

3.7 Biological and Aquatic Resources

3.7.1 Introduction

This section describes the regulatory setting and the affected environment for biological and aquatic resources, including wetlands; the impacts on these resources that would result from construction and operation of the Palmdale to Burbank Section of the California High-Speed Rail (HSR) System; and the mitigation measures that would reduce the severity of these impacts. The following resource sections in this Palmdale to Burbank Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) provide additional information related to biological and aquatic resources:

- Section 3.4, Noise and Vibration, discusses noise and vibration that would result from operation of the Palmdale to Burbank Project Section, including anticipated wildlife noise impacts. Impacts on wildlife from project noise and vibration are based on information provided in the High-Speed Ground Transportation Noise and Vibration Impact Assessment Manual (FRA 2012).
- Section 3.8, Hydrology and Water Resources, discusses existing surface water hydrology, water quality, groundwater, and floodplains and identifies impacts on these resources for each Build Alternative.
- Section 3.9, Hazardous Materials and Wastes, discusses the potential for California HSR System construction and operation to spill or mobilize pollutants.
- Section 3.14, Agricultural Lands, discusses the range of impacts on agricultural lands that could overlap with the biological conditions discussed and evaluated in this section.
- Section 3.18, Regional Growth, discusses construction and operational growth-inducing impacts of the Build Alternatives.
- Section 3.19, Cumulative Impacts, describes the cumulative impacts of this and other past, present, and reasonably foreseeable future projects.
- Chapter 4, Draft Section 4(f) and Section 6(f) Evaluations, discusses impacts on publicly owned open space and recreational areas, including wildlife and waterfowl refuges.

In addition, the following technical reports and appendices provide more detailed information:

- *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a).
- *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (2019c).
- Appendix 2-H, Regional and Local Policy Consistency Analysis, provides a Regional and Local Policy Consistency Table, which lists the biological and aquatic resource goals and policies applicable to the Palmdale to Burbank Project Section and notes the Build Alternatives consistency or inconsistency with each.
- Appendix 2-E, Impact Avoidance and Minimization Features (IAMF), lists IAMFs included as applicable in each of the Build Alternatives for purposes of the environmental impact analysis.
- Appendix 3.1-B, United States Forest Service (USFS) Policy Consistency Analysis, assesses the consistency of the Palmdale to Burbank Project Section with applicable laws, regulations, plans, and policies governing proposed uses and activities within the Angeles National Forest (ANF) including the San Gabriel Mountains National Monument (SGMNM).

This impact analysis considers IAMFs relevant to biological and aquatic resources, which the California High-Speed Rail Authority (Authority) has incorporated into the Palmdale to Burbank Project Section. Appendix 2-E, Impact Avoidance and Minimization Features (IAMF), provides the full description of the IAMFs incorporated into the project. Relevant design standards are provided in Appendix 2-D, Applicable Design Standards, in Volume 2 of this EIR/EIS.

During stakeholder outreach efforts, commenters expressed concern about impacts on biological and aquatic resources, including impacts on wild animals, impacts on the ANF, and the impacts of tunneling on hydrology, resulting from the Palmdale to Burbank Project Section. These concerns are addressed in Section 3.7.6.3.

3.7.1.1 Key Definitions

Key definitions of special-status species, special-status plant communities, aquatic resources, and protected trees are below. The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) further defines each of these terms.

Special-Status Species. Special-status species are plants or animals legally protected under the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing.

Special-status species include the following:

- Species listed or proposed for listing as threatened or endangered under the FESA (50 Code of Federal Regulations [C.F.R.] Part 17.12 [listed plants]; 50 C.F.R. Part 17.11 [listed animals, and various notices in the Federal Register [Fed. Reg.] [proposed species]). Federally threatened or endangered species are labeled as “FESA listed” for the purposes of this document.
- Species that are candidates for listing as endangered or threatened under FESA (81 Fed. Reg. 87246, December 2, 2016).
- Species listed or candidates for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [Cal. Code Regs.] 670.5).
- Bald and golden eagles protected under the Bald and Golden Eagle Protection Act (16 United States Code [U.S.C.] Sections 668 to 668d, 54 Statute 250).
- Species that meet the definitions of “rare” or “endangered” under the California Environmental Quality Act (CEQA) (CEQA Guidelines, Sections 15380 and 15125).
- Plant and animal species listed as “Sensitive” in the State of California by the United States Forest Service (USFS). This designation only applies to a species found on USFS property. Species in the ANF are under the purview of the Pacific Southwest Region of USFS.
- Plant and animal species listed as “Sensitive” in the State of California by the Bureau of Land Management (BLM). This designation only applies to a species found on BLM-administered public lands.
- Plants assigned to California Rare Plant Ranks (CRPR) 1A, 1B, 2A, 2B, and 3 (CNPS 2018):
 - 1A—Plants presumed extirpated in California and either rare or extinct elsewhere.
 - 1B—Plants rare, threatened, or endangered in California and elsewhere.
 - 2A—Plants presumed extirpated in California but common elsewhere.
 - 2B—Plants rare, threatened, or endangered in California but more common elsewhere.
 - 3—Plants about which more information is needed.
- Plant species listed as rare under the California Native Plant Protection Act (California Fish and Game Code [CFGC], Section 1900, et seq.).
- Animal Species of Special Concern (SSC) to the California Department of Fish and Wildlife (CDFW) (CDFW 2017).
- Animals that are fully protected in California (CFGC Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]) (CDFW 2017).

- **Non-Special-Status Wildlife**—For the purposes of this analysis, non-special-status wildlife is an umbrella term for wildlife species or species groups that do not meet the definition of a special-status species as defined earlier in this section, but that may still be affected by construction and operations of the project, including native birds protected under the Migratory Bird Treaty Act (MBTA) and Cal. Fish and Game Code Section 3503, as well as species groups of regional or international conservation concern (e.g., waterfowl and shorebirds, roosting bats).

The special-status species designation does not extend to bird species protected under the Migratory Bird Treaty Act (16 U.S.C. 703–712) or the corresponding California bird protection statutes (CFGF Sections 3503, 3513); however, impacts to these species are discussed under special-status wildlife species sections of this document. Further detail can be found in the Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report (Authority 2019a).

Habitats of Concern. Habitats of concern consist of special-status plant communities, significant ecological areas, riparian areas, federally designated critical habitat, essential fish habitat, wildlife movement corridors, protected trees, and conservation areas (i.e., conservation easements, public lands, conservation banks, and habitat preserves associated with habitat conservation plans and natural community conservation plans).

- **Special-Status Plant Communities**—Special-status plant communities (also referred to as sensitive natural communities) are determined to be significant, to represent rare vegetation types, or to have limited distribution statewide or within a county or region, including riparian areas regulated by CDFW per CFGF section 1600 et seq. These communities are often vulnerable to the environmental effects of projects (CDFW 2000). CDFW maintains a list of special-status plant communities in California in its Vegetation Classification and Mapping Program—Natural Communities List (CDFW 2010). Additional information can be found in the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a).
- **Significant Ecological Areas**—Significant Ecological Areas (SEAs) are areas within Los Angeles County that are officially designated for their biological value. These areas warrant special management because they contain biotic resources that are considered to be rare or unique, are critical for local wildlife preservation, represent relatively undisturbed natural areas, or serve as wildlife corridors.
- **Riparian Areas**—Riparian areas are regulated under CFGF (CFGF section 1600 et seq., Streambed Alteration Agreement). A riparian area consists of the transitional habitat between terrestrial and aquatic ecosystems. For analysis purposes in this section of the Draft EIR/EIS, riparian areas are the vegetated areas between a riverine feature and the outer drip line of the adjacent vegetation. Riparian vegetation supports a unique set of physical and biological processes, including temperature regulation and wildlife habitat, and provides valuable aquatic food web services (inputs for nutrient cycling and food availability) to adjacent aquatic ecosystems.
- **Federally Designated Critical Habitat**—Designated critical habitat includes areas that are identified under Section 4 of FESA (15 U.S.C. 1531–1544, FESA Section 3(5)(A)) and are described in 50 C.F.R. Parts 17 and 226. Designated critical habitat consists of two types of specific areas for federally listed species: (1) areas that fall within the geographic area occupied by the species at the time the species is listed in accordance with the provisions of Section 4 of the FESA, and that contain physical or biological features (constituent elements) essential to the conservation of the species and that may require special management consideration or protection; and (2) specific areas outside of the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of FESA, if the Secretary of the Interior or Commerce determines that such areas are essential for the conservation of the species.

- **Wildlife Movement Corridors**—Wildlife movement corridors are areas defined by wildlife use for movement events on varying scales (e.g., daily foraging, seasonal migration, or dispersal). The wildlife movement corridors referenced in this document refer to areas that have been modeled for specific species based on different physical and biological parameters published in statewide reports. For the purposes of this document, the term “habitat linkage” is used synonymously with the term “wildlife movement corridor.” Habitat linkages are areas of land used for a variety of purposes that potentially serve as corridors for movement or migration of wildlife. Habitat linkages aid in wildlife dispersal and distribution and are crucial for maintaining healthy populations of multiple species.
- **Conservation Easements**—A conservation easement is a binding, legal agreement between a landowner and a land trust or government agency that limits use of the land to protect its conservation values and achieve specific conservation objectives. A conservation easement allows landowners to continue to own and use their land. However, certain actions are prohibited, and the landowner agrees to conserve or restore habitat, open space, scenic, or other ecological resource values on the land covered by the easement. No conservation easements are located within the RSAs.
- **Public Lands**—Public lands are owned and typically maintained by governments, including cities, counties, states, or the federal government. For example, several species analyzed in this document occur within BLM public lands.
- **Conservation Banks**—Conservation banks are permanently protected lands that contain natural resource values. These lands are conserved and permanently managed for special-status species, aquatic resources, or other natural resources. Conservation banks function to offset adverse impacts on natural resources that occurred elsewhere. For this reason, these banks are sometimes referred to as “off-site mitigation.” In exchange for permanently protecting the land and managing it for natural resources, the natural resource regulatory agencies (e.g., United States Fish and Wildlife Service [USFWS], United States Army Corps of Engineers [USACE], CDFW) approve a specified number of natural resource (habitat, species, or resource) credits that bank owners may sell. No conservation banks are located within the RSAs.
- **Habitat Conservation Plans**—Established by Section 10(a)(1)(B) of FESA, Habitat Conservation Plans (HCP) are planning documents required as part of an application for an Incidental Take Permit. They describe the anticipated effects of the proposed taking; how those impacts shall be minimized and mitigated, principally through the establishment of habitat preserves; and how the HCP is to be funded. HCPs can apply to both listed and non-listed species, including those that are candidates or have been proposed for listing. No HCPs are located within the RSAs.
- **Essential Fish Habitat**—Essential fish habitat (EFH) is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.”

The Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act) requires all federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions or proposed actions permitted, funded, or undertaken by the federal agency that may adversely affect EFH by reducing the quality or quantity of EFH. Adverse effects may include direct (e.g., contamination, physical disruption), indirect (e.g., loss of prey), site-specific, or habitat-wide effects, including individual, cumulative, or synergistic consequences of actions (PFMC 2014). However, there is no EFH within the project footprint.
- **Recovery Plan Areas** —Section 4(f) of the FESA directs the Secretary of the Interior and the Secretary of Commerce to develop and implement recovery plans to promote the conservation of endangered or threatened species. USFWS and NMFS are responsible for administering the FESA. In some instances, recovery plans identify specific areas and describe what research and management actions are necessary to support recovery but do not themselves commit manpower or funds. Recovery plans are used in setting funding priorities and provide direction to local, regional, and state planning efforts.

Aquatic Resources. Aquatic resources within the aquatic resources study area are wetlands and nonwetland waters that are waters of the United States pursuant to the federal CWA (collectively called waters of the United States [WOTUS]), waters of the state regulated under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and aquatic and other related resources regulated under California Fish and Game Code Section 1600 et. seq. USACE regulates WOTUS, and the State Water Resources Control Board (SWRCB) regulates waters of the state. CDFW jurisdiction under Section 1600 extends to rivers, streams, and lakes (generally including adjacent riparian vegetation). The definitions of the regulatory categories for aquatic resources are presented in this section. Jurisdictionally delineated aquatic resources (the Preliminary Jurisdictional Waters and Wetlands Delineation Report for the Palmdale to Burbank Project Section is under preparation in coordination with USACE) are assumed to fall under the jurisdiction of USACE and SWRCB for purposes of this environmental review. The Build Alternative alignments occur within areas under the jurisdiction of the Los Angeles USACE District. USACE and SWRCB verification of these waters as jurisdictional would be obtained through the regulatory permitting process. Definitions of the categories that collectively make up the aquatic resources analyzed are presented below.

- **Waters of the United States**—CWA (33 U.S.C. 1251 et seq.) defines WOTUS as follows: (1) territorial seas and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; (2) tributaries; (3) lakes and ponds, and impoundments of jurisdictional waters; and (4) adjacent wetlands (33 C.F.R. 328.3(a)). Wetlands are a subclassification of WOTUS, as described below. The term “nonwetland waters” is used to describe WOTUS exclusive of wetlands.
 - **Wetlands**—Wetlands are a subclassification of WOTUS. According to the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008b), three criteria must be satisfied to classify an area as a wetland: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology). In addition to being included under the definition of WOTUS, wetlands are defined by the federal CWA as special aquatic sites (40 C.F.R. 230.41).
 - **Jurisdictional Determinations**—USACE provides two options for processing jurisdictional determinations: (1) Approved Jurisdictional Determinations (AJD); and (2) Preliminary Jurisdictional Determinations (PJD). These options are set forth in 33 C.F.R. 331.2 and Regulatory Guidance Letter No. 16-01 (USACE 2016), which supersedes previously issued guidance set forth in Regulatory Guidance Letters 07-01 and 08-02.

An AJD is defined in USACE regulations at 33 C.F.R. 331.2. A definitive, official determination that there are, or that there are not, jurisdictional aquatic resources on a parcel. The determination of the geographic limits of jurisdictional aquatic resources on a parcel can only be made by means of an AJD. AJDs require sufficient documentation for USACE, subject to USEPA oversight/approval, to make a definitive administrative finding. These findings can be administratively appealed through the USACE administrative appeal process set forth in 33 C.F.R. Part 331. On exhaustion of administrative remedies, AJDs are also subject to judicial review.

When requested, USACE may issue a PJD in which it makes no legally binding determination of any type regarding whether jurisdiction exists over a particular aquatic resource. A PJD is “preliminary” in the sense that a recipient of a PJD can later request and obtain an AJD if that becomes necessary or appropriate during the permit process or during the administrative appeal process. A PJD is generally the preferred option when the processing of an AJD is considered too time-consuming or the documentation

requirements (Significant Nexus, Relatively Permanent Waters, etc.) are considered too costly or burdensome. A PJD may be used as the basis for a permit decision; however, for purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a PJD will treat all aquatic resources that would be affected by a project as jurisdictional. A PJD must include the delineation limits (extent) of all aquatic resources within the project area, without determining the jurisdictional status of such aquatic resources. It should be noted, however, that USACE will not assume jurisdiction over aquatic resources for which it has been previously determined (via the AJD process) that the resource is not jurisdictional under the CWA.

- **Waters of the State**—Waters of the state are broadly defined by the Porter-Cologne Act (Cal. Water Code section 13050(e)) to mean any surface water or groundwater, including saline waters within the boundaries of the state. Under this definition, isolated wetlands that may not be subject to regulation under federal law are considered waters of the state and regulated accordingly.

On April 2, 2019, the SWRCB adopted its proposed State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State (“Procedures”). Among other provisions, the Procedures set out a definition of “wetlands” under the Porter-Cologne Act. Compliance with the SWRCB Procedures for the project would be achieved through adherence to the provisions set forth in a Memorandum of Understanding between the SWRCB and the Authority (dated January 19, 2017 and amended March 11, 2019) or through other means agreed upon by both parties.

- **Lakes, Rivers, and Streams**—California Fish and Game Code Section 1600 et seq.—The extent of areas regulated under CFGC section 1600 et seq. has not been officially defined by CDFW. However, CDFW generally requires notification under Section 1602 for activities affecting the beds and banks of a lake, river or stream and any adjacent riparian vegetation that is supported by the aquatic resource. Lakes, rivers, and streams are generally defined as areas with a bed, bank, or channel, extending to the top of the bank or edge of adjacent riparian vegetation where it extends beyond top-of-bank. The term “stream” is commonly understood as a watercourse having a source and terminus, banks, and channel through which waters flow, at least periodically. A “streambed” under Section 1602 includes the channel of a water course, which is generally defined to include the depression between the banks worn by the regular and usual flow of the water. Riparian areas are the vegetated areas adjacent to a lake, river, or stream feature extending to the outer drip line of the vegetation that is supported by the aquatic resource. Riparian areas support a unique set of physical and biological processes, including temperature regulation for the waterbody, wildlife habitat, and valuable inputs to the aquatic and terrestrial food webs and ecosystems (inputs for nutrient cycling and food availability). Lakes, streams, and rivers subject to Section 1600 et seq. are described as “CDFW-regulated areas” or “Section 1600 et seq. areas” in this document.
- **Protected Trees**—Protected trees are trees or tree communities that have special significance and are afforded protection by, and specifically identified in, county and city ordinances, codes, or general plans. The Build Alternatives traverse the cities of Palmdale, Santa Clarita, Los Angeles, and Burbank as well as Los Angeles County. The types of trees and specific physical characteristics that meet the local definitions vary by city and county.

3.7.2 Laws, Regulations, and Orders

3.7.2.1 *Federal*

Federal Railroad Administration Procedures for Considering Environmental Impacts (64 Fed. Reg. 28545)

On May 26, 1999, the Federal Railroad Administration (FRA) released *Procedures for Considering Environmental Impacts*. These FRA procedures supplement the Council on

Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [C.F.R.] Part 1500 et seq.) and describe FRA's process for assessing the environmental impacts of actions and legislation proposed by the agency as well as for preparation of associated documents (42 U.S.C. § 4321 et seq.). The FRA *Procedures for Considering Environmental Impacts* state that the EIS should identify any significant changes likely to occur in the natural environment and in the developed environment and should consider possible impacts on ecological systems, wetlands, and endangered species of wildlife.

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

The FESA and subsequent amendments provide guidance for conserving federally listed species and the ecosystems upon which they depend. The applicable sections of FESA are discussed below.

- **Section 7** requires federal agencies to consult with USFWS or NMFS, as appropriate, to ensure that actions federal agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered fish, wildlife, or plant species or result in the destruction or adverse modification of designated critical habitat for any such species. As part of the consultation, USFWS and NMFS would issue a biological opinion and an incidental take statement for wildlife species to exempt the project from the Section 9 “take” prohibition.
- **Section 9** and its implementing regulations prohibit the “take” of any fish or wildlife species listed under the FESA as endangered or threatened unless otherwise authorized by federal regulations. The term *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. *Take* includes the modification of a listed species’ habitat when the modification is substantial and results in actual injury. Section 9 and the implementing regulations prohibit a number of specified activities with respect to endangered and threatened plants.
- **Section 10** provides a process by which nonfederal entities may obtain an Incidental Take Permit from USFWS or NMFS for otherwise lawful activities that might incidentally result in take of endangered or threatened animal species, subject to specific conditions. The California HSR System is a federal agency project and therefore would not utilize Section 10.

Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.)

The amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act (Public Law 104-297), requires that all federal agencies consult with the NMFS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect essential fish habitat of commercially managed marine and anadromous fish species.

Clean Water Act (33 U.S.C. 1251 et seq.)

The CWA is the primary federal law protecting the quality of the nation’s surface waters and other aquatic resources, including wetlands. The CWA sections applicable to the California HSR System are discussed below.

- **Under Section 401**, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into WOTUS unless a state where the discharge would originate issues a Section 401 water quality certification verifying compliance with existing water quality requirements or waives the certification requirement.
- **Under Section 402**, all point-source discharges, including, but not limited to, construction-related stormwater discharges to surface waters, are regulated through the National Pollutant Discharge Elimination System program. Project sponsors must obtain a National Pollutant Discharge Elimination System permit from the SWRCB.

- **Under Section 404**, USACE and USEPA regulate the discharge of dredged and fill materials into WOTUS. Project sponsors must obtain a permit from USACE authorizing such discharges.

Rivers and Harbors Act of 1899 (33 U.S.C. 401 et seq.)

The Rivers and Harbors Act is the primary federal law regulating activities that may affect navigation on the nation's waterways, including:

- **Section 9 of the Rivers and Harbors Act and Section 9 of the General Bridge Act** require a permit for the construction of bridges and causeways over certain navigable WOTUS to ensure that marine traffic is not adversely affected. Navigable waters are defined as those water bodies subject to the ebb and flow of the tide and that are utilized currently, potentially, or historically in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. Section 9 bridge permits are only required for waters that are currently or potentially navigable for commerce; general recreational boating is typically not sufficient to establish jurisdiction. Section 9 bridge permits are issued by the United States Coast Guard.
- **Section 10 of the Rivers and Harbors Act** requires authorization from the USACE for the construction of any structure in or over any navigable WOTUS as well as activities that constitute "work" performed in, over, under or affecting navigable WOTUS. No aquatic resources within the aquatic resources RSA are considered navigable under the Rivers and Harbors Act. Therefore, the Rivers and Harbors Act does not apply to the Palmdale to Burbank Project Section.

U.S. Fish and Wildlife Coordination Act (16 U.S.C. 661–666c)

The U.S. Fish and Wildlife Coordination Act applies to any federal project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and appropriate state wildlife agency.

Migratory Bird Treaty Act (16 U.S.C. 703–712; PL 108–447)

The MBTA of 1918 prohibits the take of the nest, eggs, birds, or any parts thereof (listed at 50 C.F.R. § 10.13 as modified by 75 Fed. Reg. 9281). The Migratory Bird Treaty Reform Act of 2004 amended the MBTA of 1918 to exclude nonnative birds or birds that have been introduced by humans to the U.S. or its territories from protection under the MBTA. The statute defines a native migratory bird as a species present in the U.S. and its territories as a result of natural biological or ecological processes.

Bald and Golden Eagle Protection Act (16 U.S.C. 668–668(d); 50 C.F.R. Part 22)

The Bald and Golden Eagle Protection Act prohibits anyone from taking, possessing, or transporting bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), or the parts, nests, or eggs of such birds, without prior authorization. Bald and Golden Eagle Protection Act regulations authorize issuance of incidental take permits for bald and golden eagles under limited circumstances.

Protection of Wetlands (U.S. Presidential Executive Order (USEO 11990))

U.S. Presidential Executive Order (USEO) 11990 aims to avoid impacts on wetlands from federal or federally approved projects when a practicable alternative is available. If wetland impacts cannot be avoided, all practicable measures to minimize harm must be included.

Protection of Migratory Bird Populations (USEO 13186)

USEO 13186 directs each federal agency taking actions that have or may have adverse impact on migratory bird populations to work with USFWS to develop a memorandum of understanding that would promote the conservation of migratory bird populations.

Invasive Species (USEO 13112)

USEO 13112 requires federal agencies to work cooperatively to prevent and control the introduction and spread of invasive plants and animals.

United States Forest Service Authorities

Biological and aquatic resources within the ANF, including the SGMNM, are protected by several federal laws and their implementing regulations, as well as policies, plans, and orders. The primary laws governing biological and aquatic resources are the Federal Land Policy and Management Act of 1976, the National Forest Management Act, and the Antiquities Act of 1906. Appendix 3.1-B, USFS Policy Consistency Analysis, provides an analysis of the consistency of the six Build Alternatives with applicable laws, regulations, policies, plans, and orders.

United States Forest Service Manual Chapter 2670.22 Sensitive Species

For lands under its jurisdiction, USFS develops and implements management objectives for populations and any habitat of sensitive species. USFS also develops and implements management practices to minimize the potential that that USFS-identified sensitive species do not become threatened or endangered because of USFS actions. These include maintaining viable populations of native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands. The Forest Service Manual 2670.22 was last amended in 2005.

USFS Regional Foresters identify sensitive species occurring within the region and are required to examine the following sources to identify possible candidates for listing as sensitive species:

- USFWS or NMFS candidates for federal listing (categories 1 and 2) under Federal Register Notice of Review
- State lists of endangered, threatened, rare, endemic, unique, or vanishing species, especially those listed as threatened under state law
- Other sources as appropriate to focus conservation management strategies and avert the need for federal or state listing as a result of National Forest management activities

Sensitive native plant and animal species have special management emphasis to improve viability and preclude trends toward endangerment that would result in the need for federal listing under FESA. There must be no impacts on sensitive species without an analysis of the significance of adverse effects on the population, its habitat, and the viability of the species as a whole. It is essential to establish population viability objectives when making decisions that would significantly reduce sensitive species numbers.

Information and analysis of consistency with laws, regulations, plans, and policies relative to portions of the Build Alternatives that would occur within the ANF, including within SGMNM, are discussed in Section 3.7.11, United States Forest Service Impact Analysis, and in Appendix 3.1-B, USFS Policy Consistency Analysis.

3.7.2.2 State

California Assembly Bill 498

Assembly Bill 498, which amended certain provisions of the California Fish and Game Code in 2015, describes the policy of the state to promote voluntary protection of functioning wildlife corridors and habitat strongholds in order to enhance the resiliency of wildlife and their habitats to climate change, protect biodiversity, and allow for the migration and movement of species by providing connectivity between habitat lands wherever feasible and practicable. These means include, but are not limited to, acquisition or protection of wildlife corridors as open space through conservation easements, installation of wildlife-friendly or directional fencing, siting of offsets and conservation banks in areas that provide habitat connectivity, and provision of roadway underpasses, overpasses, oversized culverts, or bridges to allow for wildlife movement between

habitat areas. Provisions in Assembly Bill 498 for voluntary protection of corridors do not create new regulatory requirements under CESA or CEQA.

California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 (Fully Protected Species)

CFGC designates 37 fully protected species and prohibits the take or possession at any time of such species with certain limited exceptions.

Sections 3503, 3503.5, and 3513 (Bird Protections)

CFGC Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by code or any regulation made pursuant thereto. Section 3503.5 prohibits the take, possession, or destruction of any nests, eggs, or birds in the orders *Falconiformes* (New World vultures, hawks, eagles, ospreys, and falcons, among others) or *Strigiformes* (owls). Section 3513, the California Migratory Bird Protection Act, prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA prior to January 20, 2017.

Section 1600 et seq. (Lake and Streambed Alteration)

Section 1600 et seq. requires notification to CDFW prior to any project activity that would: (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If after this notification CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement would need to be obtained.

Natural Community Conservation Planning Act (CFGC Section 2800–2835)

The Natural Community Conservation Planning Act was enacted to encourage broad-based planning for effective protection and conservation of the state's wildlife resources while continuing to allow appropriate development and growth. To be approved by CDFW, a Natural Community Conservation Plan must provide for the conservation of species and protection and management of natural communities in perpetuity in the planning area.

California Native Plant Protection Act (CFGC Section 1900–1913)

The California Native Plant Protection Act requires that all state agencies use their authority to carry out programs to conserve endangered and rare native plants. The NPPA gives the CDFW the power to designate native plants as “endangered” or “rare” and prohibits the take of such plants, with certain exceptions.

Porter-Cologne Water Quality Control Act (Cal. Water Code Section 13000 et seq.)

The Porter-Cologne Act provides for the regulation of all pollutant discharges, including wastes in project runoff and the placement of fill in waters of the state. Any entity proposing to discharge waste must file a Report of Waste Discharge with the appropriate RWQCB or the SWRCB. The RWQCBs are responsible for implementing CWA Sections 401, 402, and 303(d). Because the California HSR System is a project of statewide importance, any Reports of Waste Discharge would be filed with the SWRCB. The Porter-Cologne Act also provides for the development and periodic reviews of basin plans that designate beneficial uses of California's major rivers and groundwater basins and establish water quality objectives for those waters.

California Endangered Species Act (CFGC Section 2050–2085)

CESA prohibits the take of any fish, wildlife, or plant species listed as endangered or threatened, or designated as a candidate for listing under the CESA. *Take* refers to mortality or injury of the listed species itself and not the modification of a listed species habitat. CESA contains a procedure for CDFW to issue a Section 2081 incidental take permit authorizing the take of listed

and candidate species incidental to an otherwise lawful activity, subject to specified conditions, including that the impacts of the take are fully mitigated.

3.7.2.3 Regional and Local

The county and city laws and regulations pertaining to the protection of biological resources are listed in Appendix 2-H, *Regional and Local Policy Consistency Analysis*. The majority of these regulations are found in general plans, ordinance codes, and park master plans of Los Angeles County and the Cities of Los Angeles, Palmdale, Santa Clarita, and Burbank. The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) provides more detail on the local plans and policies that were identified and evaluated in the preparation of this analysis.

3.7.3 Consistency with Plans and Laws

As indicated in Section 3.1.4.3, Consistency with Plans and Laws, the California Environmental Quality Act (CEQA) and the Council on Environmental Quality (CEQ) regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. As such, this Draft EIR/EIS evaluates inconsistencies between the six Build Alternatives and federal, state, regional, and local plans, and laws to provide planning context.

The Authority, as the lead state and federal agency proposing to construct and operate the California HSR System, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state permits prior to initiating construction on the selected Build Alternative. Therefore, there would be no inconsistencies between the six Build Alternatives and these federal and state laws and regulations. The Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, it has endeavored to design and construct the HSR project so that it is consistent with land use and zoning regulations. For example, the proposed Build Alternatives will incorporate IAMFs that require construction crews to be trained to recognize and identify sensitive biological resources that may be encountered in the vicinity of the Build Alternative footprint. The Authority has also adopted statewide policies that seek to reduce biological and aquatic resource impacts (see Volume 2, Appendix 2.0-E).

Appendix 2-H, *Regional and Local Policy Consistency Analysis*, provides a Regional and Local Policy Consistency Table, which lists the biological and aquatic resource goals and policies applicable to the Palmdale to Burbank Project Section and notes the Build Alternatives' consistency or inconsistency with each. The Authority reviewed eight plans. Each of the six Build Alternatives are potentially inconsistent with two policies: Policy ER 2.1.2, which promotes only compatible passive recreational uses in natural areas that are determined to be ecologically significant, and Policy COS 16.1, which requires new development to minimize removal of native vegetation. Both policies and a discussion of inconsistencies can be found in Appendix 2-H.

Despite the inconsistencies, the project is still consistent with the majority of regional and local policies and plans. Although it may not be possible to meet all local biological and aquatic resource goals and plans outlined in Appendix 2-H, IAMFs and mitigation measures would generally minimize biological and aquatic resource impacts and would ultimately meet the overall objectives of the local policies.

3.7.4 Methods for Evaluating Impacts

The evaluation of impacts on biological and aquatic resources is a requirement of several federal, state, regional, and local regulations and laws (as summarized in Section 3.7.2): NEPA; CEQA; and the NEPA 404/408 Integration Memorandum of Understanding (CWA and Rivers and Harbor Act discussion in Section 3.7.2) among the FRA, the Authority, USACE, and USEPA. The following sections summarize the biological and aquatic resource study areas (RSA) and the methods used to analyze biological and aquatic resources. This section also defined the types of potential impacts of the Build Alternatives and presents the NEPA and CEQA criteria used to

evaluate the impacts. Refer to the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) for a more detailed discussion.

Throughout this section, resources that were not specifically mapped may be present in areas where permission to enter was not granted. For all areas where field access was limited, data could not always be collected on the ground. Therefore, as described in this section for these areas, estimates and assumptions regarding the presence of aquatic resources, special-status species, and special-status plant communities are based on assessments from adjacent areas, aerial photographic interpretation, or post-survey geographic information systems (GIS) analysis.

3.7.4.1 Definition of Resource Study Area

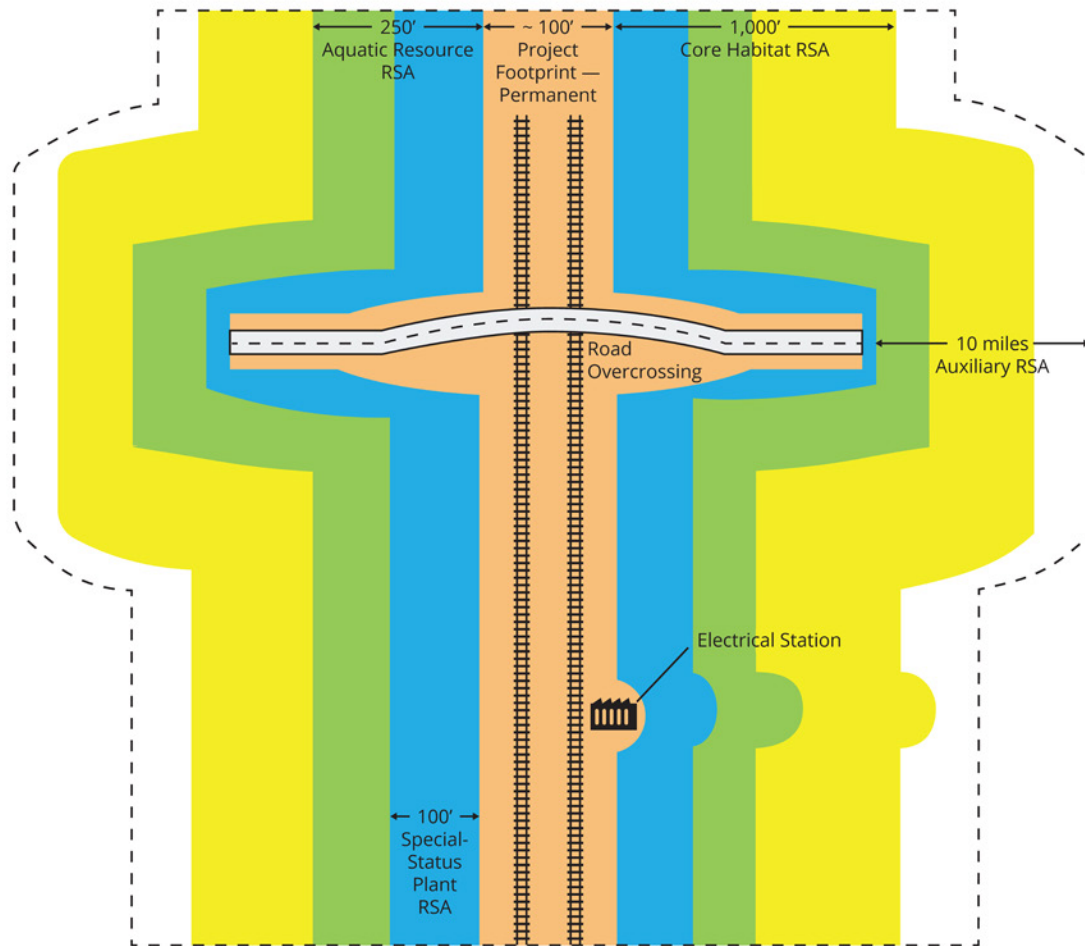
As defined in Section 3.1, Introduction, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. For the purposes of this analysis, the RSA is the area in which biological and aquatic resource investigations were conducted to determine resource characteristics and impacts of the California HSR System. There are several distinct RSAs for the Palmdale to Burbank Project Section, summarized below, quantified in Table 3.7-1 and depicted on Figure 3.7-1 and Figure 3.7-2. The RSAs encompass the construction footprint and buffers.

- **Core habitat RSA**—The core habitat resource study area is the Build Alternative footprint plus a 1,000-foot buffer to evaluate direct and indirect impacts on wildlife habitats and the special-status species that use those habitats. Project-specific vegetation mapping was conducted within this 1,000-foot buffer. Species-specific habitats were identified based on vegetation mapping aerial photograph interpretation, documented species occurrences (e.g., California Natural Diversity Database [CNDDDB] records), and field observations of special-status species and their habitats.
- **Auxiliary RSA**—The auxiliary resource study area 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. Record searches were conducted for the auxiliary RSA. Species-specific habitats were identified based on aerial photograph interpretation, documented occurrences of a species (e.g., CNDDDB records), and field observations of special-status species and their habitats.
- **Aquatic RSA**—The aquatic resources RSA includes the Build Alternative footprint plus a 250-foot buffer around the Build Alternative footprint to evaluate impacts on aquatic resources (including wetlands) and vernal pools. Figure 3.7-3 illustrates the impact calculation method for the various aquatic resources.
- **Special-Status Plant RSA**—The special-status plant RSA includes the Build Alternative footprint plus a 100-foot buffer around the Build Alternative footprint to evaluate impacts on special-status plant resources (including special-status plant communities/special-status plants and protected trees [e.g., Joshua trees]).
- **Tunnel Construction RSA**—The tunnel construction RSA is defined as the area within one mile of the centerline of each Build Alternative. This RSA was created for the purpose of analyzing changes in hydrogeologic conditions caused by tunnel construction, which has the potential to affect the hydrology of groundwater-dependent ecosystems. Figure 3.7-4 illustrates the Build Alternative alignments and the tunnel construction RSA. The RSA consists of a tectonically elevated terrain that extends from Soledad Canyon on the north to the Santa Clarita and San Fernando Valleys on the west, Tujunga Wash (i.e., Tujunga Valley) on the south and Big Tujunga Canyon to the east.

Table 3.7-1 Biological and Aquatic Resource Study Areas

Resource Study Area	Area of Effect	RSA Acreage
Core Habitat RSA		
Direct effects	Build Alternative footprint and Supplemental Work Area	35,357 acres
Indirect effects	1,000-foot buffer outside Build Alternative footprint	
Auxiliary RSA		
Wildlife movement effects	Extends up to 10 miles outward from the Build Alternative footprint	742,425 acres
Aquatic Resource RSA		
Direct effects	Build Alternative footprint and Supplemental Work Area	13,509 acres
Indirect effects	250-foot buffer outside the Build Alternative footprint	
Special-Status Plant RSA		
Direct effects	Build Alternative footprint and Supplemental Work Area	8,419 acres
Indirect effects	100-foot buffer outside the Build Alternative footprint	
Tunnel Construction RSA		
Indirect effects	One mile buffer of the centerline of each Build Alternative	

RSA = Resource Study Area



NOT TO SCALE

LEGEND

- Project Footprint — Permanent
- Special-Status Plant RSA (100')
- Aquatic Resource RSA (250')
- Core Habitat RSA (1,000')
- Auxiliary RSA (10 miles)

Figure 3.7-1 Schematic of Biological Resource Study Areas

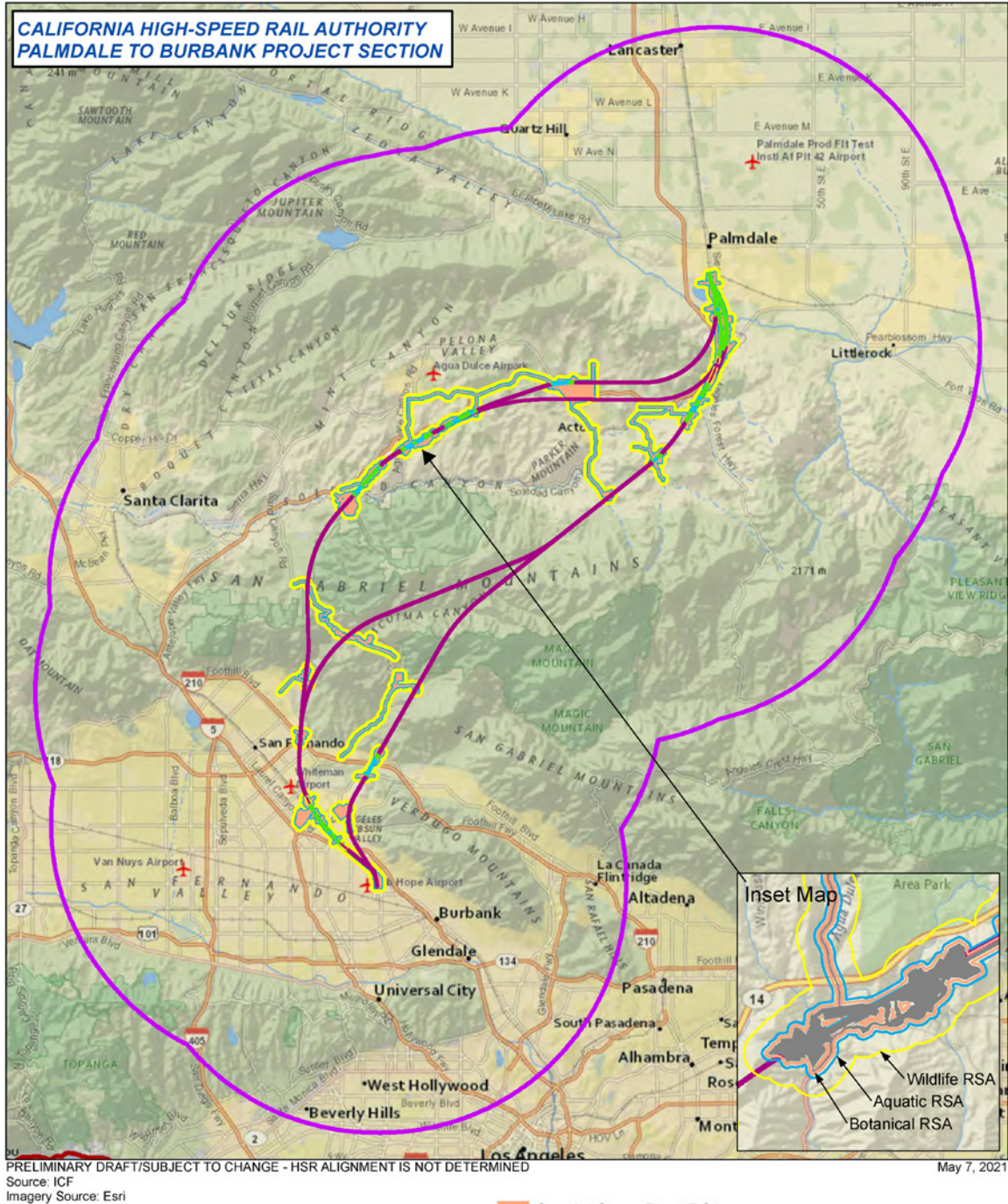


Figure 3.7-2 Biological and Aquatic Resource Study Areas

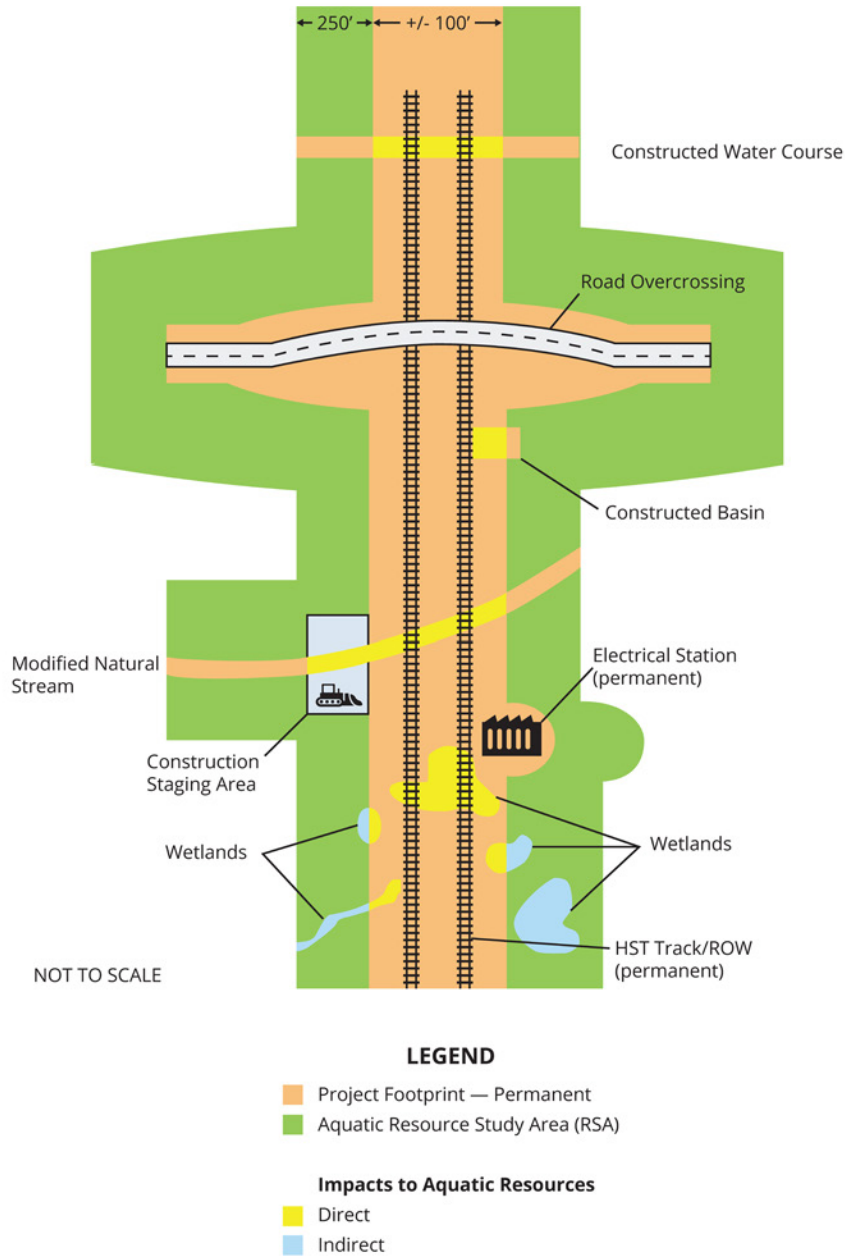


Figure 3.7-3 Illustrative Diagram of Impacts on Jurisdictional Waters

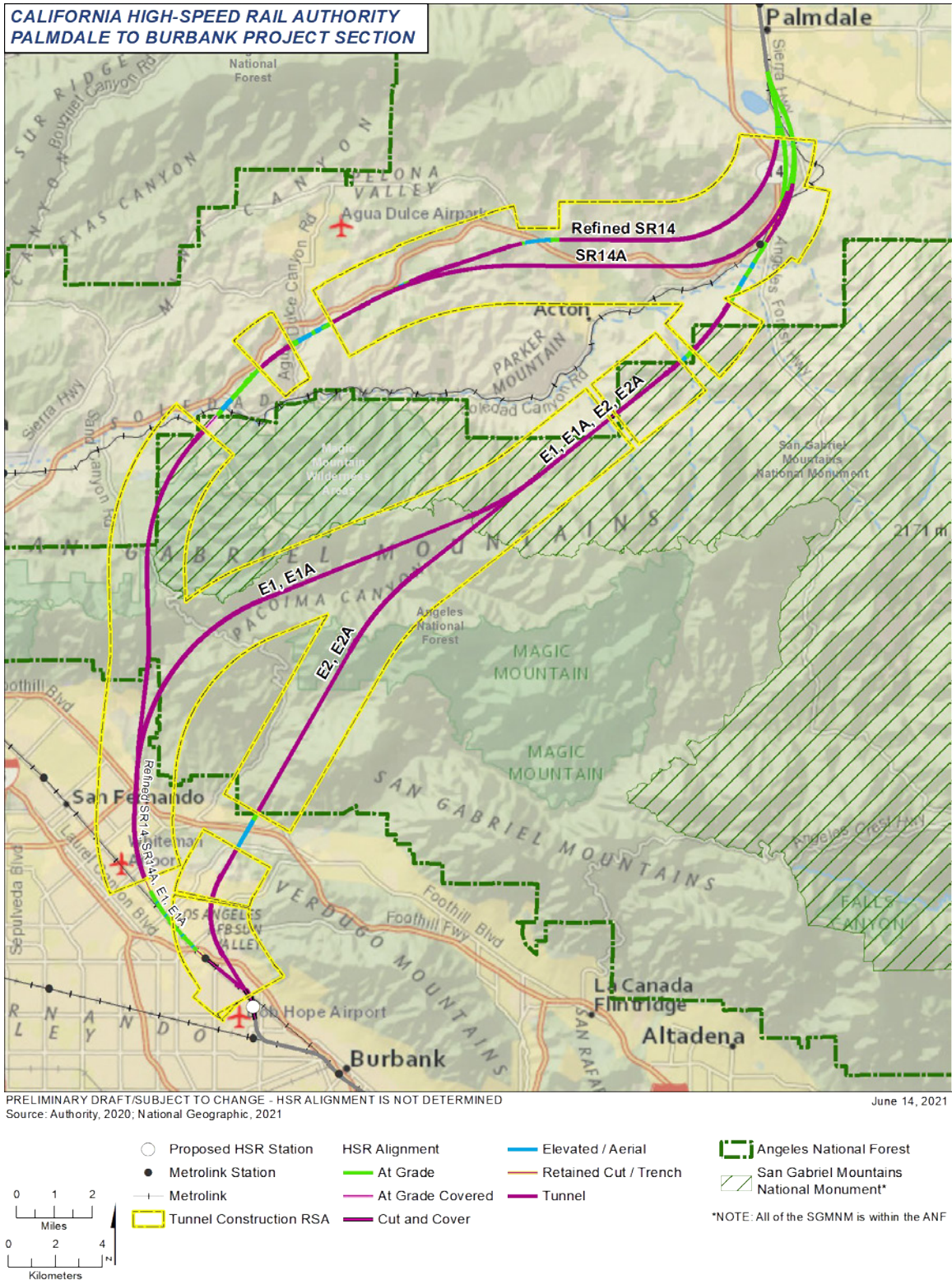


Figure 3.7-4 Tunnel Construction Resource Study Area

3.7.4.2 *Impact Avoidance and Minimization Features*

IAMFs are project features the Authority has incorporated into each of the six Build Alternatives for purposes of the environmental impact analysis. The full text of the IAMFs that are applicable to the Palmdale to Burbank Project Section is provided in Volume 2, Appendix 2-E, Impact Avoidance and Minimization Features.

The following is a list of IAMFs that were incorporated into the biological and aquatic resources analysis:

- **BIO-IAMF#1:** Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors—This IAMF describes the Authority’s commitment to submitting the name(s) and qualifications of Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures at least 15 business days prior to commencement of any ground disturbing activity. The term Project Biologist is used in these IAMFs to mean the Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors, as appropriate.
- **BIO-IAMF#2:** Facilitate Agency Access—This IAMF describes the Authority’s commitment to allowing the USFWS, USACE, NMFS, CDFW, and SWRCB to access the project site during the construction period. The IAMF stipulates that all visitors shall check in with the Authority’s resident engineer prior to entering the Build Alternative footprint for safety reasons. This IAMF requires the Project Biologist to prepare a memorandum within three business days after agency personnel visit the Build Alternative footprint, documenting the issues raised during the field meeting and reporting any issues regarding regulatory compliance raised by agency personnel to the Authority.
- **BIO-IAMF#3:** Prepare WEAP Training Materials and Conduct Construction Period WEAP Training—This IAMF describes the Authority’s commitment to training construction crews to recognize and identify sensitive biological resources that may be encountered in the vicinity of the Build Alternative footprint. Prior to any ground disturbing activity, the Project Biologist shall prepare Worker Environmental Awareness Program (WEAP) training materials, which shall be submitted to the Authority for review and approval. WEAP training materials will include, at minimum, key provisions of the FESA, CESA, the Bald and Golden Eagle Protection Act (BGEPA), MBTA, CFGC section 1600, Porter-Cologne Act, and CWA; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of avoidance, minimization, and mitigation measures. A video of the WEAP training prepared and presented by the Project Biologist and approved by the Authority may be used if the Project Biologist is not available to present the training in person.
- **BIO-IAMF#4:** Operation and Maintenance Period Worker Environmental Awareness Program Training—This IAMF describes the Authority’s commitment to providing WEAP training for operation and maintenance personnel. WEAP training materials will include, at minimum, key provisions of the FESA, CESA, BGEPA, MBTA, Porter-Cologne Act, and CWA; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a dead or injured wildlife species.

- **BIO-IAMF#5:** Prepare and Implement a Biological Resources Management Plan—This IAMF describes the Authority’s commitment to having the Project Biologist prepare the Biological Resources Management Plan prior to any ground disturbing activity. This plan will include a compilation of the biological resources’ avoidance and minimization measures applicable to the HSR section as well as details pertinent to the implementation of those measures. All project environmental plans, such as the Restoration and Revegetation Plan (RRP) and Weed Control Plan (WCP), shall be included as appendices to the Biological Resources Management Plan.
- **BIO-IAMF#6:** Establish Monofilament Restrictions—This IAMF describes the Authority’s commitment to establishing restrictions for the type of material used for erosion control activities. The Project Biologist shall verify that plastic monofilament netting (erosion control matting) or similar material is not being used as part of erosion control activities prior to any ground disturbing activity. The Project Biologist shall identify acceptable material for such use, including geomembranes, coconut coir matting, tackified hydroseeding compounds, and rice straw wattles (e.g., Earthsaver wattles: biodegradable, photodegradable, burlap).
- **BIO-IAMF#7:** Prevent Entrapment in Construction Materials and Excavations—This IAMF describes the Authority’s commitment to preventing wildlife entrapment during the construction period. The Authority shall cover, or provide an escape ramp for, all excavated steep-sided holes or trenches more than 8 inches deep and that have sidewalls steeper than 1:1 (45 degree) slope at the end of each workday during construction. The Authority shall screen, cover, or elevate all construction pipe, culverts, or similar structures with a diameter of 3 inches or greater that are stored overnight within the project footprint at least 1 foot above ground. These pipes, culverts, and similar structures will be inspected by the Project Biologist for wildlife before such material is moved, buried, or capped.
- **BIO-IAMF#8:** Delineate Equipment Staging Areas and Traffic Routes—This IAMF describes the Authority’s commitment to minimizing effects on sensitive biological resources, including habitat for special-status species, seasonal wetlands, and wildlife movement corridors, by establishing staging areas for construction equipment prior to any ground disturbing activity.
- **BIO-IAMF#9:** Dispose of Construction Spoils and Waste—This IAMF describes the Authority’s commitment to adequately disposing of construction spoils and waste. Excavated materials produced by construction activities will be temporarily stored in areas at or near construction sites within the Build Alternative footprint. Where practicable, the Authority shall return excavated soil to its original location to be used as backfill. Any excavated waste materials unsuitable for treatment and reuse shall be disposed at an off-site location, in conformance with applicable state and federal laws.
- **BIO-IAMF#10:** Clean Construction Equipment—This IAMF describes the Authority’s commitment to controlling the spread of weeds or other invasive species. The Authority shall ensure that all equipment and/or vehicles entering and leaving the Work Area are free of mud and plant materials prior to any ground disturbing activity. The Authority shall establish vehicle cleaning locations designed to isolate and contain organic materials and minimize opportunities for weeds and invasive species to move in and out of the Build Alternative footprint.
- **BIO-IAMF#11:** Maintain Construction Sites—This IAMF describes the Authority’s commitment to maintaining construction sites in accordance with identified BMPs. The Authority shall prepare a construction site BMP field manual containing standard construction site housekeeping practices required to be implemented by construction personnel, prior to any ground disturbing activity. The manual shall identify BMPs for the following topics: temporary soil stabilization, temporary sediment control, wind erosion control, non-storm water management, waste management and materials control, rodenticide use, and other general construction site cleanliness measures.
- **BIO-IAMF#12:** Design the Project to be Bird Safe—This IAMF describes the Authority’s commitment to designing the catenary system, masts, and other structures such as fencing, electric lines, communication towers and facilities are designed to be bird and raptor-safe in

accordance with the applicable recommendations presented in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (APLIC 2012).

Other resource IAMFs applicable to impacts on biological and aquatic resources include:

- **HYD-IAMF#1:** Stormwater Management
- **HYD-IAMF#5:** Tunnel Boring Machine Design and Features
- **HYD-IAMF#6:** Tunnel Lining Systems
- **HYD-IAMF#7:** Grouting
- **HMW-IAMF#9:** Environmental Management System
- **HMW-IAMF#10:** Hazardous Materials Plans

This environmental impact analysis considers these IAMFs as part of the project design. Within Section 3.7.6, Environmental Consequences, each impact narrative describes how these project features are applicable and, where appropriate, effective at avoiding or minimizing impacts.

3.7.4.3 **Methods for NEPA and CEQA Impact Analysis**

Overview of Impact Analysis

This section describes the sources and methods the Authority used to analyze project impacts of each of the six Build Alternatives on biological and aquatic resources. These methods apply to both NEPA and CEQA analyses unless otherwise indicated. Refer to Section 3.1.4.4, Methods for Evaluating Impacts, for a description of the general framework for evaluating impacts under NEPA and CEQA.

3.7.4.4 **Biological Resources Methodology**

This section summarizes data-gathering and field survey efforts to identify biological resources within the RSAs.

Literature Review and Consultation with Resource Agencies

Special-status plant and wildlife species known to occur within the RSAs were initially identified through literature investigations, aerial photography review, and consultation with natural resources agencies, including USFWS, USFS, BLM, USACE, CDFW, SWRCB, and Regional Water Quality Control Boards (RWQCB). Qualified biologists familiar with the region used personal knowledge, published reports, and unpublished reports to refine the list of species potentially present within the RSAs. Table 3.7-2 identifies the data sources utilized in this effort. Table 3.7-3 summarizes the informal consultation with the USFWS and other stakeholders including the dates, agencies involved, purpose, and outcome of meetings and correspondence that have taken place; refer to Appendix F of the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) for information regarding agency coordination.

Table 3.7-2 Biological and Aquatic Resources Pre-Field Investigation Sources

Resource	Database
Special-status Species and Plant Communities	USFWS Service IPaC website
	California Natural Diversity Database RareFind
	USFWS Birds of Conservation Concern
	Online Inventory of Rare and Endangered Plants of California
	California Wildlife Habitat Relationship System

Resource	Database
Special-status Species and Plant Communities (Cont.)	USFWS recovery plans and other federal and state documents
	National hydrology database
Designated Critical Habitat and Conservation Areas	Geographic information system layers from the USFWS Ventura and Carlsbad field offices
Protected Trees	County and city ordinances and codes, and general plans
Aquatic Resources	National wetlands inventory maps
	National hydrography data set
	USDA Natural Resources Conservation Service Soil Survey map units
	USDA Natural Resources Conservation Service hydric soils list
	Google Earth Pro aerial photographs
	Climate and precipitation data
	USACE Wetlands Delineation Manual
	Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region
Los Angeles County Flood Control Department storm drain system maps	

Source: Authority, 2019a

IpaC = Information for Planning and Consultation; USACE = United States Army Corps of Engineers; USDA = U.S. Department of Agriculture; USFWS = United States Fish and Wildlife Service

Table 3.7-3 Consultation History with the Natural Resource Agencies

Date(s)	Communication	Agencies	Purpose	Outcome(s)
April to July 2015	Meetings	USFWS	The Authority initiated FESA Section 7 consultation; several meetings with the USFWS ensued with a discussion and presentation of the Southern California project sections, regional study approach (combined Bakersfield to Palmdale and Palmdale to Burbank), and regional consultation overview.	The USFWS requested additional information regarding Section 7 schedule and deliverables, and logistics for USFWS participation. The Authority requested a species list for consideration.

Date(s)	Communication	Agencies	Purpose	Outcome(s)
July to December 2015	Meetings, emails	CDFW FRA USFS USFWS	<p>The Authority presented project description and maps of regional study area, general alignments with 500-foot buffers, its selection of a preferred Build Alternative, draft species list, and draft species modeling approach. Model review, species lists and information, and regional mitigation approach were presented.</p> <p>Continued coordination regarding species information, effects determinations, modeling approach, development of modeling tools and data exchange and agency concurrence decisions.</p>	<p>USFWS requested project alignment GIS data, species model narrative including methodology for species and mitigation, detailed alignment maps and project description.</p> <p>Working group established focusing on species models. Accuracy and efficacy of models discussed.</p> <p>USFWS provided data for species under consideration.</p>
September 17, 2015	Formal letter	USFWS	Species modeling coordination.	Authority requested USFWS concurrence that modeling represents the appropriate methodology to identify species, habitats, and mitigation.
January 2016 to February 2016	Meetings, emails	CDFW FRA USFS USFWS	<p>Continued species information, species modeling and mitigation coordination.</p> <p>Species specific data presented for discussion, including maps and species model approaches.</p> <p>Review of Section 7 schedule.</p>	<p>USFWS provided data and comments regarding models and effects determinations.</p> <p>USFWS reviewed additional species models, species information, and provided information on species conservation measures.</p> <p>USFWS provided guidance on conservation focal areas.</p> <p>USFWS agreed to consider ways to retain 135-day review timeframe for the regional BA.</p>
January 13, 2016	Formal letter	USFWS	Species modeling coordination.	USFWS acknowledged modeling tools used are useful for identifying effects and conservation opportunities.

Date(s)	Communication	Agencies	Purpose	Outcome(s)
March 2016 to June 2016	Meetings, emails	CDFW USFS USFWS	Interagency coordination Continued coordination for species modeling, model revisions and regional mitigation efforts. Continued project information. Discussion of survey methodology, access, and right-of-way processes. Presentation of effects assessments.	USFWS requested clarification of federal agency authority over the California HSR System, including operation and maintenance phase in relation to species. USFWS provided feedback on groundwater impacts in the ANF.
July 2016 to December 2016	Meetings, emails	CDFW FRA USFWS	Species information coordination and No Effects determination presentations. Review of tunnel portal studies, and wildlife corridor assessment. Discussion of claypan methodology. Continued coordination of effects assessments. Discussion of IAMFs.	USFWS provided guidance and comments on species occurrences, models, and effects assessments. USFWS and CDFW requested that protocol surveys be planned for blunt-nosed leopard lizard. USFWS and CDFW to confer regarding USFWS-approved condor hazing.
July 28, 2016	Meeting	USFWS FRA	Discussion of model revisions, tunnel portal studies, and wildlife corridor assessment.	Tunnel portal floristic surveys completed and included in Biological and Aquatics Resources Technical Report for Palmdale to Burbank Project Section.
January 25, 2017	Field Visit	USFWS CDFW USACE	Santa Clara River crossing field visit.	Authority reviewed aspects of the river crossing and responded to agency questions.
January 2017 to June 2017	Meeting	CDFW FRA USFWS	Authority provided updates on BA schedule. Presentation of regional mitigation efforts and database. Overview of the Bakersfield to Palmdale Project Section alignment. Presentation of CCNM Design Option. Authority announced decision to submit separate Bas for Bakersfield to Palmdale and Palmdale to Burbank.	USFWS requested Part 1 of the regional BA for early review. USFWS provided feedback on mitigation lands acquisition and requested mitigation priorities by species.

Date(s)	Communication	Agencies	Purpose	Outcome(s)
November 12, 2017	Meeting	USFS	HSR methodology meeting.	Authority reviewed methodology aspects of the project for USFS lands and responded to agency questions.
September 24, 2018	Meeting	USFWS CDFW FRA USEPA NOAA NPS	Overview of Palmdale to Burbank Project Section alignment.	Authority presented overview of Palmdale to Burbank Project Section alignment. Authority responded to agency questions.
July 2019 to December 2019	Meeting	USFWS USFS BLM	Authority and USFWS resumed bi-weekly informal consultations; USFS and BLM attended meetings when relevant.	Reviewed models and questions pertaining to species, models, and determinations.
October 23, 2019	Meeting	USFWS	Authority provided a summary of previous consultations and the Biological Assessment.	USFWS provided feedback on species determinations.

ANF = Angeles National Forest
 Authority = California High-Speed Rail Authority
 BA = Biological Assessment
 BLM = Bureau of Land Management
 CCNM = Cesar Chavez National Monument
 CDFW = California Department of Fish and Wildlife
 CNDDDB = California Natural Diversity Database
 FESA = Federal Endangered Species Act
 FRA = Federal Railroad Administration
 GIS = geographic information system

HSR = High-Speed Rail
 IAMF = impact avoidance and minimization feature
 NOAA = National Oceanic and Atmospheric Administration
 NPS = National Park Service
 PTE = permission to enter
 RSA = Regional Study Area
 SR = State Route
 USACE = United States Army Corps of Engineers
 USEPA = United States Environmental Protection Agency
 USFS = United States Forest Service
 USFWS = United States Fish and Wildlife Service

Field Surveys

The following investigations identified potential biological or aquatic resources, including wetlands, which might require specific preparation, further background review, or agency coordination. Refer to the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) for detailed information regarding survey methodology.

- Reconnaissance Field Surveys**—Reviewed preliminary information to inform field survey efforts, determine incidental biological resources, and identify potential biological or aquatic resource issues that could require specific preparation, background review, or agency coordination. Reconnaissance surveys included windshield surveys¹ from public roadways, which allowed visual observation of approximately 80 percent of the area that could be affected by the Palmdale to Burbank Project Section's surface alignments. Reconnaissance field surveys also included two focused surveys: one for California red-legged frog and another for slender-horned spineflower.
- Angeles National Forest Special-Status Plant and Wildlife Surveys**—Identified plant and wildlife species in the proposed tunnel portals, adits, roadways, and powerline extensions within the ANF based on windshield surveys, pedestrian transects, aerial photograph review, and extrapolation of observations from adjacent and nearby biological

¹ A windshield survey is an informal survey where the biological professional drives around the survey area and records his/her observations.

communities. These surveys also included a focused survey for Nevin's barberry to verify the existence of known plant populations.

- **Unarmored Three-spine Stickleback Habitat Assessment**—Investigated potential unarmored three-spine stickleback habitat at proposed watercourse crossings where access was granted, including tributaries of the Santa Clara River (Arrastre Canyon, Aliso Canyon, and Agua Dulce), and the mainstem portion of the Santa Clara River at Soledad Canyon.

A habitat assessment for unarmored three-spine stickleback was conducted in the Santa Clara River and its tributaries at four proposed locations where the Build Alternative alignment would pass through or near known (current or historic) locations of species occurrence by Regional Consultant Aquatic Biologist on June 1 and June 15, 2016. The biologist conducted a pedestrian survey of the drainages 600 feet up and downstream of the centerline of the Build Alternative alignment and assessed and recorded the general channel morphology and character of the surface waters, in-channel habitat conditions, vegetation composition, and overall potential for the site to support unarmored three-spine stickleback. The biologist remained outside the wetted margin of the channel during the survey in order to avoid disturbing aquatic habitat. Weather conditions, including air temperature, wind speed, and cloud cover and photographs of the survey area were taken during the habitat assessment survey.

- **Vernal Pool Assessment**—Identified potential vernal pool habitat through review of detailed aerial imagery² and subsequent field verification in areas that were publicly accessible and where access was granted. Due to lack of permission to enter, no protocol-level habitat assessment or focused presence/absence surveys were conducted for species that rely on vernal pool habitat; 14 vernal pool features were identified during review of aerial imagery within 1,000 feet of the six Build Alternative alignments.
- **California Red-Legged Frog Protocol Survey**—Protocol field surveys were conducted to determine presence or absence of California red-legged frog within suitable aquatic habitat. Protocol-level surveys were conducted in accordance with the protocol methods described in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005). These guidelines require a total of eight surveys: six breeding season surveys (two daytime and four nighttime surveys) and two nonbreeding season surveys (one daytime and one nighttime survey). As described in the survey guidance, if California red-legged frog presence was determined, no further surveys were to be performed at the study area. The surveys were conducted by qualified Regional Consultant biologists familiar with identification of California red-legged frog and other amphibian species that co-occur with the species. Resumes of surveyors were submitted to USFWS. As indicated in the survey guidance, the best approximated period to survey for California red-legged frog egg masses in southern California is between February 25 and April 30. In general, subadult frogs are most easily detected during the day between July 1 and September 30, and, in the vicinity of a breeding location, adult frogs are most likely to be detected at night between January 1 and June 30. Therefore, surveys were scheduled beginning in the early spring and continued into the summer. In accordance with the requirements of the survey guidance, each night survey took place at least 7 days apart, and day and night surveys were conducted on the same day at least 2 hours apart (one hour before and one hour after sunset, respectively). The survey areas included the stream channels and any tributaries noted above that fall within the areas of proposed surface disturbance and 500-foot buffer, where access was available. Private property, with no permission to enter, limited access to areas within 500 feet of the Palmdale to Burbank Project Section's components at the Gold Creek, Little Tujunga Creek, Middle Pacoima Creek, and Upper Pacoima Creek sites. Therefore, adjacent and/or nearby areas

² Eagle Aerial, a company specializing in orthorectified aerial photography in southern California, collected detailed aerial imagery of resources in the aquatic RSA on January 15 and 16, 2017 in order to identify potential vernal pool resources. Detailed imagery was collected using a Cannon 5DSR camera with 6-inch resolution from an elevation of 6,000 feet in a Mooney 201 aircraft. Detailed imagery was collected 2 days after a rain event to capture all possible ponded areas within the aquatic RSA for analysis.

that were accessible and were determined to have representative, hydrologically connected habitats—based on analysis of aerial imagery and hydrologic data—were surveyed in lieu of the inaccessible areas.

Aliso Creek was not surveyed because California red-legged frogs are known to occur within the creek upstream of the project alignment. Therefore, the Authority and USFWS assumed the species to be present. Arrastre Canyon Creek was surveyed where the Build Alternative alignment crosses the feature, plus a buffer of 500 feet upstream and downstream. No California red-legged frogs were observed during the survey; however, California red-legged frogs had recently been observed in Arrastre Canyon Creek upstream from the Build Alternative footprint in an unrelated survey prior to the protocol surveys conducted for the project. Both Arrastre Canyon Creek and Aliso Canyon Creek would be crossed by E1, E1A, E2, and E2A Build Alternative alignments downstream from known populations. As such, where the E1, E1A, E2, and E2A Build Alternatives cross Arrastre Canyon Creek and Aliso Canyon, it is assumed that California red-legged frogs are present. The Refined SR14 and SR14A Build Alternative alignments are not located in the proximity to any known populations of California red-legged frog. None of the drainages crossed by the Refined SR14 and SR14A Build Alternative alignments are known to have California red-legged frog populations and no California red-legged frogs were observed during the protocol surveys.

Constraints and Predictive Modeling

The habitat and aquatic resource RSAs are composed of 12,128 private and 872 publicly owned parcels. Permission to enter was granted by 51 private owners and 35 public agencies. In regard to the special-status plant RSA, review of publicly accessible aerial imagery was conducted of the entire RSA including areas without permission to enter. Where practicable, surveyors conducted visual assessments from the public right-of-way and adjoining properties.

Field survey limitations influenced the results of this report, including: (1) lack of permission to enter private property; (2) lack of physical access (because of terrain or locked gates, for example); and (3) lack of appropriate weather conditions to conduct seasonal surveys. Of the 76,178-acre habitat RSA and 57,498-acre special-status plant RSA, field surveys occurred on 2,379 acres, or 3.1 percent of the habitat RSA and 4.1 percent of the special-status plant RSA.³ Due to these access limitations, estimations, and assumptions about the presence of biological resources are based on assessments from adjacent areas, aerial photographic interpretation, post-survey geographic information system analysis, and habitat suitability modeling.

Special-Status Species Habitat Suitability Modeling

The Authority prepared GIS species habitat models for the regional RSA. Species habitat models were developed to achieve the following:

- Assess impacts
- Analyze Build Alternatives
- Place avoidance and minimization features
- Determine mitigation requirements
- Prioritize mitigation opportunities
- Track and report impacts and mitigation

Additional details on species habitat modeling methodology and approach are provided in the *Biological and Aquatic Resources Technical Report* (Authority 2019a).

³ Note that 100 percent of potential project footprint areas in areas managed by USFS and BLM were surveyed. Approximately 898 acres located outside the ANF were also surveyed, which makes up approximately 1.1 percent of the overall core habitat RSA.

Habitat models bring together information about environmental attributes, species life history, and environmental requirements to create a spatially explicit model of suitable habitat at a regional scale. The models are created and displayed using GIS software (ArcGIS 10.3). Once in GIS, the habitat models can be intersected with the project footprint and resource layers to determine impacts and assess mitigation opportunities.

Biologists developed two types of species habitat models to assess impacts from construction and operations of the project and to identify mitigation opportunities: statistically based and rule based. Statistically based models are created using a GIS-based software program that accepts habitat and occurrence data inputs and then selects potentially suitable habitat based on the most statistically significant correlations between model variables. Desert tortoise is the only species for which a statistically based model was used. Rule-based models are created using an intersection of habitat parameters in GIS. Typically, this is done using Boolean “and/or” relationships to formulate the habitat distribution. For example, a species would be predicted to occur in an area that has the vegetation community and the soil type and the correct elevation range where the species is known to occur. To recognize a difference in model complexity between listed and non-listed species, biologists defined two secondary types of rule-based models: basic and specific. Basic rule-based habitat models were created through an intersection of land cover and geographic range (including elevation range in some cases) datasets in GIS and were created primarily for non-listed species. Specific rule-based habitat models used land cover and range data; additional parameters such as geology, soil, and hydrological data; and spatial measurements related to species movement and area use to identify potentially suitable habitat.

Biologists selected the rules for basic and specific habitat models based on the scientific literature, listing and recovery documents published by resource agencies, first-hand species knowledge, and prior experience. The rules incorporate analysts’ best interpretation of species biology and life history requirements into model parameters. Where existing rule-based species habitat models were available and appropriate, they were applied or adapted to the regional RSA.

Existing models were used when possible because most have been previously reviewed by the agencies and species experts. For example, a desert tortoise habitat model that was developed for the Desert Renewable Energy Conservation Plan was used for the project.

Delineation of Aquatic Resources

The aquatic RSA contains aquatic resources that may be subject to federal and state regulation. Aquatic resources delineation noted the general location, type, and characteristics of all aquatic resources within all six Build Alternative aquatic resource RSAs that may be considered WOTUS, waters of the state, and CDFW-regulated areas, as outlined in Section 3.7.1, Introduction. Aquatic features were delineated by reviewing existing background resources, analyzing aerial photographs, conducting field surveys where practicable, and performing investigations from adjacent public right-of-way. Refer to the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) for a comprehensive discussion of the aquatic resource delineation methodology.

For the purposes of this evaluation, aquatic resources considered as WOTUS were delineated according to the definition included in the 2015 Clean Water Rule. As such, the aquatic resources evaluation provides a conservative estimation of impacts to WOTUS.

Wildlife Corridor Assessment

The *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) describes and quantifies the potential effects of the Palmdale to Burbank Project Section on wildlife movement and discusses how these effects can be avoided or minimized. The primary impact of the Palmdale to Burbank Project Section on local wildlife would be the fencing of at-grade segments and the creation of a barrier for wildlife by preventing the crossing of the alignment at those locations. Although wildlife would be able to traverse elevated/viaduct or tunneled portions of the HSR alignment, at-grade railway segments could decrease the ability of wildlife to move freely across the wildlife corridor RSA.

The wildlife corridor RSA consists of a 10-mile buffer from the Build Alternative alignment centerlines, which traverse three major geographic regions: the Antelope Valley, San Gabriel Mountains, and San Fernando Valley. Most of the Palmdale to Burbank Project Section would pass through natural areas of the San Gabriel Mountains, which provide an important connection for special-status species habitat and designated critical habitat and facilitate wildlife preservation and gene flow. Therefore, project-specific effects on wildlife movement were evaluated at a local project scale through this region. Because significant portions of the at-grade alignment for each Build Alternative are within urban areas of the Antelope Valley and San Fernando Valley, the analysis excludes these urban areas to provide a more representative view of Palmdale to Burbank Project Section's effects in the relatively undeveloped San Gabriel Mountains.

The *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) reviews existing studies related to wildlife movement, major habitat connectivity planning efforts (notably the South Coast Missing Linkages and the California Essential Habitat Connectivity Project), and existing and planned transportation and land use development throughout the wildlife corridor RSA. Refer to Appendix C of the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* for field studies and photography documenting the potential crossing opportunities along the State Route (SR) 14 freeway. Modeling then estimates local project-specific impacts on permeability, which is the length of alignment that allows for wildlife movement (compared to the total length of the Palmdale to Burbank Project Section that is "impermeable" and prevents crossing due to fences or other obstacles). This modeling effort analyzes the following four factors to determine the Palmdale to Burbank Project Section's regional impact to wildlife corridors:

1. The length of at-grade segments that traverse three broad natural land cover types (chaparral, scrub, and pinyon-juniper) to determine the proportion of the effect. These three regional habitat types are fairly contiguous and geographically important within the RSA.
2. The length of the at-grade HSR segment that traverses potentially suitable habitats of five focal species (mule deer, mountain lion, American badger, desert kit fox, and desert tortoise) to determine the proportion of the effect. These focal species represent the various geographic areas, habitat types, and ranges of movement for different species throughout the auxiliary RSA.
3. The length of the at-grade HSR segment that traverses the focal species least-cost corridor and Linkage Designs for the San Gabriel-Castaic Connection. The San Gabriel-Castaic Connection identifies wildlife least-cost corridors wherein focal species are able to move from one tract of protected land to the next.
4. The number and percentage of at-grade segments that traverse these regional linkages. These were calculated to help describe the effects quantitatively. The distance was then converted into a percentage to determine the proportion of each of these categories that would be disrupted.

Least-Cost Corridor

Least-cost corridors are regional movement corridors that provide the least resistance or movement cost for wildlife moving across the landscape from one large tract of preserved land to another. For example, high-quality habitat would have low resistance while poor-quality habitat would have high resistance.

Refer to the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) for a detailed discussion of the methodology and results of this analysis.

Changes to Hydrogeology Affecting Groundwater Levels Supporting Habitat

Hydrologic effects associated with changes to the hydrogeologic conditions were evaluated in the tunnel construction RSA within the ANF in addition to the analysis of potential hydrologic effects associated with tunnels in other areas. Tunnel construction in the ANF presents conditions such as high mountains, faulting, hard rock formations and potentially high water pressures. These conditions are substantially different than those that would be encountered in areas outside the ANF, which are primarily characterized by alluvial soils and low groundwater pressures.

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. Changes in groundwater levels for aquifers could affect the hydrology of groundwater-dependent ecosystems, resulting in effects on 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. The potential for changes in groundwater levels to adversely affect aquatic and biological resources occurring in the Risk Areas was evaluated using the following methods.

Groundwater-Dependent Species

Species requiring the surface expression of groundwater (e.g., springs, wetlands) or a species dependent upon sub-surface availability of groundwater within the rooting depth of vegetation (e.g., woodlands, riparian habitats) (Eamus et. al. 2016).

Special-Status Plants

Special-status plant species with the potential to occur in the tunnel construction RSA were evaluated to determine if they are groundwater dependent. 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.

Vegetation Communities

Vegetation communities (habitats) within the tunnel construction RSA were evaluated to determine if they are groundwater dependent, either all or in part. Vegetation communities 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 vegetation communities determined to be all or partially groundwater dependent, the mapped vegetation communities were overlaid with the tunnel construction RSA and Risk Areas to quantify the amount of each type that could be adversely affected.

Special-Status Wildlife

Special-status fish and wildlife species with the potential to occur in the tunnel construction RSA were evaluated to determine if they are groundwater dependent. 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 (see Section 3.7.5.5) were overlaid with the tunnel construction RSA and Risk Areas to quantify the amount of modeled suitable habitat that could be adversely affected for each species. For species solely dependent on aquatic habitats, all modeled suitable habitat within the Risk Areas was quantified and considered to be potentially affected. For species with both aquatic and upland life cycle requirements, areas of aquatic and riparian habitat were quantified and considered to be potentially affected.

Aquatic Resources

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 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 was calculated and considered to be potentially affected. Within these areas of affect, 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 from tunnel construction.

3.7.4.5 Methods for Evaluating Impacts under NEPA

The Council on Environmental Quality NEPA regulations (40 C.F.R. Parts 1500–1508) provide the basis for evaluating project effects (Section 3.1.4.4). As described in Section 1508.27 of these regulations, the criteria of context and intensity are considered together when determining the severity of the change introduced by the Palmdale to Burbank Project Section. “Context” is defined as the affected environment in which a proposed project occurs. “Intensity” refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved; location and extent of the effect; duration of the effect (short- or long-term); and other considerations of context. Beneficial effects are also considered. When no measurable effect exists, no impact is found to occur. For the purposes of NEPA compliance, the same methods used to identify and evaluate impacts under CEQA are applied here.

3.7.4.6 Methods for Determining Significance under CEQA

The Authority is using the following thresholds to determine if a significant impact on biological and aquatic resources would occur as a result of the project. A significant impact is one that would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS
- Have a substantial adverse effect on state or federally protected wetlands (including seasonal wetlands, canals, ditches, lacustrine systems, retention and detention basins, and seasonal riverine areas) through direct removal, filling, hydrological interruption, indirect or cumulative effects, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, state, or federal habitat plan

Where local governments have developed policies or ordinances for the protection of biological resources within their jurisdictions, a conflict with the policy or ordinance would generally indicate the potential for a significant impact. Similarly, a conflict with an adopted HCP, NCCP, or other approved local, regional, state, or federal habitat plan would generally indicate the potential for a significant impact because such plans are adopted specifically for the protection of biological resources. Conversely, where there is no conflict with a local policy or ordinance, or an NCCP or HCP, that would generally indicate that the Palmdale to Burbank Project Section would not result in a significant impact related to the resources that are protected by the policy, ordinance, or plan.

Mandatory findings of significance within CEQA Guidelines Section 15065 require the lead agency to determine whether a project might have a significant effect on the environment where substantial evidence indicates that there could be negative impacts on biological resources.

Negative conditions are defined as follows:

- The project has the potential to substantially degrade the quality of the environment, reduce habitat of wildlife species, cause wildlife populations to drop below self-sustaining levels,

threaten to eliminate a plant or animal community, or substantially reduce or restrict the range of a listed species.

- The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The project has environmental effects that are individually limited but cumulatively considerable.

Under CEQA's mandatory findings of significance, the Palmdale to Burbank Project Section would result in a significant impact if it would:

- Substantially reduce the habitat of a fish or wildlife species
- Cause a fish or wildlife population to drop below self-sustaining levels
- Threaten to eliminate a plant or animal community
- Substantially reduce the number or restrict the range of an endangered, rare, or threatened species

General indicators of significance, based on guidelines or criteria in NEPA, CEQA, CWA, CESA, FESA, and other regulatory guidance from FRA include:

- Potential modification or destruction of habitat, movement corridors, or breeding, feeding, and sheltering areas for endangered, threatened, rare, or other special-status species
- Potential measurable degradation of protected habitats; sensitive vegetation communities; wetlands; or other habitat areas identified in plans, policies, or regulations
- Potential loss of a substantial number of any species that could affect the abundance or diversity of that species beyond the level of normal variability
- Indirect impacts, both temporary and permanent, from excessive noise that elicits a negative response and avoidance behavior

3.7.5 Affected Environment

This section describes the existing biological and aquatic resources within each of the identified RSAs for the six Build Alternatives. These resources include special-status species, aquatic resources, designated critical habitats, protected trees, significant ecological areas, and wildlife movement corridors.

3.7.5.1 Regional Setting

Topography within each of the RSAs is very diverse, ranging from relatively flat high desert habitats in the Antelope Valley to steep mountainous areas within the central portion and generally flat urban landscapes in the San Fernando Valley. This area encompasses a wide variety of climatic conditions. The Antelope Valley generally sees hot, dry summers with relatively cool, wet winters. The regional climate throughout the San Gabriel Mountains consists of considerably cooler winter temperatures and moderate summer temperatures. Snow can fall occasionally at higher elevations. Seasonal rainfall occurs predominantly in the winter and spring months. Compared to the higher-elevation San Gabriel Mountains, the San Fernando Valley experiences higher winter temperatures and more rainfall, and summers are cooler with less rainfall.

There are three major watersheds within the RSA: Antelope Valley Watershed, Santa Clara River Watershed, and Los Angeles River Watershed (described below). Prominent water features within the RSA include the Santa Clara River, Lake Palmdale, Una Lake, Big Tujunga Wash, Aliso Canyon, and Arrastre Canyon. Refer to the Section 3.8, Hydrology and Water Resources, or the *Palmdale to Burbank Project Section: Hydrology and Water Quality Technical Report* (Authority 2017a) for a detailed discussion of hydrologic and climatic conditions throughout the RSA.

- **Antelope Valley Watershed**—The Antelope Valley Watershed encompasses 1,220 square miles within Los Angeles County, 2,006 square miles within Kern County, and 143 square miles within San Bernardino County. This watershed is a closed topographic basin with no outlet to the Pacific Ocean. Streams originating in the mountains and foothills flow across the valley floor and eventually pond in the dry lakes adjacent to the Northern Los Angeles County line (LADWP 2017).
- **Santa Clara River Watershed**—The Santa Clara River Watershed encompasses 786 square miles within Los Angeles County, 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 (County of Los Angeles 2017).
- **Los Angeles River Watershed**—The Los Angeles River Watershed encompasses 834 square miles, all within Los Angeles County. Approximately 56 percent of lands within the Los Angeles River Watershed are developed. Particularly in the San Fernando Valley and southward, the Los Angeles River watershed consists of many paved and channelized waterbodies. The Los Angeles River is lined with concrete along almost its entire length to provide flood control for the increasingly developed region from the 1930s through the 1960s. Pollutants from dense clusters of residential, industrial, and other urban development have impaired water quality in the middle and lower portions of the watershed.

3.7.5.2 **Vegetation Communities and Landcover Types**

Vegetation communities were mapped based on the dominant wildlife habitat types/land use types according to the California Wildlife Habitat Relationships (CWHR) System. Pedestrian surveys conducted within representative areas of the accessible portions of the special-status plant RSA verified vegetation communities.

Table 3.7-4 summarizes the types of vegetation communities between Palmdale and Burbank and lists the acreage of each vegetation community affected by the Build Alternatives within the special-status plant RSA. For a visual depiction of vegetation communities and land cover types within the RSA, please refer to Figure 3.7-5 through Figure 3.7-14. The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) provides vegetation community maps and acreage quantifications for the special-status plant RSA for all six Build Alternatives.

Table 3.7-4 Vegetation Communities within the Special-Status Plant Resource Study Area

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Tree-Dominated Habitats							
Coastal Oak Woodland (COW)	COW occurs within canyons and drainages. The overstory is open to dense and dominated or co-dominated by coast live oak with deciduous and evergreen hardwoods and some scattered conifers. The understory is composed of shrubs from adjacent chaparral or coastal scrub that are scattered under and between trees. Where trees form a closed canopy, the understory varies from a lush cover of shade-tolerant shrubs, ferns, and herbs to sparse cover with a thick carpet of litter. Scattered areas of COW exist southwest of the Agua Dulce Canyon Road (Refined SR14/SR14A), within Arrastre Canyon (E1/E1A/E2/E2A), and within the ANF along Little Tujunga Canyon Road (all six Build Alternatives).	1 – 47	1 – 47	26 – 46	26 – 46	3 – 11	3 – 11
Juniper (JUN)	JUN is mostly open woodland of arborescent shrubs up to 30 feet tall that occupy ridges and slopes, alluvial fans, and valley bottoms on porous soils in the mountains on desert-facing slopes. California juniper is dominant or codominant with Tucker oak (<i>Quercus john-tuckeri</i>). Joshua tree may be present at low cover, and there is often a shrub layer composed of Mojave Desert California buckwheat (<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>), Nevada ephedra (<i>Ephedra nevadensis</i>), and other shrub species. The herbaceous layer is sparse. JUN communities occur throughout Palmdale (all six Build Alternatives), between the California Aqueduct and Soledad Canyon (Refined SR14/SR14A), and between Palmdale and Arrastre Canyon (E1/E1A/E2/E2A).	210	215	456	400	455	400
Montane hardwood-conifer (MHC) ²	MHC is a semi-closed forest up to 200 feet tall that occupies deep canyons and hillsides on north-facing slopes in the central portion of the San Gabriel Mountains. Bigcone Douglas fir (<i>Pseudotsuga macrocarpa</i>) is dominant or codominant with canyon live oak (<i>Quercus chrysolepis</i>) and coast live oak. The shrub layer is open and consists of hoar leaf ceanothus (<i>Ceanothus crassifolius</i>), scrub oak (<i>Quercus</i> sp.), chamise (<i>Adenostoma fasciculatum</i>), big-berry manzanita (<i>Arctostaphylos glauca</i>), and other shrubs. The herbaceous layer is sparse. MHC communities occur within ANF along Little Tujunga Canyon Road (Refined SR14/SR14A/E1/E1A).	0	0	0	0	0	0

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Valley foothill riparian (VRI)	VRI is an open dense riparian forest, up to 100 feet tall, that occupies gravelly or rocky soils in canyons, intermittent streams, and floodplains. Fremont cottonwood (<i>Populus fremontii</i>) is dominant or codominant with California sycamore (<i>Platanus 3.7-34acemose</i>), Goodding's black willow (<i>Salix gooddingii</i>), and arroyo willow (<i>Salix lasiolepis</i>). The shrub layer is open to dense and includes mule fat (<i>Baccharis salicifolia</i>), blue elderberry (<i>Sambucus nigra ssp. Caerulea</i>), tarragon (<i>Artemisia dracunculus</i>), and poison oak (<i>Toxicodendron diversilobum</i>). The herbaceous layer is highly variable. VRI occurs throughout the six RSAs: near Lake Palmdale and Una Lake (Refined SR14/E1/E2), between Big Springs Road and Soledad Canyon (Refined SR14/SR14A), south of Pacoima Dam (Refined SR14/SR14A), within Aliso Canyon and Arrastre Canyon (E1/E1A/E2/E2A), within the Big Tujunga Wash (E2/E2A), and along Little Tujunga Canyon Road (E2/E2A).	41 – 48	9 – 16	14	6	23 – 29	14 – 21
Shrub-Dominated Habitats							
Chamise-redshank chaparral (CRC)	CRC consists of nearly pure stands of chamise or redshank, a mixture of both, or a combination with other shrubs. Chamise-redshank chaparral tends to occur on xeric, south-facing slopes with ceanothus (<i>Ceanothus sp.</i>), manzanita (<i>Arctostaphylos sp.</i>), scrub oak (<i>Quercus sp.</i>), and laurel sumac (<i>Malosma laurina</i>). Scattered areas of CRC occur west of the SR 14/Aqua Dulce Canyon Road interchange (Refined SR14/SR14A), and immediately north of the Santa Clara River crossing in Soledad Canyon (Refined SR14/SR14A). CRC communities exist along Aliso Canyon (E1/E1A/E2/E2A) and Little Tujunga Canyon Road (E1/E1A/E2/E2A).	48 – 61	3 – 16	14	14	2	2

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Coastal scrub (CSC)	CSC is open shrubland up to 3 feet tall that occupies well-drained soils on slopes and along drainages and washes. California buckwheat is dominant or codominant in the cismontane stands with coastal sagebrush (<i>Artemisia californica</i>) and deerweed (<i>Acmispon glaber</i>). Transmontane stands include white bur sage, big sagebrush, creosote, and bladder sage (<i>Scutellaria acemose</i>). Emergent trees may be present at low cover, including California juniper and Joshua tree. The herbaceous layer is highly variable. CSC is a common vegetation community between the California Aqueduct and Vulcan Mine, especially within Soledad Canyon (Refined SR14/SR14A). CSC also exists south of Pacoima Dam (Refined SR14/SR14A), north of the Interstate (I-)210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), near the Big Tujunga Wash crossing (E2/E2A), along Little Tujunga Canyon Road (E2/E2A), and east of the CalMat Mine disposal site (E2/E2A).	313 – 337	275 – 299	5 – 6	5 – 6	66	66
Desert scrub (DSC)	DSC is an open shrubland up to 6 feet tall that occupies well-drained soils in valleys and gentle slopes. Rubber rabbitbrush (<i>Ericameria nauseosa</i>) or Creosote bush is generally dominant, with white bur sage, allscale saltbush (<i>Atriplex polycarpa</i>), Nevada ephedra, Anderson's desert-thorn (<i>Lycium andersonii</i>), and other desert shrub species. The herbaceous layer is sparse or of nonnative grasses. Several areas of DSC exist between Palmdale and the California Aqueduct (all six Build Alternatives), along the SR 14 freeway corridor between the California Aqueduct and Vulcan Mine (Refined SR14/SR14A) and between the California Aqueduct and Aliso Canyon (E1/E1A/E2/E2A).	101	83	166	130	166	130

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Desert wash (DSW)	Desert wash is an open riparian shrubland up to 4 feet tall that occupies washes and drainages. Scalebroom (<i>Lepidospartum squamatum</i>) is dominant or codominant with mule fat, big sagebrush, and/or rubber rabbitbrush. The herbaceous layer is variable and may be grassy. Areas of DSW exist at the Refined SR14 crossing of the Santa Clara River in Soledad Canyon, within Aliso Canyon and Arrastre Canyon (E1/E1A/E2/E2A), within the Big Tujunga Wash (E2/E2A), and along Little Tujunga Canyon Road (E2/E2A).	2	5	0	0	1	1
Sagebrush (SGB)	SGB is an open shrubland up to 4 feet tall that occupies shallow soils on slopes, valley bottoms, and along intermittent drainages. Big sagebrush (<i>Artemisia tridentata</i>) is dominant in the shrub layer or codominant along with allscale saltbush, rubber rabbitbrush (<i>Ericameria nauseosa</i>), and Mojave Desert California buckwheat or other low shrub species. The herbaceous layer is sparse to intermittent and grassy. SGB communities exist north of Avenue Q (all six Build Alternatives), near the proposed SR 14 overcrossing (Refined SR14), north of the Vincent Substation (E1/E1A/E2/E2A), and west of Arrastre Canyon along Arrastre Canyon Road (E1/E1A/E2/E2A).	15	15	61	10	61	10
Mixed chaparral (MCH)	MCH is an open shrubland up to 15 feet tall that occupies slopes and ridgetops on well-drained soils in the eastern portion of the special-status plant RSA. Tucker oak is dominant or codominant with California juniper, California buckwheat, interior goldenbush (<i>Ericameria linearifolia</i>), rubber rabbitbrush, and other shrub species. The herbaceous layer is intermittent to sparse. MCH communities occur north of Soledad Canyon (Refined SR14/SR14A), within Aliso Canyon (E1/E1A/E2/E2A), and along Little Tujunga Canyon Road within the ANF (all six Build Alternatives).	228 – 242	126 – 141	18 – 21	18 – 21	27 – 43	27 – 43

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Montane chaparral (MCP) ²	MCP is a densely vegetated chaparral community up to 9 feet tall that occupies ridges and slopes within mountainous areas. MCP is characterized by evergreen species; however, deciduous, or partially deciduous species may also be present. Understory vegetation in the mature chaparral is largely absent. Conifer and oak trees may occur in sparse stands or as scattered individuals within the chaparral type. Characteristic species include hoaryleaf ceanothus (<i>Ceanothus crassifolius</i>), Eastwood manzanita (<i>Arctostaphylos glandulosa</i> ssp. <i>Glandulosa</i>), big-berry manzanita (<i>Arctostaphylos glauca</i>), mountain mahogany (<i>Cercocarpus betuloides</i>), chamise (<i>Adenostoma fasciculatum</i>), scrub oak (<i>Quercus</i> sp.). Occasional associates include canyon live oak (<i>Quercus chrysolepis</i>) and bigcone Douglas fir (<i>Pseudotsuga macrocarpa</i>). MCP communities exist south of Aliso Canyon (E1/E1A/E2/E2A).	0	0	0	0	0	0
Herbaceous Habitats							
Annual grassland (AGS)	AGS is an herbaceous community typical of disturbed areas that lack shrubland or woodland vegetation. Nonnative forbs, black mustard (<i>Brassica nigra</i>), Saharan mustard (<i>Brassica tournefortii</i>), short pod mustard (<i>Hirschfeldia incana</i>), Russian thistle (<i>Salsola tragus</i>), tall tumbleweed mustards (<i>Sisymbrium</i> spp.), and annual grasses such as bromes (<i>Bromus</i> spp.), oats (<i>Avena</i> spp.), schismus (<i>Schismus</i> spp.), and mouse barley (<i>Hordeum murinum</i>) are typically dominant or codominant. Depending on the severity and frequency of soil disturbance, these areas can contain a significant number of native forbs. Scattered AGS exists within the Palmdale area (all six Build Alternatives), Soledad Canyon (Refined SR14/SR14A), the Boulevard Mine disposal site area (Refined SR14/SR14A/E1/E1A), and Big Tujunga Wash (E2/E2A).	30	45	15	8	15	8
Other Land Cover Types							
Barren (BAR)	BAR habitat is defined by the absence of vegetation. Any habitat with less than 2 percent of total vegetation cover is defined as barren. Most areas defined as barren have been previously disturbed by human activities. Barren landcover exists throughout the six RSAs, most extensively in the urbanized areas of Palmdale.	19	16	7	8	7	8

CWHR Label	Description and Location within the Core Habitat RSA	Affected Acreage within the Special-Status Plant RSA ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Deciduous orchard/vineyard (DOR/VIN)	DOR/VIN represents agricultural land used for growing fruit or nut trees or vine crops. DOR/VIN communities exist in Palmdale (all six Build Alternatives) and Aliso Canyon (E1/E1A/E2/E2A).	0	1	20	21	20	21
Lacustrine (LAC)	LAC habitats are areas of open water and include freshwater ponds, lakes, and canals that are inundated by natural or artificial means. Lacustrine habitats also include vernal pools. Lacustrine habitat occurs in the eastern portion of the special-status plant RSA. These features may hold water year-round in wet years but may be dry in other years. Concrete-lined ponds without vegetation are mapped as urban. Lacustrine habitats are largely unvegetated, but marsh or riparian plants such as cattail (<i>Typha spp.</i>) or willows may grow in shallower parts of the water. LAC communities exist within Lake Palmdale, Una Lake, and the California Aqueduct (Refined SR14/E1/E2) The SR14A, E1A, and E2A Build Alternative alignments would not encounter LAC habitats.	12	0	14	0	14	0
Riverine (RIV)	RIV habitat consists of or intermittent or continually running water rivers and streams. Riverine habitats can occur in association with many terrestrial habitats. Riparian habitats are found adjacent to many rivers and streams. However, RIV communities do not exist within the RSA.	0	0	0	0	0	0
Urban (URB)	URB areas, such as buildings, mines, ornamental plantings, paved or graveled roads, and parking lots occur throughout the study area. This category also includes ornamental vegetation and undeveloped areas, such as residential yards and horse pens. Urban landcover is extensive throughout the six RSAs in development areas, semi-developed suburbs, and along roadway and other human infrastructure corridors; especially in the cities of Palmdale, Burbank, and Los Angeles.	877 – 896	776 – 794	764 – 773	707 – 716	559 – 560	503

Source: Authority, 2019a

¹ Acreage calculations include the range of affected vegetation communities under optional adit and intermediate window selection scenarios.

² Although these vegetation communities would not be directly affected, they are located within the core habitat RSA and are therefore included for indirect impact calculations for those special-status wildlife species that have the potential to occur with these vegetation communities.

AGS = annual grassland; ANF = Angeles National Forest; BAR = barren; COW = coastal oak woodland; CRC = chamise-redshank chaparral; CSC = coastal scrub; CWHR = California Wildlife Habitat Relationship System; DOR/VIN = deciduous orchard/vineyard; DSC = desert scrub; DSW = desert wash; JUN = juniper; LAC = lacustrine; MCH = mixed chaparral; MCP = montane chaparral; MHC = montane hardwood-conifer; RSA = resource study area; SGB = sagebrush; SR = State Route; SWA = supplemental work area; URB = urban; VRI = valley foothill riparian

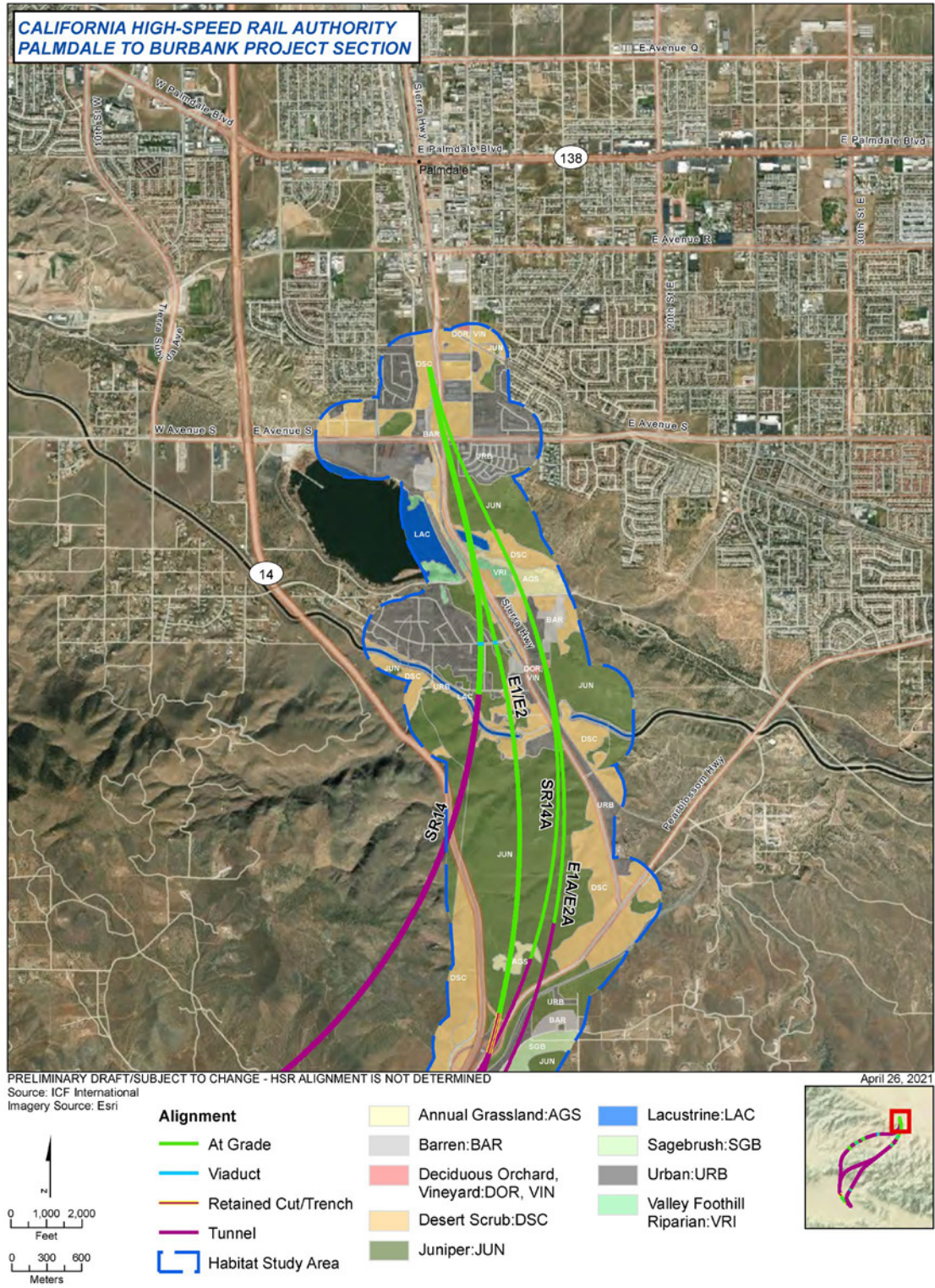


Figure 3.7-5 Vegetation Communities and Land Cover Types (Map 1 of 10)

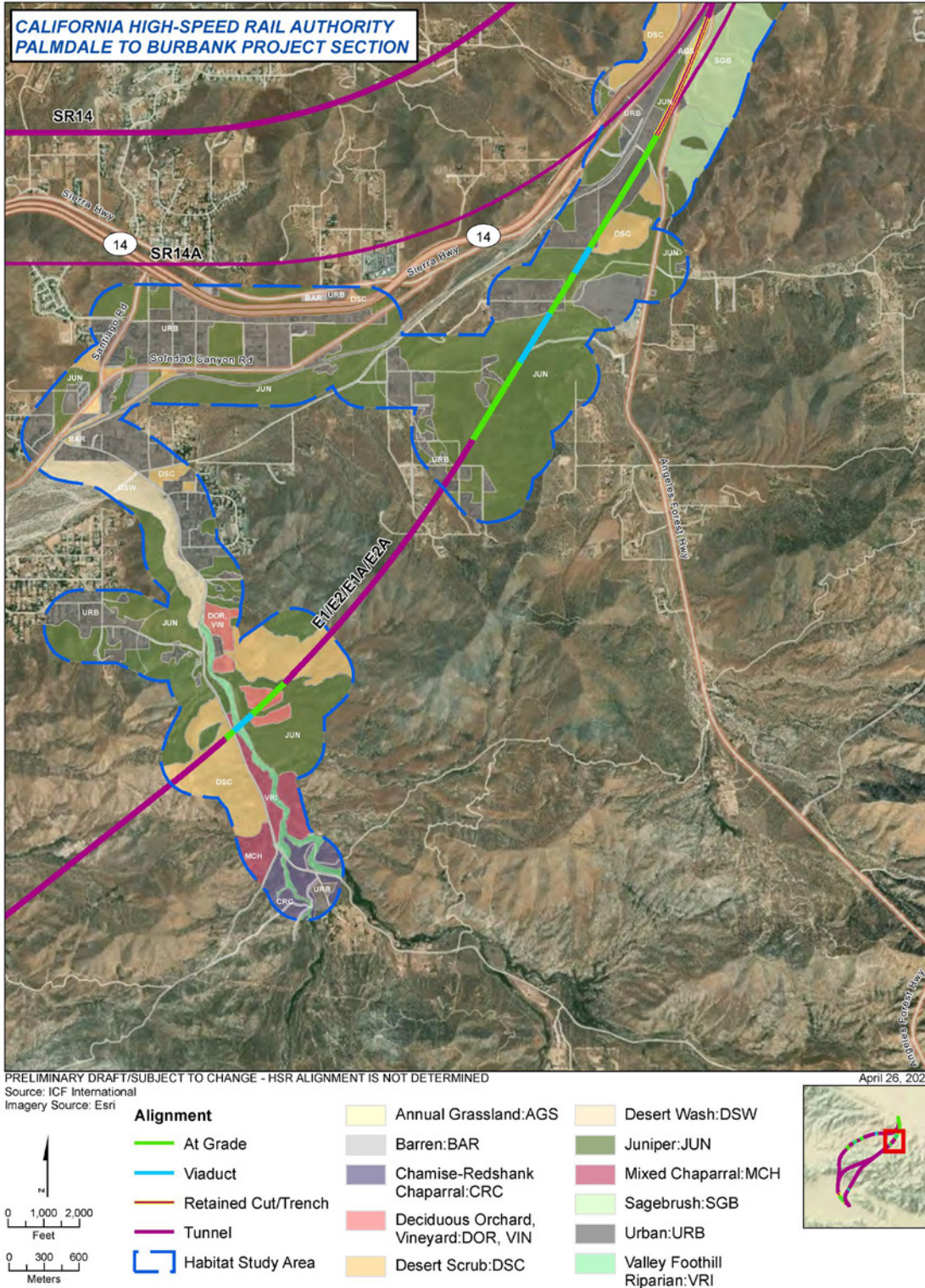


Figure 3.7-6 Vegetation Communities and Land Cover Types (Map 2 of 10)

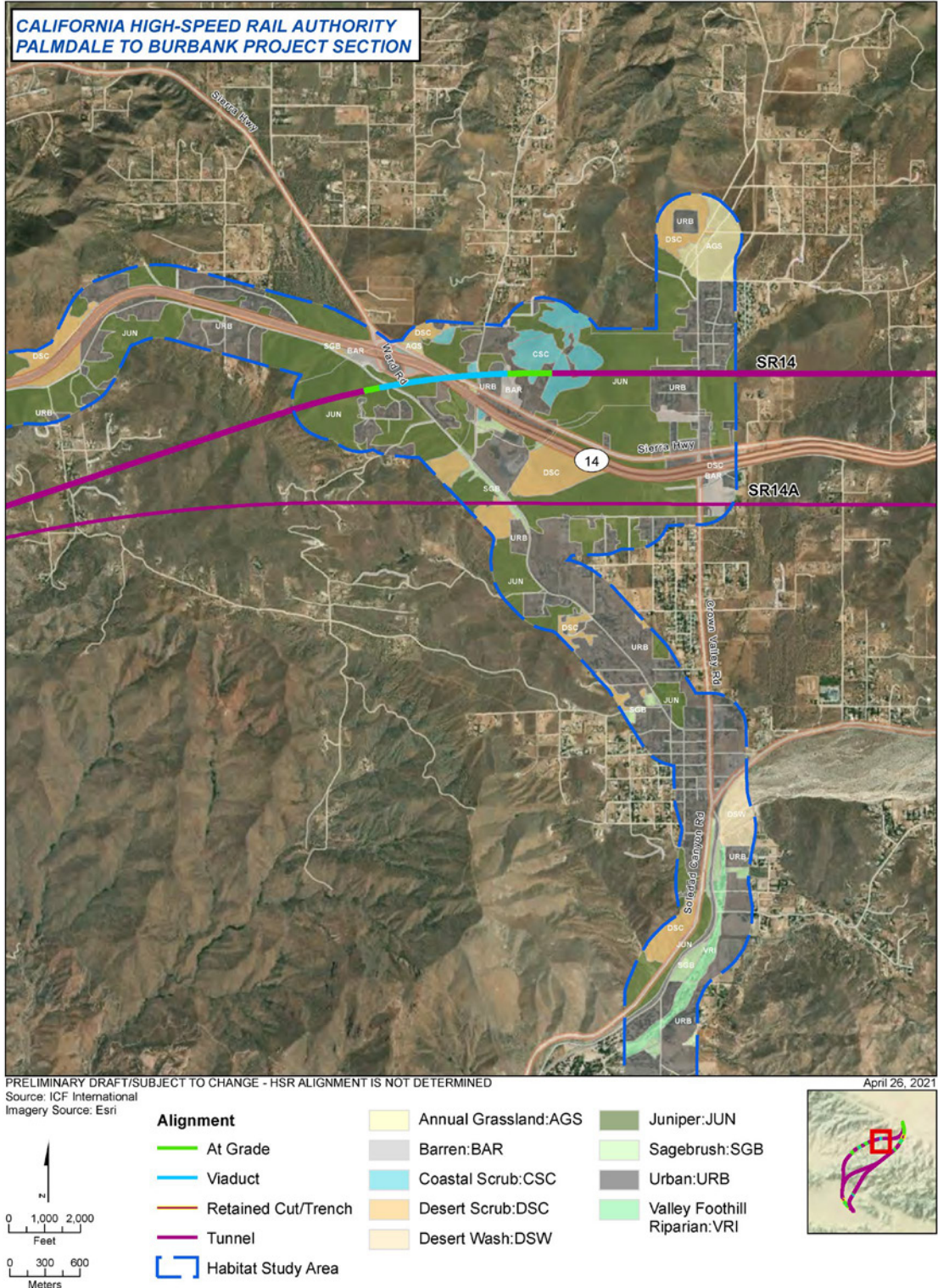


Figure 3.7-7 Vegetation Communities and Land Cover Types (Map 3 of 10)



Figure 3.7-8 Vegetation Communities and Land Cover Types (Map 4 of 10)

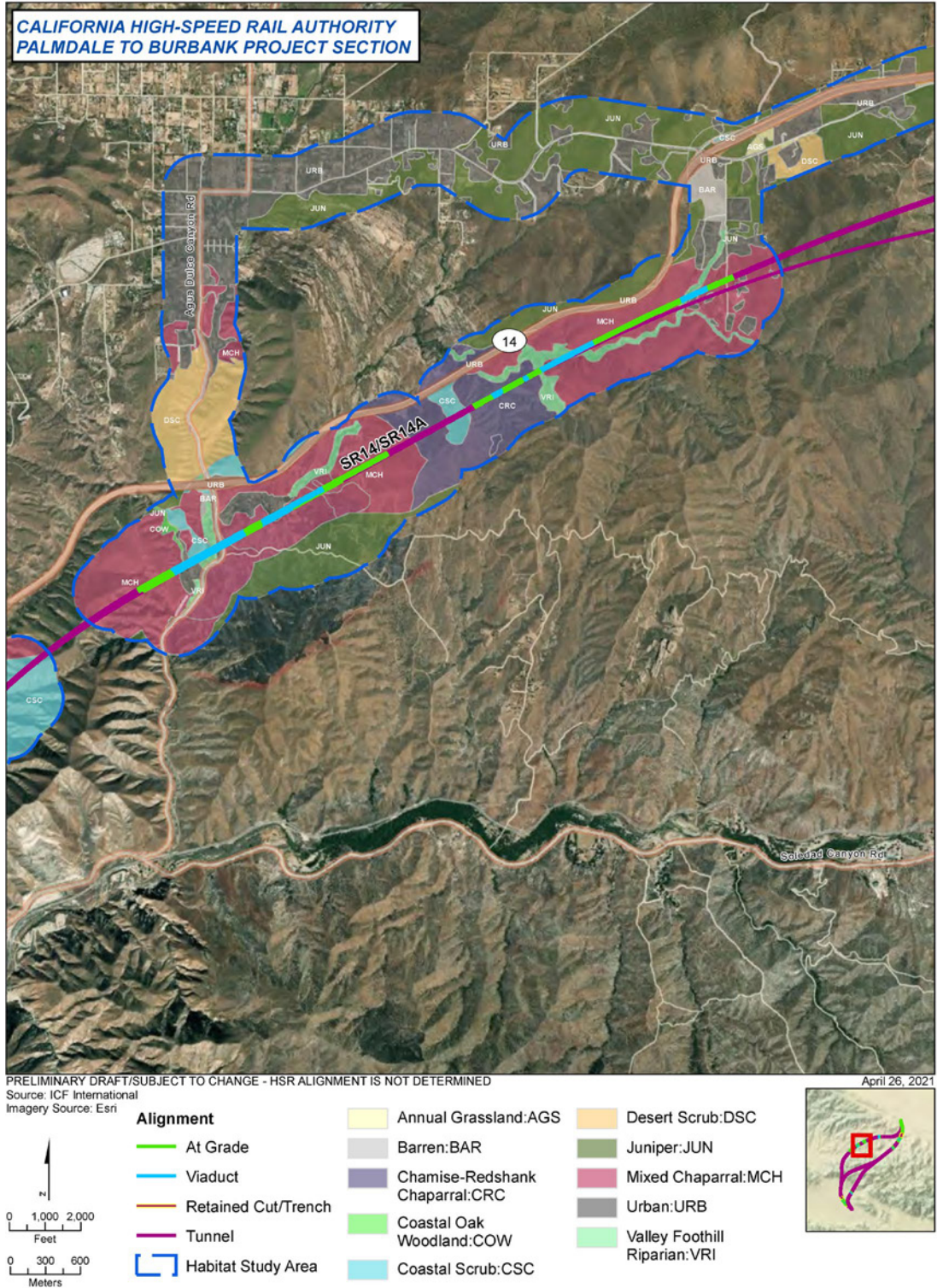


Figure 3.7-9 Vegetation Communities and Land Cover Types (Map 5 of 10)

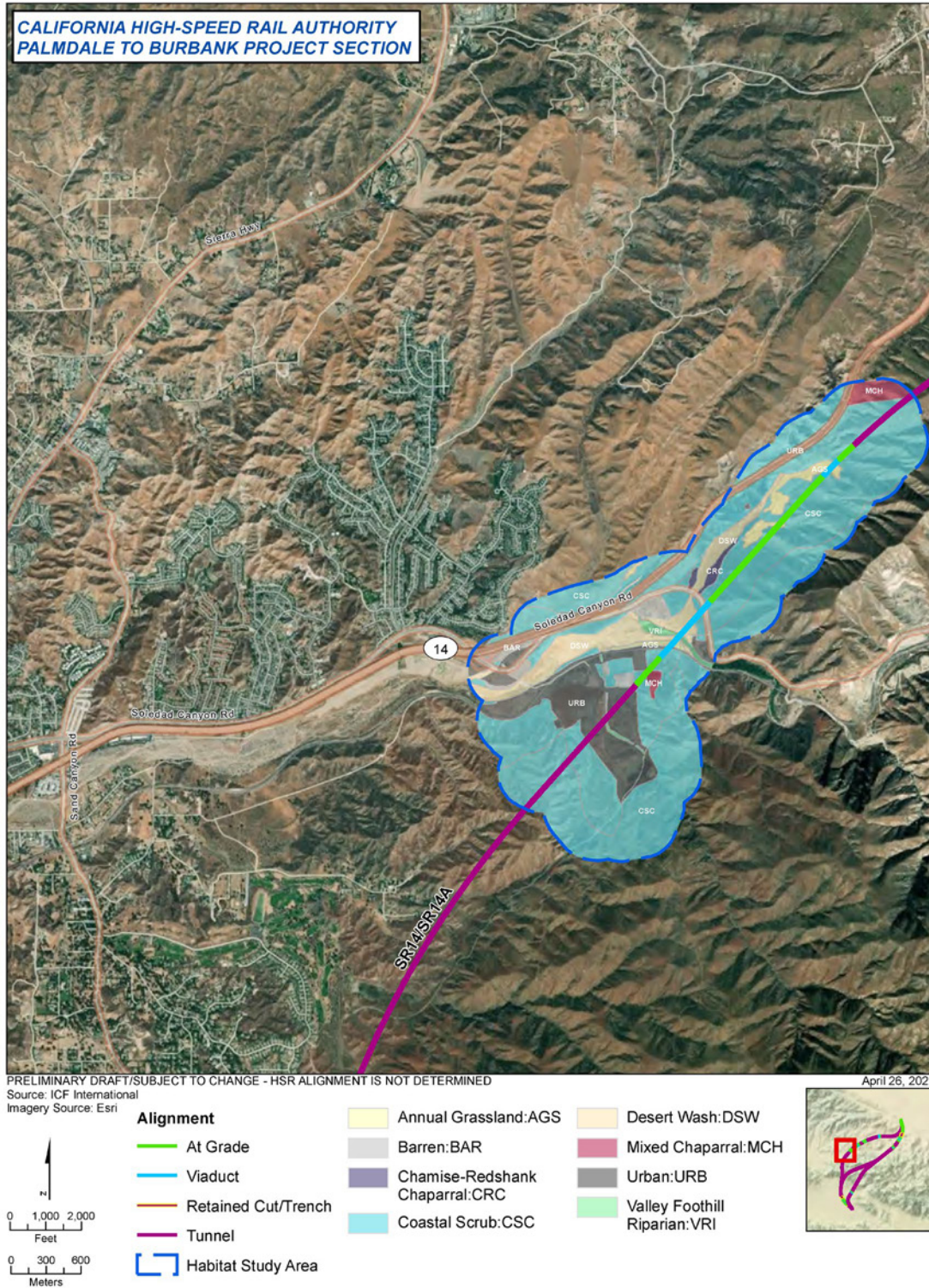


Figure 3.7-10 Vegetation Communities and Land Cover Types (Map 6 of 10)

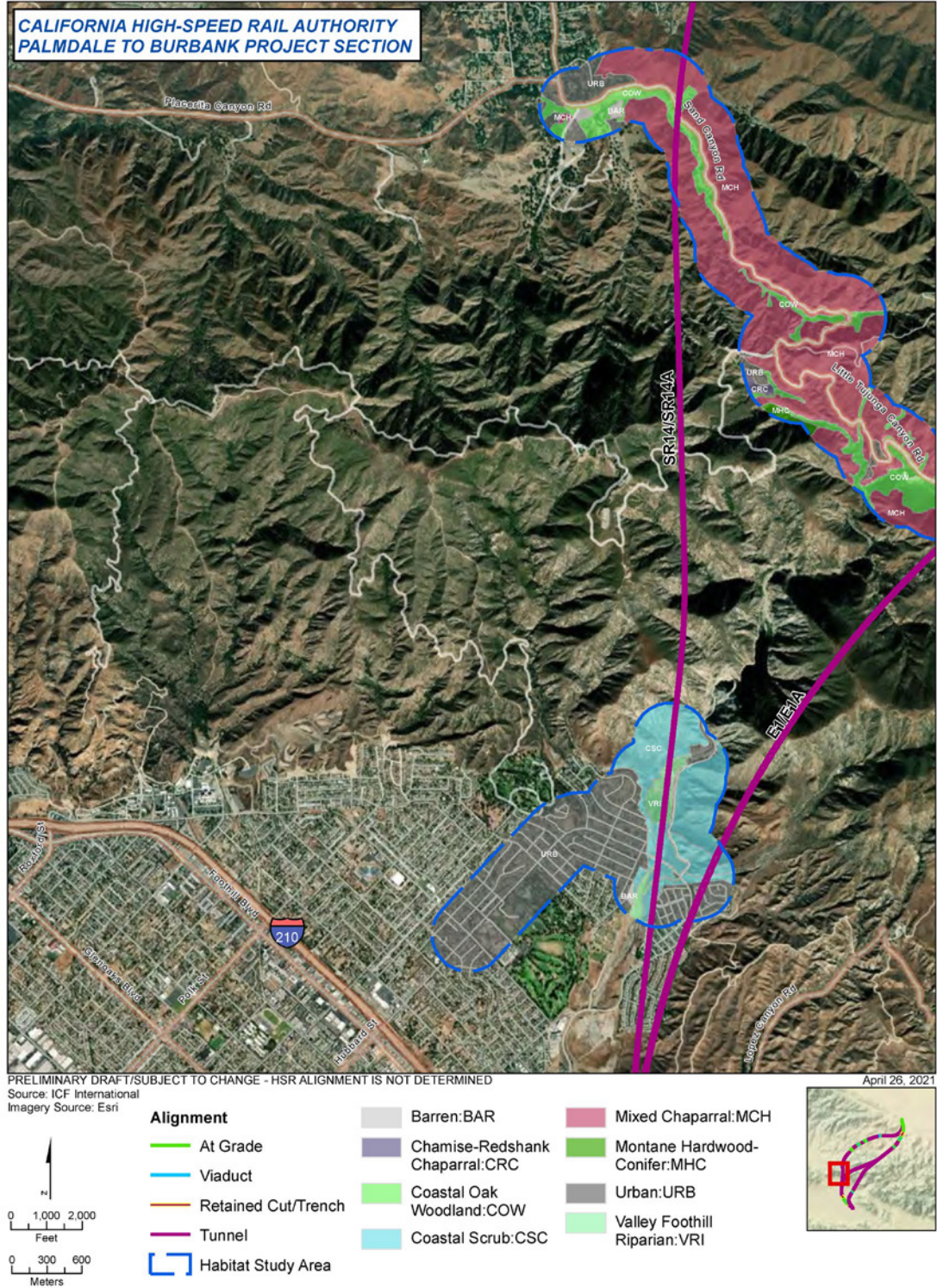


Figure 3.7-11 Vegetation Communities and Land Cover Types (Map 7 of 10)

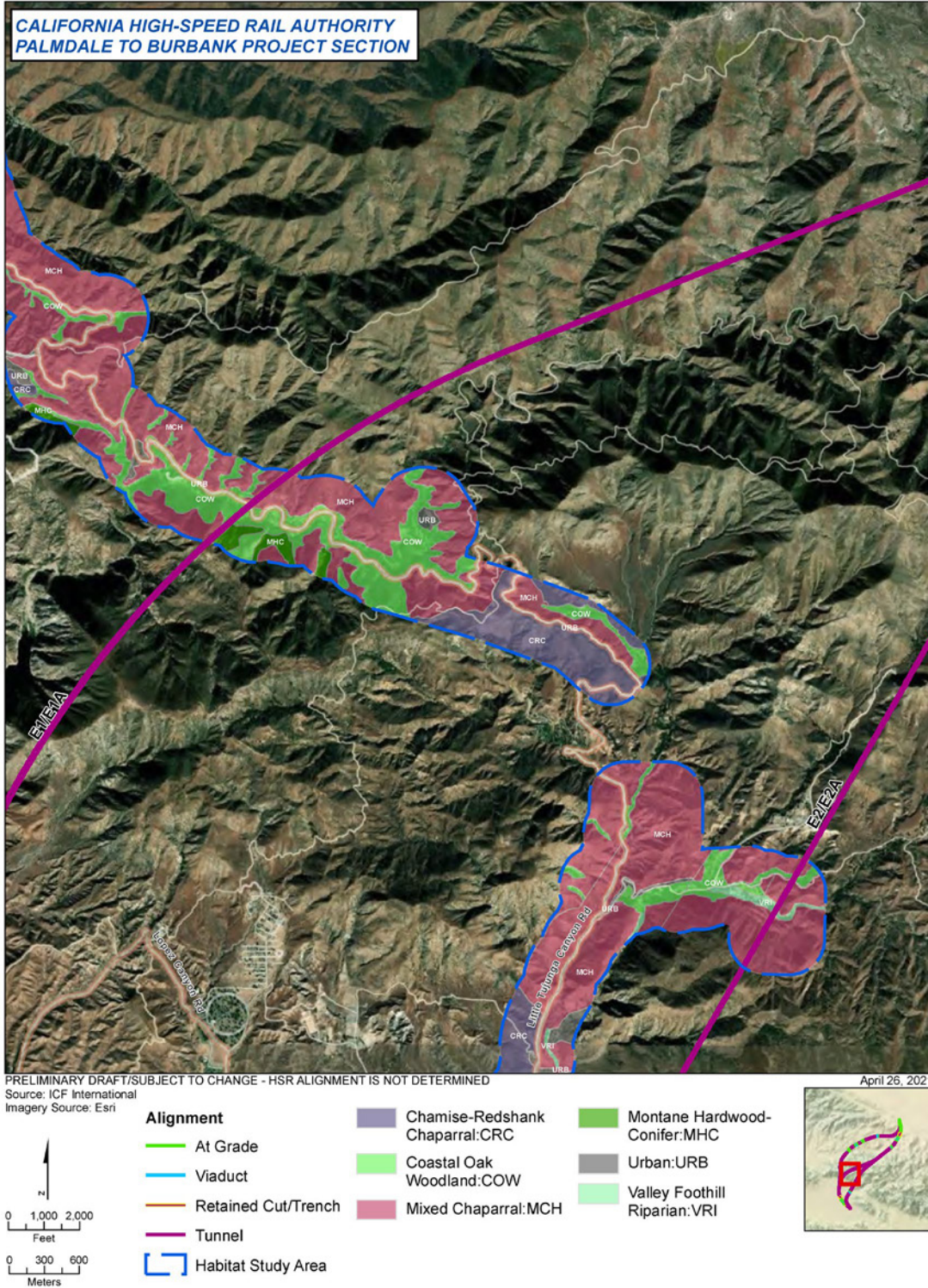


Figure 3.7-12 Vegetation Communities and Land Cover Types (Map 8 of 10)

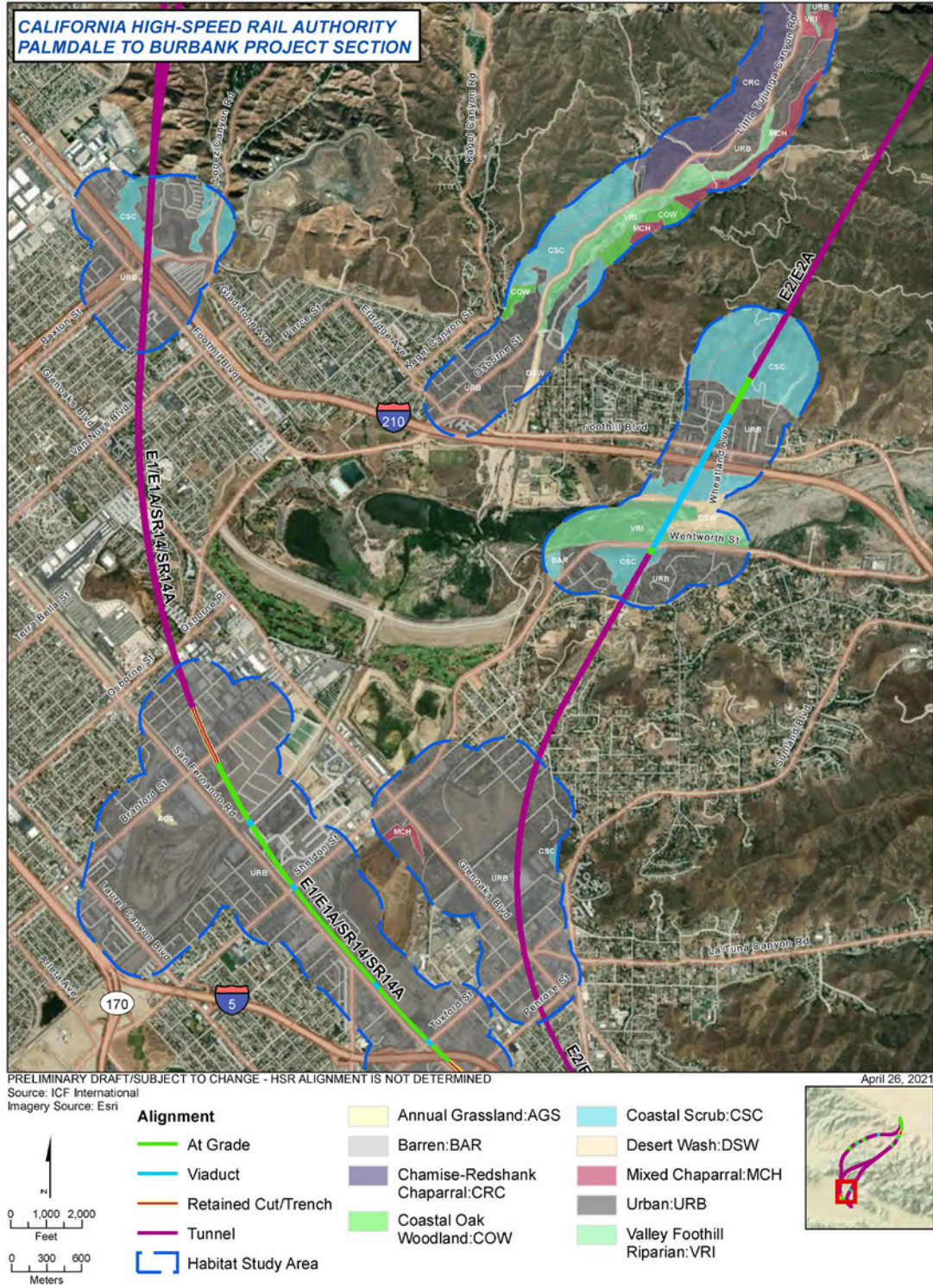


Figure 3.7-13 Vegetation Communities and Land Cover Types (Map 9 of 10)

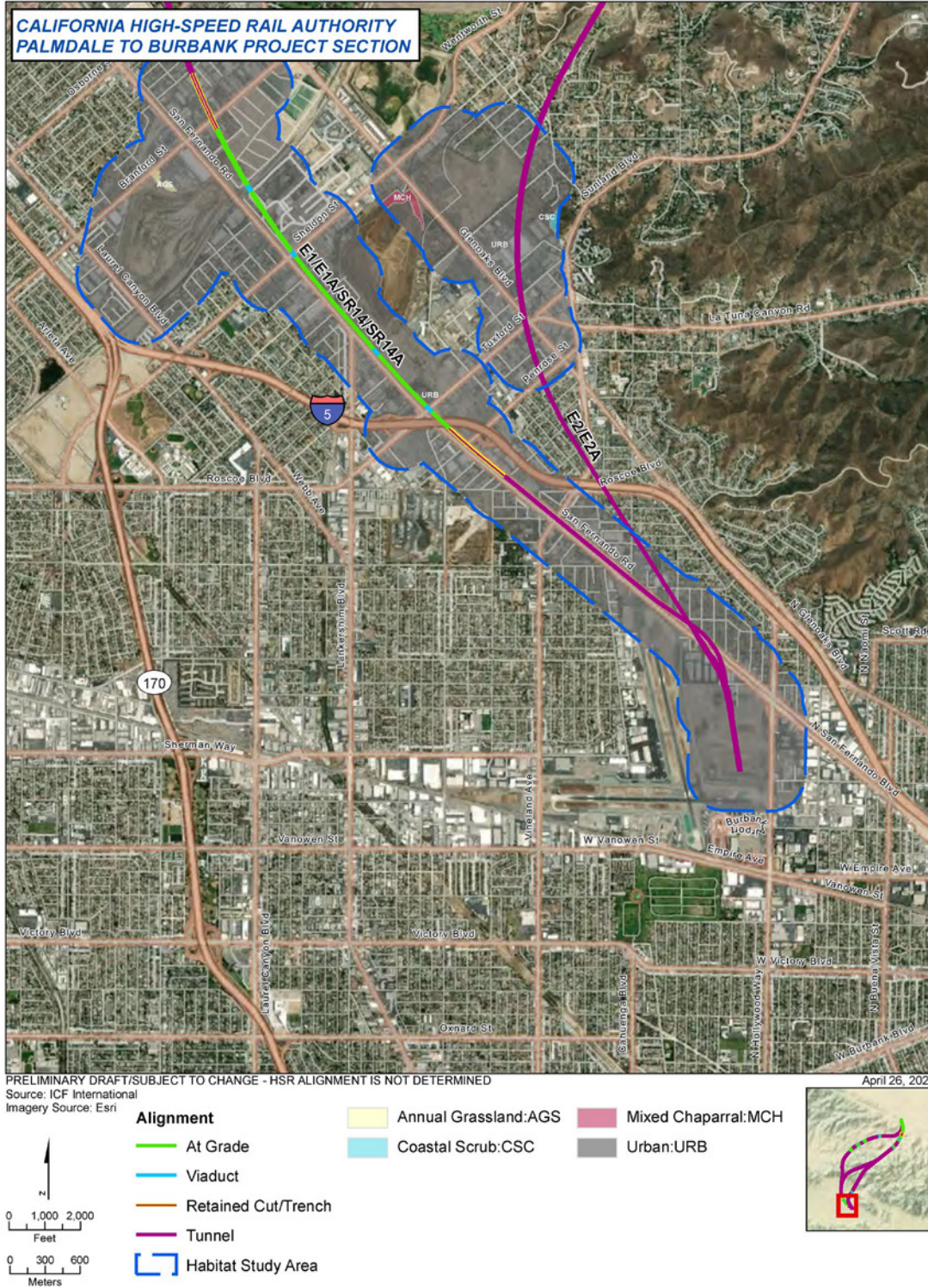


Figure 3.7-14 Vegetation Communities and Land Cover Types (Map 10 of 10)

3.7.5.3 *Special-Status Plant Species*

Background literature review identified 98 special-status plant species with low to high potential to occur within the Refined SR14, SR14A, E1, E1A, E2, and E2A special-status plant RSAs, based on the species range, known occurrences, and presence of potential habitat. Of these, 62 species were removed from consideration because of their low potential to occur within the special-status plant RSA as a result of lack of suitable habitat. The remaining 44 special-status plant species have a moderate or high potential to occur in the special-status plant RSA. These species have the following federal, state, and CRPR status:

Federal Status

- USFWS-designated federally endangered (FE) species, representing species in danger of extinction
- USFWS-designated federally threatened (FT) species, representing species likely to become endangered
- USFS-designated Forest Service sensitive (FSS) species, representing species for which population viability is a concern on regional National Forest Service lands
- BLM-designated sensitive (BLMS) species, representing species that meet a variety of criteria including occurrence on BLM public lands and risk for extirpation

State Status

- CDFW-designated state endangered (SE) species, representing a native species in danger of extinction.
- CDFW-designated state candidate for listing (SC), representing species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species, or a species for which a notice of proposed regulation to add the species to either list has been published.
- CRPR-designated rare plants, including:
 - 1A—Plants presumed extirpated in California and either rare or extinct elsewhere
 - 1B—Plants rare, threatened, or endangered in California and elsewhere
 - 2A—Plants presumed extirpated in California but common elsewhere
 - 2B—Plants rare, threatened, or endangered in California but more common elsewhere.
 - 3—Plants about which more information is needed
- CRPR-designated Threat Code extensions, which designates the level of threat by a 0.1 to 0.3 ranking with 0.1 being the most threatened and 0.3 being the least threatened. Threat ranks are:
 - 0.1—Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
 - 0.2—Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat)
 - 0.3—Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Table 3.7-5 summarizes special-status plants within each of the six Build Alternative special-status plant RSAs; protection status; and suitable CWHR vegetation communities within the special-status plant RSA. FESA-listed species are those that are designated as FE and FT by USFWS. Non-FESA listed species account for the remainder of analyzed special-status species. Figure 3.7-5 through Figure 3.7-14 depict the vegetation communities that support special-status

plant species. For FESA-listed plants within the RSA, Figure 3.7-15 through Figure 3.7-17 depict Braunton's milk-vetch, Nevin's barberry, and slender-horned spineflower habitat. Known habitat for FESA-listed species is described below:

- Braunton's milk-vetch: Between the Pacific Crest Trail and Vulcan Mine (Refined SR14/SR14A), within ANF along the SR 14/Little Tujunga Canyon Road interchange (Refined SR14/SR14A/E1/E1A) and Gold Creek Road (E2/E2A), between Pacoima Dam and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), on either side of the Big Tujunga Wash crossing (E2/E2A), and within the Boulevard Mine (Refined SR14/SR14A/E1/E1A) and CalMat Mine (E2/E2A) disposal sites
- Nevin's barberry: Near Escondido Canyon Road north of SR 14 (Refined SR14), between Big Springs Road and Vulcan Mine (Refined SR14/SR14A), within ANF along Little Tujunga Canyon Road (all six Build Alternatives) and Gold Creek Road (E2/E2A), between Pacoima Dam and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and within the Boulevard Mine (Refined SR14/SR14A/E1/E1A) and CalMat Mine disposal sites (E2/E2A)
- Slender-horned spineflower: Between the Pacific Crest Trail and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), within the ANF along Little Tujunga Canyon Road (E1/E1A/E2/E2A) and Gold Creek Road (E2/E2A), and within the Big Tujunga Wash area (E2/E2A)

The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) provides a detailed ecological description of each special-status plant species with potential to occur within the special-status plant RSA.

Table 3.7-5 Special-Status Plants within the Special-Status Plant Resource Study Areas

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ²
		Federal	State	CRPR	
FESA-Listed Special-Status Plants					
Braunton's milk-vetch	<i>Astragalus brauntonii</i>	FE/FSS	--	1B.1	AGS, BAR, CSC
Nevin's barberry	<i>Berberis nevinii</i>	FE/FSS	--	1B.1	CRC, MCH, CSC, MCH, VRI
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	FE/FSS	--	1B.1	AGS, CRC, MCH, CSC
Non-FESA-Listed Special-Status Plants					
California androsace	<i>Androsace acemose</i> ssp. <i>Acuta</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, JUN, AGS
California satintail	<i>Imperata brevifolia</i>	--	--	2B.1	CRC, MCH, CSC, DSW, DSC, VRI
California spineflower	<i>Mucronea californica</i>	--	--	4.2	CRC, MCH, COW, CSC, AGS
Chaparral ragwort	<i>Senecio aphanactis</i>	--	--	2B.2	CSC, CRC, MCH, VRI
Chickweed starry puncturebract	<i>Sidothea caryophylloides</i>	FSS	--	4.3	MCH
Clokey's cryptantha	<i>Cryptantha clokeyi</i>	BLMS	--	1B.2	DSC
Club-haired mariposa lily	<i>Calochortus clavatus</i> var. <i>clavatus</i>	--	--	4.3	CRC, MCH, CSC, COW, MHC, AGS
Davidson's bush-mallow	<i>Malacothamnus davidsonii</i>	--	--	1B.2	CRC, MCH, COW, CSC, VRI
Fragrant pitcher sage	<i>Lepechinia fragrans</i>	--	--	4.2	CRC, MCH
Forest camp sandwort	<i>Eremogone macradenia</i> var. <i>arcuifolia</i>	FSS	--	--	MCH
Greata's aster	<i>Symphotrichium greatae</i>	BLMS	--	1B.3	MHC, CRC, MCH, COW, VRI
Lemon lily	<i>Lilium parryi</i>	--	--	1B.2	COW, MHC, VRI
Lemon's syntrichopappus	<i>Syntrichopappus lemmonii</i>	--	--	4.3	CRC, MCH, JUN
Mason's neststraw	<i>Stylocline masonii</i>	--	--	1B.1	JUN

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ²
		Federal	State	CRPR	
Mesa horkelia	<i>Horkelia cuneata</i> var. <i>puberula</i>	--	--	1B.1	MCH, COW, MHC, CSC
Mojave paintbrush	<i>Castilleja plagiotoma</i>	--	--	4.3	SGB, MHC, JUN
Mojave tarplant	<i>Deinandra mohavensis</i>	--	--	1B.3	CRC, MCH, CSC, VRI, DSW
Mt. Gleason's paintbrush	<i>Castilleja gleasonii</i>	--	--	1B.2	CRC, MCH, MHC, JUN
Ocellated lily	<i>Lilium humboldtii</i> ssp. <i>Ocellatum</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, VRI
Parry's spineflower	<i>Chorizanthe parryi</i> var. <i>parryi</i>	--	--	1B.1	CRC, MCH, CSC, COW, MHC, AGS
Peirson's morning-glory	<i>Calystegia peirsonii</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, AGS
Piute Mountains navarretia	<i>Navarretia setiloba</i>	BLMS	--	1B.1	COW, JUN, AGS
Plummer's mariposa lily	<i>Calochortus plummerae</i>	--	--	4.2	CRC, MCH, MHC
Pygmy poppy	<i>Canbya candida</i>	--	--	4.2	DSC, SGB, JUN
Rigid fringedpod	<i>Thysanocarpus rigidus</i>	--	--	1B.2	JUN
Robbins' nemacladus	<i>Nemacladus secundifloris</i> var. <i>robbinsii</i>	--	--	1B.2	CRC, MCH, AGS
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	--	--	4.3	CRC, MCH, CSC
Rock monardella	<i>Monardella saxicola</i>	FSS	--	4.2	CRC, MCH, MHC
Sagebrush loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	BLMS	--	2B.2	DSC
Salt spring checkerbloom	<i>Sidalcea neomexicana</i>	FSS	--	2B.2	CRC, MCH, CSC, MHC, DSC
San Bernardino aster	<i>Symphotrichum defoliatum</i>	BLMS/ FSS	--	1B.2	COW, MHC, CSC, AGS
San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>Fernandina</i>	FSS	SE	1B.1	CSC, AGS

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ²
		Federal	State	CRPR	
San Gabriel bedstraw	<i>Galium grande</i>	BLMS/ FSS	--	1B.2	CRC, MCH, COW, MHC
San Gabriel manzanita	<i>Arctostaphylos glandulosa</i> ssp. <i>Gabrielensis</i>	FSS	--	1B.2	CRC, MCH
Short-joint beavertail	<i>Opuntia basilaris</i> var. <i>brachyclada</i>	BLMS/ FSS	--	1B.2	CRC, MCH, DSC, JUN
Slender mariposa lily	<i>Calochortus clavatus</i> var. <i>gracilis</i>	FSS	--	1B.2	CRC, MCH, CSC, AGS
Sonoran maiden fern	<i>Thelypteris puberula</i> var. <i>sonorensis</i>	FSS	--	2B.2	LAC
Southern California black walnut	<i>Juglans californica</i>	FSS	--	4.2	CRC, MCH, COW, MHC, CSC
Southern tarplant	<i>Centromadia parryi</i> ssp. <i>Australis</i>	--	--	1B.1	CRC, MCH, COW, MHC, CSC
Urn-flowered alumroot	<i>Heuchera caespitosa</i>	FSS	--	4.3	MRI, CSC, MHC
White rabbit-tobacco	<i>Pseudognaphalium leucocephalum</i>	--	--	2B.2	CRC, MCH, COW, CSC, VRI

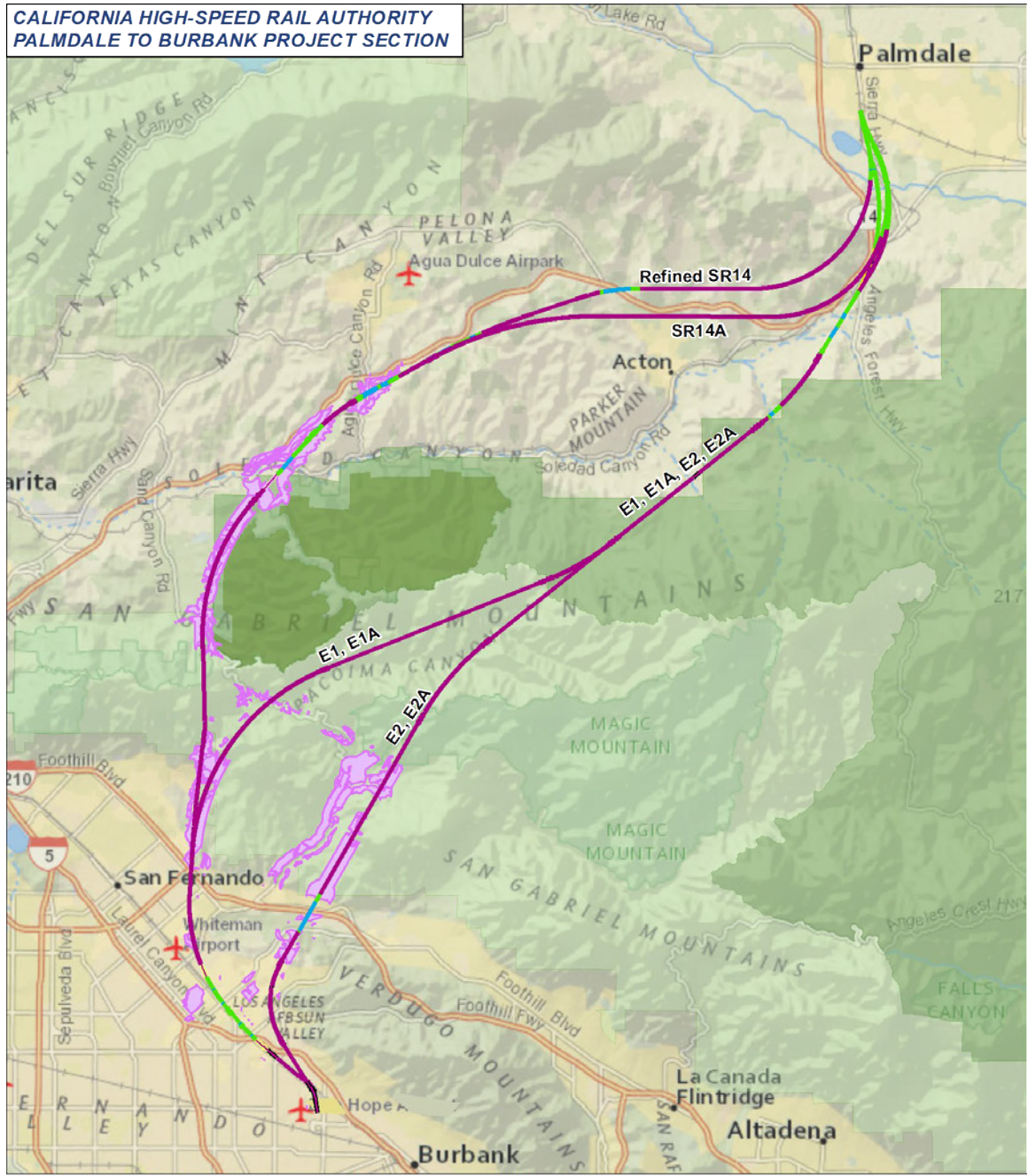
Source: Authority, 2019a

¹ Status Code

FE = federally endangered
 FSS = U.S. Forest Service sensitive
 BLMS = Bureau of Land Management sensitive
 CRPR Status = California Rare Plant Rank
 CWHR = California Wildlife Habitat Relationship
 RSA = resource study area; SR = state route
 1A = Presumed extinct in California
 1B = Rare, Threatened, or Endangered in California and elsewhere
 2B = Rare, Threatened, or Endangered in California, but more common elsewhere
 3 = A review list of plants about which more information is needed
 0.1 = Seriously threatened in California (over 80% of occurrences threatened)
 0.2 = Moderately threatened in California (20-80% of occurrences threatened)
 0.3 = Not very threatened in California (<20% of occurrences threatened)

² California Wildlife Habitat Relationships Code

DSC = desert scrub
 CRC = chamise-redshank chaparral
 MCH = mixed chaparral
 COW = coastal oak woodland
 MHC = montane hardwood-conifer
 CSC = coastal scrub
 JUN = juniper
 BAR = barren
 AGS = annual grassland
 DSW = desert wash
 VRI = valley foothill riparian
 LAC = lacustrine
 SGB = sagebrush
 MRI = montane riparian



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021 May 2, 2021

	<table border="0"> <tr> <td> Braunton's Milk Vetch</td> <td> HSR Alignment Profile</td> <td> Angeles National Forest</td> </tr> <tr> <td></td> <td> At Grade Covered</td> <td> Magic Mountain Wilderness Areas</td> </tr> <tr> <td></td> <td> Cut and Cover</td> <td> San Gabriel Mountains National Monument</td> </tr> <tr> <td></td> <td> Elevated / Aerial Structure</td> <td></td> </tr> <tr> <td></td> <td> Retained Cut / Trench</td> <td></td> </tr> <tr> <td></td> <td> Tunnel</td> <td></td> </tr> </table>	Braunton's Milk Vetch	HSR Alignment Profile	Angeles National Forest		At Grade Covered	Magic Mountain Wilderness Areas		Cut and Cover	San Gabriel Mountains National Monument		Elevated / Aerial Structure			Retained Cut / Trench			Tunnel		
Braunton's Milk Vetch	HSR Alignment Profile	Angeles National Forest																		
	At Grade Covered	Magic Mountain Wilderness Areas																		
	Cut and Cover	San Gabriel Mountains National Monument																		
	Elevated / Aerial Structure																			
	Retained Cut / Trench																			
	Tunnel																			

Figure 3.7-15 Braunton's Milk-Vetch Habitat within the Resource Study Area

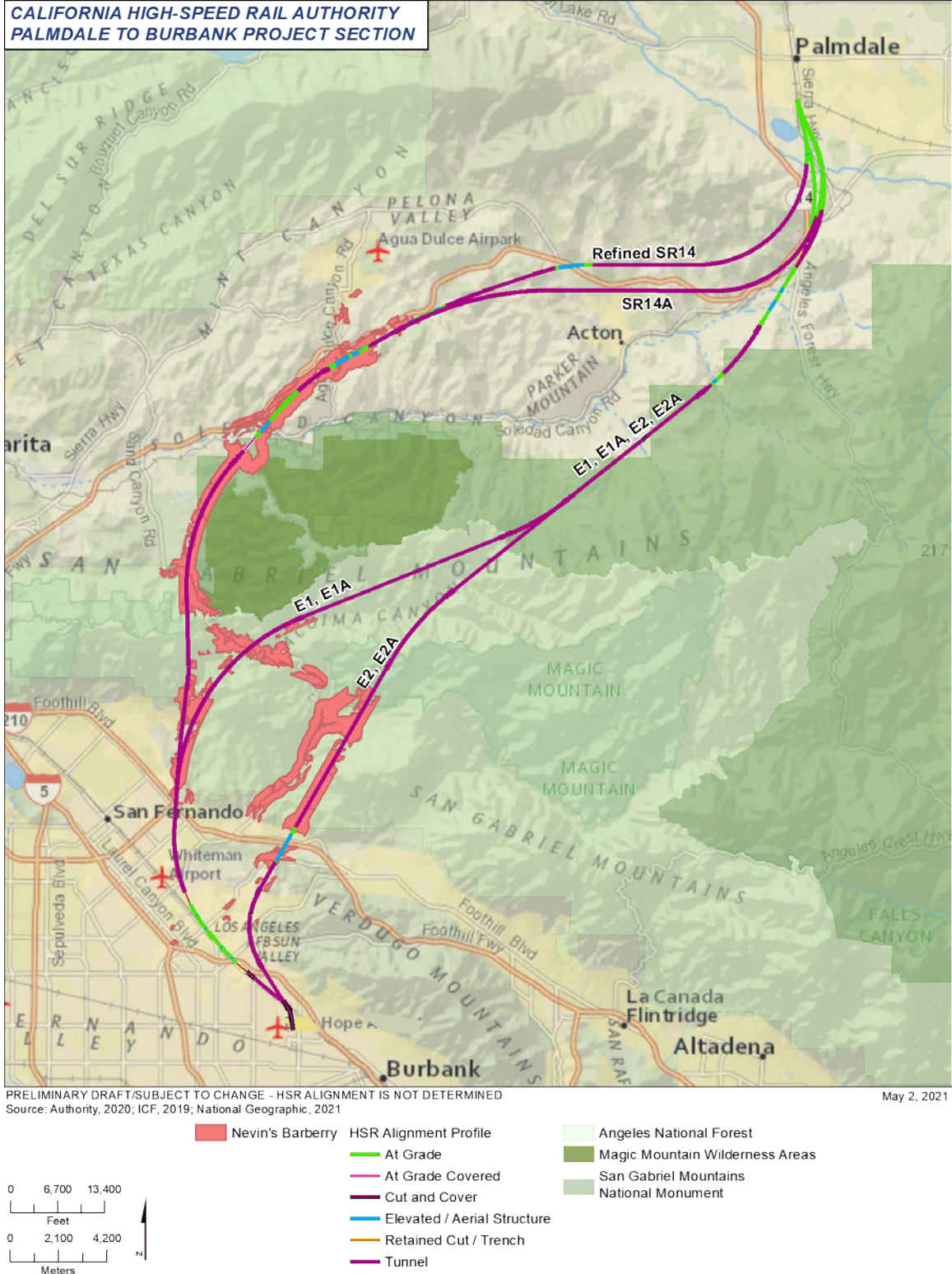


Figure 3.7-16 Nevin's Barberry Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021
 May 2, 2021

Slender-horned Spineflower	At Grade	Angeles National Forest
At Grade Covered	Cut and Cover	Magic Mountain Wilderness Areas
Elevated / Aerial Structure	Retained Cut / Trench	San Gabriel Mountains National Monument
Tunnel		

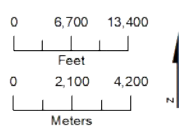


Figure 3.7-17 Slender-horned Spineflower Habitat within the Resource Study Area

3.7.5.4 Special-Status Plant Communities

Special-status plant communities within each of the six Build Alternative special-status plant RSAs represent rare vegetation types, have limited distribution statewide, include sensitive riparian areas, or are particularly vulnerable to negative environmental effects. The CNDDDB Rarity Ranking system assigns global and state rarity ranks for plant and animal species. Natural communities with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents. The following CNDDDB Rarity Rankings denote the condition of special-status plant communities and degree to which they are imperiled:

- Critically Imperiled (S1) special-status plant communities, representing communities with extreme rarity or vulnerability
- Imperiled (S2) special-status plant communities, representing communities very vulnerable to extirpation
- Vulnerable (S3) special-status plant communities, representing communities vulnerable to extirpation
- Apparently Secure (S4) special-status plant communities, representing uncommon (but not rare) communities with long-term concern for decline
- Secure (S5) special-status plant communities, representing common and abundant communities

Table 3.7-6 lists the six special-status plant communities within the six Build Alternative special-status plant RSAs, applicable CNDDDB Rarity Rankings, and CWHR vegetation communities within the special-status plant RSA that provide suitable habitat for each special-status plant community. Figure 3.7-5 through Figure 3.7-14 depict the vegetation communities that support special-status plant communities. The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) describes special-status plant communities and their occurrences throughout all six Build Alternative special-status plant RSAs.

Table 3.7-6 Special-Status Plant Communities within the Refined SR14, SR14A, E1, E1A, E2, and E2A Special-Status Plant Resource Study Areas

Common Name	Scientific Name	CNDDB Rarity Ranking ¹	Associated CWHR Vegetation Community ²
Scalebroom scrub	<i>Lepidospartum squamatum</i>	S1 and S3 ³	DSW
California sycamore woodlands	<i>Platanus racemosa</i>	S1 and S3 ³	VRI
Fremont cottonwood forest	<i>Populus fremontii</i>	S3	VRI
Bigcone Douglas fir forest	<i>Pseudotsuga macrocarpa</i>	S3	MHC
Coastal Oak woodland	<i>Quercus agrifolia</i>	S4 ⁴	COW
Black willow thickets	<i>Salix gooddingii</i>	S3	VRI

Source: Authority, 2019a

¹ There are no special-status plant communities within the Refined SR14, SR14A, E1, E1A, E2, and E2A special-status plant RSAs that are ranked as S2 or S5.

² California Wildlife Habitat Relationships (CWHR) Codes: COW = coastal oak woodland; MHC = montane hardwood-conifer; DSW = desert wash; VRI = valley foothill riparian

³ This community has a rarity ranking of S3, although some associations are S1.

Although Coastal Oak Woodland has an S4 rarity ranking, it is subject to preservation requirements of Section 22.56.2060 of Los Angeles County Oak Ordinance (see Section 3.7.5.11).

CNDDDB = California Natural Diversity Database

3.7.5.5 *Special-Status Wildlife*

Background literature review identified 71 special-status wildlife species with low to high potential to occur within the six Build Alternative core habitat RSAs, based on the species range, known occurrences, and the presence of potential habitat. Of these, 20 wildlife species were removed from consideration because of their low potential to occur within the core habitat RSA as a result of lack of suitable habitat. The remaining 58 special-status wildlife species have a moderate or high potential of occurrence in the core habitat RSA and have the following federal and state designations:

Federal Status

- USFWS-designated federally endangered (FE) species, representing species in danger of extinction. These species require “take” authorization per FESA.
- USFWS-designated federally threatened (FT) species, representing species likely to become federally endangered. These species require “take” authorization per FESA.
- USFWS-designated Birds of Conservation Concern (BCC), representing migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under FESA.
- USFS-designated Forest Service sensitive (FSS) species, representing species which population viability is a concern on regional National Forest Service lands.
- BLM-designated sensitive (BLMS) species, representing species that meet a variety of criteria including occurrence on BLM public lands and risk for extirpation.
- Species protected by the USFWS BGEPA.
- USFWS-designated delisted species removed due to recovery.

State Status

- CDFW-designated state endangered (SE) species, representing species in serious danger of extinction. These species require “take” authorization per CESA.
- CDFW-designated state threatened (ST) species, representing species likely to become federally endangered. These species require “take” authorization per CESA.
- CDFW-designated fully protected (FP) species, representing species with additional protections due to rarity or potential extinction. Incidental take of these species is prohibited and must be avoided.
- CDFW-designated candidate (CT) species, representing species under review for state listing as threatened or endangered. These species require “take” authorization per CESA.
- CDFW-designated species of special concern (SSC), representing species that meet one of several criteria, including risk of extirpation, federal listing as threatened or endangered, population decline, or susceptibility that would qualify for state threatened or endangered status.
- CDFW-designated state candidate for listing (SC), representing species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species, or a species for which a notice of proposed regulation to add the species to either list has been published.
- CDFW-designated delisted species removed due to recovery.

Table 3.7-7 summarizes special-status wildlife within each of the six Build Alternative core habitat RSAs; federal and state protection status; and suitable CWHR vegetation within the core habitat RSA. FESA-listed species are those that are designated as FE and FT by USFWS. Non-FESA-listed species make up the remainder of analyzed special-status species. Figure 3.7-18 through Figure 3.7-34 depict the vegetation communities that support non-listed special-status wildlife

species. For a visual depiction of FESA-listed special-status wildlife habitat within the RSA, please refer to Figure 3.7-18 through Figure 3.7-34. Suitable habitat for special-status species is described below:

- Arroyo toad: Soledad Canyon (Refined SR14/SR14A) and Arrastre Canyon (E1/E1A/E2/E2A)
- California Condor: Throughout Tehachapi and Southern California Mountains and foothill regions of the RSA. Foraging habitat is prevalent throughout the Refined SR14, SR14A, E1, E1A, E2, and E2A RSAs. Known to roost, forage, and loiter north of San Fernando within ANF. The Build Alternative footprint is a very small percentage of the species range. There is a lack of suitable nesting and roosting habitat proximal to the Build Alternative alignments.
- California red-legged frog: Una Lake (all six Build Alternatives), Soledad Canyon (Refined SR14/SR14A), Arrastre Canyon (E1/E1A/E2/E2A), within the ANF (all six Build Alternatives), and Big Tujunga Wash (E2/E2A). The *California Red-legged Frog Habitat Assessment and Protocol Survey* (Authority 2017b) determined California red-legged frogs are unlikely to occur at these areas due lack of known populations, lack of observed individuals, and the scarcity of suitable breeding habitat. However, the E1, E1A, E2, and E2A Build Alternative alignments would cross Arrastre Canyon Creek and Aliso Canyon Creek downstream from known populations of California red-legged frog and species presence has therefore been assumed in these downstream areas.
- Coastal California gnatcatcher: Between Agua Dulce Canyon Road and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and within the urbanized areas of the cities of Los Angeles and Burbank (all six Build Alternatives).
- Desert tortoise: Between Avenue M and the California Aqueduct (all six Build Alternatives)
- Least Bell's vireo: Near Lake Palmdale (all six Build Alternatives), between Big Springs Road and 0.75 mile east of Agua Dulce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14/SR14A), south of the Pacoima Dam (Refined SR14/SR14A), within Aliso and Arrastre Canyons (E1/E1A/E2/E2A), along Crown Valley Road (E1/E1A), within ANF along Gold Creek Road (E2/E2A) and Little Tujunga Canyon Road, and within the Big Tujunga Wash (E2/E2A).
- Santa Ana sucker: Within ANF along Pacoima Wash (Refined SR14/SR14A/E1/E1A) and along Little Tujunga Canyon Road (E2/E2A), and within the Big Tujunga Wash (E2/E2A)
- Southern mountain yellow-legged frog: Within ANF (all six Build Alternatives), north of the I-220/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and north of the Big Tujunga Wash (E2/E2A)
- Southwestern willow flycatcher: Near Lake Palmdale (Refined SR14/SR14A/E1/E1A/E2/E2A), between the proposed SR 14 overcrossing and 0.75 mile east of Agua Dulce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14/SR14A), south of Pacoima Dam (Refined SR14/SR14A), within Aliso and Arrastre Canyons (E1/E1A/E2/E2A), within ANF along Gold Creek Road (E2/E2A) and Little Tujunga Canyon Road (E2/E2A), and within the Big Tujunga Wash (E2/E2A).
- Swainson's hawk: Along Sierra Highway in Palmdale (all six Build Alternatives), at the proposed Refined SR14 alignment crossing of the SR 14 freeway (Refined SR14), at the proposed Santa Clara River crossing (Refined SR14/SR14A), north of the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), throughout the San Fernando Valley (Refined SR14/SR14A/E1/E1A), along Angeles Forest Highway south of the SR 14/Sierra Highway intersection (E1/E1A/E2/E2A), within ANF along Soledad Canyon Road (E1/E1A/E2/E2A), near the Big Tujunga Wash (E2/E2A), and along Little Tujunga Canyon Road (E2/E2A).
- Tricolored blackbird: Near Lake Palmdale (all six Build Alternatives) and within CalMat Mine (E2/E2A)

- Unarmored three-spine stickleback: The habitat assessment conducted for unarmored three-spine stickleback found that suitable habitat was present at the following aquatic resources:
 - Aliso Canyon (E1/E1A/E2/E2A). The nearest known population of unarmored three-spine stickleback is 5.2 miles downstream (river course) of where the E1, E1A, E2, and E2A Build Alternative alignments cross Aliso Canyon. All four of these Build Alternatives are identical at the crossing of Aliso Canyon. Based on aerial imagery, habitat in Aliso Canyon appears to transition from desert wash to perennial stream upstream of the Build Alternative alignments. The hydrology in the upstream portion may support perennial stream and ponded water habitat within the drainage for periods that could support unarmored three-spine stickleback use beyond the rainy season. Additionally, while the CDFW has indicated they possess additional data regarding unarmored three-spine stickleback use of drainages within Aliso Canyon, the lack of surface flow at the crossing location indicates the species would be unlikely to occur within the immediate vicinity of the E1, E1A, E2, and E2A Build Alternative alignments crossing. Therefore, based on a lack of suitable habitat conditions (specifically no surface water), there were no opportunities for the species occurrence observed onsite during the habitat assessment. If unarmored three-spine stickleback use upstream habitats during periods of increased rainfall and/or surface water flows, it can be reasonably assumed that at certain portions of the year, unarmored three-spine stickleback could occur within the project boundaries where the E1, E1A, E2, and E2A Build Alternative alignments cross Aliso Canyon, either by being washed downstream, or by migrating upstream from the Santa Clara River.
 - Arrastre Canyon (E1/E1A/E2/E2A). Based on observed habitat conditions (flowing surface water present onsite during the June 1, 2016 site visit), there are habitat opportunities for unarmored three-spine stickleback, possibly year-round at this location. Additionally, CNDDDB records and CDFW comments regarding this general area indicate that there is a known population of unarmored three-spine stickleback within 1,000 yards downstream of the Arrastre Canyon crossing location; therefore, it can be reasonably assumed that this location may be occupied within ponded water habitats that persist into the late spring/early summer months.
 - Agua Dulce Canyon (Refined SR14/SR14A). In spite of a known record for unarmored three-spine stickleback within the boundaries of the core habitat RSA at the Agua Dulce Canyon crossing location, there are currently no known populations of unarmored three-spine stickleback within the site. Based on the current presentation of habitat (no surface water) and USFWS comments, there are no habitat opportunities for the species at the site.
 - Santa Clara River (Refined SR14/SR14A). Unarmored three-spine stickleback are known to occur within the boundaries of the core habitat RSA at the Santa Clara River crossing location. Because of the intermittent nature of the presentation of surface water at this site, unarmored three-spine stickleback may not be present year round. No unarmored three-spine stickleback were observed during the June 1, 2016 site visit. The wetted stream reaches at these sites, in addition to CNDDDB records and agency comments, indicate this location should be treated as occupied.
- Western yellow-billed cuckoo: Between the SR 14 overcrossing and 0.75 mile east of Agua Dulce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14), south of Pacoima Dam (Refined SR14/SR14A), within the ANF along Little Tujunga Canyon Road (Refined SR14/SR14A/E1/E1A), and within the Big Tujunga Wash (E2/E2A).

The *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a) provides a detailed ecological description of each special-status wildlife species with potential to occur within the core habitat RSA.

Table 3.7-7 Special-Status Wildlife within the Build Alternative Core Habitat Resource Study Areas

Common Name	Scientific Name	Protection Status ¹		Associated CWHR Vegetation Community ²
		Federal	State	
Amphibians				
Arroyo toad ⁴	<i>Anaxyrus californicus</i>	FE	SSC	AGS, COW, CSC, CRC, MCH, VRI
California red-legged frog ⁴	<i>Rana draytonii</i>	FT	SSC	NHD Streams ⁶ , URB, VRI
Coast range newt	<i>Taricha torosa</i>	--	SSC	MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, MRI, VRI
Southern mountain yellow-legged frog ^{3,4}	<i>Rana muscosa</i>	FE	SE	URB, NHD Aquatics ⁶
Western spadefoot	<i>Spea hammondi</i>	BLMS	SSC	DOR/VIN, CSC, MHC, COW, DSW, DSC, AGS, MRI, VRI
Birds				
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	Delisted/FP	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, MRI, VRI, LAC, URB
Bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted/FSS/BGEPA/BLMS	SE/FP	LAC, VRI
California condor ⁴	<i>Gymnogyps californianus</i>	FE	SE/FP	AGS, MCH, CRC, CSC
Coastal California gnatcatcher ⁴	<i>Polioptila californica</i>	FT	SSC	CSC, AGS, MCH
Golden eagle	<i>Aquila chrysaetos</i>	BGEPA/BLMS	FP	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, LAC, MRI, VRI
Gray vireo	<i>Vireo vicinior</i>	BCC/FSS/BLMS	SSC	CRC, MCH, MCP, CSC, JUN
Least Bell's vireo ⁴	<i>Vireo bellii pusillus</i>	FT	SE	DRI, VRI, DSW
Least bittern	<i>Ixobrychus exilis</i>	--	SSC	LAC, VRI
Loggerhead shrike	<i>Lanius ludovicianus</i>	BCC	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, DSW, DSC, AGS, LAC, MRI, VRI
Northern harrier	<i>Circus cyaneus</i>	--	SSC	AGS, LAC

Common Name	Scientific Name	Protection Status ¹		Associated CWHR Vegetation Community ²
		Federal	State	
Southwestern willow flycatcher ⁴	<i>Empidon traillii extimus</i>	FE	SE	VRI, DSW
Swainson's hawk ⁴	<i>Buteo swainsoni</i>	BLMS	ST	AGS, BAR, COW, CSC, DSC, DSW, DOR/VIN
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC/BLMS	ST	AGS, BAR, COW, DSW, DOR/VIN
Western burrowing owl	<i>Athene cunicularia</i>	BCC/BLMS	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, DSW, DSC, AGS, JUN
White-tailed kite	<i>Elanus leucurus</i>	BLMS	FP	DOR/VIN, DSW, AGS, MRI, VRI
Western yellow-billed cuckoo ⁴	<i>Coccyzus americanus occidentalis</i>	FE/BLMS	SE	VRI, DSW
Yellow-breasted chat	<i>Icteria virens</i>	--	SSC	DSW, MRI, VRI
Yellow-headed blackbird	<i>Xanthocephalus</i>	--	SSC	LAC, VRI
Yellow warbler	<i>Dendroica petechia brewsteri</i>	BCC	SSC	DSW, MRI, VRI
Fish				
Arroyo chub	<i>Gila orcuttii</i>	FSS	SSC	DSW, MRI, VRI
Santa Ana speckled dace	<i>Rhinichthys osculus</i>	FSS	SSC	DSW, MRI, VRI
Santa Ana sucker ⁴	<i>Catostomus santaanae</i>	FT	--	DSW, RIV, LAC, DRI, VRI
Unarmored three-spine stickleback ⁴	<i>Gasterosteus aculeatus williamsoni</i>	FE	SE/FP	VRI
Invertebrates				
Crotch bumble bee	<i>Bombus crotchii</i>	--	CE	COW, JUN, MHC, VRI, CRC, CSC, DSC, DSW, SGB, MCH, AGS
Monarch butterfly	<i>Danaus plexippus</i>	--	SC	DOR/VIN, CRC, MCH, MHC, SGB, CSC, COW, DSW, DSC, AGS, JUN, VRI
San Emigdio blue butterfly	<i>Plebulina emigdionis</i>	FSS	--	N/A ⁵
San Gabriel Mountains elfin butterfly	<i>Callophrys mossii hidakupa</i>	FSS	--	N/A ⁵
Vernal pool fairy shrimp ³	<i>Branchinecta lynchi</i>	FT	--	N/A ⁷

Common Name	Scientific Name	Protection Status ¹		Associated CWHR Vegetation Community ²
		Federal	State	
Mammals				
American badger	<i>Taxidea taxus</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JUN
Fringed myotis	<i>Myotis thysanodes</i>	BLMS/FSS	--	N/A ⁵
Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	BLMS	ST	N/A ⁴
Mountain lion ⁴	<i>Puma concolor</i>	--	SC	Breeding and Foraging Habitat: CRC, MCH, SGB, CSC, COW, DSW, DSC, JUN, VRI Foraging and Dispersal Habitat: BAR, DOR/VIN, CRC, MCH, SGB, CSC, COW, DSW, DSC, AGS, JUN, VRI, LAC
Pallid bat	<i>Antrozous pallidus</i>	FSS/BLMS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JUN, MRI, VRI, URB
Ringtail	<i>Bassariscus astutus</i>	--	FP	COW, DSW, MRI, VRI
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	--	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JUN
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JUN
Southern grasshopper mouse	<i>Onychomys torridus ramona</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, MRI, VRI
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FSS/BLMS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, VRI, URB
Western mastiff bat	<i>Eumops perotis californicus</i>	BLMS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, VRI, URB
Western red bat	<i>Lasiurus blossevillii</i>	--	SSC	BAR, CSC, MHC, MRI, VRI
Western yellow bat	<i>Lasiurus xanthinus</i>	--	SSC	BAR, CSC, MHC, MRI, VRI
Yuma myotis	<i>Myotis yumanensis</i>	BLMS	--	N/A ⁵

⁴ The California Fish and Game Commission published a notice of findings on May 1, 2020, to designate the southern California/Central Coast population of mountain lion as a candidate species under the CESA. As described in the petition to list the mountain lion, 10 genetically distinct mountain lion populations were identified in California (Gustafson et al. 2018).

Common Name	Scientific Name	Protection Status ¹		Associated CWHR Vegetation Community ²
		Federal	State	
Reptiles				
Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	BLMS	SSC	DOR/VIN, CRC, MHC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JUN, MRI, VRI
California glossy snake	<i>Arizona elegans occidentalis</i>	--	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, LAC, MRI, VRI
California legless lizard	<i>Anniella pulchra</i>	FSS	SSC	CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, LAC, MRI, VRI
Coast patch-nosed snake	<i>Salvadora hexalepis virgulata</i>	--	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, LAC, MRI, VRI
Coastal rosy boa	<i>Lichanura trivirgata roseofusca</i>	FSS	--	CSC, DSC, JUN, CRC, MCH, AGS, DOR, VIN, COW, VRI
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	--	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JUN, LAC, MRI, VRI
Desert tortoise ⁴	<i>Gopherus agassizii</i>	FT	ST	AGS, DSC, DSW
San Bernardino mountain kingsnake	<i>Lampropeltis zonata parvirubra</i>	FSS	--	N/A ⁵
San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	FSS	--	N/A ⁵
South coast garter snake	<i>Thamnophis sirtalis</i>	--	SSC	DSW, LAC, MRI, VRI

Common Name	Scientific Name	Protection Status ¹		Associated CWHR Vegetation Community ²
		Federal	State	
Two-striped garter snake	<i>Thamnophis hammondi</i>	FSS/ BLMS	SSC	DSW, LAC, MRI, VRI
Western pond turtle	<i>Actinemys marmorata</i>	FSS/ BLMS	SSC	MCH, MCP, SGB, CSC, MHC, COW, AGS, JUN, LAC, MRI, VRI

Source: Authority, 2019a

¹ Status Code:

FE = federally endangered
 FT = federally threatened
 BCC = USFWS Birds of Conservation Concern
 FSS = U.S. Forest Service sensitive
 BGEPA = Bald and Golden Eagle Protection Act
 BLMS = BLM sensitive
 SE = state endangered
 ST = state threatened
 FP = CDFW fully protected species
 CT = CDFW candidate for state threatened status
 SSC = CDFW California species of special concern
 SC = CDFW candidate for listing

² California Wildlife Habitat Relationships Codes

BAR = barren
 CRC = chamise-redshank chaparral
 MCH = mixed chaparral
 MCP = montane chaparral
 SGB = sagebrush
 CSC = coastal scrub
 COW = coastal oak woodland
 DSW = desert wash
 DSC = desert scrub
 RIV = riverine
 AGS = annual grassland
 JUN = juniper
 DOR/VIN = deciduous orchard/vineyard
 MHC = montane hardwood-conifer
 MRI = montane riparian
 VRI = valley foothill riparian
 LAC = lacustrine
 URB = urban

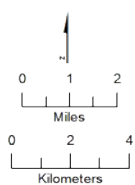
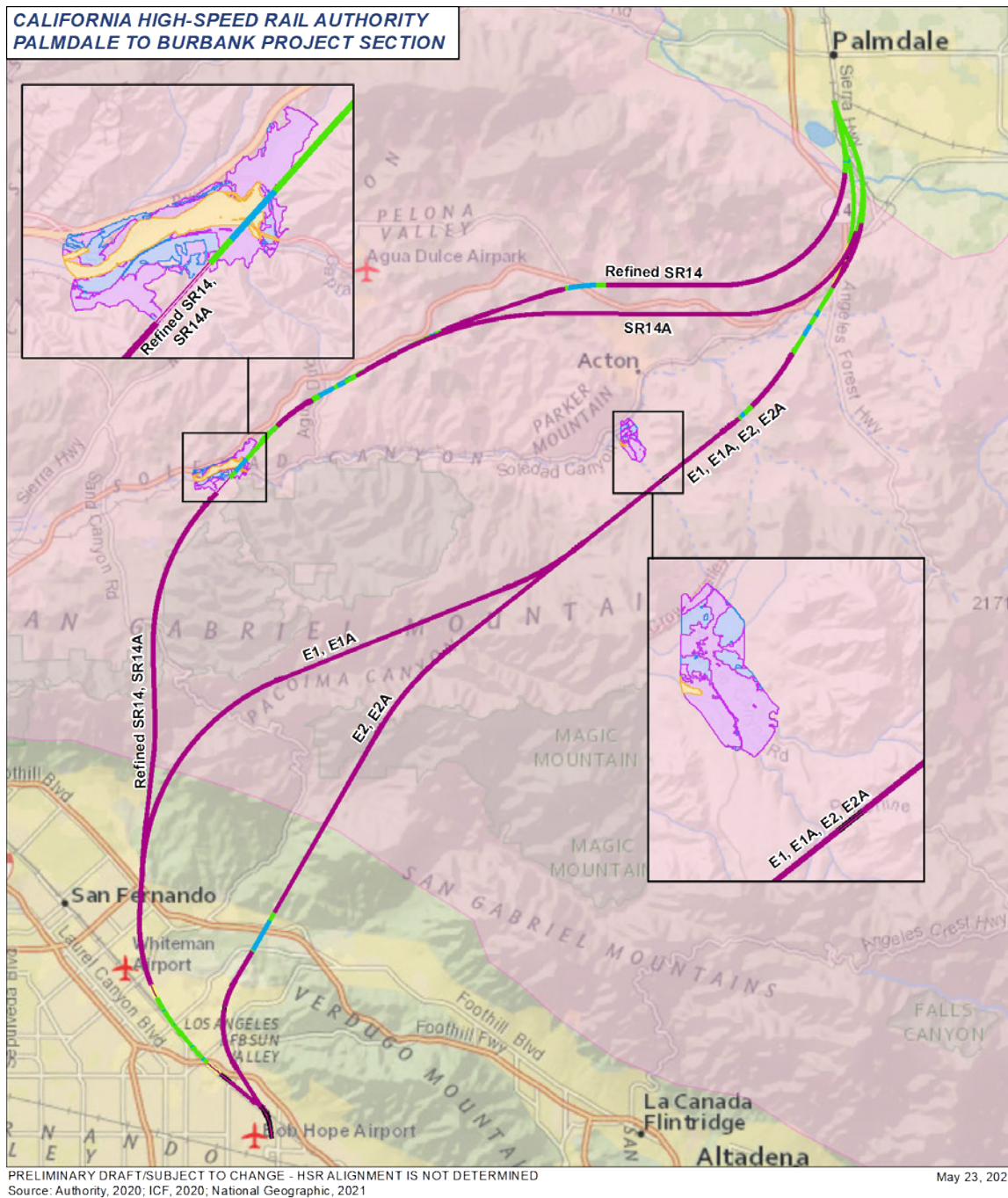
³ These species were determined to have a low potential to be found but are included because they are being included in FESA Section 7 consultation. Habitats for these species are based on species-specific modeling instead of on only CWHR vegetation communities.

Affected acreages for these species were modeled and calculated only within the jurisdictional boundary of the land management agency that identifies these species as sensitive. These include species listed as sensitive on lands administered by the BLM or within Forest Service Lands where the Regional Forester has identified the population viability as a concern.

⁶ For certain species that are more dependent on ephemeral and intermittent drainages for habitat, the National Hydrography Dataset (NHD) was used to more accurately model predicted habitat.

⁷ An aerial survey of the Palmdale to Burbank Project Section Build Alternatives identified 14 vernal pool features within 1,000 feet of the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative alignments. Although it is unknown whether the identified vernal pool features are occupied, occupied habitat occurs within a few miles of the RSA. Therefore, it is within reason to assume that the species have the potential to occur within the RSA.

CWHR = California Wildlife Habitat Relationship System; FESA = Federal Endangered Species Act; RSA = resource study area; N/A = Not Applicable



- | | |
|---|---|
| <p>HSR Alignment Profile</p> <ul style="list-style-type: none"> — At Grade — At Grade Covered — Cut and Cover — Elevated / Aerial Structure — Retained Cut / Trench — Tunnel | <p>■ Arroyo Toad Range</p> <p>Arroyo Toad Habitat</p> <ul style="list-style-type: none"> ■ Non-Breeding Upland Habitat ■ Permeable Movement Area (Dev, Ag, Disturbed) ■ Suitable Breeding Habitat |
|---|---|

Figure 3.7-18 Arroyo Toad Habitat within the Resource Study Area

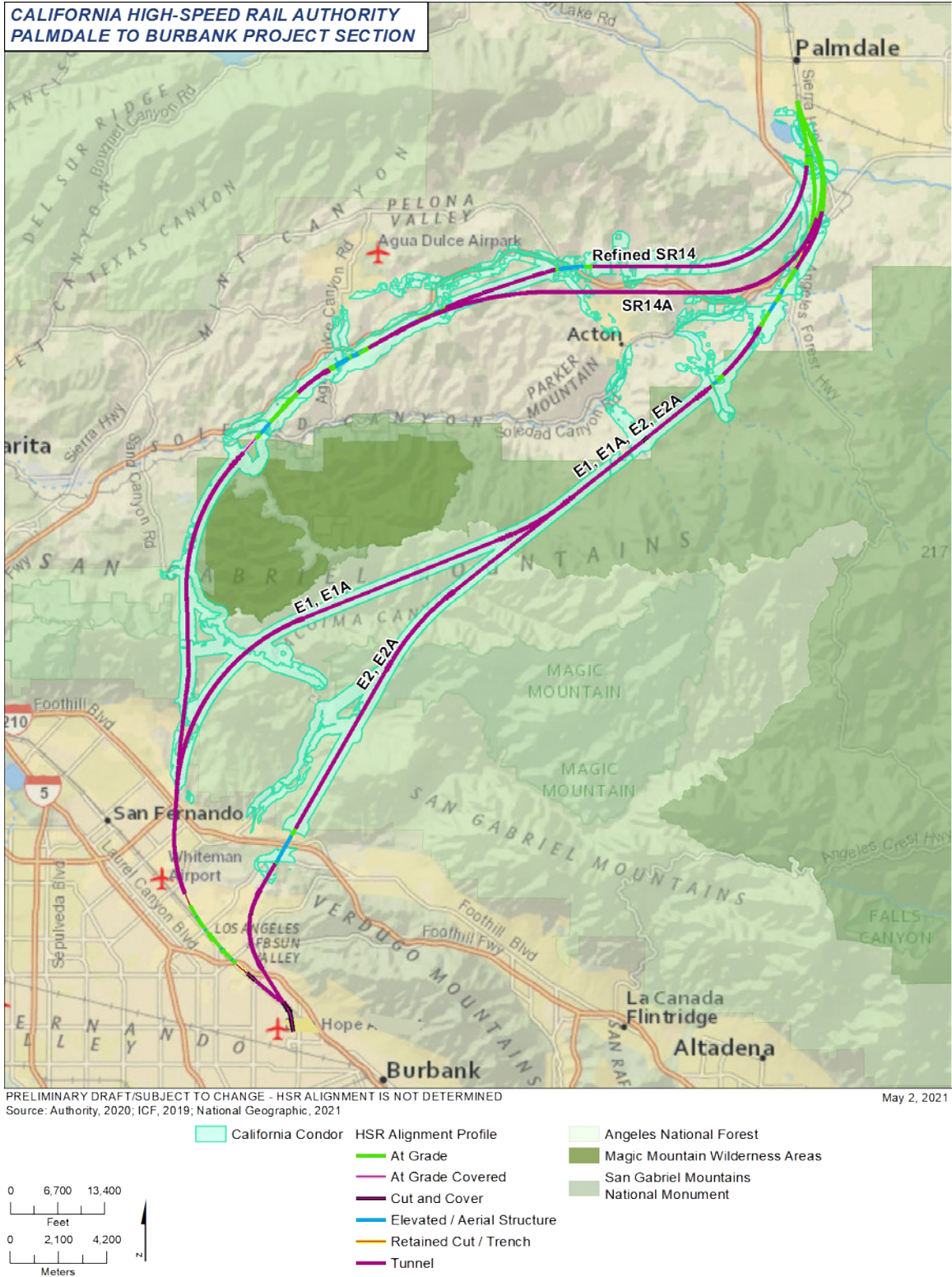


Figure 3.7-19 California Condor Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021
 May 2, 2021

Coastal California Gnatcatcher	HSR Alignment Profile At Grade	Angeles National Forest
	At Grade Covered	Magic Mountain Wilderness Areas
	Cut and Cover	San Gabriel Mountains National Monument
	Elevated / Aerial Structure	
	Retained Cut / Trench	
	Tunnel	

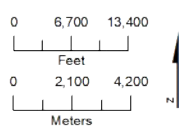
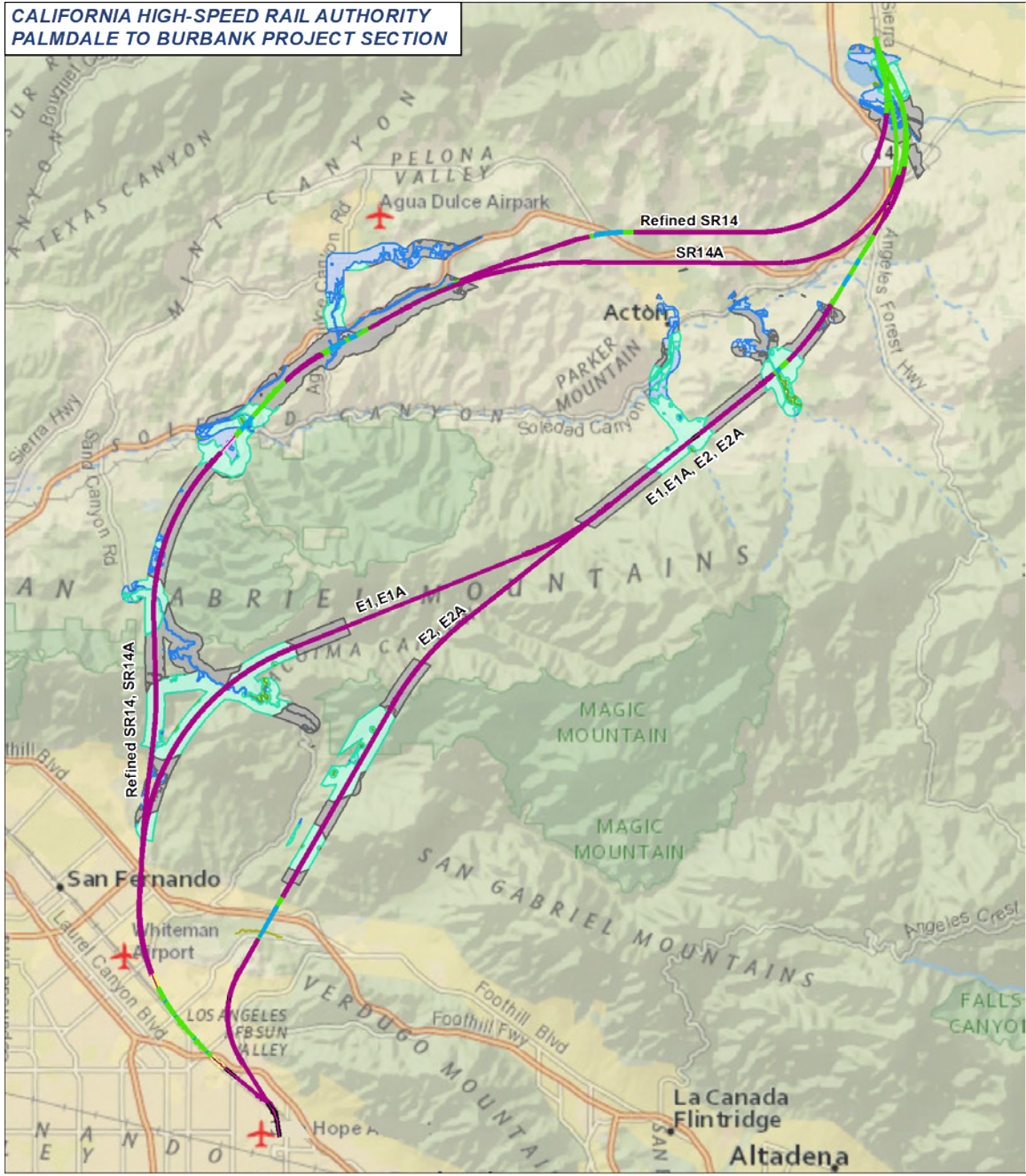
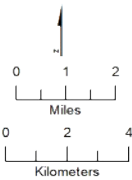


Figure 3.7-20 Coastal California Gnatcatcher Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2020; National Geographic, 2021

May 23, 2021



- | | |
|--|---|
| <p>HSR Alignment Profile</p> <ul style="list-style-type: none"> — At Grade — At Grade Covered — Cut and Cover — Elevated / Aerial Structure — Retained Cut / Trench — Tunnel | <p>California Red-Legged Frog Habitat</p> <ul style="list-style-type: none"> ■ Breeding Season Aquatic Habitat ■ Dispersal/Seasonal Movement Habitat ■ Non-Breeding Season Aquatic Habitat ■ Other Potential Movement Habitat ■ Permeable Movement Area (Dev, Ag, Disturbed) ■ Refugia/Foraging Habitat |
|--|---|

Figure 3.7-21 California Red-legged Frog Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021
 May 2, 2021

Desert Tortoise	HSR Alignment Profile	Angeles National Forest
	At Grade	Magic Mountain Wilderness Areas
	At Grade Covered	San Gabriel Mountains National Monument
	Cut and Cover	
	Elevated / Aerial Structure	
	Retained Cut / Trench	
	Tunnel	

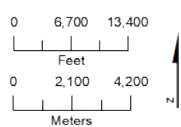


Figure 3.7-22 Desert Tortoise Habitat within the Resource Study Area

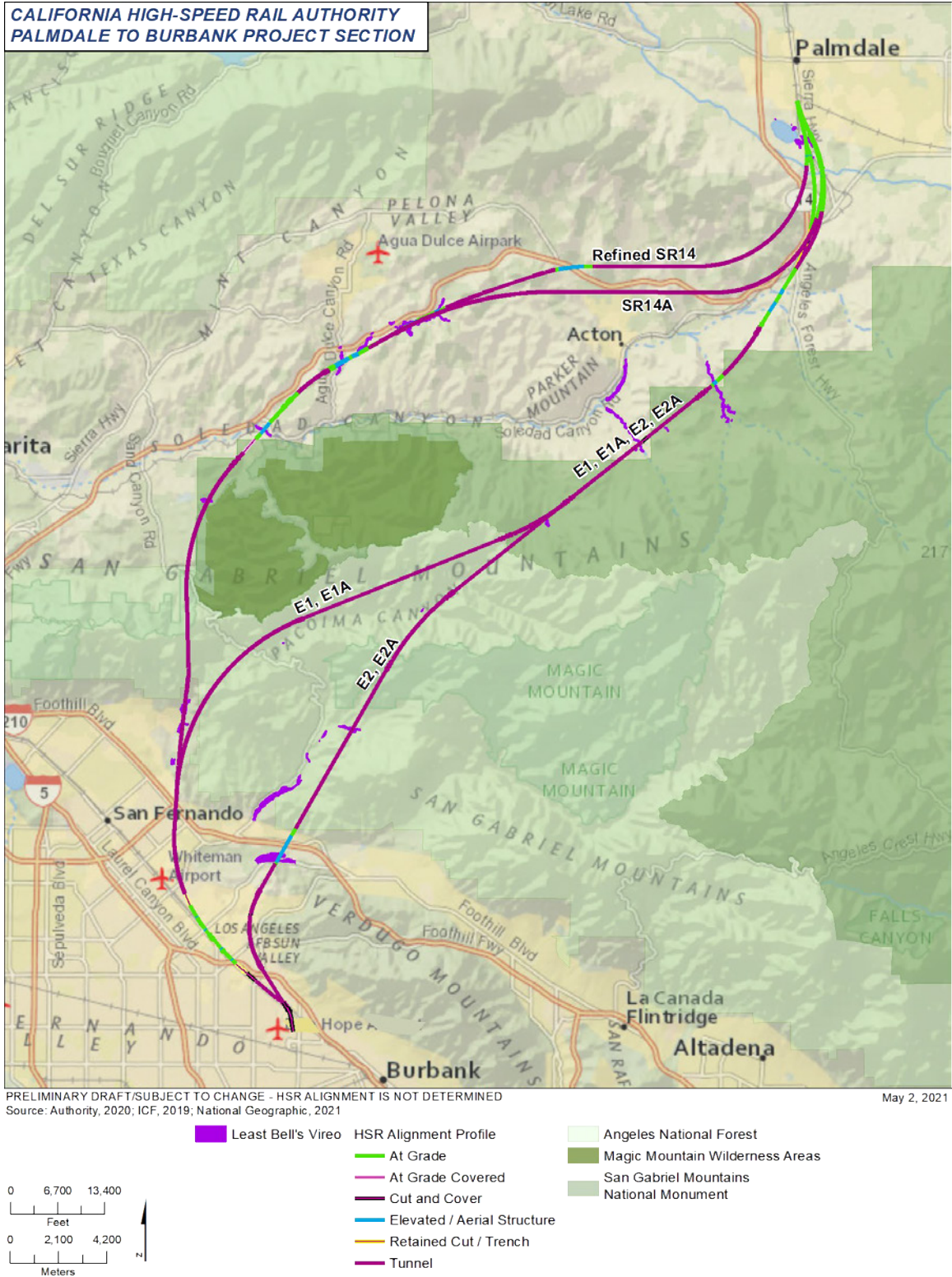
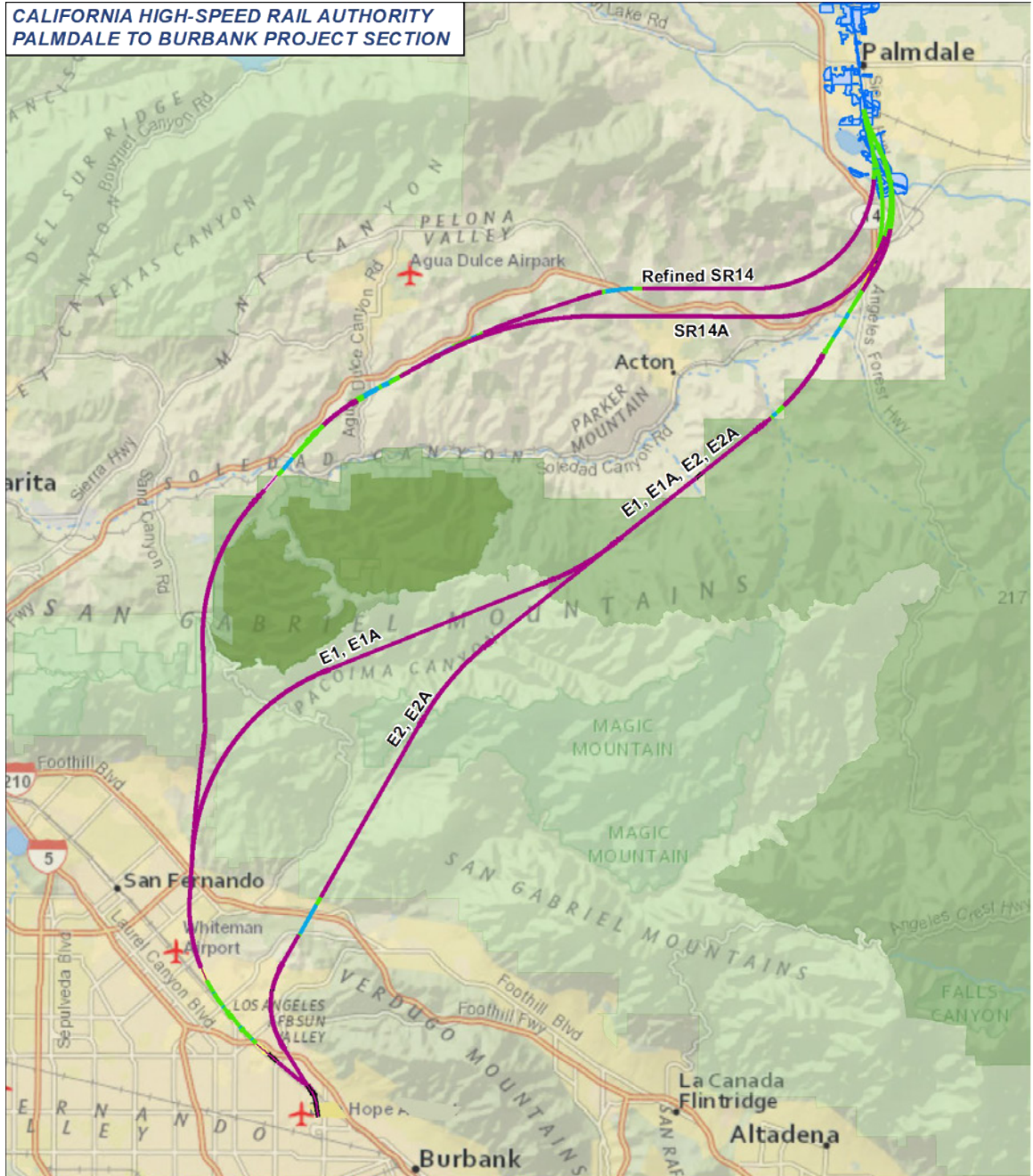


Figure 3.7-23 Least Bell's Vireo Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021
 May 2, 2021

Mohave Ground Squirrel	At Grade	Angeles National Forest
At Grade Covered	Cut and Cover	Magic Mountain Wilderness Areas
Elevated / Aerial Structure	Retained Cut / Trench	San Gabriel Mountains National Monument
Tunnel		

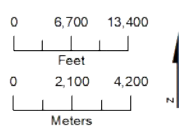


Figure 3.7-24 Mohave Ground Squirrel Habitat within the Resource Study Area

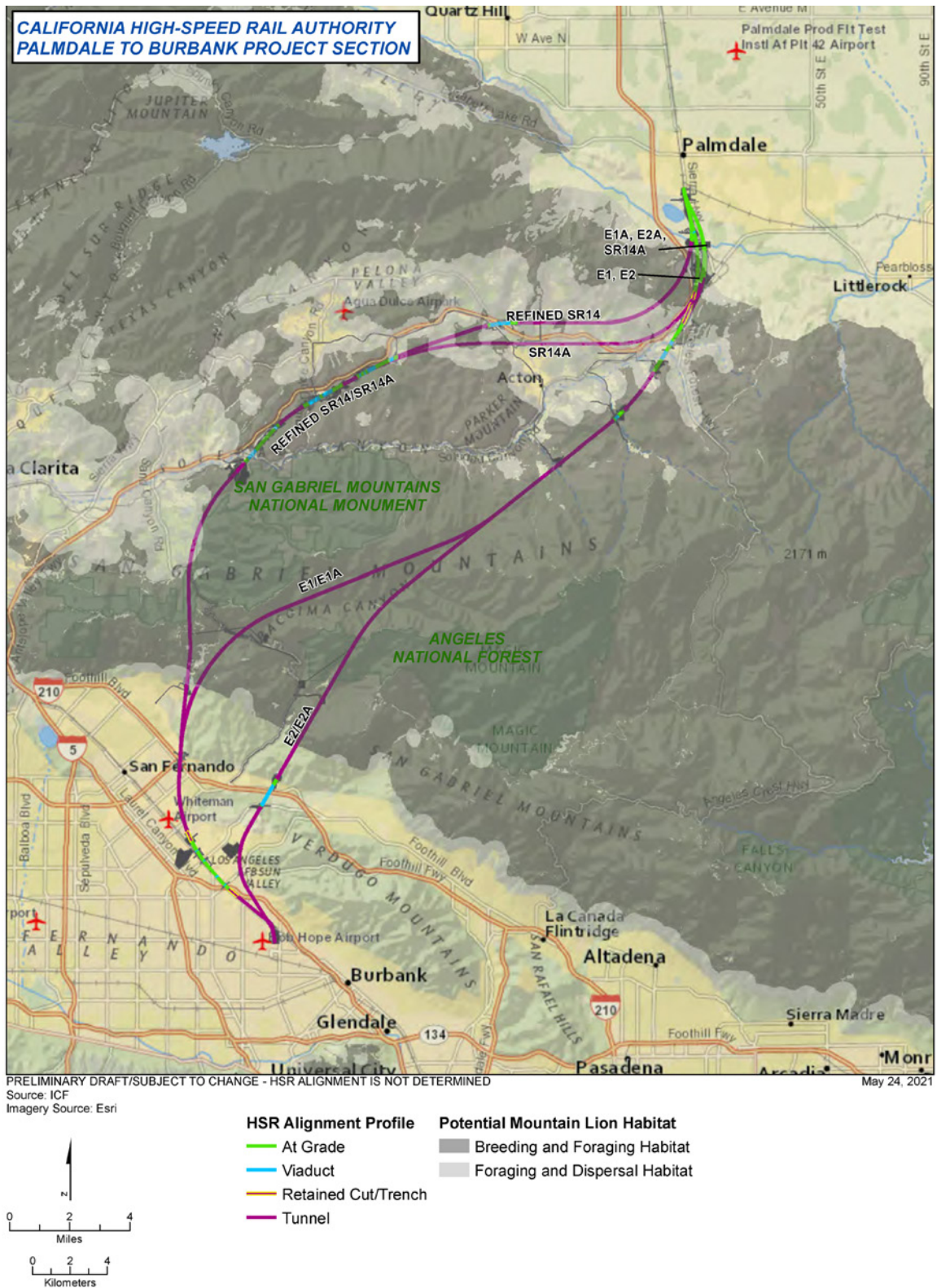
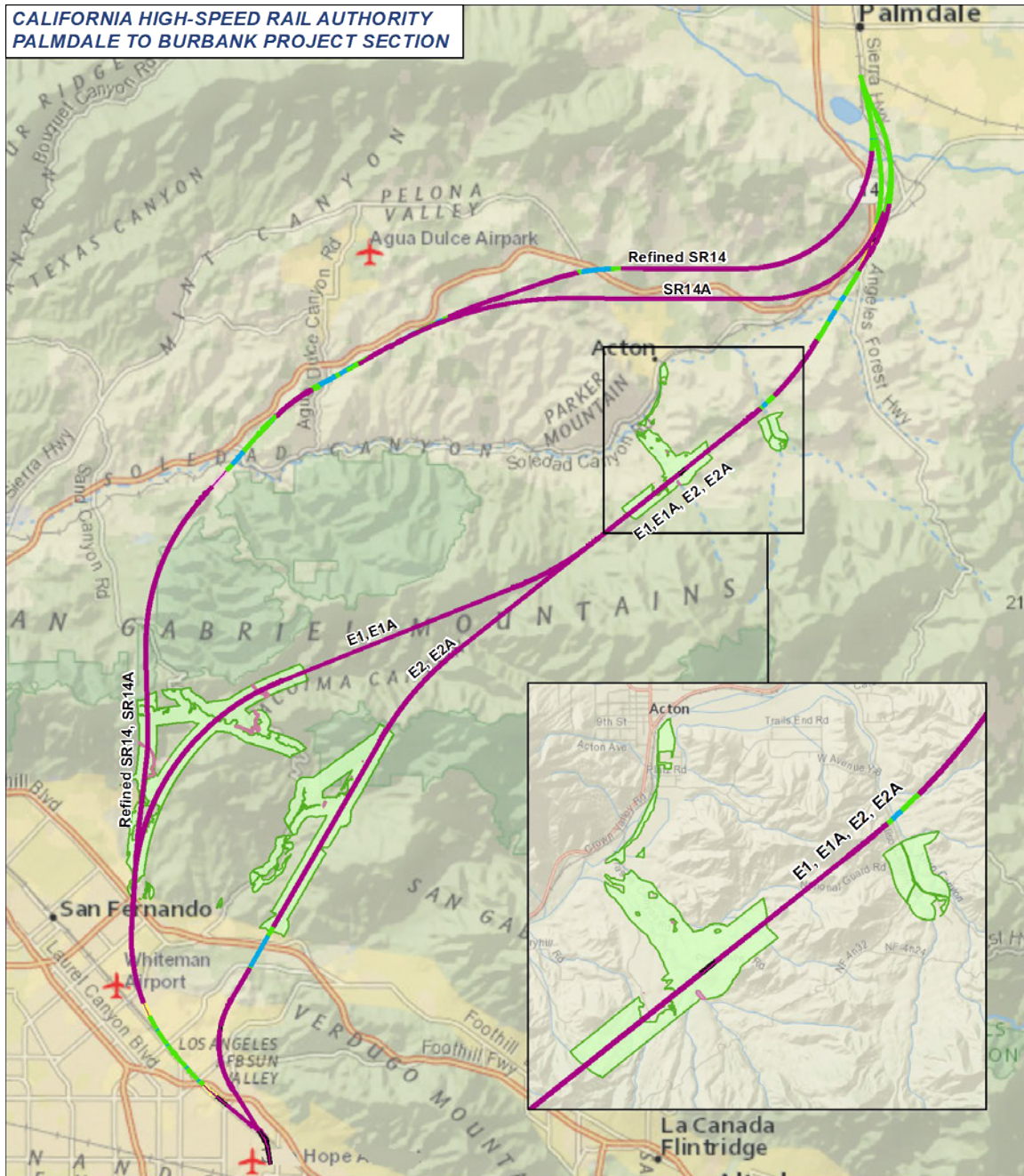
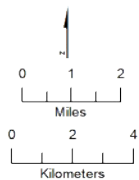


Figure 3.7-25 Mountain Lion Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2020; National Geographic, 2021

May 23, 2021



- | | |
|---|--|
| <p>HSR Alignment Profile</p> <ul style="list-style-type: none"> — At Grade — At Grade Covered — Cut and Cover — Elevated / Aerial Structure — Retained Cut / Trench — Tunnel | <p>Mountain Yellow-Legged Frog Habitat</p> <ul style="list-style-type: none"> ■ Potentially Suitable Aquatic Habitat ■ Refugia/Foraging/Dispersal Habitat |
|---|--|

Figure 3.7-26 Southern Mountain Yellow-legged Frog Habitat within the Resource Study Area

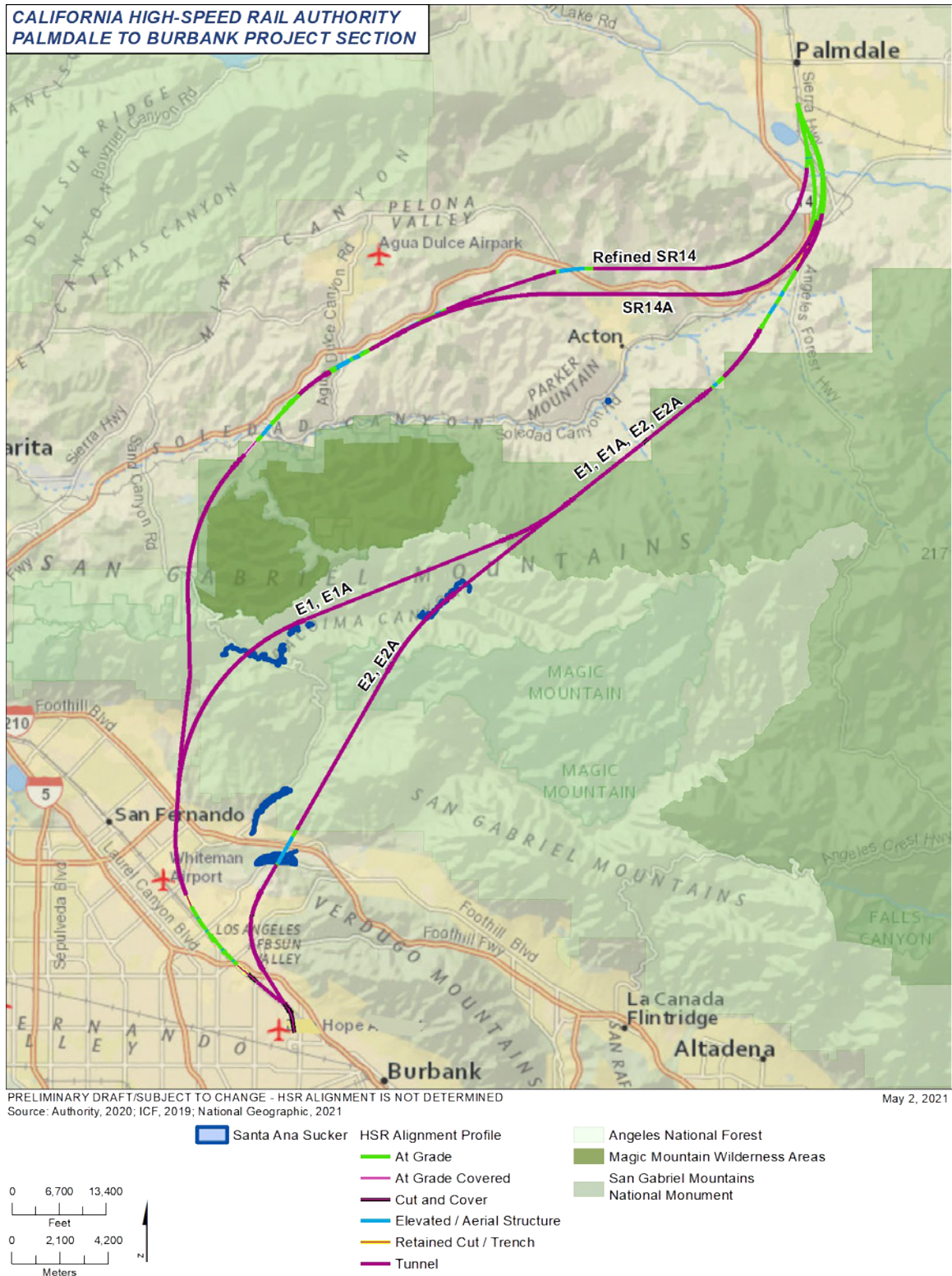
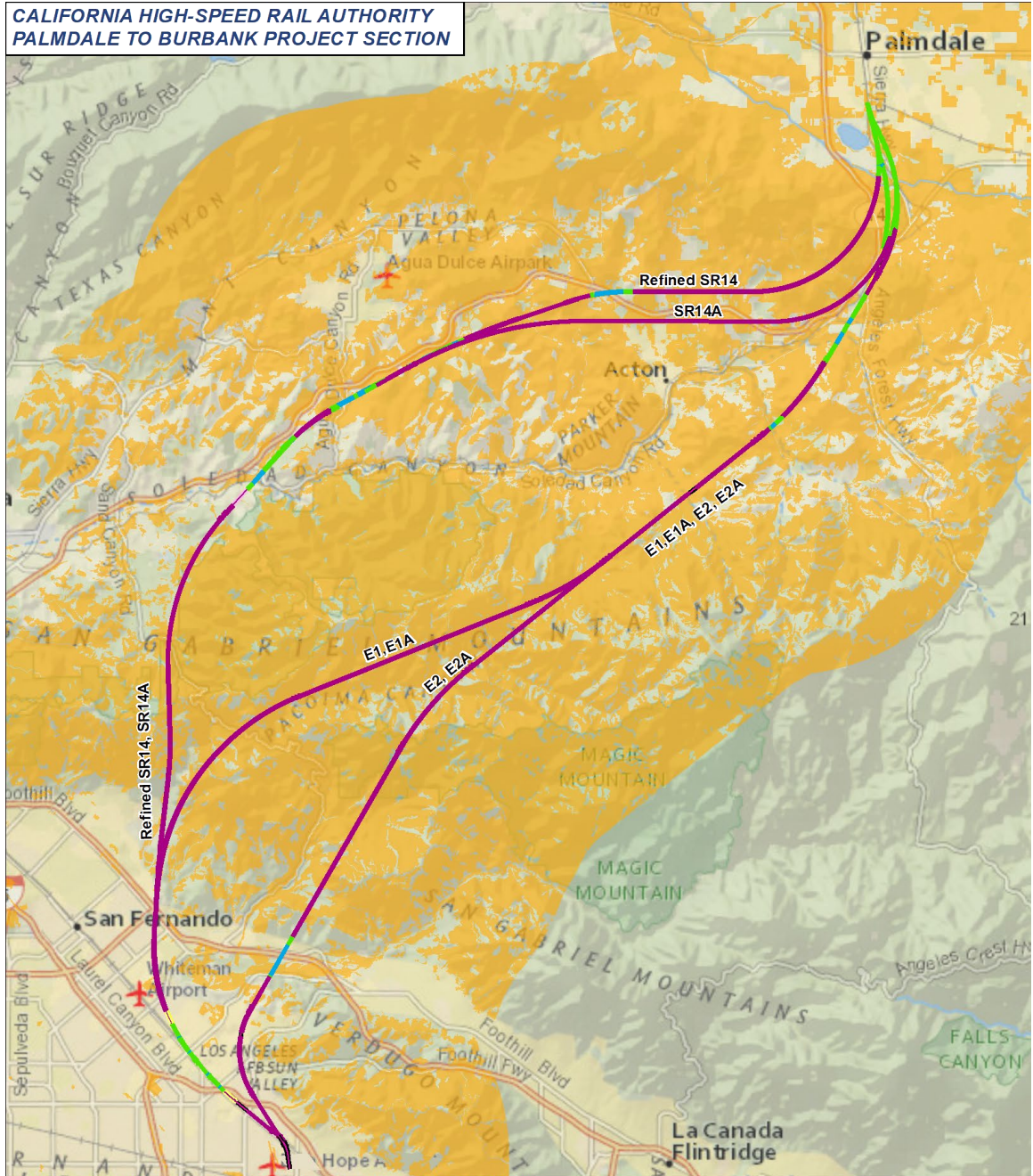


Figure 3.7-27 Santa Ana Sucker Habitat within the Resource Study Area



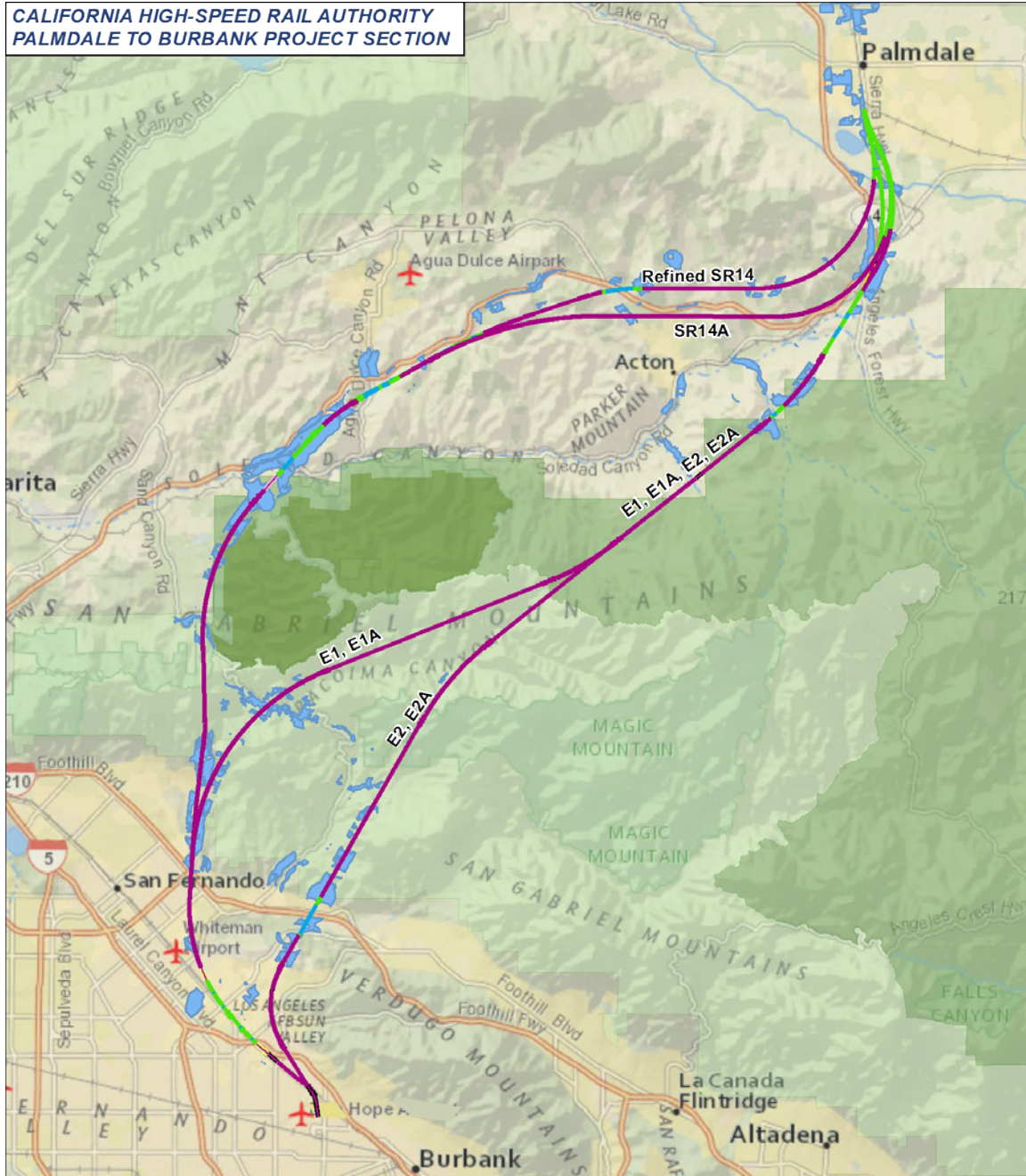
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2020; National Geographic, 2021 May 2, 2021

	HSR Alignment Profile — At Grade — At Grade Covered — Cut and Cover — Elevated / Aerial Structure — Retained Cut / Trench — Tunnel	 Crotch Bumblebee Habitat
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Figure 3.7-28 Crotch Bumble bee Habitat within the Resource Study Area



Figure 3.7-29 Monarch Butterfly Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021
 May 2, 2021

Swinson's Hawk	HSR Alignment Profile	Angeles National Forest
At Grade	At Grade Covered	Magic Mountain Wilderness Areas
Cut and Cover	Elevated / Aerial Structure	San Gabriel Mountains National Monument
Retained Cut / Trench	Tunnel	

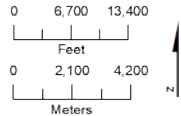
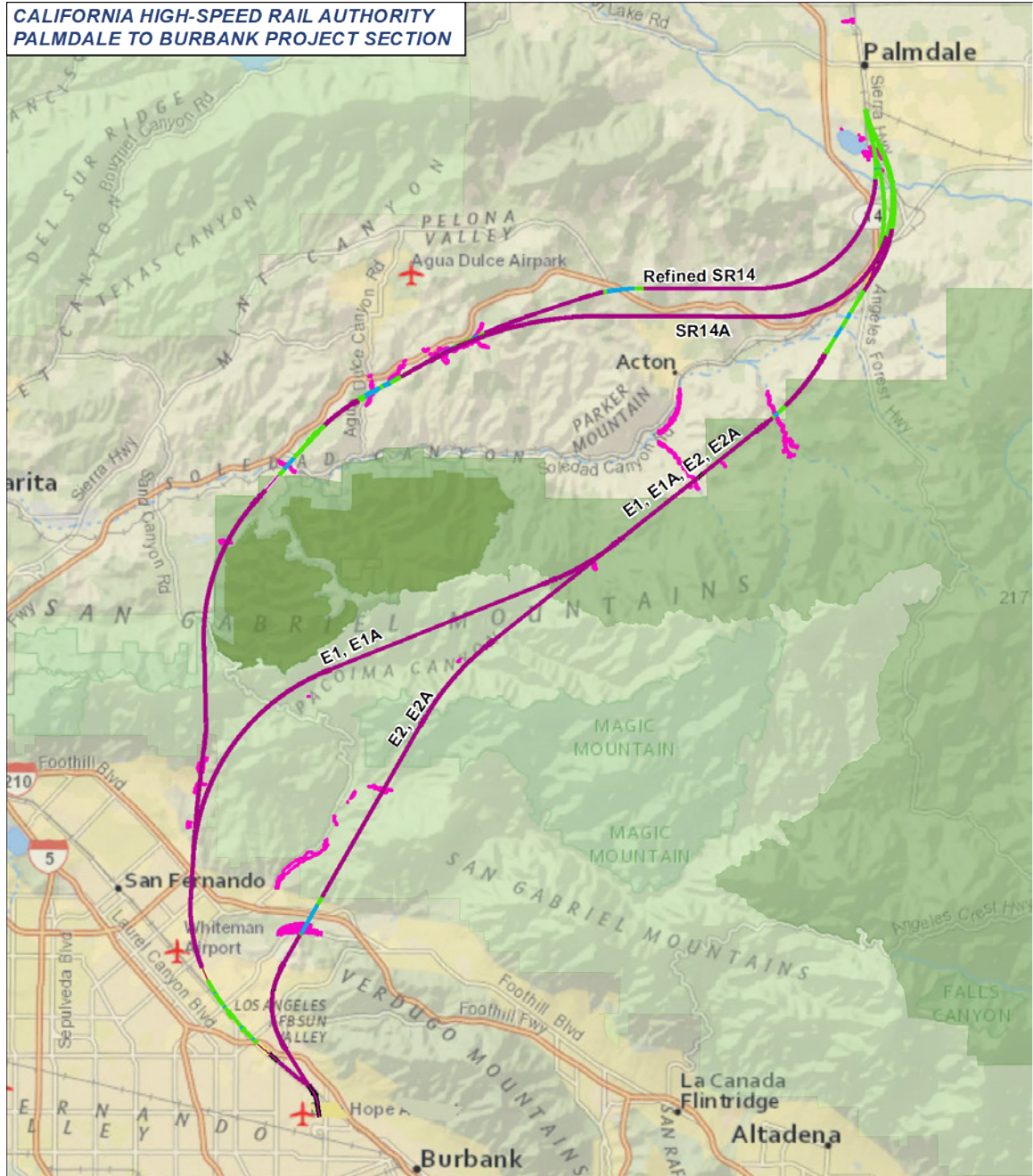


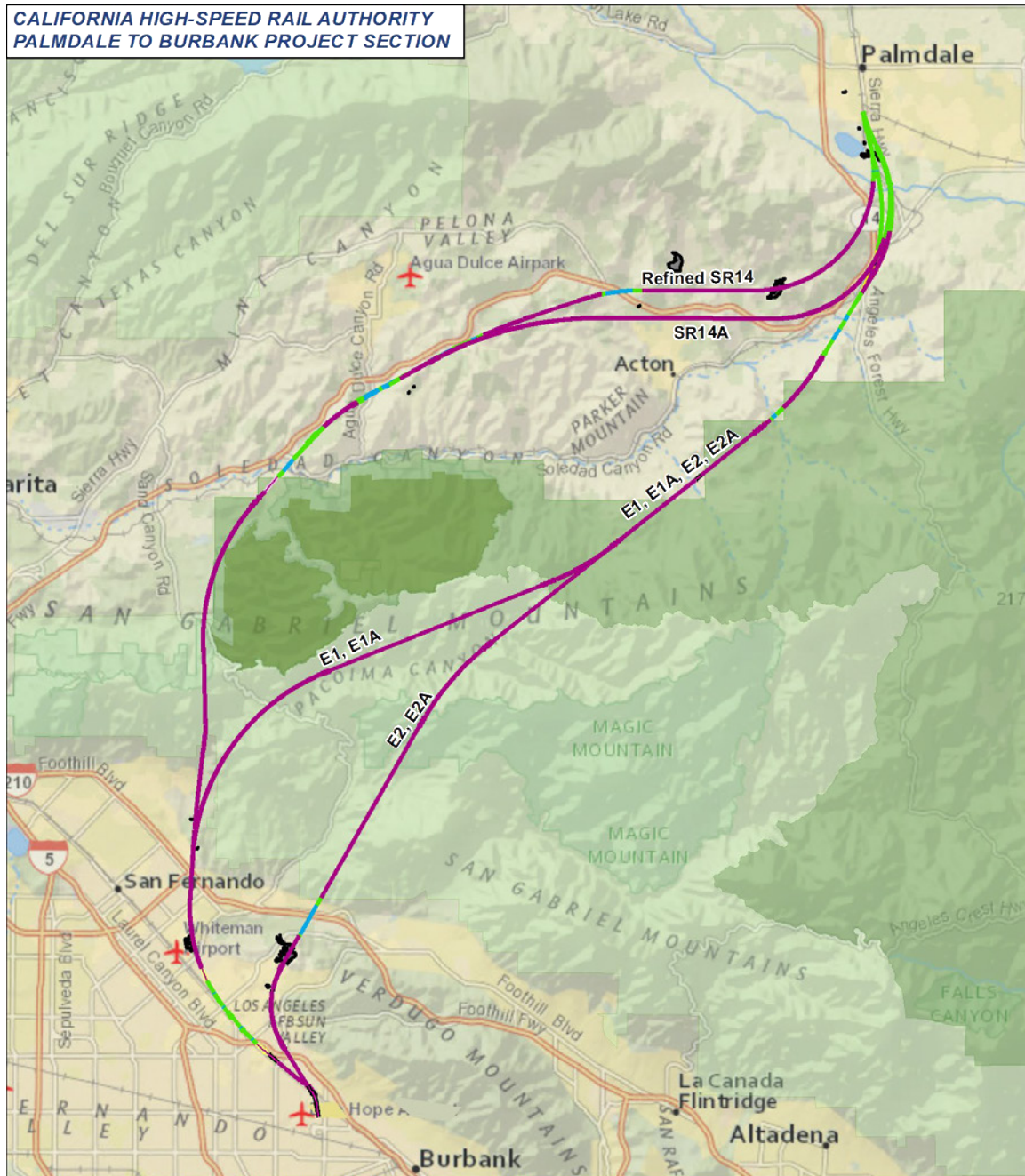
Figure 3.7-30 Swinson's Hawk Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021

<p>0 6,700 13,400 Feet</p> <p>0 2,100 4,200 Meters</p>	<p> Southwestern Willow Flycatcher</p> <p> At Grade</p> <p> At Grade Covered</p> <p> Cut and Cover</p> <p> Elevated / Aerial Structure</p> <p> Retained Cut / Trench</p> <p> Tunnel</p>	<p> Angeles National Forest</p> <p> Magic Mountain Wilderness Areas</p> <p> San Gabriel Mountains National Monument</p>
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Figure 3.7-31 Southwestern Willow Flycatcher Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021

May 2, 2021

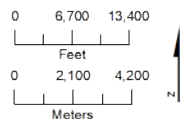
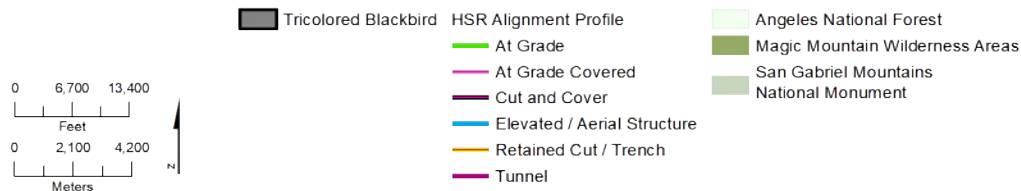
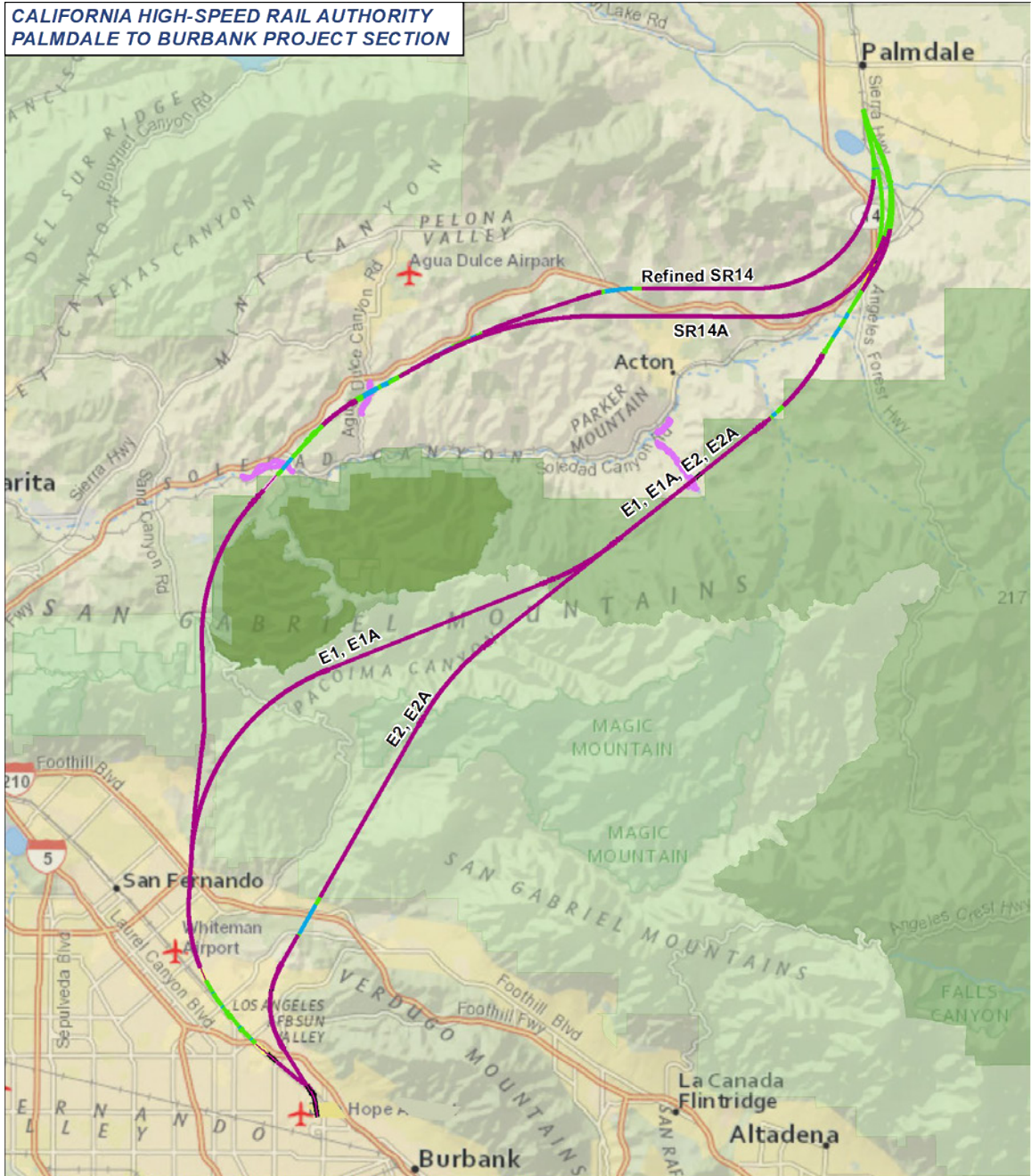


Figure 3.7-32 Tricolored Blackbird Habitat within the Resource Study Area



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; ICF, 2019; National Geographic, 2021

<p>0 6,700 13,400 Feet</p> <p>0 2,100 4,200 Meters</p>	<p>Unarmored Threespine Stickleback</p> <p>HSR Alignment Profile</p> <ul style="list-style-type: none"> At Grade At Grade Covered Cut and Cover Elevated / Aerial Structure Retained Cut / Trench Tunnel 	<ul style="list-style-type: none"> Angeles National Forest Magic Mountain Wilderness Areas San Gabriel Mountains National Monument
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Figure 3.7-33 Unarmored Three-spine Stickleback Habitat within the Resource Study Area

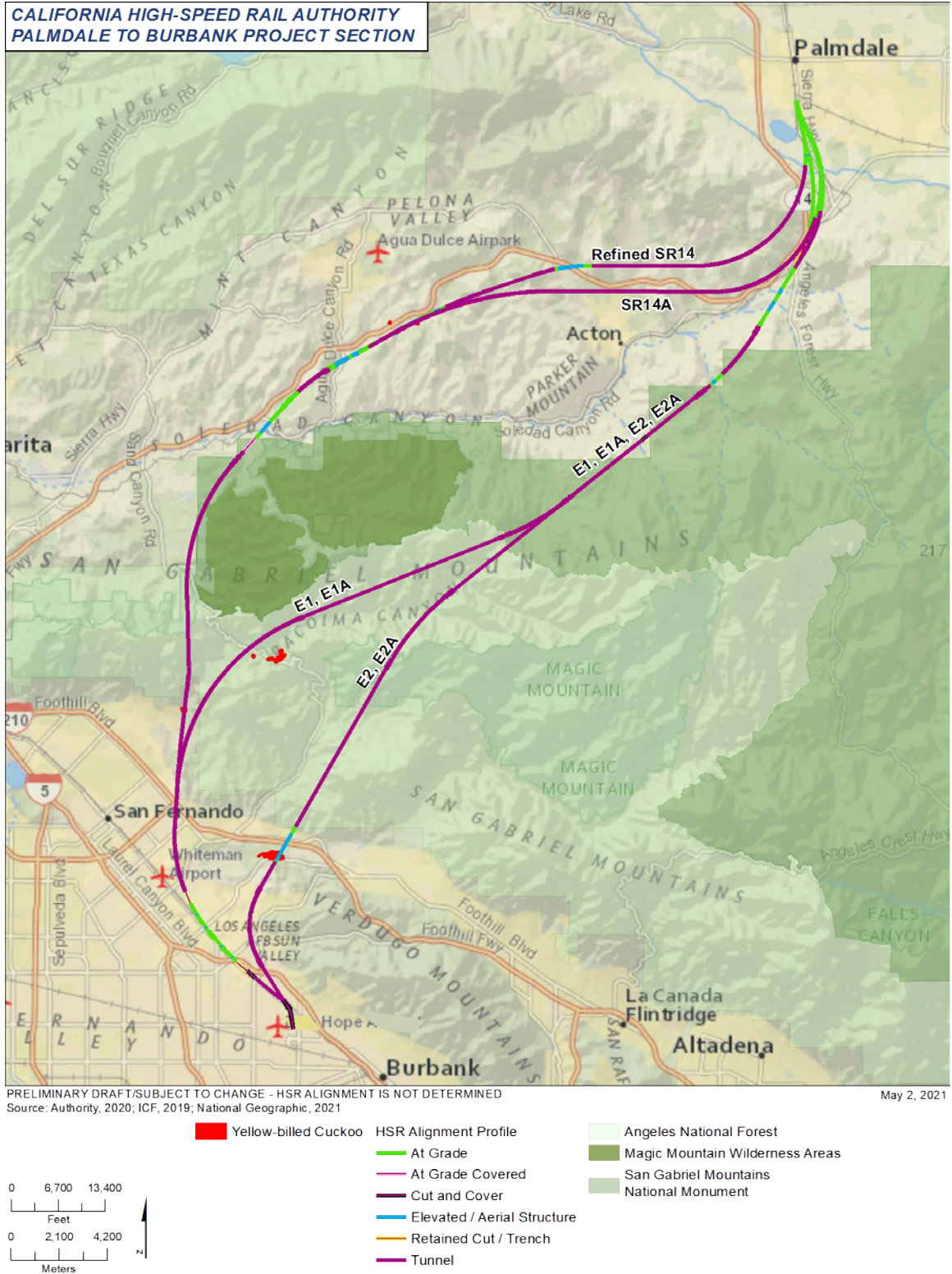


Figure 3.7-34 Western Yellow-billed Cuckoo Habitat within the Resource Study Area

3.7.5.6 Aquatic Resources

This section identifies the aquatic resources, including WOTUS; waters of the state; and streams, rivers, and lakes that are covered under Section 1600 et seq., within each of the six Build Alternative aquatic resource RSAs. The aquatic resource RSA includes three watersheds: the Antelope Valley Watershed, Santa Clara River Watershed, and Los Angeles River Watershed.

The following describes the nonwetland aquatic resources located within the aquatic RSA:

- **Natural Streams**—Natural streams are unaltered streams and rivers. Natural streams may support vegetation along the banks and in portions of the channel bottom dominated by fine sediments. Most natural watercourses in the RSA have intermittent or ephemeral flow regimes, primarily because of the regional climate and location within the watershed.
- **Modified Natural Streams**—Within the RSA, modified natural streams consist of streams modified by adjacent roads and railroads, roadway or railroad crossings, or features with concrete-lined or partial reinforced concrete or riprap channel bottoms along short reaches of an otherwise natural watercourse. These features exhibit perennial or intermittent flow regimes largely as a result of stormwater and nuisance water runoff and wastewater discharges. Some support emergent vegetation along their margins, with channel bottom substrates dominated by fine sediments.
- **Constructed Watercourses**—Within the RSA, constructed watercourses are generally concrete-lined or earthen channels constructed for stormwater conveyance. These features include previously natural drainages that were reconstructed or realigned to convey stormwater flows through urban landscapes. Scattered emergent vegetation may be present in some areas, but most constructed watercourses are subject to vegetation maintenance.
- **Constructed Basins**—Within the RSA, constructed basins include an excavated mine pit, spreading grounds, and groundwater recharge areas. These features do not support aquatic vegetation. Constructed basins are generally highly disturbed and may be routinely managed through dredging and regrading of the substrate. Hydrology varies according to management objectives, precipitation events, and artificial sources.

The following describes the wetland aquatic resources located within the aquatic RSA:

Lacustrine unconsolidated shore and emergent wetlands are found within Una Lake. Palustrine emergent, forested, and scrub-shrub wetlands are found around Lake Palmdale and Una Lake, Aliso Canyon, Arrastre Canyon, Agua Dulce Canyon, Little Tujunga Wash, Gold Creek, and two unnamed riverine features. Fourteen vernal pool features are within 1,000 feet of all six Build Alternatives.⁵ No wetlands were identified within properties where access was granted. Wetlands were identified within parcels where access had not been granted, requiring aquatic resource specialists to map wetlands within the RSA using aerial imagery, assumed presence of hydric soils, and views from public right-of-way. Hydric soils within the aquatic RSA in the ANF include 4.14 acres of Hanford family, 3 to 25 percent slopes, and 55.02 acres of Riverwash.

- **Lacustrine Wetlands**—Lacustrine wetlands are a broad class of tidal and nontidal wetlands and deepwater habitats situated in topographic depressions or dammed river channels. These wetlands typically lack trees and shrubs and have a water depth greater than 2.5 meters at low water. This includes permanently and intermittently flooded lakes and reservoirs.
 - *Emergent*—Aquatic resource specialists mapped emergent wetland associated with Una Lake.
 - *Unconsolidated Shore*—Aquatic resource specialists mapped unconsolidated shore wetland associated with Una Lake.

⁵ Identified vernal pool features are not located within the aquatic resources RSA.

- **Palustrine Wetlands**—Palustrine wetlands are a broad class of nontidal wetlands that include marshes, swamps, bogs, fens, and prairies. Palustrine wetlands found in the aquatic RSA include emergent, forested, and scrub-shrub wetlands, which are generally located within the floodplains or on the banks of natural or modified natural waterways, including rivers and creeks, and are generally characterized by a prevalence of hydrophytic vegetation.
 - *Emergent*—Palustrine emergent wetlands in the aquatic RSA typically support perennial emergent vegetation such as cattails (*Typha* spp., obligate wetland), sedges (*Carex* spp., facultative or “wetter”), bulrushes (*Schoenoplectus* spp.), and rushes (*Juncus* spp.).
 - *Forested*—Forested wetland vegetation communities in the aquatic RSA were characterized by species such as mule fat (*Baccharis salicifolia*), willows (*Salix laevigata*, *Salix lasiolepis*), and sycamore (*Platanus racemosa*).
 - *Scrub-Shrub*—The scrub-shrub wetlands within the aquatic RSA are associated with mountain and foothill intermittent streams. Access was not obtained during the field effort; therefore, all of these wetlands were mapped via aerial imagery.

Table 3.7-8 summarizes aquatic resources within each of the six Build Alternative aquatic resource RSAs. Section 6.6 of the *Palmdale to Burbank Project Section: Biologic and Aquatic Resources Technical Report* (Authority 2019a) maps aquatic resources throughout the six Build Alternative aquatic resource RSAs.

Waters of the United States

WOTUS within the aquatic resources RSA consist of wetland and nonwetland features mapped within the aquatic RSA that are regulated under the CWA as defined in 33 C.F.R. 328.3. All aquatic resources mapped outside of the Antelope Valley sub-basin are considered potentially WOTUS. USACE previously determined the aquatic resources located within the Antelope Valley watershed (excluding Lake Palmdale and associated tributaries and adjacent waters) are isolated and therefore are not subject to USACE jurisdiction. Lake Palmdale does not have any downstream surface connection within the Antelope Valley Watershed; however, it supports navigation and substantial surface water-related recreation, which previously has been determined to support a tie to interstate commerce and has been determined to be a traditional navigable waterway. Una Lake, while adjacent to Lake Palmdale, does not currently support any surface water recreation. Una Lake appears to have been separated from Lake Palmdale prior to 1915 with the construction of the Sierra Highway. It currently has an intermittent connection to Lake Palmdale during large rain events. Because Una Lake is adjacent to Lake Palmdale and because of assumed historic and current hydrologic connectivity, a USACE-approved jurisdictional determination that includes Una Lake as WOTUS was made in June 2013 (USACE 2013).

Waters of the State

Waters of the state consist of all surface water or groundwater, including saline waters and wetlands (defined in the “State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State” adopted on April 2, 2019, and effective on May 28, 2020) and are subject to regulation by the SWRCB and RWQCB under Porter-Cologne Act. Features within the Build Alternative aquatic resource RSA, including those within the Antelope Valley watershed, qualify as waters of the state.

A total of 311.18 acres of waters of the state consisting of 55.44 acres of wetlands and 255.74 acres of nonwetland waters have been identified within the RSA. Of these acreages, 12.96 acres of wetlands and 3.96 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state. The Refined SR14 Build Alternative includes a total of 163.09 acres of waters of the state consisting of 19.68 acres of wetlands and 143.41 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 7.83 acres of wetlands and 2.24 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

The SR14A Build Alternative includes a total of 129.91 acres of waters of the state consisting of 8.55 acres of wetlands and 121.36 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 5.45 acres of wetlands and 1.35 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

The E1 Build Alternative includes a total of 148.90 acres of waters of the state consisting of 17.50 acres of wetlands and 131.49 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 7.83 acres of wetlands and 2.77 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

The E1A Build Alternative includes a total of 124.33 acres of waters of the state consisting of 9.77 acres of wetlands and 114.56 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 5.37 acres of wetlands and 1.19 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

The E2 Build Alternative includes a total of 164.66 acres of waters of the state consisting of 44.68 acres of wetlands and 119.98 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 7.68 acres of wetlands and 2.77 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

The E2A Build Alternative includes a total of 140.09 acres of waters of the state consisting of 36.95 acres of wetlands and 103.14 acres of nonwetland waters identified within the aquatic RSA. Of these acreages, 5.37 acres of wetlands and 1.19 acres of nonwetland waters are waters of the state but are not WOTUS. The remaining resources are both WOTUS and waters of the state.

Table 3.7-8 Combined Aquatic Resources within the Refined SR14, SR14A, E1, E1A, E2, and E2A Aquatic Resource Study Areas

Aquatic Resource	Seasonality	WOTUS and Waters of the State(acres)	Additional Waters of the State (acres) ¹	CFGC 1600 CDFW-Regulated Areas (acres)
Wetlands				
Lacustrine – emergent	N/A	0.12	-	-
Lacustrine – unconsolidated shore	N/A	0.22	-	-
Palustrine – emergent	N/A	7.15	0.02	-
Palustrine – forested	N/A	29.07	-	-
Palustrine – scrub-shrub	N/A	5.93	12.94	-
Wetland Subtotal		42.48	12.96	-
Nonwetlands				
Natural stream	Perennial	3.85	--	3.85
	Intermittent	7.73	-	7.73
	Ephemeral	32.79	0.78	56.88
Modified natural stream	Perennial	5.19	-	5.19
	Intermittent	36.09	-	36.26
	Ephemeral	103.91	2.29	174.81
Constructed watercourse – concrete	Perennial	9.59	0.17	10.15
	Intermittent	9.97	-	9.97

Aquatic Resource	Seasonality	WOTUS and Waters of the State(acres)	Additional Waters of the State (acres) ¹	CFGC 1600 CDFW-Regulated Areas (acres)
	Ephemeral	1.75	0.71	3.35
Constructed watercourse – earthen	Perennial	0.24	-	0.24
	Ephemeral	3.42	-	3.81
Lake	Perennial	8.58	-	8.58
Constructed basin – earthen	Ephemeral	19.94	-	30.80
	Perennial	8.74	-	8.74
Mixed riparian	N/A	-	-	328.25
Nonwetland Subtotal		251.78	3.96	688.59
Total		294.27	16.91	688.59

Source: Authority 2019a

¹ Additional waters of the state are solely jurisdictional as waters of the state and are not considered WOTUS because they are isolated.

² Totals may not add up exactly due to rounding.

CDFW = California Department of Fish and Wildlife; CFGC = California Fish and Game Code; N/A = Not Applicable

CDFW-Regulated Areas

Based upon CDFW regulatory definitions outlined in Section 3.7.2.2, as well as landscape position and vegetation composition of aquatic resources, all CDFW-regulated areas include the bed and banks of lakes, rivers, and streams, delineated to the top of bank, as well as mixed riparian areas adjacent to lakes, rivers, streams, and constructed basins. A total of 675.48 acres of potential CDFW jurisdictional areas (including associated riparian habitat) were identified in the RSA. This acreage consists of 325.14 acres of riparian habitat and 350.33 acres of streams, rivers, and lakes.

3.7.5.7 Designated Critical Habitat

Figure 3.7-35 depicts the designated critical habitat within the RSA. The Refined SR14 and SR14A Build Alternative alignments would traverse 0.26 mile of designated arroyo toad critical habitat on viaduct within Soledad Canyon. The E2 and E2A Build Alternative alignments would traverse 0.26 mile of designated Santa Ana sucker and 0.24 mile of designated southwestern willow flycatcher critical habitat within the Big Tujunga Wash. The E1 and E1A Build Alternative alignments would not affect designated critical habitat. Table 3.7-9 summarizes the miles of designated critical habitat that would be traversed by all six Build Alternative alignments within the associated RSA.

Table 3.7-9 Designated Critical Habitat within the Resource Study Areas

Common Name	Miles of Designated Critical Habitat within Resource Study Areas
Fish	
Santa Ana sucker critical habitat	The E2 and E2A Build Alternative alignments would traverse 0.26 mile of designated Santa Ana sucker critical habitat within Big Tujunga Wash.
Amphibians	
Arroyo toad critical habitat	The Refined SR14 and SR14A Build Alternative alignments would traverse 0.26 mile of designated critical habitat along the Santa Clara River southeast of SR 14 in Soledad Canyon. Additional designated critical habitat for arroyo toad occurs within 10 miles of the action area.
Birds	
Southwestern willow flycatcher critical habitat	The E2 and E2A Build Alternative alignments would traverse 0.24 mile of designated southwestern willow flycatcher critical habitat within Big Tujunga Wash.

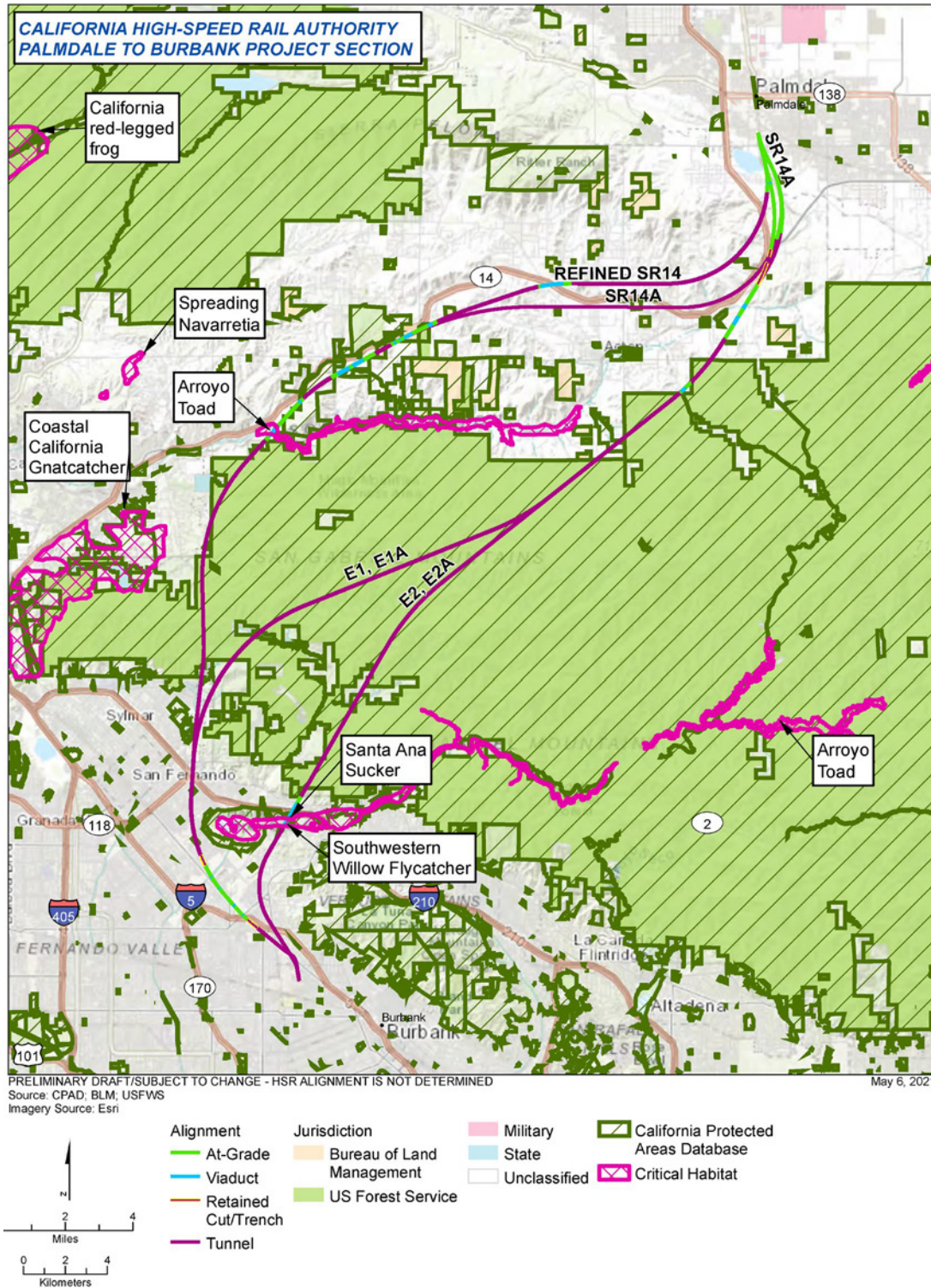


Figure 3.7-35 Critical Habitat within the Resource Study Area

3.7.5.8 *Essential Fish Habitat*

EFH is limited to commercially managed marine and anadromous fish species. There is no EFH in the project footprint. Because the Build Alternatives do not encounter marine or anadromous fish habitat within the project footprint, the project would not adversely affect any marine or anadromous fish habitat. Therefore, the Authority would not be required to consult with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act.

3.7.5.9 *Significant Ecological Areas*

SEAs are officially designated areas within Los Angeles County identified as having irreplaceable biological resources. These areas represent the wide-ranging biodiversity of the county and contain some of the county's most important biological resources. As depicted on Figure 3.7-36, there are several SEAs within the core habitat RSA, including the San Andreas SEA, Santa Clara River SEA, and Tujunga Valley/Hansen Dam SEA. These areas received SEA designation because they each support many regional biological values by containing the following (County of Los Angeles 2015b):

- The habitat of core populations of endangered and threatened plant and animal species
- Biotic communities, vegetation associations, and habitat of plant and animal species that are either unique or are restricted in distribution in Los Angeles County and regionally
- Concentrated breeding, feeding, resting, or migrating grounds, which are limited in availability in Los Angeles County
- Numerous examples of species at their habitat extremes where the coastal and desert influences meet
- Areas that provide for the preservation of relatively undisturbed examples of original natural biotic communities in Los Angeles County

The following SEA descriptions are from Appendix E of the Los Angeles County General Plan 2035 (County of Los Angeles 2015b).

- **San Andreas Significant Ecological Area**—The San Andreas SEA is the second-largest SEA in Los Angeles County and includes a great variety of habitats and frequent emergent water that is important for wildlife movement and habitat connectivity. All six Build Alternative alignments would traverse the southernmost portion of this SEA, which is disconnected from the main extent of the San Andreas SEA and includes Lake Palmdale and Una Lake; many birds can be observed at these artificial lakes and the natural springs of this area during spring and fall migration. While the Refined SR14, E1, and E2 Build Alternative alignments would traverse Una Lake on an embankment, in contrast the SR14A, E1A, and E2A Build Alternative alignments would travel approximately 300 feet east of Una Lake, thereby avoiding the lake.
- **Santa Clara River Significant Ecological Area**—The Santa Clara River riparian corridor is the primary east-west linkage between the Pacific coastline, Coast Ranges, interior ranges, high desert, and southern Sierra (via the Tehachapi Range). Animals moving through the Santa Clara River at one time had unobstructed passage along the river and within its tributaries. The present configuration of the tributary drainages has reduced connectivity from the Santa Clara Valley to the north, but the Santa Clara River remains relatively intact and open. This SEA encompasses the river corridor and linkage zones that are considered essential to ensuring connectivity and resource values within the historical movement zones for local wildlife species. The Refined SR14 and SR14A Build Alternative alignments would traverse the northwestern portion of the Santa Clara River SEA; however, the SR14A Build Alternative alignment would have less at-grade footprint where it first encounters this area compared to the Refined SR14 Build Alternative alignment. Additionally, the Refined SR14 and SR14A Build Alternative alignments would traverse the same areas of the southwestern portion of the Santa Clara River SEA. Key biological resources in these areas include riparian areas and wildlife corridors that provide connectivity across the Santa Clara River between

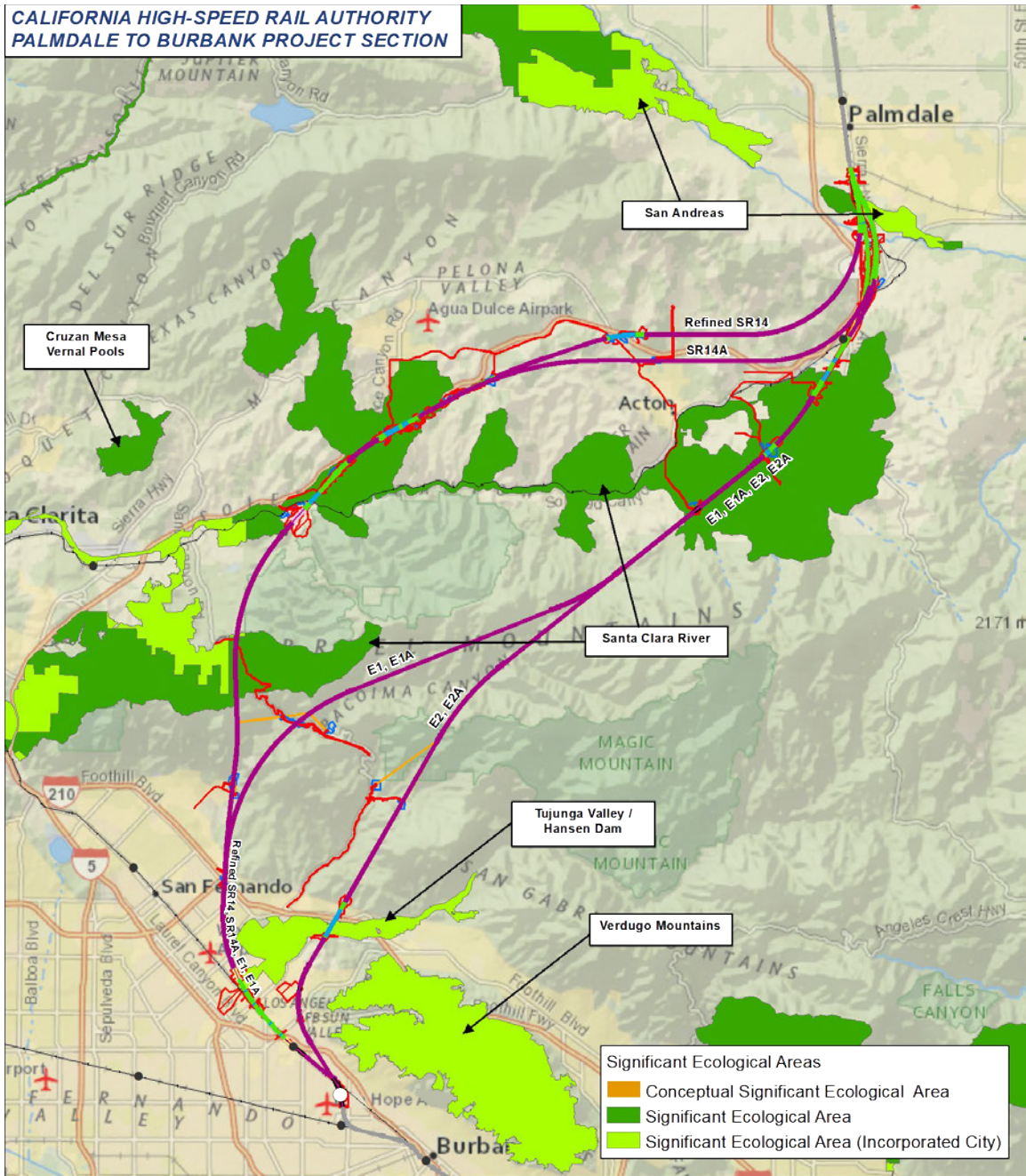
the western and eastern highland areas of the San Gabriel Mountains. Where the Refined SR14 and SR14A Build Alternatives traverse the Santa Clara River SEA, there exists habitat for sensitive plant and wildlife species, such as Braunton's milk-vetch, unarmored three-spine stickleback, Swainson's hawk, arroyo toad, California red-legged frog, least Bell's vireo and Southwestern willow flycatcher. No California red-legged frogs were observed during the protocol field surveys conducted to determine presence or absence of the species; however, California red-legged frogs are known to occur in Aliso Creek and Arrastre Canyon Creek upstream of the E1, E1A, E2, and E2A Build Alternative alignments. As such where the E1, E1A, E2, and E2A Build Alternatives cross Arrastre Canyon Creek and Aliso Canyon, it is assumed that California red-legged frogs are present. The E1, E1A, E2, and E2A Build Alternative alignments would traverse the same areas of the northeastern portion of the Santa Clara River SEA. Key biological resources in this area also include riparian resources and wildlife corridors that provide connectivity across this portion of the Santa Clara River.

- **Tujunga Valley/Hansen Dam Significant Ecological Area**—Located entirely within the city of Los Angeles, the Tujunga Valley/Hansen Dam SEA consists of the Tujunga Valley and Wash, starting in the riparian areas of Big Tujunga within the ANF and including Hansen Dam, Hansen Dam Flood Control Basin, Hansen Dam Park, Hansen Dam Golf Course, and Tujunga Wash as well as industrial areas downstream of Hansen Dam. This area is recognized for its great importance to migrating birds on the Pacific Flyway and very rare alluvial fan scrub habitat. The Refined SR14, SR14A, E1, and E1A Build Alternative alignments traverse the western portion of this SEA. This portion of the Tujunga Valley/Hansen Dam SEA contains several key biological resources, including a valuable wildlife corridor and several freshwater marsh areas that are used by marsh birds, migratory waterfowl, and shorebirds. The E2 and E2A Build Alternative alignments would traverse the center of this SEA that contains protected fish species (e.g., speckled dace, arroyo chub, and Santa Ana sucker) and sensitive vegetation habitat, including alluvial fan habitat mixed with riparian forest.

3.7.5.10 Habitat Conservation Plans/Natural Community Conservation Plans/Recovery Plan Areas

There are no HCPs or NCCPs within any of the RSAs for the six Build Alternatives. Recovery Plan Areas for the following FESA-listed species occur within the core habitat RSA:

- Southwestern willow flycatcher—Hansen Dam area is within the Coastal California Recovery Unit for Southwestern willow flycatcher.
- Santa Ana Sucker—Recovery Plan Area includes Big Tujunga Reach in Big Tujunga Creek and connecting tributaries above Big Tujunga Dam. Also includes Hansen Reach in Big Tujunga Creek and connecting tributaries between Big Tujunga Dam and Hansen Dam.
- Arroyo Toad—Big Tujunga Creek is within the Northern Recovery Unit; Subregion 7 for Arroyo toad.



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 Source: Authority, 2021; Los Angeles County, 2016
 May 2, 2021

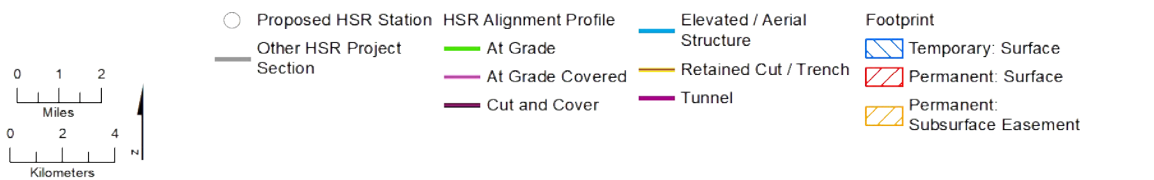


Figure 3.7-36 Significant Ecological Areas within the Resource Study Area

3.7.5.11 Protected Trees

Protected trees are trees or tree communities that have special significance and are afforded protection by, and specifically identified in, county and city ordinances, codes, or general plans. The regional and contextual importance of protected trees in the special-status plant RSA varies based on the species of tree and its location. Native tree species and trees found in riparian areas are ecologically valuable because natural habitats and riparian areas have been greatly reduced in the special-status plant RSA and therefore these trees represent a rare resource for wildlife. However, the majority of protected trees present, besides those of unknown type, are landscape, ornamental, or nonnative trees, which are less ecologically significant because they do not provide natural habitat or are less likely to provide preservation value for native species.

The types of trees and specific physical characteristics required to meet the local definitions vary by city and county:

- The City of Palmdale Municipal Code (Section 14, Environmental Management: Joshua Tree and Native Desert Vegetation Preservation, Ordinances 14.04.040 through 14.04.100) aims to preserve desert vegetation, particularly Joshua trees, to retain the unique natural desert aesthetics and promote the general welfare of the community.
- The Los Angeles County Oak Tree Ordinance recognizes oak trees as a significant historical, aesthetic, and ecological resources. The stated objective of the ordinance's oak tree permit requirement is to preserve and maintain healthy oak trees by prohibiting damage or removal of oak trees without first obtaining a permit.

3.7.5.12 Wildlife Movement Corridors

The auxiliary RSA traverses three major geographic regions: the Antelope Valley, the San Gabriel Mountains, and the San Fernando Valley; and two ecoregions: the Mojave Desert Ecoregion and the South Coast Ecoregion. Movement along the Palmdale to Burbank Project Section alignment is constrained around Antelope Valley to the north and the San Fernando Valley to the south because these areas are highly urbanized. Existing wildlife movement is limited in these areas, and the Palmdale to Burbank Project Section would have few impacts on the already limited wildlife movement localized to urban centers.

The San Gabriel Mountains are largely undeveloped and contain several existing wildlife corridors. The San Gabriel Mountains are centrally positioned in the Transverse Range and located just southeast of the convergence of four major ecoregions (Great Central Valley, Sierra Nevada, Mojave Desert, and South Coast) and five major biogeographic regions (Great Central Valley, Sierra Nevada, Mojave Desert, Coast Ranges, and Transverse Ranges). The San Gabriel Mountains, as part of the Transverse Ranges, provide a critical linkage between this convergence zone and the Peninsular Range at the south.

One of the unique aspects of the San Gabriel Mountains is the amount of conserved and protected land that stretches across the ANF, of which a large portion is included in the SGMNM. There are substantial conservation lands in proximity to the wildlife corridor RSA, including the Sierra Madre-Castaic Linkage Design, SEAs, Nature Conservancy Ecoregional Priority Areas, and open space and recreation areas. In total, there are over 275,000 acres of protected land in the wildlife corridor RSA vicinity.

Existing constraints to wildlife connectivity and natural wildlife movement in the Palmdale to Burbank Project Section vicinity come from a combination of habitat loss, fragmentation, and degradation of existing habitat resulting from urban and agricultural development and linear transportation barriers. The primary constraint to wildlife movement along the Palmdale to Burbank Project Section alignment is the urban development associated with Palmdale to the north and the San Fernando Valley to the south. The urban development in the San Fernando Valley is especially dense with residential, commercial, and industrial development traversed by a number of high traffic freeways. Existing developments are concentrated in the Palmdale, Acton, and the San Fernando Valley, but also include the transportation network that connects these urban centers.

Linear transportation features primarily consist of the SR 14 freeway which is a 65-mile-per-hour six- to eight-lane freeway divided by a concrete k-rail. The lack of vegetative cover and the width, speed, and volume of traffic associated with the SR 14 freeway creates a considerable deterrent for wildlife; for all practical purposes, the SR 14 freeway serves as a barrier to wildlife movement. Numerous bridges and culverts provide potential crossing opportunities under the SR 14 freeway. However, because of their width and height, many bridges and culverts would not facilitate wildlife movement due to lack of vegetative cover and due to the design of the bridge/culvert. The landscape attributes that favor animal movement include riparian corridors, ravines or ridgelines, habitat edges, and patches of relatively undisturbed habitat. Other existing constraints to wildlife connectivity and natural wildlife movement include:

- The Sierra Highway, as well as a number of frontage roads that parallel the SR 14 freeway.
- The Southern Pacific Railroad tracks, which extend south from Palmdale along Sierra Highway and then along Soledad Canyon Road starting at Acton. The Southern Pacific Railroad tracks are not fenced and are also used by the Metrolink.
- The California Aqueduct, which generally runs west to east at the southern end of Palmdale. The California Aqueduct is more than 125 feet wide and bordered on both sides by a paved and dirt road secured with a chain-link fence topped by barbwire, which is generally considered impervious to wildlife except where the canal goes underground or is traversed by bridges. There are also a number of drainage culverts that cross beneath the aqueduct that may be used by some species to pass under the aqueduct.
- The Antelope Valley-East Kern Water Agency's Acton Water Treatment Plant along Sierra Highway and the Waste Management Antelope Valley Landfill, which are both fenced facilities.
- Lake Palmdale, a private recreation area located between the SR 14 freeway and Sierra Highway, and Una Lake, which is located on the east side of Sierra Highway. The Lake Palmdale facility is fenced with a 6-foot chain-link fence and topped with barbwire. Una Lake is fenced with a chain-link fence. Both fences would likely present a barrier to large mammal species.

3.7.6 Environmental Consequences

3.7.6.1 Overview

This section evaluates biological and aquatic resource impacts for the No Project and Build Alternatives. The Refined SR14, SR14A, E1, E1A, E2 and E2A Build Alternatives would generally result in similar types of impacts but would vary in the degree of effect, likelihood, or amount of resource/habitat type. The following sections address construction-period and operations impacts together for all six Build Alternatives but acknowledge the differences in impact location or severity, where appropriate. Severity of the impact may differ based on geographic location of the resource as urban and non-urban settings may have differing levels of biological sensitivity.

The impacts caused by each of the six Build Alternatives are listed below and discussed in detail in subsequent subsections:

- **Construction Impacts**
 - Impact BIO#1: Project Construction Effects on Habitat for Special-Status Individuals and Communities.
 - Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
 - Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
 - Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.
 - Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.
 - Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

- Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.
- Impact BIO#8: Project Construction Effects on State and Federally Protected Aquatic Resources.
- Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.
- Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat.
- Impact BIO#11: Project Construction Effects on Significant Ecological Areas.
- Impact BIO#12: Project Construction Effects on Protected
- Impact BIO#13: Project Effects on Wildlife Movement Corridors.
- **Operations Impacts**
 - Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
 - Impact BIO#15: Indirect Effects on Federal and State Protected Aquatic Resources from Project Operation.
 - Impact BIO#16: Indirect Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.
 - Impact BIO#17: Project Operation Effects on Designated Critical Habitat.
 - Impact BIO#18: Indirect Effects on Significant Ecological Areas from Project Operation.
 - Impact BIO#19: Project Operation Effects on Protected Trees.

The nature of these impacts and their magnitude (i.e., the impact acreage) are used to determine the intensity of the impact under NEPA and the significance of the impact under CEQA.

3.7.6.2 No Project Alternative

Overall, increasing development pressure in Los Angeles County during No Project Alternative conditions would affect wildlife habitat and aquatic resources by converting rural or undeveloped land into urban communities or other human infrastructure. Improvements and expansions to the intercity transportation system would negatively affect biological or aquatic resources within the construction footprint and operating corridor for each project, and low-density development on the urban fringe would exacerbate existing trends affecting biological resources. Such development pressure would be particularly pronounced within the urbanized portions of the Antelope Valley and San Fernando Valley. Between these urban centers, vast areas of the Sierra Pelona Mountains and the San Gabriel Mountains would likely be protected from development pressures because of their protected status as part of the National Forest system.

No Project Alternative impacts on biological and aquatic resources would include habitat loss, fragmentation, or degradation, and the mortality or injury of protected plants and animals. However, because future projects would be subject to environmental review and evaluation of impacts on plants, wildlife, and habitat, as well as applicable federal and state permit processes, future impacts on biological and aquatic resources would likely be avoided, reduced, and mitigated through restoration of disturbed sites and compensatory habitat preservation. Nevertheless, irreversible loss of natural communities would occur as development pressure increases throughout the region.

3.7.6.3 High-Speed Rail Build Alternatives

As discussed in Chapter 2, Alternatives, the California HSR System would utilize different above- and below-ground facilities and alignment profiles, including at-grade, viaduct, and tunnel. In general, aboveground trackway and facilities, such as at-grade profile or viaduct profiles, would affect surface areas that contain sensitive biologic or aquatic habitats by directly removing or

disturbing such habitats. By comparison, subsurface facilities and alignment profiles, such as tunnels, would avoid or minimize impacts on surface habitats by eliminating direct removal or disturbance but could indirectly affect surface habitats through changes to subsurface hydrologic conditions.

Construction Impacts

All six Build Alternatives would affect a variety of vegetation communities between Palmdale and Burbank (described in Section 3.7.5, Affected Environment). Special-status species that rely on the vegetation communities within the adit, intermediate window, and station option footprints could experience slightly different habitat disturbances, described below. Adit and window options for the Refined SR14 and SR14A Build Alternatives include SR14-A1, SR14-A2, SR14-A3, SR14-W1, and SR14-W2. The SR14A Build Alternative also includes an intermediate window (IWA) south of SR 14, in Acton. Adit and window options for the E1 and E1A Build Alternatives include E1-A1, E1-A2, E1-W1, E1-W2A, and E1-W2B. Adit and window options for the E2 and E2A Build Alternatives include E2-A1, E2-A2, E2-W1, and E2-W2. (Refer to Chapter 2, Alternatives, for more information on adits and intermediate windows). This report provides a range that represents the minimum/maximum of acreage impacts during construction of each Build Alternative. Specific impact quantifications for each adit and window combination are found in Appendix K of the *Palmdale to Burbank Project Section: Biological Resources and Aquatic Resources Technical Report* (Authority 2019a). The impacts described in this section highlight activities that have the potential to affect special-status plant individuals/habitat per the CEQA thresholds described in Section 3.7.4.6. Direct, indirect, temporary, and permanent impacts are discussed in subsections of each impact. However, for the purposes of quantifying acreage of habitat impacts, temporary impacts are considered permanent impacts due to the length of the construction period.

Impact BIO#1: Project Construction Effects on Habitat for Special-Status Individuals and Communities.

The special-status plant RSAs for the six Build Alternatives encompass habitat for 3 FESA-listed plant species, 41 non-FESA-listed special-status plant species, and 6 special-status plant communities. Table 3.7-10 summarizes the range of surface impacts on habitat for special-status plant species and sensitive natural communities that would result from construction of the Build Alternatives. FESA-listed special-status plant species are those listed as FE and FT.

FESA-Listed Species

Braunton's Milk-Vetch (Figure 3.7-15):

- **Refined SR14 Build Alternative**—Trackway and ancillary facilities for the Refined SR14 Build Alternative would affect Braunton's milk-vetch habitat south of the SR 14/Agua Dulce Canyon Road interchange and on either side of the Santa Clara River crossing in Soledad Canyon. All Refined SR14 adit options would affect Braunton's milk-vetch habitat. SR14-W1 would affect Braunton's milk-vetch habitat, but SR14-W2 would avoid these impacts. The Boulevard Mine disposal site and adjacent areas also contain Braunton's milk-vetch habitat.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative would affect the same areas of Braunton's milk-vetch habitat as the Refined SR14 Build Alternative.

FESA-Listed and Non-FESA-Listed Species

FESA-Listed Species are federally endangered or threatened species administered by USFWS or NMFS. This analysis examines species-specific habitat along the Build Alternatives for listed species.

Non-FESA-Listed Species have protections from federal, state, or local regulators. This analysis identifies non-FESA-listed species habitat based on vegetation communities within the Build Alternative RSAs (described in Section 3.7.5.2 and Table 3.7-4).

- E1 Build Alternative**—E1-A1 and E1-A2 would affect Braunton’s milk-vetch habitat along Little Tujunga Canyon Road within the ANF. E1-W3 would avoid impacts on Braunton’s milk-vetch habitat north of the I-210/SR 118 interchange, but E1-W2 would affect habitat in this area. The Boulevard Mine disposal site and adjacent periphery also contains Braunton’s milk-vetch habitat.
- E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the Refined E1 Build Alternative. In areas where Braunton’s milk-vetch habitat occurs, the E1A Build Alternative alignment would be identical to that of the E1 Build Alternative alignment.
- E2 Build Alternative**—E2 alignment and ancillary facilities would affect Braunton’s milk-vetch habitat in the following areas: along Little Tujunga Canyon Road and Gold Creek Road within the ANF, north of the Lake View Terrace neighborhood, on either side of the Big Tujunga Wash crossing, and within the CalMat Mine disposal site.
- E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the Refined E2 Build Alternative. The E2A Build Alternative alignment would be identical to that of the E2 Build Alternative alignment in areas where Braunton’s milk-vetch habitat occurs.

Special-Status Plants and Special-Status Plant Communities

Special-status plants refer to individual plant species listed by federal, state, or local regulators.

Special-status plant communities are determined to be significant, to represent rare vegetation types, or to have limited distribution statewide or within a county or region, including riparian areas regulated by CDFW per CFGC section 1600 et seq.

Table 3.7-10 Special-Status Plant Habitat within Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Plant Species							
Braunton’s milk-vetch	FE/FSS, 1B.1	479 – 499	482 – 501	128 – 132	128 – 132	115 – 131	115 – 131
Nevin’s barberry	FE/FSS, 1B.1	464 – 513	423 – 472	44 – 68	44 – 68	113 – 115	113 – 115
Slender-horned spineflower	FE/FSS, 1B.1	435 – 452	410 – 426	11 – 13	11 – 13	84 – 100	84 – 100
Non-FESA–Listed Special-Status Plant Species							
California androsace	4.2	836 – 905	67 – 739	534 – 558	471 – 495	575 – 583	513 – 521
California satintail	2B.1	743 – 764	511 – 532	218 – 222	174 – 177	290 – 299	245 – 255
California spineflower	4.2	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121
Chaparral ragwort	2B.2	640 – 661	423 – 444	52 – 55	43 – 47	123 – 132	115 – 124

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Chickweed starry puncturebract	4.3	0	0	0	0	0	0
Clokey's cryptantha	BLMS, 2 1B	101	83	166	130	166	130
Club-haired mariposa lily	4.3	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121
Davidson's bush-mallow	1B.2	641 – 706	424 – 489	78 – 101	69 – 93	134 – 136	126 – 127
Forest camp sandwort	FSS	0	0	0	0	0	0
Fragrant pitcher sage	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44
Greata's aster	BLMS, 1B.3	322 – 392	143 – 213	73 – 95	64 – 87	69 – 70	60 – 62
Lemon lily	1B.2	46 – 88	14 – 56	40 – 60	31 – 52	26 – 40	18 – 32
Lemon's syntrichopappus	4.3	486 – 514	344 – 372	489 – 491	433 – 435	484 – 499	429 – 445
Mason's neststraw	1B.1	210	215	456	400	455	400
Mesa horkelia	1B.1	548 – 603	409 – 464	49 – 73	49 – 73	104 – 112	104 – 112
Mojave paintbrush	4.3	225	230	517	410	516	410
Mojave tarplant	1B.3	642 – 663	428 – 449	52 – 55	44 – 47	124 – 133	115 – 125
Mt. Gleason's paintbrush	1B.2	486 – 514	344 – 372	489 – 491	433 – 435	484 – 499	429 – 445
Ocellated lily	4.2	641 – 706	424 – 489	78 – 101	69 – 93	134 – 136	113 – 121
Plummer's mariposa lily	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44
Parry's spineflower	1B.1	626 – 694	472 – 524	78 – 102	71 – 95	120 – 128	113 – 121
Peirson's morning-glory	4.2	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121
Piute Mountains navarretia	1B.1	241 – 287	261 – 307	496 – 517	433 – 454	473 – 481	411 – 419

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Pygmy poppy	4.2	326	313	683 – 540	1,423	682	541
Rigid fringepod	1B.2	210	215	456	400	455	400
Robbins' nemacladus	1B.2	305 – 333	173 – 201	47 – 50	40 – 43	43 – 59	36 – 52
Robinson's pepper grass	4.3	313 – 337	275 – 299	5 – 6	5 – 6	66	66
Rock monardella	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44
Sagebrush loeflingia	2B.2	101	83	166	130	166	130
Salt Spring checkerbloom	2B.2	695 – 718	493 – 515	204 – 207	168 – 171	260 – 276	224 – 240
San Bernardino aster	1B.2	350 – 391	327 – 368	45 – 67	38 – 60	84 – 91	77 – 8
San Fernando Valley spineflower	FSS, SE, 1B.1	343 – 367	320 – 344	20 – 21	13 – 14	80	73
San Gabriel bedstraw	1B.2	277 – 351	130 – 204	58 – 81	58 – 81	40 – 48	40 – 48
San Gabriel manzanita	1B.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	29 – 44
Short-joint beavertail	1B.2	586 – 614	427 – 455	655 – 657	563 – 565	650 – 665	559 – 575
Slender mariposa lily	1B.2	624 – 647	454 – 477	52 – 56	45 – 49	108 – 124	101 – 117
Sonoran maiden fern	2B.2	12	0	14	0	14	0
Southern California black walnut	4.2	596 – 664	411 – 480	63 – 87	63 – 87	105 – 113	105 – 113
Southern tarplant	1B.1	71 – 78	54 – 61	29	13	37 – 44	22 – 28
Urn-flowered alumroot	4.3	313 – 337	275 – 299	5 – 6	5 – 6	66	66
White rabbit-tobacco	2B.2	641 – 706	424 – 489	78 – 101	69 – 93	134 – 136	126 – 127
Special-Status Plant Communities							
Scalebroom scrub	S1 and S3	2	5	0	0	1	1
California sycamore woodlands	S1 and S3	44 – 51	12 – 19	17	9	26 – 32	17 – 24
Fremont cottonwood forest	S3	44 – 51	12 – 19	17	9	26 – 32	17 – 24

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Bigcone Douglas fir forest	S3	0	0	0	0	0	0
Coast live oak woodland	S4	1 – 47	1 – 47	26 – 46	26 – 46	3 – 11	3 – 11
Black willow thickets	S3	44 – 51	12 – 19	17	9	26 – 32	17 – 24

Source: Authority 2019a

¹ **Status Code:** BLMS = BLM sensitive, FE = federally endangered; FSS = U.S. Forest Service sensitive; C = candidate; FT = federally threatened; SE = state endangered, SC = CDFW candidate for listing; CRPR Status = California Rare Plant Rank; 1A = Presumed extinct in California; 1B = Rare, Threatened, or Endangered in California and elsewhere; 2B = Rare, Threatened, or Endangered in California but more common elsewhere; 3 = A review list of plants about which more information is needed; 0.1 = Seriously threatened in California (over 80% of occurrences threatened); 0.2 = Moderately threatened in California (20-80% of occurrences threatened); 0.3 = Not very threatened in California (<20% of occurrences threatened)
² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

Nevin’s Barberrry⁶ (Figure 3.7-16):

- **Refined SR14 Build Alternative**—Trackway and ancillary facilities for the Refined SR14 Build Alternative would affect Nevin’s barberry habitat between Big Springs Road and Vulcan Mine. All three Refined SR14 adit options would affect Nevin’s barberry habitat. SR14-A3 would affect habitat that SR14-A2 would avoid. SR14-W1 would affect potentially suitable habitat, which SR14-W2 would avoid. Small fragments of Nevin’s barberry habitat are also located within and adjacent to the Boulevard Mine disposal site.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative alignment would affect Nevin’s barberry habitat where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same areas of Nevin’s barberry habitat as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—E1-A1 and E1-E2 would affect Nevin’s barberry habitat along Little Tujunga Canyon Road within the ANF. E1-W2 would affect potentially suitable habitat north of the I-210/SR 118 interchange, which would be avoided by E2-W3. Small fragments of potentially suitable habitat are also located within and adjacent to the Boulevard Mine disposal site.
- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the E1 Build Alternative. The E1A Build Alternative alignment would be identical to that of the E1 Build Alternative alignment in areas where Nevin’s barberry habitat occurs,
- **E2 Build Alternative**—E2 alignment and ancillary facilities would affect Nevin’s barberry habitat north of the Lake View Terrace neighborhood, throughout the Big Tujunga Wash crossing, and near the CalMat Mine disposal site. Within the ANF, E2-A1 and E2-A2 would affect suitable habitat along Little Tujunga Canyon Road and Gold Creek Road.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the E2 Build Alternative. In areas where Nevin’s barberry habitat occurs, the E2A Build Alternative alignment would be identical to that of the E2 Build Alternative alignment.

⁶ Focused surveys conducted for Nevin’s barberry were intended to verify the existence of known plant populations and did not result in changes to mapped suitable habitat within the special-status plant RSA.

Slender-Horned Spineflower⁷ (Figure 3.7-17):

- **Refined SR14 Build Alternative**—Trackway and ancillary facilities for the Refined SR14 Build Alternative would affect slender-horned spineflower habitat between the Pacific Crest Trail and Vulcan Mine. All Refined SR14 adit options would affect slender-horned spineflower habitat. SR14-W1 would affect suitable habitat north of the I-210/SR 118 interchange.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative alignment would affect slender-horned spineflower habitat where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same areas of slender-horned spineflower habitat as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—E1-A1, and E1-A2 would affect impact slender-horned spineflower habitat along Little Tujunga Canyon Road within the ANF. E1-W2 would affect suitable habitat north of the I-210/SR 118 interchange.
- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the E1 Build Alternative. In areas where Nevin’s barberry habitat occurs, the E1A Build Alternative alignment would be identical to that of the E1 Build Alternative alignment.
- **E2 Build Alternative**—E2 alignment and ancillary facilities would affect slender-horned spineflower habitat north of the Lake View Terrace neighborhood and throughout the Big Tujunga Wash crossing. E2-A1 and E2-A2 would affect slender-horned spineflower habitat along Little Tujunga Canyon Road and Gold Creek Road within the ANF.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the E2 Build Alternative. In areas where Nevin’s barberry habitat occurs, the E2A Build Alternative alignment would be identical to that of the E2 Build Alternative alignment.

Non-FESA–Listed Species

The special-status plant RSAs for the six Build Alternatives include habitat for 40 non-FESA–listed special-status plant species. Section 3.7.5.3 summarizes vegetation communities utilized by non-FESA–listed plant species, and Section 3.7.5.2 describes where these vegetation communities occur throughout the special-status plant RSA for each of the six Build Alternatives.

Each adit/window option slightly differs in the number of habitat impacts on CSC, CRC, COW, MCH, MHC, URB, BAR, and VRI vegetation communities (defined in Table 3.7-4), discussed below.⁸

- **Refined SR14 Build Alternative**—In general, SR14-A1 would result in more habitat loss for special-status plant species that occupy MHC, COW, and CRC vegetation communities relative to SR14-A2 and SR14-A3. However, SR14-A1 would not affect species that rely on CSC and VRI land cover types, which occur within the SR14-A2 and SR14-A3 special-status plant RSAs.

SR14-W1 and SR14-W2 would directly affect impact URB landcover, which does not support special-status plants. However, SR14-W1 would directly affect VRI habitat that SR14-W2 would avoid.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative alignment would have a more easterly course, approximately 300 feet east of Una Lake, compared to the Refined SR 14 Build Alternative. The SR14A Build Alternative alignment would also affect special-status plant species habitat in areas where the alignment would surface, approximately 0.75 mile

⁷ No slender-horned spineflower was discovered during focused species surveys. Mapping of suitable habitat for this species was adjusted to reflect the survey findings.

⁸ The adit/window options would also affect urban and barren vegetation communities, but these vegetation communities do not provide habitat for special-status plant species.

east of Agua Dulce Canyon Road. South of Vulcan Mine, the SR14A Build Alternative would affect the same areas of special-status plant species habitat as the Refined SR14 Build Alternative.

- **E1 Build Alternative**—In general, E1-A1 and E1-A2 would result in similar impacts on special-status plant species that occupy CRC, COW, MCH, and MHC vegetation communities because both adits propose comparable footprints in similar areas. However, impacts from E1-A1 would be slightly higher because E1-A1 proposes a larger footprint relative to E1-A2.

E1-W2 and E1-W3 would both affect impact URB landcover, which does not support special-status plants. However, E1-W2 would directly affect VRI habitat that E1-W3 would avoid.

- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the E1 Build Alternative. Between East Avenue S and Vincent View Road the E1A Build Alternative would have a more easterly course approximately 300 feet east of Una Lake, compared to the E1 Build Alternative. The E1A Build Alternative would affect a lower acreage of non-FESA-listed plant species habitat compared to the E1 Build Alternative.
- **E2 Build Alternative**—E2-A1 and E2-A2 would result in similar impacts on special-status plant species that occupy MCH, COW, and CRC vegetation communities because both adit options propose comparable footprints in similar areas. However, the E2-A1 adit option features a slightly larger footprint than E2-A1 and directly affects a larger portion of MCH landcover. However, E2-A2 would result in direct impacts on special-status plants within the VRI habitat that E2-A1 would avoid.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the E2 Build Alternative. Between East Avenue S and Vincent View Road the E2A Build Alternative would have a more easterly course approximately 300 feet east of Una Lake, compared to the E2 Build Alternative. The E2A Build Alternative would affect a lower acreage of non-FESA-listed plant species habitat compared to the E2 Build Alternative.

Special-Status Plant Communities

Five special-status plant communities have potential to occur within the Refined SR14, SR14A, E1, E1A, E2 and E2A Alternative special-status plant RSAs: scalebroom scrub, California sycamore woodlands, Fremont cottonwood forest, coast live oak woodland, and black willow thickets. As discussed in Section 3.7.5.2, vegetation communities such as the DSW, VRI, MHC, and COW landcovers⁹ provide suitable habitat for these special-status plant communities within each of the six Build Alternative special-status plant RSAs. Section 3.7.4.2 describes where these vegetation communities occur throughout the special-status plant RSA for all six Build Alternatives.

Direct and Indirect Impacts

Surface Construction

Installation of project infrastructure, such as trackway, tunnel portals, access roads, bridges, and other permanent facilities, would permanently remove habitat and prevent special-status plants or communities from re-establishing in potentially suitable habitat within the Build Alternative footprint. Special-status plant habitat fragmentation would result from changes in movement patterns of wildlife that facilitate pollination or propagation or the construction of barriers that prevent seed dispersal (e.g., trackway, access roads). Indirect impacts from habitat fragmentation include changes in population dynamics, reduced population distribution, and genetic isolation.

Direct impacts on special-status plant species and habitat and sensitive natural communities would result from the removal of vegetation for the installation of permanent infrastructure.

⁹ Mapped occurrences of CWHR vegetation communities were used to identify known or potential habitat for special-status plant species and communities within the special-status plant RSA. The presence of each CWHR vegetation community correlates with the potential to occur for the identified special-status plant communities.

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 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 habitat 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
- Introduction of invasive plant species

The following IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status plants and special-status plant communities:

- 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.
- BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan.
- 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.

Tunnel Construction Impacts on Special-Status Plant Habitat

Changes in groundwater levels during tunnel construction could result in indirect impacts on special-status plants. The Authority has incorporated HYD-IAMF#5, Tunnel Boring Machine Design, HYD-IAMF#6, Tunnel Lining Systems, and HYD-IAMF#7, Grouting, into the design and construction methods for tunnels under the ANF to avoid or minimize groundwater inflows into and around tunnels during construction. As discussed in Impact HWR#5 in Section 3.8, Hydrology and Water Resources, although HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will reduce the amount of potential changes in groundwater levels due to tunnel construction, based on the available information and based on prior tunnel construction experience elsewhere, some groundwater inflow into the tunnels could still occur during construction. This groundwater flow could result in localized changes of groundwater level that could have temporary indirect effects on the hydrology of groundwater-dependent surface water features, including springs, seeps, and perennial streams that provide habitat for special-status plants and special-status plant communities. The areas of greatest potential impact would be within riparian habitat areas and within mesic habitat areas (habitat with a moderate or well-balanced supply of moisture) where special-status plants and special-status plant communities depend on soil moisture that could be altered by changes in surface water from tunneling.

The duration of temporary impacts to special-status plants would depend on the hydrologic conditions, subsurface conditions, and amount of groundwater inflow into the tunnel, none of

which can be precisely estimated at this time as discussed under Impact HWR#5 in Section 3.8, Hydrology and Water Resources. The duration of groundwater inflows into the tunnels at any one location is expected to be a matter of months; and the potential period of effect on groundwater levels due to tunnel construction could be months to several years after tunnel completion (post-project monitoring of surface water features near the Arrowhead Tunnels in the San Bernardino Mountains in southern California found that groundwater recovery from tunnel construction took up to 5 years for some features (Berg 2012)).

Fifteen special-status plants with suitable habitat in the tunnel construction RSA have been identified as requiring wetland or aquatic habitats (including riparian habitats) and therefore could be adversely affected by changes in groundwater levels. Fifteen groundwater dependent plant species have suitable habitat in the No/Low Risk Areas. Because these areas lack faults and high groundwater pressure, with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 no impact is expected. Thirteen groundwater dependent plant species have suitable habitat in the Moderate and High Risk Areas within the tunnel construction RSA (Table 3.7-11, Figure 3.7-37, and Figure 3.7-38). Changes in hydrogeologic conditions could alter the inundation period (also referred to as the hydroperiod), which could cause desiccation and mortality of special-status plants and special-status plant communities, or a change that affects the germination or ability of plants to complete their life cycle due to drought stress or other causes. While effects could occur on the species and habitat identified in Table 3.7-11, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnels, and not all surface waters are typically affected, or affected to the same extent.

Table 3.7-11 Potential Impacts on Special-Status Plant Habitat from Changes in Hydrologic Conditions

Species	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Plants												
Nevin's Barberry	70	0	198	63	0	0	415	0	33	0	101	0
Non-FESA-Listed Special-Status Plants												
California satintail	259	0	182	68	361	0	1,113	6	1,145	16	168	39
California saw-grass	0	0	0	0	0	0	0	0	0	0	0	0
Davidson's bushmallow	269	0	198	63	361	0	1,447	3	1,149	16	167	37
Greata's aster	301	0	145	49	360	0	1,395	4	1,116	17	171	39
Lemon Lily	46	0	16	0	10	0	357	0	23	13	6	70
Ocellated lily	305	0	198	63	371	0	1,447	3	1,166	16	172	39
Palmer's Mariposa Lily	291	0	129	55	360	0	1,038	5	1,109	17	169	39
Salt Spring checkerbloom	295	0	182	68	371	0	1,113	6	1,159	16	173	40
San Bernardino aster	49	0	69	77	21	0	409	0	71	4	7	59
Sonoran maiden fern	0	0	0	0	0	0	0	0	0	0	0	0
Southern California black walnut	305	0	198	63	371	0	1,447	3	1,164	16	172	39
Southern tarplant	0	0	0	0	0	0	0	0	2	0	0	0

Species	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
Urn-flowered alumroot	39	0	53	100	21	0	52	0	66	5	6	80
White rabbit-tobacco	269	0	198	63	361	0	1,447	3	1,149	16	167	37

High = Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk.
 ANF = Angeles National Forest
 SGMNM = San Gabriel Mountains National Monument

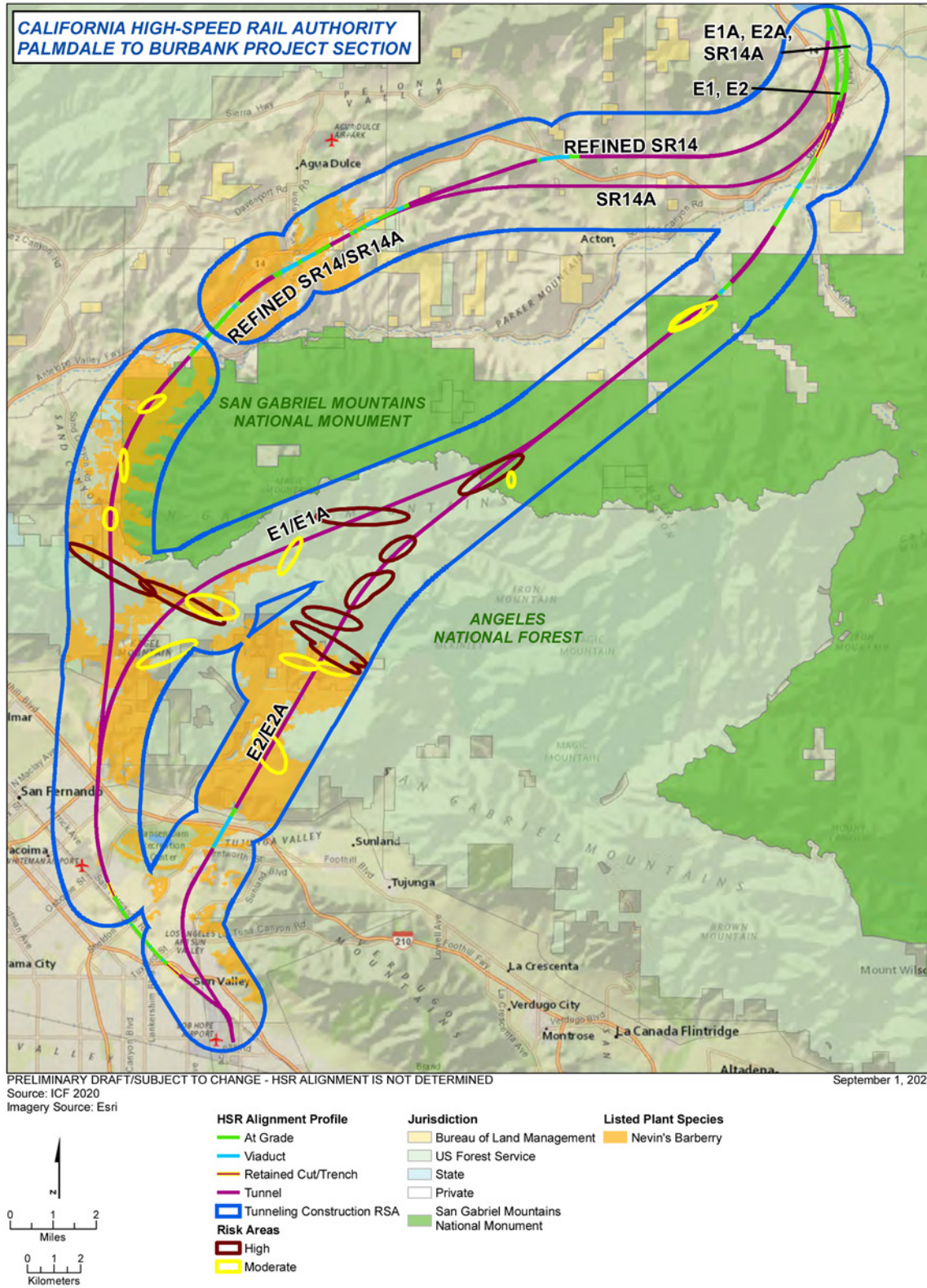


Figure 3.7-37 FESA-Listed Special-Status Plant Habitat Within the Tunnel Construction Resource Study Area

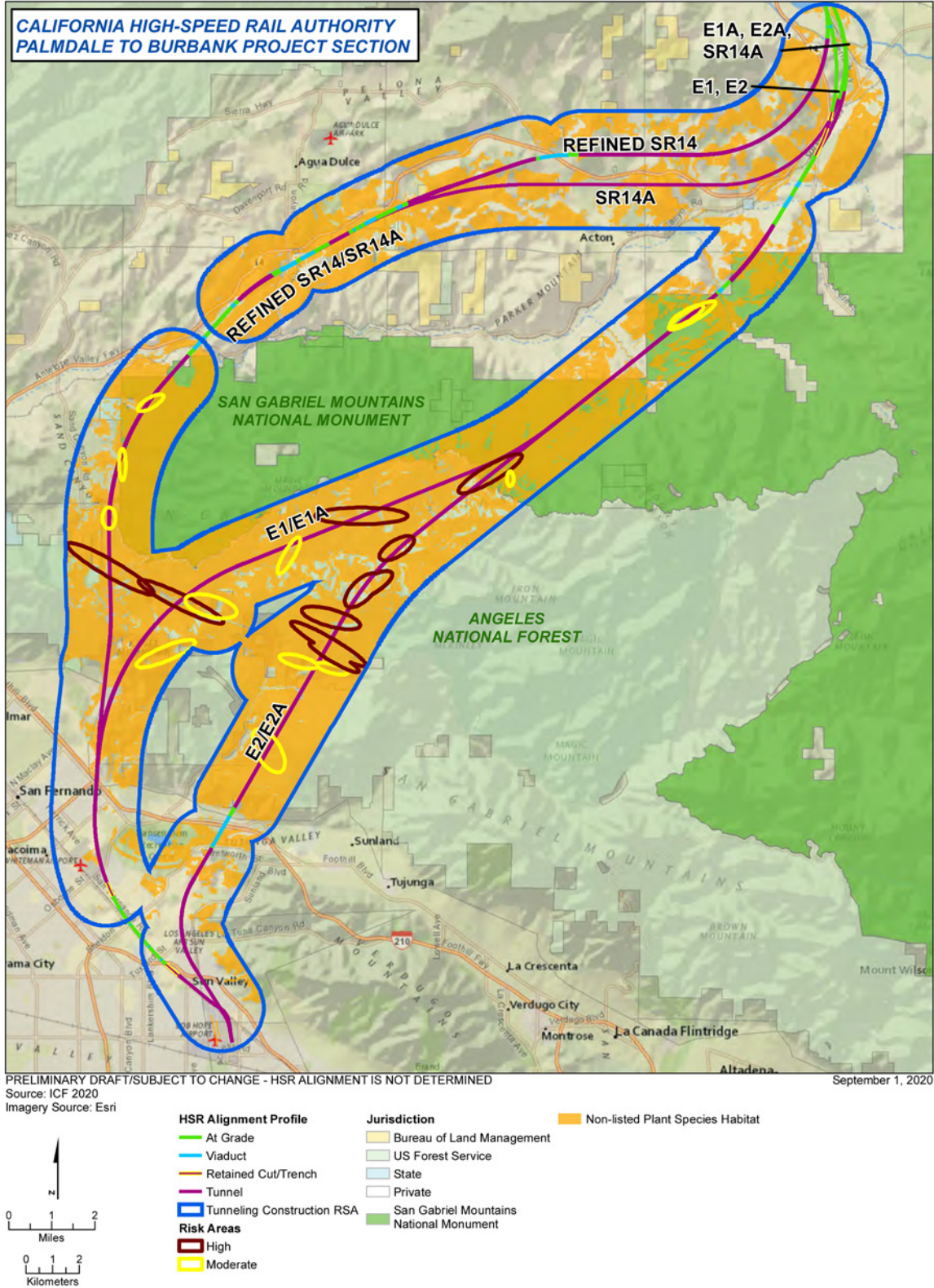


Figure 3.7-38 Non-FESA-Listed Special-Status Plant Habitat Within the Tunnel Construction Resource Study Area

The three Moderate Risk Areas identified for the Refined SR14 and SR14A Build Alternatives contain four ephemeral streams and the one High Risk Area contains seven ephemeral streams. Ephemeral streams and associated special-status plant habitat would not be affected because they are not dependent on groundwater. If through further investigation additional seeps, springs, intermittent streams or perennial streams are discovered within the tunnel construction RSA, the risk of indirect effects may increase accordingly. Implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources including special-status plant habitat.

The four Moderate Risk areas for the E1 and E1A Build Alternatives contain seven ephemeral streams, two springs, one intermittent stream, and one perennial stream. The two High Risk areas for the E1 and E1A Build Alternatives contain 12 ephemeral streams, 1 intermittent stream, and 1 intermittent/perennial stream. Ephemeral streams and associated special-status plant habitat would not be affected because they are not dependent on groundwater. The E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including special-status plant habitat.

The five Moderate Risk areas for the E2 and E2A Build Alternatives contain 10 ephemeral streams, 1 spring, and 2 intermittent streams. The six High Risk areas for E2/E2A contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated special-status plant habitat would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including special-status plant habitat.

Based on the defined Risk Areas, the Refined SR14 Build Alternative and the SR14A Build Alternative represent the least risk potential and least potential impact intensity for effects to habitat for special-status plants compared to other Build Alternative alignments through the ANF. The E1 and E1A Build Alternatives would have the greatest risk potential and potential impact intensity for effects to habitat for special-status plants. The E2 and E2A Build Alternatives would have the least potential for impacts on suitable habitat for the federally listed Nevin's barberry, while the E1 and E1A Build Alternatives would have the most potential for impacts on suitable habitat for Nevin's barberry. The E1, E1A, E2, and E2A Build Alternatives would have substantially higher levels of potential effects on special-status plants when compared to the Refined SR14 and SR14A Build Alternatives. For example, the E1 and E1A Build Alternatives and the E2 and E2A Build Alternatives have 1,808 and 1,316 acres of suitable habitat, respectively, within the defined Risk Areas, for Davidson's bush-mallow, while the Refined SR14 and SR14A Build Alternatives Risk Areas contain 467 acres of suitable habitat for Davidson's bush-mallow (Table 3.7-11).

Tunnel Construction Impacts on Special-Status Plant Communities

As noted above, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect suitable habitat for special-status plant communities.

Upland vegetation and special-status plants such as grassland species and shrubs would not be affected by potential changes in groundwater levels because these species have shallow roots, or relatively shallow roots, and are not dependent on groundwater, and thus are not discussed further. However, certain upland trees, such as oaks, can have deep roots that can reach groundwater. Within the tunnel construction RSA, common upland oak tree species include coast live oak and interior live oak, and scrub oak and valley oak are found within riparian areas of the study area. Oaks derive water from direct precipitation, shallow infiltration, the vadose zone above groundwater, and groundwater. While oaks (and other trees) have the vast bulk of their roots located within 1 to 2 meters (3 to 6 feet) of the surface (Perry 1989), some oaks can have deep roots that can reach in excess of 70 feet below the surface level (Lewis and Burgy 1964). It is possible that some oaks could be sustaining themselves in part from groundwater, particularly in summer or drought conditions. As discussed in Section 3.8, Hydrology and Water Resources, the groundwater study area is a complex geological area with extensive local faulting and the water table elevation has not been comprehensively mapped to date. Therefore, it is possible that upland trees may be affected if they are located in areas with a relatively shallow water table.

Within the tunnel construction RSA, common upland oak tree species include coast live oak and interior live oak, and scrub oak and valley oak are found within riparian areas of the study area. Valley foothill riparian, montane hardwood, montane hardwood-conifer, and coastal oak woodlands occur along stream channels fed by surface flows during the winter and spring months and by springs and subsurface water flows during the summer and fall months. These vegetation communities will likely be stressed if subsurface water flows are disrupted by tunnel construction.

Seven special-status plant communities have been identified as occurring in the tunnel construction RSA (Table 3.7-6). Four of these communities, California sycamore woodlands, Fremont cottonwood forest, coastal oak woodland, and black willow thickets, have been identified as groundwater dependent or partially groundwater dependent and therefore could be adversely affected by changes in groundwater levels (Table 3.7-12). Detailed mapping of these communities within the tunnel construction RSA is not available, however vegetation types that may support these communities have been mapped and are quantified in Table 3.7-12 for the High and Moderate Risk Areas. Changes in hydrogeologic conditions could alter the inundation period, a change to the water table which could cause desiccation and mortality of special-status plant communities, or a change that affects the germination or ability of plants to complete their life cycle due to drought stress or other causes. Valley foothill riparian, montane hardwood, montane hardwood-conifer, and coastal oak woodlands occur along stream channels fed by surface flows during the winter and spring months and by springs and subsurface water flows during the summer and fall months. These vegetation communities would likely be stressed if subsurface water flows are disrupted by tunnel construction. While effects could occur on the vegetation communities identified in Table 3.7-12, the assessment represents a worst-case evaluation of effects because the amount of special-status plant communities is likely to be a

subset of the overall vegetation communities they occur in, previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

The three Moderate Risk Areas for the Refined SR14 and SR14A Build Alternatives contain four ephemeral streams and the one High Risk Area contains seven ephemeral streams. Ephemeral streams and associated special-status plant communities would not be affected because they are not dependent on groundwater. If through further investigation additional seeps, spring, intermittent or perennial streams are discovered within the tunnel construction RSA, the risk of indirect effects may increase accordingly. Implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources including habitat for special-status plant communities.

The four Moderate Risk Areas for the E1 and E1A Build Alternatives contain seven ephemeral streams, two springs, one intermittent stream, and one perennial streams. The two High Risk areas for the E1 and E1A Build Alternatives contain 12 ephemeral streams, 1 intermittent stream, and 1 intermittent/perennial stream. Ephemeral streams and associated special-status plant communities would not be affected because they are not dependent on groundwater. The E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including habitat for special-status plant communities.

The six High Risk areas for the E2 and E2A Build Alternatives contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated special-status plant communities would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including habitat for special-status plant communities.

Table 3.7-12 Potential Impacts on Special-Status Plant Communities from Changes in Hydrologic Conditions ¹

Vegetation Community ¹	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)
Coastal Oak Woodland	10	0	16	0	0	0	61	0	5	0	2	0
Freshwater Emergent Wetland	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine	0	0	0	0	0	0	0	0	0	0	0	0
Montane Hardwood	11	0	0	0	32	0	15	0	113	26	0	0
Montane Hardwood-Conifer	36	0	0	0	10	0	0	0	17	19	4	100
Montane Riparian	0	0	0	0	0	0	0	0	0	0	0	0
Valley Foothill Riparian	0	0	0	0	0	0	0	0	2	0	0	0

High = Acres of mapped habitats potentially supporting special-status plant communities that overlap with the areas identified as high risk.

Moderate = Acres of mapped habitats potentially supporting special-status plant communities that overlap that overlap with the areas identified as moderate risk.

ANF = Angeles National Forest

SGMNM =San Gabriel Mountains National Monument

¹ Note that mapping of special-status plant communities is not available and therefore the total acres of all vegetation communities potentially supporting these communities is provided.

Based on the defined Risk Areas, the Refined SR14 and SR14A Build Alternatives Risk Areas have the least amount of vegetation types that could support special-status plant communities (72 acres), while the E2 and E2A Build Alternatives Risk Areas have the most amount of potential vegetation types that could support special-status plant communities (142 acres). Lastly, the E1 and E1A Build Alternatives Risk Areas have 117 acres of vegetation types that could support special-status plant communities.

CEQA Conclusion

All six Build Alternatives would directly and indirectly affect vegetation communities and habitat that could contain special-status plant species and communities. These landscapes are distributed throughout the RSA in the relatively undeveloped regions between Palmdale and the San Fernando Valley, particularly in the ANF, including the SGMNM. Although implementation of the IAMFs listed above would minimize impacts, surface construction associated with the six Build Alternatives would have a substantial adverse effect on any riparian habitat or other sensitive natural community by threatening to eliminate a plant community or resulting in measurable degradation of sensitive vegetation communities. All six Build Alternatives would apply the mitigation measures described below to reduce surface construction impacts on special-status plants and communities. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures. The following bullets describe how each mitigation measure would reduce surface construction impacts on special-status plant species and habitat and sensitive natural communities:

- BIO-MM#1: Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Determining the presence of special-status plant species and special-status plant communities is the first step for implementation of mitigation measures to reduce and offset impacts on special-status plant species and habitat and sensitive natural communities.
- BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species. Collection of seeds and plant materials for special-status plants and salvage, relocation and/or seed banking of listed plant species would reduce impacts.
- BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction. Disturbance of seasonal vernal pools will be avoided and impacts on vernal pools and associated special-status plant species would be reduced.
- BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas. Impacts on vernal pools and associated special-status plant species would be reduced.
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP would reduce impacts on special-status species and communities.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration and revegetation of riparian habitat in temporary impact areas would reduce impacts on populations of associated plants, including special-status plants, which rely upon riparian habitat.
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. Restoration and revegetation of aquatic resources would reduce indirect impacts on associated plant populations, including special-status plants, which rely upon affected aquatic resources. In restoring aquatic resources, impacts on associated special-status plant populations would be reduced.
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters. In monitoring construction activities adjacent to aquatic resources, the Project Biologist will ensure implementation of applicable avoidance and minimization measures to avoid and/or reduce impacts on aquatic resources. In doing so, impacts on special-status plants species and communities that rely upon aquatic resources would be reduced.

- BIO-MM#38: Compensate for Impacts on Listed Plant Species. Impacts on special-status plant species would be offset.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on special-status plant species and habitat and sensitive natural communities would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure permanent and temporary impacts on special-status species and communities would be offset.
- BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan. Control methods stipulated in the vegetation control plan may provide a benefit to special-status plant species by protecting the species from pests and noxious/invasive weeds.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce impacts on special-status plant species and habitat and sensitive natural communities from invasive species.
- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The establishment of ESAs would reduce impacts on areas that support special-status species and communities or associated habitat, as access to these areas would be restricted during construction activities. As a result, impacts on special-status plant species and habitat and sensitive natural communities would be reduced.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements will ensure that impacts on special-status species and communities would be reduced.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect surface construction impacts on special-status plants and plant communities. As a result, surface construction impacts would be less than significant for all six Build Alternatives.

For indirect effects from tunnel construction, the impact under CEQA would be potentially significant for all Build Alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status plant species, including species listed under FESA and CESA, although the level of risk and impact potential varies between Build Alternatives. 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 plants and plant communities and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat and could result in the loss of special-status plant occurrences. To address this impact, the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided.

With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to special-status plants and habitat and special-status plant communities as a result of indirect effects from tunnel construction, and this impact would therefore be less than significant for all six Build Alternatives.

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

Five special-status amphibian species have potential to occur within the all six Build Alternative core habitat RSAs: three FESA-listed species (arroyo toad, California red-legged frog, and southern mountain yellow-legged frog) and two non-FESA-listed species (coast range newt and western spadefoot). Vegetation communities associated with these species within the six Build Alternative core habitat RSAs include AGS, COW, CSC, CRC, DOR/VIN, DSC, DSW, MCH, MCP, MHC, MRI, SGB, URB, and VRI (defined in Table 3.7-4). Table 3.7-13 quantifies the acreage of special-status amphibian habitat within the Build Alternative construction footprints.

Non-FESA-listed amphibian species occupy multiple vegetation communities throughout all six Build Alternative core habitat RSAs, including COW, MHC, and VRI (defined in Table 3.7-4).¹⁰ Table 3.7-7 summarizes vegetation communities utilized by non-FESA-listed amphibian species throughout the RSA, and Section 3.7.5.2 describes where these vegetation communities occur within the special-status plant RSA for each of the six Build Alternatives. Habitat for FESA-listed amphibian species within each of the six Build Alternative core habitat RSAs is described below.

Arroyo Toad (Figure 3.7-18):

Trackway and ancillary facilities for the Refined SR14 and SR14A Build Alternatives would affect multiple types of arroyo toad habitat when crossing the Santa Clara River in Soledad Canyon. A utility corridor associated with E1-W1/E2-W1 would affect Arroyo toad habitat, north of Arrastre Canyon along Arrastre Canyon Road.

California Red-Legged Frog (Figure 3.7-21):

Based on the *California Red-legged Frog Habitat Assessment and Protocol Survey* (Authority 2017b), the following sites provide potentially suitable California red-legged frog breeding habitat:

- Una Lake (Refined SR14, SR14A, E1, E1A, E2, E2A)
- Arrastre Canyon Creek (E1, E1A, E2, E2A)
- Santa Clara River, Soledad Canyon (Refined SR14, SR14A)
- Pacoima Creek (Refined SR14, SR14A, E1, E1A)
- Little Tujunga Creek (E2, E2A)
- Gold Creek (E2, E2A)
- Big Tujunga Wash (E2, E2A)

Of these sites, only Una Lake (located adjacent to Lake Palmdale south of Palmdale), Big Tujunga Wash (located upstream of Hansen Dam), and Gold Creek (located within the ANF north of Sylmar) provided potentially suitable breeding habitat. However, only Una Lake had deep enough aquatic habitat to support red-legged frog breeding habitat. During habitat assessments and protocol surveys, no breeding activity was observed in areas that would provide suitable breeding conditions. None of the drainages surveyed have known California red-legged frog populations.

Based on the lack of observed California red-legged frogs, lack of known California red-legged frog populations in the drainages surveyed, and the scarcity of suitable breeding habitat at the survey sites, California red-legged frogs are unlikely to occur within the SR14 or SR14A Build Alternative core habitat RSA. While survey results indicated red-legged frogs are unlikely to be present, suitable habitat for the species is still present within the RSA for each Build Alternative, as indicated in Table 3.7-13.

¹⁰ As discussed above, the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative adit/window options differ slightly in the amount of potential habitat impacts on these vegetation communities.

Table 3.7-13 Special-Status Amphibian Habitat within Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Amphibian Species							
Arroyo toad	FE/SCC	102	106	6	6	6	6
California red-legged frog	FT/SCC	1,067 – 1,166	746 – 845	566 – 579	459 – 474	539 – 540	432 – 434
Southern mountain yellow-legged frog	FE/SE	14 – 74	14 – 74	114 – 137	114 – 137	144 – 146	144 – 146
Non-FESA Special-Status Listed Amphibian Species							
Coast range newt	SCC	0	0	0	0	38 – 40	38 – 40
Western spadefoot	BLMS/SCC	5 – 36	5 – 36	5 – 36	5 – 6	78 – 92	78 – 92

Source: Authority, 2019a

¹ **Status Code:** BLMS = BLM sensitive; FE = federally endangered; FT = federally threatened; SE = state endangered; SCC = CDFW California species of special concern

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the various optional adit and intermediate window selection scenarios.

Southern Mountain Yellow-Legged Frog (Figure 3.7-26):

- **Refined SR14 Build Alternative**—The Refined SR14 trackway and adit/window options would affect suitable southern mountain yellow-legged frog habitat in the ANF between I-210 and San Canyon Road.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. In areas where southern mountain yellow-legged frog suitable habitat occurs, the SR14A Build Alternative alignment would be identical to that of the Refined SR14 Build Alternative alignment.
- **E1 Build Alternative**—The E1 core habitat RSA encompasses suitable southern mountain yellow-legged frog habitat within Aliso Canyon, Arrastre Canyon, and north of Arrastre Canyon along Arrastre Canyon Road. The E1 adit and window options would also affect suitable southern mountain yellow-legged frog habitat.
- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the Refined E1 Build Alternative. In areas where suitable southern mountain yellow-legged frog habitat occurs, the E1A Build Alternative alignment would be identical to that of the E1 Build Alternative alignment.
- **E2 Build Alternative**—The E2 core habitat RSA encompasses suitable southern mountain yellow-legged frog habitat within Aliso Canyon, Arrastre Canyon, north of Arrastre Canyon along Arrastre Canyon Road, and north of the Lake View Terrace neighborhood. The E2 adit and window options would also affect southern mountain yellow-legged frog habitat.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the Refined E2 Build Alternative. In areas where suitable southern mountain yellow-legged frog habitat occurs, the E2A Build Alternative alignment would be identical to that of the E2 Build Alternative alignment.

Direct and Indirect Impacts

Surface Construction

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

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

Implementation of BIO-IAMF#1, BIO-IAMF#2, BIO-IAMF#3, BIO-IAMF#5, BIO-IAMF#8, BIO-IAMF#9, BIO-IAMF#10, and BIO-IAMF#11 (described in Section 3.7.4.2) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs in addition to the following IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status amphibians:

- BIO-IAMF#6: Establish Monofilament Restrictions.
- BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect suitable habitat for special-status amphibians.

Suitable habitat for five special-status amphibians occur in the tunnel construction RSA (wetland or aquatic habitats including riparian habitats) and therefore could be adversely affected by changes in groundwater levels (Table 3.7-14, Figure 3.7-39, and Figure 3.7-40). Of these five species, four species, California red-legged frog, mountain yellow-legged frog, coast range newt, and western spadefoot have suitable habitat within Moderate and High Risk Areas. The remaining species, arroyo toad, has suitable habitat within the No/Low Risk Areas. Because these areas lack faults and high groundwater pressure and with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 no impact is expected. Changes in hydrogeologic conditions could alter the inundation period, or a change to the water table which could cause a surface water feature to dry up or partially dry up. Depending on the time of year and/or the timing of drying, a change in the hydroperiod of surface water features can affect breeding success, survivability of eggs or larvae, and in extreme cases, can cause the desiccation and mortality of individuals if other nearby surface waters are not present. While effects could occur on the amphibian species and habitat identified in Table 3.7-14, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

The three Moderate Risk Areas for the Refined SR14 and SR14A Build Alternatives contain four ephemeral streams and the one High Risk Area contains several ephemeral streams. Ephemeral streams and associated coast range newt and western spadefoot habitat would not be affected because they are not dependent on groundwater. If through further investigation additional seeps, spring, intermittent or perennial streams are discovered within the tunnel construction RSA, the risk of indirect effects may increase accordingly. Implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources including associated amphibian habitat.

The four Moderate Risk areas for the E1 and E1A Build Alternatives contain seven ephemeral streams, two springs, one intermittent stream, and one perennial stream. The two High Risk areas for the E1 and E1A Build Alternatives contain 12 ephemeral streams, 1 intermittent stream, and 1 intermittent/perennial stream. Ephemeral streams and associated coast range newt and western spadefoot habitat would not be affected because they are not dependent on groundwater. The E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated coast range newt and western spadefoot habitat.

The five Moderate Risk areas for the E2 and E2A Build Alternatives contain 10 ephemeral streams, 1 spring, and 2 intermittent streams. The six High Risk areas for the E2 and E2A contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated coast range newt and western spadefoot habitat.

Table 3.7-14 Potential Impacts on Special-Status Amphibian Habitat from Changes in Hydrologic Conditions

Species	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Amphibians												
Arroyo Toad	0	0	0	0	0	0	0	0	0	0	0	0
California Red-legged Frog	0	0	0	0	0	0	1	0	0	0	0	0
Mountain Yellow-legged Frog	0	0	0	0	0	0	7	0	0	0	0	0
Non-FESA-Listed Special-Status Amphibians												
Coast Range Newt	324	0	127	98	324	0	822	9	960	19	113	62
Western Spadefoot	49	0	69	77	21	0	136	170	74	4	10	71

High = Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.

Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk.

ANF = Angeles National Forest

SGMNM = San Gabriel Mountains National Monument

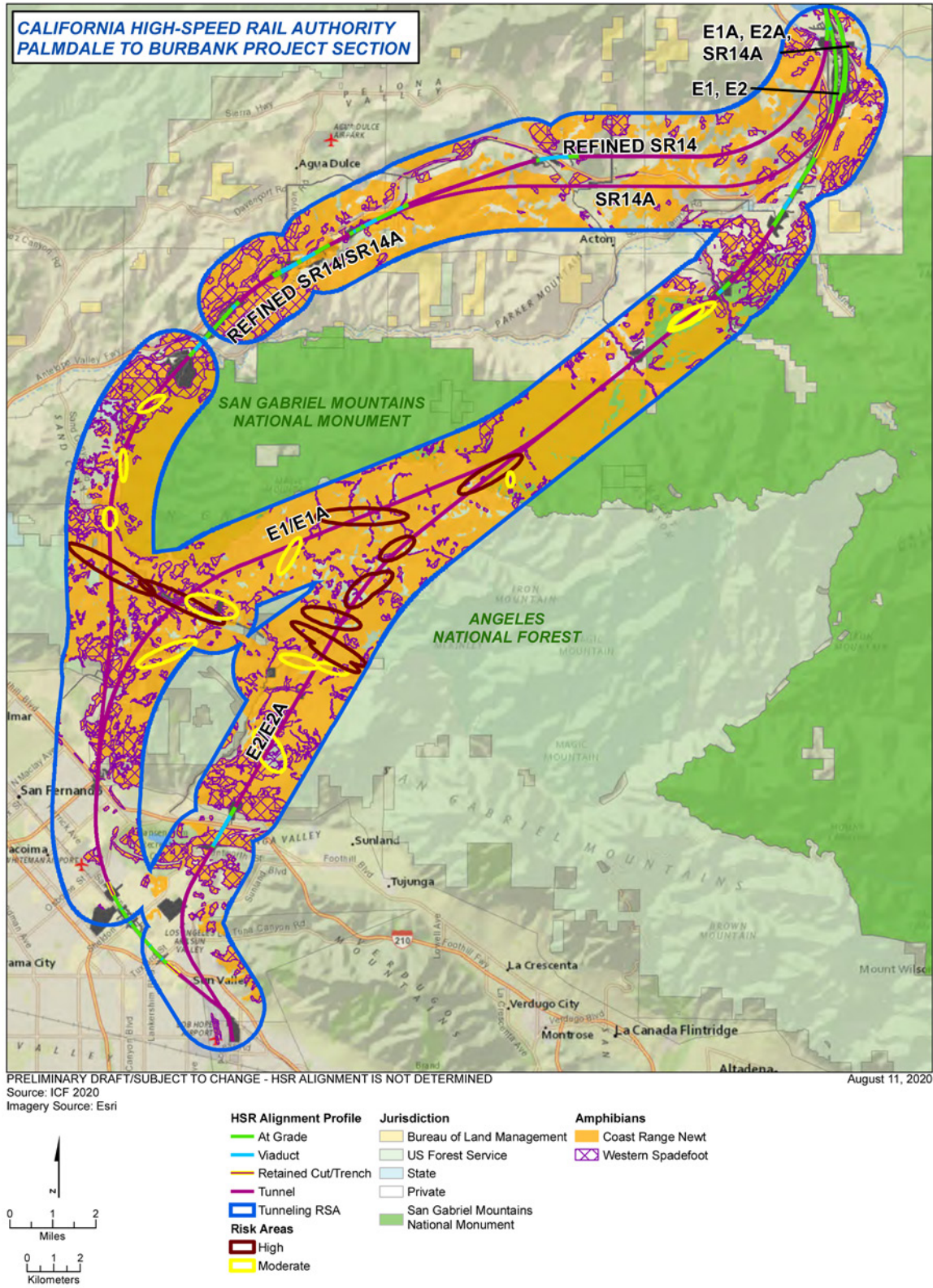


Figure 3.7-40 Non-FESA–Listed Special-Status Amphibian Habitat Within the Tunnel Construction Resource Study Area

Based on the defined Risk Areas, suitable habitat for special-status amphibians is limited within the tunnel construction RSA. There is no potential habitat for the federally listed Arroyo toad mapped within the Moderate or High Risk Areas for any of the six Build Alternatives. The Refined SR14, SR14A, E2, and E2A Build Alternatives Risk Areas do not include any mapped habitat for California red-legged frog and mountain yellow-legged frog, while the E1 and E1A Build Alternatives Risk Areas include 1 acre and 7 acres of suitable habitat for each species, respectively. Lastly, the E1 and E1A Build Alternatives Risk Areas include potential habitat for western spadefoot (182 acres), while the E2 and E2A Build Alternatives Risk Areas include 133 acres and 118 acres of suitable habitat, respectively.

CEQA Conclusion

All six Build Alternative alignments would impact special-status amphibian habitat. Although implementation of the IAMFs listed above would minimize impacts, surface construction with each of the six Build Alternatives would have a substantial adverse effect on special-status amphibian species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact because special-status amphibian habitat would still be both directly and indirectly impacted by surface construction associated with all six Build Alternatives. All six Build Alternatives would apply the mitigation measures discussed below to reduce surface construction impacts on special-status amphibians. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP would reduce impacts on special-status amphibian species and habitat.
- BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species.
- BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species. This measure would avoid and minimize effects on individual animals such that impacts on special-status amphibian species would be reduced.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration of riparian habitat disturbed by construction activities would reduce impacts on special-status amphibian species and habitat.
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. Restoration of aquatic resources would reduce impacts on special-status amphibians and habitat.
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters. Impacts on breeding and nesting habitat for special-status amphibian species would be reduced.
- BIO-MM#36: Install Aprons or Barriers within Security Fencing. Installation of aprons or barriers to prevent special-status amphibians from entering the right-of-way will prevent injury or death during project construction. As a result, impacts on special-status amphibian species would be reduced.
- BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat. Compensatory riparian habitat mitigation for permanently disturbed habitat would ensure the offset of permanent impacts on these areas, which have the potential to support special-status amphibian species and/or habitat.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. This mitigation measure would offset construction impacts on aquatic resources, which often serve as breeding and nesting habitat for special-status amphibian species. Therefore, where not co-located with species and habitat compensatory mitigation, implementation of this mitigation measure may provide an additional offset for habitat for special-status amphibian species.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable

IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on special-status amphibian species and habitat would be reduced.

- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP would ensure permanent and temporary impacts on special-status amphibian species habitat would be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce impacts on amphibian habitat, and therefore impacts on special-status amphibians would be reduced.
- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. The establishment of ESAs would reduce direct and indirect impacts on areas which support special-status amphibians or associated habitat, as access to these areas would be restricted during construction activities. As a result, impacts on special-status amphibian species and habitat would be reduced.
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Implementation of construction site and vehicle traffic limits would reduce impacts on special-status amphibian species.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements would ensure that impacts on special-status amphibian species and habitat would be reduced.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. The dewatering plan will include pre-activity surveys to determine the presence of special-status species within the affected waterbody so that avoidance, minimization, and/or compensatory mitigation may be applied to ensure that impacts on special-status amphibian species and habitat would be reduced.
- BIO-MM#63: Work Stoppage. This would reduce construction impacts on special-status amphibian species.
- BIO-MM#76: Implement Wildlife Rescue Measures. The Project Biologist will follow all relevant guidelines for all special-status species including special-status amphibian species, and therefore reduce impacts on special-status amphibian species.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect surface construction impacts on special-status amphibians. As a result, surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

For indirect effects from tunnel construction, the impact under CEQA would be potentially significant for all Build Alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status amphibian species, including species listed under FESA and CESA, although the level of risk and impact potential varies between Build Alternatives. 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 indirect impacts on special-status amphibians to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat. To address this impact, the Authority would implement an AMMP. BIO-MM#93 will

involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to special-status amphibians and habitat as a result of tunnel construction, and this impact would therefore be less than significant for all six Build Alternatives.

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

Nineteen special-status bird species have potential to occur within the six Build Alternative core habitat RSAs: 5 FESA-listed species (California condor, coastal California gnatcatcher, least Bell’s vireo, southwestern willow flycatcher, western yellow-billed cuckoo), and 14 non-FESA-listed species (American peregrine falcon, bald eagle, golden eagle, gray vireo, least bittern, loggerhead shrike, northern harrier, Swainson’s hawk, tricolored blackbird, western burrowing owl, white-tailed kite, yellow warbler, yellow-breasted chat, yellow-headed blackbird). Of these special-status bird species, there are five fully protected bird species (American peregrine falcon, California condor, bald eagle, golden eagle, white-tailed kite). Vegetation communities associated with these 19 species within the six Build Alternative core habitat RSAs include AGS, BAR, COW, CRC, CSC, DOR/VIN, DRI, DSC, DSW, JUN, LAC, MCH, MCP, MHC, MRI, SGB, URB, and VRI (defined in Table 3.7-4), Table 3.7-15 quantifies the acreage of special-status bird habitat within the Build Alternative construction footprints. If construction occurs during the breeding season (generally February 1 to September 1), active nests could also be disturbed, potentially causing the loss of eggs or developing young (i.e., nest abandonment during the incubation, nestling, or fledgling stages), and activity and noise could cause birds to avoid adjacent suitable nesting habitat.

The California condor is considered to have a high potential to occur within the Tehachapi and Southern California Mountains and foothill regions of the core habitat RSA. The California condor are known to roost, forge, and loiter north of San Fernando within the ANF and often travel great distances while foraging.

Table 3.7-15 Special-Status Bird Habitat within Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Bird Species							
California condor	FE/SE/FP	972 – 1,035	748 – 811	751 – 774	581 – 604	813 – 814	643 – 645
Coastal California gnatcatcher	FT/SSC	477 – 493	481 – 498	127 – 128	127 – 128	102	102
Least Bell’s vireo	FT/SE	38	6	14	6	22 – 29	14 – 21
Southwestern willow flycatcher	FE/SE	38 – 45	6 – 13	14	6	23 – 30	15 – 21
Western yellow-billed cuckoo	FE/BLMS/SE	3 – 4	2 – 3	3 – 20	3 – 20	7	7
Non-FESA-Listed Special-Status Bird Species							
American peregrine falcon	Delisted/FP	1,599 – 1,682	1,414 – 1,498	1,279 – 1,296	1,168 – 1,184	1,123 – 1,125	1,013 – 1,015

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Bald eagle	Delisted/ FSS/ BGEPA/ BLMS/SE/ FP	33 – 40	8 – 15	6	5	14 – 21	13 – 20
Golden eagle	BGEPA/ BMLS/FP	1,023 – 1,088	796 – 862	792 – 814	620 – 643	778 – 780	608 – 609
Gray vireo	BCC/FSS/ BLMS/SSC	549 – 565	494 – 510	494 – 497	438 – 441	549 – 565	494 – 510
Least bittern	SSC	0 – 1	0 – 1	0	0	8	8
Loggerhead shrike	BCC/SSC	799 – 820	571 – 592	308 – 311	191 – 195	379 – 389	263 – 272
Northern harrier	SSC	42	45	28	8	28	8
Swainson's hawk	BLMS/ST	508 – 547	490 – 529	326 – 346	282 – 302	267 – 279	267 – 279
Tricolored blackbird	BCC/BLMS /ST	8	17	4	18	6	20
Western burrowing owl	BCC/BLMS /SSC	188 – 205	96 – 113	188 – 189	102 – 103	250	163
White-tailed kite	BLMS/FP	73 – 74	59 – 60	24	9	33	17
Yellow warbler	BCC/SSC	34 – 41	13 – 14	5	5	14 – 20	14 – 20
Yellow-breasted chat	SSC	34 – 35	13 – 14	0	0	9	9
Yellow-headed blackbird	SSC	20	1	22	1	22	1

Source: Authority, 2019a

¹ **Status Code:** BCC = USFWS Birds of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; BLMS = BLM sensitive; CT = CDFW candidate for threatened status; FE = federally endangered; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; FT = federally threatened; SE = state endangered; SSC = CDFW California species of special concern; ST = state threatened

² Acreage calculations include the range of minimum and maximum potential habitat impacts that could occur under optional adit and intermediate window selection scenarios.

Special-status bird species occupy multiple vegetation communities throughout all six Build Alternative RSAs, including: CSC, CRC, COW, MCH, MHC, URB, BAR, and VRI (defined in Table 3.7-4).¹¹ Table 3.7-7 summarizes vegetation communities utilized by special-status wildlife species throughout the core habitat RSA, and Section 3.7.5.2 describes where these vegetation communities occur within each of the six Build Alternative RSAs. The vegetation communities where special-status bird species occur include urban and barren settings (URB, BAR) where birds are known to have habitat in “non-vegetative” settings (i.e., ground nesters, cliff nesters, riverbanks, bridges etc.). Impacts on special-status bird habitat would include degradation or removal of nesting and foraging habitat, fragmentation of habitats and landscapes, and noise or visual disturbances affecting the functionality of established habitat. Habitat for FESA-listed bird species within each of the six Build Alternative RSAs is described below.

¹¹ As discussed above, the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative adit/window options slightly differ in the amount of potential habitat impacts on these vegetation communities.

California Condor (Figure 3.7-19):

The Build Alternative footprints would affect extensive areas of potentially suitable California condor foraging and roosting habitat throughout rural areas between the city of Palmdale and the urbanized San Fernando Valley. However, suitable habitat is not a limiting factor for the California condor; California condors are known to roost, forage, and loiter in the area of Contract Point within the ANF. Nesting habitat is typically located on steep rock formations or in burned-out hollows of old-growth conifers. There is no known breeding activity within 10 miles of the Build Alternative alignments.

Coastal California Gnatcatcher (Figure 3.7-20):

- **Refined SR14 Build Alternative**—The Refined SR14 Build Alternative footprint would affect coastal California gnatcatcher habitat between Agua Dulce Canyon Road and north of the I-210/SR 118 interchange.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. In areas where coastal California gnatcatcher habitat occurs, the SR14A Build Alternative alignment would be identical to that of the Refined SR14 Build Alternative alignment.
- **E1 Build Alternative**—The E1 Build Alternative footprint would affect coastal California gnatcatcher habitat north of the I-210/SR 118 interchange and within the Boulevard Mine disposal site.
- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the Refined E1 Build Alternative. In areas where coastal California gnatcatcher habitat occurs, the E1A Build Alternative alignment would be identical to that of the E1 Build Alternative alignment.
- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect coastal California gnatcatcher habitat along Little Tujunga Canyon Road, north of the Lake View Terrace neighborhood, throughout the Big Tujunga Wash crossing, and near the CalMat Mine disposal site.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the Refined E2 Build Alternative. In areas where coastal California gnatcatcher occurs, the E2A Build Alternative alignment would be identical to that of the E2 Build Alternative alignment.

Least Bell's Vireo (Figure 3.7-23):

- **Refined SR14 Build Alternative**—The Refined SR14 Build Alternative footprint would affect least Bell's vireo habitat near Lake Palmdale, between Big Springs Road and Agua Dulce Canyon Road, and in Soledad Canyon within the Santa Clara River channel. SR14-A2 and SR14-A3 would require implementation of a temporary CSA within least Bell's vireo habitat south of Pacoima Dam.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative alignment would have a more easterly route and would affect less acreage of least Bell's vireo habitat near Lake Palmdale compared to the Refined SR14 Build Alternative alignment. Additionally, The SR14A Build Alternative alignment would affect Least Bell's vireo habitat where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same areas of Least Bell's vireo habitat as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—Trackway and ancillary facilities for the E1 Build Alternative would affect least Bell's vireo habitat near Lake Palmdale and Aliso Canyon.
- **E1A Build Alternative**—The E1A Build Alternative alignment would have a more easterly route and would affect less acreage of least Bell's vireo habitat near Lake Palmdale

compared to the E1 Build Alternative alignment. Within Aliso Canyon, the E1A Build Alternative would affect identical least Bell's vireo habitat as the E1 Build Alternative.

- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect least Bell's vireo habitat near Lake Palmdale and Aliso Canyon. Facilities associated with E2-A1, E2-A2, and the Big Tujunga Wash crossing would also affect least Bell's vireo habitat.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the E2 Build Alternative. The E2A Build Alternative alignment would have a more easterly route and would affect less acreage of least Bell's vireo habitat near Lake Palmdale compared to the E2 Build Alternative alignment. The E2A Build Alternative would affect identical least Bell's vireo habitat as the E2 Build Alternative in Aliso Canyon and Big Tujunga Wash.

Southwestern Willow Flycatcher (Figure 3.7-31):

- **Refined SR14 Build Alternative**—The Refined SR14 Build Alternative footprint would affect southwestern willow flycatcher habitat north of Avenue P, near Lake Palmdale, between Big Springs Road and Agua Dulce Canyon Road, and in Soledad Canyon in the Santa Clara River channel. SR14-A2 and SR14-A3 would require implementation of a temporary CSA within southwestern willow flycatcher habitat south of Pacoima Dam.
- **SR14A Build Alternative**—The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative. The SR14A Build Alternative alignment would have a more easterly route and would affect less acreage of southwestern willow flycatcher habitat near Lake Palmdale compared to the Refined SR14 Build Alternative alignment. Additionally, The SR14A Build Alternative alignment would affect southwestern willow flycatcher habitat where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same areas of southwestern willow flycatcher habitat as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—The E1 Build Alternative footprint would affect southwestern willow flycatcher suitable habitat north of Avenue P, near Lake Palmdale, and within Aliso Canyon.
- **E1A Build Alternative**—The E1A Build Alternative alignment would have a more easterly route and would affect less acreage of southwestern willow flycatcher habitat near Lake Palmdale compared to the E1 Build Alternative alignment. Within Aliso Canyon, the E1A Build Alternative would affect identical southwestern willow flycatcher habitat as the E1 Build Alternative.
- **E2 Build Alternative**—The E2 Build Alternative footprint would affect southwestern willow flycatcher habitat north of Avenue P, near Lake Palmdale, within Aliso Canyon, and within the Big Tujunga Wash. Within the ANF, facilities associated with E2-A1 and E2-A2 would affect southwestern willow flycatcher habitat along Little Tujunga Canyon Road and Gold Creek Road.
- **E2A Build Alternative**—The E2A Build Alternative has the same adit/window options as the E2 Build Alternative. The E2A Build Alternative alignment would have a more easterly route and would affect less acreage of least Bell's vireo habitat near Lake Palmdale compared to the E2 Build Alternative alignment. The E2A Build Alternative would affect identical southwestern willow flycatcher habitat as the E2 Build Alternative in Aliso Canyon and Big Tujunga Wash.

Swainson's Hawk (Figure 3.7-30):

- **Refined SR14 Build Alternative**—Trackway and ancillary facilities for the Refined SR14 Build Alternative would affect Swainson's hawk habitat along Sierra Highway in Palmdale, where the Refined SR14 alignment would intersect the SR 14 freeway, and near the Santa Clara River crossing. There is a large patch of Swainson's hawk habitat north of the I-210/SR 118 interchange, with smaller patches distributed along the Refined SR14 alignment through the San Fernando Valley. The Refined SR14 Build Alternative also has the potential to affect migratory season foraging habitat near the Pacoima Dam.
- **SR14A Build Alternative**—The SR14A Build Alternative alignment would affect Swainson's hawk habitat along Sierra Highway in Palmdale until entering a tunnel portal approximately 0.5 mile northeast of the Sierra Highway/Pearblossom Highway intersection. Additionally, The SR14A Build Alternative alignment would affect Swainson's hawk habitat where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same areas of Swainson's hawk habitat as the Refined SR14 Build Alternative,
- **E1 Build Alternative**—Trackway and ancillary facilities for the E1 Build Alternative would affect Swainson's hawk habitat along Sierra Highway in Palmdale and along Angeles Forest Highway south of the SR 14 and Sierra Highway intersection. Patches of Swainson's hawk habitat exist in the ANF where the E1 alignment parallels Soledad Canyon Road. E1 would affect Swainson's hawk habitat between Little Tujunga Canyon Road and north of the I-210/SR 118 interchange.
- **E1A Build Alternative**—The E1A Build Alternative alignment would affect Swainson's hawk habitat along Sierra Highway in Palmdale, as well as Swainson's hawk habitat along Angeles Forest Highway east of the E1 Build Alternative alignment. The E1A Build Alternative would affect identical Swainson's hawk habitat as the E1 Build Alternative south of Vincent View Road.
- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect Swainson's hawk habitat along Sierra Highway in Palmdale and along Angeles Forest Highway south of the SR 14 and Sierra Highway intersection. Patches of Swainson's hawk habitat exist in the ANF where the E2 alignment parallels Soledad Canyon Road. Trackway and ancillary facilities for the E2 Build Alternative would affect Swainson's hawk habitat in the Big Tujunga Wash crossing and along Little Tujunga Canyon Road, north of the Lake View Terrace neighborhood.
- **E2A Build Alternative**—The E2A Build Alternative alignment would affect Swainson's hawk habitat along Sierra Highway in Palmdale, as well as Swainson's hawk habitat along Angeles Forest Highway east of the E2 Build Alternative alignment. The E2A Build Alternative would affect identical Swainson's hawk habitat as the E2 Build Alternative south of Vincent View Road.

Tricolored Blackbird (Figure 3.7-32):

Surface trackway and ancillary footprint associated with all six Build Alternatives would affect tricolored blackbird habitat near Lake Palmdale and Una Lake. Suitable foraging and nesting habitat for tricolored blackbird is present in the core habitat RSA. A temporary construction area associated with the E2 and E2A Build Alternatives would affect tricolored blackbird habitat within CalMat Mine.

Western Yellow-billed Cuckoo (Figure 3.7-34):

- **Refined SR14 Build Alternative**—Refined SR14 trackway and ancillary features would affect western yellow-billed cuckoo habitat southwest of the SR 14/Escondido Canyon Road interchange. SR14-A1, facilities would affect western yellow-billed cuckoo habitat along Little Tujunga Canyon Road, and SR14-A2/SR14-A3 footprints would both affect western yellow-billed cuckoo habitat south of Pacoima Dam.

- **SR14A Build Alternative**—The SR14A Build Alternative would affect the same areas of western yellow-billed cuckoo habitat as the Refined SR14 Build Alternative south of where the alignment would surface approximately 0.75 mile east of Agua Dulce Canyon Road. The SR14A Build Alternative would consider the same adit/window options as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—Within the ANF, E1-A1, and E1-A2 would affect western yellow-billed cuckoo habitat along Little Tujunga Canyon Road.
- **E1A Build Alternative**—The E1A Build Alternative has the same adit/window options as the Refined E1 Build Alternative.
- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect western yellow-billed cuckoo habitat in the Big Tujunga Wash crossing.
- **E2A Build Alternative**—The E2A Build Alternative would affect identical western yellow-billed cuckoo habitat at Big Tujunga wash.

Direct and Indirect Impacts

Surface Construction

Construction activities (e.g., grubbing, grading, excavation, and driving off-road) would remove or disturb potential nesting habitat for special-status raptors and migratory birds. Direct effects would include bird mortality or injury, permanent conversion of occupied nesting and foraging habitat to project infrastructure, and fragmentation of habitats and landscapes that would interfere with seasonal movement and dispersal of migratory and special-status birds. If construction occurs during the breeding season (generally February to September), active nests could also be disturbed, potentially causing the loss of eggs or developing young (i.e., nest abandonment during the incubation, nestling, or fledgling stages), and noise could cause birds to avoid adjacent suitable nesting habitat. Raptors could nest in riparian habitat, in roadside trees, in windbreaks, in oak woodlands, and on built towers. Burrowing owls extensively use open landscapes with suitable natural or artificial burrows. Vibration from construction equipment along with increased vehicular traffic could collapse inhabited burrows.

Indirect effects during the construction period would include permanent or temporary displacement of bird species to avoid disturbance (e.g., noise, vibration, visual stimuli); such displacement would also result from fragmentation of the landscape caused by construction of project components (e.g., security fences, elevated structures, railbeds, and associated facilities). Indirect effects include interference with the daily movement, foraging, and dispersal of resident and migratory bird species. Repeated exposure to disturbance can reduce reproductive success and increase mortality by exposing nests to predators and the elements. Tunnel-boring activities could, through potential changes in the hydrology pattern or hydroperiod of streams, indirectly affect riparian areas that provide nesting and foraging habitat for many special-status bird species.

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs and IAMF #12, Design the Project to be Bird Safe, have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status birds. Refer to Section 3.7.4.2 for the full IAMF text.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect suitable habitat for special-status birds.

Seven special-status birds with suitable habitat in the tunnel construction RSA have been identified as requiring wetland or aquatic habitats (including riparian habitats) and therefore could be adversely affected by changes in groundwater levels (Table 3.7-16, Figure 3.7-41, and Figure 3.7-42). Of these seven species, three species (least Bell's vireo, southwestern willow flycatcher, and yellow warbler) have suitable habitat within High and Moderate Risk Areas. The remaining four species (tricolored blackbird, yellow-billed cuckoo, northern harrier, and yellow-headed blackbird) have suitable habitat within the No/Low Risk Areas. Because these areas lack faults and high groundwater pressure and with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7, no impact is expected. Changes in hydrogeologic conditions could alter the inundation period or a change to the water table, which could cause a surface water feature to dry up or partially dry up. For special-status bird species, the primary impact of this hydrological interruption could be a lack of surface drinking water and desiccation or mortality of groundwater dependent habitats, such as riparian trees and shrubs. Depending on the time of year and/or the timing of drying, these changes can affect breeding success, survivability of eggs or young, and in extreme cases, can cause the mortality of individuals if other nearby surface waters are not present. While effects could occur on the species and habitat identified in Table 3.7-16, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

The six High Risk areas for the E2 and E2A contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated least Bell's vireo, southwestern willow flycatcher, and yellow warbler habitat, would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated least Bell's vireo, southwestern willow flycatcher, and yellow warbler habitat.

Table 3.7-16 Potential Impacts on Special-Status Bird Habitat from Changes in Hydrologic Conditions

Species	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Birds												
Least Bell's Vireo	0	0	0	0	0	0	0	0	2	0	0	0
Southwestern Willow Flycatcher	0	0	0	0	0	0	0	0	2	0	0	0
Tricolored Blackbird	0	0	0	0	0	0	0	0	0	0	0	0
Yellow-billed Cuckoo	0	0	0	0	0	0	0	0	0	0	0	0
Non-FESA-Listed Special-Status Birds												
Northern harrier	0	0	0	0	0	0	0	0	0	0	0	0
Yellow warbler	0	0	0	0	0	0	0	0	2	0	0	0
Yellow-headed blackbird	0	0	0	0	0	0	0	0	0	0	0	0

High = Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.

Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk

ANF = Angeles National Forest.

SGMNM = San Gabriel Mountains National Monument

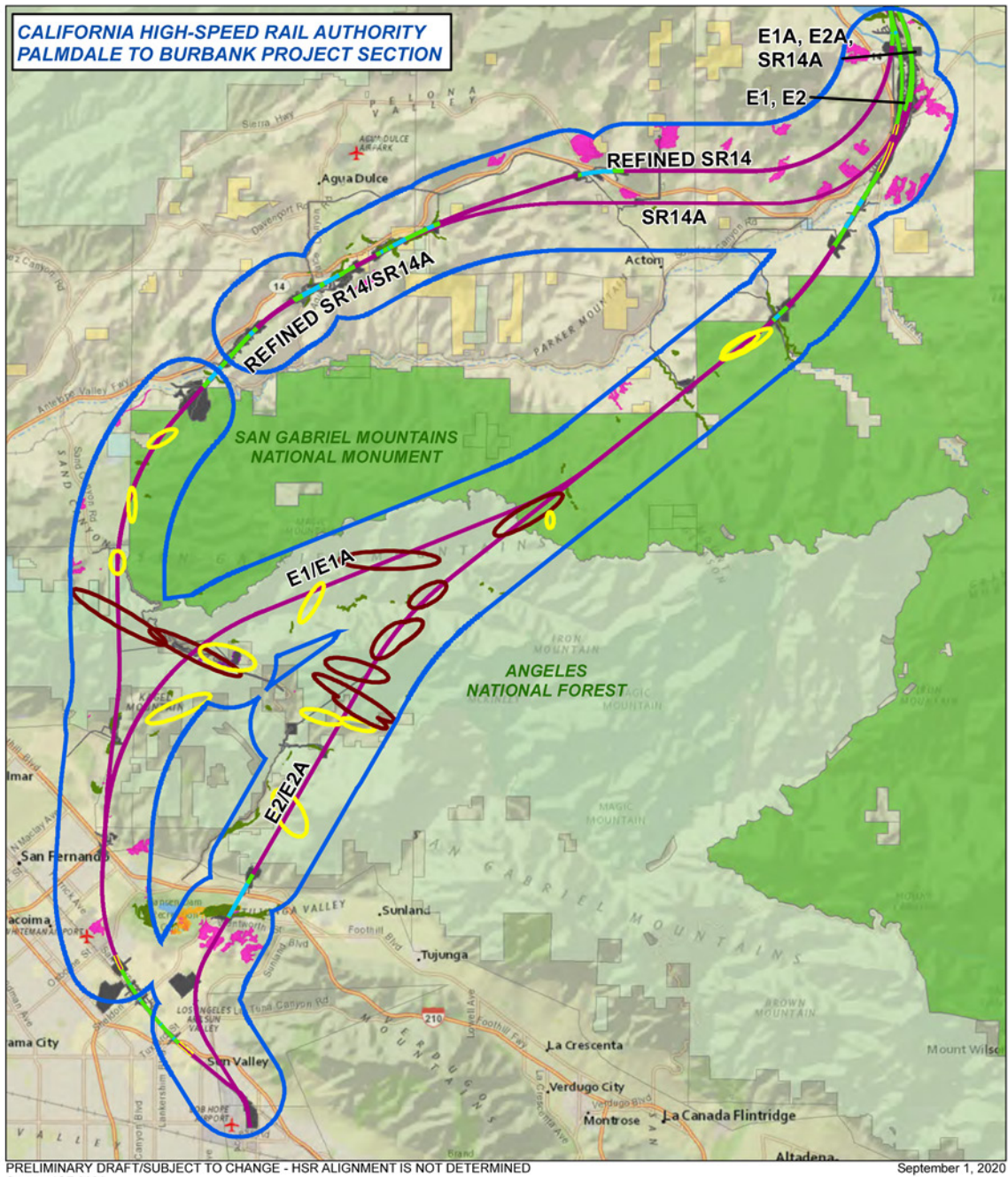


Figure 3.7-41 FESA-Listed Special-Status Bird Habitat Within the Tunnel Construction Resource Study Area

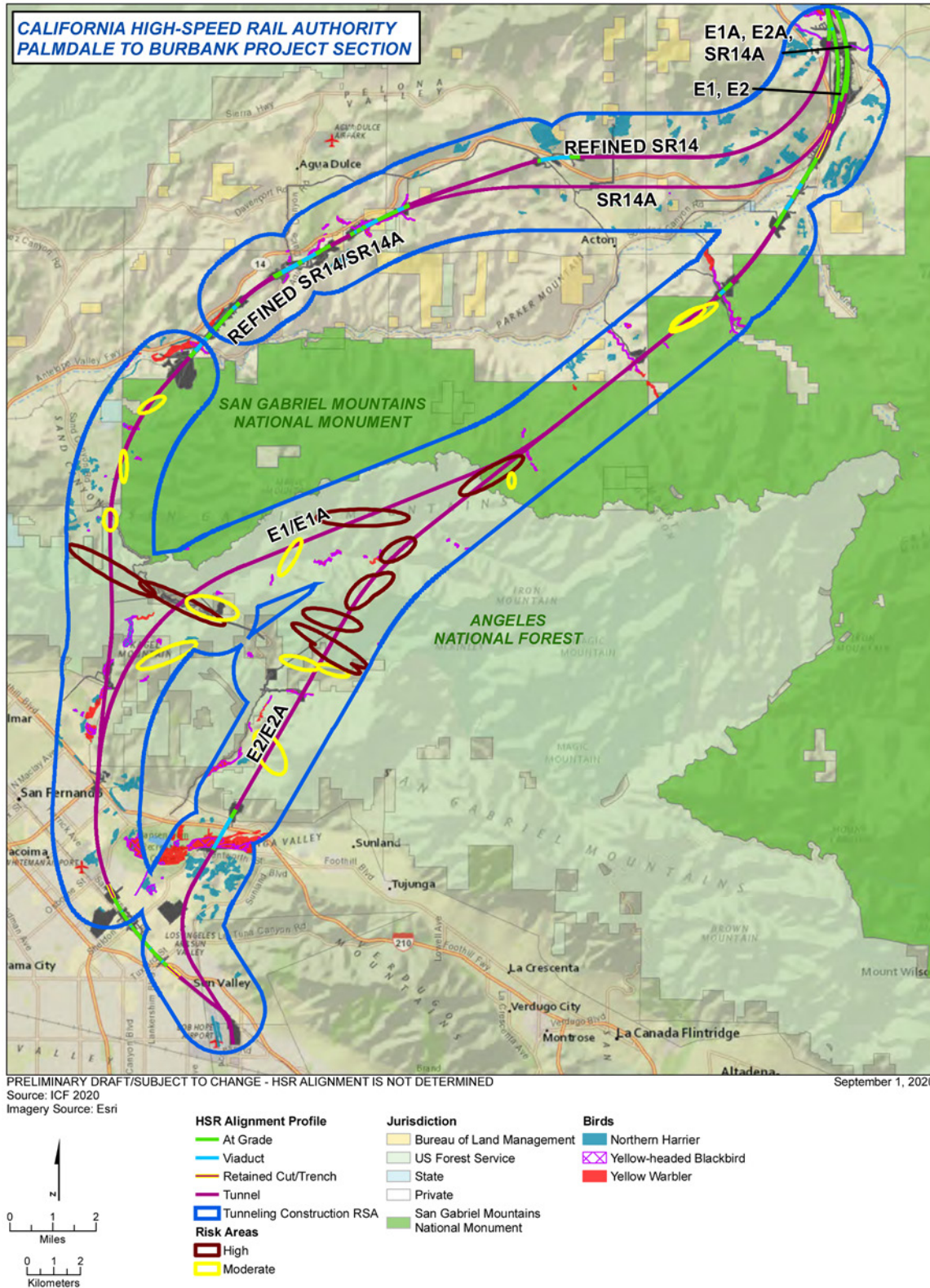


Figure 3.7-42 Non-FESA–Listed Special-Status Bird Habitat Within the Tunnel Construction Resource Study Area

Based on the defined Risk Areas, suitable habitat for the potentially affected special-status birds is limited within the RSA. Only the Risk Areas associated with the E2 and E2A Build Alternatives contain potential special-status bird habitat (approximately 2 acres). No suitable habitat for any special-status bird species is mapped with the identified Risk Areas for the Refined SR14, SR14A, E1, and E1A Build Alternatives.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, construction of each of the six Build Alternatives would have a substantial adverse effect on habitat for special-status bird species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact because special-status bird habitat would still be directly and indirectly affected by surface construction associated with each of the six Build Alternatives. The mitigation measures listed below would reduce surface construction impacts on special-status birds and habitat. Application of the mitigation measures discussed below would also ensure that no take of fully protected bird species (American peregrine falcon, California condor, bald eagle, golden eagle, white-tailed kite) would occur during construction. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP would reduce impacts on bird species and habitat, including special-status bird species.
- BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds. By reducing impacts on active bird nests, construction impacts on bird species and nesting habitats, including special-status species, would be reduced.
- BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors. Determining the presence of raptor nesting habitat enables mitigation to be implemented and impacts on raptor nests and individuals would be reduced.
- BIO-MM#16: Implement Avoidance Measures for California Condor. These avoidance measures would minimize construction-related effects on the California condor and thus reduce impacts. These measures would also avoid injury or mortality.
- BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests. Determining the presence of Swainson's hawk nests allows for the implementation of avoidance, minimization, and/or compensatory mitigation measures that ensure such impacts on Swainson's hawk individuals and nests would be reduced.
- BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson's Hawk Nests. These measures would minimize construction-related effects on Swainson's hawk nests and individuals, and thus impacts on individuals and nests would be reduced.
- BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls. In determining the presence of western burrowing owl burrows, mitigation will be implemented, and impacts on western burrowing owl individuals and habitat would be reduced.
- BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl. These measures will minimize construction-related effects on western burrowing owl habitat and individuals, and thus impacts on individuals and habitat of this special-status bird species would be reduced.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration of riparian habitat disturbed by construction activities would reduce impacts on bird species and habitat, including special-status bird species.
- BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat. By providing compensatory mitigation for affected Swainson's hawk nest trees and foraging habitat, impacts on Swainson's hawk individuals, nests, and foraging habitat will be offset.

- BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat. By providing compensatory mitigation for affected western burrowing owl nesting, occupied, and satellite burrows and western burrowing owl habitat, impacts on individuals and habitat of this special-status bird species will be offset.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources, including those used by special-status bird species as nesting and foraging habitat, during habitat restoration, enhancement, or creation activities. As a result, impacts on bird species, including special-status bird species, and habitat would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure that permanent and temporary impacts on special-status bird species and habitat will be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce invasive species impacts related to construction on bird species and habitat, including special-status bird species.
- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing. The establishment of ESAs would reduce impacts on areas that support special-status birds or associated habitat as access to these areas will be restricted during construction activities. Construction activities that have the potential to result in the removal, disturbance, or fragmentation of potential nesting habitat for special-status raptors and migratory birds will be limited to outside the established ESAs. Indirect impacts resulting from noise, vibration, and visual stimuli would similarly be confined to areas outside the ESAs. As a result, impacts on bird species and habitat, including special-status bird species, would be reduced.
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Traffic and speed limits will reduce the amount of vibration resulting from vehicular traffic, which has the potential to collapse inhabited burrows for species such as burrowing owls. Implementation of construction site and vehicle traffic limits would minimize special-status bird habitat degradation from vehicles during construction. Therefore, impacts on special-status bird species would be reduced.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements would ensure that impacts on bird species and habitat, including special-status bird species, would be reduced.
- BIO-MM#63: Work Stoppage. Construction-related impacts on bird species, including special-status bird species, would be reduced.
- BIO-MM#65: Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles. Determining the presence of bald and golden eagle nesting, roosting, and foraging habitat allows for the implementation of avoidance, minimization, and/or compensatory mitigation measures that ensure that death and injury to these special-status species would be avoided and effects on habitat reduced.
- BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests. By implementing avoidance and mitigation measures for occupied bald and golden eagle nests, death or injury to these special-status species would be avoided.
- BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests. This measure will compensate for effects that have the potential to occur on active eagle nests within the

- permanent impact area. Nest relocation/replacement would minimize impacts on eagle individuals and nests, including impacts on bald and golden eagles to ensure that death or injury to these species would be avoided.
- BIO-MM#68: Avoid Impacts on White-tailed Kite. These measures would avoid effects on white-tailed kite nests within the construction footprint, and thus death and injury to individuals of this fully protected bird species would be avoided.
 - BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies. These measures would avoid and minimize construction-related effects on active tricolored blackbird nesting colonies within the construction footprint such that impacts on individuals and nesting habitat of this special-status bird species would be reduced.
 - BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat. These mitigation methods would minimize construction-related effects on tricolored blackbird nesting, roosting, and foraging habitat, such that impacts on individuals and habitat of this special-status bird species would be offset.
 - BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use. This measure would prevent helicopter collisions that may result in the injury or death of California condors in the area.
 - BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor. These measures would minimize the use of lighting that may pose a risk or otherwise disturb or harm condors during construction, such that impacts on individuals and habitat of this fully protected bird species would be avoided.
 - BIO-MM#74: Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities. These avoidance measures would reduce helicopter collisions that may cause injury or death to bird species in the area, such that impacts on bird species, including special-status bird species, would be reduced.
 - BIO-MM#76: Implement Wildlife Rescue Measures. This measure would reduce construction effects on individual wildlife, including special-status birds.
 - BIO-MM#78: Install Wildlife Jump-outs. Although special-status birds would not typically be constrained by fencing, these measures would ensure that bird species, including species which nest on the ground, do not become entrapped or harmed within the right-of-way. As a result, impacts on bird species, including special-status bird species, would be reduced.
 - BIO-MM#79: Conduct Surveys for Coastal California Gnatcatcher. Determining the presence of suitable coastal California gnatcatcher habitat allows for the implementation of avoidance, minimization, and/or compensatory mitigation measures that ensure that death and injury to these special-status species would be avoided and effects on habitat reduced or avoided.
 - BIO-MM#80: Conduct Surveys for Least Bell's Vireo. These measures would minimize disturbance to least Bell's vireo individuals, nests, and nesting habitat, such that impacts would be reduced.
 - BIO-MM#81: Conduct Surveys for Southwestern Willow Flycatcher. These measures would minimize disturbance to southwestern willow flycatcher individuals, nests, and nesting habitat, such that impacts on this special-status bird species would be reduced.
 - BIO-MM#82: Conduct Surveys for Western Yellow-billed Cuckoo. These measures would minimize disturbance to western yellow-billed cuckoo individuals, nests, and nesting habitat, and therefore impacts on this special-status bird species would be reduced.

Collectively, the above mitigation measures would avoid, minimize, and compensate for surface construction impacts on special-status birds and habitat. Surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

For indirect effects from tunnel construction, the Refined SR14, SR14A, E1, and E1A Build Alternatives would not result in a substantial adverse effect on special-status birds or habitat, and this impact would therefore be less than significant for the Refined SR14, SR14A, E1, and E1A Build Alternatives. No mitigation measures are required for the Refined SR14, SR14A, E1, and E1A Build Alternatives.

While actions would be implemented during construction to reduce indirect impacts on special-status bird species and to minimize the loss of habitat resulting from tunnel construction associated with the E2 and E2A Build Alternatives, the project could result in loss and degradation of habitat. To address this impact for the E2 and E2A Build Alternatives, the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring.

If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the E2 and E2A Build Alternatives would not result in a substantial adverse effect to special-status birds or habitat as a result of tunnel construction, and this impact would therefore be less than significant.

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

Three special-status fish species have potential to occur within the E1, E1A, E2, and E2A Build Alternative core habitat RSA. Non-FESA-listed special-status fish include the arroyo chub and Santa Ana speckled dace, and FESA-listed special-status fish species includes Santa Ana sucker. The Refined SR14 and SR14A Build Alternative core habitat RSAs encompass habitat for these three special-status fish species, plus FESA-listed and CDFW fully protected fish species, unarmored three-spine stickleback. Vegetation communities associated with these species within the six Build Alternative core habitat RSAs include DRI, DSW, LAC, MRI, RIV, and VRI (defined in Table 3.7-4). Table 3.7-17 quantifies the acreage of special-status fish habitat within the Build Alternative construction footprints.

As discussed in Section 3.7.4, Methods for Evaluating Impacts, impacts on special-status fish species were calculated by identifying the intersection of riparian and aquatic habitats and communities with the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives permanent and temporary impact areas. This conservative approach analyzed all riparian and aquatic habitats, which make up vegetation communities described in Section 3.7.5.2, that could potentially serve as species habitat. The arroyo chub and Santa Ana speckled dace occupy VRI and DSW vegetation communities (defined in Table 3.7-4). Table 3.7-7 summarizes vegetation communities utilized by non-FESA-listed fish species throughout the core habitat RSA, and Section 3.7.5.2 describes where these vegetation communities occur within the Refined SR14, SR14A, E1, E1A, E2, and E2A RSAs. Habitat for FESA listed fish species within the Refined SR14, SR14A, E1, E1A, E2, and E2A core habitat RSAs is described below.

Table 3.7-17 Special-Status Fish Habitat within Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Fish Species							
Santa Ana sucker	FT	0 – 15	0 – 15	11 – 15	11 – 15	9	9
Unarmored three-spine stickleback	FE/SE/FP	6	9	0	0	0	0

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Non-FESA–Listed Special-Status Fish Species							
Arroyo chub	FSS/SSC	43 – 51	15 – 22	14	6	23 – 30	15 – 21
Santa Ana speckled dace	FSS/SSC	43 – 51	15 – 22	14	6	23 – 30	15 – 21

Source: Authority, 2019a

¹ **Status Code:** FE = federally endangered; FSS = U.S. Forest Service sensitive; FE = federally endangered; FP = CDFW fully protected species; FT = federally threatened; SE = state endangered; SSC = CDFW California species of special concern

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

Santa Ana Sucker (Figure 3.7-24):

Within the ANF, SR14-A1, E1-A1, and E1-A2 would affect Santa Ana sucker habitat within along Little Tujunga Canyon Road where it passes adjacent to Pacoima Wash. E2 and E2A Build Alternative trackway and ancillary facilities would affect Santa Ana sucker habitat in the Big Tujunga Wash crossing.

Unarmored Three-spine Stickleback (Figure 3.7-33)

The Refined SR14 and SR14A Build Alternatives trackway and ancillary facilities would affect unarmored three-spine stickleback habitat along Agua Dulce Canyon Road and at the Santa Clara River crossing at Soledad Canyon. A utility corridor associated with E1-W1/E2-E1 would disturb unarmored three-spine stickleback habitat along Arrastre Canyon Road north of Arrastre Canyon.

Direct and Indirect Impacts

Surface Construction

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. Shading from overhead elevated structures would also affect suitable habitat. Direct effects would consist of physical disturbance, temporary interruptions of fish passage, sedimentation, turbidity, altered water temperatures, oxygen depletion, and contaminants. Final bridge design plans were not available at the time of this analysis, but construction could require work below the ordinary high water mark of water bodies that support, or have the potential to support, special-status fish species. Dewatering during construction, if needed, could result in the stranding and mortality of special-status fish. Pile-driving in channels when surface water is present could lead to behavioral changes, injury, and possible death from vibrations. Changes in sedimentation and nutrient loading caused by soil erosion into occupied habitat as a result of construction disturbance of channel sediments and adjacent soils would degrade habitat or reduce reproductive success. Chemical spills from construction equipment (e.g., fuel, transmission fluid, lubricating oil, motor oil) would contaminate the water column, degrading habitat or reducing reproductive success of special-status fish in downstream habitats.

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.

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts to applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status fish.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect suitable habitat for special-status fish species (Table 3.7-18, Figure 3.7-43, and Figure 3.7-44).

Four special-status fish with suitable habitat in the tunnel construction RSA have been identified as requiring wetland or aquatic habitats and therefore could be adversely affected by changes in groundwater levels. Of these four species, two species, arroyo chub and Santa Ana speckled dace, have suitable habitat within High and Moderate Risk Areas. The remaining two species, Santa Ana sucker and unarmored three-spine stickleback have suitable habitat within the No/Low Risk Areas. Because these areas lack faults and high groundwater pressure and with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 no impact is expected. Changes in hydrogeologic conditions could alter the inundation period (also referred to as the hydroperiod), or a change to the water table which could cause a surface water feature to dry up or partially dry up. A change in the hydroperiod of surface water features can affect breeding success, survivability of eggs or young, water temperatures which can affect survivability, and in extreme cases, can cause the desiccation and mortality of individuals if surface waters dry up completely. While potential effects could occur on special-status fish species, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

The six High Risk areas for the E2 and E2A contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated arroyo chub and Santa Ana speckled dace habitat would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated arroyo chub and Santa Ana speckled dace habitat.

Table 3.7-18 Potential Impacts of Special-Status Fish Habitat from Changes in Hydrologic Conditions

Species	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Fish												
Santa Ana Sucker	0	0	0	0	0	0	0	0	0	0	0	0
Unarmored Three-spine Stickleback	0	0	0	0	0	0	0	0	0	0	0	0
Non FESA-Listed Special-Status Fish												
Arroyo chub	0	0	0	0	0	0	0	0	2	0	0	0
Santa Ana speckled dace	0	0	0	0	0	0	0	0	2	0	0	0

High = Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk.
 ANF = Angeles National Forest
 SGMNM = San Gabriel Mountains National Monument

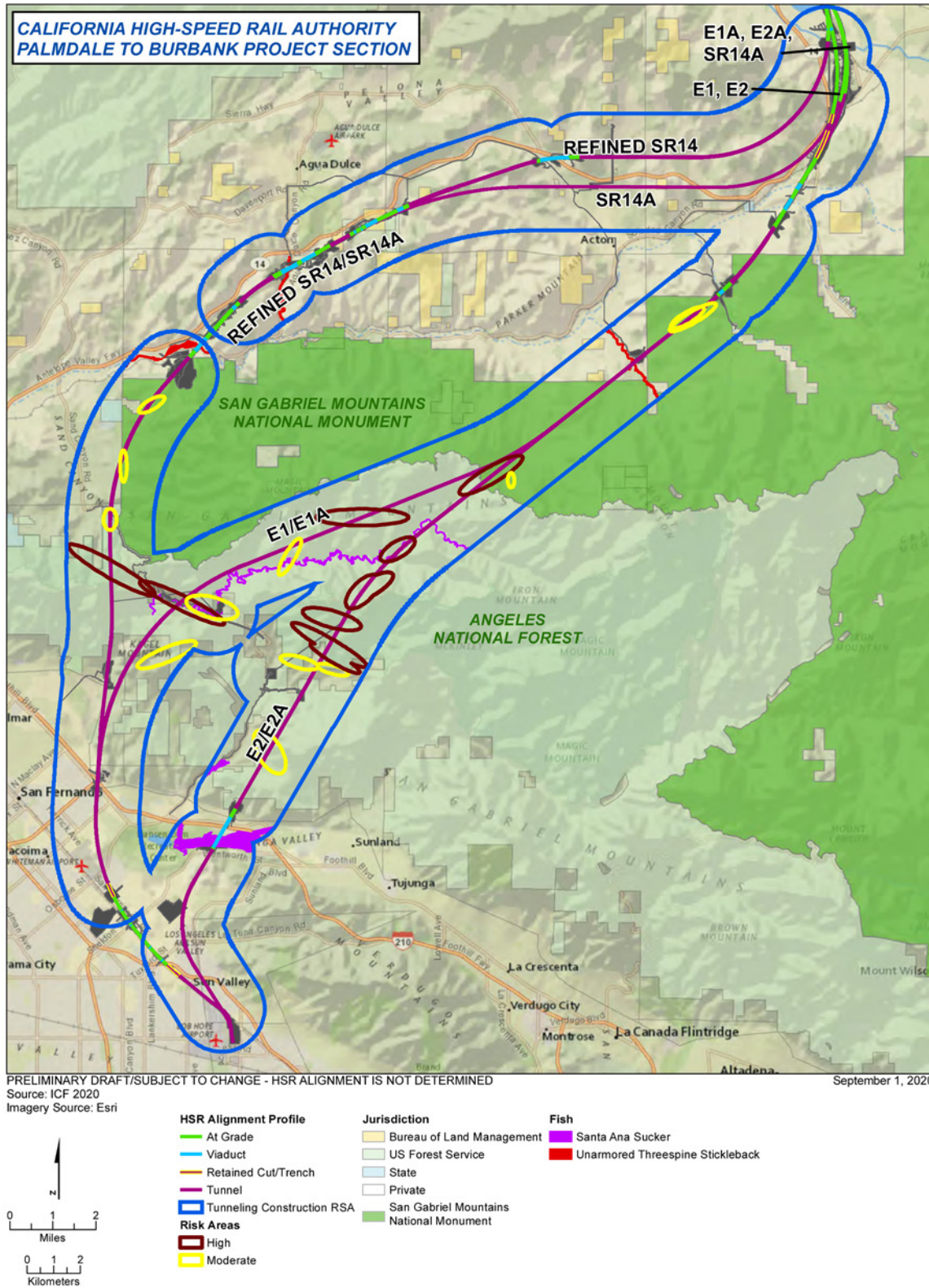


Figure 3.7-43 FESA-Listed Special-Status Fish Habitat Within the Tunnel Construction Resource Study Area

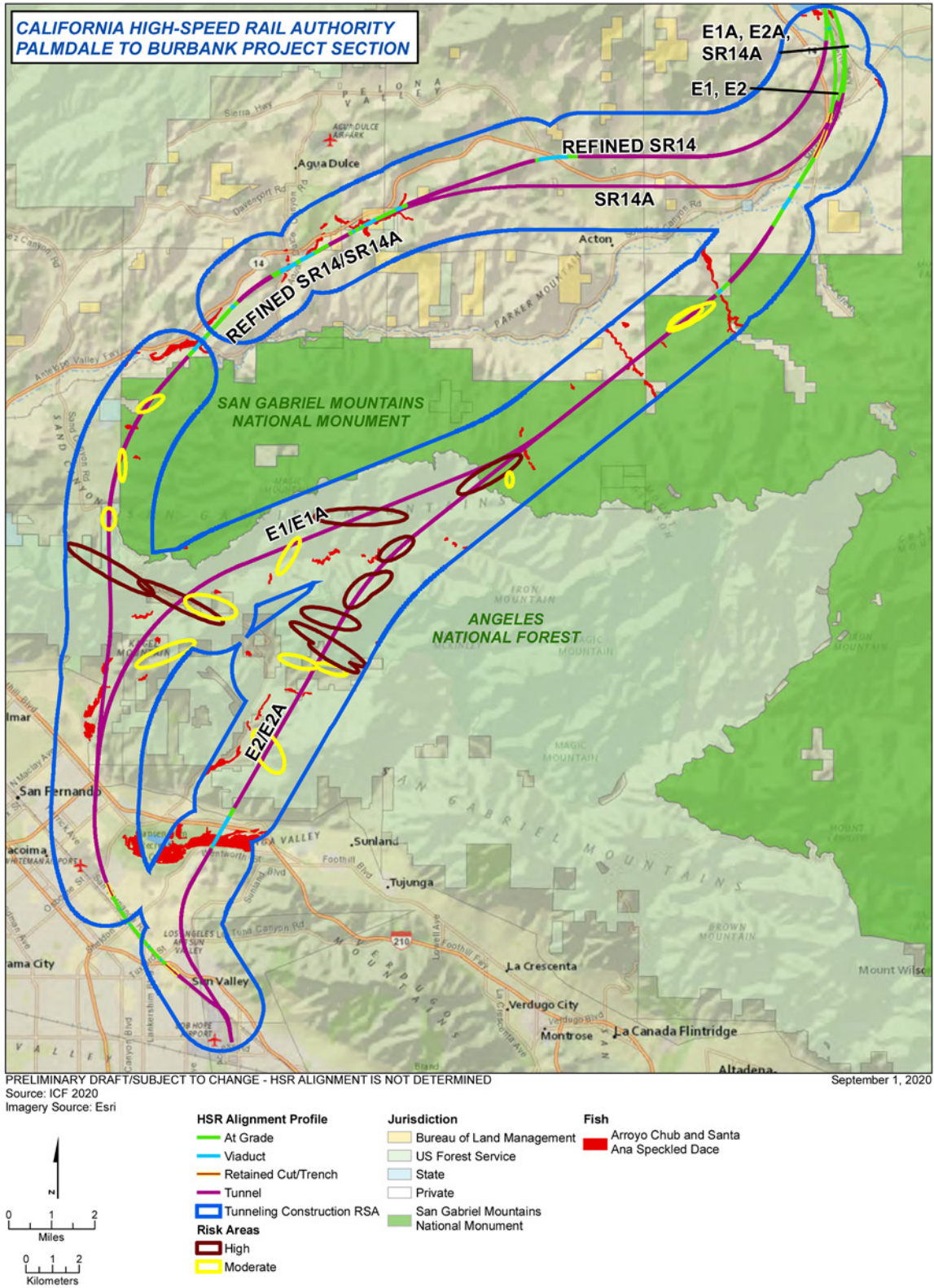


Figure 3.7-44 Non- FESA-Listed Special-Status Fish Habitat Within the Tunnel Construction Resource Study Area

Within the defined Risk Areas, suitable habitat for special-status fish is extremely limited. Only the E2 and E2A Build Alternatives have mapped special-status fish habitat within Risk Areas, approximately 2 acres of suitable habitat for the arroyo chub and Santa Ana speckled dace.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, surface construction associated with each of the six Build Alternatives would have a substantial adverse effect on habitat for special-status fish species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact because special-status fish habitat would still be directly and indirectly affected by surface construction associated with each of the six Build Alternatives. All six Build Alternatives would apply the mitigation measures discussed below to reduce surface construction impacts on special-status fish species. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP would reduce impacts on special-status fish species and habitat.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration of riparian habitat disturbed by construction activities would reduce impacts on special-status fish species and habitat.
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. Aquatic resource restoration would reduce disturbance, degradation, and pollution in suitable habitat for special-status fish, and thus impacts on special-status fish species and habitat would be reduced.
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters. These aquatic resources often serve as suitable habitat for special-status fish communities. Implementation of these measures would reduce construction-related disturbance, degradation, and pollution to these aquatic resources, such that impacts on special-status fish species and habitat would be reduced.
- BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat. Compensatory riparian habitat restoration for permanently disturbed habitat will ensure the offset of permanent impacts on these areas, which have the potential to support special-status fish species and/or resources. Therefore, impacts on special-status fish species and habitat would be offset.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. Aquatic resources often serve as suitable habitat for special-status fish communities. Implementation of this measures would ensure no net loss of wetlands and offsetting mitigation for other jurisdictional waters. Therefore, impacts on special-status fish species and habitat would be offset.
- BIO-MM#50: Implement Measures to Minimize Impacts During Offsite Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. These will include habitat and aquatic biological resources used by special-status fish species. As a result, impacts on special-status fish species and habitat would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure permanent and temporary impacts on special-status fish species and habitat would be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would ensure that invasive species would not degrade aquatic resources and suitable habitat used by special-status fish. As a result, construction impacts on impact special-status fish species and habitat would be reduced.

- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Non -Disturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs. The establishment of ESAs would reduce the potential for direct physical disturbance, temporary interruptions of fish passage, sedimentation, turbidity, altered water temperatures, oxygen depletion, and contaminants. Indirect effects, such as changes in water quality and downstream morphology would be limited to areas outside the established ESAs. The establishment of ESAs would reduce impacts on areas which support special-status fish or associated habitat, as access to these areas would be restricted during construction activities. As a result, impacts on special-status fish species would be reduced.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements would ensure that impacts on special-status fish species and habitat would be reduced.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. The dewatering plan would reduce the potential for stranding or mortality of special-status fish. In determining the presence of special-status fish as well as other special-status species within the affected waterbody, mitigation measures may be implemented to ensure that impacts on special-status fish species and habitat would be reduced.
- BIO-MM#63: Work Stoppage. Construction-related impacts on special-status fish species would be reduced.
- BIO-MM#76: Implement Wildlife Rescue Measures. The Project Biologist will follow all relevant guidelines for all special-status species including special-status fish species. Therefore, construction impacts on special-status fish species would be reduced. This measure does not apply to the unarmored three-spine stickleback as it is a fully protected species.
- BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine stickleback. This measure will ensure the availability of site-specific information regarding restrictions on the introduction and handling of concrete and other contaminants, debris, and vegetation disposal to the Santa Clara River wetted channel during construction activities, as well as worker training on the repercussions to unarmored three-spine stickleback resulting from contaminants and debris; thus, death and injury to individuals of this fully protected fish species during construction would be avoided.
- BIO-MM#85: Establish Construction Zones and Environmentally Sensitive Areas. These measures will place restrictions on construction activities to ensure that all construction activities and personnel will occur at a minimum of 10 feet from the Santa Clara River wetted channel, and that no work takes place where unarmored three-spine stickleback may be affected during temporary and permanent bridge construction in proximity to the Santa Clara River. As a result, construction impacts to special-status fish species in the Santa Clara River would be reduced, and death and injury to unarmored three-spine stickleback during construction would be avoided.
- BIO-MM#86: Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions. Weather related and seasonal work restrictions would ensure all construction work, contaminant spills, and debris, all of which have the potential to adversely impact special-status fish species and individuals and habitat, will completely avoid the Santa Clara River wetted channel. Therefore, construction impacts to special-status fish species in the Santa Clara River wetted channel would be reduced.
- BIO-MM#87: Prepare and Implement Spill Prevention and Containment Measures. These measures will prevent uncured concrete spills and ensure limited dewatering associated with the Santa Clara River crossing bridges, which would thereby minimize water quality degradation as well as reduce risk of fish stranding for special-status fish species in the

Santa Clara River wetted channel during construction activities. As a result, construction impacts to special-status fish species in the Santa Clara River wetted channel would be reduced.

- BIO-MM#88: Implement Construction or Maintenance Activity Debris Prevention Measures. These measures will prevent the inadvertent discharge of equipment, chemicals, or debris into the Santa Clara River during construction activities, which would minimize degradation of water quality and habitat suitable for special-status fish species. As a result, construction impacts to special-status fish species in the Santa Clara River would be reduced.
- BIO-MM#89: Implement Construction Measures for unarmored three-spine stickleback Avoidance. These measures will ensure the utilization of oscillating pile driving methods during bridge installation, seasonal restrictions, and vegetation management measures to ensure the avoidance of effects on unarmored three-spine stickleback during construction activities. As a result, death and injury to individuals of this fully protected fish species, among other species, during construction would be avoided.
- BIO-MM#90: Prepare a Construction Groundwater Dewatering Plan. These measures will ensure that during construction, dewatering is conducted in a manner that does not affect river flow; additionally, dewatering activities will be halted if water levels decrease in the Santa Clara River wetted channel where unarmored three-spine stickleback are present. This would avoid the risk of stranding of special-status fish species as well as avoid the introduction of pollutants to surface waters which would have the potential to degrade water quality. As a result, construction impacts to special-status fish species in the Santa Clara River would be reduced, and death and injury to unarmored three-spine stickleback during construction would be avoided.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect surface construction impacts on special-status fish. As a result, surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

The impact from tunnel construction would be potentially significant for all Build Alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status fish species, including species listed under FESA and CESA although the level of risk and impact potential varies between Build Alternatives. Although there is no mapped special-status fish habitat within the Risk Areas for the Refined SR14, SR14A, E1, and E1A Build Alternatives, habitat may still be present. 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 streams, 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 indirect impacts on special-status fish and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat. As such the Build Alternatives could have substantial adverse effects on special-status fish species, including species listed under FESA and CESA, through conversion or degradation of habitat. To address this impact the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring.

If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to special-status fish habitat as a result of tunnel construction, and this impact would therefore be less than significant.

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

Special-status invertebrate species with potential to occur within all six Build Alternative core habitat RSAs include San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly, Crotch bumble bee, Monarch butterfly, and vernal pool fairy shrimp. The Build Alternative RSAs contain suitable habitat for host plants supporting San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly¹², and Monarch butterfly. Grassland and scrub habitats within the RSA provide suitable habitat for Crotch bumble bee. Vernal pool fairy shrimp occur primarily in seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. Fourteen of these vernal pool features are within 1,000 feet of the six Build Alternatives. Although it is unknown whether the identified vernal pool features are occupied, occupied habitat occurs within a few miles of the RSA. Therefore, it is within reason to assume that the species have the potential to occur within the RSA. Table 3.7-19 quantifies the acreage of special-status invertebrate habitat within the Build Alternative construction footprints.

Table 3.7-19 Special-Status Invertebrate Habitat within Build Alternative Footprints

Species	Protection Status	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Invertebrate Species							
Vernal Pool Fairy Shrimp ³	FT	1.63	0.04 – 0.06	0.44	0.04 – 0.06	0.38	0.04
Non-FESA–Listed Special-Status Invertebrate Species							
Monarch butterfly	SC	999 – 1,064	788 – 853	796 – 819	638 – 662	852 – 852	695 – 697
Crotch bumble bee	SE	680 – 750	506 – 576	771 – 793	612 – 635	766 – 768	609 – 611
San Emigdio blue butterfly	FSS	148 – 166	148 – 166	50 – 52	50 – 52	48 – 51	48 – 51
San Gabriel Mountains elfin butterfly	FSS	144 – 162	144 – 162	50 – 51	50 – 51	48 – 50	48 – 50

Source: Authority, 2019a

¹ **Status Code:** FSS = U.S. Forest Service sensitive; FT = federally threatened, SE = state endangered, SC = CDFW candidate for listing, FESA = Federal Endangered Species Act

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Vernal pool fairy shrimp impacts are based on pools identified during the vernal pool assessment. Changes in impact acreages is based on the avoidance of pools identified as potential habitat near Una Lake and avoidance of a pool identified for the Refined SR14 alignment.

Direct and Indirect Impacts

Surface Construction

San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly, and Monarch butterfly would be directly affected by damage or removal of their host plants. Removal of host plants would reduce the long-term viability of populations of these invertebrates. Direct effects also include the permanent conversion of occupied habitat to project infrastructure or changes to micro/local hydrology. Indirect effects on San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly, and Monarch butterfly during construction would include the accumulation of fugitive dust on host plants, potentially weakening their vigor and resulting in degradation of habitat for these invertebrates. In addition, changes to local runoff would have negative effects on the health and

¹² The elfin butterfly and San Emigdio blue butterfly are protected within Forest Service lands. Each of the six Build Alternative alignments would traverse Forest Service lands within the ANF.

vigor of these plants. Indirect effects would also include inadvertent introduction of nonnative invasive weeds that would out-compete host plants, reducing the availability of suitable habitat.

Crotch bumble bee would be directly affected by damage to suitable habitat, including grassland and scrub habitats. Direct effects also include the permanent conversion of occupied habitat to project infrastructure or changes to micro/local hydrology. Indirect effects on Crotch bumble bee during construction would include the accumulation of fugitive dust resulting in degradation of habitat for these invertebrates. In addition, changes to local runoff would have negative effects on the health and vigor of plants that make up suitable habitat.

Vernal pool fairy shrimp would be directly affected if suitable aquatic habitats are disturbed, penetrated, filled, polluted, or otherwise destroyed or degraded by construction equipment, siltation, and sedimentation. Construction equipment traveling off-road in suitable aquatic habitats would cause erosion, soil compaction, increased siltation, destruction of native vegetation, and alteration of pool hydrology that would negatively affect vernal pool fairy shrimp. In upland areas surrounding suitable aquatic habitat, indirect effects would result from construction activities such as pile-driving, excavation, railbed buildup, placement of permanent and temporary structures, and vehicle traffic that would change the habitat's hydrology. Indirectly, these construction activities would alter the amount and quality of water available above- and below-ground, change the inflow of water to particular pools, or decrease or increase inundation. These changes in hydrology would affect the reproductive success and survival of these species and their food. The accidental introduction of pollutants like petroleum products in chemical-laden runoff into suitable habitats during construction would affect water chemistry and result in branchiopod mortality.

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status invertebrates.

Tunnel Construction

Tunnel construction and associated changes in groundwater levels is not expected to affect special-status invertebrates. Vernal pool fairy shrimp would not be affected because habitat for this species is vernal pools, which rely solely on rainfall to support their hydrologic cycle. Three butterfly species, San Emigdio blue butterfly, San Gabriel Mountains elfin butterfly, and Monarch butterfly, and Crotch bumble bee would not be affected because they do not occur within groundwater dependent ecosystems. Consequently, substantial impacts to special-status invertebrates as a result of tunnel construction are not expected.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, surface construction associated with each of the six Build Alternatives would have a substantial adverse effect on habitat for special-status invertebrate species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact because special-status invertebrate habitat would still be directly and indirectly affected by surface construction associated with each of the six Build Alternatives. The mitigation measures discussed below would be applied to reduce surface construction impacts on special-status invertebrates. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#3: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species. In determining the presence of vernal pool wildlife species, including vernal pool fairy shrimp, mitigation will be implemented such that impacts on special-status invertebrate species and habitat would be reduced.
- BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction. These measures will minimize construction-related disturbance to vernal pools and other suitable aquatic habitats

- used by special-status invertebrate species within the construction footprint, such that impacts on special-status invertebrate species and habitat would be reduced.
- BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas. Construction-related impacts on special-status invertebrate habitat, such as vernal pool fairy shrimp, would be reduced.
 - BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP will reduce direct and indirect impacts on the San Gabriel Mountains elfin butterfly and San Emigdio blue butterfly identified above. The RRP would reduce direct impacts on host plants, which support these special-status invertebrates, by restoring removed or damaged host plants. As a result, impacts on special-status invertebrate species and habitat would be reduced.
 - BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat. Impacts on vernal pool fairy shrimp individuals and habitat will be offset.
 - BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. Aquatic resources often serve as breeding habitat for special-status invertebrate species. Where compensatory mitigation for aquatic resources is not co-located with compensatory mitigation for species and habitat, the compensatory mitigation for aquatic resources may provide an additional offset for special-status invertebrate species.
 - BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. These measures would reduce direct and indirect impacts on invertebrates such as the San Gabriel Mountains elfin butterfly and San Emigdio blue butterfly by restoring and protecting the host plants on which these special-status species rely. As a result, impacts on special-status invertebrate species and habitat would be reduced.
 - BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure permanent and temporary impacts on special-status invertebrate species, such as the San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly, and Monarch butterfly, and habitat would be offset.
 - BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce impacts on special-status invertebrate species and habitat by controlling invasive species.
 - BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. The establishment of ESAs would reduce impacts on areas that support special-status invertebrate or associated habitat as access to these areas would be restricted during construction activities. For example, establishment of the ESAs would ensure that the direct and indirect impacts on the San Gabriel Mountains elfin butterfly and San Emigdio blue butterfly identified above would be reduced. Establishment of ESAs would reduce direct impacts on host plants, which support these special-status invertebrates, by reducing the potential for host plants to be removed or damaged. ESAs would also reduce indirect impacts on host plants by reducing the potential for fugitive dust and local runoff. As a result, impacts on special-status invertebrate species and habitat would be reduced.
 - BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Implementation of construction site and vehicle traffic limits will minimize special-status invertebrate species habitat degradation, including damage to host plants for the San Gabriel Mountains elfin

butterfly and San Emigdio blue butterfly, from vehicles during construction. Therefore, impacts on special-status invertebrate species would be reduced.

- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements will ensure that impacts on special-status invertebrate species and habitat would be reduced.
- BIO-MM#63: Work Stoppage. Construction-related impacts on special-status invertebrate species would be reduced.
- BIO-MM#94: Avoid Direct Impacts on Monarch Butterfly Host Plant. In determining the presence of monarch butterfly larval host plants, impacts on the host plant will be avoided or minimized such that impacts on special-status invertebrate species and habitat would be reduced.
- BIO-MM#95: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat. Impacts on Monarch butterfly individuals and habitat will be offset.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for surface construction impacts on special-status invertebrates. As a result, surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

For indirect effects from tunnel construction, the impact under CEQA would be less than significant for all six Build Alternatives because the project is not expected to have substantial adverse effects, through conversion or degradation of habitat, on special-status invertebrate species, including species listed under FESA and CESA. No mitigation measures are required.

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

The E1, E1A, E2, and E2A Build Alternative construction footprints encompass habitat utilized by 13 non-FESA listed special-status mammal species: American badger, Mohave ground squirrel, mountain lion, pallid bat, fringed myotis, ringtail, San Diego black-tailed jackrabbit, San Diego desert woodrat, southern grasshopper mouse, Townsend's big-eared bat, western mastiff bat, western red bat, and western yellow bat. Of these, only the ringtail is a fully protected species. The Refined SR14 and SR14A Build Alternative construction footprint encompasses habitat utilized by these 13 special-status mammal species, and is in close proximity to habitat utilized by the Yuma myotis.¹³

Vegetation communities associated with these species within the six Build Alternative core habitat RSAs include AGS, BAR, CSC, CRC, COW, DOR/VIN, DSC, DSW, JUN, MCH, MCP, MHC, MRI, SGB, URB, VRI, and URB (defined in Table 3.7-4).¹⁴ Table 3.7-7 summarizes vegetation communities utilized by non-FESA-listed mammal species throughout the RSAs, and Section 3.7.5.2 describes where these vegetation communities occur within each of the six Build Alternative RSAs. Table 3.7-20 quantifies the acreage of special-status mammal habitat within the Build Alternative construction footprints.

¹³ The Yuma myotis is protected within areas managed by the BLM. The Refined SR14 Build Alternative would pass near BLM lands along the SR 14 corridor and would only indirectly affect this special-status species.

¹⁴ As discussed above, the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative adit/window options differ slightly in the amount of potential habitat impacts on these vegetation communities.

Table 3.7-20 Special-Status Mammal Habitat within Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Non-FESA–Listed Special-Status Mammal Species							
American badger	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670
Fringed myotis ³	BLMS/FSS	102 – 114	114	39 – 41	41	38 – 47	47
Mohave ground squirrel	BLMS/ST	178	110	204	109	204	109
Mountain lion	SC	813 – 878	687 – 763	579 – 602	515 – 538	565 – 567	502 – 504
Pallid bat	FSS/BLMS /SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187
Ringtail	FP	49 – 91	20 – 62	40 – 60	31 – 52	27 – 41	18 – 33
San Diego black-tailed jackrabbit	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670
San Diego desert woodrat	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670
Southern grasshopper mouse	SSC	1,018 – 1,082	803 – 868	783 – 806	625 – 649	839 – 841	686 – 684
Townsend’s big-eared bat	FSS/BLMS /SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187
Western mastiff bat	BLMS/SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187
Western red bat	SSC	215 – 246	223 – 254	5 – 6	5 – 6	74 – 80	74 – 80
Western yellow bat	SSC	373 – 404	300 – 331	26 – 27	19 – 20	95 – 102	87 – 94
Yuma myotis ⁴	BLMS	0	0	0	0	0	0

Source: Authority, 2019a

¹ **Status Code:** BLMS = BLM sensitive; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; SSC = CDFW California species of special concern; ST = state threatened

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Affected acreages for the fringed myotis were modeled and calculated only within the jurisdictional boundary of the land management agency that identifies this species as sensitive. These include species listed as sensitive on lands administered by the BLM and on Forest Service lands.

⁴ The Yuma myotis is protected within areas managed by the BLM. The Refined SR14 Build Alternative is the only Build Alternative that would pass near BLM land and would only indirectly affect this protected species.

Mountain Lion (Figure 3.7-25):

Mountain lion habitat extends throughout the core habitat RSA and, for the purpose of this analysis, has been divided into breeding and foraging habitat, and foraging and dispersal habitat to better assess the impacts for this species.

- Refined SR14 Build Alternative—The Refined SR14 Build Alternative has the potential to affect between 606 and 679 acres of breeding and foraging habitat and 199 and 212 acres of foraging and dispersal habitat, depending on the adit and intermediate window combination selected.

- SR14A Build Alternative—The SR14A Build Alternative has the potential to affect between 541 and 615 acres of breeding and foraging habitat and 148 and 161 acres of foraging and dispersal habitat, depending on the adit and intermediate window combination selected.
- E1 Build Alternative—The E1 Build Alternative has the potential to affect between 400 and 423 acres of breeding habitat depending on the adit and intermediate window combination selected; 179 acres of foraging habitat would also be affected.
- E1A Build Alternative—The E1A Build Alternative has the potential to affect between 339 and 362 acres of breeding habitat depending on the adit and intermediate window combination selected; 176 acres of foraging habitat would also be affected.
- E2 Build Alternative—The E2 Build Alternative has the potential to affect between 388 and 390 acres of breeding habitat depending on the adit and intermediate window combination selected; 177 acres of foraging habitat would also be affected.
- E2A Build Alternative—The E2A Build Alternative has the potential to affect between 327 and 329 acres of breeding habitat depending on the adit and intermediate window combination selected; 175 acres of foraging habitat would also be affected.

While the project would result in the loss or disturbance of foraging and dispersal habitat, mountain lion is a highly mobile species, and abundant foraging and dispersal habitat is present in the region. The primary impact would be the loss or disturbance of suitable breeding habitat, including the potential to kill cubs if they are present in the area at the time of construction. The Refined SR14 Build Alternative has the potential to impact the most acres of breeding habitat among the six Build Alternatives (606–679 acres of breeding and foraging habitat).

Direct and Indirect Impacts

Surface Construction

Direct effects on special-status bats would include mortality of individuals during construction and temporary disturbance from noise, dust, and ultrasonic vibrations from construction equipment. Direct effects also include permanent conversion or fragmentation of occupied roosting and foraging habitat to project infrastructure, which would interfere with seasonal movement and dispersal of special-status bats. Ground disturbing activities, such as excavation, vegetation removal, construction of the railbed, placement of temporary structures and staging areas, and equipment operation, would result in noise, dust, or vibration disturbance. These disturbances would indirectly disrupt breeding or roosting activity or result in the temporary loss of foraging habitat. Indirect construction effects are anticipated to be less than direct construction effects. Increased artificial light at night (ALAN) would disrupt foraging activities by special-status bat species, causing them to leave an area where disturbance is prolonged. Nocturnal insects are drawn by lighting, which in turn attracts foraging bats. Special-status bats that are attracted to lighted construction areas would have higher potential for mortality through disorientation and effects from construction equipment.

Mortality and injury of American badgers and other ground-dwelling mammals would result from burrows being crushed by construction equipment as well as from vehicle strikes in construction work areas. Ground disturbance outside the Build Alternative footprint would lead to the temporary loss of foraging habitat. Temporary effects on these species would result from noise, lighting, vibration, dust, and motion disturbance. Direct effects would also include the permanent conversion or fragmentation of occupied habitat to project infrastructure, which would interfere with seasonal movement and dispersal of these species. Indirect effects would include shifts in foraging patterns or territories, increased predation, and decreased reproductive success. Indirect effects would include alteration of soils, such as compaction, which would make it more difficult to construct burrows. The inadvertent introduction of invasive weeds would reduce habitat suitability for these species.

Wildlife nursery sites refer to areas used for breeding and roosting bats. If impacts were to occur during the maternity season (May 1 through October 1), young bats that cannot yet fly are likely

to be killed or injured. A significant impact would occur if the construction of the six Build Alternatives would impede the use of native wildlife nursery sites.

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status mammals.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect suitable habitat for special-status mammals (Table 3.7-21).

The ringtail is the only special-status mammal occurring in the tunnel construction RSA that requires riparian habitats and therefore could be adversely affected by changes in groundwater levels (Figure 3.7-45). Other mammals, such as bat species, are not considered groundwater dependent for the purposes of the tunnel construction analysis, as they do not require aquatic or riparian conditions to complete a significant portion of their life cycle. Although bats do rely on aquatic conditions for foraging, their range is wide enough that they would not be hindered by changes in groundwater in the localized area of potential effects. Changes in hydrogeologic conditions could alter the inundation period or result in a change to the water table which could cause a surface water feature to dry up or partially dry up. For the ringtail, the primary impact of this hydrological interruption could be a lack of surface drinking water and desiccation or mortality of groundwater dependent habitats, such as riparian trees and shrubs, which the species depends on. Depending on the time of year and/or the timing of drying, these changes could affect breeding success, foraging, and could alter the behavior of this species, if other nearby surface waters are not present. While effects could occur on the ringtail, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

The three Moderate Risk Areas for SR14/SR14A contain four ephemeral streams and the one High Risk Area contains seven ephemeral streams. Ephemeral streams and associated ringtail habitat would not be affected because they are not dependent on groundwater. If through further investigation additional seeps, spring, intermittent or perennial streams are discovered within the tunnel construction RSA, the risk of indirect effects may increase accordingly. Implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources including special-status mammal habitat.

The four Moderate Risk areas for the E1 and E1A Build Alternatives contain seven ephemeral streams, two springs, one intermittent stream, and one perennial stream. There is no special-status mammal habitat in High Risk areas for the E1 and E1A Build Alternatives. Ephemeral streams and associated ringtail habitat would not be affected because they are not dependent on groundwater. The E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set

forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated special-status ringtail habitat.

The five Moderate Risk areas for E2 and E2A Build Alternatives contain 10 ephemeral streams, 1 spring, and 2 intermittent streams. The six High Risk areas for the E2 and E2A Build Alternatives contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated ringtail habitat would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1/E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated special-status ringtail habitat.

Based on the defined Risk Areas, suitable habitat for ringtail is relatively limited within the RSA. The E1 and E1A Build Alternative Risk Areas have the largest amount of suitable habitat for ringtail at 357 acres. The Refined SR14 and SR14A Build Alternative Risk Areas have 26 acres of potential suitable habitat for ringtail, and the E2 and E2A Build Alternative Risk Areas have 9 acres.

Table 3.7-21 Potential Impacts on Special-Status Mammal Habitat from Changes in Hydrologic Conditions

Species ¹	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Mammals¹												
N/A	--	--	--	--	--	--	--	--	--	--	--	--
Non FESA-Listed Special-Status Mammals												
Ringtail	10	0	16	0	0	0	357	0	7	0	2	0

High = Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk.
 ANF = Angeles National Forest
 SGMNM = San Gabriel Mountains National Monument
 N/A = Not Applicable
¹ No FESA-Listed special-status mammal species were identified as having suitable habitat with the high or moderate Risk Areas.

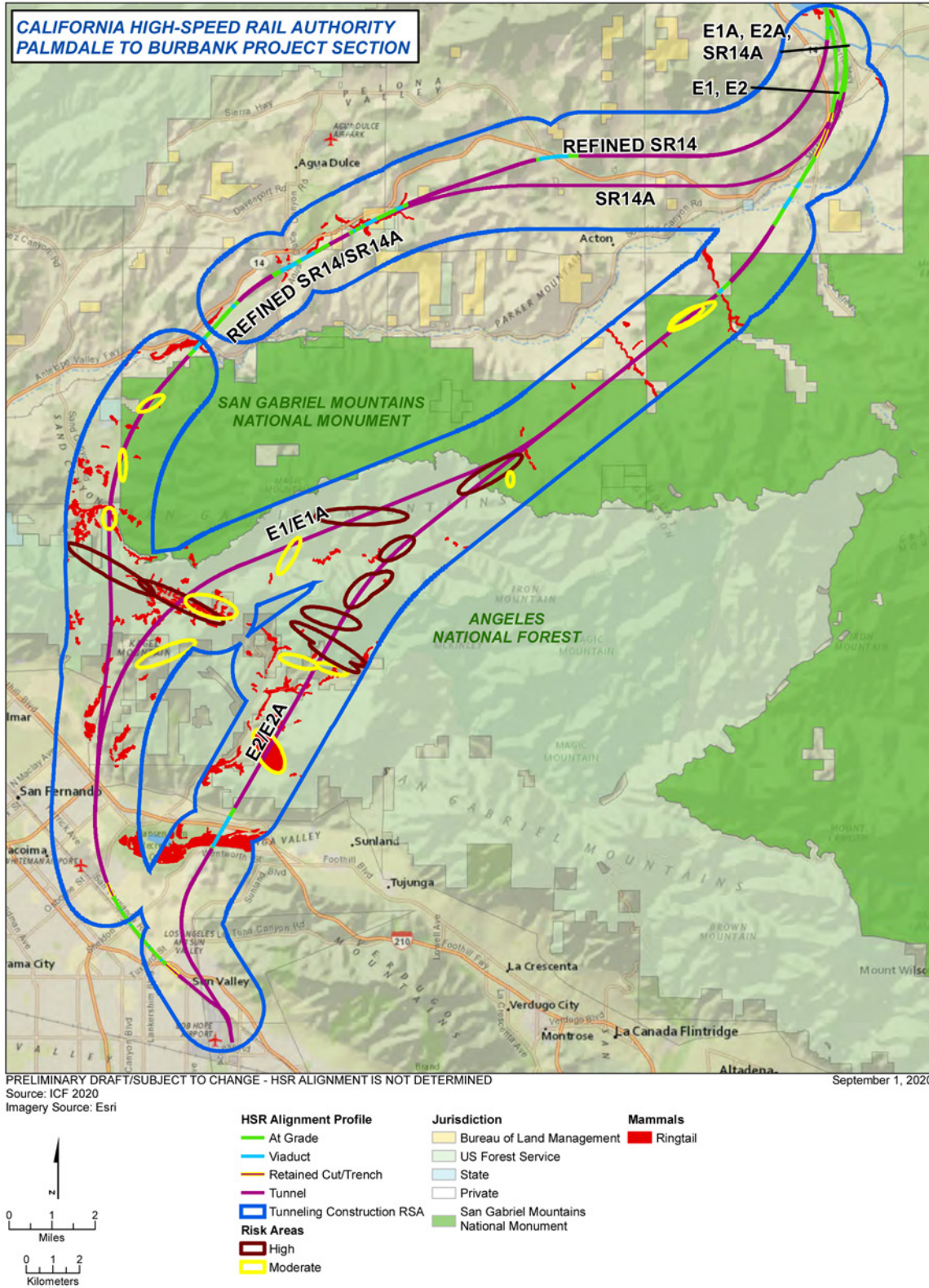


Figure 3.7-45 Non-FESA–Listed Special-Status Mammal Habitat Within the Tunnel Construction Resource Study Area

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, construction of each of the six Build Alternatives would have a substantial adverse effect on habitat for special-status mammal species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact. Implementation of the mitigation measures discussed below would reduce direct and indirect surface construction impacts on special-status mammals. Application of these mitigation measures would also ensure no take of ringtail, which is a fully protected species, would occur. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP would reduce impacts on special-status mammal species and habitat.
- BIO-MM#25: Conduct Pre-construction Surveys for Bat Species. In determining the presence of bat species and habitat, mitigation will be implemented such that impacts on special-status bat species, including special-status bat species and habitat, would be reduced.
- BIO-MM#26: Implement Bat Avoidance and Relocation Measures. These avoidance and relocation measures would minimize construction-related effects on bat species such that impacts on bat species, including special-status bat species, would be reduced.
- BIO-MM#27: Implement Bat Exclusion and Deterrence Measures. These measures would minimize construction-related effects on bat species such that impacts on bat species, including special-status bat species, would be reduced.
- BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures. These measures would avoid disturbance from construction to ringtail individuals. Therefore, impacts on ringtail individuals and habitat would be avoided.
- BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures. These measures would minimize disturbance from construction to American badger individuals and habitat. Therefore, impacts on American badger individuals and habitat would be reduced.
- BIO-MM#36: Install Aprons or Barriers within Security Fencing. Installation of aprons or barriers to prevent special-status mammals from entering the right-of-way would prevent injury or death that may occur during project construction. As a result, impacts on special-status mammal species would be reduced.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. Aquatic resources often support special-status mammal species. Where compensatory mitigation for aquatic resources is not co-located with compensatory mitigation for species and habitat, the compensatory mitigation for aquatic resources may provide an additional offset for special-status mammal species and habitat.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat (including those of special-status mammal species) and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on special-status mammal species and habitat would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP would ensure permanent and temporary impacts on special-status mammal species and habitat will be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP will ensure that effects of invasive species on special-status mammal species and habitat would be reduced.

- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. Establishing ESAs would reduce direct effects on bats and ground dwelling mammals resulting from the disturbance of breeding/roosting/foraging habitat. Precluding access to ESAs would limit the areas where construction equipment would potentially crush burrows and result in mortality and injury of special-status species. The establishment of ESAs would reduce impacts on areas that support special-status mammal or associated habitat as access to these areas would be restricted during construction activities. As a result, impacts on special-status mammal species and habitat would be reduced.
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Traffic and speed limits will reduce the amount of vibration resulting from vehicular traffic, which has the potential to collapse inhabited burrows. Implementation of construction site and vehicle traffic limits would minimize special-status mammal habitat degradation from vehicles during construction. Therefore, impacts on special-status mammal species would be reduced.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements will ensure that impacts on special-status mammal species and habitat would be reduced.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. The dewatering plan will include pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In determining the presence of special-status mammals as well as other special-status species within the affected waterbody, mitigation measures may be implemented to ensure that impacts on special-status mammal species and habitat would be reduced.
- BIO-MM#63: Work Stoppage. This measure would minimize risk of injury and death as a result of project construction, and thus construction impacts on special-status mammal species would be reduced.
- BIO-MM#76: Implement Wildlife Rescue Measures. This measure would reduce construction impacts on special-status mammal species.
- BIO-MM#96: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens. These measures would avoid or minimize disturbance from construction to mountain lion individuals.
- BIO-MM#97: Provide Compensatory Mitigation for Impact on Mountain Lion Habitat. Compensatory mitigation outlined in the CMP will ensure permanent and temporary impacts on mountain lion habitat would be offset.
- BIO-MM#99: Implement Lighting Minimization Measures During Construction. These measures will reduce nighttime lighting effects produced by construction by avoiding ground-disturbing activities within known wildlife habitat during nighttime hours, to the extent feasible. Should nighttime work be necessary, additional measures will be implemented to avoid impacts on species sensitive from artificial lighting.

Collectively, the above mitigation measures would provide avoidance, minimization and compensatory mitigation for direct and indirect surface construction impacts on special-status mammals. As a result, surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

For indirect effects from tunnel construction, the impact under CEQA would be potentially significant for all six Build Alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status mammal species, including species listed under FESA and CESA although the level of risk and impact potential varies between each Build Alternative. 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 indirect impacts on ringtail and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat.

To address this impact, the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to special-status mammals and habitat as a result of tunnel construction, and this impact would therefore be less than significant.

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

Twelve special-status reptile species have potential to occur within the six Build Alternative core habitat RSAs. The desert tortoise is the only FESA-listed special-status reptile species in the Refined SR14 and SR14A Build Alternative core habitat RSA. Non-FESA-listed species include Blainville's horned lizard, California glossy snake, California legless lizard, coast patch-nosed snake, coastal rosy boa, coastal whiptail, San Bernardino ringneck, San Bernardino Mountain kingsnake, south coast garter snake, two-striped garter snake, and western pond turtle.

Vegetation communities associated with these species within the six Build Alternative core habitat RSAs include AGS, BAR, COW, CSC, CRC, DOR, DOR/VIN, DSC, DSW, JUN, LAC, MCH, MCP, MHC, MRI, SGB, VIN, and VRI (defined in Table 3.7-4). Table 3.7-22 quantifies the acreage of habitat impacts on special-status reptiles from construction of each of the six Build Alternatives.

The extent of desert tortoise occurrence is very widespread, including those animals occurring north and west of the Colorado River, in southeastern California, southern Nevada, northwestern Arizona, and southwestern Utah. Effects on desert tortoise north of Spruce Court were evaluated in the Bakersfield to Palmdale Project Section EIR/EIS. There is little to no desert tortoise habitat mapped within the Central and Burbank subsections.

Non-FESA-listed reptile species occupy many of the vegetation communities throughout all six Build Alternative RSAs, including: CSC, CRC, COW, MCH, MHC, URB, BAR, and VRI (defined in Table 3.7-4). As discussed above, each adit/window option differs slightly in the extent of habitat impacts on these vegetation communities.

Table 3.7-22 Special-Status Reptile Habitat within the Build Alternative Footprints

Species	Protection Status ¹	Acres of Impact					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Reptile Species							
Desert tortoise	FT/ST	180	99	196	100	196	100
Non-FESA-Listed Special-Status Reptile Species							
Blainville's horned lizard	BLMS/SCC	795 – 858	685 – 749	569 – 592	510 – 533	556 – 557	498 – 499
California glossy snake	SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676
California legless lizard ³	FSS/SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676
Coast patch-nosed snake	SSC	1,030 – 1,094	803 – 868	797 – 820	625 – 649	853 – 854	682 – 684
Coastal rosy boa ⁴	FSS	148 – 172	148 – 172	54 – 58	54 – 58	48 – 59	48 – 59
Coastal whiptail	SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676
San Bernardino mountain kingsnake ⁴	FSS	148 – 172	148 – 172	30 – 33	30 – 33	24 – 34	24 – 34
San Bernardino ringneck snake ⁴	FSS	148 – 172	148 – 172	30 – 33	30 – 33	24 – 34	24 – 34
South coast garter snake	SSC	26 – 33	14 – 21	0	0	9 – 16	9 – 16
Two-striped garter snake	FSS/BLMS/SSC	41 – 48	14 – 21	13	5	22 – 29	14 – 20
Western pond turtle ⁵	FSS/BLMS/SSC	697 – 748	483 – 535	103 – 126	103 – 126	172 – 174	172 – 174

Source: Authority, 2019a

¹ **Status Code:** BLMS = BLM sensitive; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; FT = federally threatened; SSC = CDFW California species of special concern; ST = state threatened

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Acreages range for California legless lizard in the Draft EIR/EIS did not include the Palmdale and Lancaster sections. The range for this species does extend into this area, so acreage ranges have been modified to reflect the inclusion of the Palmdale and Lancaster sections.

Affected acreages for these species were modeled and calculated only within the jurisdictional boundary of the land management agency that identifies these species as sensitive. These species are listed as sensitive within Forest Service lands where the Regional Forester has identified the population viability as a concern.

⁵ The Western pond turtle's listing status is under review by the ESA.

Direct and Indirect Impacts

Surface Construction

Direct effects on special-status reptiles would result from construction activities in suitable habitat that could kill, injure, or harass adults or juveniles or crush eggs. Entrapment in open, excavated areas could kill, injure, or harass special-status reptiles. Construction could also temporarily

destroy, degrade, or pollute habitat and cause temporary loss of nesting areas, burrows, or other refugia. Direct effects would also include the permanent conversion or fragmentation of occupied aquatic and upland habitat resulting from installation of project infrastructure.

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

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status reptiles.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in full or partial desiccation of aquatic resources, with the effects lasting days to months or up to several years after tunnel construction. Adverse impacts to aquatic resources could affect suitable aquatic and riparian habitat for special-status reptiles.

Three special-status reptiles with suitable habitat in the tunnel construction RSA have been identified as requiring wetland or aquatic habitats, including associated riparian habitats, and therefore could be adversely affected by changes in groundwater levels (Table 3.7-23 and Figure 3.7-46). Adverse effects could occur because of an alteration of the inundation period, or a change to the water table which could cause a surface water feature to dry up or partially dry up. For special-status reptile species, the primary impact of this hydrological interruption could be a lack of surface water within streams or other aquatic habitats. Depending on the time of year and/or the timing of drying, these changes can affect breeding success, survivability of young, and in extreme cases, can cause the mortality of individuals if other nearby aquatic habitats are not present. While effects could occur on the species and habitat identified in Table 3.7-23 and Figure 3.7-46, the assessment represents a worst-case evaluation of effects because previous monitoring of effects from tunnel construction has shown that effects decrease with distance from the tunnel, and not all surface waters within 1 mile of the alignment are typically affected or affected to the same extent.

Table 3.7-23 Potential Impacts on Special-Status Reptile Habitat from Changes in Hydrologic Conditions

Species ¹	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)
FESA-Listed Special-Status Reptiles¹												
N/A	--	--	--	--	--	--	--	--	--	--	--	--
Non FESA-Listed Special-Status Reptiles												
South coast garter snake	0	0	0	0	0	0	0	0	2	0	0	0
Two-striped garter snake	0	0	0	0	0	0	0	0	2	0	0	0
Western pond turtle	290	0	198	63	324	0	1,484	6	1,142	16	215	51

¹ No FESA-listed special-status reptile species were identified as having suitable habitat with the High or Moderate Risk Areas.

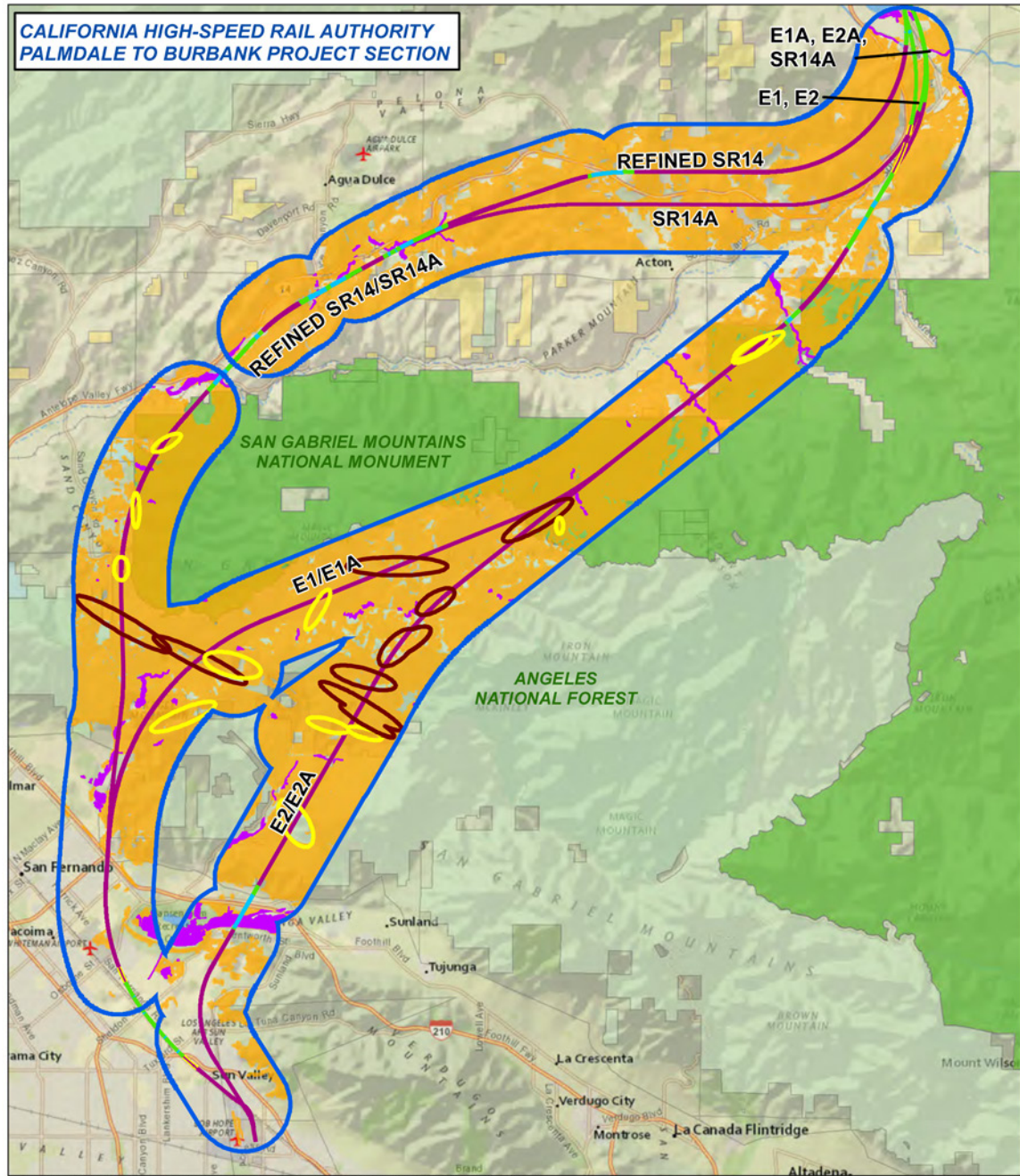
High= Acres of modeled habitat for a particular species that overlap with the areas identified as high risk.

Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as moderate risk.

ANF = Angeles National Forest

SGMNM =San Gabriel Mountains National Monument

N/A = Not Applicable



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: ICF 2020
 Imagery Source: Esri
 September 1, 2020

	HSR Alignment Profile At Grade Viaduct Retained Cut/Trench Tunnel Tunneling Construction RSA	Jurisdiction Bureau of Land Management US Forest Service State Private San Gabriel Mountains National Monument	Reptiles South Coast Garter Snake and Two-striped Garter Snake Western Pond Turtle
	Risk Areas High Moderate		

Figure 3.7-46 Non-FESA-Listed Special-Status Reptile Habitat Within the Tunnel Construction Resource Study Area

The three Moderate Risk Areas for SR14/SR14A contain four ephemeral streams and the one High Risk Area contains seven ephemeral streams. Ephemeral streams and associated western pond turtle habitat would not be affected because they are not dependent on groundwater. If through further investigation additional seeps, spring, intermittent or perennial streams are discovered within the tunnel construction RSA, the risk of indirect effects may increase accordingly. Implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources including associated special-status reptile habitat.

The four Moderate Risk areas for E1 and E1A Build Alternatives contain seven ephemeral streams, two springs, one intermittent stream, and one perennial stream. The two High Risk areas for the E1 and E1A Build Alternatives contain 12 ephemeral streams, 1 intermittent stream, and 1 intermittent/perennial stream. Ephemeral streams and associated western pond turtle habitat would not be affected because they are not dependent on groundwater. The E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated western pond turtle habitat.

The five Moderate Risk areas for the E2 and E2A Build Alternatives contain 10 ephemeral streams, 1 spring, and 2 intermittent streams. The six High Risk areas for the E2 and E2A contain 21 ephemeral streams, 4 springs, and 5 intermittent streams. Ephemeral streams and associated western pond turtle, south coast garter snake, and two-striped garter snake habitat would not be affected because they are not dependent on groundwater. The E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources, including associated western pond turtle, south coast garter snake, and two-striped garter snake habitat.

Based on the defined Risk Areas, suitable habitat within the RSA for south coast garter snake and two-striped garter snake occurs only in the E2 and E2A Build Alternative alignments. Approximately 2 acres of suitable habitat for south coast garter snake and two-striped garter snake is present within the High and Moderate Risk Areas within the E2 and E2A Build Alternative alignments. Substantially more suitable habitat for western pond turtle occurs within the Moderate and High Risk Areas for all three alignments. The Refined SR14 and SR14A Build Alternatives Risk Areas contain 488 acres of suitable habitat while the E1 and E1A Build Alternatives contain 1,357 acres and the E2 and E2A contain 1,808 acres.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, surface construction associated with each of the six Build Alternatives would have a substantial adverse effect on habitat for special-status reptile species by threatening to eliminate or result in measurable degradation of habitat. This represents a significant impact. Implementation of the mitigation measures discussed below would reduce direct and indirect impacts on special-status reptiles. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP will ensure that all temporarily disturbed areas outside of the permanent right-of-way that potentially to support special-status species, wetlands, and/or other aquatic resources would not be adversely affected such that these areas would no longer be able to support said species and/or resources. As a result, impacts on special-status reptile species and habitat would be reduced.
- BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species. In determining the presence of special-status reptile species, mitigation will be implemented to reduce impacts on special-status reptile species and habitat.
- BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species. The Project Biologist will monitor all initial ground disturbing activities that occur within suitable habitat for special-status amphibians and reptiles and will conduct clearance surveys of suitable habitat on a daily basis to reduce impacts on special-status reptile species and habitat.
- BIO-MM#36: Install Aprons or Barriers within Security Fencing. Installation of aprons or barriers to prevent special-status reptiles from entering the right-of-way would prevent injury or death that may occur during project construction. As a result, impacts on special-status reptile species would be reduced.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. Aquatic resources often support special-status reptile species and habitat. Therefore, where compensatory mitigation for aquatic resources is not co-located with the compensatory mitigation for species and habitat, it may provide an offset for impacts on reptile species on top of the compensatory mitigation specifically to be provided for such species.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on special-status reptile species and habitat would be reduced.
- BIO-MM#52: Conduct Blainville's Horned Lizards, San Joaquin Coachwhip, and Silvery Legless Lizards Monitoring, and Implement Avoidance and Minimization Measures. The measures would minimize construction-related disturbance to Blainville's horned lizard, San Joaquin coachwhip, and silvery legless lizards, and therefore impacts on these special-status reptile species and habitat would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure permanent and temporary impacts on special-status reptile species and habitat will be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce invasive species impacts on special-status reptile species habitat.
- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization

measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. By establishing ESAs, direct effects on reptiles resulting from the disturbance of breeding/roosting/foraging habitat would be reduced. Precluding access to ESAs would limit the areas where construction equipment would potentially crush burrows and result in mortality and injury of special-status species. The establishment of ESAs would reduce impacts on areas which support special-status reptiles or associated habitat as access to these areas will be restricted during construction activities. As a result, impacts on special-status reptile species and habitat would be reduced.

- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds. Traffic and speed limits will reduce the amount of vibration resulting from vehicular traffic, which has the potential to collapse nesting areas and burrows. Implementation of construction site and vehicle traffic limits would minimize special-status reptile species injury, mortality, and habitat degradation resulting from vehicles during construction. Therefore, impacts on special-status reptile species would be reduced.
- BIO-MM#61: Establish and Implement a Compliance Reporting Program. Compliance with all IAMFs, mitigation measures, and regulatory requirements will ensure that impacts on special-status reptile species and habitat would be reduced.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. The dewatering plan will include pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In determining the presence of special-status species within the affected waterbody, precautionary and/or compensatory mitigation may be applied to ensure that impacts on special-status reptile species and habitat and communities would be reduced.
- BIO-MM#63: Work Stoppage. This measure would reduce construction impacts on special-status reptile species.
- BIO-MM#76: Implement Wildlife Rescue Measures. This measure would reduce construction impacts on special-status reptile species.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect surface construction impacts on special-status reptiles. As a result, surface construction impacts would be less than significant for all six Build Alternatives.

For indirect effects to reptile species and habitat resulting from changes in groundwater levels associated with tunnel construction, the impact under CEQA would be potentially significant for all six of the Build Alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status reptile species, including species listed under FESA and CESA although the level of risk and impact potential varies between each Build Alternative. 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 tunnel construction to reduce the potential for changes in groundwater levels to occur, the project could result in desiccation of habitat, which could lead to adverse effects to individuals of the species, including on breeding, feeding, and sheltering. These impacts could reduce the viability of or eliminate local populations and contribute to range-wide or statewide declines of these species.

To address this impact, the Authority would implement an AMMP. Mitigation Measure BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat will be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to special-status reptiles and habitat as a result of tunnel construction, and this impact would therefore be less than significant.

Impact BIO#8: Project Construction Effects on State and Federally Protected Aquatic Resources.

Construction of each of the six Build Alternatives would affect WOTUS and waters of the state. As discussed in Section 3.7.4, Methods for Evaluating Impacts, direct effects on aquatic resources were calculated by overlaying the Build Alternative footprint on mapped WOTUS and waters of the state. Indirect effects are also considered for aquatic resources that fall within 250 feet of the Build Alternative footprint because project construction activities may potentially change drainage or hydrology related to adjacent aquatic resources. Table 3.7-24 quantifies all six Build Alternative construction footprints within WOTUS and Waters of the State. Appendix I of the *Palmdale to Burbank Project Section Biologic and Aquatic Resources Technical Report* maps aquatic resources throughout the Build Alternative aquatic resource RSAs.

Table 3.7-24 WOTUS and Waters of the State within the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative Footprints

Aquatic Resource	Seasonality	Acres of Impact ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
WOTUS & Waters of the State: Wetlands							
Lacustrine — emergent	N/A	0.03	0	0.03	0	0.03	0
Lacustrine — unconsolidated shore	N/A	0.17	0	0.17	0	0.17	0
Palustrine — emergent	N/A	3.23	0.46	3.19	0.46	3.19	0.46
Palustrine — forested	N/A	0.11	0	0.11	0	7.63	7.52
Palustrine — scrub-shrub	N/A	4.02	0.41	4.02 – 5.69	0.41 – 2.08	4.02	0.41
WOTUS & Waters of the State: Wetland Total²		7.56	0.87	7.51 – 9.19	0.87 – 2.54	15.04	8.39
WOTUS & Waters of the State: Nonwetlands							
Natural stream	Perennial	0	0	0.08	0.08	0.08	0.08
	Intermittent	0 – 1.83	0 – 1.83	1.83 – 3.43	1.83 – 3.43	0	0
	Ephemeral	7.50	5.73	2.65 – 2.66	2.66 – 2.67	3.85 – 4.19	3.86 – 4.21

Aquatic Resource	Seasonality	Acres of Impact ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Modified natural stream	Perennial	0	0.96	0	0	0	0
	Intermittent	0.61-0.62	0.62	0.01	0.01	1.25 – 1.65	1.25 – 1.65
	Ephemeral	2.40-2.87	2.68 – 3.83	8.45 – 8.52	8.45 – 8.52	8.81 – 8.93	8.82 – 8.94
Constructed watercourse — concrete	Perennial	6.52	0	8.37	0	8.37	0
	Intermittent	0.20	0.20	0.20	0.20	0	0
	Ephemeral	0.78	0.79	0.76	0.76	0.08	0.08
Constructed watercourse — earthen	Perennial	0	0.07	0	0.07	0	0.07
	Ephemeral	2.46	2.43	0.07	0.07	0.07	0.07
Lake	Perennial	4.63	0	4.63	0	4.63	0
Constructed basin — earthen	Perennial	8.74	8.74	0	0	0	0
	Ephemeral	5.51	5.51	5.51	5.51	0	0
WOTUS & Waters of the State: Nonwetlands Total²		39.82 – 41.19	28.87 – 29.56	32.62 – 34.16	19.71 – 21.25	27.47 – 27.65	14.57 – 14.75
Total WOTUS & Waters of the State		47.37 – 48.74	29.74 – 30.44	40.13 – 43.34	20.58 – 23.80	42.51 – 42.69	22.97 – 23.15

Source: Authority, 2019a

¹ Acreage calculations for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

² Totals may not add up exactly due to rounding.

WOTUS = waters of the U.S;

N/A = Not Applicable; < = less than

Waters of the United States—Construction of trackway and ancillary facilities associated with each of the six Build Alternatives near Una Lake would traverse five classifications of wetland WOTUS: palustrine emergent, palustrine forested, palustrine scrub-shrub, lacustrine emergent, and lacustrine unconsolidated shore.

The six Build Alternative alignments would traverse multiple nonwetland WOTUS features. Between Avenue M and the California Aqueduct, Trackway and ancillary facilities associated with all the Refined SR14, E1, and E2 Build Alternatives would affect modified natural streams, lake (Una Lake and Lake Palmdale), and concrete constructed watercourses (Lake Palmdale and the California Aqueduct). The SR14A, E1A, and E2A Build Alternatives would avoid impacts on Una Lake and Lake Palmdale but would still affect other wetland WOTUS features. South of the California Aqueduct, the Build Alternative corridors would diverge and affect different nonwetland WOTUS, as described below:

- **Refined SR14 Build Alternative**—Between the California Aqueduct and Vulcan Mine, Refined SR14 trackway and ancillary facilities would affect numerous natural streams, modified natural streams, earthen constructed watercourses, and earthen constructed basins. Finally, Refined SR14 trackway and ancillary facilities would affect earthen constructed basins within the Hansen Spreading Grounds. Adit SR14-A1 would affect natural streams and modified natural streams.

- **SR14A Build Alternative**—The SR14A Build Alternative alignment would affect natural streams and modified natural streams near Agua Dulce Canyon Road, after which the SR14A Build Alternative would affect the same nonwetland WOTUS features as the Refined SR14 Build Alternative. The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—Trackway and ancillary facilities for the E1 Build Alternative would affect numerous natural streams, modified natural streams, and concrete constructed watercourses between the California Aqueduct and the tunnel portal south of the Vincent Substation, and within Aliso Canyon and Arrastre Canyon. E1-A1 and E1-A2 would affect natural streams and modified natural streams along Little Tujunga Canyon Road within the ANF. Finally, E1 trackway and ancillary facilities would affect earthen constructed basins within the Hansen Spreading Grounds.
- **E1A Build Alternative**—The E1A Build Alternative alignment would affect nonwetland WOTUS between the California Aqueduct and the tunnel portal south of Vincent Substation east of the E1 Build Alternative alignment. South of Vincent View Road, the E1A Build Alternative alignment would affect nonwetland WOTUS identical to the E1 Build Alternative. The E1A Build Alternative has adit/window options identical to the E1 Build Alternative.
- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect numerous natural streams, modified natural streams, and concrete constructed watercourses between the California Aqueduct and the E2 tunnel portal south of the Vincent Substation, within Aliso Canyon, within Arrastre Canyon, north of the Lake View Terrace neighborhood, and within the Big Tujunga Wash Crossing. E2-A1 and E2-A2 would affect natural streams and modified natural streams along Little Tujunga Canyon Road and Gold Creek Road within the ANF.
- **E2A Build Alternative**—The E2A Build Alternative alignment would affect nonwetland WOTUS between the California Aqueduct and the tunnel portal south of Vincent Substation east of the E1 Build Alternative alignment. South of Vincent View Road, the E2A Build Alternative alignment would affect nonwetland WOTUS identical to the E2 Build Alternative. The E2A Build Alternative has adit/window options identical to the E1 Build Alternative.

Waters of the State—The WOTUS discussed above are also waters of the state. Waters of the state that are not WOTUS (additional waters of the state) are located within the Antelope Valley watershed. Construction of each of the six Build Alternatives would affect all of these nonwetland waters of the state to the same degree. Table 3.7-25 quantifies all six Build Alternative construction footprints within additional waters of the state, which are solely jurisdictional as waters of the state.

Additional Waters of the State

These waters are solely jurisdictional as waters of the state because they are isolated and are not under joint federal and state jurisdiction.

Direct and Indirect Impacts

Surface Construction

Complete avoidance of effects on aquatic resources is not feasible; however, the Authority would minimize effects to the maximum extent feasible and would compensate for losses of aquatic resources where the Palmdale to Burbank Project Section cannot avoid effects. In general, aquatic resources within areas of permanent effects would be permanently filled. Some areas would be restored when construction is complete, but because the construction schedule is longer than two growing seasons, all direct impacts during construction are considered permanent for the purpose of this analysis. CSAs are also considered permanent effects because of the duration of the construction period, but these features would be restored to pre-project conditions to the maximum extent practicable after construction is complete. Areas of elevated track spanning aquatic features, including bridges and viaducts, are also considered to be a permanent effect although these structures would only require fill within a limited portion of the footprint where supports and pilings are located. Outside of the limited area of fill, aquatic

resources spanned by elevated track or bridges would be degraded but would not be permanently filled. However, to provide a conservative estimate of effects on aquatic resources, the entire portion of the footprint beneath the bridge or elevated track structure is considered to be permanently affected.

Table 3.7-25 Additional Waters of the State within the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative Footprints

Aquatic Resource	Acres of Impact ¹					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Additional Waters of the State:² Wetlands						
Constructed basin – earthen	0	0	0	0	0	0
Lacustrine — emergent	0	0	0	0	0	0
Lacustrine — unconsolidated shore	0	0	0	0	0	0
Palustrine – emergent	0.02	0.02	0.02	0.02	0.02	0.02
Palustrine – forested	0	0	0	0	0	0
Palustrine — scrub-shrub	5.15	0.91	5.15	0.84	5.15	0.84
Additional Waters of the State: Wetlands Total	5.16	0.93	5.16	0.86	5.16	0.86
Additional Waters of the State ²: Nonwetlands ³						
Constructed basin-earthen	0	0	0	0	0	0
Constructed watercourse–concrete	0.42	0.14	0.54	0.14	0.54	0.14
Modified natural stream	0.60	0.71	1.07	0.65	1.07	0.65
Natural stream	0.07	0.14	0.22	0.12	0.22	0.12
Additional Waters of the State: Nonwetlands Total	1.08	0.99	1.83	0.91	1.83	0.91
Total Additional Waters of the State	6.25	1.92	7.00	1.76	7.00	1.76

Source: Authority, 2019a

¹ Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios

² Additional waters of the state are solely jurisdictional as waters of the state and are not considered WOTUS because they are isolated.

³ Nonwetland additional waters of the state that have the potential to be impacted are all ephemeral in nature.

Construction of new track, traction power sites, grade separations, drainages, communication towers, station sites, roadway alignments and crossings, security fencing, and other necessary facilities would disturb aquatic features. Direct effects would include the loss of aquatic resources, and associated functions and values. Construction equipment would be used to modify the landscape and place permanent fill materials (such as culverts, dirt, and/or engineering structures) in aquatic resources. Direct permanent effects on aquatic resources would occur during construction of bridges and elevated structures (e.g., viaducts) over natural waters such as rivers, washes, and wetlands, as well as over artificial ditches and basins. Bridge supports would also require excavation and dewatering in areas with surface water, increasing the risk for contamination or spills directly into groundwater resources. Indirect effects of these project components would include shading of aquatic resources by elevated structures (where the elevated structure is near the ground), placement of piles to support the elevated structures and bridges, and permanent removal of vegetation. Where there are artificial aquatic features, the above effects would remove or disrupt the limited biological functions that these features provide.

In natural areas, the above activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality, and other biological functions provided by aquatic resources. Direct effects on functions and values of aquatic resources caused by construction would include indirect effects such as a decrease in the benefits the aquatic resources would have for surface water quality, flood attenuation, and groundwater recharge, as well as a decrease in the quality of nesting/foraging and overall habitat available for wildlife. Water quality would be directly and permanently affected by erosion, siltation, chemical spills or leaks, and runoff into natural and constructed water features.

Indirect effects caused by changes in local hydrology from the construction of the project could include altered flows of either higher or lower quantities, increased erosion, siltation, and a change in the biological habitats supported by these aquatic resources. Similarly, construction of the Build Alternatives could result in secondary effects on surface waters near the project footprint. Secondary effects would include increased storm flows and degraded water quality from the increase in impervious surfaces. Increased impervious surfaces would reduce the infiltration of rainfall, causing increased flow amounts that can lead to increased erosion and siltation, which can cause higher water temperatures and degraded habitat in WOTUS.

Several IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on aquatic resources. 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) would avoid and minimize impacts on aquatic resources by employing several strategies, including ensuring that mitigation measures are applied in a timely manner, that construction activities comply with all regulatory requirements intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved to the extent feasible.

Prior to ground disturbing activity in aquatic resources, the Authority would obtain permits that would include mitigation requirements to compensate for effects on aquatic resource determined in consultation with USACE and SWRCB. Compensation methods to mitigate effects on aquatic resources are outlined in the proposed mitigation measures discussed in the CEQA Conclusion below. The Authority or its designee would document compliance and submit documentation to the regulatory agencies.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect state and federally protected aquatic resources.

Existing data from the National Hydrography Dataset was used to identify potential state and federally protected surface waters that occur in the tunnel construction RSA (Table 3.7-26). Changes in hydrogeologic conditions could cause a change to the water table, which could cause a surface water feature to dry up or partially dry up. The primary impact of this hydrological interruption could be a lack of surface water within streams or other aquatic habitats, representing a degradation of the federally protected aquatic resource. While potential effects could occur on the aquatic resources identified in Table 3.7-26, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent.

As described in Section 3.8, Hydrology and Water Resources, the E2 and E2A Build Alternative alignments traverse the greatest number of Moderate and High Risk Areas, and have the largest number of springs, streams, and wells within these designated Risk Areas. The E1 and E1A Build Alternative alignments have the next greatest number of Moderate and High Risk Areas and the second greatest number of springs, streams, and wells within these designated Risk Areas. The Refined SR14 and SR14A Build Alternatives alignments intersect the fewest Moderate and High Risk Areas. Further, the Refined SR14 and SR14A Build Alternative alignments have the fewest springs, streams, and wells within Moderate and High Risk Areas.

As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts on surface aquatic resources.

Table 3.7-26 Potential Impacts on State and Federally Protected Aquatic Resources from Changes in Hydrologic Conditions

Aquatic Resource	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)
Perennial Stream	0	0	0	0	0	0	0.3	0	0	0	0	0
Intermittent/Ephemeral Stream ¹	2.2	0	1.0	45.6	1.4	0	4.1	12.5	8.7	16.7	1.2	59.8
Seep/Spring (count) ²	0	0	0	0	0	0	2	0	3	0	1	100

¹ Intermittent and ephemeral streams cannot be distinguished based on the data used and are therefore considered together in the analysis.

² Analysis counts miles of stream and number of seeps/springs within the tunnel construction RSA that overlap High and Moderate Risk Areas.

High = Linear miles of streams or count of seeps/springs that overlap with the areas identified as high risk.

Moderate = Linear miles of streams or count of seeps/springs that overlap with the areas identified as moderate risk.

ANF = Angeles National Forest

SGMNM = San Gabriel Mountains National Monument

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize surface construction impacts to aquatic resources, construction would still result in removal or alteration of aquatic resources and would have a substantial adverse effect on state and federal wetlands and other waters. This represents a significant impact for all six Build Alternatives. Compensation to mitigate effects on aquatic resources, consistent with state and federal “no net loss policies,” would be coordinated with USACE and SWRCB and could include aquatic resource restoration, establishment, enhancement, or preservation through one or more of the following methods:

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

Furthermore, implementation of the mitigation measures discussed below would reduce surface construction impacts on state and federally protected aquatic resources. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction.
- BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas. These measures would help sustain the integrity of vernal pools, and therefore construction impacts on these state and federally protected aquatic resources would be reduced.
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration of riparian habitat disturbed by construction activities would reduce impacts on state and federally protected aquatic resources.
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. With implementation of these restoration measures, construction impacts on state and federally protected aquatic resources would be reduced.
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters. Ensuring compliance with applicable avoidance and minimization measures for jurisdictional waters will ensure that impacts on state and federally protected aquatic resources would be reduced.
- BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat. This measure will ensure that construction impacts on these federally protected aquatic resources will be offset.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on State and Federally Protected Aquatic Resources. This compensatory mitigation measure will ensure that construction impacts on wetlands would be offset through mitigation.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will also implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on state and federally protected aquatic resources would be reduced.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP would reduce impacts on state and federally protected aquatic resources.

- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The establishment of ESAs would reduce impacts on areas that support special-status species and communities or associated habitat.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for direct and indirect surface construction impacts such that the impacts would no longer result in a substantial adverse effect on state and federal wetlands. As a result, surface construction impacts would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

For indirect effects from tunnel construction, the impact under CEQA would be potentially significant for all six Build Alternatives because the project could have substantial adverse effects on state and federally protected aquatic resources through hydrological disruption and degradation. 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 impacts on aquatic resources, tunnel construction could still result in the loss and degradation of aquatic habitats. To address this impact, the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to state and federal wetlands as a result of tunnel construction, and this impact would therefore be less than significant for all Build Alternatives.

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

Construction of each of the six Build Alternatives would affect areas regulated under Fish and Game Code Section 1600 et seq. As discussed in Section 3.7.4, Methods for Evaluating Impacts, direct effects on aquatic resources in areas subject to Section 1602 notification requirements were calculated by overlaying the Build Alternative footprint on mapped areas to determine the impact acreages. Indirect effects are also considered for Section 1600 et seq. resources within 250 feet of the Build Alternative footprint because project construction activities have the potential to change drainage or hydrology related to adjacent riparian resources. Table 3.7-27 quantifies all six Build Alternative construction footprints within Section 1600 et seq. resources.¹⁵ Appendix I of the *Palmdale to Burbank Project Section Biologic and Aquatic Resources Technical Report* maps aquatic resources throughout the Build Alternative aquatic resource RSAs.

¹⁵ Acreage of aquatic resources under CDFW regulation often overlaps with aquatic resources discussed in Impact BIO#8 above as federal and state protected aquatic resources encompass some resources subject to Section 1600 et seq.

Table 3.7-27 CDFW-Regulated Areas within the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative Footprints

Aquatic Resource	Seasonality	Acres of Impact ¹					
		Refined SR14	SR14A	E1	E1A	E2	E2A
CDFW – Riparian Habitat							
Mixed riparian	N/A	46.58 – 53.21	40.72 – 47.35	30.72 – 35.82	24.96 – 30.06	23.60 – 25.22	17.86 – 19.48
Total Mixed Riparian		46.58 – 53.21	40.72 – 47.35	30.72 – 35.82	24.96 – 30.06	23.60 – 25.22	17.86 – 19.48
CDFW – Lakes and Streams (Nonwetland)							
Natural stream	Perennial	0	0	0.08	0.08	0.08	0.08
	Intermittent	0 – 1.83	0 – 1.83	1.83 – 3.43	1.83 – 3.43	0	0
	Ephemeral	14.06 – 14.07	7.08 – 7.10	5.70 – 5.72	4.54 – 4.56	9.04 – 9.71	7.88 – 8.56
Modified natural stream	Perennial	0	0.96	0	0	0	0
	Intermittent	0.61	0.61	0	0	1.25 – 1.65	1.25 – 1.65
	Ephemeral	4.79 – 5.26	2.24 – 2.71	13.41 – 13.48	12.84 – 12.92	27.63 – 27.74	27.09 – 27.20
Constructed watercourse — concrete	Perennial	6.77	0	8.69	0	8.69	0
	Intermittent	0.20	0.20	0.20	0.20	0	0
	Ephemeral	1.61	1.16	1.91	1.13	1.12	0.34
Constructed watercourse — earthen	Perennial	0	0.07	0	0.07	0	0.07
	Ephemeral	2.46	2.43	0.14	0.14	0.14	0.14
Lake	Perennial	4.63	0	4.63	0	4.63	0
Constructed basin — earthen	Perennial	8.74	8.74	0	0	0	0
	Ephemeral	7.56	7.56	7.56	7.56	0	0
Total Lakes and Streams		51.88 – 53.26	31.52 – 32.91	44.21 – 45.76	28.47 – 30.01	53.08 – 53.24	37.36 – 37.52
Total CDFW Regulated Areas		98.47 – 106.48	72.24 – 80.25	76.48 – 80.03	54.97 – 58.53	76.84 – 78.29	55.38 – 56.83

Source: Authority 2019a

CDFW = California Department of Fish and Wildlife; N/A = Not Applicable; < = less than

¹Acres calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

In accordance with California Fish and Game Code Section 1602, an entity may not substantially divert or obstruct the natural flow of, or substantially change or use material from, CDFW-regulated areas, which includes the bed, channel, or bank of any river, stream, or lake. An entity also may not deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake unless the appropriate notification is completed. Although not specifically defined in California Fish and Game Code Section 1602,

jurisdiction in some instances may include riparian vegetation adjacent to lakes and streams and constructed basins.¹⁵ All six Build Alternatives would affect riparian habitat subject to Section 1600 et seq. throughout the aquatic resource RSA. Build Alternative trackway and ancillary facilities would affect riparian habitat subject to Section 1600 et seq. in the following areas:

- South of Rancho Visa Boulevard (Refined SR14, SR14A, E1, E1A, E2, E2A)
- Una Lake (Refined SR14, E1, E2)
- Lake Palmdale (Refined SR14, E1, E2)
- North of the SR 14/Pearblossom interchange (Refined SR14, SR14A, E1, E1A, E2, E2A)
- Near the proposed SR 14 overcrossing (Refined SR14 only)
- Within the Santa Clara River crossing near the Vincent Substation (E1, E1A, E2, E2A)
- Aliso Canyon (E1, E1A, E2, E2A)
- Arrastre Canyon (E1, E1A, E2, E2A)
- Between the proposed SR 14 overcrossing and Vulcan Mine (Refined SR14, SR14A)
- Within the SR14-A1, SR14-A2, and SR14-A3 footprints (Refined SR14, SR14A)
- Within the E1-A1 and E1-A2 construction footprints along Little Tujunga Canyon Road (E1, E1A)
- Within the E2-A1 and E2-A2 construction footprints along Little Tujunga Canyon Road and Gold Creek Road (E2, E2A)
- Within the Big Tujunga Wash Crossing (E2, E2A)

The Refined SR14, E1, and E2 Build Alternatives would affect modified natural streams and earthen constructed watercourses on either side of the existing Sierra Highway corridor in the city of Palmdale. South of Palmdale, Refined SR14, E1, and E2 Build Alternative trackway and ancillary facilities would affect lake areas, modified natural streams, and concrete constructed watercourses associated with Una Lake, Lake Palmdale, and the California Aqueduct. Although the SR14A, E1A, and E2A Build Alternatives would avoid impacts on Una Lake and Lake Palmdale, they would still affect CDFW regulated resources in that area. Several natural streams in this area would also be adversely affected. South of the California Aqueduct, the Build Alternative corridors would diverge and affect different CDFW regulated lakes and modified/natural streambeds as described below:

- **Refined SR14 Build Alternative**—Trackway and ancillary facilities for the Refined SR14 Build Alternative would affect several natural streams and modified natural streams between the California Aqueduct and Soledad Canyon. Within Soledad Canyon and Vulcan Mine, Refined SR14 would affect modified natural streams associated with the Santa Clara River, and natural streams, modified natural streams, earthen constructed watercourses, and an earthen constructed basin within Vulcan Mine. SR14-A1 surface facilities would affect natural streams and modified natural streams along Little Tujunga Canyon Road whereas SR14-A2 and SR14-A3 surface facilities would affect modified natural streams south of Pacoima Dam. Finally, Refined SR14 trackway and ancillary facilities would affect concrete constructed watercourses near the Boulevard Mine disposal site and earthen constructed basins within the Hansen Dam Spreading Grounds.
- **SR14A Build Alternative**—The SR14A Build Alternative alignment would affect natural streams and modified natural streams near Agua Dulce Canyon Road. South of this point, the SR14A Build Alternative would affect the same CDFW regulated lakes and modified/natural streambeds as the Refined SR14 Build Alternative. The SR14A Build Alternative has the same adit options as the Refined SR14 Build Alternative.
- **E1 Build Alternative**—Trackway and ancillary facilities for the E1 Build Alternative would affect several natural streams, modified natural streams, and one concrete constructed

watercourse between the California Aqueduct and the E1 tunnel portal south of the Vincent Substation, and within Aliso Canyon and Arrastre Canyon. Within the ANF, E1-A1, and E1-A2 surface facilities would affect natural streams and modified natural streams along Little Tujunga Canyon Road. Finally, trackway and ancillary facilities for the E1 Build Alternative would affect concrete constructed watercourses near the Boulevard Mine disposal site and earthen constructed basins within the Hansen Dam Spreading Grounds.

- **E1A Build Alternative**—The E1A Build Alternative alignment would affect CDFW-regulated areas between the California Aqueduct and the tunnel portal south of Vincent Substation east of the E1 Build Alternative alignment. South of Vincent View Road, the E1A Build Alternative alignment would affect the same CDFW-regulated areas as the E1 Build Alternative. The E1A Build Alternative has the same adit/window options as the E1 Build Alternative.
- **E2 Build Alternative**—Trackway and ancillary facilities for the E2 Build Alternative would affect several natural streams modified natural streams, and one concrete construction watercourse between the California Aqueduct and the E2 tunnel portal south of the Vincent Substation, within Aliso Canyon, within Arrastre Canyon, north of the Lake View Terrace neighborhood, and within the Big Tujunga Wash Crossing. Within the ANF, E2-A1 and E2-A2 surface facilities would affect natural streams and modified natural streams along Little Tujunga Canyon Road and Gold Creek Road.
- **E2A Build Alternative**—The E2A Build Alternative alignment would affect CDFW-regulated areas between the California Aqueduct and the tunnel portal south of Vincent Substation east of the E2 Build Alternative alignment. South of Vincent View Road, the E1A Build Alternative alignment would affect the same CDFW-regulated areas as the E2 Build Alternative. The E2A Build Alternative has the same adit/window options as the E2 Build Alternative.

Direct and Indirect Impacts

Surface Construction

In general, aquatic resources regulated under Section 1600 et seq. located within areas of permanent effects would be permanently filled. Other areas would be restored when construction is complete, but because the construction schedule would be longer than two growing seasons, all direct impacts during construction are considered permanent for the purpose of this analysis. Direct permanent effects on areas covered under Section 1600 et seq. would occur during construction of bridges and elevated structures (e.g., viaducts) over regulated areas. These effects would include the shading of 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. The above effects may result in disruption of hydrology, vegetation, fish and wildlife use, water quality, and other biological functions provided by rivers, streams, and lakes. For an analysis regarding the construction and operations impacts on waters of the state and WOTUS as a result of the Palmdale to Burbank Project Section, refer to Impact-BIO#8.

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory requirements to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The measures include agency approval of the biologists and monitors, preparation and implementation of biological resource training, preparation and implementation of a Biological Resources Management Plan, measures to avoid and minimize impacts on species from project activities, maintenance of the site and equipment, and proper disposal of construction spoils and waste. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on fish and wildlife species present in streams, rivers, and lakes.

Tunnel Construction

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, with durations of effects lasting days to months, or up to several years after tunnel completion. These impacts could affect areas subject to Section 1600 et seq.

Existing data from the National Hydrography Dataset and other vegetation data was used to quantify potentially regulated surface waters and associated riparian habitat subject to Section 1600 et. Seq. that occur in the tunnel construction RSA (Table 3.7-28).

The Refined SR14 and SR14A Build Alternative 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 Build Alternatives pose the least potential 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. The E1 and E1A Build Alternative alignments would traverse two High Risk and four Moderate Risk Areas. There are six springs located within 1 mile of the tunnel alignment. As such the E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. The E2 and E2A Build Alternative alignments traverse the greatest number of Moderate and High Risk Areas, have the largest number of springs, streams, and wells within 1 mile of the Build Alternative alignment, and have the largest number of springs within the designated Risk Areas. As such the E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14 and SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives.

Changes in hydrogeologic conditions could cause a change to the water table which could cause a surface water feature to dry up or partially dry up. The primary impact of this hydrological interruption could be a lack of surface water within streams or other aquatic habitats, such as riparian vegetation, representing a degradation of the aquatic resource. While potential effects could occur on the aquatic resources identified in Table 3.7-28, the assessment represents a worst-case evaluation of effects because previous monitoring of tunnel effects has shown that effects decrease with distance from the tunnel, and not all surface waters are typically affected, or affected to the same extent. As noted above, implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 will minimize the severity and duration of groundwater inflow during tunnel construction, but groundwater inflow into the tunnel excavations may still occur. Implementation of the AMMP set forth in BIO-MM#93 would minimize impacts that occur and, if necessary, provide compensatory mitigation for unavoidable impacts to surface aquatic resources.

Table 3.7-28 Potential Impacts on Aquatic resources Subject to Section 1600 et. Seq. Regulation from Changes in Hydrologic Conditions

Aquatic Resource	Refined SR14/SR14A				E1/E1A				E2/E2A			
	High		Moderate		High		Moderate		High		Moderate	
	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)	Total ANF (miles)	SGMNM in ANF (%)
Perennial Stream	0	0	0	0	0	0	0.3	0	0	0	0	0
Intermittent/Ephemeral Stream ¹	2.2	0	1.0	45.6	1.4	0	4.1	12.5	8.7	16.7	1.2	59.8
Seep/Spring (count) ²	0	0	0	0	0	0	2	0	3	0	1	100
Valley Foothill Riparian (acres)	0	0	0	0	0	0	0	0	2	0	0	0

¹ Intermittent and ephemeral streams cannot be distinguished based on the data used and are therefore considered together in the analysis.

² Analysis counts miles of stream and number of seeps/springs within the tunnel construction RSA that overlap High and Moderate Risk Areas.

High = Linear miles of streams, count of seeps/springs, and acres of riparian habitat that overlap with the areas identified as high risk.

Moderate = Linear miles of streams, count of seeps/springs, and acres of riparian habitat that overlap with the areas identified as moderate risk.

ANF = Angeles National Forest

SGMNM =San Gabriel Mountains National Monument

Based on the defined Risk Areas, the Refined SR14/SR14A Build Alternatives would have the least impacts on Section 1600 et. Seq. regulated aquatic resources. The E1 and E1A Build Alternatives Risk Areas include a perennial stream. The E2 and E2A Build Alternatives Risk Areas include the most intermittent/ephemeral streams (9.9 linear miles), with the E1 and E1A Build Alternatives Risk Areas having 5.5 linear miles, and the Refined SR14 and SR14A Build Alternatives having the least (3.2 miles). The Build Alternatives also differ in their impacts on seeps/springs; the Refined SR14 and SR14A Build Alternative Risk Areas do not include any mapped seeps/springs, the E1 and E1A Build Alternative Risk Areas include two mapped seeps/springs, and the E2 and E2A Build Alternative Risk Areas include four mapped seeps/springs. Lastly, only the E2 and E2A Build Alternatives Risk Areas include riparian habitat (1.8 acres).

CEQA Conclusion

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 lakes, including riparian habitat, subject to Section 1600 et seq. This represents a significant impact because construction of each of the six Build Alternatives divert or obstruct the natural flow of areas subject to Section 1602 notification. Implementation of the mitigation measures listed below would reduce surface construction impacts and compensate for unavoidable impacts on resources regulated under Section 1600 et seq. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP will reduce impacts on CDFW-regulated areas.
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts. Restoration of riparian habitat disturbed by construction activities would ensure that these areas would not be adversely affected long term. Therefore, construction impacts on these CDFW-regulated areas would be reduced.
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts. With implementation of these restoration measures, construction impacts on CDFW-regulated areas would be reduced.
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters. The Project Biologist will monitor construction activities that occur within or adjacent to aquatic resources and document compliance with applicable avoidance and minimization measures including measures set forth in regulatory authorizations issued under the CWA and/or Porter-Cologne Act. Ensuring compliance with these avoidance and minimization measures applicable to jurisdictional waters will ensure that impacts on these CDFW-regulated areas would be reduced.
- BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat. Compensatory riparian habitat restoration for permanently disturbed habitat will ensure the offset of permanent impacts on these regulated areas. Therefore, impacts on these CDFW-regulated areas would be offset.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. These measures will ensure that construction impacts on aquatic resources would be mitigated, and therefore, would overlap with mitigation for species and habitat protected by Section 1600 et seq.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on CDFW-regulated areas within mitigation sites would be reduced.

- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. The Authority will prepare a CMP to establish compensatory mitigation provided to offset permanent and temporary impacts on federal and state-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq., and certain other special-status species. Compensatory mitigation outlined in the CMP will ensure that permanent and temporary impacts on fish and wildlife resources protected under Section 1600 et seq. would be offset.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The Authority will develop a WCP to minimize and avoid the spread of invasive weeds during project construction and operation. The WCP would reduce effects on CDFW-regulated areas and the natural biological functions they provide.
- BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones. The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. The establishment of ESAs would reduce impacts on areas that support special-status species and communities or associated habitat as access to these areas would be restricted during construction activities. As a result, impacts on CDFW-regulated areas would be reduced.
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions. The dewatering plan will include pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In determining the presence of special-status species within the affected waterbody, precautionary and/or compensatory mitigation may be applied to ensure that impacts on CDFW-regulated areas would be reduced.

Collectively, the above mitigation measures would provide avoidance, minimization and compensatory mitigation for direct and indirect surface construction impacts such that the impacts would not result in a substantial adverse effect on resources regulated under Section 1600 et seq. As a result, surface construction impacts would be less than significant for all Build Alternatives.

For indirect effects from tunnel construction, the impact would be potentially significant for all six Build Alternatives because the project could have substantial adverse effects on aquatic resources regulated under Section 1600 et. Seq., through hydrological disruption and degradation. The Refined SR14 and SR14A Build Alternative 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 Build Alternatives pose the least risk of hydrologic impacts occurring among the Build Alternatives. While actions would be implemented during construction to reduce impacts on aquatic resources, the project could result in the loss and degradation of aquatic resources and riparian habitat. To address this impact, the Authority would implement an AMMP. BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under HYD-MM#4, which would require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided. With implementation of these mitigation measures, the Build Alternatives would not result in a substantial adverse effect to resources regulated under Section 1600 et seq. as a result of tunnel construction, and this impact would therefore be less than significant for all six Build Alternatives.

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

The Refined SR14 and SR14A core habitat RSAs contains federally designated critical habitat for the arroyo toad, Santa Ana sucker, and southwestern willow flycatcher. The E2 and E2A core habitat RSAs contains designated Santa Ana sucker and designated southwestern willow

flycatcher critical habitat. The E1 and E1A core habitat RSAs does not encompass designated critical habitat for any species.

Direct and Indirect Impacts

Surface Construction

As discussed previously, USFWS-designated critical habitat contains physical or biological features essential to a species conservation. Removal or degradation of these physical or biological features within designated critical habitat could result in significant impacts on FESA-listed species. Construction of the Refined SR14, SR14A, E2, and E2A Build Alternatives would result in the permanent removal of designated critical habitat for the arroyo toad, Santa Ana sucker, and southwestern willow flycatcher, as described below:

- **Refined SR14 Build Alternative**—The Refined SR14 Build Alternative alignment would traverse 0.26 mile of designated arroyo toad critical habitat on viaduct and in tunnel within Soledad Canyon. Construction of this viaduct would require the permanent removal of 1.75 acres of designated critical habitat for the arroyo toad. Refined SR14 would traverse, in tunnel, 4.42 acres of designated arroyo toad critical habitat in Soledad Canyon. Because this portion of the alignment would be underground, there would be little associated surface impact. The upper portion of the Santa Clara River in the core habitat RSA within Soledad Canyon contains physical and biological features that are essential to the conservation and support of a breeding population of arroyo toads. Supporting physical and biological features include breeding pools in low-gradient stream segments with sandy substrates, seasonal flood flows, and riparian habitat and upland benches for foraging and dispersal. Should construction of the Refined SR14 Build Alternative affect or disrupt any of these features, it would compromise the biotic viability of this area to function as critical habitat for the arroyo toad. However, effects on designated critical habitat (6.2 acres) in Soledad Canyon represent less than 0.1 percent of the designated critical habitat on 159 acres of federal land and 1,120 acres of private land.
- **SR14A Build Alternative**—Effects on designated critical habitat from the SR14A Build Alternative would be identical to those associated with the Refined SR14 Build Alternative.
- **E2 Build Alternative**—The E2 Build Alternative alignment would traverse 0.26 mile of designated Santa Ana sucker and 0.24 mile of designated southwestern willow flycatcher critical habitat on viaduct within Big Tujunga Wash. Construction of the viaduct would require the permanent removal of 8.4 and 7.6 acres of designated critical habitat for the Santa Ana sucker and southwestern willow flycatcher, respectively. Physical and biological features in Big Tujunga Wash essential to conservation of Santa Ana sucker and southwestern willow flycatcher include aquatic resources and vegetative features that support habitat for these FESA-listed species. Areas where the in-stream aquatic habitat is covered by riparian vegetation make up the physical and biological features essential to the biotic viability of designated habitat for the Santa Ana sucker because these areas can provide thermal refuge and in-stream habitat structure. Physical and biological attributes such as floodplain size, vegetation density, and the proportion of dense vegetation and variability in vegetation density determine the functionality of an area to serve as designated critical habitat for the southwestern willow flycatcher. Construction of the E2 Build Alternative has the potential to result in the removal of riparian vegetation and fill of floodplains that make up the physical and biological features essential to Santa Ana sucker and southwestern willow flycatcher.
- **E2A Build Alternative**—Effects on designated critical habitat from the E2A Build Alternative would be identical to those associated with the E2 Build Alternative.

Implementation of BIO-IAMF#1, BIO-IAMF#2, BIO-IAMF#3, and BIO-IAMF#5 through BIO-IAMF#12 (described in Section 3.7.4.2) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts to applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section

design to reduce impacts on designated critical habitat. Table 3.7-29 summarizes the acreage of designated critical habitat impacts within the six Build Alternative core habitat RSAs.

Table 3.7-29 Designated Critical Habitat within the Build Alternative Footprints

Special-Status Designated Critical Habitat	Determination	Miles of Designated Critical Habitat within RSA	Subsurface Impacts (acres)	Permanent Impacts (acres)	Total
Arroyo toad	May Affect, and is Likely to Adversely Affect	The Refined SR14 and SR14A Build Alternative alignments would traverse 0.26 mile of designated critical habitat along the Santa Clara River southeast of SR14 in Soledad Canyon.	4.42	1.75	Refined SR14 and SR14A: 6.17
Santa Ana sucker	May Affect, and is Likely to Adversely Affect	The E2 and E2A Build Alternative alignments would traverse 0.26 mile of designated Santa Ana sucker critical habitat within Big Tujunga Wash.	-	8.44	E2 and E2A: 8.44
Southwestern willow flycatcher	May Affect, and is Likely to Adversely Affect	The E2 and E2A Build Alternative alignments would traverse 0.24 mile of designated southwestern willow flycatcher critical habitat within Big Tujunga Wash.	-	7.62	E2 and E2A: 7.62

RSA = Resource Study Area

Tunnel Construction

Tunnel construction and associated changes in groundwater levels is not expected to affect critical habitat. Critical habitat for three species, southwestern willow flycatcher, Santa Ana sucker, and arroyo toad is located within No/Low Risk Areas. Because these areas lack faults and high groundwater pressure and with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 no impact is expected. No critical habitat for any species is located with the Moderate or High Risk Areas identified for all six Build Alternatives.

CEQA Conclusion

Neither the E1 nor E1A Build Alternatives would affect designated critical habitat. Although implementation of the IAMFs listed above would minimize impacts, construction of the Refined SR14, SR14A, E2, and E2A Build Alternatives would permanently remove or degrade designated critical habitat. The removal or degradation of designated critical habitat would affect physical or biological features essential to the conservation of affected species. Therefore, degradation of designated critical habitat for the arroyo toad, Santa Ana sucker, and southwestern willow flycatcher resulting from construction of the Refined SR14, SR14A, E2, and E2A Build Alternatives would represent a significant impact. Implementation of the mitigation measures listed below would reduce direct and indirect impacts on designated critical habitat. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP will ensure that designated critical habitat within temporarily affected areas would not be adversely affected long term. As a result, impacts on designated critical habitat would be reduced.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. With implementation of this mitigation measure, there may be an additional benefit to designated critical habitat.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on designated critical habitat would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure that impacts on designated critical habitat would be offset.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for the impact such that it would no longer be a substantial adverse effect on designated critical habitat. This impact would be less than significant for the Refined SR14, SR14A, E2, and E2A Build Alternatives. No impact would occur for the E1 and E1A Build Alternatives.

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

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

As depicted on Figure 3.7-6, the six Build Alternative alignments would traverse the San Andreas, Santa Clara River, and Tujunga Valley/Hansen Dam SEAs. This section describes, from north to south, each of the SEA crossings for each of the six Build Alternatives.

Direct and Indirect Impacts

Surface Construction

The six Build Alternatives would all traverse the San Andreas SEA south of the city of Palmdale. Within this SEA, the Refined SR14, E1, and E2 Build Alternative alignments would traverse Una Lake on an embankment, requiring partial fill of the lake, in contrast, the SR14A, E1A, and E2A Build Alternative alignments would avoid Una Lake and would travel approximately 300 feet east of Una Lake. Construction activities within this SEA would also require relocation of the existing Sierra Highway and the Metrolink line that currently traverse this area. Construction of each of the six Build Alternatives would degrade aquatic resources in this portion of the San Andreas SEA. Therefore, the biological value of the San Andreas SEA would be degraded, and water resources that are important for wildlife foraging and drinking, wildlife movement, migratory pathways and stopover areas, and habitat connectivity would be affected by project construction.

South of the SR 14/Pearblossom interchange, the E1, E1A, E2, and E2A Build Alternatives would utilize a series of 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 corridor and linkage zones are considered essential to ensuring 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.

Between the SR 14 crossing and Lang Station Mine, the Refined SR14 and SR14A Build Alternatives would utilize a series of at-grade, viaduct, and tunnel profiles through the Santa Clara River SEA. An at-grade utility corridor associated with SR14-A1 would also be located along Little Tujunga Canyon Road within the Santa Clara River SEA. Key biological resources in this area include riparian areas and wildlife corridors that provide connectivity across the Santa Clara River between the western and eastern highland areas of the San Gabriel Mountains. Construction of the 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 Refined SR14, SR14A, E1, and E1A Build Alternatives would require construction through the Tujunga Valley/Hansen Dam SEA, crossing the Hansen Dam Spreading Grounds at grade within the Sun Valley neighborhood of Los Angeles. The Hansen Dam Spreading Grounds are a highly disturbed area used for groundwater recharge but have many areas of willow scrub and other native vegetation. This portion of the Tujunga Valley/Hansen Dam SEA is a valuable wildlife corridor and contains several freshwater marsh areas that are used by marsh birds, migratory waterfowl, and shorebirds. Although the Palmdale to Burbank Project Section would fill the southernmost perimeter of the Hansen Dam Spreading Grounds, this area represents a fraction of the total spreading ground area and would not impact connectivity between other portions of the SEA. Therefore, physical and biological features local to the Tujunga Valley/Hansen Dam SEA would not change during construction of the Refined SR14, SR14A, E1, and E1A Build Alternatives such that it would compromise the SEA's functionality as a waterfowl refuge and wildlife corridor.

The E2 and E2A Build Alternatives would require construction through the Tujunga Valley/Hansen Dam SEA as it traverses the Big Tujunga Wash south of the Lake View Terrace neighborhood of Los Angeles. This portion of the Tujunga Wash contains protected fish species (e.g., speckled dace, arroyo chub, and Santa Ana sucker) and sensitive vegetation habitat, including alluvial fan habitat mixed with riparian forest. The E2 and E2A Build Alternative alignments would traverse the Big Tujunga Wash on viaduct, which may entail partial fill, placement of piles, and removal of vegetation resulting in changes in hydrogeologic patterns and habitats within the Tujunga Valley/Hansen Dam SEA. Functionality of the Tujunga Valley/Hansen Dam SEA as habitat for protected fish species and sensitive vegetation would be degraded by surface impacts resulting from construction of the E2 and E2A Build Alternatives.

Implementation of BIO-IAMF#1, BIO-IAMF#2, BIO-IAMF#3, and BIO-IAMF#5 through BIO-IAMF#12 (described in Section 3.7.4.2) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts on applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on SEAs.

Tunnel Construction

Tunnel construction and associated changes in groundwater levels are not expected to affect SEAs.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, construction of each of the six Build Alternatives would result in a substantial adverse effect on biological resources, including protected plant or wildlife species, habitat, or other natural communities. The biotic viability of SEAs would be degraded such that their functionality for species would be compromised. This represents a significant impact. Implementation of the mitigation measures discussed below would reduce direct and indirect impacts on SEAs. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of an RRP will ensure that all temporarily disturbed areas, including SEAs, would not be adversely affected long term. As a result, impacts on the biotic viability and biological integrity of SEAs would be reduced.
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources. Aquatic resources are often part of SEAs for special-status fish as well as for plants and plant communities. Compensatory mitigation should occur in as close proximity to the impact as feasible and at least within the same watershed. Therefore, with implementation of this mitigation measure, the biotic viability of SEAs to function as habitat for wildlife and plant species would be preserved, and this impact will be offset.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on the biotic viability and biological integrity of SEAs functioning as habitat for wildlife and plant species would be reduced.
- BIO-MM#53: Prepare a Compensatory Mitigation Plan for Species and Species Habitat. Compensatory mitigation outlined in the CMP will ensure that impacts on the biotic viability and biological integrity of SEAs will be offset.

Collectively, the above mitigation measures would provide avoidance, minimization, and compensatory mitigation for the impact such that it would no longer result in a substantial adverse effect on SEAs. As a result, this impact would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

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

Construction of each of the six Build Alternatives would affect trees protected under county and local plans and ordinances, including the Los Angeles County General Plan, and the Los Angeles County Code. Policies stipulated under these local plans and ordinances pertain either to the compensation of direct and indirect impacts on protected trees, or toward promoting their preservation.

Direct permanent effects on protected trees are anticipated in areas where permanent infrastructure (e.g., rail track and road overpasses, proposed stations) or temporary activities (e.g., materials staging, temporary access roads, and construction right-of-way) require clearing.

Direct effects from construction activities could result from unintentional contamination, such as chemical leaks and spills, which would affect water or soils on which protected trees depend. These effects would become permanent if the source of the unintentional contamination is not properly removed. Soil compaction, placement of fill and other material, shading by equipment, and alterations to microtopography would stress trees, causing poor growth and loss of leaves or roots during the construction period. Construction activities would also have direct effects on

protected trees in the form of trimming or pruning for stations, tracks, maintenance, and equipment storage areas, access roads, road overcrossings, and substations.

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

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) will ensure that mitigation measures are applied in a timely manner, that the Palmdale to Burbank Project Section site and construction activities comply with all regulatory procedures intended to avoid and minimize impacts to applicable resources, and that biological resources are appropriately identified and preserved, to the extent feasible. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on protected trees.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, construction of each of the six Build Alternatives would conflict with local policies or ordinances protecting biological resources (policies or ordinances outlined in the Los Angeles County General Plan, the Antelope Valley Area Plan, and the Los Angeles County Code). This represents a significant impact because construction of the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives would still entail actions that would affect protected trees. Implementation of the mitigation measure discussed below would reduce direct and indirect impacts on protected trees. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan. Implementation of the RRP will ensure that all temporarily disturbed areas outside of the permanent right-of-way that potentially support protected trees would not be adversely affected long term such that these areas would no longer be able to support protected trees. As a result, construction impacts on protected trees would be reduced and the Palmdale to Burbank Project Section will remain consistent with local and regional policies requiring compensation for impacts on protected trees.
- BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees. Implementation of these measures will compensate for construction-related effects on protected trees. Therefore, impacts on protected trees would be reduced, and the Palmdale to Burbank Project Section will remain consistent with local and regional policies promoting preservation and requiring compensation for impacts on protected trees.
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites. The Authority will implement applicable IAMFs and mitigation measures discussed herein to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities. As a result, impacts on protected trees would be reduced, and the Palmdale to Burbank Project Section will remain consistent with local and regional policies requiring compensation for impacts on protected trees.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. The WCP will ensure that invasive weeds would not impact the health of protected trees, thereby reducing construction-related impacts on protected trees and ensuring that the Palmdale to Burbank Project Section will remain consistent with local and regional policies promoting the preservation of protected trees.

- **BIO-MM#56: Conduct Monitoring of Construction Activities and BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones.** The Project Biologist will monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of ESAs and installation of wildlife exclusion fencing and construction exclusionary fencing to reduce impacts. Verified compliance with stipulated avoidance and minimization measures would ensure that impacts to special-status plant species and habitat and sensitive natural communities, including those that incorporate protected trees, are directly reduced.

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

Collectively, the above mitigation measures would ensure that construction activities remain consistent with local and regional policies requiring the compensation of impacts and promoting the preservation of protected trees. As a result, this impact would be less than significant for all Build Alternatives.

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

Construction Activities

The major activities included in the construction period are earthwork; bridge, aerial structure, and road crossing construction; railway systems construction; and tunnel construction. Wildlife movement patterns may be temporarily disrupted during project construction activities (including grading, excavating, hauling, disposal, constructing the rail bed, and laying the trackway). Habitat restoration actions to restore vegetation in the construction footprint are expected to be phased and would likely occur over multiple years. Concentrated heavy vehicle and equipment use, disturbance of vegetation, and related construction activities can interfere with wildlife movement patterns and cause wildlife to avoid areas adjacent to the active construction areas or haul roads.

Direct effects on wildlife movement from placement of barriers (e.g., temporary construction fencing), CSAs, and increased vehicular traffic may include a decrease in the ability of wildlife to move across construction areas freely. Further, effects on wildlife movement from construction activities may include mortality, injury, or harassment (e.g., vehicular strikes, crushing burrows, and nest abandonment). However, protocol-level and pre-activity surveys would be conducted for burrowing species in advance of ground disturbance, wildlife exclusion fencing would be installed to prevent wildlife from entering active construction areas, and biological monitors would be present to prevent adverse effects. Moreover, the phased construction of the Palmdale to Burbank Project Section would occur in different locations over several years, dampening the intensity of temporary effects on movement.

The effects listed above will vary depending on whether a particular portion of the rail line is constructed as tunneled, elevated, or at grade:

- **Tunnel Sections**—Construction effects on wildlife movement would likely be least in sections where the rail line would be in a tunnel. Most of the aboveground activity would be concentrated around the tunnel portals, adits, access roads, disposal sites, laydown, and staging areas. Some of the activity would include the hauling away of material generated from the boring. The construction of the tunnels would produce vibration, noise, and dust associated with the use of the boring equipment and blasting. The noise and dust would likely be contained to the portal areas whereas the vibration may be felt closer to the location of the boring equipment depending on the geology and depth of the tunnel. The tunnel portals would be fenced, and activity at the portals would consist of both temporary and permanent loss of vegetation. Some tunneled portions of the HSR alignment may include cut-and-cover

tunnels, in which case the open-cut activity and placement of soil would create temporary effects associated with the construction activity and longer-term effects associated with revegetating the site. Additional disturbance would include construction of the adits and disposal of soil at the disposal sites. The adits and disposal sites would be fenced; however, their compact footprints would not be difficult for wildlife to circumvent.

- **Elevated (Viaduct) Sections**—Construction would consist of the installation of pre-cast concrete bridge segments placed atop piers using a gantry crane or similar method; self-climbing formwork system may be used to construct piers and portal beams. Temporary laydown areas and roads would be constructed for access and hauling material to the viaduct areas. The construction footprint would be cleared and grubbed for construction access. There would be temporary and permanent loss of vegetation. These elevated segments would not be fenced and would allow free passage underneath the rail once construction is complete.
- **At Grade (Surface)**—The cut-and-fill slopes associated with construction of the at-grade sections would likely have the greatest construction effects, especially in the steep terrain of the San Gabriel Mountains and foothills where the grading footprint would be the widest. Construction in these areas would consist of clearing and grubbing the vegetation, cutting through naturally elevated topography, and filling in low-lying topography to achieve the designed grade. The at-grade segments would be fenced along the track.

Some wildlife species may alter their use or movement patterns during construction phases and then re-establish pre-project movement patterns and functions once temporary construction effects elapse. BIO-IAMF#1, BIO-IAMF#2, BIO-IAMF#3, and BIO-IAMF#5 through BIO-IAMF#11 (described in Section 3.7.4.2) have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on wildlife corridors. However, HSR construction activities would still interfere with wildlife corridors.

Permanent High-Speed Rail Infrastructure

The *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) highlights permanent effects on wildlife movement that would result from operation of the Build Alternatives. There are substantial existing constraints to wildlife connectivity in the city of Palmdale and the San Fernando Valley where the Palmdale to Burbank Project Section would result in marginal effects on the already limited wildlife movement corridors. This analysis focuses on the nonurban areas between Palmdale and the San Fernando Valley because the highly urbanized Palmdale and the San Fernando Valley do not provide existing wildlife corridors. Between these urbanized areas, the Build Alternative alignments would traverse the relatively undeveloped San Gabriel Mountains, which contain vast areas of protected land (including the ANF including the SGMNM) conducive to wildlife connectivity. However, a combination of transportation corridors (namely the SR 14 freeway) and suburban land uses through the San Gabriel Mountains currently interrupt natural habitat and interfere with wildlife movement patterns.

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

The recommended wildlife crossing spacing interval is 1.0 mile for large crossings¹⁶ and 0.3 mile for small crossings (Authority 2019c).¹⁷ As long as there is a viaduct/tunnel/at-grade transition and/or drainage structure within this interval length, wildlife movement would not be impeded. The Build Alternative alignments contain few areas where the length of the at-grade segments in non-urban areas exceeds these recommended crossing intervals. Typically, at-grade segments are shorter than the recommended crossing intervals, and tunnel or elevated segments adjacent to at-grade trackway offer viable crossing opportunities. However, as discussed below, each Build Alternative would include several at-grade segments that exceed the recommended wildlife crossing spacing intervals, thus substantially impeding wildlife movement.

Refined SR14 Build Alternative—Nonurban portions (i.e., outside of Palmdale and the San Fernando Valley) of the Refined SR14 Build Alternative represent 27.1 miles of the entire Refined SR14 Build Alternative alignment. Nonurban portions of the Refined SR14 Build Alternative would be 83 percent (22.4 miles) permeable because alignment within tunnels and viaducts would facilitate wildlife movement. At-grade rail segments that occur in nonurban areas would restrict movement across 17 percent (4.6 miles) of the Refined SR14 Build Alternative. All of the impermeable Refined SR14 Build Alternative trackway would be located between the city of Palmdale and Soledad Canyon,¹⁸ which crosses the San Gabriel-Castaic Linkage Design and associated least-cost corridors (Penrod et al. 2004). However, a number of existing and planned crossing opportunities (such as drainage culverts) along the Refined SR14 Build Alternative alignment are large enough to meet the crossing criteria and facilitate the movement of certain species. Planned crossing opportunities would be designed to support wildlife passage across impermeable trackway. Crossing opportunities such as these would ensure that segments of impermeable trackway do not constrain wildlife movement except for four segments that exceed the wildlife crossing spacing criteria.

Least-Cost Corridor (LCC)

LCCs are regional movement corridors that provide the least resistance or movement cost for wildlife moving across the landscape from one large tract of preserved land to another. For example, high-quality habitat would have low resistance while poor-quality habitat would have high resistance.

Most of the Refined SR14 Build Alternative impermeable at-grade segments located between the city of Palmdale and Soledad Canyon meet the wildlife crossing spacing criteria because nearby viaduct/tunnel/at-grade transitions and/or drainage structures would facilitate wildlife movement and connectivity. However, four at-grade segments (Figure 3.7-47) exceed the recommended threshold lengths, indicating that these segments do not provide wildlife sufficient opportunities to cross the HSR alignment within the recommended intervals:

- Refined SR14 Segment 1 (1.50 miles long)—Existing constraints along this segment include the SR 14 freeway, suburban development, permanent open water and at-grade portions of the California Aqueduct, and the fenced portions of Una Lake and Lake Palmdale.
- Refined SR14 Segment 2 (0.51 mile long)—Constraints associated with the SR 14 freeway would impair the functionality of a new wildlife crossing at this location.
- Refined SR14 Segment 3 (0.39 mile long)—Constraints associated with the SR 14 freeway would impair the functionality of a new wildlife crossing at this location.

¹⁶ “Large crossings” would be overcrossings or arched undercrossings with a minimum height of 20 feet at the apex of the arch to accommodate wildlife species of larger stature, such as mountain lion, black bear, or mule deer.

¹⁷ “Small crossings” would be arched undercrossings with a minimum height of 10 feet at the apex of the arch to accommodate small- to medium-sized species.

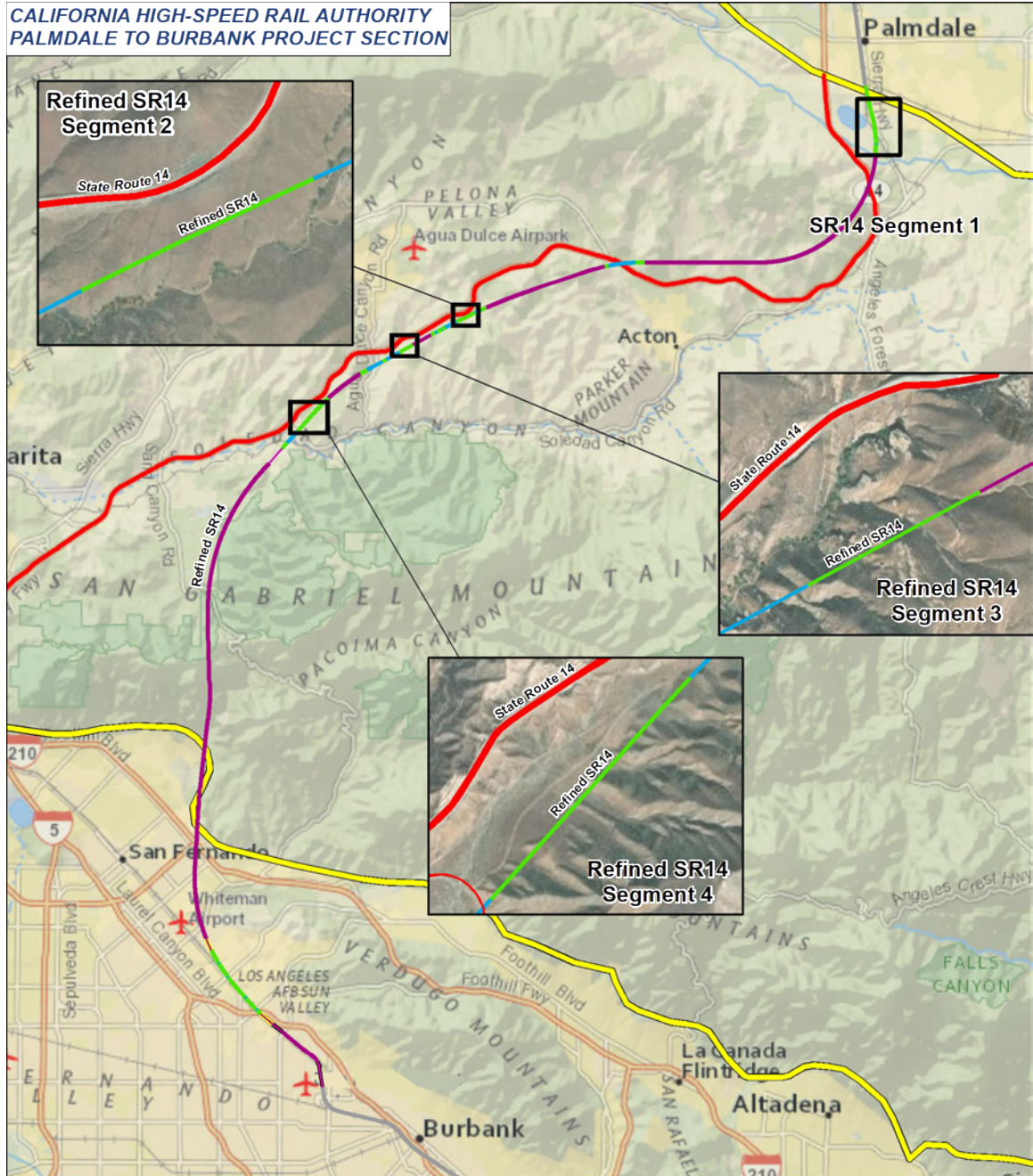
¹⁸ As discussed above, the city of Palmdale is urbanized and does not currently provide wildlife crossing opportunities. South of Soledad Canyon, where the Refined SR14 Build Alternative alignment would traverse the Santa Clara River on viaduct, the Refined SR14 Build Alternative would enter a tunnel beneath the ANF including the SGMNM until emerging in the urbanized San Fernando Valley. The tunnels and viaduct in this portion of the Refined SR14 Build Alternative would avoid impacts on wildlife movement in this area.

- Refined SR14 Segment 4 (0.89 mile long)—Constraints associated with the SR 14 freeway would impair the functionality of a new wildlife crossing at this location.

These four segments listed above align with the SR 14 freeway, which is highly impermeable to wildlife mobility. Adding a crossing structure to segments that align with the SR 14 freeway would be impractical as wildlife movement is already constrained in these areas. Furthermore, there are several other existing constraints near Refined SR14 Segment 1 that would substantially reduce the functionality of wildlife crossing structures within the HSR right-of-way. Given these, there are no at-grade segments of the Refined SR14 Build Alternative that exceed the recommended threshold lengths that would benefit from wildlife crossings.

SR14A Build Alternative—Nonurban portions (i.e., outside of Palmdale and the San Fernando Valley) of the SR14A Build Alternative represent 28.5 miles of the entire SR14A Build Alternative alignment. Nonurban portions of the SR14A Build Alternative alignment are 83 percent (23.6 miles) permeable because alignment within tunnels and viaducts would facilitate wildlife movement. Six at-grade rail segments, ranging from 0.10 mile to 3.01 miles long, restrict movement across 17 percent (4.9 miles) of the SR14A Build Alternative alignment in nonurban areas. Similar to the Refined SR14 Build Alternative, all of the impermeable SR14A Build Alternative trackway would be located between the city of Palmdale and Soledad Canyon and would cross the San Gabriel-Castaic Linkage Design and associated least-cost corridors (Penrod et al. 2004). However, several existing and planned crossing opportunities (such as drainage culverts) along the SR14A Build Alternative alignment are large enough to meet the crossing criteria and facilitate the movement of certain species. Planned crossing opportunities would be designed to support wildlife passage across impermeable trackway. Crossing opportunities such as these would ensure that segments of impermeable trackway do not constrain wildlife movement except for two segments (Figure 3.7-48) that exceed the wildlife crossing spacing criteria:

- SR14A Segment 1 (3.01 miles long in nonurban areas)—Existing constraints along this segment include the SR 14 freeway, suburban development, permanent open water and fenced at-grade portions of the California Aqueduct, and the fenced portions of Una Lake and Lake Palmdale. Two wildlife crossing location are proposed in this segment; one located near East Barrel Springs Road (east of Una Lake) and a second crossing south of the Soledad Siphon (south of the California Aqueduct).
- SR14A Segment 2 (1.13 miles long)—Constraints associated with the SR14 freeway would impair the functionality of a new wildlife crossing at this location, adjacent to Bee Canyon. This segment is also bounded by a 1.04-mile-long tunnel to the north and a 0.40-mile-long elevated viaduct to the south.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; National Geographic, 2021 March 25, 2021

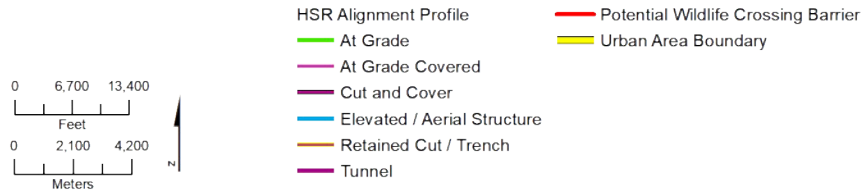
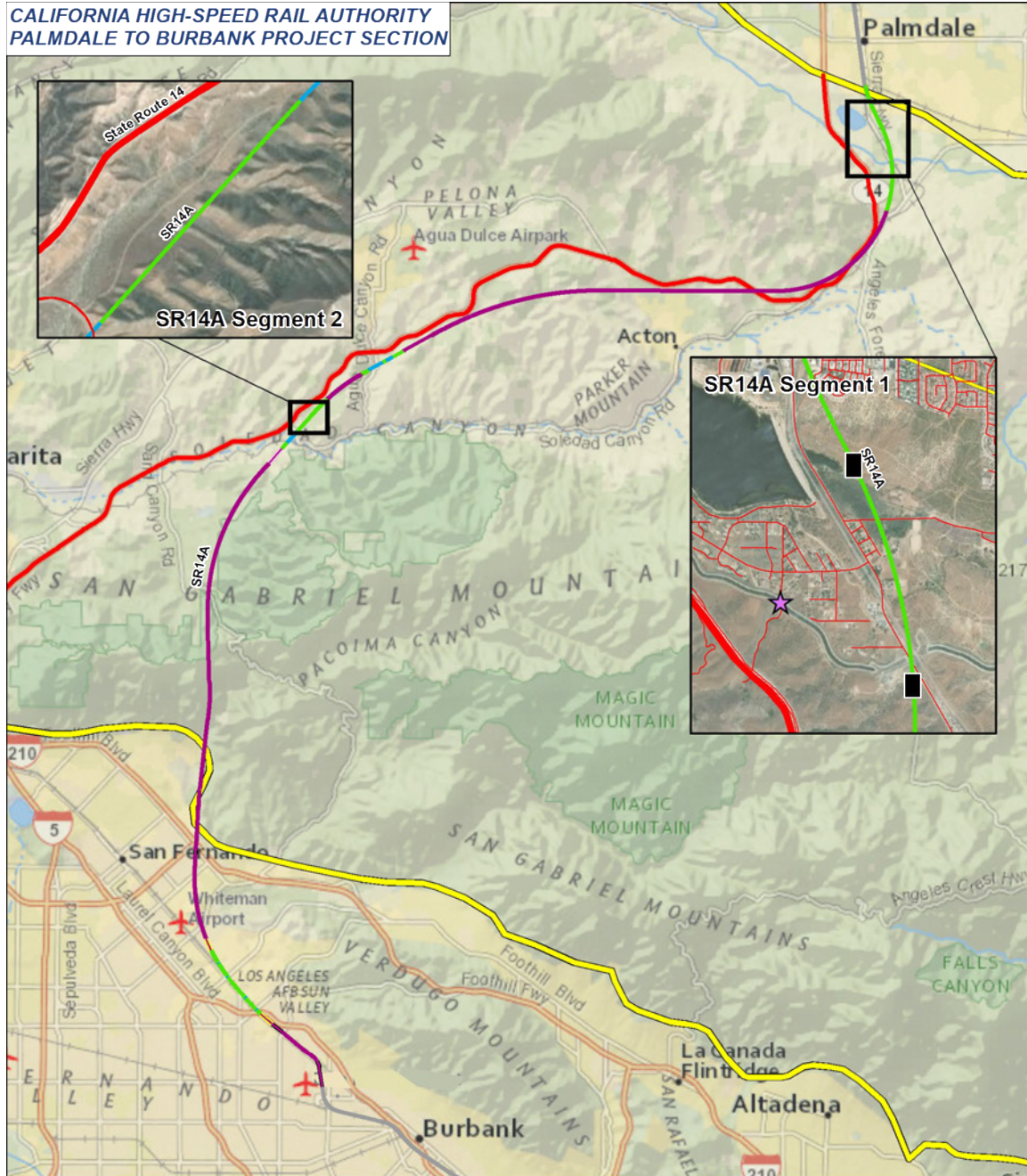


Figure 3.7-47 Wildlife Corridor Impermeability Map: Refined SR14 Build Alternative



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; National Geographic, 2021
 March 25, 2021



Figure 3.7-48 Wildlife Corridor Impermeability Map: SR14A Build Alternative

SR14A Segment 1 is in an area that includes several barriers to wildlife, including the adjacent SR 14 freeway to the west, the California Aqueduct that bisects Segment 1 from west to east, and the Sierra Highway to the east. The SR 14 freeway and the California Aqueduct provide a barrier to wildlife, except at Courson Ranch Road. Wildlife connectivity across the 3.01-mile-long at-grade segment would benefit from adding two dedicated wildlife crossings at the SR14A Segment; one crossing located north of East Barrel Springs Road near Una Lake and a second crossing located south of the Soledad Siphon.

SR14A Segment 2 parallels the SR 14 freeway near Bee Canyon, which serves as a barrier for wildlife movement because of its width and amount of traffic. Given that there are no crossings of the adjacent SR 14 freeway, the 1.13-mile-long segment would not benefit from a wildlife crossing. The two nearest crossings underneath the SR 14 freeway, located directly to the south at Stonecrest Road and 1.5 miles to the northeast at Aqua Dulce Canyon Road, both align with elevated viaduct segments that could facilitate north-south wildlife connectivity across the SR14A Build Alternative alignment and adjacent freeway.

E1 Build Alternative—Nonurban portions of the E1 Build Alternative (i.e., outside of Palmdale and the San Fernando Valley) represent 25.4 miles of the entire E1 alignment. Nonurban portions of the E1 Build Alternative would be 80 percent permeable because these portions of the E1 Build Alternative largely consist of tunnel segments and viaducts that facilitate wildlife movement. The fenced, at-grade rail segments would restrict wildlife movement across 20 percent of the E1 Build Alternative in nonurban areas. All of these impermeable portions of the E1 Build Alternative would be located between the city of Palmdale and the northern boundary of the ANF, south of Arrastre Canyon.¹⁹ Existing and planned crossing opportunities (such as drainage culverts) along the E1 Build Alternative alignment would ensure that segments of impermeable trackway do not constrain wildlife movement except for three segments (Figure 3.7-49) that exceed the wildlife crossing spacing criteria:

- E1 Segment 1 (3.2 miles long)—This segment is at the southern end of the 7.2-mile segment that stretches north past Palmdale’s urban boundary line. One wildlife crossing location is proposed in this segment, located at milepost 5.5, south of the California Aqueduct.
- E1 Segment 2 (0.67 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.
- E1 Segment 3 (0.48 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.

E1 Segment 2 and E1 Segment 3 would not benefit from wildlife crossings as they would be adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial. However, there is one potential wildlife crossing (at E1 Segment 1) that is feasible and would improve the permeability of the alignment. An existing drainage culvert would be modified to accommodate wildlife movement.

E1A Build Alternative—Nonurban portions of the E1A Build Alternative (i.e., outside of Palmdale and the San Fernando Valley) represent 25.5 miles of the entire E1A Build Alignment. Nonurban portions of the E1A Build Alternative would be 83 percent permeable because they largely consist of tunnel segments and viaducts that facilitate wildlife movement. The fenced, at-grade rail segments would restrict wildlife movement across 17 percent of the E1A Build Alternative alignment in nonurban areas. All of these impermeable portions of the E1A Build Alternative alignment would be located between the city of Palmdale and the northern boundary of the ANF, south of Arrastre Canyon. Existing and planned crossing opportunities (such as drainage

¹⁹ As discussed above, the city of Palmdale is urbanized and does not currently provide wildlife crossing opportunities. South of Arrastre Canyon, the E1 Build Alternative would enter a tunnel beneath the ANF including SGMNM until emerging in the urbanized San Fernando Valley. The tunnels and viaducts in this portion of the E1 Build Alternative would avoid impacts on wildlife movement in this area.

culverts) along the E1A Build Alternative alignment would ensure that segments of impermeable trackway do not constrain wildlife movement, except for three segments (Figure 3.7-49) that exceed the wildlife crossing spacing criteria:

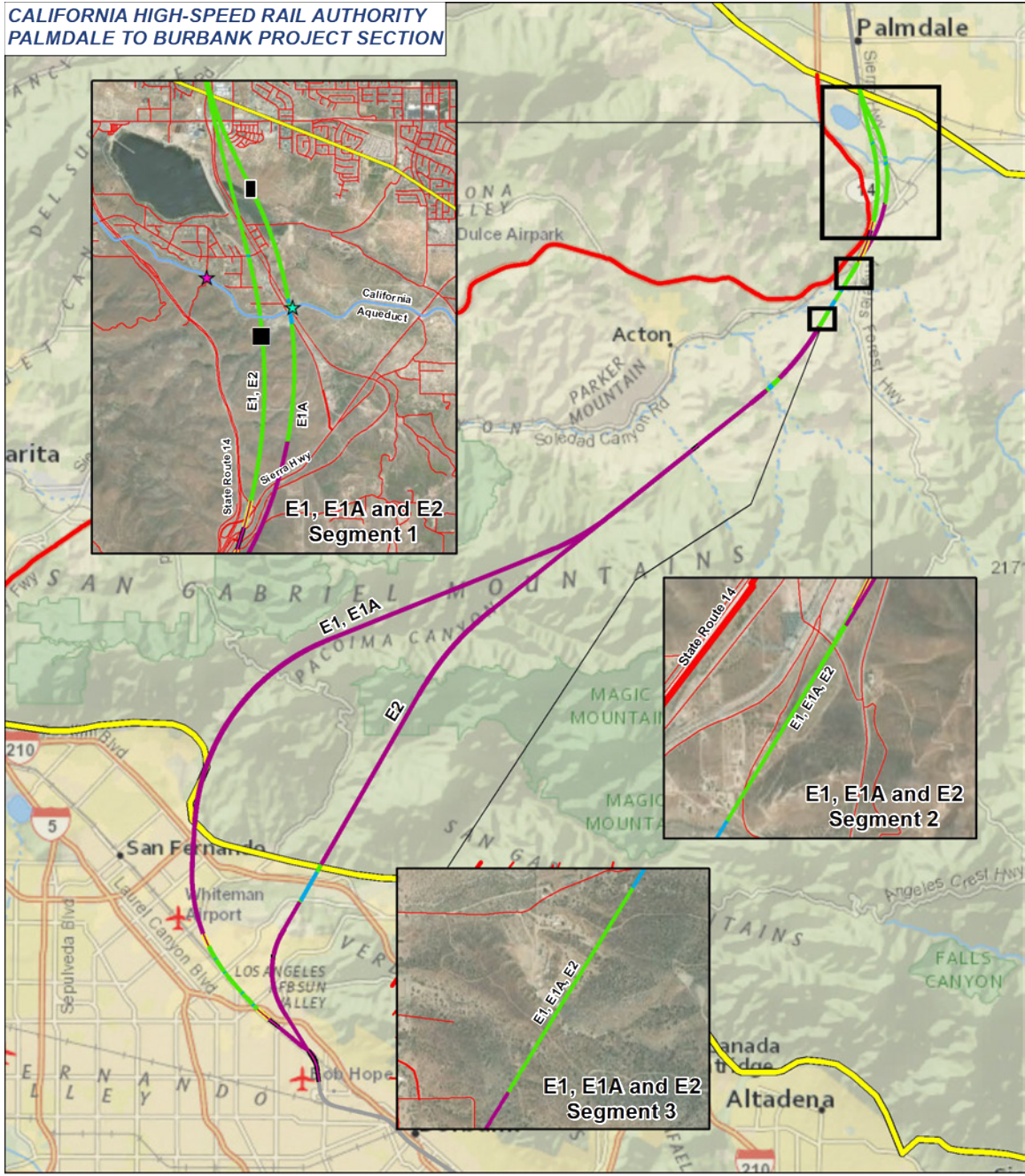
- E1A Segment 1 (1.66 miles long in nonurban area)—This segment is at the southern end of the 3.57-mile segment that stretches north past Palmdale’s urban boundary line. One wildlife crossing location is proposed in this segment, located near East Barrel Springs Road (east of Una Lake).
- E1A Segment 2 (0.95 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.
- E1 Segment 3 (0.64 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location. The nearest bridge over the SR14 freeway is at Mountain Springs Road to the north which is aligned with a tunnel section of trackway and at Sierra Highway to the south which is aligned with two elevated viaducts.

E1A Segment 2 and E1A Segment 3 would not benefit from wildlife crossings because they would be adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial. However, there is one potential wildlife crossing (at E1A Segment 1) that is feasible and would improve the permeability of the alignment. An existing drainage culvert would be modified to accommodate wildlife movement. The E1A Build Alternative would be aboveground on a viaduct near the California Aqueduct, which would facilitate wildlife movement; therefore, no wildlife crossing is needed for that area.

E2 Build Alternative—Nonurban portions of the E2 Build Alternative (i.e., outside of Palmdale and the San Fernando Valley) represent 25 miles of the entire E2 alignment. Nonurban portions of the E2 Build Alternative would be 79 percent permeable because these portions of the E2 Build Alternative largely consist of tunnel segments and viaducts that facilitate wildlife movement. The fenced, at-grade rail segments would restrict wildlife movement across 21 percent of the E2 Build Alternative in nonurban areas. All of these impermeable portions of the Build E2 Alternative would be located between the city of Palmdale and the northern boundary of the ANF, south of Arrastre Canyon.²⁰ A number of existing and planned crossing opportunities (such as drainage culverts) along the Refined E2 Build Alternative alignment are large enough to facilitate the movement of certain species. Planned crossing opportunities would be designed to support wildlife passage across impermeable trackway. Crossing opportunities such as these would ensure that segments of impermeable trackway do not constrain wildlife movement except for three segments that exceed the wildlife crossing spacing criteria (Figure 3.7-50):

- E2 Segment 1 (3.2 miles long)—This segment is at the southern end of the 7.2-mile segment that stretches north past Palmdale’s urban boundary line. One wildlife crossing location is proposed in this segment, located at milepost 5.5, south of the California Aqueduct.
- E2 Segment 2 (0.67 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.
- E2 Segment 3 (0.48 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.

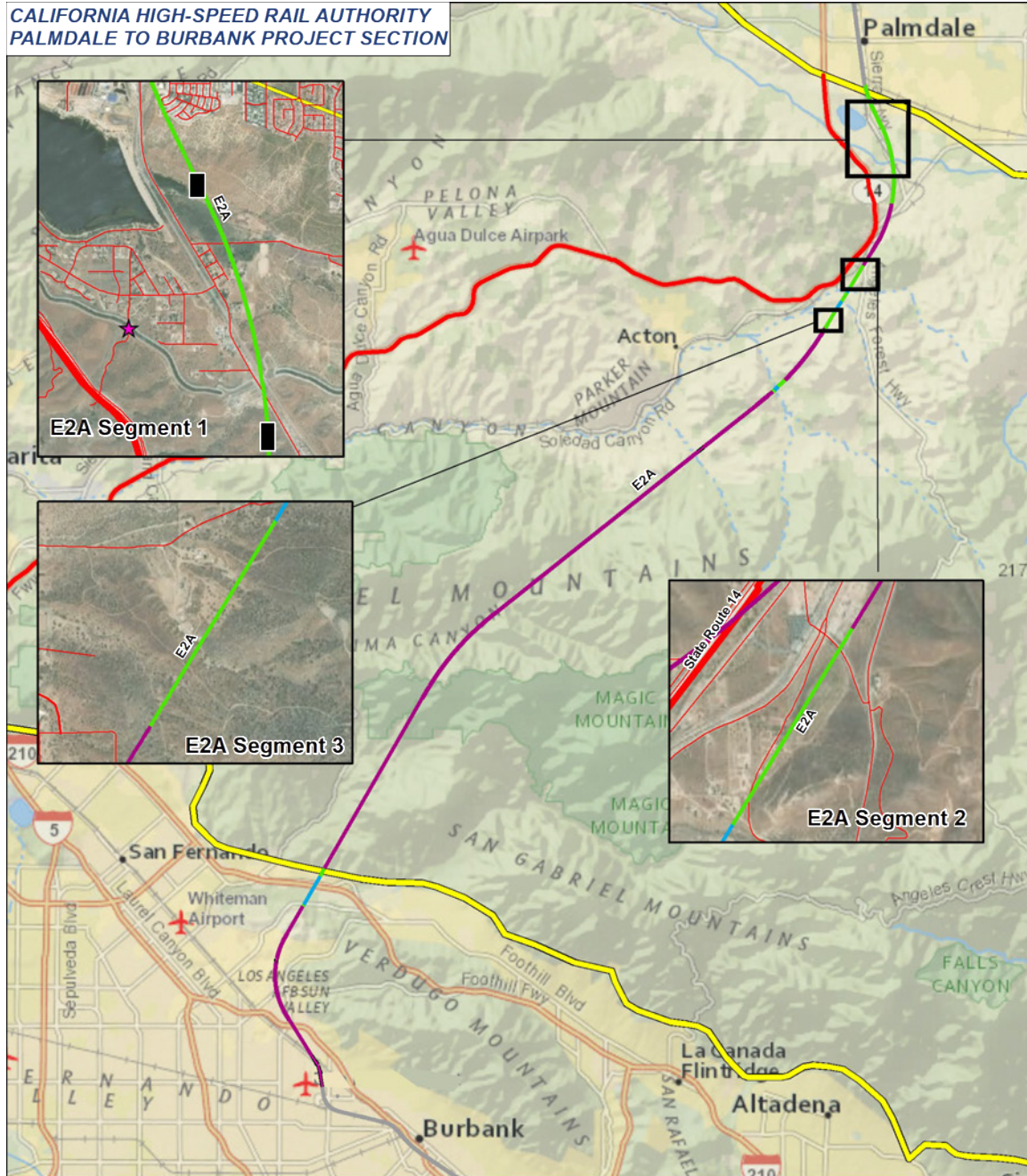
²⁰ For portions of the alignment that would pass through the ANF including SGMNM, the E2 Build Alternative would tunnel underground.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; National Geographic, 2021

March 25, 2021

Figure 3.7-49 Wildlife Corridor Impermeability Map: E1, E1A, and E2 Build Alternatives



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: Authority, 2020; National Geographic, 2021
 March 25, 2021

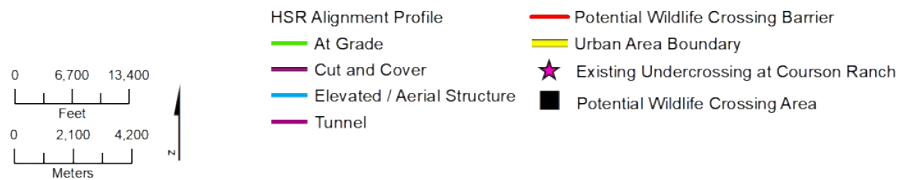


Figure 3.7-50 Wildlife Corridor Impermeability Map: E2A Build Alternative

E2 Segment 2 and E2 Segment 3 would not benefit from wildlife crossings as they would be adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial. However, there is one potential wildlife crossing (at E2 Segment 1) that is feasible and would improve the permeability of the alignment. An existing drainage culvert would be modified to accommodate wildlife movement.

E2A Build Alternative—Nonurban portions of the E2A Build Alternative (i.e., outside of Palmdale and the San Fernando Valley) represent 25 miles of the entire E2A Build Alternative alignment. The nonurban portions of the E2A Build Alternative alignment would be 82 percent permeable because they largely consist of tunnel segments and viaducts that facilitate wildlife movement. The fenced, at-grade rail segments would restrict wildlife movement across 18 percent of the E2A Build Alternative alignment in nonurban areas. All of these impermeable portions of the Build E2A Alternative would be located between the city of Palmdale and the northern boundary of the ANF, south of Arrastre Canyon. Several existing and planned crossing opportunities (such as drainage culverts) along the E2A Build Alternative alignment) are large enough to facilitate the movement of certain species. Planned crossing opportunities would be designed to support wildlife passage across impermeable trackway. Crossing opportunities such as these would ensure that segments of impermeable trackway do not constrain wildlife movement, except for three segments (Figure 3.7-50) that exceed the wildlife crossing spacing criteria:

- E2A Segment 1 (2.82 miles long in nonurban areas)—This segment is at the southern end of the 4.73-mile segment that stretches north past Palmdale’s urban boundary line. Two wildlife crossing locations are proposed in this segment: one near East Barrel Springs Road (east of Una Lake) and a second south of the Soledad Siphon (south of the California Aqueduct).
- E2A Segment 2 (0.64 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.
- E2A Segment 3 (0.48 mile long)—Constraints associated with the SR 14 freeway, Los Angeles Forest Highway, and Sierra Highway would impair the functionality of a new wildlife crossing at this location.

E2A Segment 2 and E2A Segment 3 would not benefit from wildlife crossings because they would be adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial. However, there is one potential wildlife crossing (at E2A Segment 1) that is feasible and would improve the permeability of the alignment. An existing drainage culvert would be modified to accommodate wildlife movement.

As discussed above, most impermeable segments across the Build Alternatives already meet the interval criteria to facilitate wildlife crossings or would encounter existing barriers that currently preclude wildlife crossing. The SR14A, E1, E1A, E2, and E2A Build Alternatives would install one wildlife crossing near the California Aqueduct. Another wildlife crossing is proposed east of Una Lake for the SR14A and E2A Build Alternatives. Figure 7-1 of the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) provides a preliminary schematic rendition for the wildlife crossing. Design will be based on standards recommended in the *Wildlife Crossing Structure Handbook Design and Evaluation in North America* (Federal Highway Administration 2011 [identical to Clevenger and Huijser 2009 and Meese et al. 2009]). In addition, the Authority recognizes and commits to implementing the following design recommendations:

- Undercrossings intended to be used by large mammals (i.e., mule deer) within the mule deer species range would have a 10-foot-tall concrete arch to accommodate the mammals’ larger stature.
- Any culvert intended to function as an undercrossing for carnivores and small animals would be no smaller than a 6-foot-wide arch culvert for lengths up to 200 feet, or an 8-foot-wide arch culvert for lengths up to 300 feet. The substrate would be natural soil of the surrounding area, and the grade would not exceed 2 percent. Culverts longer than 200 feet would not be considered wildlife crossing structures. If any portion of the bottom of the wildlife

undercrossing is likely to be inundated longer than 24 hours at least once per year, the structure would have a dry ledge. Ledges or tunnels and cover features to prevent predation will also be incorporated into the design to facilitate safe passage of small wildlife. The structure would be straight enough that a mammal entering the culvert can see the other end of the culvert.

- Slope within the crossing structure would be consistent with the natural (pre-construction) grade (optimally less than 2 percent). Slopes that follow natural grades greater than 2 percent are acceptable in bridged undercrossings (viaducts).
- Dual-use road crossings would have a physical separation or barrier, such as a wall, between the natural substrate crossing area and the road.
- The floor of large crossing structures (overpasses or underpasses) would be planted with native vegetation suited to the available daylight. Vegetation would be restored and monitored consistent with the RRP.
- Fencing or steep riprap would be used to guide or funnel wildlife toward the crossing entrance.
- If a stream passes through a bridged crossing structure, the passage would be wide enough (i.e., the bridge would be long enough) for the stream channel and stream banks to support riparian vegetation similar to the riparian vegetation in relatively intact areas upstream and downstream from the structure. In particular, the passage must be wide enough that any riprap needed to protect the bridge piers does not confine the stream to a narrow, scoured channel lacking riparian vegetation.
- In all crossing structures that might be used by desert tortoise, funnel fencing would follow USFWS specifications (Meese et al. 2009, pages 90–92, or updated USFWS guidance).
- In small crossing structures that do not have enough ambient light to support native plants, artificial cover (e.g., rocks, pipes) would be provided for reptiles and other small animals.

However, the Palmdale to Burbank Project Section would still affect wildlife movement corridors along permeable and impermeable sections of the alignment because construction of each of the six Build Alternatives would include activities that would affect the ability of wildlife to move across construction areas freely and introduce a constraint to wildlife movement that did not previously exist.

CEQA Conclusion

Although implementation of the IAMFs listed above would minimize impacts, construction of each of the six Build Alternatives would interfere with established wildlife movement corridors. This represents a significant impact because construction of each of the six Build Alternatives would introduce a constraint to wildlife movement that did not previously exist, interfering with established wildlife corridors. Implementation of the mitigation measures discussed below would reduce direct and indirect impacts on wildlife corridors. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

- **BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan.** Implementation of the RRP will restore vegetation surrounding wildlife movement corridors to provide appropriate cover for wildlife species. As a result, impacts on wildlife movement corridors would be reduced.
- **BIO-MM#36: Install Aprons or Barriers within Security Fencing.** Although fencing would impede wildlife movement, it would prevent wildlife injury or death (i.e., vehicle and rail strikes) resulting from encroachment into the HSR operations zone. Fencing and berms would direct animals toward crossing structures where there would be no threat of injury or death from rail and vehicular strikes. As a result, impacts on wildlife that move through the area, such as mortality, injury, and harassment would be reduced.

- **BIO-MM#37: Minimize Effects on Wildlife Movement Corridors During Construction.** These measures will ensure that movement corridors are more accessible to wildlife species, including special-status wildlife, during construction activities and that adverse effects on wildlife movement would be minimized.
- **BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones.** The Project Biologist will use flagging to mark and establish exclusionary fencing to preclude access to ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The establishment of ESAs would reduce construction-related disturbance to movement corridors and would minimize the prevention of wildlife species from utilizing movement corridors in proximity to the construction footprint. As a result, impacts on wildlife movement corridors would be reduced.
- **BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds.** Implementation of construction site and vehicle traffic limits will minimize encroachment of construction activities into wildlife movement corridors. It would also minimize wildlife species' aversion to utilizing movement corridors in proximity to the construction footprint. Therefore, impacts on wildlife movement corridors would be reduced.
- **BIO-MM#64: Establish Wildlife Crossings.** Implementation of wildlife crossings along impermeable portions of the alignment will ensure that movement along wildlife movement corridors is not constrained. Therefore, impacts on wildlife movement corridors would be reduced.
- **BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing.** The security fencing established in these measures would direct wildlife species, including special-status wildlife, to movement corridors where wildlife would not become entrapped or harmed within the right-of-way. Therefore, wildlife would be redirected to safer movement corridors where there would be no threat of injury or death from rail and vehicular strikes.
- **BIO-MM#78: Install Wildlife Jump-outs.** These measures will ensure that wildlife species, including special-status wildlife, do not become entrapped or harmed within the right-of-way, which would facilitate their access to movement corridors. As a result, impacts on wildlife movement corridors would be reduced.
- **BIO-MM#83: Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement.** These measures would promote wildlife species, including special-status wildlife, in utilizing implemented movement corridors and prevent impacts on wildlife movement. Thus, impacts on wildlife movement corridors would be reduced.

Collectively, the above mitigation measures would provide avoidance and minimization of the impact such that it would no longer result in substantial adverse effects on wildlife movement corridors. As a result, this impact would be less than significant for all six Build Alternatives.

Operations Impacts

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

Special-Status Species Habitat

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 operations and maintenance activities that would occur adjacent to special-status species habitat would be limited to activities within the fenced right-of-way. In accordance with BIO-IAMF#4, the Authority will require WEAP training for personnel prior to operations and maintenance activities. WEAP training materials will include the following information:

- Key provisions of FESA, CESA, BGEPA, MBTA, Porter-Cologne Act, and CWA and the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations

- Identification and characteristics of special-status species and explanations about their ecological value
- Hazardous substance spill prevention and containment measures
- An overview of provisions of the BRMP, annual vegetation management plan, WCP, and security fencing and wildlife exclusion fencing maintenance plans pertinent to operations and maintenance activities

Herbicides and Pesticides

Indirect habitat effects would occur due to the introduction of invasive plant species. Operations and maintenance would require vegetation and pest control using a variety of methods, including application of herbicides and pesticides. If operations and maintenance require weed abatement activities, such as the use of herbicides, these activities would also contribute to chemical runoff and pollution of adjacent suitable habitats. Herbicides and pesticides would be applied by certified pesticide applicators in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners.

Hydrology

Any change in local hydrology would change habitat conditions for riparian-dependent special-status species. Indirect effects would result from grading and stockpiling soils upslope of drainages during operations, leading to sediment transfer into the water column. As discussed in Section 3.8, Hydrology and Water Resources, direct water quality impacts related to erosion and sedimentation would be unlikely during project operation because exposed soils would be protected with BMPs implemented during the construction period.

Trash and chemicals accumulated within the Build Alternative footprint could be mobilized by storm events into adjacent surface waters. As discussed in Section 3.8, Hydrology and Water Resources, HYD-IAMF#1 will require on-site stormwater management facilities to capture runoff from pollutant-generating surfaces, including station areas, access roads, new road overpasses and underpasses, reconstructed interchanges, and new or relocated roads and highways. Potentially contaminated runoff from project-related surfaces would be captured and treated within these stormwater management facilities prior to discharge. Because pollutants would be generated in small quantities, and because BMPs would be implemented to minimize the discharge of these pollutants to receiving waters, the potential for introducing new sources of polluted runoff would be minor throughout the lifetime of the project.

Hazardous Materials

Spills of fuel, transmission fluid, lubricating oil, motor oil, and other potentially hazardous materials could contaminate biological and aquatic habitat. Section 3.10, Hazardous Materials and Wastes discusses the generation, use, transport, and disposal of hazardous materials and waste during operations. State and federal regulations summarized in Section 3.10 (including RCRA, the Hazardous Materials Transportation Act, the Hazardous Materials Uniform Safety Act, and the Hazardous Waste Control Act) regulate the proper use, transportation, storage, and disposal of hazardous materials. HMW-IAMF#9 will implement an Environmental Management System to annually inventory hazardous substances to evaluate for replacement with nonhazardous materials. HMW-IAMF#10 will implement hazardous materials monitoring plans to ensure safe handling of hazardous materials during operation.

Artificial Light Exposure

Potential wildlife exposure to ALAN has the potential to deter wildlife from habitat in proximity to the Build Alternative alignment and affect movement corridors largely because a preponderance of wildlife movement occurs at night (Beier 2006; FHWA 2011). Wildlife would generally be affected by ALAN in non-urban areas, where operational light sources include passing trains. Nighttime lighting is not expected to affect wildlife movement in urban or developed settings (such as near Antelope Valley and San Fernando Valley) where train and facility lighting would not significantly increase baseline light levels. Conversely, nighttime lighting impacts from trains are

expected to be greatest where the rail is at-grade and where there are low existing levels of ALAN. Intermittent sources of operations lighting would at times be directed toward wildlife habitat; however, operations lighting from train headlights would mostly be directed ahead and within the fenced area along the alignment, where wildlife movement would be precluded. Exposures would be brief but could potentially last for periods of minutes in the case of operations lighting from maintenance activities and up to 10 seconds in the case of operational train lighting. Exposure to intermittent light has been found to potentially affect melatonin metabolism and to elicit avoidance responses. Although no literature addresses intermittent light effects on mountain lion, or any large mammals, there is a potential for adverse behavioral and physiological effects on terrestrial wildlife resulting from intermittent light exposure from operations sources. The Authority has incorporated BIO-IAMF#12 into the project design to avoid and minimize impacts from operational lighting sources by several methods, including using appropriate shielding to reduce horizontal or skyward illumination and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen). Additionally, BIO-IAMF#12 specifies that no lighting be installed under viaduct and bridge structures in riparian habitat areas.

Noise and Vibration

As discussed in Section 3.4, Noise and Vibration, operation of the Build Alternatives would result in noise and vibration. Because of the frequency and speed of trains, noise created by train operations has the potential to affect wildlife movement and use of habitat. Maintenance activities are expected to be dispersed over time and location and are not expected to be of an intensity or duration to result in substantial impacts on wildlife movement or habitat use.

Impacts of operational noise are considered permanent and direct, though intermittent. As outlined in *Palmdale to Burbank Project Section: Noise and Vibration Technical Report* (Authority 2019), noise generated by train operation falls into three distinct sound categories:

- Propulsion or machinery noise
- Mechanical noise resulting from wheel-rail interactions or guideway vibrations
- Aerodynamic noise resulting from airflow moving past the train

Noise levels from train operations are further based on source location, strength, frequency content, directivity, and speed. The following analysis considers noise impacts on mammals and on birds.

Wildlife responses to noise are species dependent and would depend on the timing, intensity, and frequency of the sound, as well as the species' tolerance to noise. Each animal's response to noise and thresholds are unique enough that noise standards cannot be established. The duration of the noise, the type of noise, and the level of existing ambient noise weigh differently upon what type of response to expect from individual species. In general, species' response to noise may result in behavioral changes (e.g., fleeing or hiding), interference with auditory cues (e.g., interference with mate attraction), or physiological responses (e.g., stress), each of which can result in broader impacts on movement, foraging efficiency, reproductive success, and survival (Francis and Barber 2013).

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 generally low. However, in places where the Build Alternative alignment would occur at-grade or on a viaduct, wildlife habitat and movement may be disrupted. When these species are in proximity of the 100 A-weighted decibels sound exposure level contour identified in Section 3.4, Noise and Vibration, they may be affected by noise and vibration generated by the at-grade portions of the Build Alternatives. Wildlife movement may also be affected in permeable segments of the Build Alternative alignment, such as viaducts and culverts, where special-status species would travel under the alignment.

The noise exposure limit of sound exposure level of 100 A-weighted decibels for wildlife 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 wildlife from approaching the alignment at a proximity of 40 to 50 feet. Where the Build Alternative alignments would occur

within urban areas or adjacent to highways, noise exposure would be masked by other noisy features of the landscape. This is called a masking effect, which is defined as reduced perception of one sound due to the persistence of on-going ambient sound. Operation of the Build Alternatives would be masked in urban areas in Antelope Valley and Lancaster Valley and major highways (SR 14), as these features produce noise of a magnitude comparable to that of the HSR line, and they produce that noise more continuously. Additionally, due to the intermittent nature of the train, a train would take approximately 2 seconds to pass any given point and it is expected that such short periods of time would not affect animal species' communications with the exception of special-status birds as discussed further below.

Operations-related vibration can affect wildlife movement by altering behavior, potentially interfering with access to food sources, exposing animals to predation, or disrupting normal movements. The intensity of vibration perceived by wildlife differs depending on the source, distance from the source, the substrate through which the vibration travels, and the animal's ability to perceive vibration. In addition, the potential for vibration to disturb wildlife movement is greater in locations where the rail alignment passes close to or through large patches of undeveloped lands where wildlife is more likely to be present and where background noise and vibration from traffic are minimal.

The main source of operations-related vibration would be train passage. This vibration would take place throughout the project extent whenever trains pass. For most areas along the project extent, vibration from train passage has a low potential to affect wildlife movement for one or more of the following reasons:

- The duration of vibration 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. At a maximum of 176 trains per day that amounts to a total exposure of about 9 minutes per day, or 0.6 percent of the time.
- Train passages would occur primarily during the day, while most activity by vulnerable wildlife receptors (discussed below) is nocturnal.

Special-Status Species Individuals

Ongoing operations and maintenance activities can directly or indirectly affect special-status species individuals, as described below. Train operations and maintenance activities that would occur adjacent to special-status species habitat would be limited to activities within the fenced right-of-way. The following IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on special-status species individuals:

- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training.
- BIO-IAMF#12: Design the Project to be Bird Safe.
- HMW-IAMF#9: Environmental Management System (refer to Section 3.10, Hazardous Materials and Wastes).
- HMW-IAMF#10: Hazardous Materials Plans (refer to Section 3.10, Hazardous Materials and Wastes).
- HYD-IAMF#1: Stormwater Management (refer to Section 3.8, Hydrology and Water Resources).

Plants—Effects on special-status plants could include mortality from incidental trampling or crushing caused by 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. Continual wind disturbance generated by moving trains would have direct effects on special-status plants in proximity to the trackway. Forceful wind would damage individual special-status plants growing adjacent to tracks, stunt new growth, and promote desiccation. Strong winds would also prevent settlement of seeds and thus impede replacement of plants within

areas adjacent to the tracks. However, as indicated in Appendix 3.4-B, Potential Impacts from Induced Winds for High Speed Trains, it is anticipated that an HSR train traveling at 220 miles per hour would generate a wind gust lasting less than 1 second at approximately 10 feet from the train tracks. The HSR right-of-way would include a buffer of at least 21 feet between the trains and the edge of the right-of-way, with the speed of air flow decreasing incrementally farther away from the moving train body. Therefore, special-status plants beyond the cleared right-of-way would experience minimal to no effects from induced winds.

Amphibians—Spills of fuel, transmission fluid, lubricating oil, and motor oil could contaminate the water column, killing special-status amphibians or reducing their reproductive success. Noise, dust, and increased vibration would also directly affect amphibian species. Indirect effects on amphibians would include changes in the local landscape from introduction of invasive plant species that would reduce the suitability of upland habitats. Although amphibians in habitat adjacent to the alignment would be subject to noise, operation of the Build Alternatives would not cause a substantial adverse effect as amphibians would be excluded from areas which exceed 100 A-weighted decibels due to wildlife being excluded from accessing the fenced right-of-way. Amphibians are highly sensitive to vibration, using ground vibration for communication, especially in the process of mate selection; thus, vibration generated by project operations at the time of amphibian breeding has the potential to affect the success of amphibian breeding activities and thereby to affect their population status. However, vibration produced by the Build Alternatives would be of short duration and would occur primarily during the day when most vibration-sensitive amphibian species are inactive.

Birds—Moving trains could kill or injure birds through bird strikes or interactions with fencing and electrical systems. Noise, vibration, and visual stimuli from regular train operations would reduce the suitability of bird habitat and nesting habitat adjacent to the Palmdale to Burbank Project Section. In accordance with BIO-IAMF#12, the Authority will ensure that the catenary system, masts, and other structures such as fencing are designed to be bird- and raptor-safe. The design features stipulated in BIO-IAMF#12 will be incorporated into project design and would avoid the potential for special-status (including fully protected species) bird injury or mortality (from train strikes or interactions with fencing and electrical systems) during operation. As described in BIO-IAMF #12, design features will include:

- Ensuring sufficient spacing or covering of phase conductors to prevent bird electrocution
- Configuring lines to reduce vertical spread of lines and/or decreasing the span length if such options are feasible
- Marking lines to increase the visibility of lines and reduce the potential for collision
- Installing perch deterrents to discourage bird presence near project facilities
- Installing fencing or other type of flight diverter on all viaduct structures to encourage birds and raptors to fly over the HSR and avoid flying directly in the path of oncoming trains

As indicated in Appendix 3.4-B, Potential Impacts from Induced Winds for High Speed Trains, wind speed is not likely to be excessive at the edge of the right-of-way and is predicted to be less than 5 miles per hour (mph) at a distance of 30 feet from a train going 220 mph. Areas inside the fenced right-of-way would be subject to higher wind speeds (up to 22 mph), but these areas would no longer be suitable habitat due to construction of facilities and birds are not likely to be present. As such, wind speeds from operation of the Build Alternatives are unlikely to affect special-status birds.

Maintenance effects (e.g., mowing and weed control) during operations would remove or disturb areas that provide potential nesting habitat for a diverse population of birds. Operations and maintenance activities conducted in areas of nesting habitat during the breeding season (generally between February 1 and September 1) would disturb nesting birds, which could cause nest abandonment and subsequent loss of eggs or developing young at active nests in or near the area of activity.

Indirect effects would result from operations that disrupt nesting birds, potentially leading to nest failure or abandonment. Indirect effects would include avoidance behavior by some species in response to increased noise, lighting, and startle and motion disturbances during HSR operations and maintenance. Light generated from operations activities, including sources such as HSR facilities with security lighting and train headlights, would produce light that could result in altered movement or foraging patterns for bird species. For example, hunting owls may perch on OCS structures and become disoriented by the headlight of the approaching train, resulting in train strike (Santos et al. 2017). Longcore and Rich (2004) note that birds may become “trapped” by a cone of light, unwilling to exit into darkness. This behavior may elevate train strike risk for birds lit by the headlight of an approaching train.

ALAN has also been observed to cause altered melatonin metabolism in a wide variety of species, including birds; such changes can affect circadian rhythms, reproductive timing, and many other aspects of physiology and behavior (Gaston and Holt 2018). Although these effects would be minimized with implementation of BIO-IAMF#12, substantial exposure may occur for birds if they forage on insects attracted to ALAN sources. Although improved access to this food source (flying insects) would be beneficial to certain birds, it could confer a competitive benefit on those animals relative to other birds that actively avoid ALAN sources. Overall, headlight effects are brief and limited to areas where the train is at-grade or on viaduct, and facility lighting effects are localized; thus, these ALAN sources are not expected to result in a substantial impact on birds, and moreover most bird species are diurnal and would not be exposed to ALAN.

With respect to noise, because all areas inside the fenced right-of-way would no longer be suitable habitat due to construction of facilities, this analysis focuses on noise impacts on special-status birds beyond the fence line. The effect of operational noise on birds depends on the interaction of existing noise conditions relative to the published thresholds for noise impacts. At the noise levels that would be generated outside the fence line, masking is the primary impact on birds. Masking occurs when new noise sources make bird calls inaudible due to the greater volume of the new sound. Dooling and Popper identify the conservative threshold of 60 A-weighted decibels for masking effects (Dooling and Popper 2007). This threshold must be considered relative to existing conditions, such as existing ambient noise sources. For example, on the Burbank to Los Angeles Project Section, the USFWS noted that for least Bell’s vireo that are habituated to existing conditions of 63-73 A-weighted decibels of ambient noise, an increase due to train operations, of 67-77 A-weighted decibels is not likely to adversely affect the species (USFWS 2021). Because the area of operational impact has some ambient noise but is generally not subject to high levels of ambient noise, the conservative threshold of 65 A-weighted decibels is used for this analysis.

Table 3.7-30 summarizes the acreage of modeled habitat for FESA-listed special-status bird species that would be subject to noise in excess of 65 A-weighted decibel (this excludes areas within the fenced right-of-way that would already be replaced with facilities and areas where noise levels generated by existing transportation facilities already exceed 65 dBA). Where habitat for other special-status bird species overlaps with the noise impact areas identified, those species would be subject to noise impacts as well. Masking may disrupt bird calls and associated life cycle behaviors such as mating within the noise impact areas.

Table 3.7-30 Operational Noise Effects on Special-Status Bird Habitat

Species ¹	Refined SR14	SR14A	E1	E1A	E2	E2A
Coastal California gnatcatcher	271.6	181.7	0.0	0.0	3.3	3.3
Least Bell’s vireo	42.2	20.2	16.8	19.8	35.5	35.3

Species ¹	Refined SR14	SR14A	E1	E1A	E2	E2A
Southwestern willow flycatcher	42.2	20.2	16.8	19.8	20.1	19.8

Source: Authority, 2022

¹ Three special-status bird species were identified as having suitable habitat within the noise exposure limit of sound exposure level of 100 A-weighted decibels. The acreage of effects identified in Table 3.7-30 excludes areas permanently affected by facilities associated with the Build Alternatives and areas where noise levels generated by existing transportation facilities exceed 65 dBA.

Fish—Direct effects during operations could include exposure to contaminants or pollutants from accidental spills, and increased sedimentation from erosion. Depending on drainage BMPs, operations-related maintenance and other activities could cause scour and changes to local hydrologic profiles, in turn causing changes in habitat productivity and mortality to individuals. Spills of fuel, transmission fluid, lubricating oil, and motor oil could also contaminate water, killing special-status fish or reducing their reproductive success. Indirect effects on fish include changes in the local landscape from introduction of invasive plant species; and grading and stockpiling soils upslope of drainages during operations, which would cause sediment to transfer into the water column.

Invertebrates—Direct effects on special-status invertebrates would include mortality from incidental trampling or crushing caused by increased human activity related to the maintenance of equipment and facilities associated with the Palmdale to Burbank Project Section and exposure to accidental spills, including herbicides or pesticides. Removal of host plants that become established in the right-of-way over the duration of operations would reduce the long-term habitat of special-status invertebrates by inhibiting recruitment of host plants.

Direct effects on vernal pool fairy shrimp during operations would include exposure to contaminants or pollutants from accidental spills, and increased sedimentation from erosion resulting from vegetation clearing. Depending on drainage BMPs, operations-related maintenance and other activities would cause changes to local hydrologic profiles, resulting in changes in inundation periods, which would affect habitat suitability for fairy shrimp.

Mammals—Project operation would cause noise, vibration, and visual stimuli that has the potential to displace mammal species. These effects would result in shifts in foraging patterns, territories, or dispersal movements; increased predation; decreased reproductive success; and reduced population viability. Some free-ranging mammals may avoid operations areas and be funneled along the HSR corridor until locating a wildlife crossing. Rodent control programs could directly poison special-status small mammals or predators such as badgers that consume poisoned rodents. Injury or mortality would result from bat strikes or interactions with trains and electrical systems. The same effects from ALAN described above for bird species would apply to bat species; light generated from operations activities could result in altered movement or foraging patterns for bat species. BIO-IAMF#12 would avoid and minimize impacts from operational lighting sources. Further, effects from ALAN would be limited to areas where the train is at-grade or on viaduct and would be brief and localized in nature.

Noise resulting from operation of the Build Alternatives has the potential to disrupt wildlife movement and impact habitat use for small species. Mammalian wildlife use sound mainly to forage, to evade predators, and for communication. Mammalian wildlife responses to noise depend on the timing, intensity, and frequency of the sound, as well as the species' tolerance to noise. The Build Alternatives would not create noise at magnitudes that could cause traumatic effects such as temporary or permanent loss of hearing. Exposure to noise may result in behavioral changes (e.g., fleeing or hiding), interference with auditory cues (e.g., interference with mate attraction), or physiological responses (e.g., stress or impaired bioenergetics), each of which can result in broader impacts on movement, foraging efficiency, reproductive success, and survival (Francis and Barber 2013). Among wildlife, hearing is very important for mammals. Hearing enables predators to be effective in situations where vision has limited usefulness, such as dense vegetation or darkness. Some animals such as mountain lions likely locate each other

with auditory (as well as olfactory) signals (Center for Biological Diversity 2019). The primary impact of noise on mammalian wildlife, then, is the masking of acoustic information. Masking effects are only present for the duration of the noise exposure. If the noise is brief, normal behaviors return immediately upon cessation of the noise. Further, species such as Mountain lions are sensitive to human noise sources, and train noise could deter them from crossing the rail alignment or from foraging in the vicinity of the alignment. These effects are moderated by the extensive tunnel portions of the alignment and the presence of an extended quiet period between the hours of midnight and 6 a.m., which is the period when mountain lions are most active, when the alignment would experience only infrequent maintenance traffic. Train noise would not have a substantial adverse effect on special-status mammals.

Mammalian wildlife sensitive to vibration, such as burrowing rodents, may be affected by vibration produced where the Build Alternative alignment occurs at grade. While some larger mammals can detect seismic waves (vibrations) over long distances, using them to communicate, larger mammals (such as mountain lion and San Joaquin kit fox) occurring in the project area are not known to use vibration to communicate or otherwise facilitate their normal behavior. Considering the limited area affected by vibration and the highly mobile nature of these species, impacts from vibration are not likely to be substantial.

Reptiles—Impacts associated with Build Alternative operations and maintenance activities would include incidental trampling or crushing and exposure to accidental spills including contaminants or pollutants. Noise, dust, and increased vibration would also affect reptile species in the RSA. Although reptiles using habitat adjacent to the alignment would be subject to noise, it would not cause a substantial adverse effect. Reptiles are highly sensitive to vibration and may be deterred from habitat in proximity to where the Build Alternative alignments occur at grade and would produce intermittent vibration. However, vibration produced by the Build Alternatives would be of short duration and would occur primarily during the day when most vibration-sensitive reptile species are inactive.

CEQA Conclusion

Implementation of BIO-IAMF#4, HYD-IAMF#1, HMW-IAMF#9, HMW-IAMF#10, and BIO-IAMF#12 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 habitat and sensitive natural communities would still be affected by operation of the six Build Alternatives. With implementation of the mitigation measures discussed below, all six Build Alternatives would result in less than significant impacts on special-status species and special-status communities. The full text of the mitigation measures listed below is provided in Section 3.7.7, Mitigation Measures.

The mitigation measures listed below would mitigate impacts through restoration, enhancement, and/or preservation methods during operations and maintenance activities. The Authority would use these avoidance and minimization measures to protect the species discussed in this section.

- **BIO-MM#36:** Install Aprons or Barriers within Security Fencing. The features outlined in this mitigation measure, which are intended to enhance permanent security fencing, would also reduce the potential for project operation to displace species as a result of noise, vibration, wind, and visual stimuli. By precluding access to the HSR right-of-way, wildlife would be less exposed to these types of stimuli. This mitigation measure would prevent injury or mortality resulting from special-status species entering the HSR right-of-way. Therefore, operational impacts on special-status species individuals would be reduced.
- **BIO-MM#53:** Prepare a CMP for Species and Species Habitat. The Authority will prepare a CMP that sets out the compensatory mitigation that will be provided to offset permanent and temporary impacts on federal and state-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq. of the Fish and Game Code, and certain other special-status species.

- BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan. This mitigation measure would minimize risks associated with invasive weeds within the permanent Build Alternative footprint. By managing invasive weeds, this measure would reduce the potential for changes in the local landscape from introduction of invasive plant species, which would indirectly affect amphibian and fish species. This would ensure adverse effects on special-status species individuals and habitat from fire risk and invasive weeds are minimized, and, as a result, operational impacts on special-status individuals and habitat would be reduced.
- BIO-MM#55: Prepare and Implement a Weed Control Plan. This mitigation measure would minimize risks associated with invasive weeds. This will ensure adverse effects on special-status species individuals and habitat from invasive weeds are minimized, and, as a result, operational impacts on special-status individuals and habitat would be reduced.
- BIO-MM#73: Implement Removal of Carrion that may Attract Condors and Eagles. During operation and within California condor foraging areas, automated security monitoring and track inspections will be used to detect fence failures and any presence of a carcass (carrion) within the right-of-way that could be an attractant to condors and eagles. Dead and injured wildlife found in the right-of-way will be removed when the trains are not in operation. This would minimize injury and any disturbance that would otherwise occur to condors and eagles should they enter the right-of-way due to the presence of carrion. Therefore, death and injury to fully protected condors and eagles during operations would be avoided.
- BIO-MM#76: Implement Wildlife Rescue Measures. This measure would minimize risk of injury and death as a result of project operation, and thus operations impacts on special-status wildlife species individuals would be reduced.
- BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback. This measure will ensure the availability of site-specific information regarding restrictions on the introduction and handling of concrete and other contaminants, debris, and vegetation disposal to the Santa Clara River wetted channel during operations activities, as well as worker training on the repercussions to unarmored three-spine stickleback resulting from contaminants and debris; thus, death and injury to individuals of this fully protected fish species would be avoided.
- BIO-MM#86: Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions. Weather-related and seasonal work restrictions will ensure all maintenance work, contaminant spills, and debris, all of which have the potential to adversely impact special-status individuals and habitat, will completely avoid the Santa Clara River wetted channel. Therefore, operational impacts to special-status individuals and habitat in the Santa Clara River wetted channel would be reduced.
- BIO-MM#88: Implement Construction or Maintenance Activity Debris Prevention Measures. These measures would prevent the inadvertent discharge of equipment, chemicals, or debris into the Santa Clara River during maintenance activities, and as a result, operational impacts to special-status species and individuals in the Santa Clara River would be reduced.
- BIO-MM#92: Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River. These measures will ensure any dewatering during maintenance activities will not involve direct removal of surface water from, or discharge to, the Santa Clara River wetted channel, nor create a risk of fish stranding, which would otherwise adversely impact special-status fish individuals in the Santa Clara River. Thus, operational impacts to special-status fish species individuals in the Santa Clara River wetted channel would be reduced.
- BIO-MM#98: Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement. These measures would address the permanent intermittent impact of operations on aerial wildlife movement from train strike and entrapment by implementing an array of deterrent and diversion features for avian species.

- BIO-MM#100: Implement Lighting Minimization Measures for Operations. These measures would minimize the intensity and duration of operational lighting of permanent facilities as well as intermittent train lighting in order to avoid potential effects associated with ALAN.
- BIO-MM#101: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat. To address the permanent, intermittent impact of noise on suitable special-status bird habitat, the Authority will build sound barriers to minimize or avoid such impacts 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. 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.

Collectively, implementation of mitigation measures would provide avoidance and minimization for the impact such that it would no longer be a substantial adverse effect on special-status species and associated habitat. As a result, this impact would be less than significant for all six Build Alternatives.

Impact BIO#15: Indirect Effects on Federal and State Protected Aquatic Resources from Project Operation.

Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative operations and maintenance activities could indirectly affect aquatic resources adjacent to the right-of-way. These effects on state and federally protected aquatic resources would include a potential increase in erosion and sediment transport into adjacent aquatic areas and contaminant spills or leaks. As discussed in Section 3.8, Hydrology and Water Resources, direct water quality impacts related to erosion and sedimentation would be unlikely during project operation because exposed soils would be protected with BMPs implemented during the construction period. In addition, the following IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on aquatic resources during operations:

- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training.
- HMW-IAMF#9: Environmental Management System (refer to Section 3.10, Hazardous Materials and Wastes).
- HMW-IAMF#10: Hazardous Materials Plans (refer to Section 3.10, Hazardous Materials and Wastes).
- HYD-IAMF#1: Stormwater Management (refer to Section 3.8, Hydrology and Water Resources).

CEQA Conclusion

With implementation of BIO-IAMF#4, HYD-IAMF#1, HMW-IAMF#9, HMW-IAMF#10, and BIO-IAMF#12, project operation would not substantially degrade water quality (refer to Section 3.8, Hydrology and Water Resources for further discussion of operational impacts on water quality). Also, adverse impacts on aquatic resources from potential contaminant spills and leaks as a result of operations and maintenance activities would be minimized. Therefore, project operation for all six Build Alternatives would result in less than significant impacts on state and federal wetlands and CEQA does not require any mitigation.

Impact BIO#16: Indirect Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. from Project Operation.

Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternative operations and maintenance activities could indirectly affect fish and wildlife resources adjacent to the right-of-way. Impacts on lakes, streams, and riparian resources would affect physical and biological features upon which fish and wildlife species rely. These effects on CDFW protected resources would include a potential increase in erosion and sediment transport into adjacent lakes, streams, and riparian habitat and contaminant spills or leaks. As discussed in Section 3.8, Hydrology and Water Resources, direct water quality impacts related to erosion and sedimentation would be unlikely during project operation because exposed soils would be protected with BMPs implemented during the construction period. In addition, the following IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts on aquatic resources during operation:

- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training.
- HMW-IAMF#9: Environmental Management System (refer to Section 3.10, Hazardous Materials and Wastes).
- HMW-IAMF#10: Hazardous Materials Plans (refer to Section 3.10, Hazardous Materials and Wastes).
- HYD-IAMF#1: Stormwater Management (refer to Section 3.8, Hydrology and Water Resources).

CEQA Conclusion

With implementation of BIO-IAMF#4, HYD-IAMF#1, HMW-IAMF#9, HMW-IAMF#10, and BIO-IAMF#12, project operation would not substantially degrade water quality (refer to Section 3.8, Hydrology and Water Resources for further discussion of operational impacts on water quality). Also, adverse impacts on riparian habitat and aquatic resources regulated under Section 1600 et seq. from potential contaminant spills and leaks as a result of operations and maintenance activities would be minimized. Therefore, project operation of all six Build Alternatives would result in less than significant impacts on CDFW-regulated areas, and CEQA does not require any mitigation.

Impact BIO#17: Project Operation Effects on Designated Critical Habitat.

Both the Refined SR14 and SR14A Build Alternative alignments would traverse 0.26 mile of designated critical habitat for the arroyo toad, and the E2 and E2A Build Alternative alignments would traverse 0.26 and 0.24 mile of designated critical habitat for the Santa Ana sucker and Southwestern willow flycatcher, respectively (Table 3.7-9). Areas of designated critical habitat outside, but adjacent to, the permanent impact area could be adversely affected by operations and maintenance activities. Impacts on designated critical habitat resulting from operations and maintenance of the Refined SR14, SR14A, E2, and E2A Build Alternatives have the potential to affect physical or biological features essential to the conservation of the arroyo toad, Santa Ana sucker, and southwestern willow flycatcher. These physical or biological features, which are described below, have the potential to be damaged, distributed, or contaminated by ongoing operations and maintenance activities, such as routine inspection and maintenance of the HSR right-of-way and train noise. The E1 and E1A Build Alternative alignments would not traverse or indirectly affect designated critical habitat.

For arroyo toad, physical and biological features that contribute to the functionality of designated critical habitat include aquatic features that have specific landcover types and specific National Wetlands Inventory features. The upper portion of the Santa Clara River in the core habitat RSA within Soledad Canyon contains physical and biological features that are essential to the conservation and support of a breeding population of arroyo toads. Supporting physical and biological features include breeding pools in low-gradient stream segments with sandy substrates, seasonal flood flows, and riparian habitat and upland benches for foraging and dispersal.

Physical and biological features in Big Tujunga Wash are essential to the conservation of Santa Ana sucker and southwestern willow flycatcher. For the Santa Ana sucker, areas where the in-stream aquatic habitat is covered by riparian vegetation, which can provide thermal refuge and in-stream habitat structure, make up the physical and biological features essential to the biotic viability of designated habitat. Changes in local hydrology and grading or stockpiling of soils upslope of drainages during operations would lead to sediment transfer into the water column, which has the potential to affect riparian vegetation that serve as an important biological feature for Santa Ana sucker critical habitat. For the southwestern willow flycatcher, physical and biological attributes such as floodplain size, vegetation density, and the proportion of dense vegetation and variability in vegetation density determine the functionality of an area to serve as designated critical habitat for the Southwestern willow flycatcher.

Effects from operations and maintenance activities could adversely affect designated critical habitat adjacent to the Build Alternative footprint caused by 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. BIO-IAMF#4, BIO-IAMF#12, HMW-IAMF#9, HMW-IAMF#10, and HYD-IAMF#1 (discussed in Impact BIO#15 and BIO#16) would reduce impacts related to operations and maintenance activities, water quality degradation, and accidental hazardous material spills.

Maintenance may require vegetation and pest control using a variety of methods, including application of herbicides and pesticides. If operations and maintenance require weed abatement activities, such as the use of herbicides, these activities would also contribute to chemical runoff and pollution of adjacent designated critical habitat. Herbicides and pesticides would be applied by certified pesticide applicators in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners.

Noise

As discussed in Section 3.4, Noise and Vibration and Impact BIO#14 above, operation of the Refined SR14, SR14A, E2, and E2A Build Alternatives would expose adjacent habitat, including designated critical habitat, to noise. Noise created by train operations has the potential to affect use of designated critical habitat, including in the case of southwestern willow flycatcher, nesting habitat.

The majority of the Build Alternative alignment in the ANF including the SGMNM would occur underground in a tunnel. As such, the potential for designated critical habitat to be affected by operational noise is limited to small areas along the Palmdale to Burbank Project Section. However, in places where the Build Alternative alignment would occur at-grade or on a viaduct, wildlife species may be affected by noise. As described in Section 3.4, Noise and Vibration, the FRA Noise and Vibration Manual identifies a sound exposure limit of 100 A-weighted decibels as an effective criterion for determining impacts to wildlife, including birds, from noise generated by train pass-bys. Based on FRA screening distances and a maximum train speed of 220 mph, the sound exposure level of 100 A-weighted decibels for wildlife would be limited to locations within 40 to 50 feet of the aboveground alignment centerline, which is typically within the fenced right-of-way and reflects the area permanently affected by the Build Alternatives. For areas further than 50 feet from the aboveground alignment centerline, the sound exposure limit would be attenuated to lower levels. For Southwestern willow flycatcher, it is assumed that a lower level of noise (65 A-weighted decibels and higher) has the potential to disrupt breeding, foraging, and sheltering behavior. Southwestern willow flycatchers have the potential to be exposed to this lower noise threshold in a very limited area of critical habitat near Big Tujunga Wash, where the E2 and E2A Build Alternative alignments would occur on a viaduct. However, operational noise would not adversely modify the physical or biological features that qualify as critical habitat for southwestern willow flycatcher, including floodplain size, vegetation density, and the proportion of dense vegetation and variability in vegetation density. Further, the overall acreage that would be affected is small relative to the available critical habitat for southwestern willow flycatcher.

CEQA Conclusion

The E1 and E1A Build Alternative would have no impact on designated critical habitat. For the Refined SR14, SR14A, E2, and E2A Build Alternatives, maintenance activities and train operations would have potential impacts on designated critical habitat. With implementation of BIO-IAMF#4, BIO-IAMF#12, HMW-IAMF#9, HMW-IAMF#10, and HYD-IAMF#1, adverse impacts from potential spills of contaminants and pollutants as well as human activity during maintenance of HSR equipment and facilities would be minimized. The effect of train operations, including noise, would not have a substantial adverse effect on critical habitat because operational noise would not modify the physical or biological features that qualify as critical habitat, and because the overall acreage that would be affected is small relative to the available critical habitat. Therefore, there would not be a substantial adverse effect to critical habitat and project operations for the Refined SR14, SR14A, E2 and E2A Build Alternatives would result in less than significant impacts on designated critical habitat and CEQA does not require any mitigation.

Impact BIO#18: Indirect Effects on Significant Ecological Areas from Project Operation.

As discussed in Impact BIO-#11, all six of the Build Alternative alignments would have impacts in the San Andreas, Santa Clara River, and Tujunga Valley/Hansen Dam SEAs (Figure 3.7-31). Refer to Section 3.7.4.8 for a discussion of SEAs impacted by the Palmdale to Burbank Project Section. Impacts on SEAs resulting from operations and maintenance of each of the six Build Alternatives have the potential to indirectly affect or degrade physical or biological features essential to the biotic viability and functionality of the SEAs.

Degradation of physical or biological features caused by 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, would directly affect SEAs. BIO-IAMF#4, BIO-IAMF#12, HMW-IAMF#9, HMW-IAMF#10, and HYD-IAMF#1 (discussed in Impact BIO#15 and BIO#16) have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts related to operations and maintenance activities, water quality degradation, and accidental hazardous material spills.

Operations and maintenance would require vegetation and pest control using a variety of methods, including application of herbicides and pesticides. These activities have the potential to affect the biotic viability of SEAs. However, herbicides and pesticides would be applied by certified pesticide applicators in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners.

CEQA Conclusion

With implementation of BIO-IAMF#4, BIO-IAMF#12, HMW-IAMF#9, HMW-IAMF#10, and HYD-IAMF#1, adverse impacts from potential spills of contaminants and pollutants as well as human activity during maintenance of HSR equipment and facilities would be minimized. Therefore, all six Build Alternatives would result in less than significant impacts on SEAs, and there would not be a substantial adverse effect on special-status species. Therefore, CEQA does not require any mitigation.

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

Operation of each of the six Build Alternatives would affect trees protected under county and local plans and ordinances, including the Los Angeles County General Plan, the Antelope Valley Area Plan, and the Los Angeles County Code. Policies stipulated under these local plans and ordinances pertain either to the compensation of direct and indirect impacts on protected trees or to promoting their preservation.

Effects from operation of each of the six Build Alternative would include frequent noise, light, vibration, and induced wind from moving trains that would occur on a daily basis. Effects associated with the proposed station would include high levels of vehicle and foot traffic. Continual wind disturbance generated by moving trains has the potential to create direct effects on any trees up to 10 feet from the tracks. Trees growing adjacent to tracks and stations could be

damaged by forceful wind, which would also stunt growth and promote desiccation. However, trees within 10 feet of the tracks would be removed during the construction phase.

Project operations would create permanent changes in hydrology and topography, indirectly affecting protected trees and potentially affecting the soil environment surrounding tree roots. Soil compaction from heavy foot and vehicle traffic at the proposed station or in maintenance access areas would inhibit trees' oxygen and nutrient intake in the root zone. These changes would also alter the level of necessary symbionts in the soil (i.e., mycorrhizae for oaks), or cause fungal infections, root rot, and lack of proper drainage. These factors would ultimately result in the death of trees.

The egress and ingress of maintenance machinery and personnel and passage of trains would also spread or inadvertently introduce pathogens, such as sudden oak death, that would be harmful or devastating to protected trees. These activities would also promote the introduction of invasive and noxious weeds, such as tamarisk and gum, which would compete with, and ultimately kill, protected trees.

Permanent effects of project operations on wildlife species would also indirectly inhibit the health or survival of trees within specific communities that require wildlife to facilitate aeration or soil composition. Permanent effects on plant species, either common or special-status, would indirectly affect trees if those species provide nitrogen, soil aeration, root protection, and moisture retention.

Implementation of BIO-IAMF#4, HMW-IAMF#9, HMW-IAMF#10, and HYD-IAMF#1 (discussed in Impact BIO#15 and BIO#16) will ensure that operations and maintenance personnel are trained in preventing hazardous substance spill and that any chemical and other hazardous materials are disposed of safely. The above IAMFs have been incorporated into the Palmdale to Burbank Project Section design to reduce impacts related to operation and maintenance activities, water quality degradation, and accidental hazardous material spills.

CEQA Conclusion

BIO-IAMF#4 will require WEAP training for personnel prior to operation and maintenance activities. However, operation of each of the six Build Alternatives would result in significant impacts on protected trees and conflict with local policies or ordinances protecting biological resources, such as tree preservation policies or ordinances outlined in the Los Angeles County General Plan, the Antelope Valley Area Plan, and the Los Angeles County Code (refer to 3.7.2, Laws, Regulations, and Orders, for further discussion of tree preservation policies and ordinances). This represents a significant impact. With implementation of BIO-MM#35, Implement Transplantation and Compensatory Mitigation Measures for Protected Trees, the project will minimize and compensate for operational impacts on protected trees and would ensure that project operation is consistent with local and regional policies requiring the compensation of impacts and promoting the preservation of protected trees. This impact would be less than significant for all six Build Alternatives.

3.7.7 Mitigation Measures

The mitigation measures outlined in this section avoid, minimize, or compensate for effects of the Palmdale to Burbank Project Section on biological and aquatic resources. Because the types of impacts would be similar among all Build Alternatives, the mitigation measures described below are applicable to all Build Alternatives in this project section. In addition, many of these mitigation measures have multiple benefits that avoid, minimize, or compensate for the impacts on various biological resources.

The Authority would be responsible for implementing mitigation measures. The Authority's contractor would generally be responsible for monitoring with Authority oversight. The Authority would be responsible for compensatory mitigation and long-term mitigation monitoring.

As the CEQA lead agency and project proponent, the Authority would implement the mitigation measures through its own actions, the actions of its contractors, and actions taken in cooperation with other agencies and entities. The Authority would oversee administration of the mitigation monitoring and reporting program and would bear primary responsibility for verifying that the mitigation measures are implemented.

The mitigation measures presented below were refined in some cases as a result of coordination with federal, state, and local agencies. Agencies involved in early coordination include USFWS, USACE, EPA, CDFW, and SWRCB. Coordination included consideration of the types, timing, and locations of mitigation measures, including possibilities for early implementation, as feasible.

BIO-MM#1: Conduct Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities

Prior to any ground disturbing activity, the Project Biologist will conduct presence/absence botanical field surveys for special-status plant species and special-status plant sensitive natural communities in all potentially suitable habitats within a work area. The surveys shall be consistent with *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018) and *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2001). The Project Biologist will flag and record in a geographic information system (GIS) the locations of any observed special-status plant species and special-status plant sensitive natural communities.

BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species

Prior to any ground disturbing activity, the Project Biologist will collect seeds and plant materials and stockpile and segregate the top four inches of topsoil from locations within the work area where species listed as threatened or endangered under FESA; threatened, endangered, or candidate for listing under CESA; state-designated "Rare" species; and California Rare Plant Rank 1B and 2 species were observed during surveys, for use on off-site locations. Suitable sites to receive salvaged material include Authority mitigation sites, refuges, reserves, federal or state lands, and public/private mitigation banks.

If relocation or propagation is required by authorizations issued under FESA and/or CESA, the Project Biologist will prepare a plant species salvage plan to address monitoring, salvage, relocation, and/or seed banking of federal or state-listed plant species.

The plan will include provisions that address the techniques, locations, and procedures required for the collection, storage, and relocation of seed or plant material, and collection, stockpiling, and redistribution of topsoil and associated seed. The plan will also include requirements related to outcomes such as percent absolute cover of highly invasive species, as defined by the California Invasive Plant Council (less than documented baseline conditions); maintenance; monitoring; implementation; and annual reporting. The plan will reflect conditions required under regulatory authorizations issued for federal or state-listed species. The Project Biologist will submit the plan to the Authority for review and approval.

BIO-MM#3: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species

Prior to any ground disturbing activities, the Project Biologist will conduct an aquatic habitat assessment and survey for vernal pool wildlife species in seasonal wetlands and vernal pools that occur within both the work area and the area extending 250 feet from the outer boundary of the work area where access is available, consistent with USFWS vernal pool survey protocols. The Project Biologist will visit these areas after the first rain event of the season to determine whether seasonal wetlands and vernal pools have been inundated. A seasonal wetland/vernal pool will be considered to be inundated when it holds greater than 3 centimeters of standing water 24 hours after a rain event. Approximately two weeks after the pools have been determined to be inundated, the Project Biologist will conduct surveys in appropriate seasonal wetland and vernal pool habitats. The Project Biologist will submit a report to the Authority within 30 days of completing the work.

BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction

To the extent feasible, ground disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands during the rainy season (October 15 to April 15). In the event ground disturbing activities are to occur within the buffer area during the rainy season, such activities should, to the extent feasible, be undertaken when the aquatic features are not inundated.

BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas

To the extent feasible, impacts on vernal pools in work areas outside of the permanent right-of-way will be avoided. The Project Biologist will install and maintain exclusionary fencing to prevent impacts on vernal pools from construction activities. When avoidance of impacts on vernal pools is not feasible, the construction activity will be scheduled to occur in the dry season where feasible. Prior to the initiation of a ground disturbing activity occurring during the dry season, the Project Biologist will collect a representative sampling of soils from the affected vernal pools to obtain viable plant seeds and vernal pool branchiopod cysts. After collecting soil, the Project Biologist may also put rinsed gravel in the vernal pools and cover with geotextile fabric to minimize damage to the soils and protect the pools' contours, as provided by regulatory authorizations issued under FESA.

The soils containing seeds and cysts may later be returned to the affected pool after work has been completed or incorporated into other vernal pools, as provided by regulatory authorizations issued under FESA.

BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan

Prior to any ground disturbing activity, the Project Biologist will prepare an RRP to address temporary impacts resulting from ground disturbing activities within areas that potentially support special-status species, wetlands and any other aquatic resources. Restoration activities may include, but not be limited to, grading landform contours to approximate pre-disturbance conditions, re-vegetating disturbed areas with native plant species, and using certified weed-free straw and mulch. The Authority will implement the RRP in all temporarily disturbed areas outside of the permanent right-of-way that potentially support special-status species, wetlands and/or other aquatic resources.

Consistent with section 1415 of the Fixing America's Surface Transportation Act (FAST Act) restoration activities will provide habitat for native pollinators through plantings of native forbs and grasses. The Project Biologist will obtain a locally sourced native seed mix. The restoration success criteria will include limits on invasive species, as defined by the California Invasive Plant Council, to an increase no greater than 10 percent compared to the pre-disturbance condition, or to a level determined through a comparison with an appropriate reference site consisting of similar natural communities and management regimes. The RRP will outline, at a minimum:

1. Procedures for documenting pre-construction conditions for restoration purposes.
2. Sources of plant materials and methods of propagation.
3. Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas.
4. Specification of success criteria for re-established vegetation communities.
5. Specification of the remedial measures to be taken if success criteria are not met.
6. Methods and requirements for monitoring restoration/replacement efforts, which may involve a combination of qualitative and/or quantitative data gathering.
7. Maintenance, monitoring, and reporting schedules, including an annual report due to the Authority by January 31 of the following year.

The RRP will be submitted to the Authority and regulatory agencies, as defined in the conditions of regulatory authorizations, for review and approval.

BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species

Prior to any ground disturbing activities, the Project Biologist will conduct pre-construction surveys in suitable habitat to determine the presence or absence of special-status reptiles and

amphibian species within the work area. Surveys will be conducted no more than 30 days before the start of ground disturbing activities in a work area. The results of the pre-construction survey will be used to guide the placement of ESAs or conduct species relocation.

BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species

The Project Biologist will monitor all initial ground disturbing activities that occur within suitable habitat for special-status reptiles and amphibians and will conduct clearance surveys of suitable habitat in the work area on a daily basis. If a special-status reptile or amphibian is observed, the Project Biologist will identify actions, to the extent feasible, sufficient to avoid impacts on the species and to allow it to leave the area of its own volition. Such actions may include establishing a temporary ESA in the area where a special-status reptile or amphibian has been observed and delineating a 50-foot no-work buffer around the ESA. In circumstances where a no-work buffer is not feasible, the Project Biologist will relocate any of the species observed from the work area. For federal or state-listed species, relocations will be undertaken in accordance with regulatory authorizations issued under FESA and/or CESA.

BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds

Prior to any ground disturbing activity, including vegetation removal, scheduled to occur during the bird breeding season (February 1 to September 1), the Project Biologist will conduct visual pre-construction surveys within the work area for nesting birds and active nests (nests with eggs or young) of non-raptor species listed under the MBTA and/or the Fish and Game Code.

In the event that active bird nests are observed during the pre-construction survey, the Project Biologist will delineate no-work buffers. No-work buffers will be set at a distance of 75 feet unless a larger buffer is required pursuant to regulatory authorizations issued under FESA and/or CESA. No-work buffers will be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival, or the Project Biologist determines that the nest has been abandoned. In circumstances where it is not feasible to maintain the standard no-work buffer, the no-work buffer may be reduced, provided that the Project Biologist monitors the active nest during the construction activity to ensure that the nesting birds do not become agitated. Additional measures that may be used when no-work buffers are reduced include visual screens and noise barriers.

BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors

If construction or other vegetation removal activities are scheduled to occur during the breeding season for raptors (January 1 to September 1), no more than 14 days before the start of the activities, the Project Biologist will conduct pre-construction surveys for nesting raptors in areas where suitable habitat is present. Specifically, such surveys will be conducted in habitat areas within the construction footprint and, where access is available, within 500 feet of the boundary of the construction footprint. If breeding raptors with active nests are found, the Project Biologist will delineate a 500-foot buffer (or as modified by regulatory authorizations for species listed under FESA and/or CESA) around the nest, to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or until such time as the Project Biologist determines that the nest has been abandoned. Nest buffers may be adjusted if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on nesting raptors.

BIO-MM#16: Implement Avoidance Measures for California Condor

During any construction activities within the range of the California condor, as delineated in the USFWS database, the Authority will implement the following avoidance measures:

- The Project Biologist will be present for construction activities occurring within 2 miles of known California condor roosting sites.
- If USFWS informs the Authority or if the Authority is otherwise made aware that California condors are roosting within 0.5 mile of a work area, no construction activity will occur during the period between one hour before sunset and one hour after sunrise.

- All construction materials located within work areas, including items that could pose a risk of entanglement, such as ropes and cables, will be properly stored and secured when not in use.
- Littering of trash and food waste is prohibited. All litter, small artificial items (screws, washers, nuts, bolts, etc.), and food waste will be collected and disposed of from work areas on at least a daily basis.
- All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations. These materials will be kept in segregated, secured and/or secondary containment facilities, as necessary. Any spills of liquid substances that could harm condors will be immediately addressed.
- The use of ethylene glycol-based anti-freeze or other ethylene glycol-based liquid substances will be avoided. All parked vehicles/equipment will be kept free of leaks, particularly anti-freeze.
- Polychemical lines will not be used or stored on-site, to preclude condors from obtaining and ingesting pieces of polychemical lines.
- If California condors land in any work area, the Project Biologist will assess construction activities occurring at the time and determine whether those activities present a potential hazard to the individual California condor. Activities determined by the Project Biologist to present a potential hazard to the California condor will be stopped until the bird has abandoned the area. Methods approved by USFWS for hazing California condors to encourage abandonment of the construction site, *Guidance on Hazing California Condors* (September 2014), may be used, as necessary.
- The Project Biologist will coordinate with USFWS prior to construction-related uses of helicopters to establish that no California condors are present in the area. If California condors are observed in the area in which helicopters will operate, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area.

BIO-MM#17: Conduct Surveys for Swainson’s Hawk Nests

Surveys must be performed no more than one year prior to the commencement of construction activities. The Project Biologist will conduct surveys for Swainson’s hawk during the nesting season (March through August) within both the work area and a 0.5-mile buffer surrounding the work area, provided access to such areas is available. No sooner than 30 days prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys of nests identified during the earlier surveys to determine whether any are occupied. The initial nesting season surveys and subsequent pre-construction nest surveys will follow the protocols set out in the *Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley* (Swainson’s Hawk Technical Advisory Committee [SHTAC] 2000).

BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson’s Hawk Nests

Any active Swainson’s hawk nests (defined as a nest used one or more times in the past five years) found within 0.5-mile of the boundary of the work area during the nesting season (February 1 to September 1) will be monitored daily by the Project Biologist to assess whether the nest is occupied. If the nest is occupied, the Project Biologist will establish no-work buffers following CDFW’s *Staff Report Regarding Mitigation for Impacts to Swainson’s Hawks (Buteo swainsoni) in the Central Valley of California* (CDFW 1994), and the status of the nest will be monitored until the young fledge or for the length of construction activities, whichever occurs first. Adjustments to the buffer(s) may be made in consultation with CDFW. Swainson’s hawk nest trees will be avoided unless determined to be infeasible. Removal of such trees should occur only during the timeframe of October 1 and the last day in February. If an unoccupied Swainson’s hawk nest tree is to be removed, a 2081 incidental take permit under CESA will be obtained, and impacts will be minimized and fully mitigated. The mitigation may include replacement habitat management lands within the Antelope Valley Swainson’s hawk breeding range.

BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls

Prior to any ground disturbing activity, the Project Biologist will conduct protocol-level surveys for burrowing owls within suitable habitat located in the work area and any extending 500 feet from the boundary of the work area, where access is available. Surveys will be conducted in accordance with guidelines in the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl

Occupied burrowing owl burrows that will be directly affected by ground disturbing activities will be relocated in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). To the extent feasible, the Project Biologist will establish 600-foot no-work buffers around occupied burrowing owl burrows in the work area both during the nesting season (February 1 through September 1) and outside breeding season. If the no-work buffer is not feasible and occupied burrows will be relocated during the nesting season, relocation will occur either before the birds have begun egg-laying and incubation or after the Project Biologist has determined that the juveniles from the occupied burrows are foraging independently and are capable of independent survival.

BIO-MM#25: Conduct Pre-construction Surveys for Bat Species

No more than one year before the replacement or modification of any bridges or removal of other structures modeled as bat habitat and where access is available, the Project Biologist will conduct a survey of the bridge looking for evidence of roosting bats. If bat sign is detected, biologists will conduct an evening visual emergence survey of the bridge or structure, from a half hour before sunset to 1–2 hours after sunset for a minimum of two nights within the season that construction will be taking place. If a potentially active bat roost is in the bridge or structure, passive monitoring with full-spectrum bat detectors will be used to assist in determining species present. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and will prepare a report that will be submitted to the Authority, including an assessment of the significance of the roost for local bat populations.

BIO-MM#26: Implement Bat Avoidance and Relocation Measures

If active hibernacula or maternity roosts are identified in the work area or 500 feet extending from the work area during pre-construction surveys, they will be avoided to the extent feasible. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. The Project Biologist will implement the relocation plan before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. Removal of roosts will be guided by accepted exclusion and deterrent techniques.

BIO-MM#27: Implement Bat Exclusion and Deterrence Measures

If nonbreeding or non-hibernating individuals or groups of bats are found roosting within the work area, the Project Biologist will facilitate the eviction of the bats by either opening the roosting area to change the lighting and airflow conditions or installing one-way doors or other appropriate methods.

To the extent feasible, the Authority will leave the roost undisturbed by project activities for a minimum of one week after implementing exclusion and/or eviction activities. Steps will not be taken to evict bats from active maternity or hibernacula; instead, such features may be relocated pursuant to a relocation plan.

BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures

Prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys for ringtail and ringtail den sites within suitable habitat located within the work area. These surveys will be conducted no more than 30 days before the start of ground disturbing activities in

a work area. The Project Biologist will establish 100-foot no-work buffers around occupied maternity dens throughout the pup-rearing season (May 1 through June 15) and a 50-foot no-work buffer around occupied dens during other times of the year.

BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures

Prior to any ground disturbing activity, the Project Biologist will conduct pre-construction surveys for American Badger den sites within suitable habitat located within the work area. These surveys will be conducted no less than 14 days and no more than 30 days prior to the start of ground disturbing activities in a work area. The Project Biologist will establish a 100-foot no-work buffer around occupied maternity dens throughout the pup-rearing season (February 15 through July 1) and a 50-foot no-work buffer around occupied dens during other times of the year. If non-maternity dens are found and cannot be avoided during construction activities, they will be monitored for badger activity. If the Project Biologist determines that dens may be occupied, passive den exclusion measures will be implemented for three to five days to discourage the use of these dens prior to project disturbance activities.

BIO-MM#32: Restore Temporary Riparian Habitat Impacts

Within 90 days of completing construction in a work area, the Project Biologist will direct the revegetation of any riparian areas temporarily disturbed as a result of the construction activities, using appropriate native plants and seed mixes. Native plants and seed mixes will be obtained from stock originating from areas within the local watershed, to the extent feasible. The Project Biologist will monitor restoration activities consistent with provisions in the RRP (BIO-MM#6).

BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts

Within ninety days of the completion of construction activities in a work area, the Authority will begin to restore aquatic resources that were temporarily affected by the construction. Aquatic resources are those resources considered WOTUS under the CWA or waters of the state under the Porter-Cologne Act. As set out in the RRP, such areas will, to the extent feasible, be restored to their natural topography. In areas where gravel or geotextile fabrics have been installed to protect substrate and to otherwise minimize impacts, the material will be removed, and the affected features will be restored. The Authority will revegetate affected aquatic resources using appropriate native plants and seed mixes (from local vendors where available). The Authority will conduct maintenance monitoring consistent with the provisions of the RRP.

BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters

The Project Biologist will monitor construction activities that occur within or adjacent to aquatic resources, including activities associated with the installation of protective barriers (e.g., silt fencing, sandbags, fencing), installation and/or removal of creek material to accommodate crossings, construction of access roads, and removal of vegetation. As part of this effort, the Project Biologist will document compliance with applicable avoidance and minimization measures including measures set forth in regulatory authorizations issued under CWA and/or Porter-Cologne Act.

BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees

Prior to ground disturbing activities, the Project Biologist will conduct surveys in the work area to identify protected trees.

The Project Biologist will establish ESAs around protected trees that have the potential to be affected by construction activities but do not require removal. The ESAs will extend outward 5 feet from the drip lines of such protected trees.

The Authority will provide compensatory mitigation for impacts on protected trees, including impacts associated with removing or trimming a protected tree. Compensation will be based on requirements set out in applicable local government ordinances, policies, and regulations. Compensatory mitigation may include, but is not limited to, the following:

- Transplantation of protected trees to areas outside of the work area.
- Replacement of protected trees at an off-site location, based on the number of protected trees impacted, at a ratio not to exceed 3:1 for native trees or 1:1 for ornamental trees, unless higher ratios are required by local government ordinances or regulations.
- Contribution to a tree-planting fund.

BIO-MM#36: Install Aprons or Barriers within Security Fencing

Prior to final construction design the Project Biologist will review the fencing plans along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the permanent security fencing will be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below-ground and 12 inches aboveground to prevent special-status reptiles, amphibians, and mammals from moving through or underneath the fencing and gaining access to areas within the ROW. At the 12-inch depth of the below-grade portion of the apron, the barrier will extend or be bent at an approximately 90-degree angle and oriented outward from the ROW a minimum of 12 inches to prevent fossorial mammals, reptiles, and amphibians from digging or tunneling below the security fence and gaining access to the right-of-way. A climber barrier (e.g., rigid curved or bent overhang) will be installed at the top of the apron to prevent reptiles, amphibians, and mammals from climbing over the apron.

The Project Biologist will ensure that the selected apron material and climber barrier do not cause harm, injury, or entanglement to, or entrapment of, wildlife species. The Authority will provide for quarterly inspection and repair of the fencing.

The specific design and method for installation of an apron or barrier may vary as required by regulatory authorizations issued under FESA and/or CESA. Prior to operation the Project Biologist will field inspect the fencing along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the fencing has been appropriately installed. Fencing plan review and field inspection will be documented in a memorandum from the Project Biologist and provided to the Authority.

BIO-MM#37: Minimize Effects on Wildlife Movement Corridors During Construction

To the extent feasible, the Authority will avoid placing fencing, either temporarily or permanently, within known wildlife movement corridors in those portions of the alignment where the tracks are elevated (e.g., viaducts or bridges). During ground disturbing activities, the Authority will keep wildlife crossing structures, land above tunnels, and other potential wildlife movement areas as free as practicable of equipment, storage materials, construction materials, and other potential impediments. Before ground disturbing activities, the contractor will submit a construction avoidance and minimization plan for potential wildlife movement areas to the Project Biologist for concurrence. For the purposes of this section, “potential wildlife movement areas” include all lands dominated by native vegetation that are outside the final Build Alternative footprint.

The Authority will avoid conducting ground disturbing activities in wildlife movement corridors during nighttime hours, to the extent feasible, and will shield nighttime lighting to avoid illuminating wildlife movement corridors in circumstances where avoidance of such activities is not feasible.

BIO-MM#38: Compensate for Impacts on Listed Plant Species

The Authority will provide compensatory mitigation for direct impacts on federal and state-listed plant species based on the number of acres of plant habitat directly affected. Such mitigation will include the following measures:

- Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts on federally listed plant species habitat unless a higher ratio is required pursuant to regulatory authorizations issued under FESA.

- Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts on state-listed plant species habitat unless a higher ratio is required pursuant to regulatory authorizations issued under CESA.
- Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat

The Authority will provide compensatory mitigation for direct and indirect impacts, including both temporary and permanent impacts, on vernal pool branchiopod habitat at a 1:1 ratio unless a higher ratio is required by the FESA.

Compensatory mitigation will be provided using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat

To compensate for permanent impacts on active Swainson's hawk nest trees (i.e., trees in which Swainson's hawks were observed building nests during protocol-level surveys) and foraging habitat, the Authority will provide project-specific compensatory mitigation that replaces affected nest trees and provides foraging habitat. Lands proposed as compensatory mitigation for Swainson's hawk would meet the following minimum criteria:

- Support at least three mature native riparian trees suitable for Swainson's hawk nesting (i.e., valley oak, Fremont cottonwood, or willow) for each Swainson's hawk nest tree removed by construction of the Palmdale to Burbank Project Section.
- Support at least one Swainson's hawk nesting territory during the past five years.
- Contribute to the Palmdale to Burbank Project Section's mitigation commitment for Swainson's hawk foraging habitat, which will be calculated based on the following ratios:
 - 1:1 for impacts on active primary foraging habitat
 - 0.75:1 for impacts on active secondary foraging habitat
 - 0.5:1 for impacts on active tertiary foraging habitat

BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat

To compensate for permanent impacts on nesting, occupied, and satellite burrows for burrowing owls and/or their habitat, the Authority will provide compensatory mitigation at a ratio of 2:1 using one or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.

BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat

The Authority will compensate for permanent impacts on riparian habitats at a ratio of 2:1 unless a higher ratio is required by agencies with regulatory jurisdiction over the resource.

Compensatory mitigation may occur through habitat restoration, the acquisition of credits from an approved mitigation bank, or participation in an in-lieu fee program.

BIO-MM#47: Prepare and Implement a CMP for Impacts on Aquatic Resources

The Authority will prepare and implement a CMP that identifies mitigation to address temporary and permanent loss, including functions and values, of aquatic resources as defined as WOTUS under the CWA and/or waters of the state under the Porter-Cologne Act. The compensatory mitigation will meet state and federal policies on no net loss of functions and values of wetlands. Compensatory mitigation may involve the restoration, establishment, enhancement, and/or preservation of aquatic resources through one or more of the following methods:

- Purchase of credits from an agency-approved mitigation bank.
- Preservation of aquatic resources through acquisition of property.
- Establishment, restoration, or enhancement of aquatic resources.
- In-lieu fee contribution determined through consultation with the applicable regulatory agencies.

The following ratios will be used for compensatory mitigation unless a higher ratio is required pursuant to regulatory authorizations issued under Section 404 of the CWA and/or the Porter-Cologne Act:

- Vernal pools: 2:1
- Seasonal wetlands: between 1.1:1 and 1.5:1 based on impact type, function and values lost
- 1:1 off-site for permanent impacts
- 1:1 on-site and 0.1:1 to 0.5:1 off-site for temporary impacts

For mitigation involving establishment, restoration, enhancement, or preservation of aquatic resources by the Authority, the CMP will contain the following information:

- Objectives—A description of the resource types and amounts that will be provided, the type of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed or ecoregion.
- Site selection—A description of the factors considered during the long-term sustainability of the resource.
- Adaptive management plan—A management strategy to address changes in site conditions or other components of the compensatory mitigation project.
- Financial assurances—A description of financial assurances that will be provided to ensure that the compensatory mitigation will be successful.

In circumstances where the Authority intends to fulfill compensatory mitigation obligations by securing credits from approved mitigation banks or in-lieu fee programs, the CMP need only include the name of the specific mitigation bank or in-lieu fee program to be used and the method for calculating credits.

BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites

Prior to ground disturbing activities associated with habitat restoration, enhancement, and/or creation actions at a mitigation site, the Authority will conduct a site assessment of the work area to identify biological and aquatic resources, including vegetation communities, landcover types, and the distribution of special-status plants and wildlife.

Based on the results of the site assessment, the Authority will obtain any necessary regulatory authorizations prior to conducting habitat restoration, enhancement, and/or creation activities, including authorization under FESA or CESA, Fish and Game Code Section 1600 et seq., the CWA, and the Porter-Cologne Act.

The Authority will implement the following measures to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities:

- BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
- 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
- BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds
- BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors
- BIO-MM#32: Restore Temporary Riparian Habitat Impacts
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts
- BIO-MM#55: Prepare and Implement a Weed Control Plan
- BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds
- BIO-MM#63: Work Stoppage

BIO-MM#52: Conduct Blainville's Horned Lizards, San Joaquin Coachwhip, and Silvery Legless Lizards Monitoring, and Implement Avoidance and Minimization Measures

Prior to ground disturbing activities, the Project Biologist will conduct a clearance survey in suitable habitat within the work area for Blainville's horned lizards, San Joaquin coachwhip, and silvery legless lizards. The Project Biologist may establish wildlife exclusion fencing to keep the species from entering the work area. If Blainville's horned lizard, San Joaquin coachwhip, or silvery legless lizard is observed during construction, measures will be taken to avoid the individual(s), and the species will be allowed to leave of its own volition or be relocated outside of the work area by the Project Biologist. Clearance surveys will be conducted daily unless the Project Biologist determines that the surveys are no longer necessary.

BIO-MM#53: Prepare a CMP for Species and Species Habitat

The Authority will prepare a CMP that sets out the compensatory mitigation that will be provided to offset permanent and temporary impacts on federal and state-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq. of the Fish and Game Code, and certain other special-status species. The CMP will include the following:

- A description of the species and habitat types for which compensatory mitigation is being provided
- A description of the methods used to identify and evaluate mitigation options; mitigation options will include one or more of the following:
 - Purchase of mitigation credits from an agency-approved mitigation bank
 - Protection of habitat through acquisition of fee-title or conservation easement and funding for long-term management of the habitat
 - Title to lands acquired in fee-title will be transferred to CDFW, and conservation easements will be held by an entity approved in writing by the applicable regulatory agency. In circumstances where the Authority protects habitat through a conservation easement, the terms of the conservation easement will be subject to approval of the applicable regulatory agencies, and the conservation easement will identify applicable regulatory agencies as third-party beneficiaries with a right of access to the easement areas
 - Payment to an existing in-lieu fee program
- A summary of the estimated direct permanent and temporary impacts on species and species habitat

- A description of the process that will be used to confirm impacts. Actual impacts on species and habitat could differ from estimates. Should this occur, adjustments will be made to the compensatory mitigation that will be provided. Adjustments to impact estimates and compensatory mitigation will occur in any of the following circumstances:
 - Impacts on species (typically measured as habitat loss) are reduced or increased as a result of changes in project design
 - Pre-construction site assessments indicate that habitat features are absent (e.g., because of errors in land cover mapping or land cover conversion)
 - The habitat is determined to be unoccupied based on negative species surveys
 - Impacts initially categorized as permanent qualify as temporary impacts
- An overview of the strategy for mitigating effects on species. The overview will include the ratios to be applied to determine mitigation levels and the resulting mitigation totals
- A description of habitat restoration or enhancement projects, if any, that will contribute to compensatory mitigation commitments
- A description of the success criteria that will be used to evaluate the performance of habitat restoration or enhancement projects, and a description of the types of monitoring that will be used to verify that such criteria have been met
- A description of the management actions that will be used to maintain the habitat on the mitigation sites, and the funding mechanisms for long-term management
- A description of adaptive management approaches, if applicable, that will be used in the management of species habitat
- A description of financial assurances that will be provided to demonstrate that the funding to implement mitigation is assured

BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan

Prior to the operation and maintenance of the HSR, the Authority will prepare an annual vegetation control plan to address vegetation removal for the purpose of maintaining clear areas around facilities, reducing the risk of fire, and controlling invasive weeds during the operational phase. The Authority will generally follow the procedures established in Chapter C2 of the *Caltrans Maintenance Manual* to manage vegetation on Authority property (California Department of Transportation [Caltrans] 2010). Vegetation will be controlled by chemical, thermal, biological, cultural, mechanical, structural, and manual methods. The vegetation control plan will be updated each winter and completed in time to be implemented no later than April 1 of each year. The annual update to the vegetation control plan will include a section addressing issues encountered during the prior year and changes to be incorporated into the vegetation control plan. The plan will describe site-specific vegetation control methods, as outlined below:

- Chemical vegetation control methods
- Mowing program consistent with section 1415 of the FAST Act
- Other non-chemical vegetation control
- Other chemical pest control methods (e.g., insects, snail, rodent)

Only Caltrans-approved herbicides may be used in the vegetation control program. Pesticide application will be conducted in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners by certified pesticide applicators. Noxious/invasive weeds will be treated where requested by County Agricultural Commissioners. The Authority will cooperate in area-wide efforts to control of noxious/invasive weeds if such programs have been established by local agencies.

BIO-MM#55: Prepare and Implement a Weed Control Plan

Prior to any ground-disturbing activity during the construction phase, the Project Biologist will develop a WCP, subject to review and approval by the Authority. The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground disturbing activities during construction and operations and maintenance.

The WCP will include, at a minimum, the following:

- A requirement to delineate ESAs in the field prior to weed control activities.
- A schedule for weed surveys to be conducted in coordination with the BRMP.
- Success criteria for invasive weed control. The success criteria will be linked to the BRMP standards for on-site work during ground disturbing activities. In particular, the criteria will establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in the area temporarily affected by ground disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort will be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority will continue the monitoring and control efforts, and remedial actions will be identified and implemented until the success criteria are met.
- Provisions to ensure consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread and/or establishment of invasive species and reflects the same revegetation performance standards as the WCP.
- Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods.
- Time frames for weed control treatment for each plant species.
- Identification of fire prevention measures.

BIO-MM#56: Conduct Monitoring of Construction Activities

During any initial ground disturbing activity, the Project Biologist will be present in the work area to verify compliance with avoidance and minimization measures, to establish ESAs, and install wildlife exclusion fencing and construction exclusionary fencing.

BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones

Prior to any ground disturbing activity in a work area, the Project Biologist will use flagging to mark ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The Project Biologist will also direct the installation of wildlife exclusion fencing to prevent special-status wildlife species from entering work areas. The wildlife exclusion fencing will have exit doors to allow animals that may be inside an enclosed area to leave the area. The Project Biologist will also direct the installation of construction exclusionary fencing at the boundary of the work area, as appropriate, to avoid and minimize impacts on special-status species or aquatic resources outside of the work area during the construction period. The ESAs, wildlife exclusion fencing, and construction exclusionary fencing will be delineated by the Project Biologist based on the results of habitat mapping or modeling and any pre-construction surveys, and in coordination with the Authority. The ESA, wildlife exclusion fencing, and construction exclusionary fencing will be regularly inspected and maintained by the Project Biologist.

The ESA, wildlife exclusion fencing, and construction exclusionary fencing locations will be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and wildlife exclusion fencing will be explained at WEAP training and the locations of the ESA and wildlife exclusion fencing areas will be noted during worker tailgate sessions.

BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds

Prior to any ground disturbing activities, the Project Biologist will ensure that appropriate measures have been instituted to restrict project vehicle traffic within the construction footprint to established roads, construction areas, and other permissible areas. The Project Biologist will establish vehicle speed limits of no more than 15 miles per hour for unimproved access roads and for temporary and permanent construction areas within the construction footprint. The Project Biologist will also direct that access routes be flagged and marked and that measures be adopted to prevent off-road vehicle traffic.

BIO-MM#61: Establish and Implement a Compliance Reporting Program

The Project Biologist will prepare monthly and annual reports documenting compliance with all IAMFs, mitigation measures, and requirements set forth in regulatory agency authorizations. The Authority will review and approve all compliance reports prior to submittal to the regulatory agencies. Reports will be prepared in compliance with the content requirements outlined in the regulatory agency authorizations.

Pre-activity survey reports will be submitted within 15 days of completing the surveys and will include:

- Location(s) where pre-activity surveys were completed, including latitude and longitude, Assessor Parcel Number, and HSR parcel number.
- Written description of the surveyed area. A figure of each surveyed location will be provided that depicts the surveyed area and survey buffers over an aerial image.
- Date, time, and weather conditions observed at each location.
- Personnel who conducted the pre-activity surveys.
- Verification of the accuracy of the Authority’s habitat mapping at each location, provided in writing and on a figure.
- Observations made during the survey, including the type and locations (written and GIS) of any sensitive resources detected.
- Identification of relevant measures from the BRMP to be implemented as a result of the survey observations.

Daily Compliance Reports will be submitted to the Authority via Environmental Mitigation Management and Assessment²¹ within 24 hours of each monitoring day. Noncompliance events will be reported to the Authority the day of the occurrence. Daily Compliance Reports will include:

- Date, time, and weather conditions observed at each location where monitoring occurred
- Personnel who conducted compliance monitoring
- Project activities monitored, including construction equipment in use
- Compliance conditions implemented successfully
- Noncompliance events observed

Daily Compliance Reports will also be included in the Monthly Compliance Reports, which will be submitted to the Authority by the tenth of each month and will include:

- Summary of construction activities and locations during the reporting month, including any noncompliance events and their resolution, work stoppages, and take of threatened or endangered species.

²¹ Environmental Mitigation Management and Assessment is a web-based geospatially enabled application created to assist the Authority with environmental compliance. Key functions include: (1) maintaining CEQA documentation, approvals, and permits; (2) tracking compliance of environmental permits; (3) tracking mitigation efforts; and (4) tracking other environmental commitments prescribed by various regulatory agencies.

- Summary of anticipated project activities and work areas for the upcoming month.
- Tracking of impacts on suitable habitats for each threatened and endangered species identified in USFWS and CDFW authorizations, including:
 - An accounting of the number of acres of habitats for which the Authority provides compensatory mitigation that has been disturbed during the reporting month.
 - An accounting of the cumulative total number of acres of threatened and endangered species habitat that has been disturbed during the project period.
- Up-to-date GIS layers, associated metadata, and photo documentation used to track acreages disturbed.
- Copies of all pre-activity survey reports, daily compliance reports, and noncompliance/work stoppage reports for the reporting month.

Annual Reports will be submitted to the Authority by the January 20 and will include:

- Summary of all Monthly Compliance Reports for the reporting year.
- A general description of the status of the Palmdale to Burbank Project Section, including projected completion dates.
- All available information about project-related incidental take of threatened and endangered species.
- Information about other project impacts on the threatened and endangered species.
- A summary of findings from pre-construction surveys (e.g., number of times a threatened or endangered species or a den, burrow, or nest was encountered; location; whether avoidance was achieved; if not, what other measures were implemented).
- Written description of disturbances to threatened and endangered species habitat within work areas, both for the preceding 12 months and in total since issuance of regulatory authorizations by USFWS and CDFW, and updated maps of all land disturbances and updated maps of identified habitat features suitable for threatened and endangered species within the RSA.

In addition to the compliance reporting requirements outlined above, the following items will be provided for compliance documentation purposes:

- If agency personnel visit the construction footprint in accordance with BIO-IAMF#2, the Project Biologist will prepare a memorandum within one day of the visit that memorializes the issues raised during the field meeting. This memorandum will be submitted to the Authority via Environmental Mitigation Management and Assessment.²² Any issues regarding regulatory compliance raised by agency personnel will be reported to the Authority and the contractor.
- Compliance reporting will be submitted to the Authority via Environmental Mitigation Management and Assessment in accordance with the report schedule. The Project Biologist will prepare and submit compliance reports that document the following:
 - Implementation and performance of the RRP described in BIO-MM#6
 - Summary of progress made regarding the implementation of the WCP described in BIO-MM#55

²² Environmental Mitigation Management and Assessment (EMMA) is a web-based geospatially enabled application created to assist the Authority with environmental compliance. Key functions include: (1) maintaining CEQA documentation, approvals, and permits, (2) tracking compliance of environmental permits, (3) tracking mitigation efforts, and (4) tracking other environmental commitments prescribed by various regulatory agencies.

- Compliance with work window restrictions described in BIO-IAMF#10
- Compliance with BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones and Install Wildlife Exclusion Fencing
- Compliance with BIO-IAMF#6: Establish Monofilament Restrictions
- Compliance with BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations
- Compliance with BIO-IAMF#8: Delineate Equipment Staging Areas
- Compliance with BIO-IAMF#10: Clean Construction Equipment
- Compliance with BIO-MM#60: Limit Vehicle Traffic and Construction Site Speed
- Compliance with BIO-IAMF#12: Design the Project to be Bird Safe
- Compliance with BIO-IAMF#9: Dispose of Construction Spoils and Waste
- BMP field manual implementation and any recommended changes to construction site housekeeping practices outlined in BIO-IAMF#11: Maintain Construction Sites
- Work stoppages and measures taken under BIO-MM#63: Work Stoppage will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within two business days of the work stoppage.

BIO-MM#62: Prepare Plan for Dewatering and Water Diversions

Prior to initiating any construction activity that occurs within open or flowing water, the Authority will prepare a dewatering plan, which will be subject to review and approval by the applicable regulatory agencies. The plan will incorporate measures to minimize turbidity and siltation. The Project Biologist will monitor the dewatering and/or water diversion sites, including collection of water quality data, as applicable. Prior to the dewatering or diverting of water from a site, the Project Biologist will conduct pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In the event that special-status species are detected during pre-activity surveys, the Project Biologist will relocate the species (unless the species is fully protected under state law), consistent with any regulatory authorizations applicable to the species.

BIO-MM#63: Work Stoppage

In the event that any special-status wildlife species is found in a work area, the Project Biologist will have the authority to halt work to prevent death or injury of the species. Any such work stoppage will be limited to the area necessary to protect the species. Work may be resumed once the Project Biologist determines that the individuals of the species have moved out of harm's way, or the Project Biologist has relocated them out of the work area (relocation not applicable to fully protected species).

Any such work stoppages and the measures taken to facilitate the removal of the species, if any, will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within two business days of the work stoppage.

BIO-MM#64: Establish Wildlife Crossings

The Authority will create dedicated wildlife crossings to accommodate wildlife movement across permanently fenced infrastructure (consistent with any wildlife corridor assessment prepared) where wildlife movement would be significantly reduced. Prior to final construction design the Project Biologist shall confirm appropriate placement and dimensions of wildlife crossings.

For terrestrial wildlife, crossings will conform to the minimum spacing and dimensions discussed in the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) unless different dimensions are specified in authorizations issued under FESA or CESA.

To the extent feasible, all wildlife crossings created specifically for terrestrial species will include the following features and design considerations:

- Native earthen bottom
- Ledges or tunnels incorporated into the design to facilitate safe passage of small mammals
- Unobstructed entrances (e.g., no riprap, energy dissipaters, grates) although vegetative cover, adjacent to and near the entrances of crossings, is permissible
- Openness and clear line of sight from end to end
- Year-round absence of water for a portion of the width of the crossing (i.e., no flowing water)
- Slight grade at approaches to prevent flooding
- Limited open space between crossing and cover/habitat
- Separation from human use areas (e.g., trails, multiuse undercrossings)
- Avoidance of artificial light at approaches to wildlife crossings

In addition, the Authority will incorporate features to accommodate wildlife movement into the design of bridges and culverts that are replaced or modified as part of project construction, wherever feasible. Project Biologist review of final construction design for consistency with placement and dimensions of wildlife crossings will be verified in a memorandum provided to the Authority.

BIO-MM#65: Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles

At least one year prior to the start of any ground disturbing activities and construction, the Project Biologists will conduct nesting season surveys for eagles. Surveys for bald and golden eagle nests will be conducted within four miles of any construction areas supporting suitable nesting habitat and important eagle roost sites and foraging areas. Surveys will be conducted in accordance with the USFWS *Interim Golden Eagle Inventory and Monitoring Protocols* (USFWS 2010), and CDFW's *Bald Eagle Breeding Survey Instructions* (CDFW 2010), or current guidance. A nesting territory or inventoried habitat will be considered unoccupied by golden eagles only after completing at least two full surveys in a single breeding season. Prior to initial construction activities, the Project Biologist will conduct a pre-construction sweep of the Palmdale to Burbank Project Section site for golden eagle use.

BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests

Prior to the start of any ground disturbing activity, if an occupied nest is detected within 4 miles of the work areas, the Authority will implement a 1-mile line-of-sight and 0.5-mile no line-of-sight no-work buffer during the breeding season (January 1 through August 31) to ensure that construction activities do not result in injury or disturbance to eagles.

The no-work buffer will be maintained throughout the breeding season or until the young have fledged and are no longer dependent upon the nest or parental care that includes nest use for survival.

Buffers around occupied nests may be reduced if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on nesting eagles. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography, nest height, locations of foraging territory, and baseline levels of noise and human activity. Buffers will be maintained, and nests will be monitored until the Project Biologist has determined that young have fledged and are no longer reliant upon the nest or parental care that includes nest use for survival.

Eagle nest exclusion zones may be removed if monitoring reveals the nest to be inactive as determined by the Project Biologist. An inactive eagle nest is one that is no longer being used by eagles, as determined by the continuing absence of any adult, egg, or dependent young at the

nest for at least 10 consecutive days prior to, and including, the present. Monitoring to demonstrate inactivity of eagle nests will follow observational procedures.

In bald and golden eagle nesting territories, the Project Biologist will examine debris piles and determine whether there is a potential to attract prey species. If the Project Biologist determines that debris piles may attract prey species and pose a danger to eagles, the debris piles will be removed or moved.

BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests

If pre-construction surveys identify active eagle nests in the permanent impact area, the Authority, in consultation with USFWS, will develop a nest relocation or replacement plan for the affected nest(s). The plan will describe why there is no practicable alternative to nest removal while enabling project construction. Any relocation or replacement of eagle nests will be in accordance with BGEPA and subject to the following minimum requirements:

- The nest will be relocated, or a suitable nest will be provided, within the same territory to provide a viable nesting option for the affected eagle pair.
- Post-construction monitoring to confirm continued nesting within the affected nesting territory will occur for a minimum of 3 years.

BIO-MM#68: Avoid Impacts on White-tailed Kite

If construction activities are scheduled to occur between February 1 and August 31, the Project Biologist will conduct surveys for white-tailed kite. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting white-tailed kites are detected, the Project Biologist will establish a 0.25-mile no-work buffer unless the Project Biologist determines that smaller buffers would be sufficient to avoid impacts. Buffers will be maintained until the Project Biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care that includes nest use for survival.

BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies

Prior to initiation of construction at any location within 300 feet of suitable nesting habitat, the Project Biologist with experience surveying for and observing tricolored blackbird will conduct pre-construction surveys to establish use of nesting habitat by tricolored blackbird colonies, where access allows, during the nesting season (March 15 through July 31).

If construction is initiated near suitable habitat during the nesting season, three surveys will be conducted within 15 days prior to construction, with one of the surveys within 5 days prior to the start of construction. If active tricolored blackbird nesting colonies are identified, construction activities will be avoided within 300 feet of the nesting colonies during the breeding season (March 15 through July 31) to the extent practicable and consistent with the CDFW's *Staff Guidance Regarding Avoidance of Impacts on Tricolored Blackbird Breeding Colonies on Agricultural Fields* (2015). This minimum buffer may be reduced in areas with dense forest, buildings, or other habitat features between the construction activities and the active nest colony, or where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance as determined by a Project Biologist experienced with tricolored blackbird. If tricolored blackbirds colonize habitat adjacent to construction after construction has been initiated, the Authority will reduce disturbance through establishment of buffers or sound curtains, as determined by the Project Biologist.

BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat

The Authority will provide compensatory mitigation to offset impacts on tricolored blackbird habitat. Compensatory mitigation will replace permanent loss of habitat with habitat that is commensurate with the type (nesting, roosting, and foraging) and amount of habitat lost. Suitable tricolored blackbird nesting habitat will be permanently protected or restored and managed at a ratio of 3:1 (protected or restored: affected) at a location subject to CDFW approval, and in close

proximity to the nearest breeding colony observed within the past 15 years, if possible. Suitable breeding season foraging habitat will be protected and managed at a ratio of 1:1 (protected: affected) at a location subject to CDFW approval. Suitable roosting habitat will be protected or restored at a ratio of 1:1 (protected: affected) if not occupied, and a ratio of 2:1 (protected: affected) if occupied by tricolored blackbirds. Compensatory mitigation will be provided using one or more of the methods described in the CMP.

BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use

Prior to construction-related uses of helicopters, the Project Biologist will coordinate with USFWS to establish that no California condors are present in the area. If California condors are observed in the area where helicopters will operate, including the helicopter's flight pattern from its origination, during construction use, and the return flight, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area.

BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor

Nighttime light disturbance will be minimized in and adjacent to suitable habitat where California condor may be present. In the event that nighttime lighting is required, it will be focused, shielded, and directed away from adjacent suitable habitat including nighttime roost areas. The Project Biologist will be on site during nighttime light use to determine whether the lighting poses a risk or otherwise disturbs or harms condors.

BIO-MM#73: Implement Removal of Carrion that may Attract Condors and Eagles

During operation and within California condor foraging areas, automated security monitoring and track inspections will be used to detect fence failures and any presence of carrion within the right-of-way that could be an attractant to condors and eagles. Dead and injured wildlife found in the right-of-way will be removed during construction and during operations when the train is not in operation.

BIO-MM#74: Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities

For construction activities involving the use of a helicopter, the buffer for nesting birds will be 200 feet horizontal and 150 feet vertical. Buffers will be measured from the location of the nest. If a nest is located on a tower or a tree, the vertical buffer begins from the nest location. For raptors that are not state or federal special-status raptors the default buffer is 300 feet.

BIO-MM#76: Implement Wildlife Rescue Measures

During construction, maintenance, and operation if an injured or trapped wildlife species, including but not limited to birds and raptors, is observed, the Project Biologist shall be notified immediately to determine whether it is appropriate to release or take the wildlife species to the nearest CDFW permitted rehabilitation center. The Project Biologist will follow all relevant guidelines for federal and state listed species. If an injured or trapped bird is incidentally observed during maintenance or construction, personnel will notify the Project Biologist immediately to determine whether it is appropriate to release or take the bird to the nearest CDFW permitted rehabilitation center.

BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing

Prior to final construction design the Project Biologist shall review the fencing plans to confirm that security fencing design will prevent access into the right-of-way and tracks by mountain lion. Security fencing height will be increased to a minimum of 10 feet in mountain lion-suitable habitat as identified in the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) and determined by the Project Biologist. If the fence is placed on a slope, the fence height will be adjusted (increased) to ensure that mountain lion and mule deer cannot jump from an upslope position over the fence; fence height on slopes will be determined by Project Biologist. During the fencing plan review the Project Biologist will evaluate the fence design for the purpose of avoiding harm, injury, entanglement, or entrapment of wildlife species. Prior to operation, the Project Biologist will field inspect the fencing along any portion where increased height was determined to be

necessary during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.

BIO-MM#78: Install Wildlife Jump-outs

Prior to final construction design the Project Biologist shall review the fencing plans for placement of wildlife jump-outs. In areas with documented ungulate or other large mammal movement, where terrain or project design (e.g., at-grade crossings) could allow these large animals to enter the ROW, features to reduce access (e.g., taller fencing or wildlife barriers at crossings) or features to allow large animals to escape from the fenced right-of-way (e.g., wildlife jump-outs or escape ramps) will be incorporated into the Palmdale to Burbank Project Section at these locations. Specific locations of these features will be based on the behavior of target species (e.g., mule deer, mountain lion, black bear), adjacent habitat and terrain, and other design constraints as determined by the Project Biologist and Project Engineer. Prior to operation, the Project Biologist will field inspect the fencing for appropriate placement of jump-outs as determined to be necessary during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.

BIO-MM#79: Conduct Surveys for Coastal California Gnatcatcher

To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment and that are located within 300 feet of suitable coastal California gnatcatcher habitat will take place between September 1 and February 14, outside of the nesting season. If construction activities do occur within 300 feet of suitable habitat during the nesting season (February 15–August 31), an agency-approved biologist will conduct protocol surveys to determine whether there are any active coastal California gnatcatcher nests within 300 feet of the Palmdale to Burbank Project Section. The surveys would be conducted in accordance with the daily timing and weather requirements of the *USFWS Coastal California Gnatcatcher (Poliophtila californica californica) Presence/Absence Survey Guideline*, February 1997. From March 15 through June 30, a minimum of six surveys shall be conducted at least one week apart. From July 1 through March 14, a minimum of nine surveys shall be conducted at least two weeks apart. The biologist will then conduct bi-monthly surveys (every two weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a coastal California gnatcatcher nests within 300 feet of construction activities, construction activities within 300 feet of the nest will be suspended until an agency-approved biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following consultation with USFWS should existing conditions warrant a reduced buffer.

BIO-MM#80: Conduct Surveys for Least Bell's Vireo

To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable least Bell's vireo habitat will occur between September 16 and March 14, outside of the nesting season. If construction activities do occur within 300 feet of suitable habitat during the nesting season (March 15–September 15), the Project Biologist will conduct protocol surveys to determine whether there are any active least Bell's vireo nests within 300 feet of the Palmdale to Burbank Project Section. The surveys will be conducted in accordance with the daily timing and weather requirements of the *USFWS Least Bell's Vireo Survey Guidelines*, January 2001. From April 10 through July 31, a minimum of eight surveys shall be conducted. The biologist will then conduct bi-monthly surveys (every two weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a least Bell's vireo nests within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest will occur until the Project Biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following consultation with USFWS, should existing conditions warrant a reduced buffer.

BIO-MM#81: Conduct Surveys for Southwestern Willow Flycatcher

To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable southwestern willow

flycatcher habitat will occur between September 16 and March 14, outside of the nesting season. If construction activities do occur within 300 feet of suitable habitat during the nesting season (March 15–September 15), the Project Biologist will conduct protocol surveys to determine whether there are any active southwestern willow flycatcher nests within 300 feet of the Palmdale to Burbank Project Section. The surveys will be conducted in accordance with the daily timing and weather requirements of U.S. Geological Survey's *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*, 2010: a minimum of one survey between May 15 and May 31, a minimum of one survey between June 1 and June 24, a minimum of one survey between June 24 and July 17, and additional follow-up surveys at sites where territorial southwestern willow flycatchers are verified or suspected. The biologist will then conduct bi-monthly surveys (every two weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a southwestern willow flycatcher nests within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest will occur until the Project Biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following consultation with USFWS, should existing conditions warrant a reduced buffer.

BIO-MM#82: Conduct Surveys for Western Yellow-billed Cuckoo

To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable western yellow-billed cuckoo habitat would occur between September 16 and May 14, outside of the nesting season. If construction activities do occur within 300 feet of suitable habitat during the nesting season (May 15–September 15), the Project Biologist would conduct protocol surveys to determine whether there are any active western yellow-billed cuckoo nests within 300 feet of the Palmdale to Burbank Project Section. The surveys would be conducted in accordance with the daily timing and weather requirements of *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo*, (USGS 2015): a minimum of one survey from June 15 to July 1 and from July 1 to July 31, and a minimum of two surveys from July 31 to August 15. A minimum of 12 days and a maximum of 15 days between surveys are required. The biologist would then conduct bi-monthly surveys (every two weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a western yellow-billed cuckoo nests within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest would occur until the Project Biologist determines that the nest is no longer active. A reduced buffer could be implemented following consultation with USFWS, should existing conditions warrant a reduced buffer.

BIO-MM#83: Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement

The Authority recognizes the following measures to minimize rail-kill and facilitate animal movement across rail lines:

- Fencing and berms will be used to direct animals toward crossing structures and should avoid blocking entrances to crossing structures. Fencing under viaducts or above tunnel areas should be avoided. Additional evaluation will be required if fencing is required that would restrict wildlife movement under viaducts, above tunnels, or at wildlife crossings to determine appropriate mitigation measures.
- Fencing alongside at-grade sections will be designed to exclude wildlife from accessing the rail line, including species that could jump over a fence, such as mountain lion, or species like desert tortoise that could burrow under a fence.
- Disturbed areas outside of the fence, including fill slopes along at-grade sections, and the ground below viaducts, will be revegetated with native plants.
- Vegetative cover appropriate to the local area will be planted near entrances to identified wildlife crossing structures to give animals security. Per FRA regulations, vegetation will not be planted inside the HSR fence.

- Crossing structures and fences will be regularly inspected and maintained to keep the openings of wildlife crossing structures free of debris or sediment. Any damaged “funnel fencing” will be repaired, and any “hanging lip” created by scouring water flows will be remedied in time to prevent degradation of the structure’s functionality.

BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback

Prior to initiation of construction activities, implement BIO-IAMF#3: Prepare Training Materials and Conduct Construction Period WEAP Training; prior to Operation and Maintenance activities implement BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training.

WEAP training will include site-specific information developed for the restriction of access to the wetted channel of the Santa Clara River, including restrictions on the introduction and handling of concrete or other contaminants, and debris and vegetation disposal.

Training will include the repercussions to unarmored three-spine stickleback resulting from contaminants and debris, and access to wetted channel.

BIO-MM#85: Establish Construction Zones and Environmentally Sensitive Areas

During temporary and permanent bridge construction, the Authority will implement BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes and BIO-MM#58, Establish Environmentally Sensitive Areas and Nondisturbance Zones, to ensure no work takes place where unarmored three-spine stickleback may be affected. Additional measures include:

- Prior to the commencement of construction activities, a qualified biologist will survey the proposed work locations to confirm that the construction zone is outside the wetted channel of the river, that the proposed vibratory pile installation locations are located outside of the 25-year flood zone to the extent feasible, and away from the wetted channel, and that no work takes place where unarmored three-spine stickleback may be affected.
- The Project Biologist will be present during all construction and maintenance activities upstream or downstream of the bridge crossing to prevent activities, personnel, and debris from contacting or disturbing the wetted channel of the Santa Clara River.
- No construction activities or personnel will occur within 10 feet of or near the edge of the wetted channel that would have potential to destabilize the low flow channel bank. Permanent structures associated with bridge construction will remain outside of the 25-year flood zone and all construction activities associated with bridge construction will remain a minimum of 10 feet away from wetted channel.
- Prior to ground-disturbing activities, a K-rail construction barrier to the extent feasible and ESA fencing (BIO-MM#58) will be installed between the bridge construction work zone and the ESA area of the wetted channel of the Santa Clara River to prevent access to the wetted channel. The ESA will be installed a minimum of 10 feet from the wetted channel and the K-rail approximately 10 feet from the ESA to the extent practicable.

BIO-MM#86: Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions

Weather-Related Work Restrictions:

Prior to scheduling any bridge or bank stabilization concrete pours for construction or maintenance, a clear weather window, defined for this project as a less than 40 percent chance or less of 0.10 inches or greater of precipitation in the next 48 hours as forecasted by National Oceanic and Atmospheric Administration, will be required. If a bridge or bank stabilization-related concrete pour is in progress and an un-forecasted rain event occurs, bridge or bank stabilization-related concrete pours will be suspended.

Prior to and during any storm event, a monitor will inspect work sites to ensure sites are secure so that flooding does not cause damage to tarps or plug diversion drains or allow construction materials, such as uncured concrete, and debris to flow into the river.

Seasonal Work Restrictions

All permanent bridge pier and structure construction in the Santa Clara River riverbed will be completed during the dry season, defined as June 1 through November 1, and all work will completely avoid the wetted channel during construction and maintenance.

All measures implemented during bridge construction will be implemented to avoid accidental contact, spills, or falling debris into the wetted channel. During operations, if the wetted portion of the Santa Clara River shifts in location (for example, in response to a flood event that alters the wetted channel alignment), all maintenance and repair activities will continue to occur outside of the wetted channel.

BIO-MM#87: Prepare and Implement Spill Prevention and Containment Measures

All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations, the SWPPP prepared for HYD-IAMF#3 and HYD-IAMF#4, and the Construction Management Plan prepared for HMW-IAMF#6. These materials will be kept in segregated, secured, and/or secondary containment facilities, as necessary.

During concrete pours of the permanent bridge piles and bridge decks or other structures, spill containment will be installed and maintained to prevent uncured concrete releases to the wetted channel of the Santa Clara River. Spill containment may include installation of K-rail barriers at the perimeter of work areas, between work areas and the wetted channel and/or underslung tarps to intercept all potential uncured concrete flows to the Santa Clara River.

During bridge construction, no continuous dewatering or drawdown within the shafts will occur. Casing water, if any, will be extracted and disposed at a legal disposal site in an upland location. No other construction dewatering associated with installation of the Santa Clara River crossing bridges will occur within the work areas.

To ensure that water quality is not being affected by bridge and bank stabilization-related concrete pouring activities, the Authority will monitor the water quality at points, upstream, downstream, and immediately adjacent to the construction work zone daily during concrete pouring operations. Key parameters to be monitored are pH and turbidity.

BIO-MM#88: Implement Construction or Maintenance Activity Debris Prevention Measures

Prior to initiation of construction or maintenance activities, an underslung tarp, debris platform or equivalent barrier extending at least 10 feet beyond the width of the wetted channel will be deployed beneath the bridge deck to prevent the inadvertent discharge of equipment, chemicals, or debris into the Santa Clara River.

The Authority will inspect and maintain tarps, debris platform or equivalent barrier to ensure catchments are functioning appropriately.

BIO-MM#89: Implement Construction Measures for unarmored three-spine Stickleback Avoidance

During the installation of piles and piers for the bridge, vibratory or oscillating pile driving methods will be used in the Santa Clara River riverbed, outside of the wetted channel, in order to avoid effects to unarmored three-spine stickleback. Piles and footings associated with temporary structures required to construct the bridge will be installed and removed only by vibratory methods. Piles and footings will be installed and removed at least 10 feet away from the wetted channel at the time of installation or removal.

Construction activities in areas susceptible to winter flood flows will be conducted from May 1 through November 30, when winter flood flows do not occur in the Santa Clara River. Other construction activities in areas not at risk of flood flows may be constructed year-round.

Vegetation management will be limited to trimming existing riparian vegetation outside the wetted channel. Woody debris generated by vegetation management activities will be prevented from contacting the wetted channel, either by hand or by deploying physical restraints or netting.

BIO-MM#90: Prepare a Construction Groundwater Dewatering Plan

The Authority will prepare a Construction Groundwater Dewatering Plan for areas in close proximity to stream flow to ensure that any dewatering is conducted in a manner that does not affect river flow. Dewatering will be implemented in a manner that: (1) does not create temporary wetted channel habitat suitable for unarmored three-spine stickleback; (2) does not diminish existing river flow, and therefore does not result in stranding of unarmored three-spine stickleback or other fish; and (3) does not introduce pollutants to surface waters.

The plan will include, but not be limited to:

- No direct removal of surface water from or to the Santa Clara River or activities that may result in stranding of unarmored three-spine stickleback.
- Groundwater discharges will be directed to appropriate legal disposal sites in an upland area that cannot flow into the Santa Clara River or otherwise change the river’s flow and water quality.
- The Authority will monitor daily surface water elevations upstream, adjacent to, and downstream of the extraction points, to assess any critical flow regimes susceptible to excessive draw down before, during, and after groundwater dewatering activities.
- The biological monitor will have the authority to halt dewatering activities if water levels decrease in the wetted portion of the Santa Clara River where unarmored three-spine stickleback are present.

BIO-MM#92: Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River

All maintenance of project facilities on the Santa Clara River will adhere to timing and work area restrictions, specifically:

- No maintenance activities or personnel will occur within 10 feet of or near the edge of the wetted channel.
- Maintenance activities will not take place in the wetted channel of the Santa Clara River.
- Repair, or replacement of bridge structures requiring access to the 25-year flood zone of the riverbed will be restricted to the period from June 1 to September 30, except in the case of an emergency.

Any dewatering necessary during maintenance activities will not create a risk of fish stranding, either through draw down (zone of influence) or by flow discharge creating temporary habitat suitable for federally listed fish, nor will it involve direct removal of surface water from, or discharge to, the wetted channel of the Santa Clara River.

Maintenance activities will implement additional conservation measures, BIO-MM#84 through BIO-MM#90, as applicable to the activity.

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

To avoid, minimize and mitigate for impacts on seeps, springs, streams, riparian vegetation, and special-status plant and wildlife species, the Authority will prepare and implement an adaptive management and monitoring plan (AMMP) prior to, during, and after tunnel construction to implement the requirements described under HYD-MM#4 and as described below concerning biological resources.

The purpose of the AMMP relative to biological resources is to monitor groundwater-dependent biological resources within the tunnel construction RSA to detect and remediate adverse effects on habitat function in a timely manner. Implementation of the AMMP will provide information and

data to identify hydrological and biological effects that may arise during tunnel construction, if any, and trigger actions to offset any such impacts. The AMMP will include the following components, at a minimum, to avoid or minimize and address impacts on habitat for special-status species, and aquatic resources:

Baseline inventory—The Authority will establish baseline hydrologic conditions within the tunnel construction RSA. Baseline surveys will characterize potential aquatic resources, including but not limited to mapping of wetland and riparian vegetation; hydroperiod (the duration of inundation); flow rates; area of feature; and the potential for special-status plant and fish and wildlife species to occur.

Construction monitoring—The Authority will designate monitoring locations and methodologies for monitoring water levels, vegetation cover, and special-status species habitat most likely to be affected by tunnel construction. The Authority will monitor representative locations during periods when effects are most likely to occur. If effects (e.g., lowering water levels resulting in reduced habitat) are observed, the Authority will implement contingency plans that expand monitoring beyond the representative locations and increase monitoring frequency to capture the extent of effects on groundwater-dependent biological resources.

Supplemental water—The Authority will prepare contingency plans to provide supplemental water as necessary to support riparian/aquatic vegetation, wildlife breeding cycles, aquatic wildlife, or protected tree health within the area of predicted effects determined through modeling or monitoring to be potentially affected by groundwater lowering. Seasonal variation as documented during the preconstruction baseline monitoring will be considered in establishing the amount of supplemental water. For all features, supplemental water will provide minimum flows and periods of inundation to match baseline conditions. The periods of supplemental water, in general, will likely be in periods of baseflow, which occurs in late spring, summer, and early fall outside of rain periods. For breeding habitats, the Authority will, at a minimum, supplement breeding habitat where necessary to maintain adequate depths for completion of the reproduction cycle (defined as the time by which juveniles are viable and mobile such that they can feasibly leave the breeding location).

However, where breeding habitat is perennial or long-seasonal, then supplemental water will be provided as necessary to maintain the entire wetted period as determined through baseline monitoring. For nonbreeding movement and foraging habitat in creeks and streams, water will be provided to maintain seasonal flow similar to baseline conditions. Water will be provided as needed to sustain habitat conditions up to the point of baseline conditions until the qualified biologist determines it is appropriate to cease its provision. If supplemental water is provided from wells, the effects on water supply and habitat features will be managed to avoid and minimize potential disruption by the selection of well location, depth, flow rate, and the use of alternative supplies.

Contingency plan for supplemental water in areas outside of predicted area of effect—The Authority will establish contingency procedures to provide supplemental water to springs, seeps, and streams to support riparian/aquatic vegetation, wildlife breeding cycles, and aquatic wildlife outside the area of predicted effects, if warranted by monitoring.

Temporary relocation—The Authority will relocate aquatic species where unavoidable drying of aquatic breeding habitat would occur and maintaining the habitat with supplemental water is not feasible. The Authority will relocate these species, as allowed by USFWS and CDFW. If holding facilities are used, the Authority will return affected wildlife to affected aquatic areas after recovery of baseline hydrologic conditions.

Post-construction monitoring—After construction, the Authority will monitor water levels and aquatic resource conditions of affected features twice annually (spring and summer) for at least 5 years or as determined through consultation with USFWS and CDFW. As long as groundwater levels are demonstrated to be recovering, monitoring will continue until baseline conditions return or 10 years, whichever is longer. In the event that supplementary water is not successful at restoring aquatic resources to baseline conditions in the post-construction period and off-site

compensation is triggered, then monitoring may be waived for certain features if it is determined that there is no further utility for monitoring the specific feature.

Post-construction riparian or wetland restoration—The Authority will restore any lost riparian or wetland vegetation that is not recovering on its own within 1 year of construction and is determined to be the result of tunnel construction through comparison to baseline conditions. Subject to landowner approval, such restoration will occur on site, or at a suitable location nearby if not feasible on site. The Authority will implement restoration of riparian or wetland restoration, as applicable, as defined in Mitigation Measures BIO-MM#47 and BIO-MM#53.

Compensatory mitigation—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, the Authority will provide compensatory mitigation to offset the loss of habitat pursuant to BIO-MM#47 and BIO-MM#53.

BIO-MM#94: Avoid Direct Impacts on Monarch Butterfly Host Plant

Prior to construction, the Project Biologist will survey for monarch butterfly larval host plants, including native milkweed species, within suitable habitat. If host plants are found, the Project Biologist will conduct surveys for adult monarch butterflies during the peak of the flight period to determine presence/absence. Where adult monarch butterflies are present, construction personnel will avoid host plants outside permanent impact areas.

BIO-MM#95: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat

The Authority will provide compensatory mitigation at a minimum of 1:1 ratio for occupied breeding and foraging habitat required to offset impacts on habitat for monarch butterfly and to offset impacts on habitat for monarch butterfly. Compensatory mitigation could include one or more of the following:

- Purchase of credits from an agency-approved conservation bank
- Acquisition in fee title of USFWS-approved property
- Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values
- An in-lieu fee contribution determined through negotiation and consultation with the USFWS

Mitigation for monarch butterfly will prioritize areas with any future designated critical habitat (if the monarch is listed and critical habitat is designated) and with existing monarch butterfly populations and suitable milkweed populations to support breeding. The secondary priority will be to create suitable habitat in other areas, if feasible (i.e., establish self-sustaining milkweed populations). The compensatory mitigation areas and methods selected will include appropriate measures to guide management of habitats (e.g., grazing, weed control), monitor populations, and identify methods to establish or reestablish populations, if necessary.

BIO-MM#96: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens

Prior to any ground-disturbing activity, regardless of the time of year, the Project Biologist will conduct pre-construction surveys for known or potential mountain lion dens within suitable habitat located within the work area and within 600 meters of the work area. These surveys will be conducted no less than 14 days and no more than 30 days prior to the start of ground-disturbing activities in a work area. Known and potential mountain lion den types will be defined as follows:

- Known den. Any existing natural den or human-made structure that is used or has been used at any time in the past by a mountain lion. Evidence of use may include historical records; past or current radio telemetry or tracking study data; mountain lion sign, such as tracks,

scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a mountain lion.

- Potential den. Any thick vegetation, boulder piles, rocky outcrops, or undercut cliffs within the species' range for which available evidence is insufficient to conclude that it is being used or has been used by a mountain lion. Potential dens will include the following characteristics: (1) refuge from predators (coyotes, golden eagles, other mountain lions) or (2) shielding of the litter from heavy rain and hot sun.

The Project Biologist will use location-specific survey methods to identify known and potential dens. The survey method will consider topography, vegetation density, safety, and other factors. Surveys will be conducted by a qualified biologist (i.e., a biologist with demonstrated experience in mountain lion biology, identification, and survey techniques) and may involve the establishment of camera stations, scent stations, pedestrian surveys (looking for tracks, caches, etc.), or other appropriate methods. Survey methods used will be designed to avoid the disturbance of known or potential dens to the extent feasible

If known or potential mountain lion dens are identified or observed during pre-construction surveys, mountain lion dens will be assumed to have kittens present until the Project Biologist can document that they are not present and/or that the den is not being used. A non-disturbance buffer of at least 1,970 feet will be established around the known or potential den until the Project Biologist can document and confirm that the den is not occupied. If the den is determined to be occupied, the 600-meter non-disturbance buffer will be maintained until the den is confirmed abandoned by the Project Biologist. Construction may proceed if the Project Biologist determines that the den is not being used by mountain lions. However, to the extent feasible, ground disturbance will be limited to those days between October 1 and January 31 within 1,970 feet of known or potential dens to the extent feasible. Mountain lions can breed year-round; however, most breeding activity and births occur during the spring and summer months between February 1 and September 30.

BIO-MM#97: Provide Compensatory Mitigation for Impact on Mountain Lion Habitat

The Authority will provide compensatory mitigation for impacts on mountain lion suitable habitat through the preservation of suitable habitat that is acceptable to CDFW. Habitat will be replaced at a minimum ratio of 2:1 for permanent impacts on breeding/foraging habitat and high-priority foraging and dispersal habitat, and at a ratio of 1:1 for low-priority foraging and dispersal habitat, unless a higher ratio is required by regulatory authorizations issued under CESA. Compensatory mitigation will be provided using one or more of the methods described in BIO-MM#53: Prepare and implement a Compensatory Mitigation Plan for Species and Species Habitat and would, where feasible and acceptable to CDFW, contribute to preserving important lands for movement.

BIO-MM#98: Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement

To address the permanent intermittent impact of operations on aerial wildlife movement from train strike and entrapment, the Authority will implement an array of deterrent and diversion features for avian species. These features include the following, which are specified in detail in the *Wildlife Corridor Assessment Report* (Authority 2019c):

- Install pigeon wire or other features to discourage birds from perching on the overhead catenary system (OCS) throughout the project
- In selected areas, place flight barriers such as fencing, pole barriers or a tubular screen (Life Impacto Cero 2015) to the height of the OCS to avoid birds flying into the rail alignment and being struck by the train in the following locations:
 - Refined SR14/SR14A/E1/E1A/E2/E2A in the vicinity of Una Lake;
 - Refined SR14/SR14A at Agua Dulce Canyon, Bee Canyon, the Santa Clara River; crossing, and the Vulcan Mine;

- E1/E1A/E2/E2A at the Aliso Canyon Creek crossing; and
- E2/E2A at the Big Tujunga Wash crossing.
- Modify OCS poles to preclude bird entrapment in hollow poles (e.g., avoid the use of tubular poles or cap openings in all poles)
- Design aerial structures and tunnel portals to discourage bats from roosting in expansion joints, light tunnel entrances, or other crevices

BIO-MM#99: Implement Lighting Minimization Measures During Construction

The Authority will avoid conducting ground-disturbing activities within known wildlife habitat during nighttime hours, to the extent feasible. If nighttime work is necessary, the Authority will minimize impacts on adjacent habitat by:

- Conducting nightwork only within the boundaries of previously disturbed, cleared and grubbed areas;
- Shielding and directing nighttime lighting to avoid illuminating wildlife habitat, including movement corridors;
- Using the minimum lighting levels approved by Occupational Safety and Health Administration (29 C.F.R. 1926.56) for general construction (i.e., 5 foot-candles or 54 lux);
- Minimizing the direction of construction vehicle headlights towards offsite locations and use low beams or turn off headlights when safety considerations permit; and,
- Minimizing the duration of lighting by using remote monitoring systems or other methods to ensure security of the construction site during hours it is not in use.

BIO-MM#100: Implement Lighting Minimization Measures for Operations

To address the permanent and intermittent impacts from lighting, 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 as follows:

- Outdoor lighting at operational facilities will be consistent with minimum Occupational Safety and Health Administration requirements established by 29 C.F.R. 1926.56 when the facilities are in use. To the extent feasible, the Authority will minimize the duration of lighting at operational facilities by using methods other than lighting (e.g., remote monitoring systems) to ensure security of facilities during nighttime hours they are not in use;
- Nighttime lighting will have shields or cowls (or other device to limit lighting) installed to direct the light downward to reduce the standard luminous intensity distribution curve to contain the light to the boundaries of the project site to the extent practicable; and
- Train headlights will use the minimum standard allowed by the FRA under 49 C.F.R. 229.125 (a single headlight of at least 200,000 candelas) within non-tunnel portions of the project section.

BIO-MM#101: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat

To address the permanent, intermittent impact of noise on suitable 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 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 generated by HSR operations, as measured 50 feet from the noise barrier. Typically this level of sound attenuation may require a 10 to 17 foot tall sound barrier. The sound barriers will be constructed in conjunction with the installation of track and OCS and will be

completed before HSR train operations begin. 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.

3.7.7.1 Impacts from Implementing Mitigation Measures

This section evaluates the potential for biological mitigation measures (described in Section 3.7.7, Mitigation Measures) to result in secondary environmental effects. Many biological mitigation measures propose similar activities applied to different resources. For example, BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests and BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls prescribe similar survey methodologies to assess for the presence of special-status species. Therefore, BIO-MM#17 and BIO-MM#20 would result in similar secondary effects of similar magnitude and intensity, and for this reason, are evaluated together in the subsections below. Other biological mitigation measures assessed in this section are also grouped, where appropriate, to succinctly assess secondary effects.

The types of impacts identified in this section are common to most infrastructure construction projects and are typically minimal and not significant. Adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures, would reduce secondary impacts with the potential to occur as a result of implementation of biological mitigation measures.

Pre-Construction Surveys

BIO-MM#1, BIO-MM#3, BIO-MM#7, BIO-MM#14, BIO-MM#15, BIO-MM#17, BIO-MM#20, BIO-MM#25, BIO-MM#28, BIO-MM#29, BIO-MM#52, BIO-MM#65, BIO-MM#69, BIO-MM#79, BIO-MM#80, and BIO-MM#81, and BIO-MM#82 will require pre-construction surveys to determine the presence of special-status plants and wildlife within the construction footprint. Survey methods depend on the specific target species but would generally entail low-impact visual inspections by trained biologists walking within and immediately adjacent to the construction footprint. As such, the mitigation measures listed above would not result in negative or secondary environmental effects.

Resource Protection and Restoration

BIO-MM#4 and BIO-MM#34 will prescribe vernal pool and jurisdictional water non-disturbance zones, seasonal work restrictions, installation of erosion-control measures, and construction monitoring. Protective measures (silt fencing, sandbags) could extend outside of the immediate construction footprint to protect nearby aquatic resources but would be temporary and would not permanently degrade quality of nearby environmental resources.

BIO-MM#5 will require the creation and implementation of a protection plan for vernal pools located within temporary impact areas. The protection measures would be created in consultation with the appropriate resource agencies and removed as part of the restoration of the temporary impact area.

BIO-MM#6, BIO-MM#32, and BIO-MM#33 will restore temporary impacts on riparian habitat, jurisdictional waters, and wildlife movement corridors from construction. Revegetation, grading, exotic plant removal, and long-term monitoring and maintenance will occur within areas disturbed by construction activities. Temporary access roads, fences, and debris will be removed within wildlife movement corridors. These mitigation measures will also restore the biologic and hydrologic functions of aquatic resources and wildlife movement corridors within and immediately adjacent to the construction footprint.

Depending on the duration of the construction period, maintenance or removal of aquatic resource protective measures can often cause secondary effects. For example, vegetation would develop around and through in-place protective measures, such as fencing. Storm events would damage or displace fencing or sandbags, which would require increased access through sensitive aquatic environments for upkeep or replacement. These maintenance and removal activities would entail vegetation disturbance and interruption to other biologic or aquatic

resources. Therefore, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#32, BIO-MM#33, and BIO-MM#34 would result in negative or secondary environmental effects.

Construction Site Management

BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#89, and BIO-MM#90 will be implemented within the construction footprint to minimize construction-related impacts. BIO-MM#60, BIO-MM#61, and BIO-MM#63 would not result in physical disturbance. BIO-MM#62 will ensure that construction within open or flowing water would be accompanied by an appropriate dewatering plan to minimize sedimentation, siltation, erosion, and impacts on aquatic species. Such plans typically require visual inspections, water quality monitoring (and treatment if necessary), and pre-activity surveys to determine the presence or absence of special-status species; such activities would occur within the disturbance area. In the event that special-status species are detected, the Project Biologist will have the authority to halt work (BIO-MM#63) in order to relocate the species outside of the work area. Therefore, avoidance and protective measures identified per BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#89, and BIO-MM#90 will be limited to the construction footprint and would not result in negative or secondary environmental effects.

Wildlife Protection, Avoidance, and Relocation

BIO-MM#8, BIO-MM#16, BIO-MM#18, BIO-MM#21, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#52, BIO-MM#56, BIO-MM#66, BIO-MM#68, BIO-MM#69, BIO-MM#71, BIO-MM#73, and BIO-MM#74 will prescribe construction site monitoring, deterrence, and relocation to protect special-status wildlife within and immediately adjacent to the Build Alternative footprint. BIO-MM#58 and BIO-MM#85 will also use flagging to demarcate environmentally sensitive area and wildlife exclusion fencing to prevent wildlife from entering the work area during construction. Wildlife monitoring and deterrence techniques will occur within the footprint and would not result in off-site activity or adverse effects on other environmental resources. The avoidance and protective measures identified above will be limited to the footprint and would not result in negative or secondary environmental effects. BIO-MM#76 will entail assessment and treatment of injured or trapped wildlife species within the Palmdale to Burbank Project Section site. Although wildlife injury or mortality could occur during assessment and treatment, the purpose of this mitigation will be to avoid incidental wildlife injury or mortality from occurring as a result of activities associated with the Palmdale to Burbank Project Section. This mitigation measure would not result in negative or secondary environmental effects.

BIO-MM#2, BIO-MM#8, BIO-MM#21, BIO-MM#26, and BIO-MM#67 will entail relocation for special-status plant species, special-status reptile and amphibian species, burrowing owls, bats, and eagle nests. These species will be relocated into appropriate habitat outside of the construction area, which would result in minimal site disturbance. For example, burrowing owl relocation will entail the installation of artificial burrows within the proposed relocation area. Short-term monitoring at relocation areas will require pedestrian survey techniques. These efforts would ensure the viability of special-status species while improving the biologic quality of designated relocation zones, which will be identified in consultation with the appropriate resource agencies. However, relocation of special-status species would affect resident individuals in the relocation area through increased predation and competition of resources with relocated individuals. Therefore, wildlife relocation activities associated with the mitigation measures listed above could result in negative or secondary environmental effects. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations, compliance with regulatory permits, incorporation of BMPs, and application of standard mitigation measures.

Construction and Operation within Wildlife Movement Corridors

BIO-MM#37 would facilitate wildlife movement within portions of the construction footprint identified as habitat linkages. A construction avoidance and minimization plan will limit the use of construction and avoid permanent fencing in wildlife movement linkages where the viaducts or bridges are included in the final design. BIO-MM#64 provides design standards for wildlife

crossings proposed within the Build Alternative footprint. BIO-MM#37 and BIO-MM#72 will also minimize nighttime illumination through directional lighting and shielding. BIO-MM#37, BIO-MM#64, and BIO-MM#72 would not result in negative or secondary environmental effects.

Permanent security fencing (BIO-MM#36, BIO-MM#83, and BIO-MM#77) will be installed along portions of the Palmdale to Burbank Project Section adjacent to wildlife movement corridors to prevent special-status wildlife ingress into the HSR right-of-way during project operations. Fence installation, inspection, and repair activities will occur within the construction footprint. Although fencing would impede wildlife movement, it would prevent wildlife injury or death (i.e., vehicle and rail strikes) resulting from encroachment into the HSR operational zone. Fencing and berms would also direct animals toward crossing structures. As such, the mitigation measures listed above would not result in negative or secondary environmental effects.

BIO-MM#78 could require the installation of features to reduce access (e.g., taller fencing or wildlife barriers at crossings) or allow large animals to escape from the fenced right-of-way (e.g., wildlife jump-outs or escape ramps). Installation of these features will be based on site-specific evaluation but will occur within the HSR footprint. As such, BIO-MM#78 would not result in negative or secondary environmental effects.

Impacts Due to Plant Relocation, Vegetation Management, Compensatory Mitigation, and Habitat Protection

BIO-MM#2, BIO-MM#35, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#67, and BIO-MM#70 pertain to compensatory mitigation and habitat protection for sensitive biologic resources observed within the Build Alternative footprint. Compensatory mitigation will consist of habitat acquisition, restoration, or enhancement, purchase of mitigation credits, or payment into a land bank fund. These actions will directly or indirectly require conservation management to ensure the long-term viability of target species.

BIO-MM#54 and BIO-MM#55 propose vegetation control plans to address vegetation removal for the purpose of maintaining clear areas around facilities, reducing the risk of fire, and controlling invasive weeds during construction and operation.

Examples of management activities proposed as part of these mitigation measures include:

- Trash removal
- Fence construction or replacement
- Aquatic exclusion or non-disturbance zones
- Topographic alteration to restore hydrologic functions
- Installation of temporary or permanent erosion-control measures
- Special-status plant, protected tree, or native vegetation plantings
- Artificial burrow installation and maintenance
- Invasive plant removal and control
- Unauthorized entry deterrence
- Ground-disturbance due to planting and fencing (specific to BIO-MM#2 and BIO-MM#35)

Habitat acquisition, restoration, or enhancement associated with the mitigation measures listed above could result in negative or secondary environmental effects. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations, compliance with regulatory permits, incorporation of BMPs, and application of standard mitigation measures.

Impacts due to Construction of Noise Walls

The construction of noise/visual barriers could result in secondary impacts on visual resources. However, because noise walls will be used in limited locations, and will be constructed adjacent to the guideway and other ancillary features, the contribution to impacts on visual resources would not be substantially different than or in addition to the construction of the guideway itself.

3.7.8 NEPA Impacts Summary

This section evaluates and compares impacts associated with construction and operation of all six Build Alternatives on biological resources, including special-status plants, wildlife, and vegetation communities; aquatic resources; federally designated critical habitat; SEAs; protected trees; and wildlife corridors. Direct impacts on biologic and aquatic resources would result from activities within temporary impact areas of the construction footprint. Indirect impacts on such resources would occur within and adjacent to the construction footprint. During project operation, impacts would occur within the HSR footprint, but because this area would be occupied by project infrastructure, impacts on habitat would be more likely adjacent to the HSR footprint.

3.7.8.1 Special-Status Plant Species and Communities

All Build Alternatives would affect the same 3 FESA-listed plant species, 41 non-FESA-listed special-status plant species, and 6 special-status plant communities (Table 3.7-31). The Refined SR14 Build Alternative would affect the most acres of special-status plant species habitat and special-status plant communities (Table 3.7-31). The SR14A Build Alternative would affect the second-most acres of special-status plant species habitat and special-status plant communities, and the E1 Build Alternative would affect the least. Vehicles and personnel disturbing and removing vegetation within construction areas would directly affect special-status plant species and plant communities. Indirect effects would include altered hydrology, erosion, or siltation that alter aquatic habitats; contamination from accidental spills; increased dust levels; increased risk of fire; habitat fragmentation; and introduction of noxious plant species. The following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), discussed under each impact in Section 3.7.6, Environmental Consequences, would minimize and offset impacts on special-status plants and special-status plant communities:

- 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
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan
- 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

Special-status Plant Species and Plant Communities

Section 3.7.5.2 introduces vegetation communities and identifies where they occur throughout each of the six Build Alternative RSAs.

Sections 3.7.5.3 and 3.7.5.4 describe special-status plant species and plant communities within the special-status plant RSA and summarize vegetation communities utilized by special-status plant communities.

Section 3.7.6.3 describes direct and indirect impacts to special-status plant species and plant communities that would result from construction and operations of each of the six Build Alternatives.

- BIO-IAMF#11: Maintain Construction Sites
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plans
- HYD-IAMF#1: Stormwater Management
- BIO-MM#1: Conduct Protocol-Level or Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities
- BIO-MM#2: Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species
- BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction
- BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas
- 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#38: Compensate for Impacts on Listed Plant Species
- 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 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
- BIO-MM#58: Environmentally Sensitive Areas and Nondisturbance Zones
- BIO-MM#61: Establish and Implement a Compliance Reporting Program

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Table 3.7-31 Special-Status Plant Species and Plant Community Habitat Impacts

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
FESA-Listed Plant Species										
Braunton's milk-vetch	FE/FSS, 1B.1	479 – 499	482 – 501	128 – 132	128 – 132	115 – 131	115 – 131	Adverse Effect	BIO-MM#1 BIO-MM#2 BIO-MM#4 BIO-MM#5 BIO-MM#6 BIO-MM#32	No Adverse Effect
Nevin's barberry	FE/FSS, 1B.1	464 – 513	423 – 472	44 – 68	44 – 68	113 – 115	113 – 115	Adverse Effect	BIO-MM#33 BIO-MM#34 BIO-MM#38 BIO-MM#47 BIO-MM#50 BIO-MM#53	No Adverse Effect
Slender-horned spineflower	FE/FSS, 1B.1	435 – 452	410 – 426	11 – 13	11 – 13	84 – 100	84 – 100	Adverse Effect	BIO-MM#54 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#61	No Adverse Effect
Non-FESA-Listed Plant Species										
California androsace	4.2	836 – 905	67 – 739	534 – 558	471 – 495	575 – 583	513 – 521	Adverse Effect	BIO-MM#1 BIO-MM#2	No Adverse Effect
California satintail	2B.1	743 – 764	511 – 532	218 – 222	174 – 177	290 – 299	245 – 255	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
California spineflower	4.2	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121	Adverse Effect	BIO-MM#6	No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Chaparral ragwort	2B.2	640 – 661	423 – 444	52 – 55	43 – 47	123 – 132	115 – 124	Adverse Effect	BIO-MM#32 BIO-MM#33	No Adverse Effect
Chickweed starry puncturebract	4.3	0	0	0	0	0	0	No Adverse Effect ³	BIO-MM#34 BIO-MM#47 BIO-MM#50	N/A
Clokey's cryptantha	BLMS, 1B.2	101	83	166	130	166	130	Adverse Effect	BIO-MM#53 BIO-MM#54	No Adverse Effect
Club-haired mariposa lily	4.3	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
Davidson's bush-mallow	1B.2	641 – 706	533	78 – 101	69 – 93	134 – 136	126 – 127	Adverse Effect	BIO-MM#58 BIO-MM#61	No Adverse Effect
Forest camp sandwort	FSS	0	0	0	0	0	0	No Adverse Effect ³		N/A
Fragrant pitcher sage	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44	Adverse Effect		No Adverse Effect
Greata's aster	BLMS, 1B.3	322 – 392	143 – 213	73 – 95	64 – 87	69 – 70	60 – 62	Adverse Effect		No Adverse Effect
Lemon lily	1B.2	46 – 88	14 – 56	40 – 60	31 – 52	26 – 40	18 – 32	Adverse Effect		No Adverse Effect
Lemon's syntrichopappus	4.3	486 – 514	344 – 372	489 – 491	433 – 435	484 – 499	429 – 445	Adverse Effect		No Adverse Effect
Mason's neststraw	1B.1	210	215	456	400	455	400	Adverse Effect		No Adverse Effect
Mesa horkelia	1B.1	548 – 603	409 – 464	49 – 73	49 – 73	104 – 112	104 – 112	Adverse Effect		No Adverse Effect
Mojave paintbrush	4.3	225	230	517	410	516	410	Adverse Effect		No Adverse Effect
Mojave tarplant	1B.3	642 – 663	428 – 449	52 – 55	44 – 47	124 – 133	115 – 125	Adverse Effect		No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Mt. Gleason's paintbrush	1B.2	486 – 514	344 – 372	489 – 491	433 – 435	484 – 499	429 – 445	Adverse Effect	BIO-MM#32 BIO-MM#33	No Adverse Effect
Ocellated lily	4.2	641 – 706	424 – 489	78 – 101	69 – 93	134 – 136	113 – 121	Adverse Effect	BIO-MM#34	No Adverse Effect
Plummer's mariposa lily	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
Parry's spineflower	1B.1	626 – 694	472 – 524	78 – 102	71 – 95	120 – 128	113 – 121	Adverse Effect	BIO-MM#53 BIO-MM#54	No Adverse Effect
Peirson's morning-glory	4.2	626 – 694	456 – 524	78 – 102	71 – 95	120 – 128	113 – 121	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
Piute Mountains navarretia	1B.1	241 – 287	261 – 307	496 – 517	433 – 454	473 – 481	411 – 419	Adverse Effect	BIO-MM#58 BIO-MM#61	No Adverse Effect
Pygmy poppy	4.2	326	313	683 – 540	1,423	682	541	Adverse Effect		No Adverse Effect
Rigid fringe-pod	1B.2	210	215	456	400	455	400	Adverse Effect		No Adverse Effects
Robbins' nemacladus	1B.2	305 – 333	173 – 201	57 – 50	40 – 43	43 – 59	36 – 52	Adverse Effect		No Adverse Effect
Robinson's pepper-grass	4.3	313 – 337	275 – 299	5 – 6	5 – 6	66	66	Adverse Effect		No Adverse Effect
Rock monardella	4.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 44	28 – 44	Adverse Effect		No Adverse Effect
Sagebrush loeflingia	2B.2	101	83	166	130	166	130	Adverse Effect		No Adverse Effect
Salt Spring checkerbloom	2B.2	695 – 718	493 – 515	204 – 207	168 – 171	260 – 276	224 – 240	Adverse Effect		No Adverse Effect
San Bernardino aster	1B.2	350 – 391	327 – 368	45 – 67	38 – 60	84 – 91	77 – 8	Adverse Effect		No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
San Fernando Valley spineflower	FSS, SE, 1B.2	343 – 367	320 – 344	20 – 21	13 – 14	80	73	Adverse Effect	BIO-MM#32 BIO-MM#33 BIO-MM#34	No Adverse Effect
San Gabriel bedstraw	1B.1	277 – 351	130 – 204	58 – 81	58 – 81	40 – 48	40 – 48	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
San Gabriel manzanita	1B.2	275 – 303	129 – 156	33 – 35	33 – 35	28 – 45	28 – 44	Adverse Effect	BIO-MM#53 BIO-MM#54	No Adverse Effect
Short-joint beavertail	1B.2	586 – 614	427 – 455	655 – 657	563 – 565	650 – 665	559 – 575	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
Slender mariposa lily	1B.2	624 – 647	454 – 477	52 – 56	45 – 49	108 – 124	101 – 117	Adverse Effect	BIO-MM#58 BIO-MM#61	No Adverse Effect
Sonoran maiden fern	2B.2	12	0	14	0	14	0	SR14A, E1A, and E2A: No Adverse Effect ³ Refined SR14, E1, and E2: Adverse Effect		SR14A, E1A, and E2A: N/A Refined SR14, E1, and E2: No Adverse Effect
Southern California black walnut	4.2	596 – 664	411 – 480	63 – 87	63 – 87	105 – 113	105 – 113	Adverse Effect		No Adverse Effect
Southern tarplant	1B.1	71 – 78	54 – 61	29	13	37 – 44	22 – 28	Adverse Effect		No Adverse Effect
Urn-flowered alumroot	4.3	313 – 337	275 – 299	5 – 6	5 – 6	66	66	Adverse Effect		No Adverse Effect
White rabbit-tobacco	2B.2	641 – 706	424 – 489	78 – 101	69 – 93	134 – 136	126 – 127	Adverse Effect		No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Special-Status Plant Communities										
Scalebroom scrub	N/A	2	5	0	0	1	1	E1 and E1A: No Adverse Effect ³ Refined SR14, SR14A, E2, and E2A: Adverse Effect	BIO-MM#1 BIO-MM#2 BIO-MM#4 BIO-MM#5 BIO-MM#6	E1 and E1A: N/A Refined SR14, SR14A, E2, and E2A: No Adverse Effect
California sycamore woodlands	N/A	44 – 51	12 – 19	17	9	26 – 32	17 – 24	Adverse Effect	BIO-MM#32 BIO-MM#33 BIO-MM#34	No Adverse Effect
Fremont cottonwood forest	N/A	44 – 51	12 – 19	17	9	26 – 32	17 – 24	Adverse Effect	BIO-MM#38 BIO-MM#47 BIO-MM#50	No Adverse Effect
Bigcone Douglas fir forest	N/A	0	0	0	0	0	0	No Adverse Effect ³	BIO-MM#53 BIO-MM#54 BIO-MM#55	N/A
Coast live oak woodland	N/A	1 – 47	1 – 47	26 – 46	26 – 46	3 – 11	3 – 11	Adverse Effect	BIO-MM#56 BIO-MM#58 BIO-MM#61	No Adverse Effect
Black willow thickets	N/A	44 – 51	12 – 19	17	9	26 – 32	17 – 24	Adverse Effect		No Adverse Effect

Source: Authority, 2019a

¹ **Status Code:** BLMS = BLM sensitive; C = candidate; CRPR Status = California Rare Plant Rank; FE = federally endangered; FSS = U.S. Forest Service sensitive; FT = federally threatened; SE = state endangered; SC = CDFW candidate for listing; N/A = Not Applicable

1A = Presumed extinct in California; 1B = Rare, Threatened, or Endangered in California and elsewhere; 2B = Rare, Threatened, or Endangered in California, but more common elsewhere; 3 = A review list of plants about which more information is needed; 0.1 = Seriously threatened in California (over 80% of occurrences threatened); 0.2 = Moderately threatened in California (20-80% of occurrences threatened); 0.3 = Not very threatened in California (<20% of occurrences threatened)

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Species listed that would experience 0 acres of direct impacts to habitat would still experience indirect effects from the Build Alternative(s). However, such effects would not constitute an adverse effect for the purposes of NEPA.

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3.7.8.2 *Special-Status Wildlife*

Direct, permanent impacts on special-status wildlife habitat associated with all six Build Alternatives are quantified in Table 3.7-32 and Table 3.7-33.

The Refined SR14 and SR14A Build Alternatives would affect the most FESA-listed wildlife species (12 species each) relative to the E1, E1A, E2, and E2A Build Alternatives (11 species each). The E2 and E2A Build Alternatives would affect the most non-FESA-listed species (47 species each) relative to the E1 and E1A Build Alternatives (43 species each) and the Refined SR14 and SR14A Build Alternatives (46 species each). Refined SR14 would have the greatest acreage of wildlife habitat impacts, with SR14A resulting in the second-most. Of the special-status wildlife species that would be affected by the Palmdale to Burbank Project Section, 18 are listed as BLM sensitive, and 15 are listed as U.S. Forest Service sensitive (See Section 3.7-289 for analyses of U.S. Forest Service sensitive species impacts). 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. Indirect construction effects also include the prevention of burrowing and the change in frequency or density of vegetative cover from soil compaction or fill placement. Project components such as security fencing, electrical infrastructure, and elevated structures would attract predators by providing artificial perch sites in the landscape. Inadvertent introduction of invasive (noxious) weeds would further degrade habitat suitability. Trash and food scraps around the construction site would attract opportunistic predators. Wildlife crossing beneath HSR aerial structures could periodically experience noise and startle effects during train pass-bys. Train pass-by noise would have a short duration and would only exceed applicable noise thresholds at aerial structures where wildlife cross under the Build Alternative alignment. However, operational noise has the potential to indirectly degrade suitable habitat for special-status bird species at at-grade and elevated portions of the Build Alternative alignment. The following IAMFs (listed in Section 3.7.4.2 and fully described in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, Environmental Consequences, would reduce impacts on special-status wildlife:

- 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
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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

Special-Status Wildlife

Section 3.7.5.2 introduces vegetation communities, which serve as habitat for special-status species, and identifies where they occur throughout each of the six Build Alternatives.

Section 3.7.5.5 describes special-status wildlife species within the RSA and summarizes vegetation communities utilized by special-status wildlife species.

Section 3.7.6.3 describes direct and indirect impacts to special-status wildlife species that would result from construction and operations of each of the six Build Alternatives.

- BIO-IAMF#11: Maintain Construction Sites
- BIO-IAMF#12: Design the Project to be Bird Safe
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plans
- HYD-IAMF#1: Stormwater Management
- BIO-MM#3: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species
- BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction
- BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species
- BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species
- BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds
- BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors
- BIO-MM#16: Implement Avoidance Measures for California Condor
- BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests
- BIO-MM#18; Implement Avoidance and Minimization Measures for Swainson's Hawk Nests
- BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls
- BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl
- BIO-MM#25: Conduct Pre-construction Surveys for Bat Species
- BIO-MM#26: Implement Bat Avoidance and Relocation Measures
- BIO-MM#27: Implement Bat Exclusion and Deterrence Measures
- BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures
- BIO-MM#29: Conduct Pre-Construction Surveys for American Badger Den Sites and Implement Minimization Measures
- BIO-MM#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#36: Install Aprons or Barriers within Security Fencing
- 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 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#52: Conduct Blainville's Horned Lizards, San Joaquin Coachwhip, and Silvery Legless Lizards Monitoring, and Implement Avoidance and Minimization Measures
- BIO-MM#53: Prepare 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
- BIO-MM#58: Environmentally Sensitive Areas, and Nondisturbance Zones
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds
- BIO-MM#61: Establish and Implement a Compliance Reporting Program
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions
- BIO-MM#63: Work Stoppage
- BIO-MM#65: Conduct Pre-construction Surveys and Monitoring for Bald and Golden Eagles
- BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests
- BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests
- BIO-MM#68: Avoid Impacts on White-tailed Kite
- BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies
- BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat
- BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use
- BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor
- BIO-MM#74: Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities
- BIO-MM#76: Implement Wildlife Rescue Measures
- BIO-MM#79: Coastal California Gnatcatcher Surveys
- BIO-MM#80: Least Bell's Vireo Surveys
- BIO-MM#81: Southwestern Willow Flycatcher Surveys
- BIO-MM#82: Western Yellow-billed Cuckoo Surveys
- BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback
- BIO-MM#85: Establish Construction Zones and Environmentally Sensitive Areas
- 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
- BIO-MM#94: Avoid Direct Impacts on Monarch Butterfly Host Plant
- BIO-MM#95: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat
- BIO-MM#96: Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens
- BIO-MM#97: Provide Compensatory Mitigation for Impact on Mountain Lion Habitat
- BIO-MM#98: Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement
- BIO-MM#99: Implement Lighting Minimization Measures During Construction
- BIO-MM#100: Implement Lighting Minimization Measures for Operations
- BIO-MM#101: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat

Table 3.7-32 FESA-Listed Special-Status Wildlife Habitat Impacts

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Amphibians										
Arroyo toad	FE/SCC	102	106	6	6	6	6	Adverse Effect	BIO-MM#6 BIO-MM#7 BIO-MM#8 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#36	No Adverse Effect
California red-legged frog	FT/SCC	1,067 – 1,166	746 – 845	566 – 579	459 – 474	539 – 540	432 – 434	Adverse Effect	BIO-MM#46 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58	No Adverse Effect
Southern mountain yellow-legged frog	FE/SE	14 – 74	14 – 74	114 – 137	114 – 137	144 – 146	144 – 146	Adverse Effect	BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76	No Adverse Effect

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Birds										
California condor	FE/SE/FP	972 – 1,035	748 – 811	751 – 774	581 – 604	813 – 814	643 – 645	Adverse Effect	BIO-MM#6 BIO-MM#14 BIO-MM#15 BIO-MM#16 BIO-MM#17 BIO-MM#18 BIO-MM#20	No Adverse Effect
Coastal California gnatcatcher	FT/SSC	477 – 493	481 – 498	127 – 128	127 – 128	102	102	Adverse Effect	BIO-MM#21 BIO-MM#32 BIO-MM#43 BIO-MM#44 BIO-MM#50 BIO-MM#53 BIO-MM#55	No Adverse Effect
Least Bell's vireo	FT/SE	38	6	14	6	22 – 29	14 – 21	Adverse Effect	BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#63 BIO-MM#65	No Adverse Effect

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Southwestern willow flycatcher	FE/SE	38 – 45	6 – 13	14	6	23 – 30	15 – 21	Adverse Effect	(cont.) BIO-MM#66 BIO-MM#67 BIO-MM#68 BIO-MM#69 BIO-MM#70 BIO-MM#71	No Adverse Effect
Western yellow-billed Cuckoo	FE/BLMS/SE	3 – 4	2 – 3	3 – 20	3 – 20	7	7	Adverse Effect	BIO-MM#72 BIO-MM#74 BIO-MM#76 BIO-MM#79 BIO-MM#80 BIO-MM#81 BIO-MM#82	No Adverse Effect

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Fish										
Santa Ana sucker	FT	0 – 15	0 – 15	11 – 15	11 – 15	9	9	Adverse Effect	BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#46 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#61	No Adverse Effect
Unarmored three-spine stickleback	FE/SE/FP	6	9	0	0	0	0	Refined SR14 and SR14A: Adverse Effect E1, E1A, E2, and E2A: No Adverse Effect ³	BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#84 BIO-MM#85 BIO-MM#86 BIO-MM#87 BIO-MM#88 BIO-MM#89 BIO-MM#90	Refined SR14 and SR14A: No Adverse Effect E1, E1A, E2, and E2A: N/A

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Invertebrates										
Vernal pool fairy shrimp	FT	1.63	0.04 – 0.06	0.44	0.04 – 0.06	0.38	0.04	Adverse Effect	BIO-MM#3 BIO-MM#4 BIO-MM#5 BIO-MM#6 BIO-MM#39 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#63 BIO-MM#94 BIO-MM#95	No Adverse Effect

Species	Protection Status	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Reptiles										
Desert tortoise	FT/ST	180	99	196	100	196	100	Adverse Effect	BIO-MM#6 BIO-MM#7 BIO-MM#8 BIO-MM#36 BIO-MM#47 BIO-MM#50 BIO-MM#52 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76	No Adverse Effect

Source: Authority 2019a

¹ **Status Code:** BCC = USFWS Birds of Conservation Concern; BLMS = BLM sensitive; CT = CDFW candidate for threatened status; FE = federally endangered; FSS = U.S. Forest Service sensitive; FP = CDFW fully protected species; FT = federally threatened; SE = state endangered; SSC = CDFW California species of special concern; ST = state threatened;

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Species listed that would experience 0 acres of direct impacts to habitat would still experience indirect effects from the Build Alternative(s). However, such effects would not constitute an adverse effect for the purposes of NEPA.

Table 3.7-33 Non-FESA-Listed Special-Status Wildlife Habitat Impacts

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Amphibians										
Coast range newt	SCC	0	0	0	0	38 – 40	38 – 40	Refined SR14, SR14A, E1, and E1A: No Adverse Effect ³ E2 and E2A: Adverse Effect	BIO-MM#6 BIO-MM#7 BIO-MM#8 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#36 BIO-MM#46 BIO-MM#47 BIO-MM#50	Refined SR14, SR14A, E1, and E1A: N/A E2 and E2A: No Adverse Effect
Western spadefoot	BLMS/SCC	5 – 36	5 – 36	5 – 6	5 – 6	78 – 92	78 – 92		BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76	

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Birds										
American peregrine falcon	Delisted/FP	1,599 – 1,682	1,414 – 1,498	1,279 – 1,296	1,168 – 1,184	1,123 – 1,125	1,013 – 1,015	Adverse Effect	BIO-MM#6 BIO-MM#14 BIO-MM#15 BIO-MM#16 BIO-MM#17 BIO-MM#18 BIO-MM#20 BIO-MM#21	No Adverse Effect
Bald eagle	Delisted/SS/BGEPA / BLMS/SE/FP	33 – 40	8 – 15	6	5	14 – 21	13 – 20	Adverse Effect	BIO-MM#32 BIO-MM#43 BIO-MM#44 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56	No Adverse Effect
Golden eagle	BGEPA/BLMS/FP	1,023 – 1,088	796 – 862	792 – 814	620 – 643	778 – 780	608 – 609	Adverse Effect	BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#63 BIO-MM#65 BIO-MM#66	No Adverse Effect
Gray vireo	BCC/FSS/BLMS/SSC	549 – 565	494 – 510	494 – 497	438 – 441	549 – 565	494 – 510	Adverse Effect	BIO-MM#67 BIO-MM#68 BIO-MM#69	No Adverse Effect
Least bittern	SSC	0 – 1	0 – 1	0	0	8	8	E1 and E1A: No Adverse Effect ³ Refined SR14, SR14A, E2 and E2A: Adverse Effect		E1 and E1A: N/A Refined SR14, SR14A, E2 and E2A: No Adverse Effect
Loggerhead shrike	BCC/SSC	799 – 820	571 – 592	308 – 311	191 – 195	379 – 389	263 – 272	Adverse Effect		No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Northern harrier	SSC	42	45	28	8	28	8	Adverse Effect	BIO-MM#70 (cont.) BIO-MM#71 BIO-MM#72	No Adverse Effect
Swainson's hawk	BLMS/ST	508 – 547	490 – 529	326 – 346	282 – 302	267 – 279	267 – 279	Adverse Effect	BIO-MM#74 BIO-MM#76 BIO-MM#79	No Adverse Effect
Tricolored blackbird	BCC/BLMS / ST	8	17	4	18	6	20	Adverse Effect	BIO-MM#80 BIO-MM#81 BIO-MM#82	No Adverse Effect
Western burrowing owl	BCC/BLMS / SSC	188 – 205	96 – 113	188 – 189	102 – 103	250	163	Adverse Effect		No Adverse Effect
White-tailed kite	BLMS/FP	73 – 74	59 – 60	24	9	33	17	Adverse Effect		No Adverse Effect
Yellow warbler	BCC/SSC	34 – 41	13 – 14	5	5	14 – 20	14 – 20	Adverse Effect		No Adverse Effect
Yellow-breasted chat	SSC	34 – 35	13 – 14	0	0	9	9	E1 and E1A: No Adverse Effect ³ Refined SR14, SR14A, E2 and E2A: Adverse Effect		E1 and E1A: N/A Refined SR14, SR14A, E2 and E2A: No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Yellow-headed blackbird	SSC	20	1	22	1	22	1	Adverse Effect		No Adverse Effect
Fish										
Arroyo chub	FSS/SCC	43 – 51	15 – 22	14	6	23 – 30	15 – 21	Adverse Effect	BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#46 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#61	No Adverse Effect
Santa Ana speckled dace	FSS/SCC	43 – 51	15 – 22	14	6	23 – 30	15 – 21	Adverse Effect	BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#84 BIO-MM#85 BIO-MM#86 BIO-MM#87 BIO-MM#88 BIO-MM#89 BIO-MM#90	No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Invertebrates										
Monarch butterfly	SC	999 – 1,064	788 – 853	796 – 819	638 – 662	852 – 852	695 – 697	Adverse Effect	BIO-MM#3 BIO-MM#4 BIO-MM#5 BIO-MM#6	No Adverse Effect
Crotch bumble bee	SE	680 – 750	506 – 576	771 – 793	612 – 635	766 – 768	609 – 611	Adverse Effect	BIO-MM#39 BIO-MM#47 BIO-MM#50 BIO-MM#53	No Adverse Effect
San Emigdio blue butterfly	FSS	148 – 166	148 – 166	50 – 52	50 – 52	48 – 51	48 – 51	Adverse Effect	BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60	No Adverse Effect
San Gabriel Mountains elfin butterfly	FSS	144 – 162	144 – 162	50 – 51	50 – 51	48 – 50	48 – 50	Adverse Effect	BIO-MM#61 BIO-MM#63 BIO-MM#94 BIO-MM#95	No Adverse Effect
Mammals										
American badger	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670	Adverse Effect	BIO-MM#6 BIO-MM#25	No Adverse Effect
Fringed myotis	BLMS/FSS	102 – 114	114	39 – 41	41	38 – 47	47	Adverse Effect	BIO-MM#26 BIO-MM#27	No Adverse Effect
Mohave ground squirrel	BLMS/ST	178	110	204	109	204	109	Adverse Effect	BIO-MM#28 BIO-MM#29	No Adverse Effect
Mountain lion	SC	813 – 878	687 – 763	579 – 602	515 – 538	565 – 567	502 – 504	Adverse Effect	BIO-MM#36	No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Pallid bat	FSS/BLMS / SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187	Adverse Effect	(cont.) BIO-MM#47	No Adverse Effect
Ringtail	FP	49 – 91	20 – 62	40 – 60	31 – 52	27 – 41	18 – 33	Adverse Effect	BIO-MM#50	No Adverse Effect
San Diego black-tailed jackrabbit	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670	Adverse Effect	BIO-MM#53 BIO-MM#55 BIO-MM#56	No Adverse Effect
San Diego desert woodrat	SSC	973 – 1,041	790 – 859	769 – 792	619 – 643	810 – 818	662 – 670	Adverse Effect	BIO-MM#58 BIO-MM#60	No Adverse Effect
Southern grasshopper mouse	SSC	1,018 – 1,082	803 – 868	783 – 806	625 – 649	839 – 841	686 – 684	Adverse Effect	BIO-MM#61 BIO-MM#62	No Adverse Effect
Townsend's big-eared bat	FSS/BLMS / SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187	Adverse Effect	BIO-MM#63 BIO-MM#76	No Adverse Effect
Western mastiff bat	BLMS/SSC	1,895 – 1,978	1,579 – 1,662	1,555 – 1,571	1,341 – 1,357	1,398 – 1,400	1,185 – 1,187	Adverse Effect	BIO-MM#96 BIO-MM#97	No Adverse Effect
Western red bat	SSC	215 – 246	223 – 254	5 – 6	5 – 6	74 – 80	74 – 80	Adverse Effect	BIO-MM#99	No Adverse Effect
Western yellow bat	SSC	373 – 404	300 – 331	26 – 27	19 – 20	95 – 102	87 – 94	Adverse Effect		No Adverse Effect
Yuma myotis ⁴	BLMS	0	0	0	0	0	0	No Adverse Effect ³		N/A

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Reptiles										
Blainville's horned lizard	BLMS/SCC	795 – 858	685 – 749	569 – 592	510 – 533	556 – 557	498 – 499	Adverse Effect	BIO-MM#6 BIO-MM#7	No Adverse Effect
California glossy snake	SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676	Adverse Effect	BIO-MM#8 BIO-MM#36	No Adverse Effect
California legless lizard	FSS/SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
Coast patch-nosed snake	SSC	1,030 – 1,094	803 – 868	797 – 820	625 – 649	853 – 854	682 – 684	Adverse Effect	BIO-MM#52 BIO-MM#53	No Adverse Effect
Coastal rosy boa	FSS	148 – 172	148 – 172	54 – 58	54 – 58	48 – 59	48 – 59	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
Coastal whiptail	SSC	1,011 – 1,075	787 – 852	790 – 813	617 – 641	846 – 847	675 – 676	Adverse Effect	BIO-MM#58 BIO-MM#60	No Adverse Effect
San Bernardino mountain kingsnake	FSS	148 – 172	148 – 172	30 – 33	30 – 33	24 – 34	24 – 34	Adverse Effect	BIO-MM#61 BIO-MM#62	No Adverse Effect
San Bernardino ringneck snake	FSS	148 – 172	148 – 172	30 – 33	30 – 33	24 – 34	24 – 34	Adverse Effect	BIO-MM#63 BIO-MM#76	No Adverse Effect
South coast garter snake	SSC	26 – 33	14 – 21	0	0	9 – 16	9 – 16	Refined SR14, SR14A, E2 and E2A: Adverse Effect E1 and E1A: No Adverse Effect ³		Refined SR14, SR14A, E2 and E2A: No Adverse Effect E1 and E1A: N/A
Two-striped garter snake	FSS/BLMS / SSC	41 – 48	14 – 21	13	5	22 – 29	14 – 20	Adverse Effect		No Adverse Effect

Species	Protection Status ¹	Acres of Impact ²						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
		Refined SR14	SR14A	E1	E1A	E2	E2A			
Western pond turtle ⁵	FSS/BLMS / SSC	697 – 748	483 – 535	103 – 126	103 – 126	172 – 174	172 – 174	Adverse Effect		No Adverse Effect

Source: Authority, 2019a

¹ **Status Code:** BCC = USFWS Birds of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; BLMS = BLM sensitive; CT = CDFW California candidate for threatened status; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; SE = state endangered; SSC = CDFW California species of special concern; ST =state threatened; SC = CDFW candidate for listing

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ Species listed that would experience 0 acres of direct impacts to habitat would still experience indirect effects from the Build Alternative(s). However, such effects would not constitute an adverse effect for the purposes of NEPA.

⁴ The Yuma myotis is only protected within areas managed by the BLM. The Refined SR14 Alternative is the only Build Alternative that would pass near BLM land and would only indirectly impact this protected species.

⁵ The western pond turtle's listing status is under review by the ESA.

3.7.8.3 Aquatic Resources

The impacts on WOTUS, waters of the state, and CDFW-regulated areas that would occur with each of the six Build Alternatives are quantified in Table 3.7-34 and Table 3.7-35. The Refined SR14 Build Alternative would have the greatest acreage of impacts on nonwetland WOTUS and waters of the state and riparian habitat subject to Section 1600 et seq. The E2 Build Alternative would have the most impacts on wetland WOTUS and waters of the state and lakes, rivers, and streams also subject to Section 1600 et seq. The Refined SR14, E1, and E2, Build Alternatives would have the most impacts on wetland isolated waters of the state. The E1 and E2 Build Alternatives would have the most impacts on nonwetland additional waters of the state. Construction of HSR infrastructure would disturb aquatic features. Project effects would include the loss of aquatic resources and associated functions and values, such as water quality, flood attenuation, groundwater recharge, and wildlife habitat. The Authority would mitigate effects on aquatic resources by replacing, creating, restoring, enhancing, or preserving aquatic resources at ratios set forth in BIO-MM#47 or as determined in consultation with the appropriate agencies, to compensate for functions and values lost. Furthermore, the following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, Environmental Consequences, would reduce impacts on aquatic resources:

- 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
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plans
- HYD-IAMF#1: Stormwater Management
- BIO-MM#4: Seasonal Vernal Pool Work Restriction
- BIO-MM#5: Implement and Monitor Vernal Pool Protection within Temporary Impact Areas
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#32: Restore Temporary Habitat Riparian Impacts
- BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts
- BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters

Aquatic Resources

Section 3.7.1 and Section 3.7.5.6 define WOTUS, waters of the state, and CDFW jurisdictional areas. Section 3.7.6.3 describes direct and indirect impacts to aquatic resources that would result from construction and operations of each of the six Build Alternatives.

- BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat
- 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 Off-Site Habitat Restoration, Enhancement, and Preservation
- BIO-MM#53: Prepare 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
- BIO-MM#58: Environmentally Sensitive Areas, and Nondisturbance Zones
- BIO-MM#62: Prepare Plan for Dewatering and Water Diversions

Table 3.7-34 State and Federally Protected Aquatic Resources Impacts

Alternative	Acres of Impact ¹	NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
WOTUS and Waters of the State – Wetlands				
Refined SR14	7.56	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
SR14A	0.87	Adverse Effect	BIO-MM#6 BIO-MM#32	No Adverse Effect
E1	7.51 – 9.19	Adverse Effect	BIO-MM#33 BIO-MM#34 BIO-MM#39	No Adverse Effect
E1A	0.87 – 2.54	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
E2	15.04	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
E2A	8.39	Adverse Effect	BIO-MM#58 BIO-MM#62	No Adverse Effect
WOTUS Waters of the U.S. and Waters of the State – Nonwetlands				
Refined SR14	39.82 – 41.19	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
SR14A	28.87 – 29.56	Adverse Effect	BIO-MM#6 BIO-MM#32	No Adverse Effect
E1	32.62 – 34.16	Adverse Effect	BIO-MM#33 BIO-MM#34 BIO-MM#39	No Adverse Effect
E1A	19.71 – 21.25	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect

Alternative	Acres of Impact ¹	NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
E2	27.47 – 27.65	Adverse Effect	(cont.) BIO-MM#55	No Adverse Effect
E2A	14.57 – 14.75	Adverse Effect	BIO-MM#56 BIO-MM#58 BIO-MM#62	No Adverse Effect
Additional Waters of the State – Wetlands²				
Refined SR14	5.16	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
SR14A	0.93	Adverse Effect	BIO-MM#6 BIO-MM#32 BIO-MM#33	No Adverse Effect
E1	5.16	Adverse Effect	BIO-MM#34 BIO-MM#39	No Adverse Effect
E1A	0.86	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
E2	5.16	Adverse Effect	BIO-MM#55 BIO-MM#56 BIO-MM#58	No Adverse Effect
E2A	0.86	Adverse Effect	BIO-MM#62	No Adverse Effect
Additional Waters of the State – Nonwetlands²				
Refined SR14	1.08	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
SR14A	0.99	Adverse Effect	BIO-MM#6 BIO-MM#32 BIO-MM#33	No Adverse Effect
E1	1.83	Adverse Effect	BIO-MM#34 BIO-MM#39	No Adverse Effect
E1A	0.91	Adverse Effect	BIO-MM#47 BIO-MM#50	No Adverse Effect
E2	1.83	Adverse Effect	BIO-MM#55 BIO-MM#56 BIO-MM#58	No Adverse Effect
E2A	0.91	Adverse Effect	BIO-MM#62	No Adverse Effect

Source: Authority, 2019a

¹Acree calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

² Additional waters of the state are solely jurisdictional as waters of the state and are not considered WOTUS because they are isolated.
WOTUS = waters of the United States

Table 3.7-35 CDFW Regulated Area Impacts

Alternative	Acres of Impact ¹	NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
California Department of Fish and Wildlife – Riparian Habitat				
Refined SR14	46.58 – 53.21	Adverse Effect	BIO-MM#4 BIO-MM#5	No Adverse Effect
SR14A	40.72 – 47.35	Adverse Effect	BIO-MM#6 BIO-MM#32 BIO-MM#33	No Adverse Effect
E1	30.72 – 35.82	Adverse Effect	BIO-MM#34 BIO-MM#46	No Adverse Effect
E1A	24.96 – 30.06	Adverse Effect	BIO-MM#47 BIO-MM#50 BIO-MM#53	No Adverse Effect
E2	23.60 – 25.22	Adverse Effect	BIO-MM#55 BIO-MM#56	No Adverse Effect
E2A	17.86 – 19.48	Adverse Effect	BIO-MM#58 BIO-MM#62	No Adverse Effect
California Department of Fish and Wildlife – Lakes and Streambeds				
Refined SR14	51.88 – 53.26	Adverse Effect	BIO-MM#4 BIO-MM#5 BIO-MM#6	No Adverse Effect
SR14A	31.52 – 32.91	Adverse Effect	BIO-MM#32 BIO-MM#33	No Adverse Effect
E1	44.21 – 45.76	Adverse Effect	BIO-MM#34 BIO-MM#46 BIO-MM#47	No Adverse Effect
E1A	28.47 – 30.01	Adverse Effect	BIO-MM#50 BIO-MM#53 BIO-MM#55	No Adverse Effect
E2	53.08 – 53.24	Adverse Effect	BIO-MM#56 BIO-MM#58	No Adverse Effect
E2A	37.36 – 37.52	Adverse Effect	BIO-MM#62	No Adverse Effect

Source: Authority, 2019a

¹ Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

3.7.8.4 Designated Critical Habitat

The Refined SR14 Build Alternative alignment would traverse 6.17 acres of designated arroyo toad critical habitat on viaduct and in tunnel within Soledad Canyon. The E2 Build Alternative alignment would traverse 8.44 acres of designated Santa Ana sucker critical habitat and 7.62 acres of designated southwestern willow flycatcher designated critical habitat on viaduct within Big Tujunga Wash. The E1 Build Alternative alignments would not traverse designated critical habitat and would therefore have the least impact on designated critical habitat. Impacts on designated critical habitat from the SR14A and E2A Build Alternatives would be identical to the Refined SR14 and E2 Build Alternatives, respectively. Like the E1 Build Alternative, the E1A Build Alternative would avoid impacts on designated critical habitat.

Impacts on designated critical habitat resulting from construction of the Refined SR14 and E2A Build Alternatives would adversely affect physical or biological features essential to the conservation of the FESA-listed species for which the critical habitat was designated. Operations impacts could indirectly affect physical or biological features essential to the conservation of arroyo toad, Santa Ana sucker, and southwestern willow flycatcher.

Physical and biological features essential to the conservation of the arroyo toad include breeding pools in low-gradient stream segments with sandy substrates, seasonal flood flows, and riparian habitat and upland benches for foraging and dispersal. These features, which support the breeding population of arroyo toads, are local to the upper portion of the Santa Clara River in the core habitat RSA within Soledad Canyon. Physical and biological features in Big Tujunga Wash are essential to the conservation of Santa Ana sucker and southwestern willow flycatcher. Areas where the in-stream aquatic habitat is covered by riparian vegetation, which can provide thermal refuge and in-stream habitat structure, make up the physical and biological features essential to the biotic viability of designated habitat for the Santa Ana sucker. Physical and biological attributes such as floodplain size, vegetation density, and the proportion of dense vegetation and variability in vegetation density determine the functionality of an area to serve as designated critical habitat for the Southwestern willow flycatcher.

Table 3.7-36 summarizes the acreage of designated critical habitat impacts within the Refined SR14, SR14A, E2, and E2A core habitat RSA. Both the E2 and E2A Build Alternatives would have the most acreage of impacts on designated critical habitat.

Many of the IAMFs and mitigation measures that will be implemented to reduce impacts on special-status species and habitat are also applicable to impacts associated with designated critical habitat. These measures would minimize and offset impacts on the physical and biological features present in designated critical habitat. Therefore, application of these IAMFs and mitigation measures would effectively reduce impacts on designated critical habitat. Each impact outlined in Section 3.7.6, Environmental Consequences, details how specified mitigation measures would reduce impacts below the applicable threshold. The following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, would reduce impacts on critical habitat:

- BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors
- BIO-IAMF#2: Facilitate Agency Access

Designated Critical Habitat and Significant Ecological Areas

Section 3.7.1 and Section 3.7.5.7 define designated critical habitat. Figure 3.7-2 Biological and Aquatic Resource Study Areas

displays where designated critical habitat occurs within each of the six Build Alternative RSAs.

Section 3.7.6.3 describes direct and indirect impacts to designated critical habitat that would result from construction and operations of each of the six Build Alternatives.

Section 3.7.4.8 defines SEAs. Figure 3.7-5 displays where SEAs occur within each of the six Build Alternative RSAs. Section 3.7.6.3 also describes direct and indirect impacts to SEAs that would result from construction and operations of each of the six Build Alternatives.

- BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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
- BIO-IAMF#12: Design the Project to be Bird Safe
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plan
- HYD-IAMF#1: Stormwater Management
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan 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 a Compensatory Mitigation Plan for Species and Species Habitat

Table 3.7-36 Designated Critical Habitat within the Core Habitat Resource Study Areas

Special-Status Designated Critical Habitat	Subsurface Impacts (acres)	Permanent Impacts (acres)	NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
Arroyo toad (Refined SR14/SR14A)	4.42	1.75	Adverse Effect	BIO-MM#6 BIO-MM#47	No Adverse Effect
Santa Ana sucker (E2/E2A)	-	8.44	Adverse Effect	BIO-MM#50 BIO-MM#53	No Adverse Effect
Southwestern willow flycatcher (E2/E2A)	-	7.62	Adverse Effect		No Adverse Effect

3.7.8.5 Significant Ecological Areas

The six Build Alternative alignments would traverse the San Andreas, Santa Clara River, and Tujunga Valley/Hansen Dam SEAs. All six Build Alternatives propose construction activities and permanent footprint within SEAs, which would degrade ecological value. Application of IAMFs and mitigation measures to protect special-status species and habitat would reduce impacts associated with designated SEAs. The following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, Environmental Consequences, would reduce impacts on SEAs:

- 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
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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
- BIO-IAMF#12: Design the Project to be Bird Safe
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plan
- HYD-IAMF#1: Stormwater Management
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan 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 a Compensatory Mitigation Plan for Species and Species Habitat

3.7.8.6 Protected Trees

Construction and operation of the proposed project would affect trees protected under the following county and local plans and ordinances:

- Los Angeles County General Plan
- Antelope Valley Area Plan
- Los Angeles County Code

Several tree species also receive protection as the dominant species within special-status plant communities. The following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, Environmental Consequences, would reduce impacts on protected trees:

- 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

- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plan
- HYD-IAMF#1: Stormwater Management
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees
- BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites
- BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan
- BIO-MM#55: Prepare and Implement a Weed Control Plan
- BIO-MM#58: Environmentally Sensitive Areas, and Nondisturbance Zones

3.7.8.7 Wildlife Movement Corridors

The six Build Alternatives would bisect wildlife movement corridors. Construction activities would deter wildlife from entering construction work areas, and work occurring near existing crossing structures, such as underpasses, overpasses, or culverts, would deter use of these structures for wildlife passage. Direct effects on wildlife movement from placement of barriers (e.g., temporary construction fencing), CSAs, and increased vehicular traffic may include a decrease in the ability of wildlife to move across construction areas freely. Effects on wildlife movement from construction activities may include mortality, injury, or harassment (e.g., vehicular strikes, crushing burrows, and nest abandonment). However, protocol-level and pre-activity surveys would be conducted in advance of ground disturbance, wildlife exclusion fencing would be installed to prevent wildlife from entering active construction areas, and biological monitors would be present to prevent adverse effects.

The operation of the Build Alternatives would result in permanent effects on wildlife movement in areas with little to no existing constraints because, in urban areas such as Palmdale and San Fernando Valley, the operation of the Palmdale to Burbank Project Section would result in marginal effects on the already limited wildlife movement corridors. Most of the Build Alternatives would be permeable outside of the Palmdale and the San Fernando Valley urban areas, as indicated in the summary of permeability for each Build Alternative below:

- Refined SR14 Build Alternative: 83 percent permeability in nonurban areas
- SR14A Build Alternative: 83 percent permeability in nonurban areas
- E1 Build Alternative: 80 percent permeability in nonurban areas
- E1A Build Alternative: 83 percent permeability in nonurban areas
- E2 Build Alternative: 79 percent permeability in nonurban areas
- E2A Build Alternative: 82 percent permeability in nonurban areas

These permeable areas, which are conducive to wildlife connectivity, occur where the Build Alternatives would be elevated on a viaduct or underground in a tunnel. Conversely, at-grade segments of the Build Alternatives would create a permanent barrier to wildlife movement. However, there are few at-grade segments of the Build Alternatives where wildlife would not already be constrained by existing infrastructure and landscape features.

The *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019c) highlights 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 that exceed the recommended crossing interval lengths of 1.0 mile for large crossings and 0.3 miles for small crossings (Authority 2019c), indicating that certain segments of the Build Alternatives do not provide wildlife sufficient opportunities to traverse the Palmdale to Burbank Project Section alignment. The Authority would install one wildlife crossing south of the California Aqueduct and one wildlife crossing east of Una Lake to improve the permeability of the SR14A, E1, E1A, E2, and E2A 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 adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial.

The following IAMFs (described in Section 3.7.4.2 and listed in entirety in Appendix 2-E) and mitigation measures (described in Section 3.7.7), for which applicability and efficiency is discussed in Section 3.7.6, Environmental Consequences, would reduce impacts on wildlife movement corridors:

- 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
- BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training
- 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
- BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan
- BIO-MM#36: Install Aprons or Barriers within Security Fencing
- BIO-MM#37: Minimize Effects on Wildlife Movement Corridors During Construction
- BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones
- BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds
- BIO-MM#64: Establish Wildlife Crossings
- BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing
- BIO-MM#78: Install Wildlife Jump-outs

- BIO MM#83: Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement

3.7.8.8 Tunnel Construction Effects to Biological and Aquatic Resources

The Refined SR14 and SR14A Build Alternative 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 Build 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. The E1 and E1A Build Alternative alignments would traverse two High Risk and four Moderate Risk area. There are six springs located within one mile of the tunnel alignment. As such the E1 and E1A Build Alternatives would pose substantially higher risk of hydrologic impacts occurring when compared to the Refined SR14 and SR14A Build Alternatives and similar risk of hydrologic impacts occurring when compared to the E2 and E2A Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14/SR14A Build Alternatives and similar to the E2 and E2A Build Alternatives. The E2 and E2A Build Alternative alignments traverse the greatest number of Moderate and High Risk areas; have the largest number of springs, streams, and wells within one mile of the Build Alternative alignment; and have the largest number of springs within the designated Risk Areas. As such the E2 and E2A Build Alternatives would pose the highest risk of hydrologic impacts occurring when compared to the other Build Alternatives. Moreover, to the extent such impacts may occur, they would likely be more severe than the Refined SR14/SR14A Build Alternatives and similar to the E1 and E1A Build Alternatives.

Special-Status Plant Habitat

The Refined SR14 Build Alternative and the SR14A Build Alternative would have the least amount of effects on habitat for special-status plants, while the E1 and E1A Build Alternatives would have the greatest level of impacts on habitat for special-status plants. The E2 and E2A Build Alternatives would have the least impacts on suitable habitat for the federally listed Nevin's barberry, while the E1 and E1A Build Alternatives would have the most impacts on suitable habitat for Nevin's barberry. The E1, E1A, E2, and E2A Build Alternatives would have substantially higher levels of effects on special-status plants when compared to the Refined SR14 and SR14A Build Alternatives. For example, the E1 and E1A Build Alternatives and the E2 and E2A Build Alternatives have 1,808 and 1,316 acres of suitable habitat, respectively, within the defined Risk Areas, for Davidson's bush-mallow, while the Refined SR14 and SR14A Build Alternatives Risk Areas contain 467 acres of suitable habitat for Davidson's bush-mallow (Table 3.7-11).

Special-Status Plant Communities

The Refined SR14 and SR14A Build Alternatives would have the least amount of effects on vegetation types that could support special-status plant communities (72 acres), while the E2 and E2A Build Alternatives would have the most amount of impacts on vegetation types that could support special-status plant communities (142 acres). Lastly, the E1 and E1A Build Alternatives would have impacts on 117 acres of vegetation types that could support special-status plant communities.

Special-Status Amphibian Habitat

Suitable habitat for special-status amphibians is limited within the RSA. The E1 and E1A Build Alternatives are expected to have the most impacts on special-status amphibians from tunneling. Tunneling and changes in groundwater levels are not expected to affect potential habitat for the federally listed Arroyo toad for any of the six Build Alternatives. The Refined SR14, SR14A, E2, and E2A Build Alternatives are not expected to affect potential habitat for California red-legged frog and mountain yellow-legged frog, while the E1 and E1A Build Alternatives could affect 1 acre and 7 acres of suitable habitat for each species, respectively. Lastly, the E1 and E1A Build Alternatives could affect the most potential habitat for western spadefoot (182 acres), while the

E2 and E2A Build Alternatives could affect 133 acres of suitable habitat and the Refined SR14 and SR14A Build Alternatives could affect 118 acres of suitable habitat.

Special-Status Bird Habitat

Suitable habitat for special-status birds associated with aquatic habitat is limited within the RSA. The E2 and E2A Build Alternatives are the only Build Alternatives with impacts on special-status birds from tunneling related changes in groundwater levels. Approximately 2 acres of potential habitat for special-status birds is present within the Moderate and High Risk Areas within the tunnel construction RSA and could be affected during tunneling. Tunneling and changes in groundwater levels are not expected to affect suitable habitat for any special-status bird species for the Refined SR14, SR14A, E1, and E1A Build Alternatives.

Special-Status Fish Habitat

Suitable habitat for special-status fish is extremely limited within the RSA. Only the E2 and E2A Build Alternatives are expected to have impacts on special-status fish from tunneling. Approximately 2 acres of suitable habitat for the arroyo chub and Santa Ana speckled dace could be affected under this Build Alternative.

Special-Status Invertebrate Habitat

Tunnel construction and associated changes in groundwater levels are not expected to affect special-status invertebrates. Vernal pool fairy shrimp would not be affected because habitat for this species is vernal pools, which rely solely on rainfall to support their hydrologic cycle. Two butterfly species, San Emigdio blue butterfly and San Gabriel Mountains elfin butterfly, would not be affected because they do not occur within groundwater dependent ecosystems. Consequently, substantial impacts to special-status invertebrates are not expected.

Special-Status Mammal Habitat

Suitable habitat for ringtail is relatively limited within the RSA. The E1 and E1A Build Alternatives would have the largest impact on suitable habitat for ringtail at 357 acres. The Refined SR14 and SR14A Build Alternatives would have 26 acres of impact on suitable habitat for ringtail and the E2 and E2A Build Alternatives would have 9 acres of impact.

Special-Status Reptile Habitat

Suitable habitat within the RSA for south coast garter snake and two-striped garter snake occurs only in the E2 and E2A Build Alternative alignment. Approximately 2 acres of suitable habitat for south coast garter snake and two-striped garter snake is present within the Moderate and High Risk Areas within the E2 and E2A Build Alternative alignment and could be adversely affected by changes in groundwater levels. Substantially more suitable habitat occurs for western pond turtle within the Moderate and High Risk Areas for all three alignments. The Refined SR14 and SR14A Build Alternatives could adversely affect 488 acres of suitable habitat while the E1 and E1A Build Alternatives could adversely affect 1,357 acres and the E2 and E2A Build Alternatives could adversely affect 1,808 acres.

State and Federally Protected Aquatic Resources

The Refined SR14 and SR14A Build Alternatives would have the least impacts on state and federally protected aquatic resources. The analysis indicates that only the E1 and E1A Build Alternatives would potentially affect a perennial stream. The E2 and E2A Build Alternatives would have the most potential for effects on ephemeral/intermittent streams (9.9 linear miles), while the Refined SR14 and SR14A Build Alternatives would have the least impacts (3.2 linear miles). The E1 and E1A Build Alternatives would have 5.5 linear miles of impacts. Lastly, the Build Alternatives would also differ in their impacts on seeps/springs, with the Refined SR14 and SR14A not expected to affect seeps/springs, the E1 and E1A Build Alternatives potentially affecting two seeps/springs, and the E2 and E2A Build Alternatives four seeps/springs.

Aquatic Resources Subject to Section 1600 et. seq.

The Refined SR14 and SR14A Build Alternatives would have the least impacts on Section 1600 et. seq. regulated aquatic resources and the associated fish and wildlife habitat. The analysis indicates that only the E1 and E1A Build Alternatives would potentially affect a perennial stream. The E2 and E2A Build Alternatives would have the most effects on ephemeral/intermittent streams (9.9 linear miles), while the Refined SR14 and SR14A Build Alternatives would have the least impacts (3.2 linear miles). The E1 and E1A Build Alternatives would have 5.5 linear miles of impacts. The Build Alternatives would also differ in their impacts on seeps/springs, which could potentially fall under Section 1600 jurisdiction, with the Refined SR14 and SR14A not expected to affect seeps/springs, the E1 and E1A Build Alternatives affecting two and the E2 and E2A Build Alternatives four seeps/springs. Lastly, only the E2 and E2A Build Alternatives would adversely affect riparian habitat (1.8 acres).

Designated Critical Habitat

Tunnel construction and associated changes in groundwater levels are not expected to affect critical habitat. Critical habitat for three species, southwestern willow flycatcher, Santa Ana sucker, and arroyo toad is located within No/Low Risk Areas. Because these areas lack faults and high groundwater pressure and with the implementation of HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 no impact is expected. No critical habitat for any species is located within the Moderate or High Risk Areas identified for all six Build Alternatives.

3.7.9 CEQA Significance Conclusions

Table 3.7-37 summarizes impacts, the level of significance before mitigation, mitigation measures, and the level of CEQA significance after mitigation of the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives. With implementation of mitigation measures, impacts on biological and aquatic resources would be less than significant for all six Build Alternatives.

Table 3.7-37 Summary of CEQA Significance Conclusions and Mitigation Measures for Biological and Aquatic Resources

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Construction Impacts														
Impact BIO#1: Project Construction Effects on Habitat for Special-Status Individuals and Communities.	S	S	S	S	S	S	BIO-MM#1 BIO-MM#2 BIO-MM#4 BIO-MM#5 BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#38	BIO-MM#50 BIO-MM#53 BIO-MM#54 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#61 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#7 BIO-MM#8 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#36 BIO-MM#46 BIO-MM#47 BIO-MM#50	BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.	S	S	S	S	S	S	BIO-MM#6	BIO-MM#63	LTS	LTS	LTS	LTS	LTS	LTS
							BIO-MM#14	BIO-MM#65						
							BIO-MM#15	BIO-MM#66						
							BIO-MM#16	BIO-MM#67						
							BIO-MM#17	BIO-MM#68						
							BIO-MM#18	BIO-MM#69						
							BIO-MM#20	BIO-MM#70						
							BIO-MM#21	BIO-MM#71						
							BIO-MM#32	BIO-MM#72						
							BIO-MM#43	BIO-MM#74						
							BIO-MM#44	BIO-MM#76						
							BIO-MM#50	BIO-MM#78						
							BIO-MM#53	BIO-MM#79						
							BIO-MM#55	BIO-MM#80						
							BIO-MM#56	BIO-MM#81						
							BIO-MM#58	BIO-MM#82						
						BIO-MM#60	BIO-MM#93							
						BIO-MM#61								

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#46 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#61	BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#84 BIO-MM#85 BIO-MM#86 BIO-MM#87 BIO-MM#88 BIO-MM#89 BIO-MM#90 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.	S	S	S	S	S	S	BIO-MM#3 BIO-MM#4 BIO-MM#5 BIO-MM#6 BIO-MM#39 BIO-MM#47 BIO-MM#50 BIO-MM#53	BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#63 BIO-MM#94 BIO-MM#95	LTS	LTS	LTS	LTS	LTS	LTS

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#25 BIO-MM#26 BIO-MM#27 BIO-MM#28 BIO-MM#29 BIO-MM#36 BIO-MM#47 BIO-MM#50 BIO-MM#53 BIO-MM#55	BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#93 BIO-MM#96 BIO-MM#97 BIO-MM#99	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#7 BIO-MM#8 BIO-MM#36 BIO-MM#47 BIO-MM#50 BIO-MM#52 BIO-MM#53 BIO-MM#55	BIO-MM#56 BIO-MM#58 BIO-MM#60 BIO-MM#61 BIO-MM#62 BIO-MM#63 BIO-MM#76 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#8: Project Construction Effects on State and Federally Protected Aquatic Resources.	S	S	S	S	S	S	BIO-MM#4 BIO-MM#5 BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#39	BIO-MM#47 BIO-MM#50 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#62 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#32 BIO-MM#33 BIO-MM#34 BIO-MM#46 BIO-MM#47 BIO-MM#50	BIO-MM#53 BIO-MM#55 BIO-MM#56 BIO-MM#58 BIO-MM#62 BIO-MM#93	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat.	S	S	No Impact	No Impact	S	S	BIO-MM#6 BIO-MM#47	BIO-MM#50 BIO-MM#53	LTS	LTS	N/A	N/A	LTS	LTS
Impact BIO#11: Project Construction Effects on Significant Ecological Areas.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#47	BIO-MM#50 BIO-MM#53	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#12: Project Construction Effects on Protected	S	S	S	S	S	S	BIO-MM#6 BIO-MM#35 BIO-MM#50	BIO-MM#55 BIO-MM#56 BIO-MM#58	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#13: Project Effects on Wildlife Movement Corridors.	S	S	S	S	S	S	BIO-MM#6 BIO-MM#36 BIO-MM#37 BIO-MM#58	BIO-MM#60 BIO-MM#64 BIO-MM#77 BIO-MM#78 BIO-MM#83	LTS	LTS	LTS	LTS	LTS	LTS

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation						
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A	
Operations Impacts														
Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.	S	S	S	S	S	S	BIO-MM#36 BIO-MM#53 BIO-MM#54 BIO-MM#55 BIO-MM#73 BIO-MM#76	BIO-MM#84 BIO-MM#86 BIO-MM#88 BIO-MM#92 BIO-MM#98 BIO-MM#100 BIO-MM#101	LTS	LTS	LTS	LTS	LTS	LTS
Impact BIO#15: Indirect Effects on Federal and State Protected Aquatic Resources from Project Operation.	LTS	LTS	LTS	LTS	LTS	LTS	No mitigation measures are required.		N/A	N/A	N/A	N/A	N/A	N/A
Impact BIO#16: Indirect Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.	LTS	LTS	LTS	LTS	LTS	LTS	No mitigation measures are required.		N/A	N/A	N/A	N/A	N/A	N/A
Impact BIO#17: Project Operation Effects on Designated Critical Habitat.	LTS	LTS	No Impact	No Impact	LTS	LTS	No mitigation measures are required.		N/A	N/A	N/A	N/A	N/A	N/A

Impact	Level of CEQA Significance before Mitigation						Mitigation Measures	Level of CEQA Significance after Mitigation					
	Refined SR14	SR14A	E1	E1A	E2	E2A		Refined SR14	SR14A	E1	E1A	E2	E2A
Impact BIO#18: Indirect Effects on Significant Ecological Areas from Project Operation.	LTS	LTS	No Impact	No Impact	N/A	LTS	No mitigation measures are required.	N/A	N/A	N/A	N/A	N/A	N/A
Impact BIO#19: Project Operation Effects on Protected Trees.	S	S	S	S	S	S	BIO-MM#35	LTS	LTS	LTS	LTS	LTS	LTS

¹ Refer to Section 3.8, Hydrology and Water Resources for a discussion of HWR-MM#4.
MM = Mitigation Measure; N/A = Not Applicable; LTS = Less than Significant; S = Significant

3.7.10 Summary of Section 7 Consultation

Section 7 of FESA, Interagency Cooperation, establishes the process whereby federal action agencies, their designees, and the USFWS and/or the NMFS enter into consultation to ensure proposed actions are not likely to jeopardize the continued existence of species listed or proposed for listing as threatened or endangered, or result in the destruction or adverse modification of designated critical habitats for those species. As part of the consultation, a Biological Assessment is required to be prepared for major construction activities and may be prepared in other instances to provide the basis for determining the effects of the proposed action on listed species and their critical habitat. In response to the Biological Assessment, the USFWS and/or the NMFS will issue a Biological Opinion that may include an incidental take statement for fish or wildlife species to exempt take prohibited under Section 9.

The *Palmdale to Burbank Project Section: Biological Assessment* (Authority 2020) was prepared to evaluate adverse effects of the SR14A Build Alternative, the State’s Preferred Alternative, on species listed as endangered or threatened under FESA, as amended, and on designated or proposed critical habitats (Authority 2020). Effects on federally listed species were evaluated in accordance with the legal requirements set forth in Section 7 of FESA (16 U.S.C. 1531 et seq.) and the implementing regulations.

3.7.10.1 Federally Listed Plant and Wildlife Species and Critical Habitat

The Palmdale to Burbank Project Section: Biological Assessment analyzes listed species and designated critical habitat regulated by the USFWS. Twelve federally listed plant species and 22 wildlife species were evaluated for their potential to occur within 10 miles of the action area.²³ Determinations for federally listed species and their designated or proposed critical habitat are summarized in Table 3.7-38. No species or designated critical habitat under the jurisdiction of the NMFS is present in the action area; thus, no consultation with NMFS is required.

Table 3.7-38 Determination of Effects for Federally Listed Species and Designated or Proposed Critical Habitat

Scientific Name Common Name	Federal Status	Determination
Plants		
<i>Arenaria paludicola</i> Marsh sandwort	FE	May Affect, but is Not Likely to Adversely Affect
<i>Astragalus brauntonii</i> Braunton's milk-vetch	FE	May Affect, but is Not Likely to Adversely Affect
Braunton's milk-vetch designated critical habitat	Designated CH	No Effect
<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i> Ventura marsh milk-vetch	FE	No Effect
<i>Astragalus tener</i> var. <i>titi</i> Coastal dunes milk-vetch	FE, BLMS	No Effect
<i>Berberis nevinii</i> Nevin's barberry	FE	May Affect, but is Not Likely to Adversely Affect

²³ For the purposes of the *Palmdale to Burbank Project Section: Biological Assessment* (Authority 2020), the action area encompasses the Build Alternative footprint (including the below-ground tunnel sections) and all areas where direct and indirect effects from the proposed action may occur to federally listed species and/or their critical habitats. The action area includes the Build Alternative footprint and up to a 100-foot buffer for plant species, up to a 250-foot buffer for vernal pool species, and a 1,000-foot buffer for wildlife species. The limit of indirect effects in the action area is discussed in Section 5, Effects Analysis, on a species-by-species basis.

Scientific Name Common Name	Federal Status	Determination
Nevin's barberry designated critical habitat	Designated CH	No Effect
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i> Salt marsh bird's beak	FE	No Effect
<i>Dodecahema leptoceras</i> Slender-horned spineflower	FE	May Affect, and is Likely to Adversely Affect
<i>Nasturtium gambellii</i> Gambel's watercress	FE/FSS	May Affect, but is Not Likely to Adversely Affect
<i>Navarretia fossalis</i> Spreading navarretia	FT	May Affect, but is Not Likely to Adversely Affect
Spreading navarretia designated critical habitat	Designated CH	No Effect
<i>Orcuttia californica</i> California Orcutt grass	FE	May Affect, but is Not Likely to Adversely Affect
Invertebrates		
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	FE	No Effect
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT	May Affect, but is Not Likely to Adversely Affect
Vernal pool fairy shrimp designated critical habitat	Designated CH	No Effect
<i>Euphydryas editha quino</i> (= <i>E. e. wrighti</i>) Quino checkerspot butterfly	FE	No Effect
Quino checkerspot butterfly designated critical habitat	Designated CH	No Effect
<i>Streptocephalus woottoni</i> Riverside fairy shrimp	FE	No Effect
<i>Euproserpinus euterpe</i> Kern primrose sphinx moth	FT	May Affect, but is Not Likely to Adversely Affect
Fish		
<i>Gasterosteus aculeatus williamsoni</i> Unarmored three-spine stickleback	FE	May Affect, and is Likely to Adversely Affect
Amphibians		
<i>Anaxyrus californicus</i> Arroyo toad	FE	May Affect, and is Likely to Adversely Affect
Arroyo toad designated critical habitat	Designated CH	May Affect, and is Likely to Adversely Affect
<i>Rana draytonii</i> California red-legged frog	FT	May Affect, but is Not Likely to Adversely Affect
California red-legged frog designated critical habitat	Designated CH	No Effect

Scientific Name Common Name	Federal Status	Determination
<i>Rana muscosa</i> Southern mountain yellow-legged frog	FE	May Affect, but is Not Likely to Adversely Affect
Southern mountain yellow-legged frog designated critical habitat	Designated CH	No Effect
Reptiles		
<i>Gopherus agassizii</i> Desert tortoise	FT	May Affect, and is Not Likely to Adversely Affect
Desert tortoise designated critical habitat	Designated CH	No Effect
Birds		
<i>Coccyzus americanus</i> Western yellow-billed cuckoo	FT, BLMS	May Affect, but is Not Likely to Adversely Affect
Western yellow-billed cuckoo designated critical habitat	Proposed CH	No Effect
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher	FE	May Affect, and is Likely to Adversely Affect
<i>Gymnogyps californianus</i> California condor	FE	May Affect, and is Not Likely to Adversely Affect
California condor designated critical habitat	Designated CH	No Effect
<i>Polioptila californica</i> Coastal California gnatcatcher	FT	May Affect, and is Likely to Adversely Affect
Coastal California gnatcatcher designated critical habitat	Designated CH	No Effect
<i>Vireo bellii pusillus</i> Least Bell's vireo	FE	May Affect, and is Likely to Adversely Affect
Least Bell's vireo designated critical habitat	Designated CH	No Effect

BLMS – Bureau of Land Management Sensitive
 CH – Critical Habitat
 DPS – Distinct Population Segment
 FE – Federally Endangered
 FT – Federally Threatened
 FSS – Forest Service Sensitive
 ssp. – subspecies
 var. – variety

3.7.10.2 **Determination of Effects for Federally Listed Species and Their Critical Habitat**

Due to findings of “may affect, and is likely to adversely affect” for the following species and designated critical habitat, the Biological Assessment concluded that formal consultation is required pursuant to Section 7 of the FESA for these species:

- Slender-horned spineflower
- Unarmored three-spine stickleback
- Arroyo toad
- Arroyo toad designated critical habitat
- Southwestern willow flycatcher
- Coastal California gnatcatcher

- Least Bell's vireo

Due to findings of “may affect, but is not likely to adversely affect” or “no effect”, the Authority is seeking concurrence from USFWS that formal consultation pursuant to Section 7 of the FESA is not required for the following species:

- Marsh sandwort
- Braunton's milk-vetch
- Ventura marsh milk-vetch
- Coastal dunes milk-vetch
- Nevin's barberry
- Salt marsh bird's beak
- Gambel's watercress
- Spreading navarretia
- Bakersfield cactus
- California Orcutt grass
- Conservancy fairy shrimp
- Vernal pool fairy shrimp
- Quino checkerspot butterfly
- Riverside fairy shrimp
- Kern primrose sphinx moth
- California red-legged frog
- Mountain yellow-legged frog (southern California DPS)
- Yellow-billed cuckoo (western DPS)
- California condor
- Desert tortoise

The *Palmdale to Burbank Project Section: Biological Assessment* (Authority 2020) includes conservation measures to avoid, minimize, and mitigate impacts to these species and habitat.

3.7.11 United States Forest Service Impact Analysis

This section summarizes the impacts of the six Build Alternatives on biological and aquatic resources in the ANF, including lands within the ANF that are part of the SGMNM. Table 3.7-39 summarizes the range of surface impacts within the ANF on habitat for special-status plant species and sensitive natural communities that would result from construction of the Build Alternatives. Table 3.7-40 and Table 3.7-41 summarize the range of surface impacts within the ANF on habitat for FESA-listed, and non-FESA-listed special-status wildlife species.

Table 3.7-39 Special-Status Plant Species and Plant Community Habitat Impacts within the Angeles National Forest

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
FESA-Listed Special-Status Plant Species							
Braunton's milk-vetch	FE/FSS, 1B.1	2	2	<1 – 2	<1 – 2	15 – 17	15 – 17
Nevin's barberry	FE/FSS, 1B.1	<1 – 22	<1 – 22	<1 – 22	<1 – 22	1 – 5	1 – 5
Slender-horned spineflower	FE/FSS, 1B.1	<1 – 8	<1 – 8	1 – 8	1 – 8	1 – 5	1 – 5

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Non-FESA–Listed Special-Status Plant Species							
California androsace	4.2	135 – 159	111 – 135	29 – 33	29 – 33	24 – 33	24 – 33
California satintail	2B.1	141 – 159	113 – 131	45 – 47	45 – 46	43 – 46	43 – 46
California spineflower	4.2	135 – 159	111 – 135	24 – 28	24 – 28	19 – 28	19 – 28
Chaparral ragwort	2B.2	141 – 159	113 – 131	21 – 22	21 – 22	19 – 22	19 – 22
Chickweed starry puncturebract	4.3	0	0	0	0	0	0
Clokey's cryptantha	BLMS,.2 1B	0 – 23	0 – 0	5 – 24	5 – 24	5 – 24	5 – 24
Club-haired mariposa lily	4.3	111 – 159	111 – 135	21 – 28	21 – 28	19 – 22	19 – 22
Davidson's bush-mallow	1B.2	23 – 165	0 – 137	26 – 28	26 – 28	17 – 19	17 – 19
Forest camp sandwort	FSS	0 – 141	0 – 113	0 – 25	0 – 25	0 – 29	0 – 29
Fragrant pitcher sage	4.2	41 – 135	18 – 111	0 – 22	0 – 22	9 – 10	9 – 10
Greata's aster	BLMS, 1B.3	54 – 135	26 – 111	24 – 28	24 – 28	10 – 28	10 – 28
Lemon lily	1B.2	12 – 135	8 – 111	6 – 24	6 – 24	0 – 28	0 – 28
Lemon's syntrichopappus	4.3	0 – 41	0 – 18	9 – 27	9 – 27	12 – 15	12 – 15
Mason's neststraw	1B.1	0 – 23	0	5 – 29	5 – 29	5 – 29	5 – 29
Mesa horkelia	1B.1	0 – 153	0 – 130	5 – 22	5 – 22	5 – 18	5 – 18
Mojave paintbrush	4.3	0	0	5	5	5	5
Mojave tarplant	1B.3	141 – 159	113 – 131	21 – 22	21 – 22	19 – 22	19 – 22
Mt. Gleason's paintbrush	1B.2	23 – 41	0 – 18	26 – 27	26 – 27	15 – 17	15 – 17
Ocellated lily	4.2	141 – 165	113 – 137	25 – 28	25 – 28	19 – 29	19 – 29
Plummer's mariposa lily	4.2	111	111	0	0	9	9
Parry's spineflower	1B.1	135 – 159	111 – 135	24 – 28	24 – 28	19 – 28	19 – 28
Peirson's morning-glory	4.2	135 – 159	111 – 135	24 – 28	24 – 28	19 – 28	19 – 28
Piute Mountains navarretia	1B.1	0 – 6	0 – 6	9 – 11	9 – 11	5 – 12	5 – 12
Pygmy poppy	4.2	0	0	29	29	29	29
Rigid fringe-pod	1B.2	0 – 0	0 – 0	5 – 5	5 – 5	5 – 5	5 – 5

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Robbins' nemacladus	1B.2	23 – 41	0 – 18	21 – 22	21 – 22	10 – 12	10 – 12
Robinson's pepper grass	4.3	111	111	0	0	9	9
Rock monardella	4.2	23 – 41	0 – 18	21 – 22	21 – 22	10 – 12	10 – 12
Sagebrush loeflingia	2B.2	0	0	24	24	24	24
Salt Spring checkerbloom	2B.2	135 – 153	111 – 129	45 – 46	45 – 46	43 – 45	43 – 45
San Bernardino aster	1B.2	111 – 117	111 – 117	4 – 6	4 – 6	9 – 16	9 – 16
San Fernando Valley spineflower	FSS, SE, 1B.1	111	111	0	0	9	9
San Gabriel bedstraw	1B.2	23 – 47	0 – 24	24 – 28	24 – 28	10 – 20	10 – 20
San Gabriel manzanita	1B.2	23 – 41	0 – 18	21 – 22	21 – 22	10 – 12	10 – 12
Short-joint beavertail	1B.2	23 – 41	0 – 18	50 – 51	50 – 51	39 – 42	39 – 42
Slender mariposa lily	1B.2	135 – 153	111 – 129	21 – 22	21 – 22	19 – 21	19 – 21
Sonoran maiden fern	2B.2	0	0	0	0	0	0
Southern California black walnut	4.2	135 – 159	111 – 135	24 – 28	24 – 28	19 – 28	19 – 28
Southern tarplant	1B.1	6	2	0	0	0 – 1	0 – 1
Urn-flowered alumroot	4.3	111	111	0	0	9	9
White rabbit-tobacco	2B.2	141 – 165	113 – 137	25 – 28	25 – 28	19 – 29	19 – 29
Special-Status Plant Communities							
Scalebroom scrub	S1 and S3	0	0	0	0	0	0
California sycamore woodlands	S1 and S3	7	7	0	0	0 – 1	0 – 1
Fremont cottonwood forest	S3	7	7	0	0	0 – 1	0 – 1
Bigcone Douglas fir forest	S3	0	0	1	1	0	0
Coast live oak woodland	S4	3 – 9	3 – 9	9 – 11	9 – 11	3 – 11	3 – 11
Black willow thickets	S3	0	0	0	0	0	0

Source: Authority 2019a

¹ Status Code: BLMS = BLM sensitive, FE = federally endangered; FSS = U.S. Forest Service sensitive; C = candidate; FT = federally threatened; SE = state endangered, SC = CDFW candidate for listing; CRPR Status = California Rare Plant Rank; 1A = Presumed extinct in California; 1B = Rare, Threatened, or Endangered in California and elsewhere; 2B = Rare, Threatened, or Endangered in California but more common elsewhere; 3 = A review list of plants about which more information is needed; 0.1 = Seriously threatened in California (over 80% of occurrences threatened); 0.2 = Moderately threatened in California (20-80% of occurrences threatened); 0.3 = Not very threatened in California (<20% of occurrences threatened)

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional add and intermediate window selection scenarios.

Table 3.7-40 FESA – Listed Special – Status Wildlife Habitat Impacts within the Angeles National Forest

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Amphibians							
Arroyo toad	FE/SCC	7	7	0	0	0	0
California red – legged frog	FT/SCC	199 – 239	171 – 211	75 – 77	75 – 77	51 – 62	51 – 62
Southern mountain yellow – legged frog	FE/SE	0 – 21	0 – 21	20 – 23	20 – 23	17 – 28	17 – 28
Birds							
California condor	FE/SE/FP	144 – 168	117 – 141	54 – 58	54 – 58	48 – 59	48 – 59
Coastal California gnatcatcher	FT/SSC	105	105	<1	<1	9	9
Least Bell's vireo	FT/SE	4	0	<1	<1	<1 – 1	<1 – 1
Southwestern willow flycatcher	FT/SE	4	0	<1	<1	<1 – 1	<1 – 1
Western yellow – billed Cuckoo	FE/BLMS/SE	0 – 3	0 – 3	3	3	0	0
Fish							
Santa Ana sucker	FT	0 – 1	0 – 1	<1 – 1	<1 – 1	0	0
Unarmored three – spine stickleback	FE/SE/FP	0	0	0	0	0	0
Invertebrates							
Vernal pool fairy shrimp	FT	0	0	0	0	0	0
Reptiles							
Desert tortoise	FT/ST	0	0	0	0	0	0

Source: Authority 2019a

¹ **Status Code:** BCC = USFWS Birds of Conservation Concern; BLMS = BLM sensitive; CT = CDFW candidate for threatened status; FE = federally endangered; FSS = U.S. Forest Service sensitive; FP = CDFW fully protected species; FT = federally threatened; SE = state endangered; SSC = CDFW California species of special concern; ST = state threatened;

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

Table 3.7-41 Non – FESA–Listed Special – Status Wildlife Habitat Impacts within the Angeles National Forest

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Amphibians							
Coast range newt	SCC	0	0	0	0	0	0
Western spadefoot	BLMS/SCC	0	0	0	0	0 – 3	0 – 3

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Birds							
American peregrine falcon	Delisted/FP	0	0	0	0	0	0
Bald eagle	Delisted/FSS/ BGEPA/ BLMS/SE/FP	0	0	0	0	0	0
Golden eagle	BGEPA/ BLMS/FP	8 – 13	8 – 13	12 – 14	14 – 14	9 – 12	9 – 12
Gray vireo	BCC/FSS/ BLMS/SSC	0	0	0	0	0	0
Least bittern	SSC	0	0	0	0	0	0
Loggerhead shrike	BCC/SSC	0	0	0	0	0	0
Northern harrier	SSC	8	8	<1	<1	<1 – 1	<1 – 1
Swainson's hawk	BLMS/ST	0	0	0	0	0	0
Tricolored blackbird	BCC/BLMS/ ST	0	0	0	0	0	0
Western burrowing owl	BCC/BLMS/ SSC	0	0	0	0	0	0
White – tailed kite	BLMS/FP	0	0	0	0	0	0
Yellow warbler	BCC/SSC	32 – 52	32 – 52	22 – 24	22 – 24	4 – 70	4 – 7
Yellow – breasted chat	SSC	0	0	0	0	0	0
Yellow – headed blackbird	SSC	0	0	0	0	0	0
Fish							
Arroyo chub	FSS/SCC	0	0	0	0	0	0
Santa Ana speckled dace	FSS/SCC	0	0	0	0	0	0
Invertebrates							
Monarch butterfly	SC	0	0	0	0	0	0
Crotch bumble bee	SE	0	0	0	0	0	0
San Emigdio blue butterfly	FSS	0	0	0	0	0	0
San Gabriel Mountains elfin butterfly	FSS	0	0	0	0	0	0
Mammals							
American badger	SSC	8	8	<1	<1	<1 – 1	<1 – 1
Fringed myotis	BLMS/FSS	0	0	0	0	0	0
Mohave ground squirrel	BLMS/ST	0	0	0	0	0	0
Mountain lion	SC	0	0	0	0	0	0

Species	Protection Status ¹	Acres of Impact ²					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Pallid bat	FSS/BLMS/SSC	40 – 60	40 – 60	22 – 24	22 – 24	4 – 7	4 – 7
Ringtail	FP	0	0	0	0	0	0
San Diego black – tailed jackrabbit	SSC	0	0	0	0	0	0
San Diego desert woodrat	SSC	0	0	0	0	0	0
Southern grasshopper mouse	SSC	0 – 2	0 – 2	1 – 2	1 – 2	0	0
Townsend’s big – eared bat	FSS/BLMS/SSC	0	0	0	0	0	0
Western mastiff bat	BLMS/SSC	40 – 59	40 – 60	22 – 23	22 – 23	4 – 7	4 – 7
Western red bat	SSC	0	0	0	0	0	0
Western yellow bat	SSC	0	0	0	0	0	0
Yuma myotis	BLMS	35 – 55	35 – 55	22 – 24	22 – 24	4 – 7	4 – 7
Reptiles							
Blainville’s horned lizard	BLMS/SSC	0 – 2	0 – 2	1 – 2	1 – 2	0 – 3	0 – 3
California glossy snake	SSC	0	0	0	0	0	0
California legless lizard	FSS/SSC	0	0	0	0	0	0
Coast patch – nosed snake	SSC	0	0	0	0	0	0
Coastal rosy boa	FSS	0	0	0	0	0	0
Coastal whiptail	SSC	0	0	0	0	0	0
San Bernardino mountain kingsnake	FSS	0	0	0	0	0	0
San Bernardino ringneck snake	FSS	0	0	0	0	0	0
South coast garter snake	SSC	0	0	0	0	0	0
Two – striped garter snake	FSS/BLMS/SSC	3 – 8	3 – 8	3 – 5	3 – 5	0 – 3	0 – 3
Western pond turtle ⁴	FSS/BLMS/SSC	35 – 55	35 – 55	19 – 55	19 – 55	0 – 3	0 – 3

Source: Authority, 2019a

¹ **Status Code:** BCC = USFWS Birds of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; BLMS = BLM sensitive; CT = CDFW California candidate for threatened status; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; SE = state endangered; SSC = CDFW California species of special concern; ST = state threatened; SC = CDFW candidate for listing

² Acreage calculations include the range of minimum and maximum habitat impacts that could occur under the optional adit and intermediate window selection scenarios.

³ The Yuma myotis is only protected within areas managed by the BLM. The Refined SR14 Alternative is the only Build Alternative that would pass near BLM land and would only indirectly impact this protected species.

⁴ The western pond turtle’s listing status is under review by the ESA.

3.7.11.1 Consistency with Applicable United States Forest Service Policies

Appendix 3.1-B, USFS Policy Consistency Analysis, contains a comprehensive evaluation of relevant laws, regulations, plans, and policies relative to portions of the Build Alternative alignments within the ANF, including the SGMNM. Policies in the Angeles National Forest Management Plan regarding biological and aquatic resources are generally related to USFS's ability to protect and conserve habitat for special-status species. This analysis determined that the portions of the Build Alternatives located within the ANF would be consistent with applicable policies pertaining to biological and aquatic resources.

3.7.11.2 United States Forest Service Resource Analysis

As part of the NEPA process, it is USFS policy (Forest Service Manual 2670.33) to review programs and activities through a BE to determine their effect on FSS species (USFS 2009). The six Build Alternatives would affect FSS species habitat within the ANF, including the SGMNM. Most impacts on FSS species would occur during construction-period ground disturbance and installation of trackway and ancillary features. Implementation of IAMFs would minimize impacts on biological resources and aquatic resources during construction and operation of the six Build Alternatives. Mitigation measures incorporated as part of the six Build Alternatives would further reduce the impacts.

The *Palmdale to Burbank Project Section: Biological Evaluation* assesses the effects of the project on FSS species and suitable habitat in the ANF (Authority 2019b). The action area was analyzed for direct and indirect effects on FSS species and their suitable habitats²⁴. FSS species listed as endangered, threatened, or proposed for listing as endangered or threatened are not analyzed in the BE. These species are evaluated in the BA being prepared for the proposed action (Authority 2020). Potential direct, indirect, and cumulative effects are evaluated in the BE for the following FSS plant and wildlife species that may occur in the action area:

- California satintail
- Club-haired mariposa lily
- Fragrant pitcher sage
- Mesa horkelia
- Palmer's mariposa lily
- Parry's spineflower
- Robbins' nemacladus
- San Gabriel manzanita
- Short-tailed beavertail
- Slender mariposa lily
- San Emigdio blue butterfly
- Southwestern pond turtle
- Northern legless lizard (California legless lizard)
- Rosy boa
- San Bernardino ring-necked snake
- Coast mountain kingsnake
- Two-striped garter snake
- Bald eagle
- Gray vireo
- Pallid bat
- Townsend's big-eared bat

²⁴ The action area for the BE includes the Build Alternative footprint where direct effects to FSS species and their suitable habitat may occur. The action area also includes areas adjacent to the Build Alternative footprint located within a 100-foot buffer for FSS plants and 1,000-foot buffer for FSS wildlife.

Determinations for FSS Plant Species

Construction and operation and maintenance activities in the ANF, including the SGMNM, may result in direct, indirect, and cumulative effects to FSS plant species if present in the action area. Individuals of the following 10 FSS plant species may be directly or indirectly affected by the proposed action:

- California satintail
- Club-haired mariposa lily
- Fragrant pitcher sage
- Mesa horkelia
- Palmer’s mariposa lily
- Parry’s spineflower
- Robbins’ nemacladus
- San Gabriel manzanita
- Short-joint beavertail
- Slender mariposa lily

Project design features and conservation measures will be implemented for the proposed action to avoid and minimize effects to these species and impacts to their suitable habitat.

Relatively little suitable habitat for FSS plant species will be impacted by construction and operation and maintenance activities for the proposed action in the action area. Project design features and conservation measures will be implemented for the proposed action to avoid and minimize effects to FSS plant species and impacts to their suitable habitat (Authority 2019b). Therefore, the proposed action is not likely to adversely affect regional population numbers, contribute towards a trend to federal listing, or result in a loss of viability to individuals or populations of these FSS plant species.

Determinations for FSS Wildlife Species

Construction and operation and maintenance activities may result in direct, indirect, and cumulative effects to FSS wildlife species with the potential to occur in the action area. Individuals of the following 11 FSS wildlife species may be directly or indirectly effected by the proposed action:

- San Emigdio blue butterfly
- Southwestern pond turtle
- Northern legless lizard
- Rosy boa
- San Bernardino ring-necked snake
- Coast mountain kingsnake
- Two-striped garter snake
- Bald eagle
- Gray vireo
- Pallid bat
- Townsend’s big-eared bat

Project design features and conservation measures will be implemented for the proposed action in order to avoid and minimize effects to these species and impacts to their suitable habitat.

Relatively little suitable habitat for FSS wildlife species will be impacted by construction and operation and maintenance activities for the proposed action in the ANF. Project design features and conservation measures will be implemented for the proposed action and effects on individuals or populations of these species are expected to be minimal (Authority 2019b).

Hydrological Resources

As discussed in Section 3.8, Hydrology and Water Resources, project construction beneath the ANF, including parts of the SGMNM, could expose conduits that would allow for groundwater to flow into the tunnel excavations, which could have the effect of reducing groundwater supply to

springs, seeps, and streams within the ANF. Changes in groundwater contribution to surface-water resources could alter the amount and quality of aquatic habitats for sensitive groundwater dependent species discussed in Section 3.7.6, Environmental Consequences. These changes could also modify the amount and quality of the associated riparian habitat.

To address this impact, the Authority will implement construction procedures and techniques to avoid or reduce leakage into tunnels during construction. In addition, the Authority will implement a long-term AMMP, which will involve ongoing habitat monitoring to detect and remediate in a timely manner hydrological impacts that may arise in the future.