of the property
- Offer to acquire uneconomic remnant parcels
- Reimbursement for expenses resulting from the transfer of title

The Authority would negotiate property acquisitions on a case-by-case basis with the property owner(s). The Authority would acquire the property at fair market value, as determined by the process described above. In the event that the Authority and a property owner cannot reach an agreement, then the Authority also has the power of eminent domain, which allows it to condemn the property of unwilling sellers, with payment of just compensation to the property owner. Eminent domain would be viewed as a last resort to acquire land for the public purpose of developing the statewide HSR system. Information on

the eminent domain process is available on the Authority's website (available at https://hsr.ca.gov/wp-content/uploads/docs/programs/private_property/Your-Property-Your-HSR-Project-Factsheet.pdf).

Just compensation is an amount paid to a property owner for property acquired for public purposes that is not less than the fair market value of the property acquired, including damages or benefits to the remaining property. Compensation also would include any measurable loss in value to the remaining property as a result of a partial acquisition.

When displacement results from the acquisition of residential properties or nonresidential properties, such as businesses, the Uniform Act's provisions for relocation assistance include:

- Relocation advisory services, including referrals to replacement properties, help in filing payment claims, and other necessary assistance to help the displaced person successfully relocate
- A minimum 90-day written notice to vacate the property before the Authority would take possession
- Reimbursement for moving and reestablishment expenses

The Uniform Act requires the Authority to provide fair and equitable treatment of all persons affected by relocation and real property acquisition. The Uniform Act provides benefits to displaced individuals to assist them financially and with advisory services related to relocating their residence or business operation. Benefits are available to both owner occupants and tenants of either residential or business properties.

Consistent with the requirements of the Uniform Act and California Relocation Assistance Act, the Authority is committed to working closely and proactively with residents and businesses to help them plan ahead for relocation, find a new home or business site, and solve problems related to the acquisitions and relocation.

Any person, household, business, farm, or nonprofit organization displaced by the Project may be entitled to relocation benefits if they are in occupancy of the property being acquired at the time of the Initiation of Negotiations (ION). In some cases, the occupants of the property to be acquired may need to relocate prior to the ION. The Authority may issue a Notice of Intent to Acquire (NIA) to the owner-occupants to preserve their relocation benefits. The amount and type of benefits will vary depending upon the type and length of occupancy.

Right to Appeal

The right to appeal shall be described in all Relocation Assistance Program (RAP) written documents that are distributed at public hearings or to individual displacees. The right to appeal shall also be mentioned whenever verbal presentations on relocation assistance are made at public hearings. Any aggrieved person may file a written appeal with the Department in any case in which the person believes that the Authority has failed to properly consider the person’s application for relocation assistance. Such assistance may include, but is not limited to, the person’s eligibility for, or the amount of, a relocation payment required under the Uniform Act. Additionally, persons determined to be ineligible for relocation benefits because of their U.S. residency status, or because the relocation is temporary, may file an appeal. The displacees must file an appeal within six months of the last day of the deadline for submitting a claim for moving or replacement housing payment. When the displacee vacates the acquired property, the RAP Agent should provide a letter to the displacee advising of the time periods to occupy replacement property, file claims for reimbursement, and to file an appeal.

Filing an Appeal

Any person who is dissatisfied with the Authority’s relocation benefits or eligibility determination may either verbally or in writing submit an appeal. The Authority will assist persons in filing an appeal and explain the procedures to be followed. The appealing party will be given a prompt and full opportunity to be heard.

Additional information about acquisition, compensation, and relocation assistance and the Uniform Act is also available in Appendix 3.12-A of the Draft EIR/EIS, as well as on the Authority’s website.

17.12.2 PB-Response-SOCIO-2: Property Values

Commenters expressed concern that the HSR project would devalue their properties. They asked how the project would impact their property values and who they can contact for information on compensation.

Section 7.4, Long-term Impact to Property Values, in the Economic Impact Technical Report (Appendix C to the Community Impact Assessment Technical Report) summarizes the potential property value impacts of the HSR project (this report can be provided upon request to the Authority). The analysis included a literature review of studies related to railroad tracks and both conventional rail and HSR stations. Studies on the impact of railway stations on property value indicate that residential and commercial property values near transportation system stations typically increase and are valued higher than similar properties not in the vicinity of such stations due to improved accessibility (both of residents to regional jobs and of employers to a larger labor pool). In a study of the property value impacts associated with a variety of "disamenities," such as environmental contamination or proximity to linear features like roadways and railroads, Simons (Simons 2006) reviewed several studies (conducted in Ohio, Georgia, and Norway) of the relationship between residential property values and proximity to rail lines, and concluded that there were negative property value impacts in the single digits (e.g., 2 or 3 percent) for residential properties within 750 feet of an active railroad track. Furthermore, he found that this negative impact could increase depending on the amount of whistle blowing and the volume of train trips. Another study that examined the residential property value impacts of four commuter rail lines and six light rail lines around the United States found a wide variety of results in different regions and concluded that home price changes were influenced more by regional housing market conditions than by proximity to railroad tracks (Baldwin and Frank 2008).

These studies that have been conducted to date offer no clear consensus on findings due to the limited availability of existing literature. While good data exist on such outcomes as shifts in travel modes resulting from the introduction of new HSR service, economic development effects "are less clear, harder to observe and quantify, and therefore are more controversial" (Givoni 2006). Successful HSR station area development (and presumably related real estate price effects) appears to be linked to a number of factors, including robust local economic conditions, strong travel demand, and excellent links to other forms of transit. It also is difficult to extrapolate from studies conducted in high-density urbanized areas of Japan, Korea, and Europe to predict property value effects in U.S. communities that are much more dispersed. For example, Japan's Tokaido line connects the Tokyo metropolitan area and Osaka metropolitan area which have approximately 30 million and 16 million inhabitants, respectively.

The studies show that, in general, the potential exists for the values of residential and commercial properties to appreciate as a result of HSR projects. Property value increases can result from both new access to a HSR transportation system and the associated intensification of development that can occur around station locations. However, given the potential for nuisance effects (e.g., noise and visual effects) resulting from operation of HSR trains, it is possible that some properties could experience a decrease in value. This potential for a decrease in property value may be particularly true for residences and businesses in locations considerably removed from train stations but exposed to nuisance effects of the HSR project. These non-station residences and businesses would enjoy relatively few benefits (mainly those deriving from improved accessibility) to offset the nuisance effects. This balance between the amount of benefit enjoyed compared to the nuisance effects would be unique for each property and would be only one of the many factors influencing the ultimate market value of any particular property.

As discussed in Chapter 2, Alternatives, of the Draft EIR/EIS, a major reason for tunneling throughout the project corridor was to reduce impacts to existing land uses. Properties located above the HSR Build Alternative tunnels would not experience nuisance effects associated with the HSR due to the tunnel depths. As detailed throughout the Draft EIR/EIS, the project incorporates standardized features to avoid and/or minimize impacts. These features are referred to as Impact Avoidance and Minimization Features (IAMFs) and will be implemented during project design, construction, operation, and maintenance as relevant to the HSR project section, to avoid or reduce impacts. These features are considered part of the project, and the Draft EIR/EIS explains how they will work and describes their effectiveness (see Appendix 2-E). If significant impacts are determined to occur even with the implementation of IAMFs, feasible mitigation measures are identified and will be implemented as required under CEQA. The

Authority, in coordination with the property owners, will implement IAMFs during project design, construction, and operation. These IAMFs include NV-IAMF#1 (Noise and Vibration), which would minimize noise and vibration impacts; TR-IAMF#2 (Construction Transportation Plan), 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), and TR-IAMF#8 (Construction during Special Events), TR-IAMF#11 (Maintenance of Transit Access), and TR-IAMF#12 (Pedestrian and Bicycle Safety), which would avoid or minimize impacts related to temporary disruptions to community circulation patterns and parking during project construction; and SS-IAMF#1 (Construction Safety Transportation Management Plan), which would minimize the project's temporary impacts on emergency response times during construction.

Mitigation measures N&V-MM#1 (Construction Noise Mitigation Measures) and AVQ-MM#1 (Minimize Visual Disruption from Construction Activities) would minimize impacts from temporary noise and visual changes, respectively. Mitigation Measures N&V-MM#3 (Implement California High-Speed Rail Project Noise Mitigation Guidelines), N&V-MM#4 (Vehicle Noise Specification), N&V-MM#5 (Special Track Work at Crossovers and Turnouts), and N&V-MM#6 (Additional Noise Analysis Following Final Design) would be implemented to address operational noise impacts. IAMFs AVQ-IAMF#1 (Aesthetic Options) and AVQ-IAMF#2 (Aesthetic Review Process) and Mitigation Measures AVQ-MM#3 (Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures) and AVQ-MM#4 (Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas) would minimize and mitigate adverse effects of permanent visual changes. Some measures, such as the sound barriers proposed under N&V-MM#3 (Implement California High-Speed Rail Project Noise Mitigation Guidelines), will benefit adjacent properties by reducing noise from existing trains as well as HSR trains. In summary, nuisance impacts to any properties affected by the HSR project that could have an effect on property values would be avoided, minimized, or mitigated as appropriate. However, as described above, nuisance effects would be only one of the many factors influencing the ultimate market value of any particular property.

Although it is predicted that, in general, property values will increase and not decrease, owners who believe they have suffered a loss of property value as a result of the project may file a claim with the State of California's Government Claims Program. The claims process is not considered mitigation because none is required. However, the claims program is part of an already established program and is available apart of the California HSR System. More information on filing a claim may be obtained online at the following link: https://www.dgs.ca.gov/ORIM/Services/Page-Content/Office-of-Risk-and-Insurance-Management-Services-List-Folder/File-a-Government-Claim#@ViewBag.

Claims may be mailed to the below address:

Office of Risk and Insurance Management

Department of General Services

P.O. Box 989052 MS-414

West Sacramento, CA 95798-9052

For assistance from the Government Claims Program (GCP), call (800) 955-0045.

17.12.3 PB-Response-SOCIO-3: Health and Safety of Children

Commenters expressed concern about children's health and safety during construction and operations of the project.

Construction of the Build Alternatives could affect children's health and safety through traffic effects on bus routes and children bicycling and walking to school, air emissions, noise/vibrations, and use of hazardous materials in proximity to schools. The potential for the construction of the Build Alternatives to result in impacts on children's health and safety is evaluated in Impact SOCIO#11 in Section 3.12.6.3 and described in Volume 2, Appendix 3.12-C, Children's Health and Safety Risk Assessment of the Draft EIR/EIS. As discussed in Section 3.12.7, IAMFs and mitigation measures would be implemented to address impacts on children's health and safety from the HSR project. Construction impacts that could

affect children's health and safety are described in Section 3.12.6.3, Impact SOCIO #11, Temporary Impacts on Children's Health and Safety from Construction. Implementation of IAMFs (i.e., SOCIO-IAMF#1 [Construction Management Plan], TR-IAMF#2 [Construction Transportation Plan], AQ-IAMF#1 [Fugitive Dust Emissions], AQ-IAMF#2 [Selection of Coatings], AQ-IAMF#6 [Reduce the Potential Impact of Concrete Bath Plants], HMW-IAMF#5 [Demolition Plans], and SS-IAMF#2 [Safety and Security Management Plan]) would avoid and/or minimize impacts related to temporary changes in access, increases in noise and dust, and hazardous materials transport.

Additionally, Impact SOCIO#16, Permanent Impacts on Children's Health and Safety from Operations, addresses permanent impacts to children's health and safety from operation (e.g., traffic effects, air emissions, noise/vibrations, and use of hazardous materials in proximity to schools).

Construction

As discussed in Impact SOCIO#11 of the Draft EIR/EIS, local roadway modifications and construction activities including spoils hauling may temporarily disrupt circulation patterns in some communities and could affect school bus transportation routes and the safety of children bicycling or walking to school. Although access to some neighborhoods, businesses, or community facilities (including schools) would be disrupted and detours required for short periods during construction, access would remain available, since roadways that will require realignment would be constructed before the closure of the existing roadways to minimize effects. Construction activities would affect pedestrians, bicyclists, and transit because of detours, traffic delays, and increased congestion (refer to Section 3.2 of the Draft EIR/EIS for information on construction impacts and mitigation measures to minimize transportation and traffic impacts and maintain access).

As discussed above, temporary impacts related to community circulation during construction of the Build Alternatives would be minimized through compliance with SOCIO-IAMF#1 (Construction Management Plan) and TR-IAMF#2 (Construction Transportation Plan). These IAMFs would reduce potential temporary impacts related to community circulation from construction through preparation of a CMP and CTP prior to construction that will include actions pertaining to communications, visual resources protection, air quality, safety controls, noise controls, and traffic controls to ensure the safety of school children and advising school districts of construction activities.

Construction activities such as earthmoving and operation of diesel-fueled construction equipment could result in a substantial amount of fugitive dust emissions and temporary disruption of soil or exposure to airborne transmission of the fungus that causes Valley fever. Temporary construction impacts related to air quality, hazardous materials, and Valley fever risk are discussed in more detail in Sections 3.3, 3.10, and 3.11 of the Draft EIR/EIS, respectively. IAMFs are identified in each of these sections that would minimize construction-related impacts. Specifically, AQ-IAMF#1 (Fugitive Dust Emissions), AQ-IAMF#2 (Selection of Coatings), AQ-IAMF#6 (Reduce the Potential Impact of Concrete Batch Plant), HMW-IAMF#5 (Demolition Plans), and SS-IAMF#2 (Safety and Security Management Plan) would require preparation of plans outlining construction practices that will minimize construction-related impacts, including impacts to schools and children.

Noise and vibration from construction activities would have the potential to temporarily exceed noise and vibration standards and affect sensitive receptors along the project corridor (refer to Section 3.4 of the Draft EIR/EIS for the location of sensitive receivers including schools within 1,000 feet of the Build Alternatives, information on construction impacts, and IAMFs to minimize impacts). Noise-related disruptions would be minimized by requiring the contractor to adhere to federal guidelines for minimizing noise and vibration impacts near sensitive receptors, including residential neighborhoods, schools, and parks (NV-IAMF#1 [Noise and Vibration]). Implementation of NV-IAMF#1 (Noise and Vibration) would minimize effects on children's health and safety from construction-related noise and vibration.

Construction of each of the six Build Alternatives would increase the quantity of hazardous materials moving along major transportation corridors (i.e., SR 14 and I-5) during construction. If unaddressed, the presence of hazardous materials near educational facilities would represent a direct hazard throughout the construction period (refer to Section 3.10 of the Draft EIR/EIS and Standard Response PB Response-HAZ-1: Materials Hauling and Transportation of Hazardous Materials of this Final EIR/EIS for the location of schools and other education facilities within 0.25 mile of the Build Alternatives, information on

construction impacts, and mitigation measures and IAMFs to minimize impacts). Such construction could potentially result in accidental spills or releases of hazardous materials and wastes, and could result in temporary hazards to schools. With implementation of the Spill Prevention, Control, and Countermeasure plan described in HMW-IAMF#6 (Spill Prevention), the project's construction effects to children's health related to routine transportation and handling of hazardous or acutely hazardous materials would be reduced.

Operation

Roadway modifications may change some access and routing of school buses due to road closures, but alternative routes would remain available to minimize impacts (refer to Section 3.2 of the Draft EIR/EIS for information on access impacts and mitigation measures implemented as part of the construction phase to maintain access). As discussed in Section 3.2 of the Draft EIR/EIS, there would be no significant operational transportation impacts requiring mitigation. Additionally, pedestrian and bicycle facilities would be provided to compensate for loss of existing facilities and to maintain safe connections to the regional and local pedestrian and bicycle network. The Build Alternatives would also not include at-grade road crossings, thereby preventing vehicles, bicycles, pedestrians, and children from crossing the tracks. The HSR infrastructure (e.g., mainline tracks and maintenance and storage facilities) would be designed to prevent access by unauthorized vehicles, people, animals, and objects. The California HSR System would also include appropriate barriers (fences and walls) and state-of-the-art communication, access control, and monitoring and detection systems. In addition, it would conform to the latest federal requirements regarding transportation safety and security, further providing a firewall between vehicles, bicycles, pedestrians, and children and the HSR tracks.

All six Build Alternatives would result in a net benefit to regional and statewide air quality from HSR operations because of a decrease in emissions as a result of transportation modes shift (refer to Section 3.3 of the Draft EIR/EIS for information on operational emissions).

HSR operations could result in a number of moderate and severe noise impacts to sensitive receivers due to increased noise levels during operation (refer to Section 3.4, Noise and Vibration, of the Draft EIR/EIS for information on operational noise impacts and mitigation measures to minimize impacts). As discussed in Impact SOCIO#16, which has been revised in the Final EIR/EIS for clarity, no noise or vibration impacts on institutional uses (e.g., schools) were identified for any of the Build Alternatives.

Project operations could entail storage or use of hazardous materials within 0.25 mile of a school (refer to Section 3.10 of the Draft EIR/EIS for information on operational hazardous materials impacts and mitigation measures to minimize impacts). An operations plan would be created by the Authority and coordinated with the relevant educational facilities to ensure that no extremely hazardous substances would be used in a quantity equal to or greater than the state threshold quantity within 0.25 mile of a school, in compliance with California Health and Safety Code Section 25532.

Several schools would be adjacent to the Build Alternatives. California Code of Regulations (Cal. Code Regs.) Title 5, Section 14010c, calls for a separation between schools and power transmission lines of 100 feet for 50- to 133-kilovolt (kV) lines. The project would be powered by a 25-kV system; additionally, the project would not require the construction of new power transmission lines in the vicinity of existing schools and other education facilities. For these reasons, electrical infrastructure associated with the Build Alternatives would have no safety effects on school employees and students.

Derailment of a train could be a substantial safety hazard to schools along the Build Alternatives if the train were to leave the HSR right-of-way and collide with school structures or children on adjacent school properties, with hazards associated with the physical mass and speed of the train. Derailment of a train on the California HSR System would not result in any hazardous material spills because the train will only carry passengers. The Build Alternatives would be located in a tunnel in all locations where it would be adjacent to schools; therefore, derailment risk in the vicinity of a school would result in no impacts.

17.13 Parks and Recreation

17.13.1 PB-Response-PR-1: Impacts on the Pacific Crest Trail (Refined SR14 Build Alternative Only)

Commenters expressed concern regarding trail realignment, construction-period, noise, and visual impacts on the Pacific Crest Trail (PCT). Commenters requested more information regarding the IAMFs set forth to minimize impacts to the PCT.

The PCT is part of the National Scenic Trail System and extends approximately 2,659 miles along the Sierra Nevada and Cascade mountain ranges, from the border of Mexico and California, through California (including Los Angeles and Kern Counties), Oregon, and Washington to the border of Washington and Canada. The PCT is open to use by hikers and equestrians, but not to bicyclists or motorized vehicles.

The Refined SR14 Build Alternative alignment would intersect with the PCT at two locations on viaduct, affecting about 0.7 mile of the trail in total. The SR14A, E1, E1A, E2, and E2A Build Alternative alignments would tunnel underneath the PCT, thereby avoiding any physical impacts on the trail.

Discussions of noise, visual, trail realignment, and construction-period impacts associated with the Refined SR14 Build Alternative on the PCT and its users are provided below. Refer to Section 3.4, Noise and Vibration, Section 3.15, Parks and Recreation, Section 3.16, Aesthetics and Visual Quality, and Chapter 4, Section 4(f) and Section 6(f) Evaluations of the Final EIR/EIS for additional details regarding impacts on the PCT.

Trail Realignment

For the Refined SR14 Build Alternative, an approximately 400-foot segment of the PCT would be affected by construction and construction staging. However, the Authority has consulted with the PCT Association, the Bureau of Land Management, and the U.S. Forest Service regarding trail realignment options and has developed a preliminary trail realignment that would be part of the Refined SR14 Build Alternative project construction, if approved by the Authority. The trail realignment would be built and made accessible to the public before construction of the Refined SR14 Build Alternative begins, to ensure continuous access to the PCT.

The proposed realignment would reduce air quality, visual, and noise impacts on users of the PCT by routing the trail farther away from both the SR 14 freeway and the Refined SR14 Build Alternative. The trail would be shifted as little as possible to achieve the required impact reduction. Realigning the trail away from the SR 14 freeway may result in an overall benefit to trail users because the existing trail runs parallel to the east side of the SR 14 freeway for roughly 0.75 mile before heading further east, which causes potential visual and noise effects from vehicles using this portion of the freeway. Therefore, the Refined SR14 Build Alternative would not result in adverse changes to the character of this recreation resource or reduce its capacity or value in the long term and could result in beneficial effects for PCT users.

Construction-Period Effects

As discussed under Impact PK#2, Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources, in Section 3.15 of the Draft EIR/EIS, construction activities associated with the Refined SR14 Build Alternative would temporarily increase dust and noise levels for users of the PCT. Construction staging areas would introduce major visual changes to the immediate surroundings, with visually intrusive stored material and equipment; these impacts would be temporary and disturbed areas would be restored to preconstruction conditions after completion of construction. Implementation of AQ-IAMF#1 (Fugitive Dust Emissions) and NV-IAMF#1 (Noise and Vibration) would commit the Authority to prepare a fugitive dust control plan for each distinct project segment during construction, as well as develop methodology to minimize construction noise and vibration within 1,000 feet of sensitive receptors, respectively, thereby minimizing construction impacts related to dust, noise, and vibration for trail users. Furthermore, Mitigation Measures PR-MM#1 (Temporary Restricted Access to Park Facilities during Construction), PR-MM#2 (Providing Park Access), PR-MM#3 (Implement Standard Safety Measures), PR-MM#4 (Develop and Implement a Trail Facilities

Plan), and PR-MM#5 (Modifications to Recreational Uses) will be employed to reduce the effects of construction-related access, noise, vibration, air quality, and visual changes. PR-MM#1 (Temporary Restricted Access to Park Facilities during Construction) and PR-MM#2 (Providing Park Access) will ensure that access to the PCT remains unaffected by construction activities by providing alternative access routes to temporarily restricted park facilities and by ensuring that connectivity remains after construction. PR-MM#3 (Implement Standard Safety Measures) will require standard safety measures for detours, signage, and post-construction access. PR-MM#4 (Develop and Implement a Trail Facilities Plan) will set conditions for the temporary closure and/or detouring of existing trails. PR-MM#5 (Modifications to Recreational Uses) will set conditions to use land from park, recreation, and school play areas for temporary impact areas during the construction period. Therefore, construction of the Refined SR14 Build Alternative would not create a temporary barrier for access to the PCT, nor inhibit use of the PCT from dust, noise, and vibration effects. As discussed above, the PCT would be rerouted prior to the start of construction.

Additional discussion regarding noise and vibration and visual effects to the PCT during construction and operation of the Refined SR14 Build Alternative are discussed below.

Noise and Vibration

Construction associated with the Refined SR14 Build Alternative would temporarily increase noise at the PCT, which could inhibit the use of the trail. IAMFs would reduce and avoid impacts related to dust and noise during construction (see Section 3.4, Noise and Vibration, of the Draft EIR/EIS). Prior to construction, the contractor will prepare a noise and vibration technical memorandum documenting the pertinent federal guidance for minimizing construction noise and vibration impacts. These measures would be applied when work is conducted within 1,000 feet of sensitive receivers, including the existing and proposed PCT realignment (NV-IAMF#1 [Noise and Vibration]). The measures developed as part of the construction plans will ensure that temporary increases in noise and vibration along the PCT would be reduced to an acceptable level.

Once constructed, horses using areas along the PCT would come within 50 feet of HSR aerial structures. Passing HSR trains would periodically substantially increase ambient noise levels in the project vicinity, which would cause startle noise impacts on domestic animals within 50 feet of the alignment centerline. At a maximum of 217 trains operating per day, there would be a potential exposure of about 11 minutes per day, or 0.8 percent of the time. Because of the location of equestrian facilities, including stables and riding trails, the Refined SR14 Build Alternative alignment may result in startle effects to horses present along the PCT.

Mitigation Measure N&V-MM#8 (Startle Effect Warning Signage) (discussed in Section 3.4.7, Mitigation Measures, of the Draft EIR/EIS) would reduce startle effects by requiring active and passive warning signs be posted along the PCT. Signage would be posted to warn users of an upcoming train crossing and the approximate time for the crossing. As a result, users accompanied by domestic animals will have appropriate warning in order to reduce startle effects on animals.

Aesthetics and Visual Quality

The PCT offers views of natural harmony and is considered a scenic resource. The existing visual quality is high. Visual quality is an assessment of what viewers like and dislike about visual resources that compose the visual character of a particular scene. Visual quality serves as the baseline for determining the degree of visual effect. Key viewpoint (KVP) 1.14, as shown in Figure 3.16 A-14b in Appendix 3.16-A, Photographs of Existing Conditions and Visual Simulations with the Project, in Volume 2 of the Draft EIR/EIS includes westward views along the PCT south of SR 14. The view is characterized by green, rounded mountains in the background with linear lines of the canyons comprising the foreground.

The SR14A, E1, E1A, E2, and E2A Build Alternatives would avoid KVP 1.14 and would therefore not result in visual quality effects on the PCT. The Refined SR14 Build Alternative would include an elevated viaduct structure that crosses over the PCT, introducing a highly visible and contrasting element in the view. During construction, the PCT would be realigned within this area, and a portion of the trail would be permanently relocated away from both the SR 14 freeway and the HSR alignment.

Implementation of the Refined SR14 Build Alternative would substantially change the visual character of the setting. The most prominent project components would be vertical support piers and the horizontal bridge spanning over the trail. OCS poles and wires would also be visible. The viaduct would be highly visible to hikers (i.e., recreational neighbors) on the PCT south of SR 14. The visual quality would be reduced to moderate.

AVQ-IAMF#1 (Aesthetic Options) and AVQ-IAMF#2 (Aesthetic Review Process) would commit the Authority's construction contractor to document how the Authority's aesthetic guidelines and review process have been employed to minimize visual impacts from HSR structures and non-station area structures, in order to promote local context-sensitive visual unity, intactness, and integrity. Additionally, Mitigation Measures AVQ-MM#3 (Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures) and AVQ-MM#4 (Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas), as described in Section 3.16.7 of the Draft EIR/EIS, will require incorporation of local design and aesthetic preferences into the design of the viaduct and require landscape treatments to screen the elevated guideway. Implementation of these measures would reduce the prominence of the elevated alignment. With implementation of mitigation, the project would reduce visual quality along this portion of the PCT (KVP 1.14) from high to moderate for the Refined SR14 Build Alternative.

17.13.2 PB-Response-PR-2: Impacts on Big Tujunga Wash – Recreational Uses, Equestrian Use

Commenters expressed concern regarding construction and operations impacts on recreational use and equestrian use in Big Tujunga Wash, within the Hansen Dam Open Space Area. Commenters expressed concern regarding noise and vibration impacts on domestic animals. Commenters requested more information on the IAMFs and mitigation measures set forth to minimize impacts to the recreational and equestrian uses in Big Tujunga Wash.

As discussed in Table 3.15-4 in Section 3.15 in the Draft EIR/EIS, the Refined SR14, SR14A, E1, and E1A Build Alternatives would avoid the Hansen Dam Open Space Area within the Big Tujunga Wash area. Therefore, there would be no construction or operations-related impacts on recreational uses within the Big Tujunga Wash area under the Refined SR14, SR14A, E1, and E1A Build Alternatives. The E2 and E2A Build Alternatives include an elevated viaduct that would traverse the Hansen Dam Open Space Area within the Big Tujunga Wash.

Construction

Construction of the elevated viaduct in the Hansen Dam Open Space Area for the E2 and E2A Build Alternatives would result in temporary impacts on air quality, noise and vibration, and visual quality that could create a physical or perceived barrier to recreation resources and/or increase the use of other existing recreational facilities within the Big Tujunga Wash area.

Construction of the E2 and E2A Build Alternatives' elevated viaduct would require approximately 30 support piers/footings within the Hansen Dam Open Space Area within Big Tujunga Wash. The total permanent acquisition area would be approximately 13 acres, approximately 1.6 percent of the entire open space area acreage. Temporary construction easements and staging areas within the Hansen Dam Open Space would not extend beyond the permanent acquisition areas. As discussed in Section 3.15.7 of the Draft EIR/EIS, Mitigation Measure PR-MM#6 (Return of Land Used by Temporary Impact Areas to the Property Owners) will return temporarily acquired land to the property owners after construction. PR-MM#7 (Permanent Easement from Parks, Recreation Resources, and/or Trail) and PR-MM#9 (Permanent Acquisition of Public Property from Land and/or Trails Planned for Public Recreational Use) will require the Authority to consult with property owners and public agencies for the acquisition or easement of private and public lands. With implementation of these mitigation measures, the project would not result in the net loss of park, recreation, or open space resources, including the Hansen Dam Open Space Area.

Construction of the elevated viaducts for the E2 and E2A Build Alternatives would require temporary closure of the Hansen Dam Open Space Area in the immediate vicinity of the proposed railway alignment, temporarily limiting access to recreational areas. Additionally, construction activities would cross below the roadway and would interrupt access to the Hansen Dam Open Space Area. This effect would

temporarily create a barrier to access or inhibit use of the Hansen Dam Open Space Area from this segment of Wentworth Street, which would be relocated and reconstructed as part of the E2 and E2A Build Alternatives. Additionally, aerial structures associated with the E2 and E2A Build Alternatives would pass over public recreation areas that provide equestrian trails and/or equestrian facilities such as riding stables within the Hansen Dam Open Space Area within the Big Tujunga Wash. PR-MM#1 (Temporary Restricted Access to Park Facilities during Construction), PR-MM#2 (Providing Park Access), PR-MM#3 (Implement Standard Safety Measures), PR-MM#4 (Develop and Implement a Trail Facilities Plan), and PR-MM#5 (Modifications to Recreational Uses) will be employed to maintain access to facilities during construction. PR-MM#1 (Temporary Restricted Access to Park Facilities during Construction) and PR-MM#2 (Providing Park Access) will ensure that access to the Hansen Dam Open Space Area remains unaffected by construction activities by providing alternative access routes to temporarily restricted park facilities and by ensuring that connectivity remains after construction. PR-MM#3 (Implement Standard Safety Measures) will implement standard safety measures for detours, signage, and post-construction access. PR-MM#4 (Develop and Implement a Trail Facilities Plan) will set conditions for the temporary closure and/or detouring of existing trails. PR-MM#5 (Modifications to Recreational Uses) will set conditions to use land from park, recreation, and school play areas for temporary impact areas during the construction period. The Hansen Dam Open Space Area would remain accessible during construction if the E2 or E2A Build Alternative were chosen.

Operations

The total area of the Hansen Dam Open Space Area within the Big Tujunga Wash is 813 acres, and the total permanent land acquisition area for the E2 and E2A Build Alternatives would be approximately 13 acres. PR-MM#8 (Permanent Changes to Access to Parks, Recreation Resources, and/or Trails) will maintain accessibility to park facilities or provide alternative access to ensure the park or recreation resources remain accessible. In accordance with PR-MM#8 (Permanent Changes to Access to Parks, Recreation Resources, and/or Trails), the Authority will provide compensation for, or enhancement of, access driveways or parking areas at the recreation resource. Therefore, for the E2 and E2A Build Alternatives, with implementation of PR-MM#8 (Permanent Changes to Access to Parks, Recreation Resources, and/or Trails), park, recreation, and open space resources associated with the Hansen Dam Open Space Area would remain accessible following project construction, and users would be able to pass under the viaduct to move from one area of the open space to another.

Noise from passing trains would be perceptible to patrons of the Hansen Dam Open Space Area. The HSR viaduct in the Hansen Dam Open Space Area within the Big Tujunga Wash for the E2 and E2A Build Alternatives would change the character of this recreation resource. However, these changes would not reduce the capacity or the value of the open space area to the surrounding communities. The current aquatic activities, equestrian facilities, hiking trails, and picnic areas would remain part of the Hansen Dam Open Space Area amenities.

Noise from trains passing through the Big Tujunga Wash area would be perceptible to patrons of the Hansen Dam Open Space Area. Patrons within 90 feet of the E2 and E2A Build Alternative alignment centerlines would experience annoyance effects from onset rates caused by the HSR operations. The speed with which a train approaches and passes by a noise-sensitive receiver is referred to as “onset rate”. The on-set rate varies by train speed. Within the Hansen Dam Open Space area, train speeds would be approximately 150 mph. At this distance, startle effects to humans would occur when 30 feet or closer to the train. The viaduct crossing the Hansen Dam Open Space area would be a minimum of 30 feet above ground and in many locations higher (40 to 50 feet). As such, the trains travelling across the viaduct across Big Tujunga Wash are not expected to result in startle effects on humans (open space users). This would be a less than significant impact and no mitigation would be required.

While mitigation N&V-MM#8 (Startle Effect Warning Signage) requires passive and active signage in the Hansen Dam Open Space Area where domestic animals (primarily horses) may traverse to avoid and minimize startle effects, it would also inform humans of the potential noise effects. For further discussion of operational annoyance and startle effects on humans and domestic animals, please refer to discussions under Impact N&V#5 and Impact N&V#7 in Chapter 3.4 of the Final EIR/EIS.

The main source of operations-related vibration would be train passage. The duration of vibration would be brief; a train would take approximately 2 seconds to pass any given point or 3 seconds if vibration

impacts are assumed to extend up to 150 feet in front of and behind the train. At a maximum of 217 trains operating per day, there would be a potential exposure of about 11 minutes per day, or 0.8 percent of the time. Therefore, because of the distance from vibratory sources and the limited time of exposure, vibration from train passage is not anticipated to affect patrons. In addition, vibration impacts from the passing of trains would not exceed vibration impact criteria thresholds per FRA guidelines (for further discussion of FRA guidelines, please refer to the discussion under Impact N&V#1 in Section 3.4, Noise and Vibration, of the Draft EIR/EIS).

The E2 and E2A Build Alternatives include an elevated viaduct that would traverse the Hansen Dam Open Space Area within the Big Tujunga Wash. The viaduct structure, vertical piers, and distant tunnel portals would be highly visible and would contrast with the existing visual setting. Patrons of the Hansen Dam Open Space Area would be highly sensitive to these visual changes, because the changes would impinge upon the natural harmony of the views. The recreational resources would remain accessible in the long term, and users would be able to pass under the viaduct to move from one area of the open space to another.

Given the visual-related impacts related to operation of the viaduct within the Hansen Dam Open Space Area, the E2 and E2A Build Alternatives would change the character of this recreation resource. However, these changes would not reduce the capacity or the value of the Hansen Dam Open Space Area to the surrounding communities. The current aquatic activities, equestrian facilities, hiking trails, and picnic areas would remain part of the Hansen Dam Open Space Area amenities.

Noise and Vibration Impacts on Domestic Animals

Since construction of the elevated viaducts for the E2 and E2A Build Alternatives would require temporary closure of the Hansen Dam Open Space Area in the immediate vicinity of the proposed railway alignment, temporarily limiting access to recreational areas, construction-related noise and vibration impacts on domestic animals are not anticipated.

The main operations impact on equestrian use in the Hansen Dam Open Space Area within the Big Tujunga Wash would be vibration. However, domestic animals are not anticipated to be close enough to experience significant vibration effects. Screening distance was established for startle effects on domestic animals and wildlife using FRA guidance on screening distances for human startle effects. Based on FRA screening distances and a maximum train speed of 220 mph, startle effects could occur within 40 to 50 feet of the right-of-way where domestic and wild animals are present. Further, the duration of vibration would be brief; a train would take approximately 2 seconds to pass any given point or 3 seconds if vibration impacts are assumed to extend up to 150 feet in front of and behind the train. At a maximum of 217 trains per day, there would be a potential exposure of about 11 minutes per day, or 0.8 percent of the time. Therefore, because of the distance from vibratory sources and the limited time of exposure, vibration from train passage is not anticipated to affect domestic animals (for further discussion of FRA guidelines, please refer to the discussion under Impact N&V#7 in Section 3.4, Noise and Vibration, of the Draft EIR/EIS).

If domestic mammals are within 40 to 50 feet of the at-grade alignment centerline, the California HSR System trains would cause startle noise impacts on domestic animals during operations. The noise exposure limit of a sound exposure level of 100 dBA for horses and other domestic animals would be limited to locations within 40 to 50 feet of the at-grade alignment centerline, which is typically within the fenced right-of-way. Such fencing would preclude domestic animals from approaching within 40 to 50 feet of the centerline of the alignment. Domestic mammals such as horses near the E2 and E2A Build Alternatives viaduct structure in the Hansen Dam Open Space Area could experience startle effects from noise caused by train pass-bys, however, if they are subjected to sound exposure levels of 100 A-weighted decibels (dBA) or higher, as shown in Table 3.4-13 in Section 3.4 of the Draft EIR/EIS.

This potential impact would be further reduced with adherence to Mitigation Measure N&V-MM#8 (Startle Effect Warning Signage) (discussed in Section 3.4.7, Mitigation Measures, of the Draft EIR/EIS) which would reduce startle effects by requiring active and passive warning signs to be posted along the Hansen Dam Recreation Area. These signs will be posted to warn users of an upcoming train crossing and the approximate time for the crossing. Users accompanied by domestic animals will have appropriate warning, which would reduce startle effects on animals. With implementation of Mitigation Measure N&V-

MM#8 (Startle Effect Warning Signage), noise impacts on domestic animals would be less than significant.

17.14 Aesthetics and Visual Quality

17.14.1 PB-Response-AVQ-1: Impacts to Scenic Vistas and Scenic Drives

Commenters expressed concern about how construction and operation of the HSR project would impact scenic vistas and scenic drives. Commenters requested photos of what the project would look like during operations. Commenters requested more information regarding mitigation measures set forth to minimize visual quality impacts to scenic vistas and scenic drives from construction activities.

There are several roadways in the vicinity of each Build Alternative that are considered to be scenic drives as established in the 2015 Antelope Valley Area Plan: Town and County Scenic Drives Map. These include scenic drives along Sierra Highway (near Una Lake) (KVP 1.2), Soledad Canyon Road (KVPs 1.18 and 1.19), Aliso Canyon Road (KVP 1.3), and Barrel Springs Road. The Refined SR14, SR14A, E2, and E2A Build Alternatives would cross scenic drives at Little Tujunga Canyon Road, and the Refined SR14 and SR14A Build Alternative would run parallel to the SR 14 highway scenic drive. As shown in Tables 3.16-21 and 3.16-22, the HSR project would be visible from the Sierra Highway scenic drive under the Refined SR14, E1, and E2 Build Alternatives, resulting in a significant aesthetic and visual quality impact prior to the implementation of 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), and AVQ-MM#6 (Screen Traction Power Supply Stations and Radio Communication Towers). The HSR project would be visible from the Aliso Canyon Road scenic drive under the SR14A, E1A, and E2A Build Alternatives but would result in a less than significant or no impact to aesthetics and visual quality under all Build Alternatives. The HSR project would be visible from the Soledad Canyon Road scenic road but would result in a less than significant or no impact to aesthetics and visual quality under all Build Alternatives. The HSR project would be visible from Barrel Springs Road but would result in a less than significant impact to aesthetics and visual quality under all Build Alternatives.

The 2003 San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan (City of Los Angeles 2003) identifies Big Tujunga Canyon Road (Oro Vista Avenue to City Limits), Foothill Boulevard (Wentworth Street to Osborne Street) (KVP 1.23), Foothill Freeway (I-210; Osborne Street to City Limits) (KVP 1.24), La Tuna Canyon Road (Sunland Boulevard to City Limits), and Wentworth Street (Foothill Boulevard to Sheldon Street) as scenic highways within the City of Los Angeles. The HSR project would be visible from but would not affect visual quality from views along Foothill Boulevard because project features would be consistent with the existing visual setting and the overall degree of change to visual quality would be neutral; however, the E2 and E2A Build Alternatives would be visible from Foothill Freeway.

For visual simulations depicting what the project would look like during operations along the alignment, refer to Volume 2, Appendix 3.16-A, Photographs of Existing Conditions and Visual Simulations with the Project in the Draft EIR/EIS.

Construction

Construction activities would temporarily decrease the visual quality rating of views seen from scenic vistas and drives. As discussed in Section 3.16.6.4 of the Draft EIR/EIS, implementation of AVQ-MM#1 (Minimize Visual Disruption from Construction Activities) will require minimizing pre-construction clearing, building removal, post-construction regrading, and avoid locating construction staging areas within 500 feet of recreational areas and other sensitive land uses, such as scenic drives. The contractor will be required to prepare a technical memorandum, prior to construction, identifying how these measures have been implemented reducing impacts. AVQ-MM#1 (Minimize Visual Disruption from Construction Activities) also requires, where feasible, the preservation of existing vegetation that may screen views of construction activities, and requires the regrading, re-contouring, and revegetation of areas disturbed by construction, staging, and storage. These measures will minimize views of construction elements and staging areas that may reduce the visual quality of the natural and cultural environment near scenic drives. With implementation of AVQ-MM#1 (Minimize Visual Disruption from Construction Activities) visual

quality impacts from construction activities including those within the vicinity of scenic vistas and drives would be reduced to a less than significant level. (Please refer to Section 3.16.6.4 of the Draft EIR/EIS for further discussion of temporary construction impacts on visual quality.)

Operations

Visual/aesthetic effects to scenic drives from operations include high-speed trains running on the system, increased activity, traffic on local roadways from passengers arriving at and departing from stations, and ongoing maintenance activities. During peak hours, trains would pass a viewpoint as often as 12 times per hour. As discussed in Section 3.16.6 of the Draft EIR/EIS, the project will incorporate AVQ-IAMF#1 (Aesthetic Operations) and AVQ-IAMF#2 (Aesthetic Review Process), which require design and construction of structures that are in visual harmony with and have aesthetic character matching the surrounding environment. The IAMFs also define how to implement the Authority's aesthetic review process. Mitigation measures AVQ-MM#3 (Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures) and AVQ-MM#4 (Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas) would incorporate Authority-approved aesthetic preferences for nonstation structures into final design and would provide vegetation screening along at-grade and elevated guideways adjacent to residential areas. As shown in Tables 3.16-21 and 3.16-22, the Build Alternatives would be visible along scenic drives/highways and would result in the following impacts:

- KVP 1.2 Sierra Highway, Refined SR14, E1, E2: Significant and Unavoidable (CEQA) and Adverse Effect (NEPA) post mitigation
- KVP 1.3 Soledad Siphon, SR14A, E1A, E2A: Significant and Unavoidable (CEQA) and Adverse Effect (NEPA) post mitigation
- KVP 1.18 Soledad Canyon Road 1, All Build Alternatives: Less than Significant/No Impact (CEQA) and No Adverse Effect (NEPA) (no mitigation required)
- KVP 1.19 Soledad Canyon Road 2, All Build Alternatives: Less than Significant/No Impact (CEQA) and No Adverse Effect (NEPA) (no mitigation required)
- KVP 1.23 Lake View Terrace 2, All Build Alternatives: Less than Significant/No Impact (CEQA) and No Adverse Effect (NEPA) (no mitigation required)
- KVP 1.24 Big Tujunga Wash, E2, E2A: Significant and Unavoidable (CEQA) and Adverse Effect (NEPA) post mitigation

Based on the KVPs near or along scenic drives/highways, the Preferred Alternative (SR14A) would result in a significant and unavoidable impact at KVP 1.3 Soledad Siphon, while the other scenic drive/highway viewpoints would experience a less than significant or no impact as a result of the Preferred Alternative.

17.14.2 PB-Response-AVQ-2: Visual Effects on Big Tujunga Wash

Commenters expressed concern regarding visual quality effects associated with each Build Alternative on Big Tujunga Wash. Commenter requested more information regarding mitigation measures set forth to reduce impacts on visual quality.

As shown in Figure 3.16-A-24a in Appendix 3.16-A, Photographs of Existing Conditions and Visual Simulations with the Project in Volume 2 of the Draft EIR/EIS, KVP 1.24 shows the view from the end of Wheatland Avenue near the Foothill Freeway over Tujunga Wash and power transmission towers, looking southwest. Ranches and other commercial developments are located around the intersection, with residential neighborhoods nearby. The existing visual quality is moderately high.

The Refined SR14, SR14A, E1, and E1A Build Alternative alignments would avoid the Big Tujunga Wash, and would therefore avoid visual quality effects to the wash.

The E2 and E2A Build Alternative alignments would be on an elevated viaduct across Big Tujunga Wash. The viaduct structure, vertical piers, and distant circular tunnel portal would be highly visible and would contrast with the existing visual setting, lowering the existing natural harmony. Visual quality would be reduced from moderately high to moderate with the project. Workers in the adjacent ranches and

commercial areas, and the residents, would be highly sensitive to these visual changes because they would impinge upon the natural harmony of the view from their community. The overall degree of change to visual quality would be adverse.

Mitigation Measures AVQ-MM#3 (Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures) and AVQ-MM#4 (Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas), as described in Section 3.16.7 of the Draft EIR/EIS, are required to reduce impacts on visual quality. These measures will incorporate local design and aesthetic preferences into the design of the viaduct and require landscape treatments to screen the elevated guideway. Implementation of these measures would reduce the prominence of the viaduct. Nonetheless, even with the implementation of mitigation, the E2 and E2A Build Alternatives would still reduce visual quality from moderately high to moderate.

17.14.3 PB-Response-AVQ-3: Effects on Visual Quality during Construction

Commenters expressed concern regarding construction staging effects on visual quality, including lighting and glare from construction activities. Commenters requested more information regarding the mitigation measures set forth to minimize construction-related impacts to aesthetics and visual quality.

Clearing, earthmoving, and erection of project facilities would introduce new lines, forms, and colors that would typically contrast with the existing landscape forms and patterns in urban and non-urbanized areas, causing a decrease in the visual quality of most existing views. Non-urbanized areas, where largely pastoral and/or natural scenes would be disturbed by intensive construction activities, would experience a reduction of visual quality by one to two levels depending on the setting. Natural resources would be affected by the tunnel drilling in areas where tunnel portals would be constructed to transition from above- and below-ground sections of the alignment. Construction of viaducts to carry the alignment above ground would also be highly visually intrusive. Most construction activities would cease within 1 to 2 years at a given location. The exception to this would be concrete batch plants at tunnel portals used to fabricate project components and some construction laydown areas that would be used for 5 or more years. Disturbed areas would be remediated after completion of construction, though construction of large-scale structures (e.g., tunnel portals and overcrossings) would remain as permanent impacts on the landscape. The effect of construction on existing visual quality along the study area would be significant before the consideration of mitigation.

AVQ-MM#1 (Minimize Visual Disruption from Construction Activities) requires the contractor to implement measures to minimize construction-related disruption to aesthetics and visual quality, including activities such as minimizing pre-construction clearing, limiting building removal, post-construction regrading, and avoiding locating construction staging areas within 500 feet of existing residential neighborhoods, recreational areas, and other sensitive land uses. These measures would substantially reduce the noticeability of the construction activities for project neighbors. The contractor will prepare a technical memorandum prior to construction how to identify how the measures will be implemented to reduce impacts to a less than significant level. This technical memorandum will be reviewed and approved by the Authority. With the implementation of AVQ-MM#1 (Minimize Visual Disruption from Construction Activities), and because construction activities will be temporary in duration, construction activities would avoid substantial degradation of visual quality in non-urbanized areas or conflicts with applicable zoning or other regulations governing scenic quality in urbanized areas. Therefore, with implementation of AVQ-MM#1 (Minimize Visual Disruption from Construction Activities), this impact would be reduced to a less than significant level for each of the six Build Alternatives (please refer to Section 3.16.6.4 of the Draft EIR/EIS for further discussion of temporary construction impacts on visual quality).

Construction associated with each of the six Build Alternatives would create new sources of light and glare that may temporarily affect nighttime views. Lighting associated with nighttime construction would increase ambient light, which may adversely affect nighttime views. Lighting may be an annoyance for some at the isolated and sporadic non-urbanized residential developments along the Palmdale to Burbank Project Section; it may be a more pervasive annoyance in the more dense and urban residential and commercial developments along the alignment. Construction would occur at night only intermittently over the construction period, and would typically last 1 to 2 years at a location, although construction activities at concrete batch plants and some construction laydown areas would last for up to 5 years.

AVQ-MM#2 (Minimize Light Disturbance during Construction) will require nighttime construction lighting to be shielded and directed downward to minimize light that falls outside the construction site boundaries. The contractor will prepare a technical memorandum prior to construction to verify how nighttime lighting would be shielded and directed downward to reduce impacts. Shielding nighttime construction lighting would minimize the light and glare within developed areas at nighttime, reducing this impact to less than significant.