

Attachment E
Biological Opinion



United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE

Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008



In Reply Refer to:
SB-22-0002338-S7

April 6, 2023
Sent Electronically

Deborah Suci-Smith
Supervisory Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

Subject: Biological Opinion for the Brightline West - Victor Valley to Rancho Cucamonga High-speed Rail Project

Dear Deborah Suci-Smith:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the proposed the Brightline West Victor Valley to Rancho Cucamonga High-Speed Rail Project (Project) and its effects on the San Bernardino kangaroo rat (*Dipodomys merriami parvus*; SBKR) and its designated critical habitat, least Bell's vireo (*Vireo bellii pusillus*; vireo), arroyo toad (*Anaxyrus californicus* [*Bufo microscaphus* c.]) and its designated critical habitat, Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), and slender-horned spineflower (*Dodecahema leptoceras*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). The Federal Railroad Administration (FRA) and the United States Department of Transportation are considering providing funding for the Project. We received your letter requesting initiation of formal consultation on July 15, 2022.

Brightline West proposes to construct the Project (see Appendix A for location) and to operate the Project under a lease agreement with the California Department of Transportation for the use of the Interstate 15 (I-15) right-of-way and the proposed passenger station at Hesperia.

The FRA is the lead federal agency for the Project, intending to provide funding for the Project. FRA is the National Environmental Policy Act lead for the Project, as well as providing clearance for and ensuring safety of the train, pursuant to 49 U.S.C. Sections 103, 20103, and 49 CFR Part 236, and 49 CFR Part 238. The U.S. Army Corps of Engineers has jurisdiction over Waters of the U.S. and may issue a Section 404 Permit, pursuant to the Federal Clean Water Act; the Surface Transportation Board has jurisdiction over the construction, acquisition, operation, and abandonment of rail lines, railroad rates and services, and rail carrier consolidations and mergers; and the Federal Highway Administration has jurisdiction over the use and modification of the Interstate highway right-of-way.

This biological opinion is based on information provided in:

- *Draft Biological Assessment Cajon Pass High-speed Rail* (HNTB July 2022a)
- *Addendum to the July 2022 Draft Biological Assessment Brightline West Cajon Pass High-Speed Rail Project* (HNTB 2022b)
- *Draft Environmental Assessment Brightline West Cajon Pass High-Speed Rail Project* (Draft EA; FRA 2022)
- *Cajon Pass High-Speed Rail Project Habitat Restoration Plan* (Rincon 2022a; Appendix C)
- *Cajon Pass High-Speed Rail Project San Bernardino Kangaroo Rat Capture and Translocation Plan* (Rincon 2022b; Appendix D)

In your request for consultation, you indicated the Project is not likely to adversely affect the federally threatened desert tortoise (*Gopherus agassizii*), yellow-billed cuckoo (*Coccyzus americanus*), coastal California gnatcatcher (*Polioptila californica*; gnatcatcher), and the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher) and its designated critical habitat. For reasons discussed in Appendix B and with the inclusion of the avoidance measures in Appendix B, we concur with your determination that the Project is not likely to adversely affect the desert tortoise, yellow-billed cuckoo, gnatcatcher, or flycatcher or its designated critical habitat. Furthermore, following our review of activities associated with the Project, the most recent available survey data, and our evaluation of conservation measures committed to by Brightline West, we have determined that the proposed Project is not likely to adversely affect the Santa Ana River woolly-star (*Eriastrum densifolium sanctorum*) or the slender-horned spineflower (*Dodecahema leptoceras*) [see Appendix B]. Therefore, the aforementioned species and designated critical habitat are not further addressed in this biological opinion.

CONSULTATION HISTORY

The FRA sent our office a Draft Biological Assessment (BA) and an initiation letter dated July 15, 2022, requesting formal and informal consultation for the Project. After our evaluation of the BA, we concluded that in order to initiate formal consultation, we would need additional information. On August 12, 2022, our office sent FRA a letter outlining the additional information necessary to initiate formal consultation. Following that, FRA sent us an addendum to the BA along with a letter initiating formal consultation on September 15, 2022.

Our office electronically mailed a draft biological opinion to FRA on January 26, 2023, and received comments on the draft, via electronic mail from FRA on February 28, 2023. On March 2, 2023, we held a follow-up conference call with FRA to discuss updates to the project description.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

DesertXpress Enterprises, LLC (doing business as “Brightline West”) proposes to construct and operate a passenger high-speed rail system capable of speeds up to 140 miles per hour (mph) covering 47.9 miles between Victor Valley and Rancho Cucamonga, California. The proposed high-speed rail would be built in, and share, the California Department of Transportation (Caltrans) right-of-way for the existing Interstate 15 (I-15). The northern terminus of the Project would be in Victor Valley, California, in the western Mojave Desert. From Victor Valley, the alignment extends southward, passing through or next to the communities of Victorville, Hesperia, Rialto, and Fontana—as well as the San Bernardino Mountains and Cajon Canyon—before it reaches its southern terminus in Rancho Cucamonga, California. Excepting the final approach to the Rancho Cucamonga station, the Project alignment occurs within Caltrans right-of-way, including when passing through San Bernardino National Forest. Figure 1 (Appendix A) shows the alignment of the proposed Project.

The rail alignment would be built in the median between the northbound and southbound lanes of I-15 (median running), except at the approach to the Rancho Cucamonga station where the alignment would cross over southbound I-15 lanes and run parallel to the outer side of southbound lanes (side-running). Where the rail alignment leaves the I-15 right-of-way, it travels in city, railroad, or utility rights-of-way in Rancho Cucamonga.

Most of the rail alignment would be built at the same elevation as the existing highway. Some rail segments would be on elevated structures (bridges or viaducts) supported by piers or columns, and some would be on elevated embankment or entrenched to enable grade-separated intersections and for grade control where needed for safe high-speed rail operations. The Project would cross the Mojave River, Cajon Wash, Lytle Creek, and other drainages and washes along the rail alignment. At all such crossings, the Project would build new crossings between the north and southbound lanes of the existing I-15 crossings.

The proposed Project includes construction of two passenger stations, a traction power substation, and alterations of existing transportation infrastructure, including expansion of existing I-15 lane areas at the outer edges of the existing roadway to enable rail to travel in the I-15 median.

The Biological Assessment describes the alignment in three sections.

- **Section 1:** High Desert – Approximately 19 miles. Starting immediately south of the proposed Victor Valley Passenger Station (proposed by a separate Project), Section 1 extends south in the median of I-15 to the I-15/Oak Hill Road interchange in Hesperia.
- **Section 2:** Cajon Pass – Approximately 12 miles. From the I-15/Oak Hill Road interchange, Section 2 continues south in the I-15 median, up and over Cajon Summit, and continuing in Cajon Canyon down to the I-15/Kenwood Avenue interchange in unincorporated San Bernardino County.

- **Section 3:** Greater Los Angeles – Approximately 17 miles. From the I-15/Kenwood Avenue interchange, Section 3 continues southwest along I-15, then travels in an existing rail corridor to the proposed new Rancho Cucamonga passenger station (site of existing Metrolink passenger station) and ends at Haven Avenue in Rancho Cucamonga.

In addition to guideway and rails, the Project includes a catenary system (posts with cantilevers supporting electrical supply wires), retaining walls and sound walls, and modification of 22 existing highway interchanges and their ramps. In most of the alignment, accommodating the rail in the highway median would require modification of existing highway lanes; modifications would include expanding the lanes out toward the edge of right-of-way in most cases.

Construction

The proposed Project includes components that would be constructed in one or more of the three Project sections. Table 1 summarizes the major Project components and construction activities by Project section. Construction activities associated with many of the Project components are similar; therefore, we are organizing the discussion by the category of major construction activity.

Earthwork and Site Preparation

Excavation, grading, and vegetation removal are necessary for construction access, temporary construction areas, and temporary staging areas. The primary access route for construction is anticipated to occur via I-15 and adjacent existing roadways. No new access roads are anticipated to be required for almost all of the Project. At both Lytle Creek and Cajon Wash, a dirt access road would be temporarily constructed to enable access by cranes, pile drivers, and for materials delivery. The road would access locations where support structures (bents) for the guideway would be constructed. At the Mojave River crossing, an existing Caltrans construction access road would be used.

Temporary construction areas would be located within the Caltrans right-of-way and include laydown/staging areas, i.e., illuminated, enclosed, secured, stabilized, graded yards that would serve as a base for construction operations for particular parts of the proposed Project. The temporary construction area footprints would vary according to the space available, but would provide sufficient space for unloading, storage, sorting, and distribution of concrete and other building materials, equipment, and large components required for a particular construction segment or structure. Temporary construction areas for bridges and viaducts would include space for steel and timber falsework used to support overhead concrete construction. To construct piers and other supporting structures, temporary formwork, falsework, cranes, and other protection devices would be utilized to support structural members during construction and would be removed following final installation. Temporary platforms would be used to support pile driving machinery where pile driving is necessary to install foundations for piers, abutments, and other structures requiring pile foundations.

Temporary artificial lighting would be used during all nighttime construction activities.

Construction would require large volumes of cut and fill to achieve necessary grades, as well as for temporary construction areas for material staging and Project administration. It is estimated that the proposed Project would result in the cut and fill of 288,500 and 1,370,000 cubic yards of material, respectively. To accommodate the proposed traction power substation, an area of approximately 70,200 square feet of undeveloped land would be cleared and graded.

Work would be performed with a large variety of mobile, diesel-powered heavy construction equipment. Stationary equipment, such as generators or air compressors, would also be used. Pile driving would require use of impact and/or vibratory pile drivers. The proposed Project would not require blasting.

Trucks would remove excavated soil either to stockpile locations or for off-site disposal and would bring suitable subgrade and guideway materials to the site. At least 154,000 dump truck trips are likely to be necessary to transport cut and fill. A source for fill material has not been confirmed, but material is presumed to be sourced from one or more existing quarries in the area.

Except as specified below in Conservation Measures, restoration and maintenance of temporary construction areas in the right-of-way would follow Caltrans standards for landscape architectural design (Caltrans 2020) along with approved restoration plans for suitable habitat for ESA-listed species.

Demolition

Demolition would occur in multiple locations along the alignment. Existing highway overpasses and pavement on lanes and ramps would be demolished and/or modified to accommodate the guideway—including expanding the highway deck on the outside edges of the existing highway in many locations. The proposed Project includes approximately 316,137 cubic yards of pavement demolition. Two existing overpass bridges would be demolished, and access would be replaced elsewhere. Approximately 32,500 square feet of highway deck would be removed.

New Structures

New structures for the proposed Project include the rail guideway, bridges and viaducts, catenary system, traction power substation, two passenger stations, and a new parking garage. Approximately nine new bridges/viaducts would be constructed in alignment to existing I-15 bridges. Bridges would be constructed with abutments supported by structural steel piles and would use cast-in-place concrete footings and piers. Construction activities include excavation and drilling for foundations, concrete pouring (including formwork and rebar placement), falsework installation, construction of bridge decking, and placement of ballast and ties. Impact pile driving machinery may be used to install steel piles, including at the Mojave River, Cajon Wash, and Lytle Creek crossings and other locations on elevated structures (Table 2).

Approximately 5 million square feet (125 acres) of new pavement area on I-15 would be constructed to enable median-running rail.

The proposed Hesperia passenger station is expected to require approximately 4 acres of undeveloped land to accommodate the surface parking area and station. The passenger station and parking garage at Rancho Cucamonga would be built in an existing heavily urbanized railroad corridor used by Metrolink and other railroads. The proposed Rancho Cucamonga passenger station would replace and, in the future, share passenger service with the existing Metrolink passenger station.

Table 1. Major Project Components and Construction Elements

Project Component	Section 1: High Desert	Section 2: Cajon Pass	Section 3: Greater Los Angeles	Major Construction Activities
Rail and Catenary	Single and double track at grade and on viaduct; median-running	Single track at grade except for interchanges and crossing of existing railroads and washes; median-running	Single and double track, at grade and on viaduct; Median- and side-running sections.	Earthwork and site preparation (road cut, grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, pile driving, imported fill material) Catenary wires, signal and control systems
New Bridges/Viaducts (see Table 2)	Major crossings: Mojave River, BNSF Railway tracks, Union Pacific Railroad (UPRR) tracks, U.S. 395, California Aqueduct	Major crossings: three BNSF Railway mainline tracks, one UPRR track, tributaries to Cajon Wash	Major crossings: southbound I-15, Cajon Wash, Lytle Creek, several constructed washes	Earthwork and site preparation (road cut, grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, pile driving, imported fill material)
Retaining Walls, Noise Walls	Noise walls near viaduct in Victorville	No noise walls, Retaining walls on steep slopes	Noise walls near side-running track in Rancho Cucamonga	Earthwork and site preparation (road cut, grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, pile driving, imported fill material)
Interchange/Ramp Modification	Yes	Yes	Yes	Structure demolition, earthwork, and site preparation (grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, poured asphalt, imported fill material)
Highway Footprint Expansion	Yes	Yes	Yes	Structure demolition, earthwork, and site preparation (grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, poured asphalt, imported fill material)
New Passenger Station and Parking	Hesperia station: Parking area for 300 vehicles, station in the median	No passenger station	Rancho Cucamonga station: 3,500-space parking garage shared with Metrolink, new shared passenger station	Earthwork and site preparation (grading, soil removal, vegetation removal, temporary staging areas) Structures (poured concrete, asphalt, imported fill material)
New Power Substation	Traction power substation	None	None	Earthwork and site preparation (grading, soil removal, vegetation removal, temporary staging areas) Building Structures, utility relocation/expansion

Table 2. Sections of Rail Alignment Built on Elevated Structures

Project Section	Crossing Name and Location	Location Relative to I-15 Travel Lanes	High-Speed Rail Bridge or Viaduct Length (feet)	High-Speed Rail Bridge or Viaduct Width (feet)	Number of Structure Spans
1	Bell Mountain Wash and Stoddard Wells Road	At same elevation, Median-running	260	40.5	2
1	Mojave River Crossing	At same elevation, Median-running	600	22.75	8
1	Crossing of D/E Street and Rail	At same elevation, Median-running	80	22.75	1
2	Cleghorn Creek Bridge	At same elevation, Median-running	250	22.75	3
2	Debris Cone Creek Bridge	At same elevation, Median-running	120	22.75	1
2	Brush Creek Bridge	At same elevation, Median-running	125	22.75	3
3	Cajon Wash	At same elevation, Median-running	484	22.75	5
3	Lytle Creek Bridge (Sycamore Creek Drive)	At same elevation, Median-running	1,982	22.75	18
3	East Etiwanda Channel	At same elevation, Median-running	100	22.75	1
3	Crossing over southbound I-15 at Rancho Cucamonga	Overhead, side-running to Southbound lanes and in rail corridor	2,574	22.75 and 40.5	25

Operations and Maintenance

Trains are expected to operate daily between Victor Valley and Rancho Cucamonga, with a trip duration of approximately 35 minutes. Initially, trains are expected to run every 60 minutes; and by year 11 of operations, trains are expected to run every 30 minutes. Trains are anticipated to run between 6 a.m. and midnight.

It is anticipated that train horn use would be very limited if used at all because there are no at-grade road crossings in the alignment. Fixed headlights would be used on trains. Nighttime lighting would be provided at passenger stations, including at platforms, in parking areas, and

along exterior landscaping and access routes. Intermittent flashes of light at the pantograph (the apparatus that contacts the overhead lines to drive the train car) contact may occur during train operations, depending on atmospheric and pantograph conditions, and would be most noticeable at night.

No major maintenance areas are proposed as part of the proposed Project. Periodic routine maintenance activities would include addressing rail sensors, rail lubrication, track, and electrical and catenary inspections, maintaining the route to be free from obstructions and debris, and passenger station and traction power facilities maintenance. Most routine maintenance would be performed by maintenance machinery on the rail. Limited on-the ground crews would be required for maintenance. Crews would access the alignment from the highway and from the rail to service signaling, communications, and maintenance of the electrical overhead catenary system and to traction power facilities. Because the alignment is median running for most of its extent, no crews are anticipated to be on the ground for maintenance or inspection for any significant time within designated critical habitat for ESA-listed species.

Sequencing and Timeline

The general target date for completion of construction of the proposed Project is 2027. Construction would occur year-round. Construction would occur six days a week and is very likely to include work at night to minimize impacts on I-15 traffic.

A timeline for construction is not yet available, but it is anticipated the Project would require at least three years from start to completion. Construction work at any single location on the alignment would occur for approximately 18 months. In the vicinity of occupied habitat areas, certain types of construction would be scheduled to mitigate potential construction effects.

Conservation Measures

Practicable measures to avoid impacts on ESA-listed threatened and endangered species and their critical habitats, such as those described below, will be implemented. In areas where unavoidable impacts may occur, efforts will be made to minimize those impacts. Following implementation of avoidance and minimization measures, the proposed Project will employ compensation measures to offset any unavoidable impacts that occur.

Conservation measures (CM) are applicable to the entire proposed Project. In the list below, general CMs are followed by additional measures for specific species.

- CM 1 Biologists will be present to monitor construction activities along the following portions of the Project alignment:
- Mojave Desert vicinity: From the northern-most Project extent, continuing south to the I-15 Bridge over D/E Street in Victorville - Focusing on protection of least Bell's vireo, and critical habitat for southwestern willow flycatcher.

- Cajon Canyon and Cajon Summit vicinity: From I-15 at Oak Hill Road to I-15 at Hall Ranch Road - Focusing on protection of least Bell's vireo, arroyo toad, and critical habitat for arroyo toad.
- Cajon Wash and Lytle Creek vicinity: From I-15 at Hall Ranch Road to I-15 at Summit Avenue. Focusing on protection of SBKR, ESA-listed plants, and critical habitat for SBKR.

No biologist is required during construction along other portions of the alignment not listed above—for example, in urban areas in of Rancho Cucamonga, Hesperia, and Victorville—although Brightline West and its contractors may choose to utilize resource monitors/biological monitors at their discretion in these areas to ensure environmental compliance.

CM 2 Certain types of construction activities are not to be commenced during bird breeding season at three separate locations along the alignment. The types of construction activities regulated are vegetation disturbance, pile driving, and ground disturbance (defined below). This conservation measure does not apply to other construction activities or other locations. Three separate locations of Avian Avoidance Exclusion Areas are:

Area 1. Mojave River (Figure A-6)

Area 2. Cajon Wash (Figure A-7)

Area 3. Lytle Creek (Figure A-8)

Figures showing the exclusion areas are provided in Appendix A.

Vegetation disturbance activities, including clearing and grubbing of vegetation, are prohibited in exclusion areas during closure dates.

Pile driving and ground disturbance activities are prohibited in exclusion areas during closure dates unless the work is initiated prior to the start of the closure period. In addition, impact pile driving at the Mojave River Crossing will not be allowed to commence between March 15 and May 31.

Project-related ground disturbance is defined as:

- Site preparation including grading and establishment of construction access, and
- Grading, earth moving, stockpiling materials, excavation, and filling activities.

Table 3 summarizes the closure dates by location.

Table 3. Locations and Closure Dates

Location	Closed From	To
Area 1. Mojave River Crossing	March 15	May 31
Area 2. Cajon Wash	February 15	September 30
Area 3. Lytle Creek	February 15	September 30

The Palm Springs Fish and Wildlife Office (PSFWO) of the Service has verified bird nesting dates, which are summarized for reference in Table 4.

Table 4. ESA-Listed Bird Species' Nesting Dates (information provided for reference)

Species	Breeding Habitat Used	Nesting Dates	Habitat Location		
			Cajon Wash	Lytle Creek	Mojave River
Coastal California gnatcatcher (<i>Poliophtila californica californica</i>)	Coastal sage scrub and adjacent areas of chaparral, grassland, and riparian vegetation.	February 15 to August 30 ¹	Yes	Yes	No
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	Desert Riparian, Riverine, Valley Foothill Riparian	March 15 to September 30 ²	Yes	Yes	Yes
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Desert Riparian, Riverine, Valley Foothill Riparian	May 1 to September 1 ³	No	No	Yes
Western Yellow Billed Cuckoo (<i>Coccyzus americanus</i>)	Desert Riparian, Riverine, Valley Foothill Riparian	June 1 to September 1 ⁴	No	No	Yes

¹USFWS, 2019. Section 7 Consultation on FEMA Disaster, Mitigation, and Preparedness Programs in Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, California. File Number: FWS-CFWO-16B0293-18F1358. May 31, 2019.

²USFWS, 1998. *Draft Recovery Plan for the least Bell's vireo*. U.S. Fish and Wildlife Service, Portland, OR. 139 pp.

³USFWS, 2002. *Southwestern Willow Flycatcher Recovery Plan*. Albuquerque, New Mexico. i-ix+210 pp., Appendices A-O.

⁴Laymon, S.A. 1998. "Yellow-billed Cuckoo (*Coccyzus americanus*)" in The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Accessed on 8/2/22. Available at: http://www.prbo.org/calpif/htmldocs/species/riparian/yellow-billed_cuckoo.htm

- CM 3 All Project staff, including Brightline West and its contractors, operators, consultants, field personnel, and subcontractors, will attend a mandatory environmental awareness training program. The program will be developed and presented by knowledgeable biologists. The curriculum will cover the following, at a minimum:
- Awareness information for each ESA-listed species potentially present and designated critical habitats in the Project area.
 - The legal protection for each ESA-listed species, critical habitats, and the definition of “take” for listed species.
 - Measures to protect ESA-listed species during construction.
 - Review of the Project’s environmental commitments, restoration steps, and mitigation requirements.
 - Explain the reasoning behind the restrictions on the construction, where restrictions exist.
 - Importance of avoiding ground-disturbing activities outside the designated work areas, closing construction gates, and visually surveying designated work zones prior to moving equipment.
 - The location of any occupied ESA-listed species habitat and any suitable habitat within designated critical habitat areas within 400 feet of the Project footprint.
 - Requirements for ground and general areas inspection prior to moving vehicles and equipment.
 - Explain the problem of generalist predators, such as common ravens (*Corvus corax*).
 - Explain the importance of keeping construction areas free from trash and litter and avoiding subsidizing generalist predators.
 - Penalties for violation of federal and state environmental laws.

Training will be documented, including names of trainees and dates of completion. All trained workers will be given an identifying sticker to be worn on site.

- CM 4 At least 60 calendar days prior to the start of Project-related ground disturbance that would occur within 400 feet of any occupied ESA-listed species habitat or within any suitable habitat within designated critical habitat areas, a written *Biological Monitoring During Construction Plan* (Plan) will be developed by Brightline West PSFWO.

The Plan will discuss the type, locations, and timing of physical disturbance: (1) within 400 feet of any occupied ESA-listed species habitat, or (2) within any suitable habitat within designated critical habitat areas. The Plan will provide details of construction monitoring to be completed.

The Plan will identify appropriate monitoring and reporting needs during construction, including responsibilities, timing, and monitoring activities including information to be collected, and will identify coordination requirements, safety requirements, and communications, including points of contact. The Plan will be implemented during construction to ensure compliance with environmental commitments and will focus on commitments under the ESA.

- CM 5 No more than 120 calendar days after the completion of construction, the biologist will prepare a *Construction Monitoring, and Restoration Report* for submission to PSFWO for any construction areas: (1) within 400 feet of any occupied ESA-listed species habitat, or (2) within suitable habitat within designated critical habitat areas. The report will include the results of construction monitoring, pre- and post-construction photographs, and the type and locations of installed mitigation measures and a discussion of planned restoration measures. The report will include reporting on exclusion fencing monitoring and repairs.
- CM 6 Pre- and post-construction photographs will be taken by the biologist to document habitat conditions and alterations within the limits of disturbance during construction activities. Photographs will be dated, and their locations recorded, and they will be stored in a manner that will allow access for reporting purposes.
- CM 7 In areas adjacent to sensitive resources, the contractor will restrict all work to designated work areas through the use of visible demarcation.

The following are locations of sensitive resources:

- Mojave Desert vicinity: From the northern-most Project extent, continuing south to the I-15 Bridge over D/E Street in Victorville.
- Cajon Canyon and Cajon Summit vicinity: From I-15 at Oak Hill Road to I-15 at Hall Ranch Road.
- Cajon Wash and Lytle Creek vicinity: From I-15 at Hall Ranch Road to I-15 at Summit Avenue.

The contractor will avoid any unauthorized disturbance of native vegetation and sensitive resources outside the designated work area. Remnant habitat and existing stands of native vegetation will be identified and protected wherever possible.

During construction, the contractor, or their representative, will monthly inspect the visible demarcation and will help ensure that construction equipment, vehicles, and associated activities remain within designated construction work areas.

- CM 8 Prior to ground disturbing activities, a noxious weed survey will be performed by a qualified biologist within the temporary construction impact areas outside the I-15 median. "A" and "B" rated weeds on the California Department of Food and

Agriculture's Weed Pest Ratings table will be managed per Caltrans landscape management requirements. During construction, the contractor will avoid the introduction or spread of noxious weeds by having a biologist perform annual re-inspections and implementing weed removal/control in temporary construction impact areas and in restoration areas.

- CM 9 The contractor will ensure that supplies, equipment, and/or construction excavations where wildlife such as SBKR could hide (e.g., materials stockpiles, equipment in staging areas, and under vehicles) will be inspected by all construction crew members prior to moving or working on or with them to avoid killing or injuring wildlife. If wildlife is detected, the biologist will be contacted.
- CM 10 The contractor and Brightline West will preserve any dead biological material encountered related to ESA-listed species in the best possible state for later analysis. Preservation may include chilling and general protection from disturbance.
- CM 11 The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan that identifies best management practices (BMPs) best suited for site conditions. The plan will meet applicable Caltrans standards for erosion and sediment control.
- CM 12 The contractor will develop and implement a Spill Prevention, Control, and Countermeasures Plan for construction activities. The potential for chemical spills or releases of contaminants, including any non-stormwater discharge to drainage channels, will be managed and the risk reduced. If a spill occurs, cleanup, containment, and response measures will be implemented. Any accidental spills will be immediately contained and reported to the California Office of Emergency Services (1-800-852-7650) and the National Response Center (1-800-424-8802).
- CM 13 The contractor will not store construction equipment, chemicals, fuels, or lubricants within the 100-year floodplain of any water feature.
- CM 14 The contractor will ensure that all equipment maintenance activities and dispensing of fuel, oil, coolant, or any other such materials will be restricted to the designated staging areas outside of the Mojave River floodplain, Cajon Wash, and Lytle Creek to prevent the release of hazardous substances into these sensitive areas.
- CM 15 The contractor will develop and implement a *Fugitive Dust Control Plan* that includes, at a minimum, the following:
- Reduce nonessential earth-moving activity under high-wind conditions when visible dusting occurs from surfaces due to wind erosion.

- Water will be used for stabilization of surfaces for fugitive dust control within 400 feet of areas occupied by ESA-listed species, or within suitable habitat within designated critical habitat areas.
 - Periodic watering for short-term stabilization of disturbed surface area.
 - Prevent track-out onto paved surfaces and clean up any tracked materials immediately.
 - Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than 30 days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions.
- CM 16 The contractor will employ permanent stabilization measures upon completion of construction along washes and in other areas of potential erosion.
- CM 17 Water will be obtained by the contractor from existing commercially available water sources during construction. No new groundwater wells or surface water impoundments will be developed without federal, state, and local permits as appropriate and legally required.
- CM 18 Existing stormwater systems will be designed or redesigned by Brightline West to accommodate runoff from impervious surfaces. Drainage facilities will detain flows and will not contribute to additional flows in rivers, streams, and washes.
- CM 19 All new utility lines and ancillary structures associated with the Project will be designed by Brightline West in a manner that will reduce the likelihood of bird nesting, especially by common ravens.
- CM 20 Permanent water quality treatment devices that comply with state and local requirements, as applicable, will be designed by Brightline West and installed to meet water quality objectives.
- CM 21 The contractor will employ noise control measures to reduce noise from construction including:
- Use equipment with enclosed engines and/or high-performance mufflers.
 - Locate stationary construction equipment as far as possible from noise-sensitive sites.
 - Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
 - Route truck traffic along roadways that will cause the least disturbance to species.
 - Where pile driving is needed, use sonic/vibratory pile driver wherever possible. Where impact pile drivers must be used near noise-sensitive receptors, implement a slow start and limit activity to daylight hours to the extent possible.

- CM 22 The contractor will implement a litter-control program during construction to avoid subsidizing (feeding) generalized scavengers, such as common ravens. The program will include:
- Use of covered common-raven-proof trash receptacles.
 - Daily removal of trash from the trash receptacles.
 - Daily site inspections.
 - Proper disposal of trash in a designated solid waste disposal facility.

Precautions will also be taken by the contractor to prevent trash from blowing out of construction vehicles.

- CM 23 To mitigate subsidized predation, Brightline West will plan and implement operational standards to maintain railway and stations free of food and habitat elements that subsidize generalist scavengers, such as common ravens.

- CM 24 Brightline West and their contractors will ensure that no feeding of wildlife occurs during construction and operations. No pets or firearms will be allowed in the construction area.

- CM 25 New culverts, bridges, and viaducts will be designed by Brightline West to align with any existing I-15 structures to maintain a continuous wildlife crossing corridor. Where the alignment of new culvert, bridges, or viaduct would deviate from alignment with existing I-15 structures, Brightline West will design and install appropriately sized crossing structures at appropriate intervals to allow for terrestrial wildlife to pass under the proposed alignment.

- CM 26 Brightline West has developed a *Restoration Plan* to restore areas of native vegetation that are temporarily disturbed by construction. The *Restoration Plan* is provided here as Appendix C. Within Caltrans right-of-way, outside of designated critical habitat restoration will follow Caltrans requirements. Within Caltrans right-of-way that is also designated critical habitat, restoration will include habitat structure considerations for the relevant species. Initiation of restoration will occur within one year of the completion of construction at any location along the alignment, during the appropriate seasonal window. Replanting will not be delayed.

- CM 27 The contractor will stockpile and protect removed native topsoil and will use the stockpiled topsoil in restoration and landscaped areas. Areas from where topsoil is recovered will be free from invasive plant species.

- CM 28 In consultation with the Caltrans District Landscape Architect, permanent or temporary irrigation systems to supply water to replacement landscape plantings will be developed and implemented by Brightline West.

- CM 29 Nighttime lighting at passenger stations and along the rail alignment will be designed by Brightline West to incorporate minimized light intensity, duration, and distribution and will utilize wildlife- and insect-sensitive spectrum lighting to reduce the negative effects of artificial nighttime lighting to sensitive species. Passenger stations will incorporate light and glare screening measures—for example, use downward-cast lighting—and will use motion sensor lighting, where appropriate.
- CM 30 Brightline West will promptly remove all track-killed animals along the operating rail line to reduce adverse effects associated with food subsidies to generalist predators, such as common ravens.
- CM 31 During operations, Brightline West will annually monitor catenary and ancillary structures, power poles, auxiliary buildings, passenger stations, and parking areas to identify and remove common raven nests outside of the nesting season. Once raven nesting sites are identified, actions will be taken to block the site from raven reuse. In coordination with PSFWO, adaptive management may be undertaken if the initial measures are unsuccessful to remove common raven nests.
- CM 32 During operations, and to mitigate potential subsidized predation, Brightline West will plan and implement operational standards for maintaining railway and passenger stations to not support generalist predators. Stations and other operations areas will be maintained free of food sources and will mitigate identified habitat support elements that facilitate opportunist predators.
- CM 33 Within 120 calendar days following the completion of restoration activities, Brightline West will develop an *Invasive Plant Species Monitoring and Control Plan* for review and approval by PSFWO. Invasive plant species in the restored temporarily disturbed areas and within operational areas will be monitored monthly from January through June for two growing seasons following completion of initial restoration.

Arroyo Toad

- ARTO 1 Surveys for the presence of suitable habitat for arroyo toad within the Caltrans right-of-way will be conducted by qualified biologists prior to the start of construction. Suitable habitat areas are likely present in the vicinity of tributaries to Cajon Creek and are not likely in any other locations within the Project. Coordination with PSFWO prior to implementation of any survey is required. Information on monitoring within suitable habitat will be included in the monitoring plan identified in CM 4.
- ARTO 2 Presence/absence surveys will be conducted by biologists at all locations within Caltrans right-of-way identified to have suitable habitat prior to the start of ground disturbance within 150-feet of ground disturbance. Survey procedures will

be consistent with survey protocols for arroyo toad (USFWS 1999b). If surface water is present, surveys will be conducted during the breeding season, which generally occurs from March 15 through July 1. Information on monitoring within occupied habitat will be included in the *Monitoring Plan* identified CM 4.

- ARTO 3 Arroyo toads identified to be present within the surveyed areas will be captured by biologists and relocated prior to the start of any ground disturbance that would occur within 150 feet of the surveyed area.

Captured animals will be released as soon as possible following capture. Capture and handling procedures will follow the directives of the Declining Amphibian Task Force's Fieldwork Code of Practice. The Fieldwork Code of Practice provides procedures for reducing the risk of spread of amphibian diseases and/or parasites during handling.

Animals will be released within the closest available habitat of equivalent or superior suitability to the habitat in which the animals were found, and at least 150 feet from any area of the Project's potential ground disturbance. The biologist will determine the best location for release. Where feasible, animals will be released downstream within the same drainage captured. Release areas will be selected based on arroyo toad habitat requirements, generally including relatively broad, streamside flats with scattered vegetation located adjacent to shallow pools that have unvegetated sand bars or gravel bars. Adjacent upland may be vegetated with coastal sage scrub, chaparral, grassland, or oak woodland.

- ARTO 4 For all areas within the active ground disturbance footprint that is also within 150 feet of the location of an arroyo toad capture, a biologist will perform daily clearance surveys prior to the initiation of any ground disturbing operations for that the day. The clearance survey area will be defined as the location where the toad was captured plus the surrounding area within 150 feet. The biologist will have the authority to delay ground disturbance activities within the clearance survey area until the clearance is complete.

- ARTO 5 PSFWO shall be notified by the biologist within two business days of any capture and release actions.

- ARTO 6 Within 90 calendar days following capture and release, an *Arroyo Toad Summary* will be developed by the biologist and submitted to PSFWO. The summary will provide information on handling methods used, photographs, numbers of animals handled, and maps with coordinates of capture and release locations of arroyo toads.

Least Bell's Vireo

- LBV 1 Surveys to document the presence of suitable habitat for least Bell's vireo will be conducted prior to the start of construction by biologists in areas of mapped

potential suitable habitat. Coordination with PSFWO prior to implementation of any survey is required. A summary memorandum with the results of the survey will be shared with PSFWO no later than 14 days after completion.

- LBV 2 Preconstruction surveys will be conducted within 400 feet of any proposed ground disturbance at any location identified to have suitable habitat following standard protocols. Information on any occupied habitat monitoring will be included in the *Monitoring Plan* identified in CM 4.

San Bernardino Kangaroo Rat

- SBKR 1 In collaboration with PSFWO and prior to the start of any ground disturbance, the biologist will identify areas within the construction Temporary and Permanent Limits of Disturbance that may support SBKR. Areas outside of the Temporary and Permanent Limits of Disturbance and also within the Caltrans right-of-way in SBKR critical habitat will also be assessed for areas that may support SBKR. Suitable habitat is most likely be located along the Project alignment between the vicinity of Hall Ranch Road and the vicinity of Summit Avenue and could be encountered in Cajon Wash, Lytle Creek, and or terraces adjacent to these features.

Areas identified to have suitable habitat for SBKR will be called “*SBKR restricted work areas*”. Areas of existing infrastructure and areas lying between I-15 highway lanes (median) will not be included in SBKR restricted work areas.

The 2002 final rule designating critical habitat for SBKR identified four primary constituent elements, now called Physical and Biological Features (PBFs) that provide for the conservation of SBKR. The PBFs for SBKR critical habitat are:

- (PBF 1) Soil series consisting predominantly of sand, loamy sand, sandy loam, or loam;
- (PBF 2) Alluvial sage scrub and associated vegetation such as coastal sage scrub and chamise chaparral, with a moderately open canopy;
- (PBF 3) River, creek, stream, and wash channels that are subject to dynamic geomorphological and hydrological processes typical of fluvial systems; and
- (PBF 4) Upland areas adjacent to more suitable habitat that serve as refugia during large-scale flooding.

SBKR suitable habitat, protected as SBKR restricted work areas, will be further classified as Moderate habitat when evidence of PBFs 1, 2, and 3, but not 4 are present, or as High habitat when evidence of PBF 4 is present.

Coordination with and approval by PSFWO will occur to identify and refine the geographical boundaries of SBKR restricted work areas.

Information on monitoring of SBKR restricted work areas during construction will be included in the Monitoring Plan identified CM 4.

- SBKR 2 Surveys for SBKR will be performed by qualified biological monitors who are either approved by the PSFWO or are section 10(A)(1)(a) permit holders which allow handling of SBKR. Permit holder names and permit numbers will be provided to the PSFWO for record keeping purposes. Resumes for qualified SBKR biological monitors who do not hold a section 10(A)(1)(a) permit will be submitted via email to the PSFWO biologist assigned the Project for record-keeping purposes and approval. The PSFWO will have 7 calendar days to approve biological monitors based on submitted qualifications. If the PSFWO does not respond within seven calendar days, it will be assumed that all biological monitors are approved.
- SBKR 3 Trapping for SBKR will be performed by qualified biological monitors prior to the start of ground-disturbing activities within SBKR restricted work areas per details provided in Appendix D in order to remove animal from the work area.
- SBKR 4 Based on survey results, PSFWO, in collaboration with Brightline West, will determine where captured SBKR are released. Captured SBKR will be released to either:
- i) suitable unoccupied habitat within Caltrans right-of-way adjacent to the project site, or
 - ii) suitable unoccupied habitat within Caltrans right-of-way beyond the limits of temporary and permanent impacts, or
 - iii) a receiving conservation bank, preferably located within the same watershed as original trapping location.
- SBKR 5 Prior to initiating ground-disturbing activities within any portion of SBKR restricted work areas, SBKR barrier fencing will be installed by the contractor or biologist to separate the construction activities from the surrounding area and allow clearance of the restricted work area.
- SBKR barrier fencing will be constructed with suitable fencing for effective small mammal exclusion that uses anti-climb technology 30 to 36 inches high above ground with the bottom buried at least 12 inches deep with a 6-inch apron lying at 12 inches deep at a right angle.
 - No gaps greater than 0.5 inch will be allowed.
 - The biologist or the biologist's representative will be present when the fence is installed to ensure that no burrows or burrow entrances are covered by the apron of the barrier fence.
 - Within 14 calendar days of the conclusion of exclusion fence installation, Brightline West will submit to PSFWO an Exclusion Fencing Report indicating the locations of fence along with photographs

- SBKR 6 For the duration of construction work within the SBKR restricted work area, the Biologist(s) shall:
- Review the previous week's construction activities and the upcoming week's construction activities to determine if there are areas that need additional inspection, fencing, or monitoring.
 - Inspect the SBKR barrier fencing at the end of each workday during construction.
 - Repair any gaps in the barrier fence prior to leaving the site at the end of the workday.
 - Inspect SBKR barrier fencing, and repair as needed at least weekly during any pause in construction of greater than 1 week.
 - Search the construction footprint for any kangaroo rat sign early in the morning and prior to any ground-disturbing activities.
 - Contact PSFWO immediately if kangaroo rat sign is detected inside the barrier fencing.
 - Provide a weekly written report of construction monitoring activities and findings to PSFWO within 4 business days following the end of each week during ground-disturbing construction within the SBKR restricted work area.
- SBKR 7 Prior to ground disturbance, the biologist will conduct pre-construction clearance trapping of SBKR inside exclusion fenced areas. Trapping will be conducted at each location until no SBKR are trapped for two consecutive nights. Initial trapping is required to be performed on the evening of the first day on which the barrier fence installation is complete.
- SBKR 8 The biologist will implement the *SBKR Translocation Plan* (Rincon 2022b, Appendix D), which provides procedures and protocols to follow when SBKR are relocated from the SBKR restricted work areas.
- SBKR 9 The biologist will house and release all captured SBKR as soon as possible following trapping. The captured SBKR will be housed in suitable facilities until they are released. The protocol for housing trapped SBKR will follow the *SBKR Translocation Plan*. Captured SBKR will be translocated by soft release into appropriate receiving habitat as detailed in the *SBKR Translocation Plan*.
- SBKR 10 Bright line will restore SBKR restricted work areas temporarily affected by the Project as described in the Restoration Plan (Appendix C). The restored areas will be monitored in accordance with CM 33, Appendix C, and Caltrans requirements.
- SBKR 11 Not less than 90 calendar days prior to construction groundbreaking within any identified SBKR restricted work area, Brightline West will provide PSFWO with a *SBKR Compensation Summary* identifying the locations, type, and extent of permanent impacts to SBKR restricted work areas along with a calculation of required compensation credits to be provided.

Permanent impacts will be defined as direct, negative effects to functioning PBFs within designated critical habitat that result in permanent loss of the PBFs. Using the habitat classification provided under SBKR 1, impacts will be calculated, and conservation credits purchased at the following ratios:

- 0.5 credits per acre (0.5:1) for permanent impact to Moderate functioning SBKR restricted work areas, and
- 1.0 credit per acre (1:1) for permanent impact to High functioning SBKR restricted work areas.

SBKR 12 To offset permanent impacts to suitable SBKR habitat, Brightline West will purchase conservation credits. Not less than 60 calendar days prior to construction groundbreaking within any identified SBKR restricted work area, Brightline West will submit proof of payment or proof of escrow account payable, either payable to a Service-approved conservation bank to establish an endowment sufficient to compensate permanent impacts at the ratios given above.

SBKR 13 Brightline West will submit a *SBKR Final Report* to PSFWO within 60 calendar days of the completed Project. The *SBKR Final Report* will include results of trapping within SBKR restricted work areas and a status report of SBKR relocated, including numbers and status of soft release.

Action Area

Regulations implementing the Act (50 CFR § 402.02) describe the action area as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

We have identified the action area as all areas within and adjacent to the Project footprint which may be exposed to Project related effects such as noise, vibration, dust, digging, grading, artificial lighting, and human activity during Project construction, including construction, staging, and operation and maintenance areas. We have defined the action area to encompass the Project footprint and a 500-ft buffer. Wherever construction requires impact pile driving, this buffer extends up to 1-mile (See Appendix A, Figures 1 through 5). Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon this action area.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a

listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

For the section 7(a)(2) determination regarding jeopardizing the continued existence of the species, the Service begins by evaluating the effects of the proposed Federal action and the cumulative effects. The Service then examines those effects against the current status of the species to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the species in the wild.

Adverse Modification Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. “Destruction or adverse modification” of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species (50 CFR § 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the condition of all designated critical habitat in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluate the effects of future non-Federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the designated critical habitat are evaluated in the context of the condition of all designated critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat as a whole for the conservation of the species.

STATUS OF THE SPECIES AND ITS CRITICAL HABITAT

The San Bernardino kangaroo rat

The San Bernardino kangaroo rat was emergency listed as endangered on January 27, 1998, and listed as endangered on September 24, 1998 (Service 1998a). We completed a comprehensive 5-year review of the status of SBKR in August 2009 (Service 2009a) and a short-form update in 2020 (Service 2020a) in which no change to the listing status of SBKR was recommended. We provide the following biological information to inform the reader's understanding of our analysis and provide an update to information about the SBKR contained in our last comprehensive review (Service 2009a). The location and dynamic nature of the alluvial habitat occupied by this species makes it especially vulnerable to flood control activities within the floodplain drainages where it occurs. The long-term conservation of SBKR is dependent upon a number of factors including: the protection and management of occupied habitat; the protection of linkages between groups of SBKR to maintain gene flow and minimize loss of genetic diversity; the protection of upland areas adjacent to suitable habitat that serve as refugia during flood events and source populations for recolonization of the lower floodplain after the flooding recedes; and the protection of geomorphological, hydrological, and aeolian (wind-driven) processes essential to the continued existence and conservation of suitable habitat (Service 2002a). Other background information is available in these two referenced documents which are available on the Environmental Conservation Online System [SBKR Species Profile](#) website.

Numbers and Reproduction

The population size of SBKR both over its range and within each population and designated critical habitat unit is difficult to determine because the sub-species spends much of its life underground (Service 2009a). Kangaroo rat populations also exhibit large fluctuations in density in response to temporal variability in plant seed productivity and periodic flooding (Brown and Harney 1993; Goldingay et al. 1997). Systematic trapping is required to acquire distribution and abundance information. Reproductive activity coincides with high food availability (Brown and Harney 1993). The rate of population growth is limited in SBKR by the relatively small litter size and long intervals between litters (Brown and Harney 1993). During flooding events, burrows within the active channel are inundated, presumably drowning the occupants. Post flooding, suitable habitat can be recolonized by individuals dispersing from adjacent refugia habitat. These factors explain why range-wide population numbers are difficult to quantify and can fluctuate widely from year to year.

Distribution

Historically, SBKR ranged from the San Bernardino Valley in San Bernardino County to southwest Perris, Bautista Canyon, and Murrieta Hot Springs in Riverside County, with at least 25 separate localities identified (Service 2009a). Present day populations are limited to three disjunct areas in San Bernardino and Riverside Counties which contain the largest remaining areas of suitable habitat for this species: the historical floodplain along the upper Santa Ana

River wash, Lytle and Cajon Washes, and the San Jacinto River. In 2009, we considered the range of SBKR to be approximately 10,696 acres (Service 2009a).

Santa Ana River Population

The area within and adjacent to the Santa Ana River is the largest remaining area of contiguous habitat of SBKR; this area encompasses the open washes of the Santa Ana River and City, Mill, Plunge, and Elder Creeks, which are tributaries to the Santa Ana River. SBKR are known to occur within the upper Santa Ana River wash from approximately 3.5 miles above the confluence of Mill Creek and the Santa Ana River to approximately 0.5 mile downstream of the Tippecanoe Avenue overpass in the City of San Bernardino (CFWO Listing and Recovery internal database 2020). SBKR occupies habitat within a mosaic of undisturbed habitat and developed areas and may use less suitable habitats such as the margins of water spreading grounds (groundwater recharge), airports, aggregate mining operations, and fallow citrus groves (Service 2009a).

The Corps and local sponsors (Riverside, San Bernardino and Orange County Flood Control Districts) established the 764-acre Woolly Star Preserve Area to offset impacts to alluvial fan habitat and associated species as the result of the operation of Seven Oaks Dam (Service 2002b); its boundary was expanded to approximately 781 acres in 2009 (SAIC 2012, unpublished report). Our most recent data indicates that approximately 53 percent of the WSPA was occupied by the SBKR in 2011 (SJM Biological Consultants 2011, unpublished report). We estimate approximately 450–500 acres of additional habitat is occupied outside of the WSPA lands. The recently completed Upper Santa Ana Wash Habitat Conservation Plan (Wash Plan HCP) includes conservation of 940 acres and management of 683 acres of Bureau of Land Management (BLM) Area of Critical Environmental Concern (Service 2020b).

With additional conservation of lands through other Federal and non-Federal actions, a total of approximately 2,733 acres of habitat have been conserved and or managed within the Santa Ana Wash and adjacent upland areas for the SBKR (CFWO GIS internal database 2020).

SBKR is most abundant in the washes at the confluences of the various creeks with the Santa Ana River.

Lytle Creek and Cajon Wash Populations

The Lytle-Cajon population is found in a roughly Y-shaped distribution along Lytle Creek and Cajon Wash, beginning just north of the Interstate 15 Bridge downstream approximately to Foothill Boulevard in the City of San Bernardino. The 1,373-acre Cajon Wash Conservation Area, which includes a 675-acre conservation bank, was set aside by Vulcan Materials, Inc. in the Cajon Wash to offset future mining impacts outside of the active floodplain (Service 1995, 1998a).

Near the Lytle-Cajon confluence, a 128-acre area was set aside to offset impacts of the construction of the San Bernardino Sheriff's Office training facility on the Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *Sanctorum*; woolly-star); however, this property has not

been protected with a durable protective legal instrument, nor has a mechanism for funding the management of the area for the benefit of woolly-star been established. It is not known to be occupied by SBKR. San Bernardino County Flood Control District has set-aside 40 acres of habitat under conservation easement, but without management in Cajon Wash (Service 1995, 1998b). An additional 435 acres of San Bernardino County Flood Control District-owned lands have been identified for potential future conservation by the San Bernardino County Flood Control District to offset effects from their ongoing maintenance activities.

Frisbee Creek is downstream of the Lytle Cajon confluence and is a historic braid of Lytle Creek. Frisbee Creek is approximately 1 mile in length and is bisected by Pepper Avenue. The area upstream and immediately downstream of Pepper Avenue is known to be occupied.

Most SBKR populations associated with tributaries to Lytle Creek or Cajon Wash appear to be extirpated. Just east of the main Lytle-Cajon population is a now-disjunct stream called Cable Creek; SBKR were last captured in this area in 2004. To the south and west of Lytle Creek is a large triangular-shaped area in north Fontana, west of Riverside and Sierra Avenues, that historically contained SBKR and was part of the Lytle Creek alluvial floodplain, but there have been no positive trapping results in the area since 2002 (Service 2002a, 2002b).

San Jacinto River and Bautista Creek Population

The smallest area supporting SBKR is within the San Jacinto River and its tributary, Bautista Creek. This area supports the only known remaining population of SBKR within Riverside County. The extent of occupied habitat has been reduced from an estimated 15-mile length of the San Jacinto River floodplain to just 6 miles as a result of habitat loss and degradation from agriculture, residential development, and flood control activities. The largest concentration of SBKR within this population is between the San Jacinto River-Bautista Creek confluence and the Main Street Bridge (Service 2002a, 2002b). The Western Riverside County Multiple Species Habitat Conservation Plan was designed to address the impacts of urbanization within western Riverside County and contains specific management and minimization measures intended to protect SBKR and other species (Service 2004).

The last record of SBKR in Bautista Creek is from 2002 when one animal was caught. Minimal trapping has occurred in Bautista Creek since then; however, a trapping effort in the Bautista flood control basin in 2015 produced negative results (Biological Monitoring Program 2016). The status of SBKR in Bautista Creek is currently unknown; however, it is isolated from the San Jacinto River population by more than 4 miles of concrete channel.

A Review and Summary of Kangaroo Rat Translocation Projects

Translocation of SBKR from the Project footprint is proposed as part of this Project. We have considered information from translocation of other species of kangaroo rat, as we consider the information applicable to SBKR. Therefore, we have reviewed the following, recent kangaroo rat translocation Projects conducted to date, although this review is not exhaustive: Shier and Swaisgood 2011; Shier and Wang 2012, unpubl. report; Tetra Tech 2016, unpubl. report; Tennant and Germano 2017; and Montgomery 2020, unpubl. report. The purposes for these

different translocations included testing assumptions about techniques and reducing mortality from habitat destruction.

The number of kangaroo rats released in each of these studies varied widely and, in general, no objective assessment of receptor-site carrying capacity was made beforehand. These translocations included both “soft-releases” in which translocated animals were confined on the site for some period of time and “hard-releases” in which translocated animals were released without confinement at the new location. Site preparation varied from no preparation to removal of congeneric species considered possible competitors, predator management, vegetation management and/or exclusionary fencing. These translocation efforts provide some insight into possible factors affecting release, and though no standard practices were employed, some inferences about relative success can be drawn.

In general terms, all post-release assessments were completely dependent upon re-capture at the release site, with the exception of the Tennant and Germano (2017) study in which a small proportion of the translocated kangaroo rats were radio collared. In general, post-release recapture of translocated individuals declined over time even though reproduction was documented at some release sites. Tennant and Germano (2017) reported the depredation and injury from intraspecific competition were the primary causes of post-release mortality. Shier and Swaisgood (2011) found that when SKR were released at translocation sites in proximity to “neighbors” (i.e., other SKR from immediately adjacent habitat areas at the capture-location), animals responded less-aggressively to familiar neighbors following release, thereby reducing potentially lethal interactions and energy-expenditures. With solitary animals such as kangaroo rats, aggression and territorial defense are normal behaviors and for translocated animals, and in addition to greater risk of depredation, affects their probability of survival post-release into novel habitat areas (Shier and Swaisgood 2011).

Where different release techniques were employed, soft-release appears to enhance survival relative to those kangaroo rats given a hard-release (Tennant and Germano 2017; Montgomery 2020, unpubl. report). Soft release was employed for 45 SBKR translocated in the San Jacinto River: 15 SBKR were found 3 months following release along with four putative offspring, but no animals were detected onsite in subsequent trapping although a single SBKR was captured in a nearby dirt road suggesting possible dispersal from the translocation site (Shier and Wang 2012, unpubl. report).

In only two of the cases we reviewed [i.e., the Diversified Pacific SBKR Translocation Project and the U.S. Marine Corps Base Camp Pendleton (MCBCP) SKR translocation] does it seem that a novel colony of kangaroo rats was established at the relocation site. With the Diversified Pacific Translocation Project, the number of animals persisting on the site represents a small fraction (i.e., less than 5 percent) of the 370 SBKR initially translocated. However, the numerous factors affecting post-release survival and assumed retention at the relocation site included site-disturbance from transients and recreational uses at the site, soil disturbance from use of goats to control weedy vegetation, and the high number of SBKR introduced into a relatively small receptor site (Montgomery 2020, unpubl. report). Translocated SBKR did reproduce at the Diversified Pacific translocation site with at least 175 putative offspring of these individuals

captured during 3–4 years of post-release trapping. However, during the most-recent trapping effort in October of 2019, only 17 SBKR (none of which were animals released at translocation) were captured at the site (Montgomery 2020, unpubl. report). Of particular note is the subsequent detection of a genetic signature unique to the Santa Ana Wash population of SBKR in SBKR captured in the upper Cajon Wash. Tissue samples taken from two SBKR within Cajon Wash in 2018, documented ancestry from the Santa Ana River wash; these SBKR were captured roughly 1 kilometer (0.6 mile) from the Diversified Pacific SBKR Translocation Project release site (Hendricks et al 2020). This demonstrates that either emigration from the release site and/or mating(s) between translocated SBKR and SBKR resident to the Lytle-Cajon Wash occurred. Therefore, survival greater than that documented by post-release trapping alone is possible. As no tagged SBKR were captured from the relocation site, emigration cannot be determined. A secondary goal of translocation of SBKR across the geographic range could be to attempt to increase effective population size (N_e); however, the longer-term stability of, or effects from, gene-flow resulting from translocation cannot be assessed from this limited sampling.

At MCBCP there was little observed mortality of translocated SKR and that with reproduction, a four-fold increase in SKR at the translocation site was realized within just short of 3 years. This may be explained, in part, by the different techniques used for this Project: the primary factor in preventing dispersal of SKR from the release site was the use of exclusionary fencing maintained over this 3-year period and prevention of interactions between potential competitors such as the DKR which were excluded from the area. The number of SKR within the release site continued to increase over the 2 years since dispersal was allowed indicating that a self-sustaining resident colony has been established (Tetra Tech 2016, unpubl. report).

Designated Critical Habitat

Critical habitat for SBKR was first proposed on December 8, 2000 (65 FR 77178), and designated on April 22, 2002 (67 FR 19812). Critical habitat for SBKR was subsequently re-proposed on June 19, 2007 (72 FR 33808), and a revised designation of the critical habitat was made final on October 17, 2008 (73 FR 61936). Following a 2009 lawsuit challenging the 2008 critical habitat designation, the court vacated the 2008 designation and reinstated the 2002 critical habitat designation on January 8, 2011. Designated critical habitat for SBKR encompasses approximately 33,295 acres in San Bernardino and Riverside counties.

Four critical habitat units have been delineated: Santa Ana River; Lytle and Cajon Washes; San Jacinto River-Bautista Creek; and Etiwanda Alluvial Fan and Wash. We provide below a summary description of the designated critical habitat units and the physical and biological features (previously referred to as primary constituent elements) for the SBKR; the status of each unit is discussed below. A more detailed description of each critical habitat unit is found within the final rule designating the critical habitat (Service 2002a).

Physical and Biological Features (PBFs)

The 2002 designation of SBKR critical habitat includes four PBFs:

1. Soil series consisting predominantly of sand, loamy sand, sandy loam, or loam.

2. Alluvial sage scrub and associated vegetation, such as coastal sage scrub and chamise chaparral, with a moderately open canopy.
3. River, creek, stream, and wash channels; alluvial fans; floodplains; floodplain benches and terraces; and historic braided channels that are subject to dynamic geomorphological and hydrological processes typical of fluvial systems within the historical range of the San Bernardino kangaroo rat. These areas may include a mosaic of suitable and unsuitable soils and vegetation that either:
 - a. Occur at a scale smaller than the home range of the animal, or
 - b. Form a series of core areas and linkages between them.
4. Upland areas proximal to floodplains with suitable habitat (e.g., floodplains that support the soils, vegetation, or geomorphological, hydrological, and aeolian processes essential to this species).

The term “upland areas” in the SBKR critical habitat rule is used synonymously with the term “refugia” when it is suitable for use by SBKR. These areas may include marginal habitats, such as agricultural lands that are disked annually, out-of-production vineyards, margins of orchards, areas of active or inactive industrial or resource extraction activities, and urban/wildland interfaces where SBKR have been found (CFWO Listing and Recovery internal database 2020). Along with mature alluvial fan sage scrub, these upland areas adjacent to more suitable habitat, when occupied, may also serve as refugia during large-scale flooding events and become a source of animals for recolonization of the lower floodplain once the system has stabilized (Service 2002a). SBKR may occupy less preferred refugia habitats when favorable climatic conditions have provided for population expansion.

The habitat within each designated critical habitat unit provides varying conservation value to the species. In order to maintain viable populations of SBKR in each critical habitat unit, protection and/or active management may be necessary and should focus on improving those degraded PBFs where intervention may provide a meaningful benefit. These features of critical habitat should include: (1) geomorphological, hydrological, and aeolian processes (PBF3); (2) linkages between core areas to maintain gene flow and minimize the loss of genetic diversity (Lande 1988; Keyghobadi 2007); and (3) upland areas adjacent to more suitable habitat that serve as refugia during large scale flooding events and provide a source for recolonization after the flooding has subsided (PBF 4) (Service 2002a, 2020b).

Critical Habitat Units (CHU)

Unit 1 – Santa Ana River

The Santa Ana River unit encompasses approximately 8,936 acres in San Bernardino County (Service 2002a). The area includes lands within the San Bernardino National Forest and portions of the cities of San Bernardino, Redlands, Highland, and Colton (Service 2002a). This unit contains upland refugia, active hydrological channels, floodplain terraces, and areas of habitat

immediately adjacent to floodplain terraces within the Santa Ana River and its tributaries: City, Plunge, and Mill Creeks.

Unit 2 – Lytle and Cajon Washes

The Lytle and Cajon Washes unit, which encompasses approximately 13,971 acres in San Bernardino County, includes the northern extent of the SBKR's remaining distribution. Critical habitat in CHU2 was designated as 3 subunits. We designated approximately 12,278 acres of critical habitat within Subunit 2A in the cities of Fontana and Muscoy. We designated approximately 787 acres of critical habitat in Devil's Canyon (Subunit 2B) and approximately 906 acres in Cable Creek (Subunit 2C), both in the City of Verdemont to the east of the Interstate-215 Freeway (Service 2002a). This unit contains habitat along and between Lytle and Cajon Washes and their tributaries emanating from canyons within the Angelus and San Bernardino National Forests.

Unit 3 – San Jacinto River and Bautista Creek

This unit is a long and linear area and includes approximately 5,565 acres in Riverside County along the San Jacinto River and Bautista Creek (Service 2002a). This unit includes portions of San Bernardino National Forest, the Soboba Band of Luiseno Indians Reservation, Bautista Creek (a tributary to the San Jacinto River), and areas along the San Jacinto River in the vicinity of the cities of San Jacinto, Hemet, and Valle Vista. This unit, which represents the southern extent of the currently known distribution of the SBKR, is adjacent to the Cleveland National Forest.

Unit 4 – Etiwanda Alluvial Fan and Wash

The Etiwanda Alluvial Fan and Wash critical habitat unit encompasses approximately 4,818 acres in western San Bernardino County in the cities of Rancho Cucamonga and Fontana, and represents the approximate westernmost extent of the known range of the SBKR. The northern boundary of the unit is within the Angelus National Forest. This unit includes lands within and between Deer, Day, and Etiwanda creeks.

Critical Habitat Function

To assess the changes in the function or ability of the designated critical habitat to support SBKR since the designation, we reviewed aerial imagery and identified developed areas and other land uses that appeared to remove or degrade PBFs and, thus, negatively affect the function of SBKR critical habitat. We then subtracted the acres of critical habitat where PBFs no longer occur (e.g., habitat lost to residential or commercial development, flood control structures, hard-sided recharge basins) from that designated within each critical habitat unit. We have done a similar evaluation to assess relative function in areas where essential PBF's have not been eliminated, but rather where they have become degraded since 2002. This estimate is far less precise as information from site visits and survey reports is incomplete and hence, is not included herein. We are preparing the Recovery Plan for SBKR and actively assessing the condition of critical and other habitat areas, which will allow us to better quantify acres of habitat that we consider

sufficiently degraded with respect to PBFs to no longer provide the function for which they were designated as critical.

In Table 1 below, we report the estimated number of acres of critical habitat that have been developed since the 2002 designation and which, therefore, no longer provide the function intended at designation. We also report acreage conserved based upon information developed during section 7 consultation, a section 10 Habitat Conservation Plan, and/or recorded conservation easements provided to us from other entities (e.g., county jurisdictions).

Table 1. Assessment of Physical and Biological Features and Conserved Lands for San Bernardino Kangaroo Rat within Critical Habitat Units

CH Unit	Total Acres	Developed Acres	Percent Developed	Conserved Acres	Percent Conserved
1 - Santa Ana River	8,936	1,871	21	2,733	31
2 - Lytle-Cajon Washes	13,971	3,603	26	2,014	14
3 - San Jacinto River/Bautista Creek	5,565	1,099	20	1,269	23
4 - Etiwanda fan	4,818	1,213	25	1,124	23
Total	33,290	7,786	23	7,140	21

Least Bell's Vireo

The following section summarizes information about the federally endangered least Bell's vireo pertinent to its legal status and biology as it pertains to the Project. For more detailed information on the vireo's biology, ecology, range wide status, threats, and conservation needs, please refer to the draft recovery plan (Service 1998b) and 5-year review (Service 2006). Additional information is also available in the final rule designating critical habitat for vireo (59 FR 4845). These documents are available on the [least Bell's vireo species' profile](#).

Numbers

The vireo was listed as endangered on May 2, 1986 (51 FR 16474), in response to a dramatic decline in population and widespread loss of riparian habitat. Since then, there has been a ten-fold increase in population size, and we recommended that the vireo be down listed from endangered status to threatened status in our 2006 5-year review. Numbers of documented vireo have continued to climb, and 3,413 territories were recorded range-wide in 2018 (Kus et al. 2019). Within the Santa Ana River watershed, 2,293 in 2020 vireo territories were observed (Zembal et al. 2020). It is important to keep in mind that the numbers reported here are for territories observed and reported; they are not exhaustive and observed territorial males do not necessarily represent pairs. The recorded territories are the minimum number of territorial males observed and reported within an area. It is also important to note that the survey effort, both within the Santa Ana River watershed and range-wide, varies widely from year to year and

therefore numbers of territories presented may underestimate true abundance. Year-to-year comparisons should be made with caution.

Reproduction

Vireo generally begin to arrive from their wintering range in southern Baja California and establish breeding territories by mid to late March, departing from their breeding grounds by the third week of September (Garrett and Dunn 1981; Salata 1983a, 1983b; Hays 1989; Pike and Hays 1992). Data collected for color-banded birds indicate that site fidelity is high among adults, with many birds not only returning to the same territory, but also placing nests in the same shrub used the previous year (Salata 1983b).

The vireo is an obligate riparian nester, occupying a number of riparian habitat types, including cottonwood-willow woodlands/forests, oak woodlands, and mulefat scrub. However, vegetation structure is an important determinant of vireo site use, and they prefer a diverse array of early successional riparian vegetation. Occupied breeding habitat generally includes dense shrub cover within 3 to 6 feet from the ground for nesting and a structurally diverse canopy for foraging (Service 1998b). Plant species composition does not appear as important a determinant in nesting site selection as habitat structure. As riparian vegetation matures, the tall stands tend to shade out the shrub layer, making the sites less suitable for vireo nesting. In addition, vireo nests tend to occur in openings and along the riparian edge, where exposure to sunlight allows the development of shrubs (Service 1998b).

Although the vireo occupy breeding territories that typically vary in size from 0.5 to 4.5 acres (RECON 1988), a few may be as large as 7.5 acres (Service 1998b). In general, it appears likely that areas that contain relatively high proportions of degraded habitat have lower reproductive success than areas that contain high quality riparian woodland (Jones 1985; RECON 1988; Pike and Hays 1992).

Distribution

The number of locations with breeding vireo has increased throughout southern California since listing, and there has been a slight shift northward in the subspecies overall distribution, but it remains restricted to the southern portion of its historic range (Service 2006). Vireo historically occupied willow riparian habitats from Tehama County in northern California, southward to northwestern Baja California, Mexico, and as far east as Owens Valley, Death Valley, and the Mojave River (Grinnell and Miller 1944; Service 1998b). Greater than 99 percent of remaining vireo still nest in southern California, south of the Tehachapi Mountains (Service 2006). Widespread habitat losses have fragmented most remaining populations into small, disjunct, and widely dispersed subpopulations.

Recovery

The overall positive trend for vireo since its listing is primarily due to efforts to reduce threats such as wholesale loss and degradation of riparian habitat, and brown-headed cowbird (*Molothrus ater*) parasitism. To be considered for downlisting, the Draft Recovery Plan identifies

11 sites that must be protected and managed, with stable or increasing vireo populations/metapopulations consisting of several hundred or more breeding pairs. The Santa Ana River and Camp Pendleton/Santa Margarita River populations have met this criterion due to the extensive efforts by the Corps and other partners, but most of the other locations have not. As numbers increase locally, the goal is that these “source populations” will yield individuals that will expand into the northern portion of its current and historic range, eventually recolonizing riparian woodlands of the California Central Valley.

Arroyo Toad

The Service federally listed the arroyo toad as endangered on December 16, 1994 (Service 1994), and on July 24, 1999, issued the Arroyo southwestern toad (*Bufo microscaphus californicus*) recovery plan (arroyo toad recovery plan; Service 1999a). The [arroyo toad recovery plan](#) identifies recovery units and number of populations for each unit to allow for delisting. More detailed information on the status of arroyo toad can be found in the arroyo toad recovery plan (Service 1999a), [5-year review](#) (Service 2009b) and the [latest rule](#) regarding this species (Service 2015). Please refer to these documents for detailed information on life history requirements, threats, and conservation needs of the species rangewide.

An estimated 25 populations of arroyo toad are known in the United States, from Monterey County south to the Mexican border (Service 2014), and an additional 10 populations occur in Mexico. These populations persist primarily as small, isolated populations in the headwaters of streams. Arroyo toads are terrestrial for much of the year and can range widely into upland habitat for foraging and burrowing, but use aquatic habitat for breeding. Breeding occurs in shallow, slow-moving stream systems and may occur from January to July. Breeding tends to occur earlier in coastal areas than inland areas (Service 1999a). Urbanization, agriculture, and dams are the main reasons for the decline of arroyo toad and are also current threats. Other threats include water management activities and diversions; road construction, maintenance, and use; grazing; mining; recreation; and nonnative plants and animals (Service 1999a).

Designated Critical Habitat

Final critical habitat for the arroyo toad was designated on February 9, 2011 (76 FR 7246). Arroyo toad critical habitat is designated in 21 different units from Santa Barbara County south to San Diego County, including units in Ventura, Los Angeles, San Bernardino, Riverside, and Orange counties. The designation includes a total of 98,366 ac of arroyo toad critical habitat.

Consistent with the recovery plan for the arroyo toad (Service 1999a), the critical habitat units are grouped into three recovery units: the northern, southern, and desert recovery units. The northern recovery unit consists of units in Santa Barbara, Ventura, and Los Angeles counties. Critical habitat in the northern recovery unit is primarily restricted to Forest Service lands as most of the habitat off of Forest Service land has been lost due to road construction, dams, agriculture, and urbanization.

The desert recovery unit consists of units in Los Angeles and San Bernardino counties. The final rule describes the desert recovery unit as follows: "Each of these units is isolated from each other

and from any other recovery units, making the issues of inbreeding, fragmentation, and random negative impacts of great concern. However, this recovery unit also represents unique ecological conditions for arroyo toads, such as extremes in aridity, heat, and cold, and likely harbors important genetic diversity" (Service 2011).

The southern recovery unit consists of units in Orange, western Riverside, and San Diego counties. The final rule describes the southern recovery unit as follows: "These critical habitat units consist of a range of geographic locations from coastal regions to interior mountains. Arroyo toads likely occurred throughout each of these river and creek basins, but are now found only in segments of the rivers and creeks due to loss or change of habitat and nonnative predators. Conserving arroyo toad populations in these river basins is necessary for preserving the species' full range of genetic and phenotypic variation" (Service 2011). The Plan Area is within the southern recovery unit for arroyo toad.

The primary constituent elements (PBFs) for arroyo toad critical habitat are defined as follows (Service 2011):

1. Rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads. Breeding pools must persist a minimum of 2 months for the completion of larval development. However, due to the dynamic nature of southern California riparian systems and flood regimes, the location of suitable breeding pools may vary from year to year. Specifically, the conditions necessary to allow for successful reproduction of arroyo toads are:
 - a. Breeding pools that are less than 6 inches (in) deep;
 - b. Areas of flowing water with current velocities less than 1.3 feet (ft) per second; and
 - c. Surface water that lasts for a minimum of 2 months during the breeding season (a sufficient wet period in the spring months to allow arroyo toad larvae to hatch, mature, and metamorphose).
2. Riparian and adjacent upland habitats, particularly low-gradient (typically less than 6 percent) stream segments and alluvial streamside terraces with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles; and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground, to provide foraging and living areas for juvenile and adult arroyo toads.
3. A natural flooding regime, or one sufficiently corresponding to natural, that: (A) Is characterized by intermittent or near-perennial flow that contributes to the persistence of shallow pools into at least mid-summer; (B) Maintains areas of open, sparsely vegetated, sandy stream channels and terraces by periodically scouring riparian vegetation; and (C)

Also modifies stream channels and terraces and redistributes sand and sediment, such that breeding pools and terrace habitats with scattered vegetation are maintained.

4. Stream channels and adjacent upland habitats that allow for movement to breeding pools, foraging areas, overwintering sites, upstream and downstream dispersal, and connectivity to areas that contain suitable habitat.

ENVIRONMENTAL BASELINE

The regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal Projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR § 402.02).

In the following paragraphs, we have provided information on the likely status of SBKR, vireo, and arroyo toad, the status of critical habitat, land status, and previous consultations in the action area in each of the three sections. Unless otherwise cited, the following discussion is based on the biological assessment (HNTB 2022a) and general knowledge of Service staff.

Habitat Characteristics of the Action Area

The biological assessment (HNTB 2022a) provides a more detailed description of the action area. In general, the action area covers approximately 64,803 acres and has high biotic, climatic, and geographic diversity. The proposed rail alignment (north to south) begins in the arid Mojave Desert (Section 1, High Desert), crosses the Cajon Pass area of the San Gabriel Mountains (Section 2), and travels into the marine-influenced, Mediterranean climate of the northeastern extent of the Los Angeles Basin (Section 3). The rail alignment would be built primarily in the median between the northbound and southbound lanes of I-15 (median running), except at the approach to the Rancho Cucamonga station where the alignment would cross over southbound I-15 lanes and run parallel to outer side of southbound lanes (side-running). Where the rail alignment leaves the I-15 right-of-way, it travels in city, railroad, or utility rights-of-way. Alterations of landscape, topography, hydrology, and vegetation have occurred previously along the I-15 highway corridor. Human presence is common in all portions of the Project. The existing highway corridor already effects wildlife and wildlife habitats; effects include alterations in wildlife behavior and direct mortality from construction and highway use and operations; reduction in habitat connectivity, facilitation of invasive plant species spread, and frequent human presence (Trombulak and Frissell 2001).

Elevated ambient noise is a prominent baseline feature within the action area, along with punctuated reoccurring episodes of louder noise from train and car horns, sirens, and other

sources. The main source of noise in the Project area is the I-15. Cross-Spectrum Acoustics collected noise readings for FRA along the Project alignment to assess the impact of construction and operation of the high-speed train on noise-sensitive receptors in the vicinity of the Project such as human dwellings. Noise readings were not collected in the Cajon Pass area because of a lack of human presence and noise-sensitive receptors. Existing noise levels recorded at sensitive receptor locations range from 51.8 dBA Leq (A-weighted decibels of equivalent continuous sound level over a specified number of hours) hourly at about 400 feet away from I-15, to 76.7 dBA Leq from within 50 feet from I-15. Readings of Leq tended to fall in around 65 dBA Leq measured about 200-feet from the I-15. Of course, these are samples of average noise conditions and noise on a given day will vary depending on conditions like wind, temperature, and traffic. Thus, typical daytime noise levels along the Project alignment measured at human-sensitive receptor locations from I-15 is approximately 65 dBA Leq at a distance of 200 feet from I-15 (Cross-Spectrum Acoustics 2022). Noise closer to the I-15 is likely approaching or at times exceeding 70 dBA.

At the Mojave River crossing, there is ongoing disturbance to the riparian vegetation where I-15 crosses the river. In addition to elevated noise due to vehicle traffic at the Mojave River crossing, there is extensive human presence in the form of human encampments and off-road vehicle use.

Four rail lines run along mainly along the west side of Cajon Wash to the west of the proposed alignment, and three of the rails cross the active channel of Cajon Wash twice within one mile near Cleghorn Creek and Debris Cone Creek. Cajon Boulevard runs along the east side of Cajon Wash. At its junction with the I-215 Freeway, I-15 turns south southwest crossing Cajon Wash. In addition to removing habitat, the railroad and roads and freeways have constrained Cajon Wash and reduced connectivity between the active stream channel and adjacent upland habitat. The use and maintenance of dirt roads extending from Cajon Boulevard has degraded and fragmented some of the habitat within the wash. Some illegal OHV use is known to occur in Cajon Wash.

Additionally, numerous wildfires in excess of 500 acres have occurred in the action area within the Cajon Wash or Cajon Pass area in the last two decades resulting in periodic and sometimes large swaths of vegetation disturbance. At least 8 of them between 2000 and 2009 including the 50,618-acre Grand Prix Fire and the 91,428-acre Old Fire in 2003. More recently the Blue cut fire of 2016 burned 36,274 acres off of I-15 and SR 138, affecting Cajon Wash, Cleghorn creek and blue cut. Numerous smaller fires occur almost annually in the Cajon Pass area such as the 2020 Brook fire, 2018 Box fire, and 2017 Tower fire. After crossing over Cajon Wash, Section 3 briefly runs through the foothills in the San Bernardino National forest (SBNF) adjacent to residential development where roads and the freeway again constrain the flow of water from the mountains. A riparian corridor is present near the I-15/Glen Helen Parkway interchange. From there, section 3 crosses over Lytle Creek, passes through increasing residential and urban development before entering Rancho Cucamonga.

Status of the Species in the Action Area

San Bernardino kangaroo rat

In general, SBKR have been detected in the action area primarily within the alluvial channels of Cajon and Lytle Creeks and to a lesser extent the adjacent upland areas and terraces. No surveys were conducted for SBKR or field evaluations/site visits in support of the biological assessment for this biological opinion. The BA (HNTB 2022a) used available environmental documentation to assess the likelihood of suitable habitat presence in the action area, including California Natural Diversity Database, and the California Wildlife Habitat Relationships System. Overall, the action area provides a wide range of suitability conditions from unsuitable to suitable for SBKR. Likewise, the distribution of SBKR within suitable habitat in the action area is most likely patchy. SBKR are assumed present to the north and south of I-15 in the action area at the Cajon and Lytle Creek crossings.

Previous surveys in the action area include:

- A small trapping effort near Kenwood Ave and Cajon Blvd in dense woody chaparral and coastal sage scrub that could be characterized as refugia habitat for SBKR. That trapping effort was in 2014 and found no SBKR.
- A small trapping effort along Cajon Blvd near the intersection of Glen Helen Pkwy Cajon Blvd and Devore Rd. The survey was done in dense scrub in 2015 and found no SBKR.
- In 2015, a 160-acre survey area spread across several locations from Cajon Pass to just downstream of the I-15/215 interchange along Cajon Wash. In total, 7 SBKR were captured, all in the vicinity of the I-15/I-215 interchange, and surveys were negative in the Cajon Pass area at several sites in Cajon Wash. Fewer than 1 SBKR per hectare sampled (trapped) were captured.
- In 2016, a 35-acre site was surveyed for SBKR near the intersection of I-15 and Victoria St in Fontana. There were no SBKR found.
- In 2018, a 40-acre site just downstream of the Lytle Creek portion of the Project was surveyed. 30 unique SBKR were captured; about 2 SBKR per hectare.

Abundance of San Bernardino Kangaroo Rats in the Action Area

Based on a review of SBKR occurrence data by Service staff, the habitat assessment in the BA, a subsequent site visit by Service staff, vegetation maps (HNTB 2022a), and aerial photographs, we estimate that SBKR inhabit the area in low densities in a patchy distribution. Generally, we expect there are less than one SBKR per hectare in the action area, but there could be between 1 to 5 SBKR per hectare. Earlier, in our status of the species, we said that Kangaroo rat populations exhibit large fluctuations in density in response to temporal variability in plant seed productivity and periodic flooding. Numbers of SBKR are difficult to estimate with accuracy due to their characteristic boom-bust population demographic. Therefore, we would only expect high densities of SBKR in the action area in a particularly good year for SBKR.

Previous Consultations in the vicinity of the Action Area

- Lytle Creek Ranch development. The Service issued a biological opinion on April 21, 2021, (FWS-SB-09B0411-16F0721-R001) to the U.S. Army Corps of Engineers for the issuance of a permit under Section 404 of the Clean Water Act. The Project comprises approximately 1,938 acres encompassing Lytle Creek north and south of I-15 at Lytle Creek Road, Riverside Avenue, and Glen Helen Parkway, and the On-Site and Off-Site Conservation Areas. The Project will result in the permanent loss of 962 acres of SBKR critical habitat, including 88 acres of occupied habitat. The Project will mitigate for impacts to SBKR habitat through Active habitat management and site-protection measures proposed for the 944-acres of habitat in perpetuity.
- Interstate 15/Interstate 215 Interchange Improvements Project. The Service issued a biological opinion on January 27, 2012, (FWS-SB-10B0097-12F0001) to the California Department of Transportation (who assumed the Federal Highway Administration's responsibilities under the Act for the consultation) for proposed Interstate 15/215 interstate improvements in the Cajon Wash/Wash area. The action area contained SBKR habitat. Assessments were conducted in 2008 and 2009 by Caltrans and Service biologists to identify potentially suitable SBKR habitat within the action area. Approximately 29.3 acres of occupied SBKR habitat were identified in the Project footprint. Take was exempted for up to 145 adult and 219 immature SBKR that could be killed or injured as a result of the Project and for all SBKR taken in the form of capture and relocation. There were approximately 203.2 acres of critical habitat in the action area, of which 146.4 acres supported the PBFs necessary for SBKR breeding, feeding, and sheltering, although with various degrees of disturbance. The remaining 56.8 acres were considered unsuitable due to development or absence of PBFs to support SBKR. To offset permanent and temporary impacts to SBKR habitat, the California Department of Transportation agreed to purchase 75.7 acres of conservation credits in an accredited conservation bank for SBKR.
- Glen Helen Parkway Grade Separation Project. The Service issued a biological opinion on December 13, 2011, (FWS-SB-08B0293-11F0415) to the California Department of Transportation (who assumed the Federal Highway Administration's responsibilities under the Act for the consultation) construction of transportation improvements along Glen Helen Parkway. It was determined that the Project would have 10.68 acres of temporary impacts to SBKR habitat. Project impacts were offset by habitat restoration and creation. Permanent impacts of 2.89 acres were compensated for at a 2:1 ratio.
- Calnev Expansion Project. A biological opinion was issued by the Service on March 31, 2016, (FWS-SB-12B0205-12F0352) to the Bureau of Land Management for the issuance of a right-of-way grant and maintenance for the Calnev Expansion Project. It was determined that 115.51 acres of occupied and suitable habitat will be impacted by Project construction and O&M, and result in a loss of 18.51 acres of SBKR critical habitat. The Project mitigated its impacts through the conservation and management of 190 acres of habitat for SBKR. To offset the effects of the Project's impacts on SBKR critical habitat,

the applicant provided for the permanent conservation and management of 85.37 acres of habitat for construction impacts and up to 51.31 acres of habitat for O&M impact either by direct acquisition or by purchase of conservation credits from an approved conservation bank.

- Ongoing Activities on the San Bernardino National Forest. A biological opinion was issued by the Service on December 6, 2012, to the USFS (FWS-SB/WRIV- 08B0680-09F0227) for the effects of ongoing activities on eight riparian species and SBKR. The activities were identified as Invasive Species Management, Recreation, Road Use and Trail Maintenance, Aerial Water Drafting for Fire Suppression and Cultural Resource Excavation. The level of incidental take of SBKR and impacts to its habitat was estimated to be very low, in part due to numerous measures the USFS proposed to reduce the level and extent of take. In addition, because the action area of the USFS action area narrowly intersects that which is analyzed for the Project in this biological opinion, only a very small portion of the take associated with the USFS ongoing activities would coincide geographically with the Project.
- Burlington Northern Santa Fe Third Main Track. The Service issued a biological opinion on April 13, 2007, (1-6-07-F-4426.6) to the U.S. Army Corps of Engineers for issuance of a permit for impacts to waters of the U.S. from construction of a railroad track by Burlington Northern Santa Fe in the Cajon Wash Area. It was determined that the Project would impact a total of 16.8 acres of SBKR habitat in critical habitat Unit 2. Of the 16.8 acres of habitat impacts, 10.6 acres would be permanent, and 6.2 acres would be temporary. Permanent and temporary impacts to SBKR and its habitat were offset by on and off-site conservation and restoration of 25.9 acres of Riversidean alluvial fan sage scrub.

Least Bell's vireo

In our status of the species, we said that more than 99 percent of remaining vireo nest south of the Tehachapi Mountains, and widespread habitat losses have fragmented most remaining populations into small, disjunct, and widely dispersed subpopulations. In 2005, we estimated that 3% of all vireo territories were in San Bernardino County, where the action area is located (Service 2006). In contrast, in 2005 San Diego and Riverside Counties accounted for 54 percent and 30 percent of all vireo territories respectively (Service 2006). While no surveys were conducted for vireo in support of the biological assessment for this biological opinion, we do have records of past surveys in the action area.

Mojave River Crossing

Between 2012 and 2018, several surveys have been completed to support projects in the vicinity of the I-15 Mojave River Bridge. In 2012, a survey of 141 acres of habitat detected two vireo territories within an approximately 60-acre section of the survey area which held the highest quality of habitat. This survey was in the extreme north of the action area and as many as seven individual vireo were observed. In 2016, one territory was detected in the same survey area, and

another territory was detected south of the survey area. In 2017, a survey area that covered approximately 25 acres detected one vireo territory; three individuals were detected. This survey area was limited to the area within about 1,000 feet of the I-15 Mojave River Bridge. The following year in 2018, the same area was surveyed and detected no vireo territories.

Abundance of Least Bell's Vireo in the Action Area

Generally, we expect that vireo would be less abundant near the I-15 Mojave River Bridge since there is elevated noise and disturbance from vehicular traffic, ongoing vegetation disturbance underneath the bridge and adjacent areas from vegetation management, off-road vehicle use, and human encampments.

Cajon Wash and Glen Hellen Parkway

In 2010, surveys of a 30.5-acre site south of the Glen Hellen Parkway/I-15 interchange, incidentally detected 3 territorial male vireo (Glenn Lukos 2010; unpublished report). In 2015, survey effort in Cajon Pass sighted one vireo, which was determined to be an unpaired (not nesting) wandering male (BonTerra Psomas 2015; unpublished report).

Abundance of vireo

In general, we expect vireo to be less abundant in the Cajon Wash in the action area since habitat is not well managed (in contrast to areas where vireo have recovered the most, i.e. the lower Santa Ana River watershed and San Diego County), and because of relatively high disturbance due to fire, noise, off-road vehicle use, and human activity.

Summary

In general, we expect to see low numbers of vireo since the action area is outside of the areas where vireo habitat and numbers have recovered the most, i.e. in the lower Santa Ana River watershed and in San Diego County. In section 1, vireo are assumed present at the Mojave River crossing where they have been observed nesting as recently as 2018; in portions of the Cajon Wash in the Cajon Pass in section 2; and in a drainage adjacent to I-15 near Glen Helen Park in section 3 of the action area. We estimate that there may be 6 to 10 vireo territories in the action area, the majority of which are within the Santa Ana River watershed (1 to 2 territories in the Cajon Creek, 3 to 4 territories near Glen Helen Parkway, and 2 to 4 territories in the Mojave River).

The Santa Ana River population of vireo meets the downlisting criteria specified in the 1998 Draft Recovery Plan; the population is currently protected and managed. Although the primary threats to the population are still present and show no signs of abating should the management cease, the number and distribution of vireo have been increasing since the Draft Recovery Plan was written. The number of observed vireo pairs within the Santa Ana River watershed was 1,199 in 2020 (Pike 2020; Zembal et al. 2020), satisfying the stated goal of several hundred or more breeding pairs in the Santa Ana River watershed.

Previous Consultations in the Action Area

- Calnev Expansion Project. A biological opinion was issued by the Service on March 31, 2016, (FWS-SB-12B0205-12F0352) to the Bureau of Land Management for the issuance of a right-of-way grant and maintenance for the Calnev Expansion Project. It was determined that construction of the 16-inch pipeline will result in 0.47 acres of permanent impacts to vireo habitat. Construction was expected to result in 0.47 acres of permanent impacts and 3.88 acres of temporary impacts to vireo habitat. The applicant offset permanent impacts to vireo habitat by acquiring replacement habitat at a 2:1 ratio. If impacts occurred to a known breeding territory, the replacement ratio was 3:1. We expected the Project to result in harm of one or more vireo pairs from the removal of habitat or from construction noise during construction or O&M activities.
- Ongoing Activities on the San Bernardino National Forest. A biological opinion was issued by the Service on December 6, 2012, (FWS-SB/WRIV-08B0680- 09F0227) to the USFS for the effects of ongoing activities on eight riparian species including vireo. The activities were identified as Invasive Species Management, Recreation, Road Use and Trail Maintenance, Aerial Water Drafting for Fire Suppression and Cultural Resource Excavation. The level of incidental take of vireo and impacts to their habitat was estimated to be low, in part due to numerous measures the USFS proposed to reduce the level and extent of take.
- Burlington Northern Santa Fe Third Main Track. A biological opinion was issued by the Service on April 13, 2007, (1-6-07-F-4426.6) to the Army Corps of Engineers for issuance of a permit for impacts to waters of the U.S. from construction of a railroad track by Burlington Northern Santa Fe Railway (BNSF) in the Cajon Wash Area. Impacts to vireo occurred over a long, narrow, linear area, primarily in and adjacent to habitat which had previously been disturbed. Impacts to vireo habitat were estimated to be 2.9 acres (1.6 acres of temporary and 1.3 acres of permanent impacts). A small amount of take, the young (eggs of fledglings) of two pair, was authorized.

Arroyo toad

Historically, arroyo toads occurred in two sites within the action area, at the Mojave River in the Victor Valley and Cajon Wash. They are assumed to be extirpated from Victor Valley because there have been no detections in more than 30 years, though there have been no recent surveys (Service 2014). The current status of arroyo toad in Cajon Wash is unknown because documentation history includes only a few records with low numbers of individuals and high disturbance of habitat (Service 2014). Arroyo toads are assumed present in suitable habitat in Cajon Wash in the BA. No surveys were conducted for arroyo toad in support of the biological assessment for this biological opinion. Recent focused surveys for arroyo toad in Cajon Wash near the SR-138 (MIG 2019; unpublished report), Cleghorn Creek and its confluence with Cajon Wash, and Crowder Creek (BonTerra Psomas 2015; unpublished report), were negative. The U.S. Geologic Survey conducted surveys for arroyo toads in the Cajon Wash in 2020 and 2021 and found no arroyo toads in either year (Hitchcock et al. 2022; unpublished report).

The extensive area of habitat and its dynamic nature combined with variation in timing of precipitation and arroyo toad breeding in Cajon Wash may make locating toads very difficult.

The best available information that we have on arroyo toad distribution in their upland and riparian habitat come from studies done on Marine Corps Base Camp Pendleton. Between 1998 and 2000, Holland and Sisk used extensive pitfall trapping in an attempt to determine arroyo toad distribution in the upland and riparian environment on MCBCP. This included trapping in locations adjacent to San Mateo and Cristianitos Creeks, and the Santa Margarita River (Holland and Sisk 2001). As described in more detail in previous consultations (FWS-MCBCP-09B0249-10F0421, FWS-MCBCP-10B0201-10F0410, FWS-MCBCP-12B0042-12F0058), based on the information in Holland and Sisk (2001), we estimate the average density of arroyo toads in the upland environment near Cajon Wash to be 0.47 arroyo toads per acre and estimate the average density of arroyo toads in the riparian environment near Cajon Wash to be 21.0 arroyo toads per acre. We expect there would be fewer toads per acre in the tributaries to Cajon Wash.

Habitat loss, degradation, and fragmentation are a significant threat to arroyo toads in and around the action area. Activities contributing to these threats in various parts of the Cajon Wash include the Burlington Northern Santa Fe rail line on the west side of Cajon Wash, a paved road (Cajon Boulevard) on the east side of Cajon Wash, dirt roads and trails extending into Cajon Wash from Cajon Boulevard, illegal off-highway vehicle (OHV) use, and dumping. Direct mortality to juvenile and adult toads may also be occurring in the action area from collisions with vehicles travelling on and off-road.

At the time of listing, recreational activities in riparian wetlands had substantial negative effects on arroyo toad habitat and individuals. Streamside campgrounds in southern California National Forests were frequently located adjacent to arroyo toad habitat (Sweet 1992). With nearly 20 million people living within driving distance of the National Forests and other public lands in southern California, recreational access and its subsequent effects are an ongoing concern. Numerous studies have documented the effects of recreation on vegetation and soils and report results of human trampling caused by hiking, camping, fishing, and nature study. In Cajon Wash, swimming and OHV recreation are the most prominent threats to arroyo toad associated with recreation (Service 2014).

At the time of listing and at present, periodic fires are considered a threat to the arroyo toads because fires can cause direct mortality of arroyo toads, destroy streamside vegetation, or eliminate vegetation that sustains the watershed. Numerous wildfires in excess of 500 acres have occurred in the action area where toads have been documented within the Cajon Wash or Cajon Pass area in the last two decades. See the Habitat Characteristics of the Action Area section of this biological opinion.

While the wildfires may have resulted in temporary impacts such as the loss of riparian vegetation, in arroyo toads have been documented in recently burned habitat. For example, the 1991 Lions Fire on upper Sespe Creek in the Los Padres National Forest directly destroyed riparian habitat along Sespe Creek, which contained the largest known extant population of arroyo toads. The fire also destroyed 15 known breeding pools and over 50 percent of the known

adult population on the Sespe drainage. By 1993, surveys in the burned riparian area indicated that toads had recovered rapidly through an equivalent recruitment of newly matured toads throughout the length of Sespe Creek (Sweet 1993).

At the time of listing, drought and the resultant deterioration of riparian habitats was considered to be the most significant natural factor adversely affecting the arroyo toad. Although drought is a recurring phenomenon in southern California, there is no doubt that this natural event combined with the many manmade factors negatively affects arroyo toad survival. Drought continues to have negative effects on arroyo toads in Cajon Wash and range wide.

Abundance of Arroyo Toads in the Action Area

In general, we expect arroyo toads to be much less abundant in the Cajon Wash and its tributaries in the action area since habitat is poor and few arroyo toads have ever been documented at this portion of the drainage, and because of relatively high disturbance due to fire, noise, off-road vehicle use, and human activity.

Previous Consultations in the Action Area

- Ongoing Activities on the San Bernardino National Forest. A biological opinion was issued by the Service on December 6, 2012, to the USFS (FWS-SB/WRIV- 08B0680-09F0227) for the effects of ongoing activities on eight riparian species including arroyo toad. The activities were identified as Invasive Species Management, Recreation, Road Use and Trail Maintenance, Aerial Water Drafting for Fire Suppression and Cultural Resource Excavation. The level of incidental take of arroyo toad and impacts to its habitat was estimated to be low, in part due to numerous measures the USFS proposed to reduce the level and extent of take.
- Kinder Morgan Pipeline Anomaly Repair Project. A biological opinion was issued by the Service on September 17, 2012 (FWS-SB-12B0250- 12F0553) to the USFS for a pipeline inspection and repair by Kinder Morgan. There were 0.43 acres of temporary impacts to arroyo toad critical habitat, and only a small amount of take was authorized.
- Calnev Expansion Project. A biological opinion was issued by the Service on March 31, 2016, (FWS-SB-12B0205-12F0352) to the Bureau of Land Management for the issuance of a right-of-way grant and maintenance for the Calnev Expansion Project. Project construction activities were expected to permanently impact approximately 7.75 acres and temporarily impact 18.79 acres of arroyo toad, breeding, foraging and aestivation habitat adjacent to Cajon Wash. O&M activities were expected to impact 26.03 acres (12.65 acres of breeding/floodplain habitat and 13.38 acres of upland habitat). The Project was also expected to result in 6.63 acres of permanent and 13.07 acres of temporary impacts to arroyo toad critical habitat as a result of Project construction, and up to 26.03 acres of temporary impacts from O&M activities during the life of the 50-year permit. The affected critical habitat contains all four arroyo toad PBF's. To offset the effects of the Project's impacts on arroyo toad critical habitat, the applicant did

provide for the permanent conservation and management of 14.59 acres of habitat for construction impacts and up to 26.03 acres of habitat for O&M temporary impacts either by direct acquisition or by purchase of conservation credits from an approved conservation bank.

- Burlington Northern Santa Fe Third Main Track Project. A biological opinion was issued by the Service on April 13, 2007, (1-6-07-F-4426.6) to the Army Corps of Engineers for issuance of a permit for impacts to waters of the U.S. from construction of a railroad track by Burlington Northern Santa Fe Railway (BNSF) in the Cajon Wash Area. It was determined that the Project would impact a total of 11.0 acres of arroyo toad breeding and foraging habitat in critical habitat Unit 20. The breeding habitat did not contain documented breeding pools. The permanent loss of upland foraging habitat was relatively small considering available habitat in the area.

Status of Critical Habitat of the Species in the Action Area

Status of San Bernardino Kangaroo Rat Critical Habitat in the vicinity of the Action area

The action area is within critical habitat unit 2. Critical habitat unit 2 encompasses approximately 13,970 acres and represents the northern extent of the subspecies' distribution. Subunit 2 is divided into three subunits. The Project goes through only subunit 2A. Subunit 2A provides alluvial fans, floodplain terraces, and historic braided river channels (PBF 3) that contain suitable habitat within Lytle and Cajon Washes and their remaining alluvial terraces (PBFs 1–4) (Service 2002a). We estimate that approximately 1,177 acres (346 acres in Lytle Creek and 771 acres in Cajon Wash) within Subunit 2A upstream from currently occupied habitat provide important hydro-geomorphological processes that support the PBFs downstream.

In general, Lytle Creek contains abundant soils and vegetation (PBFs 1 and 2) to support the SBKR. However, multiple flood control structures have reduced much of the area of upland habitat proximal to the floodplain (PBF 4) that would receive flood disturbance (PBF 3) now and into the future. Much of Subunit 2A is part of the historic Lytle Creek alluvial fan, but is outside of the current channel alignment of Lytle Creek. As a result, it is completely isolated from fluvial activity and vegetation in the area has become senescent (degraded PBFs 2–4).

The fluvial processes that rejuvenate and maintain the dynamic mosaic of alluvial fan sage scrub (PBF 3) are extensive within Cajon Wash. Downstream of the floodplain-constriction that exists near the San Manuel Amphitheater and Glen Helen Parkway, there are multiple stream braids and terracing within the active wash (PBFs 1–4). However, the installation of flood control structures in Cajon Wash (i.e., the Devore levees, Muscoy groins and Devil's Creek diversion), channel-maintenance (e.g., at Institution Road), engineered and non-engineered berms and levees, encroachment into the wash from recreational areas in Glen Helen Regional Park, and long-term OHV use of these areas have degraded soils and vegetation (PBFs 1 and 2) in critical habitat in many areas of Cajon Wash (e.g., see ECORP 2009, in litt.).

The Cajon Wash Habitat Conservation Management Area and the Cajon Wash Conservation Bank together provide approximately 1,445 acres of conserved and managed critical habitat containing PBFs 1–4. Isolation from the streambed limits the function of upland refugia habitat that is now no longer topographically or hydrologically connected to Cajon Wash (degraded PBF 4). Vulcan Materials, Inc. has reported that flow patterns have shifted within their conservation properties as a result of upstream manipulations affecting sediment deposition over the time period of 1997 to 2008 (ECORP 2009, in litt.). Vulcan is working to restore habitat connectivity between upland terraces and in-wash habitat within Cajon Wash (Lockhart and Associates, Inc. 2019, unpubl. report).

The Lytle Creek Conservation Bank conserves approximately 182.2 acres of habitat containing appropriate substrate and vegetation (PBFs 1 and 2). Roughly half of this property is within the active floodplain which in this reach of Cajon Wash is much-subjected to scour (degraded PBFs 1–3). Habitat on the elevated terrace supports appropriate soils and vegetation and provides refugia habitat (PBFs 1, 2, and 4), but no longer experiences fluvial processes (lacking PBF 3).

We estimate that approximately 3,603 acres of the 13,971 acres of designated critical habitat (approximately 26 percent) of CHU 2 have been developed since 2002 (CFWO GIS internal database 2020), and that approximately 2,014 acres, or 14 percent, have been conserved (as depicted in Figure 4).

Status of Arroyo Toad Critical Habitat in the vicinity of the Action area

The action area is located in the 1,775-acre Unit 20 (Upper Santa Ana River Basin/Cajon Wash). Located in southwestern San Bernardino County this unit encompasses approximately 7.9 miles of Cajon Wash from approximately 0.2 miles north of Highway 138 downstream to approximately 0.3 miles northwest of the Interstate 15 crossing. The unit consists of 711 acres of USFS land and 1,065 acres of private land. Unit 20 supports a remnant of a much larger population that historically existed along the upper Santa Ana River Basin, but was almost entirely extirpated by urbanization. Therefore, this location is important to maintain the current geographic extent of the species (Service 2011). The action area intersects the eastern side of Unit 20 along most of its length, primarily affecting upland habitat in the 100-year floodplain. Although the upland areas in the vicinity of the action area are somewhat confined and fragmented due to Cajon Boulevard, the Burlington Northern Santa Fe rail line, and naturally steep topography, the habitat in the vicinity of the action area contains the primary constituent elements (PCEs) necessary for breeding, foraging, and aestivating. A detailed description of the PCEs of critical habitat for arroyo toad can be found within the 2011 final rule designating critical habitat (Service 2011).

EFFECTS OF THE ACTION

Regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is

reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.17).

The regulations for section 7(a)(2) note that “a conclusion of reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available” [50 CFR § 402.17(a)]. When considering whether activities caused by the proposed action (but not part of the proposed action) or activities reviewed under cumulative effects are reasonably certain to occur, we consider factors such as (1) past experiences with activities that have resulted from actions that are similar in scope, nature, and magnitude to the proposed action; (2) existing plans for the activity; and (3) any remaining economic, administrative, and legal requirements necessary for the activity to go forward.

Effects of Construction on SBKR

Brightline West will identify any areas of suitable habitat within the construction limits of disturbance and begin SBKR surveys in areas of suitable habitat that may support SBKR (SBKR 1). In areas found to contain SBKR, Brightline West will temporarily fence the construction area with SBKR exclusionary fencing (SBKR 5). After the fences are installed, Brightline West will begin trapping SBKR and translocating them (SBKR 7, SBKR 8; Rincon 2022b). Any SBKR found during translocation will be housed temporarily before soft release at a receiver site (SBKR 8, SBKR 9, San Bernardino Kangaroo Rat Capture and Translocation Plan). Brightline West and the Service will identify an alternative receiver site after preconstruction surveys if needed to avoid harm to SBKR living at receiver sites after preconstruction surveys have been conducted. The receiver site(s) will be selected based on the number of SBKR captured and the availability of suitable habitat within the Caltrans right-of-way adjacent to the Project footprint. If few animals are captured in the Project footprint, then they will be soft released adjacent to their capture location if possible, so that individuals may remain within their existing home range. If more SBKR are captured in the Project footprint than can be accommodated in the suitable adjacent habitat in the Caltrans ROW, or if the Caltrans ROW is densely occupied by SBKR, Brightline West will have the SBKR translocated into the chosen alternative location. Grading, compacting, filling, pile driving, and construction of the rail may begin after capture and translocation of SBKR within the Project footprint has been completed.

Capture of SBKR during surveys could result in death or injury. It is possible for ants to attack SBKR inside the trap, or for the trapped SBKR to be depredated. The trap itself may injure SBKR, or SBKR may be injured during handling. Steps taken to reduce some of these risks include checking traps twice a night, and not trapping during inclement weather. Vehicles may collapse SBKR burrows during fence installation or removal, killing or injuring SBKR. The biologist or the biologist's representative will be present when the fence is installed to ensure that the apron of the barrier fence covers no burrows or burrow entrances. The SBKR fence will also be a barrier to movement of any SBKR that have burrows outside of the Project site but use the Project site for foraging. This may impair essential behavior patterns such as feeding and may result in harm of those SBKR.

Removal of SBKR from the wild for holding during translocation could result in harm of individuals because of general stress, lower immunity, potential for spread of diseases, a self-inflicted injury, and malnutrition/weight loss if an individual loses appetite while in captivity. Lactating females captured from the Project site will not return to nursing juveniles, and if those juveniles are immobile their death is likely. Releasing SBKR to a receiver site away from their home range could result in mortality from predation as individuals reestablish territories, with possibly more long-distance dispersal events and increased above ground activity.

Ground disturbance from clearing, grading, and soil redistribution are likely to crush any remaining SBKR and their burrows. However, this outcome is greatly reduced in magnitude because the use of SBKR fence and efforts to capture all SBKR that have a burrow within the Project footprint. Capture efforts should result in a high confidence that all SBKR are removed from the Project footprint. However, there is always a possibility that there are SBKR individuals that are not captured or individuals that immigrate into the Project area could be harmed as a result of construction activities. Because we cannot guarantee the removal of all SBKR from the Project site, we assume an unknown number of individuals may remain or immigrate to the Project site. A biological monitor will be present throughout ground disturbing activities to look for SBKR sign on the Project site, and to inspect and repair the SBKR fence on a daily basis.

Construction will require impact pile driving at Cajon and Lytle Creeks. We are addressing impact pile driving in our analysis because it is the loudest form of pile driving and has the farthest-reaching effects, and because the Project proponent was not able to commit to other less impactful forms of pile driving. Impact pile driving will be the loudest noise during construction and noise effects will expand beyond the effects of ground disturbance. Noise and vibration from pile driving and other heavy machinery may adversely affect SBKR during construction. Earlier, in our description of the action area, we stated that the pile driving buffer would be one mile. At one mile, we expect that noise from pile driving will reach approximately background levels. At 1,600 feet away from impact pile driving, we expect noise levels to reach about 67 dBA, which is the baseline noise level within about 200 feet from the I-15 (Cross-Spectrum Acoustics 2022). Within 1,600 feet of piledriving, we expect SBKR to have reduced alerting distance which could lead to a higher than usual number of SBKR being predated on. Beyond 1,600 feet from impact pile driving, we expect that noise will be low enough not to cause stress, alarm, or alerting behavior from SBKR above ground which could reasonably lead to reduced fitness by interrupting foraging, breeding, or intra species communication behaviors; Within 1,600 feet, we expect that SBKR individuals could suffer from temporary hearing loss and stress induced effects on foraging, breeding, and communication behavior. In addition, impact pile driving has the potential to cause vibrations and damage buildings within 55 feet, and vibrations could be noticeable by people out to 290 feet (Cross-Spectrum Acoustics 2022). Therefore, it is reasonable to assume that some burrows could collapse as a result of the vibration generated from pile driving, killing or injuring any SBKR within about 55 feet. Vibrations could also startle or flush SBKR within 290 feet, or mask SBKR communication such as foot drumming. Ultimately, we expect that any SBKR exposed to impact pile driving noise and vibration within 1,600 feet could be harmed. Beyond 1,600 feet we expect that SBKR are not likely to be adversely affected in a way that is measurable.

However, as described in the Project description, Brightline West will implement conservation measures specific to SBKR (SBKR 1 through 13) to minimize these impacts including, but not limited to, preconstruction surveys, delineation of areas to be avoided by construction, measures to keep SBKR out of construction zones, and biologists authorized to move SBKR from within the construction area to nearby suitable habitat outside of harm's way. While some SBKR may be injured or killed during relocation efforts, this risk will be minimized because only individuals knowledgeable of SBKR will be authorized to handle animals. Any SBKR remaining in the Project site are likely to die. Clearing, grubbing, and soil redistribution are likely to crush any remaining SBKR and their burrows. However, this outcome is greatly reduced in magnitude because the use of SBKR fence and efforts to capture all SBKR that have a burrow on the Project site.

Effects of Operation and Maintenance on SBKR

We do not have extensive information regarding the types of Project operation or maintenance activities. We anticipate that the potential for injury or mortality of SBKR to result from these activities would generally be low because most of these activities would occur on top of the viaducts away from SBKR. We expect that activities in Cajon and Lytle Creeks would be infrequent and fairly limited in size and duration. If such activities occurred in Cajon and Lytle Creeks, SBKR would be exposed to threats similar to those we described for construction.

The operation of the high-speed passenger train will generate increased noise and vibration throughout the action area. We cannot assess how far away from the train SBKR would be affected and whether or not it will change their behavior. Operation of the train could potentially prevent SBKR from re-occupying the area immediately adjacent to the train viaducts that cross Cajon and Lytle Creeks. Conversely, the animals, after some time, may become habituated and move back into the area.

Since Brightline West will be constructing the rail alignment in the median of the I-15 and most routine maintenance would be performed by maintenance machinery on the rail, and because the rail will ride on an elevated structure through Cajon and Lytle Creeks, we do not anticipate that operation and maintenance will result in effects above and beyond the baseline conditions of existing noise, lighting, or habitat fragmentation.

Effect on Recovery

According to section 2(b) of the Act, the primary purposes of the Act are to provide a means whereby the ecosystems upon which listed species depend may be conserved, and to provide a program for the recovery of listed species. Under section 2(c), Congress established a policy requiring all Federal agencies to use their authorities in seeking to recover listed species in furtherance of the purposes of the Act. Consistent with these purposes and Congressional policy, sections 3(5), 4(f), 7(a)(1), the implementing regulations to section 7(a)(2) at 50 CFR § 402.02 and related preamble at 51 FR 19926 (June 3, 1986) generally require Federal agencies to further the survival and recovery of listed species in the use of their authorities. According to these mandates, our analysis below assesses: (1) whether the proposed action adequately offsets its

adverse effects to the environmental baselines for SBKR, and (2) the extent to which the proposed action would cause “significant impairment of recovery efforts” or adversely affect the “species” chances for survival to the point that recovery is not attainable (51 FR 19926).

While the Service has not developed a recovery plan for SBKR, the proposed conservation measures avoid and minimize adverse effects to SBKR. While the Project may result in the displacement or loss of a few SBKR that are present in the Project site, the Project will (1) have a small amount of permanent and temporary impacts to SBKR habitat, (2) Brightline West will restore temporarily disturbed habitat which SBKR may immigrate back into, (3) Brightline West will compensate for permanent impacts to SBKR and their designated critical habitat through the purchase of credits at an approved SBKR bank as described in SBKR 11 and SBKR 12, and (4) no measurable long term effects are expected from operation and maintenance of the Project.

Effects on SBKR Critical Habitat

The Project will result in permanent loss of 0.89 acres of SBKR designated critical habitat, and temporary impacts to 76.3 acres from ground disturbance. Of the 13,971 acres of SBKR designated critical habitat in unit 2, approximately 3,603 have been developed, and about 10,368 acres are undeveloped. The Project would affect 0.7 percent of SBKR designated critical habitat in unit 2. Thus, the impacts to critical habitat are very minor relative to the entire designation and the unit, and the conservation role of the entire critical habitat and the unit will not be diminished. Further, the permanent and temporary impacts to SBKR habitat will be offset by on-site restoration and compensated for through the purchase of credits at an approved SBKR Bank (SBKR 11, and SBKR 12). Critical habitat was designated to protect hydrologic function for habitat regeneration and habitat connectivity between occupied sites within Unit 2 (67 FR 19818). Due to the Project’s alignment with the existing I-15, and that the elevated crossings at Lytle and Cajon Washes, impacts to hydrologic functions supporting SBKR habitat are expected to be limited and not expected to measurably change from the existing condition.

Summary

As we stated previously in this biological opinion, “jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). This regulatory definition focuses on how the proposed action would affect the reproduction, numbers, and distribution of the species under consideration in the biological opinion. For that reason, we have used those aspects of the SBKR’s status as the basis to assess the overall effect of the proposed action on the species.

Additionally, we determine whether a proposed action is likely “to jeopardize the continued existence of the species” through an analysis of how a proposed action affects the listed taxon within the action area in relation to the range of the entire listed taxon. For the SBKR, this process involves considering the effects at the level of the action area, then at the level of the critical habitat unit or recovery unit, and then finally for the range of the listed taxon. Logically,

if a proposed action is unlikely to cause a measurable effect on the listed taxon within the action area, it is unlikely to affect the species throughout the critical habitat unit, the recovery unit, or the remainder of its range. Conversely, an action with appreciable effects on the listed entity in the action area may degrade the status of the species to the extent that it affects the recovery unit or the entire range.

In the following sections, we will synthesize the analyses contained in the Effects of the Action section of this biological opinion to determine how each of the proposed actions affects the reproduction, number, and distribution of the SBKR. We will then assess the effects of the proposed actions on the recovery of the species and whether they are likely to appreciably reduce the likelihood of both the survival and recovery of the SBKR in the wild.

Reproduction

The Project will have short term effects on individual reproductive capacity since a relatively small number of individuals will not have the opportunity to reproduce for a maximum of two peak breeding seasons due to the 18 month-long construction timeline. The proposed Project does not involve actions, processes, or the introduction of chemicals that would logically lead to the conclusion that reproduction of the species as a whole would be affected in a meaningful way. Moreover, we do not expect that the number of individuals affected, compared to the population as a whole, to be so large that it would logically lead to a significant decrease in reproduction of the species. Thus, we do not expect the proposed action will cause a meaningful decrease in reproductive capacity of the species.

Numbers

Since there were no SBKR surveys conducted for this Project at the time of writing this biological opinion, we do not have a recent sample of census data that is representative of this Project as a whole. Therefore, we do not know how SBKR are distributed in the action area. However, in the past we have used the Abundance Index provided by McKernan (McKernan 1997) to estimate the numbers of SBKR in a given Project site. Abundance of SBKR is generally correlated with the quality and amount of habitat in a given area and may be estimated by certain characteristics: low abundance are usually areas with dense cover of non-native annual plants carrying 1-5 individual SBKR per hectare (ha), moderate abundance can be expected for habitat with intermediate phases of alluvial fan sage scrub carrying 5-15 SBKR per ha, and high abundance usually contains pioneer to intermediate phases of alluvial fan sage scrub carrying 20-30 SBKR per ha.

Noise from pile driving may adversely affect SBKR within about 262 acres of suitable SBKR habitat (106 hectares). Of those 262 acres, about 75.6 acres are pioneer, 80 acres are intermediate, and 106.29 acres of dense and lower suitability habitat. Within those 262 acres, ground disturbance from construction may affect as much as 77.2 acres, or 31.2 hectares (ha), of occupied habitat for SBKR.

Based on these abundance indexes, the quality of available habitat, and the information available to us, which we provided in the status of the species in the action area section of this biological

opinion, we estimate the number of SBKR in the action area to be on the lowest end of the Abundance Index. We estimate SBKR in the action area number between approximately 106 to 530 individuals; of those, between 32 and 157 may be adversely affected by ground disturbance and translocation in the form of harm, capture, injury or death; and 75 to 374 individuals may be affected by nighttime pile driving noise. Furthermore, an unknown number of pups may be crushed killed or by ground disturbing activities, or harmed by pile driving noise. Any SBKR exposed to noise from pile driving outside of the limits of ground disturbance and within 1,600 feet of pile driving may be harmed by noise in the form of reduced fitness by damaging hearing, interrupting foraging, breeding, or intra-species communication behaviors, and reduced alerting distance leading to higher predation.

In Status of the Species, we described several factors that explain why range-wide population numbers are difficult to quantify and that SBKR numbers can fluctuate widely from year to year. Because of this, it is difficult to identify an accurate scale of impact to numbers. We used the Abundance Index provided by McKernan (McKernan 1997) to estimate the numbers of SBKR range-wide with our estimate of occupied habitat (10,696 acres or 4,328 hectares). The total estimate of occupied habitat range-wide could support 1 to 30 SBKR per hectare, which means that range-wide SBKR could number between 4,328 to 129,840 individuals. Even at the lowest estimate of SBKR numbers range-wide, we do not expect this Project to have a significant effect on the number of SBKR range-wide.

Distribution

All SBKR within the Project site will be removed through capture or otherwise adversely affected. Some SBKR will be relocated outside of the construction area. Thus, we anticipate a small change in the distribution of the species within the action area. However, based on the scale of the action area relative to the range of the species, and because most of the action area will remain as suitable habitat for SBKR, the overall distribution of the Lytle-Cajon SBKR population and range-wide will not be decreased by the Project.

Effects of Construction on Arroyo Toad

Brightline West will identify suitable arroyo toad habitat that may support arroyo toad (ARTO 1) within the construction limits of disturbance and begin arroyo toad surveys. Earlier we described the current status of arroyo toad in Cajon Wash as unknown and that historically only a few records exist with low numbers of individuals and that suitable habitat is under pressure from disturbance. We have little data on the proportion of arroyo toads likely to be captured within the proposed areas of ground disturbance. We expect that surveys will find very low numbers of arroyo toads since ground disturbance and survey efforts will focus on tributaries to Cajon Wash and upland areas where arroyo toads are less likely to be found, and because ground disturbance that may affect arroyo toads in riparian areas will be several hundred feet away from the main stem of Cajon Wash. Any arroyo toads found in the survey areas, will be removed from harm's way by a qualified biologist and released nearby in Cajon Wash in an area of suitable habitat. Construction may begin after the site has been surveyed and cleared of arroyo toads.

Capture and relocation measures have the potential to effectively minimize death and injury of arroyo toads during ground disturbing activities. Toads often release their bladder contents upon capture (Stebbins and McGinnis 2012) and may experience increased stress levels; these responses could reduce arroyo toad survival and reproduction following capture and relocation. However, foraging and aestivating arroyo toads are not known to be territorial, so individuals have the potential to continue foraging or aestivating without substantial disruption following relocation. A qualified biologist, with experience using methods that have been implemented successfully during construction of other Projects in arroyo toad-occupied habitat, will oversee capture and relocation efforts. Based on the past successful implementation of trapping and relocation of arroyo toads in other Projects without any documented mortality, we do not anticipate that any individuals will be killed or injured during trapping and relocation efforts.

We are not aware of any studies that have determined the carrying capacity for arroyo toads within the habitat along the Cajon Wash or similar habitat. However, because a large area of undisturbed suitable arroyo upland habitat will remain within and adjacent to the action area after Project construction, the relocation of toads captured within the impact areas into adjacent suitable habitat is not expected to result in adverse impacts associated with overcrowding.

Ground disturbance will affect 13.67 acres of arroyo toad habitat. Of those 13.67 acres, 12.66 acres are upland aestivation habitat, and 1.01 acres are riparian breeding habitat. Any remaining arroyo toads that are not salvaged are likely to be injured or killed during ground disturbing activities. Those arroyo toads remaining in the Project footprint are likely to be aestivating and difficult to observe. We assume that any arroyo toad remaining in the impact area will be killed or injured as a result of being crushed by construction equipment. Based on our experience with previous construction Projects within arroyo toad habitat, aestivating toads are rarely discovered during or after ground disturbing activities.

Habitat adjacent to construction areas may be exposed to increased lighting and noise from pile driving. Increased ambient lighting and noise levels can affect arroyo toads through increased predation risk and disruption of normal behaviors in adjacent breeding, foraging, and dispersal habitat. We expect that toads within 3,200 feet of impact pile driving may be adversely affected because that is the approximate distance where impact pile driving noise should reach background levels. However, we expect there to be few toads in areas where noise will be loud enough to cause adverse effects; since, most toads will be farther away inside Cajon Wash and because the baseline noise level is so high, owing to the combination of I-15, Cajon Boulevard, and 4 existing high traffic cargo rail lines intertwined with Cajon Wash.

Additionally, we do not expect that additional light from nighttime construction is likely to cause additional adverse effects once arroyo toads are removed from the construction area because construction will be within the median of the existing I-15, which is a source of light as well as Cajon Boulevard, and because Cajon Boulevard and the I-15 act as barriers making it unlikely for toads to be affected by construction lighting. We anticipate that potential effects to arroyo toads resulting from lighting are likely to be insignificant (i.e., should not reach the level where take occurs).

Effects of Operation and Maintenance on Arroyo Toad

We do not have extensive information regarding the types of operation or maintenance activities. We anticipate that the potential for injury or mortality of arroyo toad to result from these activities would generally be low because most of these activities would occur on top of the viaducts away from arroyo toad habitat. We expect that activities in Cajon Creek would be infrequent and fairly limited in size and duration. If such activities occurred in Cajon Creek, arroyo toad would be exposed to threats similar to those we described for construction.

The operation of the high-speed passenger train will generate increased noise and vibration throughout the action area. We cannot assess how far away from the train arroyo toad would be affected and whether or not it will change their behavior. Operation of the train could potentially prevent arroyo toad from re-occupying the area immediately adjacent to the train viaducts that cross Cajon Creek and its tributaries. Conversely, the animals, after some time, may become habituated and move back into the area.

Since Brightline West will be constructing the rail alignment in the median of the I-15 and most routine maintenance would be performed by maintenance machinery on the rail, and because the rail will ride on an elevated structure, we do not anticipate that operation and maintenance will result in effects measurable effects different from the existing levels of noise, lighting, or habitat fragmentation.

Effect on Recovery

Downlisting and delisting criteria are described in the arroyo toad recovery plan (Service 1999a) as conserving, maintaining, and restoring the riparian and upland habitats used by arroyo toads for breeding, foraging, and wintering habitat; maintaining a minimum number of self-sustaining populations in each of the three recovery units; and by maintaining 15 additional self-sustaining populations of arroyo toads in coastal plain, coastal slope, desert slope, and desert river basins, including known populations outside of federal jurisdiction.

With the implementation of conservation measures such as 1) restoring approximately 12.92 acres (of 13.67 acres total) of temporary impacts from vegetation removal (CM-5, CM-27), and 2) having a biological monitor on site to avoid adverse effects (CM-1); and since 3) the Project will not result in significant permanent impacts since only 0.73 acres of upland habitat and 0.01 acres of riparian habitat will be lost, 4) the Project area is small relative to the overall range of arroyo toad, and 5) because the proposed rail alignment is in the median of the I-15, without significant impact to arroyo toad numbers, distribution, and reproduction, we expect that the proposed activities would not cause significant impairment of recovery efforts or adversely affect the arroyo toad's prospects for recovery.

Effects on Arroyo Toad Critical Habitat

Temporary and permanent vegetation removal would occur within critical habitat for arroyo toad. Clearing and grubbing within the temporary and permanent LOD would affect habitat types

that may be used for foraging and burrowing (PBF 4). Permanent loss of vegetation would directly reduce the area of PBFs essential to the functioning of critical habitat for arroyo toad.

Fugitive dust as a result of construction activities in arid conditions may indirectly affect critical habitat for arroyo toad. Fugitive dust that settles on plants can reduce the photosynthesis capability of multiple plant species, including evergreen and perennial shrubs typical of riparian and adjacent upland habitat types. Plant mortality or reduced plant vitality may change the composition of riparian or adjacent upland plant communities; such changes could reduce the quality or availability of functioning critical habitat for arroyo toad within the Action Area. Avoidance and minimization measures for fugitive dust from Project construction activities would reduce this impact.

The Project will result in permanent loss of 0.73 acres of arroyo toad upland habitat (PBF 4), and 0.01 acres of riparian habitat (PBF 2) in tributaries to Cajon Wash as a result of soil compaction and habitat type conversion from installation of the rail and new bridge structures. The Project will result in temporary impacts to approximately 0.54 acres of riparian habitat (PBF 2) and approximately 12.5 acres of upland habitat (PBF 4) within arroyo toad critical habitat unit 20.

We do not expect the proposed Project will alter the function of PBFs within Cajon Wash, and is not expected to affect hydrologic regimes of Cajon Wash or tributaries to Cajon Wash because the Project does not involve actions that would logically lead to changes in the hydrologic regime such as, disrupt a natural flooding regime (PBF 3), or remove or modify stream channels (PBF 4), and the Project is not expected to increase fragmentation of critical habitat above and beyond the baseline conditions because the rail will be constructed in the median.

Summary

In the following sections, we will synthesize the analyses contained in the Effects of the Action section of this biological opinion to determine how each of the proposed actions affects the reproduction, number, and distribution of the arroyo toad. We will then assess the effects of the proposed actions on the recovery of the species and whether they are likely to appreciably reduce the likelihood of both the survival and recovery of the arroyo toad in the wild.

Reproduction

The Project will have short term effects on individual reproductive capacity since a relatively small number of individuals will not have the opportunity to reproduce. The proposed Project does not involve activities, processes, or the introduction of chemicals that would logically lead to the conclusion that reproduction of the species as a whole would be affected in a meaningful way. Moreover, we do not expect that the number of individuals affected, compared to the population as a whole, to be so large that it would logically lead to a significant decrease in reproduction of the species. Thus, we do not expect the proposed action will cause a meaningful decrease in reproductive capacity of the species.

Numbers

It is not possible to quantify exactly how many arroyo toads may be killed, injured, or adversely affected by noise during construction of the proposed Project. Due to the difficulty in finding this species and the fluctuations that occur in the numbers and densities on a seasonal and annual basis, and the lack of recent survey data in the action area, we cannot precisely determine the number of individuals that may be adversely affected. Regardless, the numbers of arroyo toads killed, injured, or harmed should be low due to the limited extent of Project activities, the focus of Project activities in upland areas where arroyo toad densities are expected to be lower, and implementation of the proposed conservation measures.

The proposed Project will affect a small fraction of more than one thousand acres of arroyo toad riparian and upland habitat within and adjacent to Cajon Wash. Based on the scale of the impacts relative to the amount of available habitat, this loss of habitat is not anticipated to have a significant effect on the size or persistence of the arroyo toad populations in these drainages. In addition, habitat impacts will be mitigated by restoring 12.92 acres of disturbed arroyo toad habitat impacted by the Project. Similarly, the potential for impacts will be minimized due to the limited amount of ground disturbance (13.67 acres total), the focus of ground disturbance in upland areas where arroyo toad densities are expected to be much lower (12.66 acres), education of workers, use of biological monitors, and relocation of individual adult or juvenile arroyo toads out of harm's way. The anticipated death, injury, or relocation of a small number of arroyo toads will affect a small fraction of the population along Cajon Wash. The individuals lost from the population are anticipated to be replaced by successful breeding in subsequent years and will not have a significant impact on the long-term persistence of arroyo toads along Cajon Wash.

Distribution

Since the Project will have a small amount (0.74 acres) of permanent impacts to arroyo toad habitat, and the size of adverse effects to arroyo toad individuals will be small relative to the species range and the population's range in Cajon Wash, and because the proposed rail alignment will be in the median of the I-15 thereby minimizing additional affects beyond the baseline conditions, we do not expect that the Project is likely to cause a meaningful reduction in the distribution of arroyo toad.

Effects of Construction on Least Bell's Vireo

Vegetation clearing in suitable vireo habitat may harm, crush, or kill vireo and their eggs or chicks. Adverse effects during construction and vegetation removal will be minimized by implementing preconstruction surveys within the limits of ground disturbance to verify presence or absence, and by timing construction to minimize adverse effects during the nesting season (LBV 1, LBV 2, CM 2). Vegetation clearing that may affect vireo will only be necessary at the Mojave River crossing. The Project is expected to result in temporary disturbance to 8.65 acres of riparian habitat from vegetation removal and habitat alteration or degradation during construction at the Mojave River. 1.88 acres of suitable habitat will be lost at the Mojave River crossing due to construction of the viaduct and expansion of the I-15 Bridge. To minimize the

effect of vegetation clearing in the Mojave River, Brightline West will limit the construction footprint and delay vegetation clearing to the later part of the nesting season, beginning in June after vireo have had time for at least one reproductive cycle. If vireo have late clutches in the nesting season, vegetation clearing may crush, kill or injure eggs, chicks or fledglings, and vegetation clearing may elicit startle or escape responses or adversely affect normal feeding and breeding behavior in adults.

Brightline West will restore the area of temporary construction impacts. Restoration activities themselves may cause temporary impacts due to noise, fugitive dust, ground disturbance, and human presence. Control of invasive species may require mechanical or chemical disturbance during native plant reestablishment periods. Human presence would occur during monitoring and maintenance activities during reestablishment. Reestablishment to preconstruction levels of plant cover for riparian plant species may take two to three years, during which reduced habitat functions would be present in the restoration area.

Noise from pile driving and other heavy machinery may adversely affect vireo during construction. Construction will require impact pile driving at several locations near Cajon Creek, at the Mojave River, and possibly at the I-15 overpass at Glen Helen Parkway which is near a site known to be occupied by vireo (Appendix A, Figure 4). We chose to use impact pile driving in our analysis because it is the loudest form of pile driving and has the farthest-reaching effects, and because the Project proponent was not able to commit to other less impactful forms of pile driving. Impact pile driving will be the loudest noise during construction and noise effects will extend beyond the effects of ground disturbance and any other source of noise from the Project.

The Service has previously used 60 dBA Leq per half hour, or 5 dBA above ambient conditions, as the threshold to assess impacts to vireo due to noise. A study examining the effects of helicopter noise at Camp Pendleton in San Diego County found that vireo vocalization rates were significantly reduced when noise levels exceeded 60 dBA Leq and breeding success was 3 to 11 percent higher outside of the zone exposed to 60 dBA (Mock and Tavares 1997), although we note that this effect is difficult to tease apart from external factors. The authors still found an exponential increase of vireo following cowbird management and habitat restoration at Camp Pendleton, suggesting that the impacts of noise are minor compared to cowbird parasitism and habitat degradation. Additionally, it should be noted that the Service has been unable to track the specific methods and analysis used by Mock and Tavares. However, with the lack of other study data indicating that the 60 dBA threshold is inappropriate to use for this species, we will not deviate from our standard practice.

Our rationale for considering construction noise up to 5 dBA over ambient (when ambient noise is above 60 dBA Leq) as a noise level that is likely to adversely affect vireo is in recognition that vireo seem to habituate to elevated ambient noise as is evidenced by their presence near major roadways such as I-15. Earlier in our environmental baseline section we explained that the existing daytime noise level at about 200 feet from the I-15 is about 65 dBA Leq.

The noise report proposes that typical at-grade track construction would result in an 8-hour workday Leq of 88 dBA at a distance of 50 feet from the construction site (grader, loader, truck),

without considering pile driving (Cross-Spectrum Acoustics 2022). Impact pile driving would generate a maximum sound level (Lmax) of 101 dBA at 50 feet from the source (Federal Highway Administration 2006). Lmax is the highest instantaneous sound level measured during a specified period. Construction noise is commonly reported in maximum noise levels, which are not typically sustained over long periods of time. Construction equipment generally acts like a point source and will typically reduce at a rate of 6 dB per doubling of distance, across hard flat surfaces (CalTrans 2016). However, acoustically absorptive sites with soft dirt, grass, or scattered bushes and trees between the source and the receiver increase sound attenuation (reduction) by an additional 1.5 dBA per doubling distance, or an overall attenuation factor of 7.5 dBA per doubling distance for a point source. Additionally, a break in the line of sight between the noise source and the receptor using sound walls can result in a 5 dBA reduction (Federal Highway Administration 1995).

Assuming the first 100 feet from pile driving and construction is a hard flat surface with 6 dBA of attenuation, we expect 101 Lmax dBA at 50 feet to attenuate to 95 dBA at 100 feet (double the distance). Beyond 100 feet we expect attenuation will increase due to terrain and softer surfaces such as loose soil, grass, shrubs and trees; beyond 100 feet we expect attenuation will be 7.5 dBA per doubling of distance. At 200 feet we expect noise to drop off to 87.5 dBA; then doubling to 400 feet, 80 dBA; 800 feet, 72.5 dBA; 1,600 feet, 65 dBA; 3,200 feet, 57.5 dBA.

At 1,600 feet away from impact pile driving, we expect noise levels to reach about 65 dBA, which is the ambient noise level within about 200 feet from the I-15; therefore, we expect ambient noise to be lower than 65 dBA at 1,600 feet from I-15 (Cross-Spectrum Acoustics 2022). Beyond 2,700 feet from impact pile driving, we expect that noise will drop below 60 dBA Leq hourly and vireo are not likely to be adversely affected beyond 2,700 feet from impact pile driving. Therefore, within 2,700 feet, we expect that noise will interfere with vireo vocalization, reduce listening and alerting distance, negatively interfere with hatchling development and nesting, stimulate startle and escape behavior, and cause hearing loss with increased negative effects and increased risk of injury or death as distance is reduced between the vireo and the source of noise.

Based on a distance of 2,700 feet, we can measure the acreage of riparian habitat that is assumed to be occupied by vireo. We estimate that approximately 55.6 acres of habitat may be affected by pile driving noise in Cajon Creek, and about 19 acres of habitat will be impacted near the Glen Helen Parkway overcrossing. Pile driving at the Mojave River crossing may affect 28.8 acres of riparian habitat. In total, the Project is likely to result in adverse noise effects in 103.4 acres of habitat, all of which is assumed to be occupied.

Effects of Operation and Maintenance on Least Bell's Vireo

Operations of high-speed rail could result in mortality of least Bell's vireo through collisions with operating trains. The viaduct would be elevated over the Mojave River and its floodplain, creating physical separation from rail operations and the alignment is median running across the river. We expect the physical separation away from riparian habitat along with isolation within

the highway median to minimize potential for bird strikes during nesting season as it is expected that the birds would remain close to vegetation well below the track.

Since Brightline West will be constructing the rail alignment in the median of the I-15 and most routine maintenance would be performed by maintenance machinery on the rail, and because the rail will ride on an elevated structure across the Mojave River, Lytle Creek, and along Cajon Creek, we do not anticipate that operation and maintenance will result in effects above and beyond the baseline conditions of existing noise, lighting, or habitat fragmentation.

Effect on Recovery

The number of vireo in the vicinity of the Project's action area has been steadily increasing, although substantial threats requiring ongoing management remain. A Draft Recovery Plan for the species was outlined in 1998 and coordinated actions by several agencies have been taken to promote the recovery of the vireo since it was listed in 1986. The primary goals of the draft vireo recovery plan are stated as: (1) maintain stable or increasing vireo metapopulations, each consisting of several hundred or more breeding pairs; (2) protect and manage riparian and adjacent upland habitats within the historic range of the vireo, (3) control non-native plant species, (4) control cowbird parasitism, and (5) conduct habitat restoration. Population surveys indicate that the Santa Ana River population has achieved the downlisting criterion in the draft recovery plan, although most of the other populations/metapopulations of vireo have not. This Project is not anticipated to have measurable effects on vireo recovery.

Summary

In the following sections, we will synthesize the analyses contained in the Effects of the Action section of this biological opinion to determine how each of the proposed actions affects the reproduction, number, and distribution of the vireo. We will then assess the effects of the proposed actions on the recovery of the species and whether they are likely to appreciably reduce the likelihood of both the survival and recovery of the vireo in the wild.

Reproduction

The Project will have short term effects on individual reproductive capacity since a relatively small number of individuals will not have the opportunity to reproduce and some vireo nest sites will be lost due to a permanent loss of a small amount of habitat. The proposed Project does not involve activities, processes, or the introduction of chemicals that would logically lead to the conclusion that reproduction of the species as a whole would be affected in a meaningful way. Moreover, we do not expect that the number of individuals affected, compared to the population as a whole, to be so large that it would logically lead to a significant decrease in reproduction of the species. Thus, we do not expect the proposed action will cause a meaningful decrease in reproductive capacity of the species.

Numbers

The Project will result in permanent loss of 1.88 acres of vireo habitat, and likely adverse noise effects to vireo across 103.4 acres (55.6 acres along Cajon Creek, 19 acres near Glen Helen Parkway, and 28.8 acres in the Mojave River) of habitat. Using the survey data we presented in the status in the action area, we estimate that the Project is likely to adversely affect 6 to 10 vireo territories, the majority of which are within the Santa Ana River watershed (1 to 2 territories in the Cajon Creek, 3 to 4 territories near Glen Helen Parkway, and 2 to 4 territories in the Mojave River). Of the 2,293 territories estimated to be in the Santa Ana River watershed, the Project would affect less than one percent of those territories alone. Of the 87 estimated territories in San Bernardino County, from less than 9 to 11 percent would be affected. Moreover, we expect that the low number of territories in our estimate is the most likely to be present in the action area, based on past survey results, and the baseline conditions of the habitat in the action area. Even at the high end of estimated effects to vireo territories, we do not expect this Project to have a significant effect on the number of vireo range wide. We expect there could be as many as 10 territories adversely affected by construction noise.

Distribution

Since the Project will have a small amount (1.88 acres) of permanent impacts to vireo habitat, and since temporary impacts to vireo habitat will be small (8.65 acres) and the size of adverse effects to vireo individuals will be small relative to the species range, and because the proposed rail alignment will be in the median of the I-15 thereby minimizing additional affects beyond the baseline conditions, we do not expect that the Project is likely to cause a meaningful reduction in the distribution of vireo.

CUMULATIVE EFFECTS

Cumulative effects are effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR § 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We have not identified any future State, Tribal, local, or private actions that are reasonably certain to occur within the action area.

CONCLUSION

After reviewing the current status of the SBKR and its critical habitat, the arroyo toad and its critical habitat, and the least Bell's vireo, the environmental baseline for the action area, the effects of the proposed activities, and the cumulative effects, we have determined that the activities considered in this biological opinion are not likely to jeopardize the continued existence of the SBKR, arroyo toad, least Bell's vireo or adversely modify arroyo toad or SBKR critical habitats. We have reached this conclusion for the following reasons:

1. Project activities are likely to kill or injure few SBKR and arroyo toads because Brightline West will implement numerous measures to reduce the potential that SBKR and arroyo toads will occupy Project work sites.
2. We expect habitat supporting up to 10 vireo territories may be affected by ground disturbance and construction noise, which may reduce the fitness and productivity of these birds. However, any associated impacts will be temporary, lasting a maximum of the estimated two nesting seasons during Project construction.
3. Adverse effects to arroyo toad, SBKR, and vireo in the action area will be reduced by implementation of the conservation measures identified in the Project Description of this biological opinion.
4. As many SBKR as practicable will be trapped prior to ground disturbance and translocated.
5. The loss of designated critical habitat is limited to a small fraction of total critical habitat within SBKR Unit 2 and arroyo toad Unit 20.
6. Temporary impacts to critical habitat will be restored to pre-Project conditions.
7. To minimize impacts to arroyo toads, construction areas will be surveyed prior to initiating ground-disturbing activities, and any arroyo toads observed in the Project footprint will be relocated to safety in suitable habitat nearby.

INCIDENTAL TAKE STATEMENT

INTRODUCTION

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act **prohibit the take of endangered and threatened animal species**, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of “take” in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The measures described below are non-discretionary and must be undertaken by the FRA so that they become binding conditions of any grant or permit issued to the Brightline West, for the exemption in section 7(o)(2) to apply. The FRA has a continuing duty to regulate the activity covered by this incidental take statement. If the FRA: (1) fails to assume and implement the terms and conditions, or (2) fails to require the Brightline West to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FRA or Brightline West must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

San Bernardino Kangaroo Rat

The regulations for section 7(a)(2) clarify that the Service may use surrogates to express the amount or extent of anticipated take when “exact numerical limits on the amount of anticipated incidental take may be difficult” (80 FR 26832). The implementing regulations [50 CFR § 402.14(i)(1)(i)] require that the Service meet three conditions for the use of a surrogate. To use a surrogate, the Service must:

1. Describe the causal link between the surrogate and take of the listed species:

Construction impacts to habitat can be a surrogate for take of individual SBKR because SBKR can be crushed and/or entombed during grading and clearing activities or harmed by noise and vibration from impact pile driving. They may also be inadvertently crushed during vegetation management activities. We consider that most, if not all, occupied habitat in the construction footprint would be trapped in order to remove SBKR prior to ground-disturbance. An unknowable number of SBKR would also be exposed to pile driving noise within habitat outside the limits of ground disturbance. Construction impacts to habitat represents the potential loss of or harm to an unknown number of SBKR which cannot accurately be estimated.

2. Describe why it is not practical to express the amount of anticipated take or to monitor take-related impacts in terms of individuals of the listed species:

Incidental take in terms of numbers of individual SBKR is difficult to quantify because they are small, nocturnal animals that spend daylight hours underground; young are not detectable in the burrow; and populations fluctuate seasonally. Therefore, it is not possible to accurately assess or predict the number of SBKR that may be present within any area of habitat.

3. Set a clear standard to determine when the proposed action has exceeded the anticipated amount or extent of the taking:

Take of SBKR would be exceeded if more than 77.2 acres of habitat are cleared, graded or otherwise disturbed during Project implementation. Take would be exceeded if noise levels exceed 68 dBA Leq hourly during nighttime pile driving activities at 1,600 feet away from pile driving.

We anticipate take of all SBKR within the 77.2 acres of habitat within the Project site, and we anticipate that all of these individuals would be taken in the form of capture, harm, injury or death during capture, off-site housing, translocation, and construction. We also anticipate the additional take of all SBKR in the form of harm from noise within the 184.8 acres of suitable habitat beyond the limits of ground disturbance. Note that the 77.2 acres of impacts from ground disturbance is nested within the 262 acres where we anticipate that adverse effects may occur,

therefore take in the form of harm from noise may affect 184.8 acres of suitable habitat beyond the ground disturbance footprint.

- IT 1. Capture, handling, captive holding, and release of all SBKR within the 77.2-acre Project site. We anticipate that all or most of the adult SBKR residing within the Project will be captured. We are not putting a limit on take in the form of capture. We are not putting a limit on take in the form of harm during the holding and release process.
- IT 2. Take in the form of death or injury of up to 2 SBKR as a result of capture or handling. If the initial capture and handling period kills or injures more than 2 SBKR, take will be exceeded.
- IT 3. Take in the form of harm, death, or injury of an unknown number of SBKR that escape capture, and an unknown number of underground pups that are not collected within the 77.2-acre Project site.
- IT 4. Take in the form of harm of an unknown number of SBKR exposed to nighttime pile driving noise within 184.8 acres of habitat outside the limits of ground disturbance.

Arroyo Toad

The regulations for section 7(a)(2) clarify that the Service may use surrogates to express the amount or extent of anticipated take when “exact numerical limits on the amount of anticipated incidental take may be difficult” (80 FR 26832). The implementing regulations [50 CFR § 402.14(i)(1)(i)] require that the Service meet three conditions for the use of a surrogate. To use a surrogate, the Service must:

1. Describe the causal link between the surrogate and take of the listed species:

The precise distribution and number of arroyo toads in the action area is difficult to determine due to the dynamic conditions associated with their habitat and biology and because detection of arroyo toads outside of the breeding season is very difficult. Because arroyo toads are likely to remain underground within their burrows during Project implementation, it will not be possible to observe and quantify the number of animals residing within the soil disturbance footprint that escape capture and are killed, injured, or harmed. Finally, earlier in the ‘status of the species in the action area’ section, we established a way to estimate the number of arroyo toads in suitable arroyo toad habitat of Cajon Wash based on information about arroyo toads in another watershed. Therefore, we have established estimated levels of take and associated triggers for reinitiation based on the amount of habitat that will be affected, the number of arroyo toads that are observed within the Project footprint and relocated, and the number of arroyo toads that are anticipated to be observed dead or injured due to the action.

2. Describe why it is not practical to express the amount of anticipated take or to monitor take-related impacts in terms of individuals of the listed species:

In most cases, the precise level or extent of anticipated take in terms of individuals is difficult to determine because: (1) the small size and cryptic nature of arroyo toads; (2) the numbers of arroyo toad individuals will change over time in a given area; and (3) the best available commercial and scientific data for arroyo toad in Cajon Creek does not provide a reliable population estimate or distribution of arroyo toads in the action area.

3. Set a clear standard to determine when the proposed action has exceeded the anticipated amount or extent of the taking:

Take of arroyo toad associated with Project activities will be exceeded if:

- | | |
|------|---|
| IT 1 | Take will be exceeded if capture of all arroyo toads exceeds 13.67 acres of arroyo toad suitable habitat. |
| IT 2 | Take will be exceeded if ground disturbance exceeds 13.67 acres of arroyo toad habitat. |
| IT 3 | Take will be exceeded if more than one arroyo toad is observed dead or injured from construction activities or relocation activities. |

Least Bell's Vireo

We anticipate take in the form of harm for two vireo territories in the Mojave River due to the temporary loss of breeding, feeding, and sheltering habitat within 8.65 acres. These vireo territories are expected to become displaced, which will subject them to increased competition, greater risk of predation/nest parasitism, and decreased reproductive success. If the habitat of more than two vireo territories is removed by this Project, the take limit will have been exceeded and consultation will need to be reinitiated.

We anticipate take in the form of harm for the vireo (pairs and young) within up to 10 vireo territories that may be affected by construction noise. These birds may suffer a reduction in fitness and productivity during Project construction, expected to last no more than two nesting seasons. The take exemption will be exceeded if more than two nesting seasons are impacted by impact pile driving during Project construction.

REASONABLE AND PRUDENT MEASURES

We have determined that the following reasonable and prudent measures are necessary and appropriate to minimize the impact of the incidental take of SBKR and vireo:

- RPM 1 FRA and Brightline West must adhere to the requirements of this biological opinion, including the avoidance and minimization measures included the Project Description as conservation measures as a condition of funding.
- RPM 2 FRA will cause Brightline West to monitor and report on compliance with the established take thresholds for SBKR, vireo, and arroyo toads associated with the proposed action.
- RPM 3 FRA will cause Brightline West to carry out habitat assessments and preconstruction construction surveys for SBKR, arroyo toad, and vireo.
- RPM 4 FRA will cause Brightline West to capture and translocate SBKR prior to ground disturbance in SBKR restricted work areas of the Project alignment.

Our evaluation of the proposed action includes consideration of the conservation measures proposed by FRA and Brightline West in the Description of the Proposed Action section of this biological opinion. Consequently, any changes in the conservation measures may constitute a modification of the proposed action that causes an effect to the SBKR, vireo, and/or arroyo toad that was not considered in the biological opinion and would require re-initiation of consultation, pursuant to the implementing regulations of the section 7(a)(2) of the Act (50 CFR 402.16). The reasonable and prudent measures and terms and conditions are intended to compliment the conservation measures proposed by FRA and Brightline West.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the FRA and Brightline West must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline monitoring and reporting requirements. These terms and conditions are non-discretionary.

- TC 2.1 Submit a written Biological Monitoring Plan to the PSFWO for approval at least 60 days prior to the start of Project-related ground disturbance that is within 400 feet of any occupied ESA-listed species habitat or within any suitable habitat within designated critical habitat areas (CM 4).
- TC 2.2 Contact the PSFWO within 24 hours if the qualified biologist detects impacts to SBKR from Project-related activities that exceed the take limits identified above.
- TC 2.3 Brightline West will monitor the noise in Lytle and Cajon Creeks during pile driving activities at 400-foot intervals out to 1600 feet and provide a monthly report to the PSFWO and FRA.
- TC 3.1 FRA will cause Brightline West to ensure the biologist monitoring Project activities within the SBKR restricted work areas meet the standards for a qualified SBKR biologist and has been pre-approved by the PSFWO to work on this Project.

- TC 3.2 Submit preconstruction survey results to PSFWO within 14 days of completion.
- TC 4.1 Construct SBKR exclusion fencing to exclude SBKR from construction areas based on preconstruction survey results.
- TC 4.2 Submit documentation of exclusion fence monitoring and repairs.
- TC 4.3 Submit an exclusion fencing report to the PSFWO upon exclusion fencing completion.
- TC 4.4 Translocated SBKR will be soft release as described in Appendix D.
- TC 4.5 Trapped SBKR will be translocated to suitable habitat adjacent to their capture site; or to nearby suitable habitat that was identified as suitable but not occupied during preconstruction surveys and within Caltrans Right-of-way; or moved to a receiving Conservation Bank.
- TC 4.6 If more than 1 SBKR is injured or dies during capture or handling contact the PSFWO so we can discuss what went wrong and how harm and mortality can be minimized going forward.
- TC 4.7 Submit a final Project report within 60 days of the completed Project, which includes the results of SBKR trapping within the exclusion areas, and a status report of SBKR relocated off-site including the number of SBKR relocated and the status of soft release.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

The Applicant shall notify the PSFWO (see email address and phone number below) within 1 working day if any federally endangered or threatened species is found dead or injured as a direct or indirect result of Project implementation, in excess of that described in the above incidental take statement. Notification must include the date, time, and location of the injured animal or carcass, and any other pertinent information. In addition, mark dead animals appropriately, photograph, and leave the carcass on site; transport injured animals to a qualified veterinarian; and contact the PSFWO regarding the final disposition of any treated animals that survive.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- CR 1 In order to improve our understanding of the utility of translocation in minimizing impacts to individual SBKR and to the larger population, implement post-

translocation trapping at 3- and 6-month intervals following release from artificial burrows.

REINITIATION NOTICE

Reinitiation of consultation is required and will be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is by law and:

1. If the amount or extent of taking specified in the incidental take statement is exceeded;
2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or
4. If a new species is listed or critical habitat designated that may be affected by the identified action.

Any questions or comments should be directed to [William Sherwin](#)⁵ of my staff at 760-322-2070.

Sincerely,
Scott A. Sobiech
Field Supervisor

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APPENDIX A

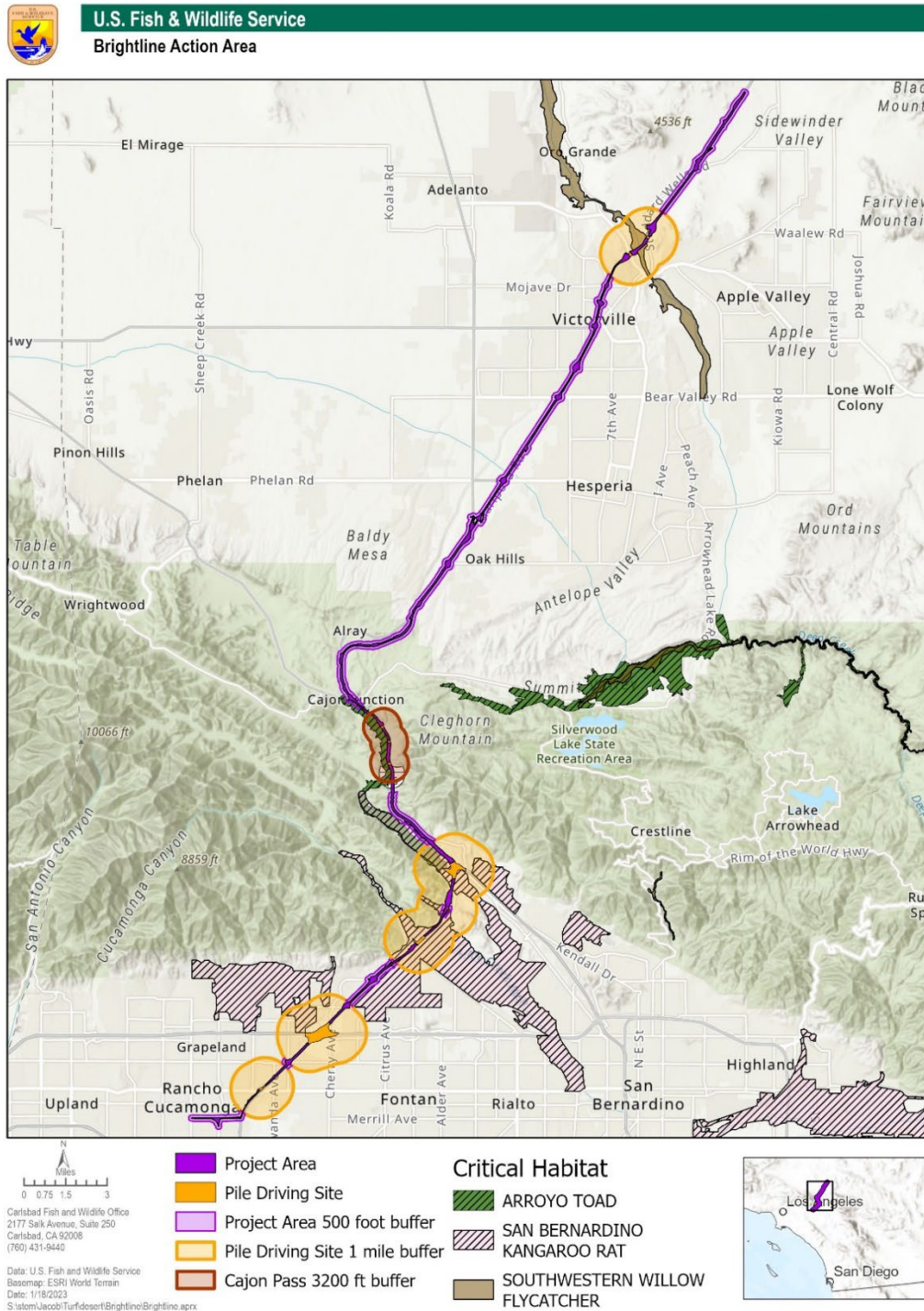
Figure 1. Project Location, Action Area, and Critical Habitat Areas for Cajon Pass High-Speed Rail

Figure 2. Project Location, Action Area, and Critical Habitat Areas for Cajon Pass High-Speed Rail, Mojave River Crossing

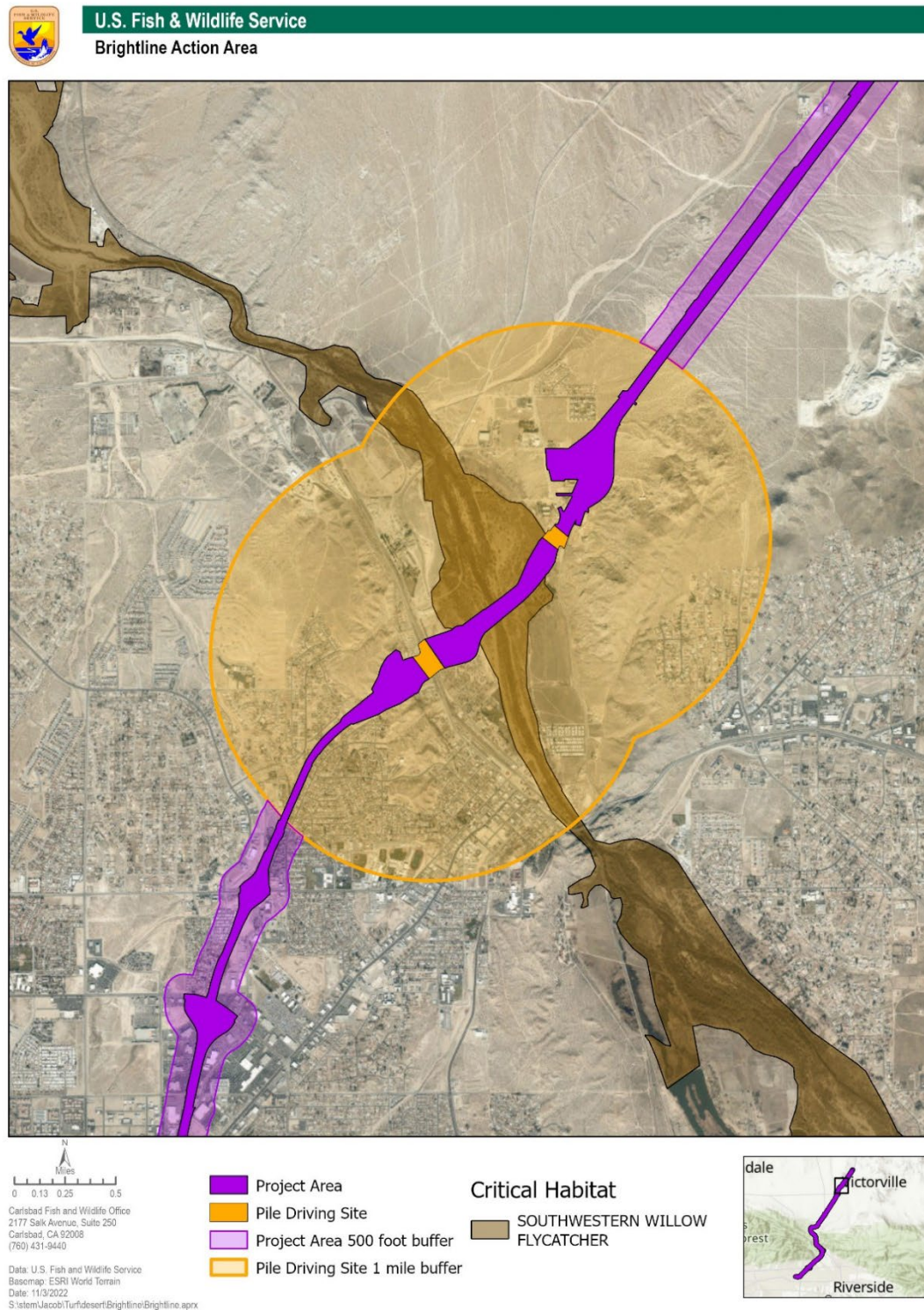


Figure 3. Project Location, Action Area, and Critical Habitat Areas for Cajon Pass High-Speed Rail, Cajon Pass



Figure 4. Project Location, Action Area, and Critical Habitat Areas for Cajon Pass High-Speed Rail, Cajon Creek, Glen Helen Pkwy Interchange, Lytle Creek (from northeast to southwest)

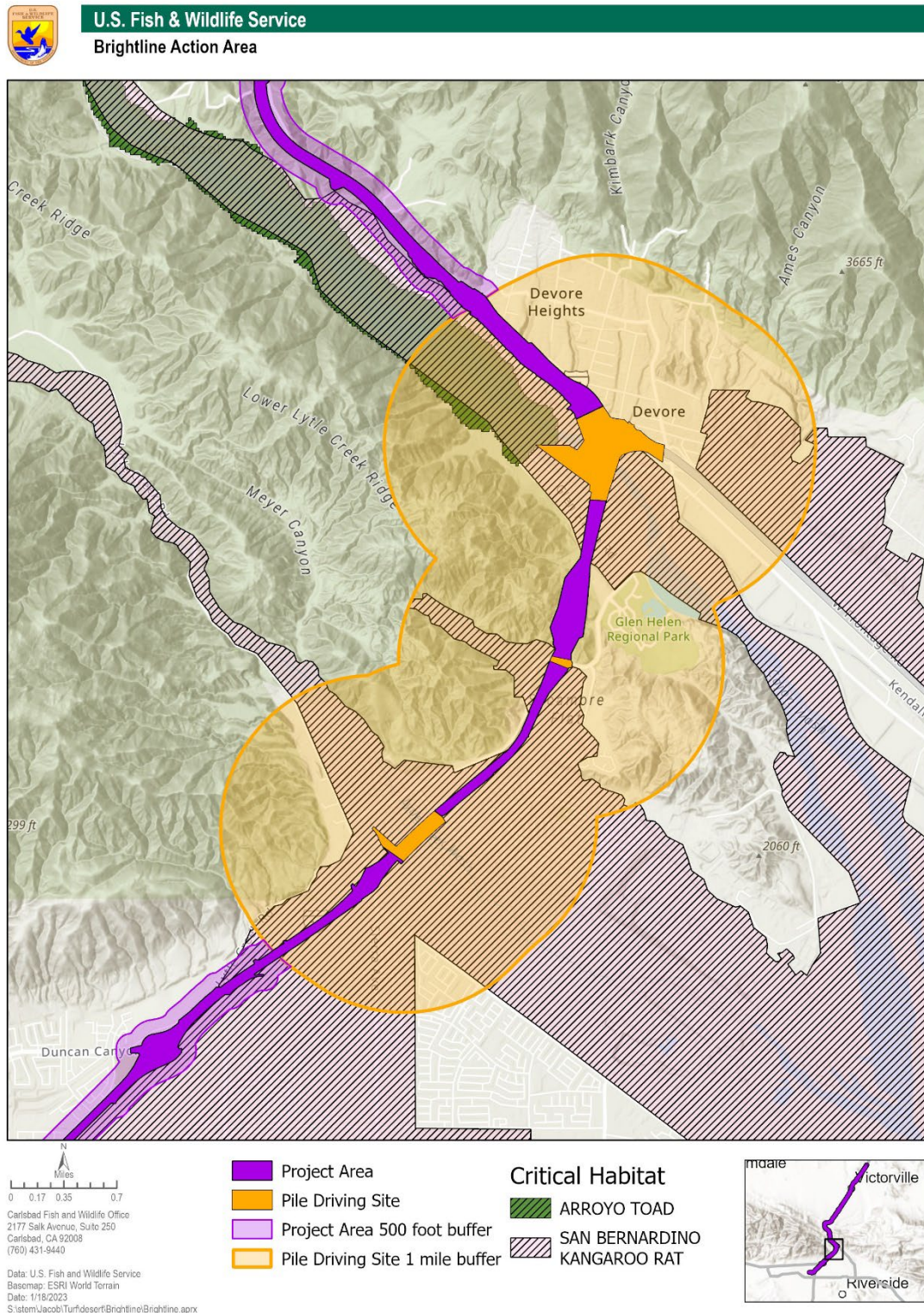


Figure 5. Project Location, Action Area, and Critical Habitat Areas for Cajon Pass High-Speed Rail, I-15/SR-210 Interchange

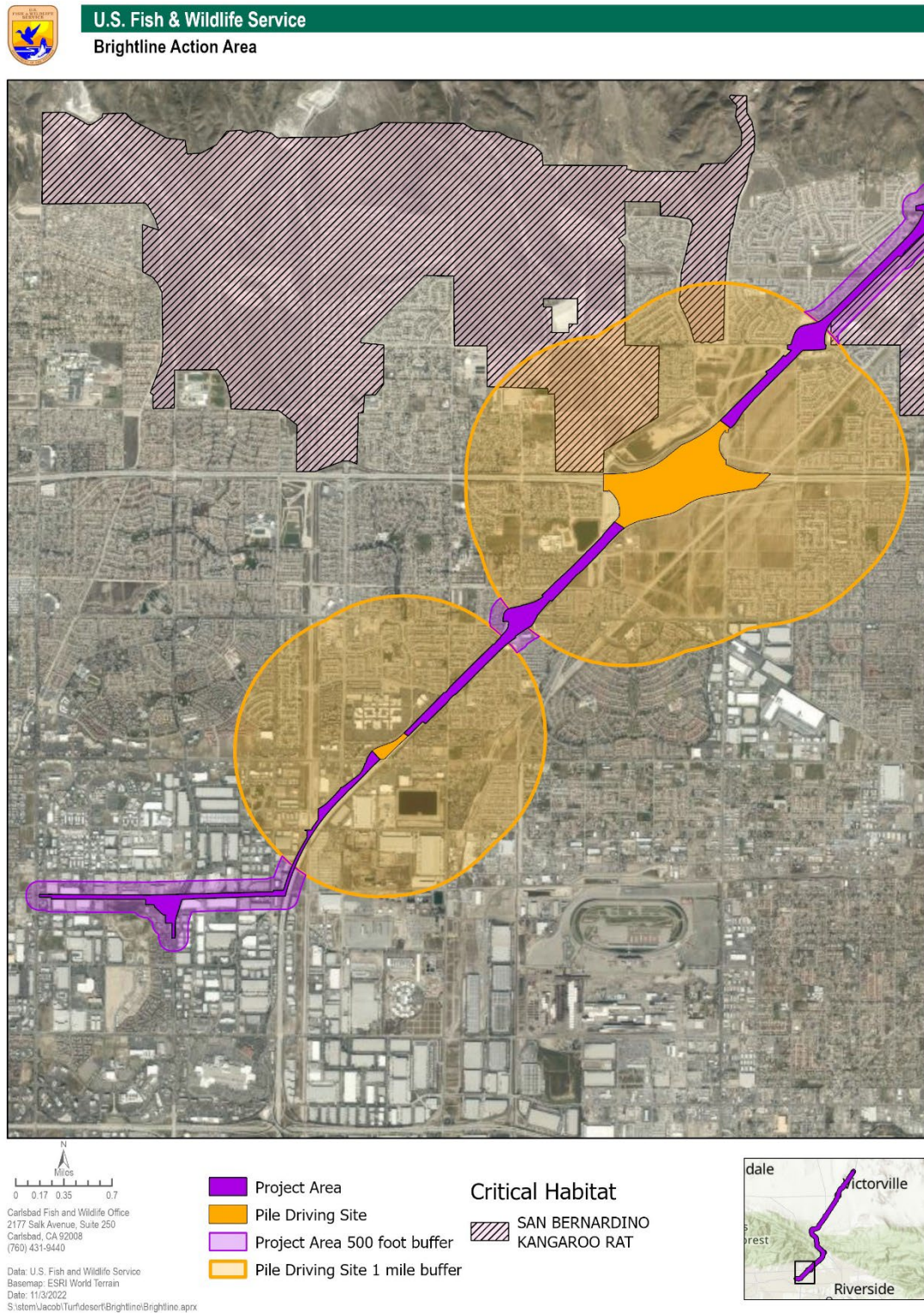


Figure 6. Avian Exclusion Area Mojave River



Figure 7. Avian Exclusion Area Cajon Wash

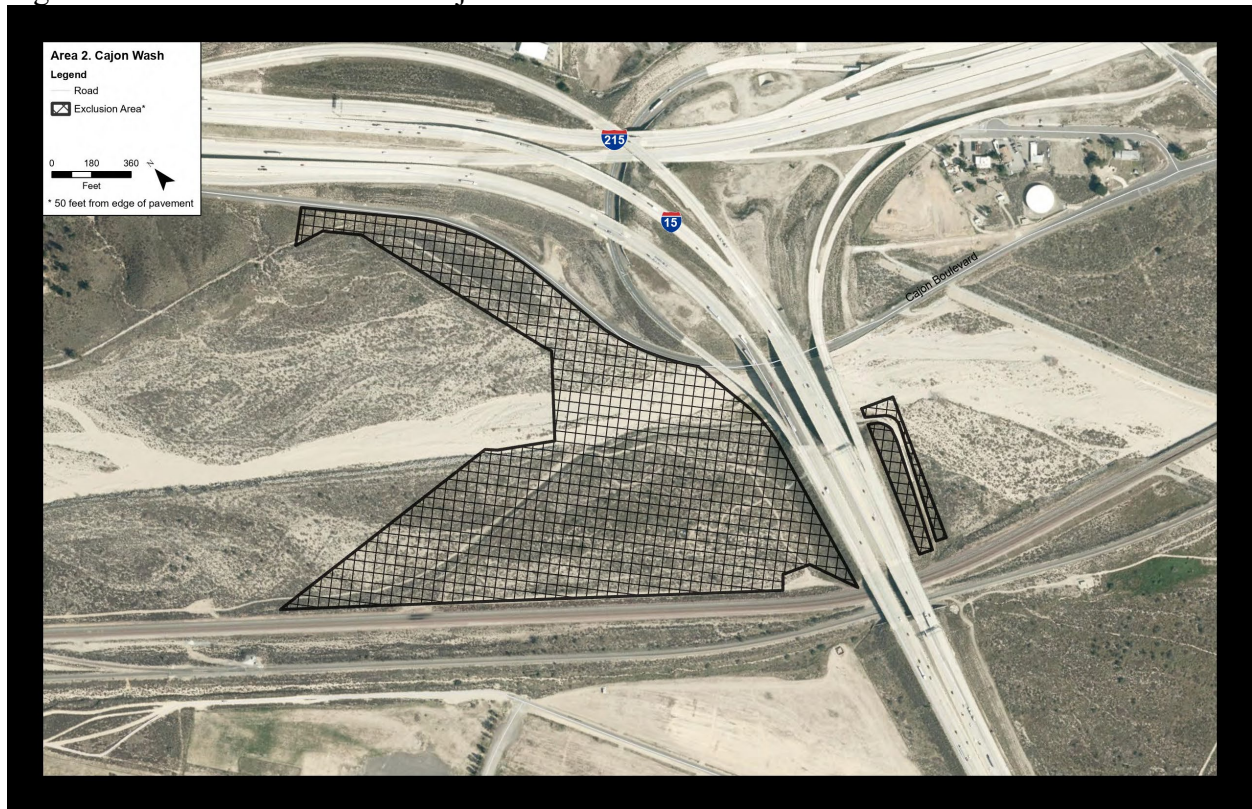


Figure 8. Avian Exclusion Area Lytle Creek



APPENDIX B

NOT LIKELY TO ADVERSLEY AFFECT CONCURRENCE

The following information supports the Service's concurrence with the FRA's not likely to adversely affect determination for the federally threatened desert tortoise (*Gopherus agassizii*), Yellow-billed Cuckoo (*Coccyzus americanus*), coastal California gnatcatcher (*Polioptila californica*; gnatcatcher), and the federally endangered Southwestern willow flycatcher (*Empidonax traillii extimus*) and its designated critical habitat. Furthermore, following our review of activities associated with the Project, the most recent available survey data, and based on conservation measures committed to by Brightline West, we have determined that the proposed Project is not likely to adversely affect the Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *Sanctorum*, woolly-star), and the slender-horned spineflower (*Dodecahema leptoceras*, spineflower), in accordance with section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*), for the Brightline West - Victor Valley to Rancho Cucamonga High-speed Rail Project. This concurrence depends upon implementation of the following components of the proposed action.

Avoidance Measures

ESA-Listed Plant Species Protection

- P 1 Qualified botanists will conduct preconstruction surveys within suitable habitat for ESA-listed plant species prior to any ground disturbing activities.
- P 2 Prior to initiating ground-disturbing activities, temporary construction fencing shall be placed around all ESA-listed plant species that occur within the temporary construction areas. When ESA-listed plants are observed within temporary construction areas, avoidance and minimization measures shall be applied. Exclusionary areas shall be signed for avoidance by construction equipment and personnel. Depending on the proximity of the ESA-listed plant populations to the construction work area, the plant populations shall be monitored during and following construction to avoid adverse effects.
- P 3 To the extent possible, the Project shall completely avoid areas with ESA-listed plant populations by designing viaduct piers outside such areas.

Analysis of Effects

Yellow-billed Cuckoo and Southwestern Willow Flycatcher

The proposed rail line crosses the Mojave River and yellow-billed cuckoo and southwestern willow flycatcher habitat at the existing Interstate-15 crossing. Although habitat is present, we do not expect individuals to occur at this location because the habitat is poor quality, and we anticipate that continuous noise disturbance from the existing interstate will reduce the potential for occupancy. CM 2 would ensure that any disturbance to vegetation occurs outside the

breeding season, which will reduce the amount of time that construction activities occur when listed birds are present along the Mojave River. Collision risk by individuals with trains is unlikely because trains would operate at a low frequency and birds would be more likely to fly under the bridge or high above it (when migrating). Consequently, there is a discountable potential for construction and operation activities to affect yellow-billed cuckoo or southwestern willow flycatcher because there is a low potential that either species will occur at this location.

Desert Tortoise

The proposed rail line occurs within the range of desert tortoise, but its alignment is within disturbed habitat in the median of the existing Interstate-15 corridor. Although some widening of the corridor may be necessary to allow use of the median, areas potentially affected by the widening are also previously disturbed. In addition, areas immediately adjacent to interstate highways typically have few desert tortoises, the Project location is on the edge of the species range, and habitat in the surrounding area is highly fragmented and unlikely to support large numbers of individuals. Consequently, there is a discountable potential for construction and operation activities to affect the desert tortoise because there is a low potential for desert tortoises to occur within the Project area.

Southwestern Willow Flycatcher Critical Habitat

Although the Project includes a small amount of permanent (1.88 acres) and temporary (8.07 acres) disturbance of desert riparian habitat at the existing Interstate-15 crossing, the condition of the physical and biological features of critical habitat is poor at this location because of past disturbance, fragmentation by the existing bridge structure and an understory that is continually being disturbed by human activity. Consequently, effects to southwestern willow flycatcher designated critical habitat would be insignificant because of the small area of effects and the poor condition of affected habitat.

Coastal California Gnatcatcher

The Project is at the northeast extent of the gnatcatchers current range, and any existing habitat is small and fragmented due to past development, or of poor quality due to frequent fires in the area and prolonged drought. Gnatcatcher occupancy in the action area is tenuous at best, and many focused surveys document negative sightings. Since Brightline West will be constructing the rail alignment in the median of the I-15 and most routine maintenance would be performed by maintenance machinery on the rail, and because the rail will ride on an elevated structure, we do not anticipate that operation and maintenance will result in effects above and beyond the baseline conditions of existing noise, lighting, or habitat fragmentation. Therefore, effects to gnatcatcher from construction of the train are expected to be discountable, and effects from operation of the train are expected to be insignificant to gnatcatcher.

Santa Ana River Woolly-Star and Slender-Horned Spineflower

Two small sections of the train alignment traverse potentially suitable habitat for woolly-star and spineflower. There is potentially suitable habitat for woolly-star and spineflower where the train

alignment crosses Cajon Creek, and there is potentially suitable habitat for spineflower at the Lytle Creek crossing. Focused surveys were conducted at Lytle Creek Crossing in 2004, 2005, 2006, 2007, and 2012 with negative results. Therefore, effects to spineflower at the Lytle Creek crossing is anticipated to be discountable based on multiple negative surveys there. At the Cajon Creek crossing, focused surveys for the spineflower, and woolly-star were conducted in 2008, 2009, and 2010 with negative findings. A previous Project, Interstate 15/Interstate 215 Interchange Improvements (FWS-SB-10B0097-12F0001), has been completed there but habitat restoration has not been completed. Therefore, effects to woolly-star and spineflower at the Cajon Creek crossing are anticipated to be discountable based on negative surveys and recently disturbed habitat.

CONCLUSION

Based on the analysis provided above, including the implementation of the proposed conservation measures, we concur that the proposed Project is not likely to adversely affect desert tortoise, Southwestern willow flycatcher and its designated critical habitat, yellow-billed cuckoo, coastal California gnatcatcher, Santa Ana River woolly-star, and the slender-horned spineflower.

APPENDIX C.

CAJON PASS HIGH-SPEED RAIL PROJECT HABITAT RESTORATION PLAN

APPENDIX D.

**CAJON PASS HIGH-SPEED RAIL PROJECT SAN BERNARDINO KANGAROO RAT
CAPTURE AND TRANSLOCATION PLAN**



Cajon Pass High-Speed Rail Project

Habitat Restoration Plan

prepared for

United States Fish and Wildlife Service

prepared by

Rincon Consultants, Inc.
1980 Orange Tree Lane, Suite 105
Redlands, California 92374

November 2022



RINCON CONSULTANTS, INC.

Environmental Scientists | Planners | Engineers

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Cajon Pass High-Speed Rail

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Appendix A Figures

1 Introduction

1.1 Project Background

DesertXpress Enterprises, LLC (doing business as “Brightline West”) proposes to construct and operate a passenger high-speed rail system covering 47.9 miles within the California Department of Transportation (Caltrans) right-of-way of Interstate 15 (I-15) between Victor Valley and Rancho Cucamonga, California. The project’s potential adverse effects to biological resources have been evaluated under the National Environmental Policy Act (NEPA) through preparation of a Biological Assessment (HNTB 2022a) and Biological Technical Report (HNTB 2022b). The project includes construction of two passenger stations, a traction power substation, and alterations of existing transportation infrastructure, including relocating some existing I-15 lane areas at the outer edges of the existing roadway to enable rail to travel in the I-15 median.

1.2 Project Location

The project would be constructed within the existing Caltrans I-15 right-of-way. The northern terminus of the project is in Victor Valley, California, in the western Mojave Desert. The project alignment extends southward from Victor Valley, passing through, or next to the communities of Victorville, Hesperia, Rialto, and Fontana and crossing the San Bernardino Mountains through Cajon Canyon, reaching its southern terminus in Rancho Cucamonga, California, in the northeastern part of the Los Angeles Basin. The project is located within Caltrans and existing transportation rights-of-way, including when passing through the San Bernardino National Forest. The project is designed in three distinct sections: Section 1 High Desert; Section 2 Cajon Pass; and Section 3 Greater Los Angeles (Appendix A, Figure 1).

1.3 Project Description

The project includes construction and operation of a passenger high-speed rail system capable of speeds up to 140 miles per hour (mph) covering 47.9 miles between Victor Valley and Rancho Cucamonga, California. A more detailed description of the Project, including construction, operations and maintenance, and sequencing and timeline can be found in the Biological Assessment prepared for the project (HNTB 2022a).

1.4 Purpose and Intended Use

This Habitat Restoration Plan (Plan) has been prepared to address restoration of soils and areas of native vegetation that will be temporarily disturbed by project construction. The Plan has been prepared in accordance with General Measures (GM)-27 Native Plant Community Restoration Plans and GM-28 Stockpile Native Topsoil for Reuse in Restoration outlined in the Biological Assessment and Biological Resources Technical Report (HNTB 2022a, 2022b).

Goals and Objectives

The objective of this Plan is to provide a conceptual, programmatic restoration framework that allows flexibility for site-specific restoration implementation. Specifically, this Plan provides an approach to restore the function of temporarily disturbed habitat suitable for the following federally listed species:

- Arroyo toad (*Anaxyrus californicus*),
- Coastal California gnatcatcher (*Polioptila californica californica*),
- Least Bell's vireo (*Vireo bellii pusillus*),
- Southwestern willow flycatcher (*Empidonax traillii extimus*),
- Western yellow-billed cuckoo (*Coccyzus americanus*),
- Monarch butterfly (*Danaus plexippus*),
- San Bernadino Merriam's kangaroo rat (*Dipodomys merriami parvus*),
- Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), and
- Slender-horned spineflower (*Dodecahema leptoceras*).

The Plan also establishes performance-based restoration standards, monitoring and reporting requirements, and provides contingency measures in the event that restoration efforts are not successful or feasible.

2 Temporarily Impacted Habitat Types

As described in the Biological Resources Technical Report (HNTB 2022b), the California Wildlife Habitat Relationship (CWHR) System (CDFW 2021) was used to map and describe the wildlife habitat types that occur within the project limits of disturbance. The CWHR System is a habitat classification program that provides detailed information on wildlife habitat types and their spatial distribution within California. The core of the CWHR System is a database that relates species to each of the habitats that support them. The classification system provides maps and contains life history, geographic range, and management information for California's amphibians, reptiles, birds, and mammals. Fourteen habitat types that may be temporarily impacted by the Project are mapped within the project limits of disturbance (Appendix A). These habitat types are summarized below. Habitat descriptions have been adapted from the Biological Resource Technical Report (HNTB 2022b).

2.1 Desert Scrub

Desert Scrub habitat is characterized by widely spaced shrubs with low levels of canopy cover and, depending on elevation, season, and disturbance, has either diverse herbaceous growth between shrubs or low plant coverage with nearly bare earth between shrubs. Creosote bush (*Larrea tridentata*) is the characteristic shrub present. Approximately 204 acres of Desert Scrub are mapped within the project limits of disturbance, occurring in Sections 1 and 2.

The primary resident wildlife species that utilize Desert Scrub habitat include reptiles and rodents; however, many species use this habitat for foraging. Species typical of Desert Scrub habitat include black-throated sparrow (*Amphispiza bilineata*), sage sparrow (*Amphispiza belli*), desert kit fox (*Vulpes macrotis arsipus*), various pocket mice and kangaroo rats (*Dipodomys* spp.), Mohave ground squirrel (*Xerospermophilus mohavensis*), and a variety of lizards and snakes, such as side-blotched lizard (*Uta stansburiana*), basin whiptail (*Aspidoscelis tigris tigris*), and Mohave Desert sidewinder (*Crotalus cerastes cerastes*). Common raven (*Corvus corax*) are generalist predators and their numbers have recently increased in this habitat and adjacent urbanizing areas (Boarman 2003, Boarman et al. 2006).

2.2 Alkali Desert Scrub

Alkali Desert Scrub includes habitats on dry lakebeds, dry riverbeds, and dry shorelines in desert settings. project limits of disturbance. The habitat features shrubs and sometimes succulent plants, all of which are tolerant of dry and salty soils. Common shrub species include allscale (*Atriplex polycarpa*), brittlebush (*Encelia farinosa*), and desert holly (*Atriplex hymenelytra*). Salt-tolerant forbs and grasses may also be present, especially as winter annuals. Trees are absent. Approximately 5.5 acres of Alkali Desert Scrub are mapped within the project limits of disturbance along Section 1.

Characteristic animal species include the Mohave ground squirrel, zebra-tailed lizard (*Callisaurus draconoides*), and long-nosed leopard lizard (*Gambelia wislizenii*).

2.3 Desert Wash

Desert washes flow intermittently, usually only following heavy precipitation. Desert Wash habitat occurs where vegetation is present within desert washes. Some desert washes are not naturally vegetated and, thus, would be mapped as Barren habitat. This habitat type consists of plants adapted to intermittent or episodic presence of surface water. The plant communities within this habitat type are often taller and denser than surrounding desert habitats, thereby providing vertical structure and cover. Native plant species include desert pearl (*Ambrosia salsola*), threadleaf ragwort (*Senecio flaccidus*), and four-winged saltbush (*Atriplex canescens*). In some locations, washes are colonized by invasive tamarisk (*Tamarix chinensis*) or Russian olive shrubs (*Elaeagnus angustifolia*).

Approximately 44 acres of Desert Wash habitat is mapped within the project limits of disturbance, nearly all within Section 3 in the Cajon Wash. Within this habitat type, the occasional presence of surface water along with dense shrubs provide cover and breeding habitat for many species that forage in the adjacent desert habitats.

2.4 Desert Riparian

Desert Riparian is characterized as dense groves of low, shrubby trees that may also include areas of woodlands composed of small- to medium-sized trees, all of which are adjacent to water. Along the Mojave River, willows (e.g., sandbar willow [*Salix exigua*], red willow [*Salix laevigata*]) form the riparian shrub community, while Fremont cottonwood (*Populus fremontii*) and Arizona ash trees (*Fraxinus velutina*) create an overstory. This habitat type is limited within the region and is associated with several endangered species, including least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and arroyo toad. Approximately 10 acres of Desert Riparian habitat are mapped within the project limits of disturbance, with most of this area located at the Mojave River crossing in Section 1.

2.5 Valley Foothill Riparian

Valley Foothill Riparian is one of two forested habitats present within the project limits of disturbance and is generally limited within the region. The habitat is restricted to stream and river valley floodplains bordered by alluvial fans and slightly dissected terraces at lower foothills, generally with gently sloping topography. Approximately two acres of Valley Foothill Riparian habitat is mapped within the project limits of disturbance, occurring in Sections 1 and 3 associated with the Mojave River and Cajon Canyon, respectively.

Tree species present are usually broad-leafed and winter deciduous. While relatively limited in area, linear riparian habitats that traverse through various landscapes serve as key wildlife linkages and migratory and dispersal corridors. Cottonwood (*Populus* spp.) and California sycamore (*Platanus racemosa*) are dominant tree species, with white alder (*Alnus rhombifolia*) and boxelder (*Acer negundo*) as subdominant trees. Wild grape (*Vitis californica*), wild rose (*Rosa californica*), and willows are often present and important to create a multilayered vegetation canopy. With the presence of trees and water along with high plant diversity with overstory and understory layers, this habitat supports an abundance of wildlife for foraging and breeding.

2.6 Annual Grassland

Annual Grassland habitats are characterized as having dramatic vegetation coverage differences from season to season, with lush, early-year, green growth as a response to winter rains followed by dry, brown, cured vegetation during the dry season. During drought years, vegetation is dry or absent throughout the year. Approximately 19 acres of the project limits of disturbance are mapped as Annual Grassland, with about 14 acres mapped along Section 3.

In most locations, this habitat is dominated by introduced grass species mostly of Mediterranean origin including cheatgrass (*Bromus tectorum*), soft brome (*Bromus hordeaceus*), slender wild oats (*Avena barbata*), and wild oats (*Avena fatua*). The non-native grasses are more fire-adapted than non-native species. Many animals use Annual Grassland for foraging, especially when the area is adjacent to other structural habitat elements such as cliffs, aquatic resources, shrubs, or other nearby areas suitable for perching and cover. Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger (*Mustelidae mephitidae*), and coyote (*Canis latrans*). This habitat provides foraging habitat for a wide variety of birds, including raptors and other migratory birds.

2.7 Barren

The Barren habitat type is defined as having less than 10 percent tree and shrub cover and less than two percent vegetative cover of plants. The habitat includes rock, gravel, and bare soil areas. Within the project limits of disturbance, some areas may be classified as Barren if vegetation is widely spaced or absent, such as in washes. Approximately 4.57 acres are mapped as Barren in the project limits of disturbance. The Barren habitat type is mapped in Sections 2 and 3, and is generally located adjacent to developed areas. The Barren habitat type does not provide suitable habitat for federally listed species due to the absence of vegetation and proximity to developed areas.

2.8 Juniper

Juniper habitats are characterized as woodlands with open to dense aggregations of small trees or shrubs. Utah juniper (*Juniperus utahensis*), California juniper (*Juniperus californica*), and Tucker oak (*Quercus john-tuckeri*) are the most common plant species, with other associated shrubs and herbaceous plants.

Dusky chipmunk (*Tamias obscurus davisii*) and common ravens are common in this habitat. The acreage covered by juniper woodlands tends to increase under fire suppression and subsequently decreases immediately following wildfire. Approximately three acres of Juniper habitat is mapped along Section 1 in the vicinity of Hesperia.

2.9 Riverine

Riverine habitats are characterized by areas of streams and rivers with intermittent or continually running water. Approximately 15 acres of Riverine habitat are mapped within the project limits of disturbance and occur across all three project sections. Most of this habitat is located in either the Mojave River or Cajon Canyon. Riverine habitat is generally limited in this xeric environment.

Open water provides habitat for a broad variety of wildlife (e.g., waterfowl, passerines, aquatic invertebrates). Riverine habitat is distinguished between Desert Riparian and Valley Foothill Riparian as it is typically located within the areas of actively flowing water within a watershed, such as in the central portion of the Mojave River, while Desert Riparian and Valley Foothill Riparian are typically located in vegetated areas adjacent to river or stream channels.

2.10 Joshua Tree

Joshua Tree (*Yucca brevifolia*) habitat supports widely scattered Joshua trees in open shrublands with low broad-leaved evergreen and deciduous shrubs and limited herbaceous understory. Other plants present with Joshua trees include California juniper, Mojave yucca (*Yucca schidigera*), big sagebrush (*Artemisia tridentata* ssp. *tridentata*), Nevada ephedra (*Ephedra nevadensis*), California buckwheat (*Eriogonum fasciculatum*), Cooper's goldenbush (*Ericameria cooperi*), burrobush (*Ambrosia dumosa*), Anderson's thornbush (*Lycium andersonii*), Cooper's box thorn (*Lycium cooperi*), spiny desert olive (*Menodora spinescens*), and beavertail cactus (*Opuntia basilaris*). Joshua Tree habitat is generally located on the periphery of the Mojave Desert.

Because Joshua trees grow tall within an otherwise shrubby habitat, they are critical to habitat function, providing perches and nesting sites. Common animal species include ladder-backed woodpecker (*Dryobates scalaris*), cactus wren (*Campylorhynchus brunneicapillus*), Scott's oriole (*Icterus parisorum*), and desert spiny lizard (*Sceloporus magister*). Approximately 0.4 acre of this habitat is mapped within the project limits of disturbance in Section 1 in the vicinity of Hesperia.

2.11 Sagebrush

This habitat is characterized by almost pure stands of big sagebrush with a generally low plant diversity relative to other shrub habitats. Shrub density is variable by location and disturbance regime and can range from sparsely distributed to closely spaced shrubs. Approximately 22 acres of Sagebrush habitat are mapped within the project limits of disturbance along Section 1.

Common wildlife in Sagebrush habitat includes black-tailed jackrabbits, cottontail rabbits (*Sylvilagus* spp.), ground squirrels, least chipmunk (*Neotamias minimus*), kangaroo rats, wood rats, pocket mice (*Perognathus longimembris*), deer mice (*Peromyscus maniculatus*), grasshopper mice (*Onychomys torridus*), sagebrush vole (*Lemmyscus curtatus*), and desert bighorn sheep (*Ovis canadensis nelsoni*). Birds that regularly utilize Sagebrush habitat include chukar (*Alectoris chukar*), black-billed magpie (*Pica hudsonia*), gray flycatcher (*Empidonax wrightii*), pinyon jay (*Gymnorhinus cyanocephalus*), sage thrasher (*Oreoscoptes montanus*), and several sparrows (multiple genera), and hawks (multiple genera).

2.12 Mixed Chaparral

Mixed Chaparral habitat consists of woody, stiff-stemmed, thick-leaved, mainly evergreen shrubs. Plant diversity is generally high, with many different species of woody shrubs potentially present. This habitat is wildfire-adapted as long as wildfires return at natural frequencies, but it can be damaged by intense wildfire following long periods of fire suppression, or too frequent fires. Approximately 134 acres of Mixed Chaparral are mapped within the project limits of disturbance. Mixed Chaparral occurs within all three project sections with the majority of the habitat type occurring in Sections 2 and 3.

Plant species include scrub oak (*Quercus dumosa*), coyote brush (*Baccharis pilularis*), and several species of chamise (*Adenostoma* spp.), ceanothus (*Ceanothus* spp.), and manzanita (*Arctostaphylos* spp.). Commonly associated shrubs include birchleaf mountain mahogany (*Cercocarpus betuloides*), silk-tassel (*Garrya flavescens*), poison-oak (*Toxicodendron diversilobum*), coffeeberry (*Frangula californica*), hollyleaf cherry (*Prunus ilicifolia*), and California fremontia (*Fremontia californica*).

Wildlife species that utilize Mixed Chaparral, typically utilize a variety of shrub habitats. Common bird species that utilize shrub habitats include western scrub-jay (*Aphelocoma californica*), California towhee (*Melospiza crissalis*), various hummingbirds, and various sparrows. A variety of animals including wood rats (*Neotoma fuscipes macrotis*) and brush rabbits (*Sylvilagus bachmani*) use this shrub habitat for cover.

2.13 Chamise-Redshank Chaparral, Mixed Chaparral

Chamise-Redshank Chaparral and Mixed Chaparral is a heterogeneous mix of two habitat types at scales below the CWHR mapping resolutions. Chamise-Redshank Chaparral habitat is a dense habitat where shrubs with stiff, overlapping, interwoven branches are so dense that there is no herbaceous vegetation below the shrub canopy. Chamise (*Adenostoma fasciculatum*) and or redshank (*Adenostoma sparsifolium*) may comprise the entire community. Chamise-Redshank Chaparral is distinguished from Mixed Chaparral and Coastal Scrub based on percent cover of chamise and redshank compared to other shrub species. Less than four acres of this habitat type are mapped within the project limits of disturbance along Section 2. Wildlife use of this habitat is anticipated to be similar to Mixed Chaparral.

2.14 Coastal Scrub and Riversidean Alluvial Fan Sage Scrub

In southern California, the typical community components of Coastal Scrub include a large variety of soft stemmed shrubs, such as California sagebrush (*Artemisia californica*) and California buckwheat. In this habitat, shrubs may drop their leaves during dry months (drought deciduous), and, generally, plant density and structure allow enough light to support an herbaceous understory.

“Coastal sage scrub” is generally referred to as Coastal Scrub in southern California, and within the project limits of disturbance, a very specific vascular plant community, called “Riversidean Alluvial Fan Sage Scrub” has been recognized (White and Padley 1997). Riversidean Alluvial Fan Sage Scrub habitat is a distinct and limited plant community found on alluvial fans at the foothills of the San Gabriel Mountains. In the project limits of disturbance, this includes Lytle Creek and Cajon Wash areas. Riversidean Alluvial Fan Sage Scrub plant communities consist of a specific subset of plants within Coastal Scrub habitat types that consist of a distinct mix of plants that differs from Coastal Scrub habitat elsewhere in California.

Plant species present in the Riversidean Alluvial Fan Sage Scrub plant community include California sagebrush, white sage (*Salvia apiana*), various buckwheat species (*Eriogonum* spp.), golden yarrow (*Eriophyllum confertiflorum*), and coastal pricklypear (*Opuntia littoralis*). Scale-broom (*Lepidospartum squamatum*) is an indicator species for Riversidean Alluvial Fan Sage Scrub.

The habitat is known to support several ESA-listed species, including coastal California gnatcatcher, San Bernardino Merriam’s kangaroo rat, slender-horned spineflower, and Santa Ana River woolly-

star. Designated critical habitat for San Bernardino Merriam's kangaroo rat is mapped on alluvial fan landforms supporting, or potentially supporting, Riversidean Alluvial Fan Sage Scrub.

This habitat type is found throughout the northern portions of the cities of Fontana and Rialto and in unincorporated San Bernardino County in the vicinity of I-15. Approximately 15 acres of Coastal Scrub habitat is mapped within the project limits of disturbance along Section 3 at Cajon Creek and Lytle Creek.

2.15 Temporary Impacts to Habitat Types

Based on 30% project design, up to 419 acres of wildlife habitat may be temporarily impacted as a result of the Project; however, this impact acreage estimate is subject to change depending on final project design. Anticipated temporary impacts to each habitat type are presented in Tables 1 through 4 below. Approximately 114 acres of habitat may be temporarily impacted in Section 1 (Table 1), 181 acres may be temporarily impacted in Section 2 (Table 2), and 124 acres may be impacted in Section 3 (Table 3) (HNTB 2022b). Table 4 provides a summary of total temporary impacts for all three segments.

Table 1 Section 1, High Desert, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code ^a	Temporary Impact Area (acres)
Alkali Desert Scrub	ASC	3.93
Annual Grassland	AGS	2.63
Barren	BAR	0.16
Desert Riparian	DRI	8.19
Desert Scrub	DSC	85.70
Joshua Tree	JST	0.35
Juniper	JUN	1.94
Mixed Chaparral	MCH	0.56
Riverine	RIV	1.82
Sagebrush	SGB	8.08
Valley Foothill Riparian	VRI	0.46
Total for Section 1 – High Desert		113.81

Table 2 Section 2, Cajon Pass, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code	Temporary Impact Area (acres)
Chamise-Redshank, Mixed Chaparral	CRC, MCH	3.19
Coastal Scrub	CSC	5.72
Desert Riparian	DRI	0.85
Desert Scrub, Desert Wash	DSC, DSW	1.38
Desert Scrub	DSC	81.85
Desert Wash	DSW	0.17
Mixed Chaparral	MCH	87.76
Total for Section 2 – Cajon Pass		180.91

Table 3 Section 3, Greater Los Angeles, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code ^a	Temporary Impact Area (acres)
Annual Grassland	AGS	13.68
Barren	BAR	3.78
Coastal Scrub	CSC	9.41
Desert Wash	DSW	43.40
Mixed Chaparral	MCH	39.82
Riverine	RIV	12.42
Valley Foothill Riparian	VRI	1.48
Total for Section 3 – Greater Los Angeles		124.19

Table 4 Temporary Impacts on Wildlife Habitat Types Across All Sections

CWHR Wildlife Habitat Type	Habitat Code ^a	Temporary Impact Area (acres)
Alkali Desert Scrub	ASC	3.93
Annual Grassland	AGS	16.31
Barren	BAR	3.94
Chamise-Redshank, Mixed Chaparral	CRC, MCH	3.19
Coastal Scrub	CSC	15.13
Desert Riparian	DRI	9.04
Desert Scrub, Desert Wash	DSC, DSW	1.38
Desert Scrub	DSC	167.55
Desert Wash	DSW	43.57
Joshua Tree	JST	0.35
Juniper	JUN	1.94
Mixed Chaparral	MCH	128.14
Riverine	RIV	14.24
Sagebrush	SGB	8.08
Valley Foothill Riparian	VRI	1.94
Total for Sections 1 – 3		418.73

3 Performance Standards

Performance-based restoration standards provide a reliable and objective means of evaluating the success of restoration efforts over time. The Plan's programmatic performance standards are intended to result in a return of temporarily lost habitat function for federally listed species. Performance standards are defined relative to the original pre-construction status of the habitat types occurring within the project limits of disturbance. These standards have been grouped based on functional habitat classes. All performance standards are designed to be attained within a five-year maintenance and monitoring period.

One habitat type (Barren) does not provide suitable habitat for any federally listed species and does not contain native vegetation communities; therefore, this habitat type is not subject to restoration requirements and no performance-based restoration standards are defined for this habitat type.

3.1 Baseline Pre-Construction Surveys

Prior to initiation of project-related ground disturbing activities, baseline condition surveys must be conducted within all proposed temporary disturbance areas to determine the vegetative cover and species composition within each habitat type that will function as the baseline conditions against which performance standards will be evaluated. Baseline pre-construction surveys will be implemented in accordance with the Rapid Assessment (RA) vegetation sampling technique developed by the CDFW and CNPS (CDFW and CNPS 2019). The RA sampling methodology is based on a visually estimated area within a representative portion of an entire stand, with up to 20 of the dominant or characteristic plant species and their cover values recorded. A stand, as defined in the RA sampling protocol, is the basic physical unit of vegetation in a landscape. Stands of vegetation are consistent in their species composition, structure, and environmental setting.

Vegetation sampling shall be conducted within each stand in the temporary impact area. The following protocol is designed to standardize data collection for comparison among vegetation stands:

- The minimum mapping unit size for upland vegetation stands will be one (1) acre.
- The minimum mapping unit size for riparian vegetation stands will be 0.25 acre.
- Vegetation sampling should occur when vegetation is readily identifiable (i.e., during the spring season following winter rains). This is especially important for desert habitats (e.g., Annual Grassland) where vegetative coverage may shift dramatically from season to season.
- Each stand within the temporary impact area will be traversed to look for variations in species composition and stand structure.
- Once the entire stand has been assessed, a sample area will be selected that captures the stand's common species composition and structural condition.
- Within each sample area, vegetation (e.g., vegetative percent cover) will be collected in accordance with the RA vegetation sampling protocol (CDFW and CNPS 2019).
- Relevant soil characteristics (e.g., leaf litter, soil texture and compaction) will be documented within each vegetation sampling location.

Where stands overlap with federally designated critical habitat (i.e., arroyo toad, southwestern willow flycatcher, and San Bernardino kangaroo rat critical habitat), special attention will be

afforded to determining suitability of the habitat for each species and defining the most important species-specific habitat characteristics. The vegetation structure, presence of Physical or Biological Features (PBFs) essential for the species' conservation, and potential use of the habitat by listed species will be documented within critical habitat areas that overlap the temporary disturbance area.

Baseline vegetation cover/composition will inform site-specific, quantitative performance standards within each habitat type as assessed through post-restoration monitoring and as detailed in the following Sections.

3.2 Site-Specific Performance Standards

Site-specific performance standards are to be determined based on pre-construction conditions which will be assessed during the baseline pre-construction surveys described in Section 3.1. The specific plant percent cover (both native and non-native) required to meet the performance standards in each habitat type will be relative to pre-construction values. Additionally, specific planting techniques (e.g., seeding, container planting) and planting palette for each habitat type will be adjusted based upon pre-construction conditions.

Federally listed species with potential to occur in each habitat type are discussed in detail in the Biological Assessment (HNTB 2022a) and Biological Technical Report (HNTB 2022b). These species include arroyo toad, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, monarch butterfly, San Bernadino kangaroo rat, Santa Ana River woolly-star, and slender-horned spinyflower. The site-specific performance standards have been designed to improve habitat function for these federally listed species through use of vegetative percent cover as a proxy for habitat function.

Habitat Classes

Shrubland Habitats

Shrubland habitats that may be temporarily impacted by the Project include the Alkali Desert Scrub, Desert Scrub, Desert Wash, Joshua Tree, Mixed Chaparral, Coastal Scrub, Chamise-Redshank Chaparral, Mixed Chaparral, and Sagebrush habitat types. These shrublands potentially provide habitat for arroyo toad in Sections 2 and 3, coastal California gnatcatcher in Sections 2 and 3, monarch butterfly in all sections, San Bernardino kangaroo rat in Sections 2 and 3, Santa Ana River woolly-star in Sections 2 and 3, and slender-horned spinyflower in Sections 2 and 3, and are generally dominated by shrub species (e.g., allscale and brittlebush in Alkali Desert Scrub; chamise and redshank in Chamise-Redshank Chaparral). Herbaceous species are generally subdominant and include a variety of annual and perennial plant species. Tree species are generally absent but habitats may include emergent trees that are present at relatively low cover.

Performance standards for the restoration of shrubland habitats areas are as follows:

- Shrubland 1: Native plant absolute cover shall reach 70 percent (%) of pre-construction levels.
- Shrubland 2: Relative cover of shrub species to herbaceous species (when compared to shrub and tree species) shall be within 20% of pre-construction levels.
- Shrubland 3: Non-native plant species absolute cover shall be no greater than 10% above pre-construction levels..

Riparian Habitats

Riparian habitats that may be temporarily impacted by the project include the Desert Riparian, Riverine, and Valley Foothill Riparian habitat types. These riparian areas potentially provide habitat for arroyo toad in Sections 2 and 3, and least Bell's vireo, southwestern willow flycatcher, and monarch butterfly in all three sections, and are generally dominated by tree species (e.g., willows and Fremont cottonwood in Desert Riparian; western sycamore and white alder in Valley Foothill Riparian). Shrub species (e.g., mulefat [*Baccharis salicifolia*]) may also be abundant. Herbaceous species are generally subdominant and include a variety of annual and perennial plant species.

Performance standards for the restoration of riparian habitats areas are as follows:

- Riparian 1: Native plant absolute cover shall reach 75% of pre-construction levels.
- Riparian 2: Relative cover of tree and shrub species (when compared to herbaceous species) must be within 10% of pre-construction levels.
- Riparian 3: Non-native plant species absolute cover shall be no greater than 10% above pre-construction levels.

Juniper Habitat

The Juniper habitat type potentially provides habitat for arroyo toad in Sections 2 and 3, and monarch butterfly in all three sections, and contains open to dense aggregations of small trees or shrubs, including Utah and California juniper, and Tucker oak. Herbaceous species are generally subdominant, and include a variety of annual and perennial plant species.

Performance standards for the restoration of Juniper habitat is as follows:

- Juniper 1: Native plant absolute cover shall reach 70% of pre-construction levels.
- Juniper 2: Relative cover of tree species (when compared to herbaceous species) shall be within 10% of pre-construction levels.
- Juniper 3: Non-native plant species absolute cover shall be no greater than 10% above pre-construction levels.

Annual Grassland Habitat

The Annual Grassland habitat type potentially provides habitat for monarch butterfly in all three sections. This habitat type is generally dominated by herbaceous plant species, including annual non-native plants such as cheatgrass, soft brome, slender wild oats, and wild oats. Shrub and tree species are generally absent, but may be present at relatively low cover as emergent species.

Performance standards for the restoration of Annual Grassland habitat is as follows:

- Grassland 1: Native plant absolute cover shall reach 60% of pre-construction levels.
- Grassland 2: Relative cover of herbaceous species (when compared to shrub and tree species) shall be within 5% of pre-construction levels.
- Grassland 3: Non-native plant species absolute cover shall be no greater than 10% above pre-construction levels.

4 Implementation

Restoration is intended to return temporarily disturbed areas to their pre-project ecological functions and values. The restoration area is defined as the portion of the project limits of disturbance that will be temporarily disturbed by project activities. This area is quantified in Tables 1 through 4 based on 30% design (acreages are subject to change pending final project design). Temporary disturbance areas may be restored through a variety of restoration techniques, including but not limited to soil decompaction, seeding and container planting. All restoration work shall be conducted in accordance with the performance standards defined in Section 3 above.

Implementation of this Restoration Plan must commence during the first appropriate seasonal window (i.e., in the fall prior to winter rainfall) following completion of construction at each project location. These restoration techniques, as described below, are most effective when implemented in the fall prior to winter rainfall, and would be less effective at promoting native plant establishment and growth if they were implemented during dry summer months. The exact acreage to be restored is dependent on the area that is disturbed. Temporarily disturbed areas will be documented by a biologist during construction. The total extent of the restoration area will be determined at the conclusion of the project.

All restoration activities outlined herein shall be overseen by a qualified Restoration Specialist familiar with native restoration implementation, monitoring, and reporting and implemented by a Restoration Contractor with experience in native vegetation restoration, who is responsible for site preparation, installation, and maintenance of the restoration area.

Diligent, pro-active maintenance of the restoration area is essential to achieving restoration objectives and success criteria. The Restoration Specialist will direct and oversee the work performed by the Restoration Contractor.

4.1 Species Avoidance and Minimization Measures

All restoration activities shall be performed in coordination with a qualified biologist to implement appropriate avoidance and minimization measures for activities within suitable habitat for federally-listed species. Avoidance and minimization measures shall be established by the qualified biologist based on site-specific conditions and proposed restoration activities. Avoidance and minimization measures may include but would not be limited to: installation of exclusion fencing, completion of pre-construction surveys, use of hand tools instead of mechanical equipment and/or biological monitoring.

4.2 Access Routes and Staging

Access and staging for vehicles and equipment, such as light and heavy-duty pickup trucks and heavy machinery may be necessary during restoration implementation, maintenance, and monitoring. Vehicle access routes will be limited to the minimum extent necessary to implement the Plan.

4.3 Site Preparation

The Restoration Specialist should oversee the Restoration Contractor during site preparation activities. The Restoration Contractor will be responsible for preparation of the restoration area as detailed below.

Delineation of the Restoration Area

The access routes and staging areas will be clearly marked on the site and described to the Restoration Contractor in the field. The restoration area will be described to the Restoration Contractor and clearly delineated in the field using temporary fencing, staking, or similar materials as necessary.

Site Recontouring

In accordance with Mitigation Measure GM-27, the topography of the restoration area will be restored to pre-construction contours. This will be completed at the conclusion of project construction prior to revegetation and is not the responsibility of the Restoration Contractor.

Topsoil Salvage

In accordance with Mitigation Measure GM-28, native topsoil will be salvaged (from areas free from invasive species) and stockpiled during initial ground disturbance and will be spread across the soil surface upon completion of construction. Areas from where topsoil is recovered shall be free from invasive plant species. This will preserve the existing seed bank and facilitate native plant establishment. It is recommended that the top 12 to 18 inches of native topsoil are salvaged. Native topsoil will be recovered from areas that are free of invasive plant species. For the purpose of this Plan, invasive plant species are those categorized as Moderate or higher by the California Invasive Plant Council (Cal-IPC) in the Mojave or Southwest Regions (Cal-IPC 2022).

Soil Decompaction

Project construction may result in soil compaction that will reduce soil aeration and filtration capacity. Soil compaction can reduce native plant establishment and growth, potentially adversely affecting habitat quality for federally listed plant and wildlife species. Soil within the restoration area will be assessed by the restoration specialist for signs of compaction, and decompacted where necessary prior to revegetation efforts. If areas are determined to be compacted based on a visual assessment by the Restoration Specialist, various decompaction techniques will be utilized to loosen the soil to mimic undisturbed conditions. The techniques chosen will be subject to site-specific conditions and accessibility, as determined by the Restoration Specialist. The most common and effective decompaction technique is ripping with tines (such as those on a bulldozer). Decompaction will occur with dry soils, to an average perennial plant rooting depth (approximately six to 24 inches). The goal of decompaction is to provide a soil substrate that is loose, but still contains some soil clumps. Rocks in the soil are generally beneficial and should be left in place. Care should be taken to not mix the salvaged topsoil with lower soil horizons. Soil decompaction should take place within one month prior to the addition of any container plants or seed installation as described in Section 4.4.

Soil Stabilization

In accordance with GM-27, soils within the restoration area will be stabilized through the use of erosion control materials such as straw wattles, mulch, erosion control blankets, or other materials as recommended by the Restoration Specialist. These materials may be installed to help avoid the transport of sediment and to provide soil stabilization; care will be taken to avoid unnecessary damage to native vegetation. Soil stabilization may occur at various stages as needed, including after seeding or container plant installation.

4.4 Potential Restoration Techniques

Restoration techniques provided below are intended as guidelines to be used when determining the final approach for implementation of the Plan. Restoration will aim to maintain the pre-project extent and functional capacity of temporarily disturbed areas by stabilizing soils, promoting establishment of native plants, and removing non-native plants.

The project limits of disturbance along the I-15 between mile post 22.0 and 32.3 overlap the Caltrans right-of-way that is subject to the Monarch Butterfly Nationwide Candidate Conservation Agreement with Assurances (CCAA; Cardno 2019). The Monarch Butterfly Nationwide CCAA was reviewed, and this Plan was found to be consistent with all applicable conservation measures in the CCAA (Cardno 2019).

Seed Installation

Seed installation is recommended within all habitat types where performance standards have been defined in the Plan (i.e., shrubland, riparian, Juniper, and Annual Grassland). Seed installation promotes native plant establishment and growth, allowing restoration areas to progress more rapidly toward meeting defined performance standards than restoration actions without seeds.

Native plants that are characteristic of each habitat type should be preferentially selected for seed installation. The site-specific planting palette must be tailored to include the dominant species found during baseline pre-construction surveys. To preserve the integrity of local gene pools, facilitate adaptation to site-specific conditions, and avoid inadvertent introduction of inappropriate species or pathogens, seed material should be sourced from locally-collected plant species. Where appropriate and based upon the results of baseline pre-construction surveys, pollinator plants and milkweed (*Asclepias* spp.) that have the potential to support monarch butterfly should be included in seed mixes to maintain consistency with Conservation Measure 1 in the CCAA (Cardno 2019) and Mitigation Measure MB-1 in the Biological Assessment (HNTB 2022a). A seeding rate of 20 pounds per acre or higher is recommended but may be adjusted as necessary. A higher seeding rate increases the likeliness of full coverage, optimizes plant growth, and precludes invasion by non-native species. Actual species and amounts of each species installed will be dependent on those species and quantities that are available at the time of implementation.

Seed installation should be conducted following site preparation. Seeds may be applied by hand or through mechanical means and should be distributed evenly to achieve full coverage. To minimize fugitive dust and prevent loss of seed material, seeding should only occur during low wind conditions. Following seeding, the restoration area may be hydromulched, if recommended by the Restoration Specialist. Hydromulch typically consists of long-strand wood fiber and is typically applied at a rate of 1,500 pounds per acre, along with a non-toxic binder (e.g., Ecology Control “M” binder) which should be applied at a rate of 100 pounds per acre.

Seeding should occur in the fall, if feasible. Ideally, all seed installation should be conducted after the first rains, typically beginning in October-December. This installation timing will take advantage of the rainy season to maximize the potential for successful germination and establishment of the new seeds.

Container Plant Installation

Container plant installation may be appropriate within the shrubland, riparian, and Juniper habitat types. A reliable water source is necessary for the establishment of container plants. Similar to seed installation, container plant installation promotes native plant establishment and growth, but may result in a higher success rate of native plant establishment by installing pre-established container stock.

Container plants should be installed throughout the habitat types recommended for this restoration technique, as appropriate for site-specific conditions. Container stock selection will be determined following completion of baseline pre-construction surveys. Container stock selection must be based on the dominant and/or characteristic plant species observed within each habitat type. The quantity, size, and spacing of container stock will be determined by the Restoration Specialist. Container stock species may also be adjusted based upon availability at the time of installation.

Holes for the container plants may be dug by hand using a shovel, or mechanically through the use of an auger or similar device. Care should be taken not to disturb the root ball when installing container plants. Planting pits should be backfilled with soil so as not to leave air spaces around the plant's soil and roots and so the soil surface of the container plant is at grade. Each container plant should be immediately watered after installation.

Container plant installation should take place after site preparation is complete. If possible, installation will take place near the beginning of the rainy season (approximately October through December). This installation timing allows for taking advantage of the rainy season to maximize the potential for successful establishment. If installation is required during a different time of the year, the Restoration Specialist will tailor installation methods to improve the likelihood of establishment success. Maintenance of container plants should be conducted as described in Section 5.

Willow/Mulefat Staking

Willow/mulefat staking may be appropriate within the riparian habitat types. Willows and mulefat are fast-growing riparian species that can be utilized for bank stabilization and revegetation.

If this restoration technique is selected, willow/mulefat cuttings should be collected from within the same watershed where they are proposed for planting. For example, if willow/mulefat staking will be implemented within the Mojave River, cuttings should be collected from within the Mojave River and installed within riparian habitat at this location. Cuttings should be collected during the dormant period for mulefat and/or willows, prior to bud emergence. Care should be taken to salvage from multiple trees to ensure that salvaging is not concentrated and does not negatively affect the source trees. Cuttings should be straight, with all secondary branches and leaves cut flush with the main branch. Cuttings should be stored in water containers with the terminal end facing upward and/or out of the water. It is recommended that salvage occur immediately prior to installation, and that willow/mulefat bundles and live stakes are installed or planted within 24 hours of cutting.

Willow/Mulefat Bundles

Willow/mulefat bundles consist of a group of dormant branches bound together to create a log-like structure that will root, grow and quickly provide plant cover. Additionally, bundles create small terraces that encourage native seed growth through stabilizing the soil.

Willow/mulefat bundles are ideally placed along steep slopes, and should be constructed as follows:

1. Cuttings between 0.5 inch to 2.0 inches in diameter and at least three to four feet long should be collected and overlapped to form bundles that are eight to 10 inches in diameter and eight to 10 feet long. Bundles are tied every one to two feet with biodegradable twine;
2. Bundles are buried with soil approximately $\frac{3}{4}$ the depth of the bundle diameter. Bundles should be watered, and the soil packed down to remove air pockets; and
3. Bundles should be secured with wooden stakes that are at least 18 inches long.
4. Once all bundles have been installed, they should be inspected to ensure adherence to the planting techniques mentioned above.

Willow/Mulefat Live Stakes

Willow/mulefat stakes may be opportunistically planted within the temporarily disturbed portions of riparian habitat types within the restoration area. Spacing should be adjusted to emulate natural conditions. Cuttings should be collected and installed as follows:

1. Cuttings should be between 0.25 and 1.0 inch in diameter and cut to approximately four to five feet in length;
2. The basal ends are cut at a 45-degree angle to identify the end to be planted, and immediately immersed in water for temporary storage and transport, as necessary;
3. Cuttings should be planted in small-diameter holes at least three feet deep and as wide as necessary to accommodate the installation of the basal planting end;
4. Immediately prior to the installation, the lower end of cuttings are given a fresh cut at a 45-degree angle and immediately planted vertically in the holes; and
5. Planting holes are then filled with water and backfilled to proper compaction, making sure that cuttings are properly secure within the soil, and to avoid potential washout of the cutting.
6. Once all stakes have been installed, they should be inspected to ensure adherence to the planting techniques mentioned above.

5 Monitoring and Maintenance Program

Brightline West, through contractual commitments with the Restoration Contractor, shall be responsible for the adequate maintenance of the restoration area during the five-year maintenance and monitoring period. During this period, the restoration areas should show progress toward meeting performance criteria as specified in Section 3. If the Restoration Specialist determine that the restoration area meets the mandated performance criteria at the end of five years, no further restoration activity is required. If during the maintenance and monitoring period, progress toward performance criteria is inadequate, Brightline West and their contracted Restoration Specialist shall initiate consultation with USFWS to assess possible causes of, and solutions for deficiencies in restoration success. The purpose of consultations would be to identify appropriate adaptive management procedures to maintain the five-year restoration monitoring schedule, and to identify factors beyond a reasonable ability for Brightline West and their Restoration Specialist to manage (e.g., extended drought, wildfires, etc.) or to identify and approve alternative mitigation options.

5.1 Monitoring Requirements

Monitoring Schedule

Following implementation of revegetation, the restoration area will be monitored two times (2) per year each year for five (5) years, totaling ten (10) monitoring visits, or until performance standards are met. Each year, one monitoring visit will be a qualitative assessment, and one monitoring visit will be a quantitative assessment. The quantitative assessment will be conducted in spring, and the qualitative assessment will be conducted in fall. The methodologies of qualitative and quantitative assessment are described below.

The monitoring visits should be conducted just prior to or during the Restoration Contractor maintenance visits, when feasible. Data will be collected during each visit as detailed below. Additional monitoring visits may be required if the site is not meeting performance standards and remedial actions are required.

Monitoring Procedures

The Restoration Specialist shall assess site conditions relative to the required performance standards outlined in Section 3.2. The Restoration Specialist may determine that additional monitoring visits are necessary, depending on the site's progression toward meeting performance standards.

Qualitative Assessments

During the qualitative monitoring visits, the Restoration Specialist should perform a qualitative assessment of the restoration area, consisting of an evaluation of the following:

- List of native and non-native plant species observed within each habitat type, and general description of overall species composition in each habitat type.
- General ecological conditions within each habitat type.
- Establishment and health of native plants within each habitat type.
- Naturally recruiting (not planted) native plant species.

- The presence of non-native weeds and the effectiveness of weed control efforts.
- Habitat suitability for federally listed species (actual species use or occupation not required)
- The status and effectiveness of any soil stabilization Best Management Practices (BMPs).
- The presence of any pest infestations, including rodents and insects.
- General site conditions including the presence of trash, unnatural debris, unauthorized access, vandalism, theft, etc.

Site photographs will be collected from photo points established by the Restoration Specialist to document site conditions and assist in tracking the success of the Plan. In addition to collecting information for inclusion in annual reports, qualitative monitoring visits will enable the identification of any potential problems or negative trends at the site. The Restoration Specialist shall promptly communicate the need for any remedial actions (replacement seeding and/or additional required maintenance activities) to the Restoration Contractor. The Restoration Contractor will perform required maintenance activities and/or take other remedial actions upon notification of any action items. Results of the qualitative monitoring visits will be presented in annual reports as described in Section 6.

Quantitative Assessments

One annual quantitative assessment will be conducted by the Restoration Specialist each year in spring. Data collection will utilize the Rapid Assessment (RA) vegetation sampling protocol described in Section 3.1. Additionally, restoration area conditions will be assessed in relation to the established performance standards outlined in Section 3.2. Data to be collected during annual quantitative monitoring visits will be used to document the status of the restoration area in annual reports. Data collected during annual quantitative monitoring visits will include all data noted above under qualitative monitoring visits as well as Rapid Assessment (RA) vegetation sampling. Results of the annual quantitative monitoring will be presented in annual reports as described in Section 6.

5.2 Maintenance Activities

Maintenance Schedule

Throughout the 5-year maintenance and monitoring period, the Restoration Contractor shall visit the site on an as-needed basis under the direction of the Restoration Specialist to facilitate progression of the restoration area toward meeting the performance standards.

Maintenance activities may consist of non-native weed removal, supplemental irrigation, additional seeding/container planting, or erosion control. These activities are described in detail below. Adaptive management may be required to respond to unforeseen circumstances. Maintenance activities may be adjusted depending on direction provided from the Restoration Specialist.

Weed Removal

Under the direction of the Restoration Specialist, the Restoration Contractor shall conduct weed removal activities during each maintenance visit. The Restoration Specialist may recommend implementation of the weed control methods outlined below or additional specific techniques based on the success or failure of weed control efforts. The Restoration Contractor shall ensure that the person(s) conducting weed control activities are trained and knowledgeable in identifying native and non-native species, particularly invasive weed species. It is critical that native species that become established are not damaged during weed control activities.

Invasive non-native perennial species rated as Moderate or higher by the Cal-IPC observed during the maintenance and monitoring period will be targeted for removal (Cal-IPC 2022). Other non-native species will also be removed as feasible. The level of required weed removal will likely be higher in the first year and may decrease thereafter as weeds are systematically controlled and native plant cover increases. If it is determined that additional weed removal is required, the Restoration Specialist will coordinate with the Restoration Contractor to schedule additional maintenance visits.

During the 5-year maintenance and monitoring period, the removal of non-native vegetation shall be conducted by hand, or by using hand-operated power tools as necessary. All non-native plant materials, including roots, should be removed and properly disposed of in a manner and a location which prevents their reestablishment. Weed seeds, pollen, and biomass should be removed at the appropriate time of year to minimize spread by wind, water, animal, or other means.

Whenever possible, invasive species should be removed by hand or by hand-operated power tools rather than by chemical means. However, for effective treatment of overly abundant or persistent invasive species, the use of herbicides may be warranted. Pre-emergent herbicides containing chlorinated hydrocarbons (DDT, Chlordane, Lindane) or organic phosphates (e.g., Parathion or Paraquat or equivalents) should be avoided. If surfactants or spreader stickers are used, they should be restricted to non-ionic chemicals, such as Agri-Dex® or equivalent.

Herbicide use should be conducted only when weather conditions are conducive to effective uptake of the herbicide by the targeted species (i.e., dry, and when plants are actively growing) and when wind conditions are such that herbicide drift is avoided (five miles per hour or less). Herbicides should not be applied within a minimum 72 hours of a predicted rain event or when nesting birds could be exposed. A brightly colored dye may be used in applications. Targeted application of herbicides should be completed in a manner that avoids application to non-target native species to the greatest extent feasible in order to prevent unintended mortality of native plant species. The material should be a nontoxic, water-soluble, liquid material such as Blazon® by Milliken Chemicals or its equivalent. Turfmark® is not an acceptable alternative. The dye should be mixed with the herbicide at no more than one-half the rate specified on the label (one-quarter the rate will usually suffice).

All herbicides shall be applied in accordance with state and federal law. In order to apply an unrestricted herbicide (e.g., AquaMaster®), the Restoration Contractor must have a Pest Control Business License, which requires that at least one individual employed by the Restoration Contractor be in possession of a Qualified Applicator's License (QAL). All licenses must be issued by the State of California, be registered in San Bernardino County, and be of current status. Application of herbicide must be supervised by a certified applicator and be in conformance with manufacturer's specifications for use. Compounds used must be appropriate to the target species and habitat.

Supplemental Irrigation and Maintenance

Following seed and/or plant installation, optional supplemental irrigation may be provided by hand via a water truck and hose, water truck with side sprayers, or equivalent. Irrigation, if implemented, should be scheduled to maximize growth of native species and should account for natural rainfall, while minimizing growth of invasive non-native plants. Generally, if irrigation is needed, more irrigation should be provided during the growing season (winter and spring) to mimic seasonal weather patterns, and minimal irrigation should be provided during the summer and fall as needed to keep plants alive. In the Mojave Desert region, container plant establishment success is increased

with at least two to three years of supplemental irrigation. The Restoration Contractor should manage the irrigation schedule to ensure sufficient water is supplied to the native plants to maintain their health and vigor in coordination with the Restoration Specialist.

Erosion Control

The Restoration Contractor should repair minor erosional issues with hand tools, as specified by the Restoration Specialist, in order to adequately maintain the restoration area. Any BMPs installed in the restoration area should be monitored and maintained by the Restoration Contractor to ensure that BMPs are being implemented correctly.

General Site Maintenance

The Restoration Contractor should remove all trash and other unnatural debris from the restoration area during regular maintenance visits. The site should be kept neat, clean, and free of non-vegetative debris and trash, as well as vegetative waste produced during weeding activities, which should be removed off-site.

Replacement Seeding/Planting

The restoration area may require supplemental revegetation to facilitate successful plant establishment. The Restoration Specialist will determine if replacement plants or additional seeding will be needed to meet success criteria by the end of Year 5. The Restoration Contractor should re-seed or replace dead, stolen, vandalized, damaged, or dying plants as determined by the Restoration Specialist. Dead and dying material shall be replaced annually during the planting season. Newly planted material will be subject to a five-year monitoring period.

Pest Control

Pest management strategies should be employed if pest infestations are detected during maintenance and monitoring visits. Pest control shall be accomplished using only those methods approved by the Restoration Specialist. Fencing or caging plants at the earliest sign of severe damage is recommended. Severe insect infestation should be treated as necessary to protect the health and establishment of the installed plants, per the recommendations of the Restoration Specialist.

5.3 Adaptive Management

Adaptive management may be employed to respond to unforeseen circumstances and adjust restoration strategies as needed. Specific time-sensitive maintenance and project management activities may be identified based on the results of each monitoring visit. As part of each annual monitoring report, maintenance and management activities implemented during the previous year will be described and the results will be evaluated under the framework of adaptive management. If management and maintenance methods are not successful in addressing negative environmental stressors identified in monitoring reports, the methods will be examined and altered to increase the potential for success based on the Restoration Specialist's best professional judgment and management methods that are shown to be successful based on scientific research. In some cases, the effectiveness of management and maintenance activities may not be evident over the course of only one year. This will be accounted for in annual monitoring reports through evaluation of the efficacy of management actions in progress towards success criteria. In some cases, it may be

necessary to wait two years or more before altering methods as part of an adaptive management strategy.

The entire project limits of disturbance are located within the Caltrans right-of-way. Caltrans will continue to conduct routine operations and maintenance of their right-of-way throughout the duration of the 5-year monitoring and maintenance period. Caltrans operations and maintenance activities have the potential to impact the restoration area. In the event that inadvertent damage is caused to the restoration area by Caltrans operations and maintenance activities, adaptive management strategies will be discussed in coordination with Caltrans and the Restoration Specialist.

5.4 Contingency Measures

This Plan includes habitat-specific performance standards that will be based on results of baseline pre-construction surveys, and generally follow a 5-year monitoring and maintenance period. If the restoration area does not progress toward meeting the defined performance standards, or if restoration is determined to be infeasible/cost-prohibitive, the habitat temporarily affected by the project may be mitigated through the purchase of mitigation credits at an in-kind 1:1 ratio to ensure no net loss of suitable habitat for federally listed species. The following conservation lands or conservation banks are located within the regional vicinity of the project, and may be used to purchase mitigation credits :

- Lytle Creek Conservation Bank (approximately 199 acres available)
- Cajon Creek Conservation Bank (approximately 1200 acres available)
- San Bernadino Mountains Land Trust (approximately 310 acres available)

Other mitigation bank(s) may be selected in coordination with USFWS.

6 Reporting

The Restoration Specialist is required to document maintenance and monitoring activities as described below.

6.1 Annual Monitoring Reports

The Restoration Specialist shall prepare an annual monitoring report for each year of the five-year maintenance and monitoring period, or until restoration has been deemed successful. The annual monitoring report will include, at a minimum, documentation of the following:

- Location and extent of the restoration area, including a GIS-based “As Built” map of the restoration area
- Replacement plant installation or re-seeding techniques employed, if applicable
- An overview of the maintenance activities performed during the year, such as weed control and any erosion control/stabilization efforts
- A summary of any significant issues that may affect the ultimate success of restoration and how those issues are being addressed
- A summary of remedial actions taken during the year (if any) and a discussion of any adaptive management strategies that have been implemented
- Monitoring methodology
- Results of Rapid Assessment (RA) vegetation sampling
- General survivorship of container plants
- Photographs from established photo stations
- Summary of performance standards
- A discussion of the monitoring results in relation to performance standards
- Summary of significant issues that may affect restoration success, and pertinent recommendations/remedial actions required to meet performance standards

All annual monitoring reports shall be submitted to the FRA, USFWS, Caltrans and the Federal Highway Administration (FHWA) in digital format. The annual report at the close of Year 5 may double as the Completion of Mitigation Notification as detailed in Section 6.2.

6.2 Completion of Mitigation Notification

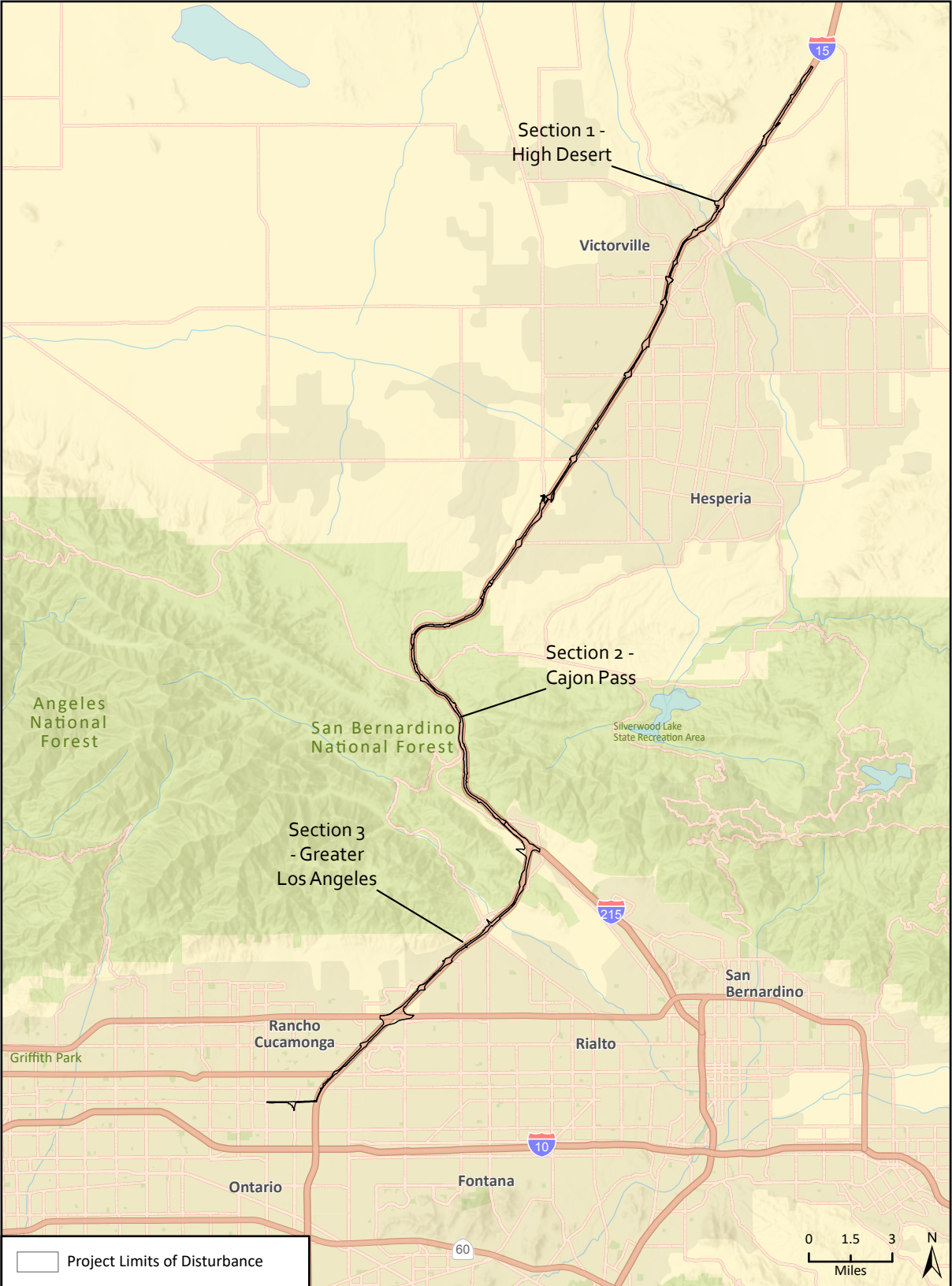
Restoration shall be considered complete when the performance standards defined in Section 3.1 are achieved, as determined by the Restoration Specialist. The final monitoring report shall document an evaluation of the restoration effort in achieving the final performance standards.

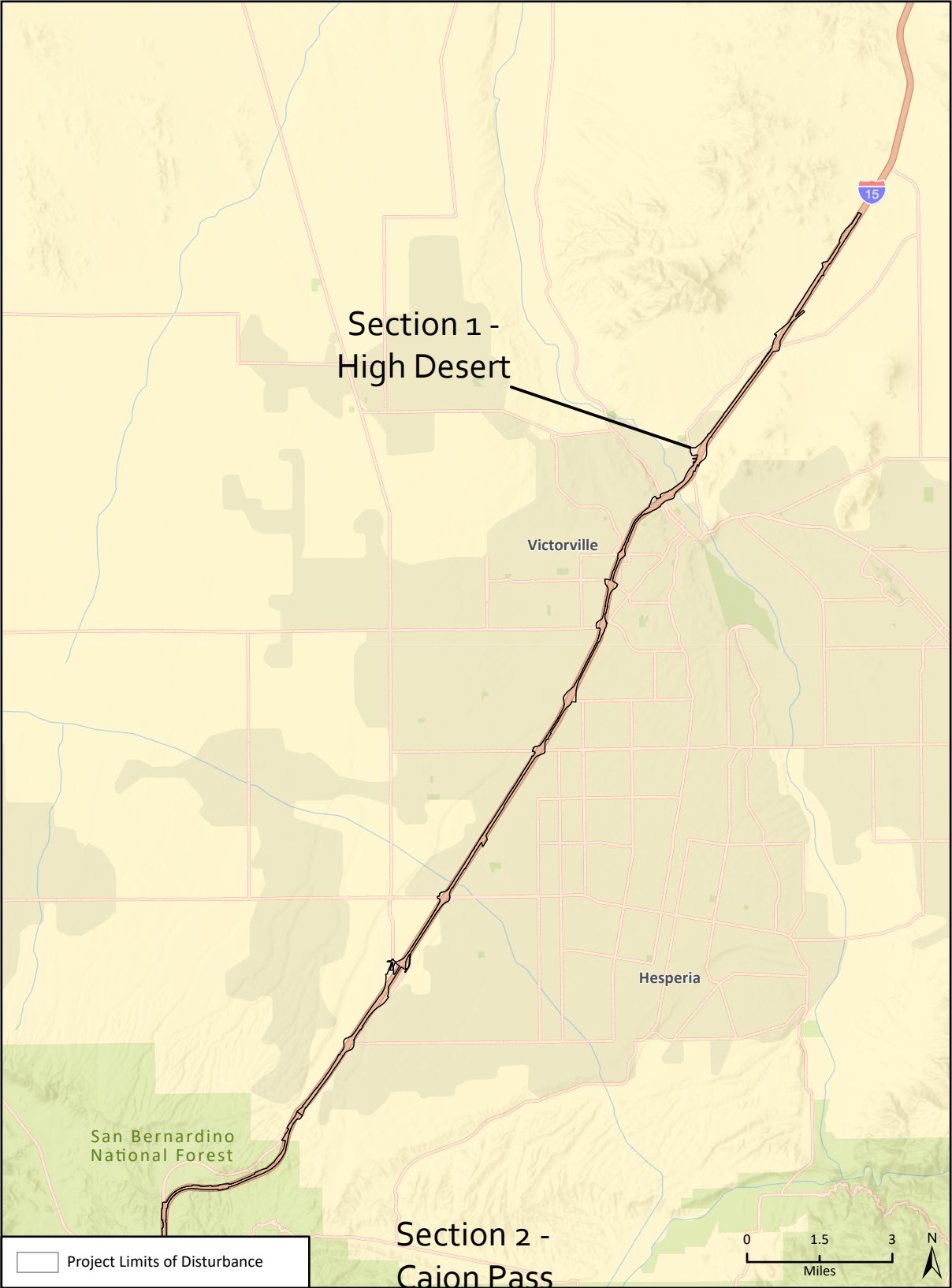
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Appendix A

Figures











Cajon Pass High-Speed Rail Project

San Bernardino Kangaroo Rat Capture and Translocation Plan

prepared for
United States Fish and Wildlife Service

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November 2022



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1 Introduction

DesertXpress Enterprises, LLC (doing business as “Brightline West”) proposes to construct and operate a passenger high-speed rail system covering 47.9 miles within the California Department of Transportation (Caltrans) right-of-way of Interstate 15 (I-15) between Victor Valley and Rancho Cucamonga, California. The project’s potential adverse effects to biological resources have been evaluated under the National Environmental Policy Act (NEPA) through preparation of a Biological Technical Report (HNTB 2022a) and Biological Assessment (HNTB 2022b). The environmental review determined the project is likely to adversely effect the Federally Endangered San Bernardino Merriam’s kangaroo rat (SBKR, *Dipodomys merriami parvus*) and its designated critical habitat. This SBKR Capture and Translocation Plan (Plan) has been developed in accordance with species-specific measure SBKR-4 outlined in the project’s Biological Assessment to support Section 7 Consultation with United States Fish and Wildlife Service (USFWS). The Plan provides procedures and protocols to avoid and minimize effects to SBKR during project construction including methods for capture and translocation in areas with potential to support SBKR.

1.1 Project Location

The proposed project would be constructed within the existing Caltrans I-15 right-of-way. The northern terminus of the project is in Victor Valley, California, in the western Mojave Desert. The project alignment extends southward from Victor Valley, passing through, or next to the communities of Victorville, Hesperia, Rialto, and Fontana and crossing the San Bernardino Mountains through Cajon Canyon, reaching its southern terminus in Rancho Cucamonga, California, in the northeastern part of the Los Angeles Basin. The project is located within Caltrans and existing transportation rights-of-way, including when passing through the San Bernardino National Forest.

The project is designed in three distinct sections: Section 1 High Desert; Section 2 Cajon Pass; and Section 3 Greater Los Angeles. This Plan focuses on the project limits of disturbance within the SBKR habitat distribution range (SBKR Plan Area; Appendix A, Figure 1).

1.2 Project Description

The project includes construction and operation of a passenger high-speed rail system capable of speeds up to 140 miles per hour (mph) covering 47.9 miles between Victor Valley and Rancho Cucamonga, California. The project would cross the Cajon Wash, Lytle Creek, and other drainages and washes along the rail alignment, that are within critical habitat and suitable habitat for SBKR.

1.3 Plan Background

In cooperation with the Federal Highway Administration, Surface Transportation Board, U.S. Army Corps of Engineers, and tribal entities, the Federal Railroad Administration (FRA) is preparing a NEPA Environmental Assessment and Section 4(f) Evaluation in accordance with NEPA (42 U.S.C. § 4321, et seq). The project is considered a major construction activity under the federal Endangered Species Act of 1973 (ESA; Title 16 of the United State Code [U.S.C.], Chapter 35).

Through consultation with USFWS, FRA identified SBKR critical habitat and potential for SBKR individuals, both protected under the ESA, within the project limits of disturbance. A Biological Technical Report (HNTB 2022a) and Biological Assessment (HNTB 2022b) were prepared to support the Environmental Assessment, and formal Section 7 consultation with USFWS has been initiated for incidental take of the species. The Biological Technical Report and Biological Assessment identified SBKR suitable habitat/SBKR critical habitat, assumed presence of the species and determined that implementation of the project may affect/is likely to adversely affect SBKR and its designed critical habitat.

The SBKR assessments for this project have been based on desktop analyses and habitat modeling.

1.4 Plan Purpose

Adverse effects to SBKR that were assessed as potentially occurring during project-related construction activities, may require the translocation of SBKR from the project limits of disturbance. The intent of any translocation efforts would be to move SBKR individuals to the closest suitable habitat within the Caltrans right-of-way that is outside of the project limits of disturbance.

In accordance with species-specific measure SBKR-4, this Plan has been developed to outline the procedures and protocols that will be implemented to avoid and minimize effects to SBKR during project construction including methods for capture and translocation in areas with potential to support SBKR.

The two primary goals of this Plan are:

1. Reduce the likelihood of injury and direct mortality to SBKR individuals during project construction.
2. Increase the probability of survival for translocated SBKR individuals.

Provided herein are the methods for SBKR detection, capture, handling, and translocation that will be implemented during project activities, as well as methods for appropriate monitoring and reporting. Avoidance and minimization measures have been incorporated into the project design and will be adhered to during construction. Species-specific avoidance and minimization measures as well as those specifically applicable to this Plan have been incorporated herein and included in Appendix B. Additional avoidance and minimization measures applicable to all species are not specifically referenced herein and would further reduce impacts to SBKR. Restoration of temporarily disturbed SBKR suitable habitat will occur as detailed in the Habitat Restoration Plan included in Appendix C.

1.5 Plan Methodology

This Plan relies on data provided in the Biological Technical Report and Biological Assessment as well as an updated literature review for SBKR occurrence documentation (CDFW 2022), review of SBKR trapping reports (RCA 2016; PBS&J 2009), and Final Designation of Critical Habitat for San Bernardino Kangaroo Rats (USFWS 2002; USFWS 2008). To assist in development of the methodologies for the capture and translocation of SBKR, translocation documents of kangaroo rats (Shier 2008; Bender et. al 2010) were also reviewed.

2 Species Description/Background

The SBKR is a member of the Heteromyidae family and is one of three subspecies of the Merriam's kangaroo rat (*Dipodomys merriami*) (USFWS 2002). The Merriam's kangaroo rat is a widespread species that can be found from the inland valleys to the deserts of Southern California. The subspecies known as SBKR has a limited distribution, confined to inland valley scrub communities occurring along rivers, streams and drainages. Most of the habitats that support SBKR have been historically altered by flood control efforts, the increased use of river resources, mining, off-road vehicle use, and road and housing developments. This historic alteration to river systems and anthropomorphic development has resulted in a reduction in both the amount and quality of SBKR habitat, prompting an emergency listing of SBKR as a federally endangered species under the ESA (USFWS 1998a).

2.1 Physical Characteristics, Life History and Listing Status

Physical Characteristics

The SBKR is distinguished from the other Merriam's kangaroo rat subspecies by its hind feet which have four toes on each foot, as opposed to five toes found on the Dulzura kangaroo rat (*Dipodomys simulans*), Pacific kangaroo rat (*Dipodomys agilis*), and Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR). The SBKR is darker and smaller than other kangaroo rats with its total length averaging between 230 to 235 millimeters (mm) (9.0-9.3 inches[in]), including a body length of approximately 95 mm (3.7 in) (USFWS 2002) and weight averaging 36 grams (McKernan 1997).

Life History

SBKR are solitary animals that establish and defend individual territories through scent marking, chases, and other social dominance displays. Their burrows provide shelter from extreme temperatures and predators, as well as nesting and food caching areas. Burrows are excavated in loose soil, usually near or beneath shrubs. Each burrow is occupied by a single adult, and they must leave their burrows to mate (Daly, Behrends, and Wilson. 2000). The breeding season is from January through November with peak breeding in late June. SBKR are nocturnal and they are unable to enter a state of torpor (Brown and Harney 1993); therefore, they are active throughout the year. Kangaroo rats, in general, are typically sedentary once they have established a territory. Although local home ranges are approximately 0.75 acre, the species have a small core area near their burrow that they actively defend (Jones 1993). Changes to home ranges occur by incremental shifts within familiar territory (e.g., frequent moves to new burrows nearby) and not by large movements (Jones 1993).

SBKR do not need to drink water and they feed on a variety of seeds and some insects. SBKR have been documented using areas heavily disturbed by humans, including non-native grasslands, margins of orchards, and out-of-use vineyards. The life span of SBKR is unknown, but Merriam's kangaroo rat and SKR have been found to live from 3.7 months to 2 years, and death prior to reproduction has been found to be somewhat common in at least one species (Fresno kangaroo rats, *Dipodomys nitratooides exilis*; Daly et al. 2000).

Populations for all species of kangaroo rat are highly variable, but environmental variables, competition for resources, and adequate space within appropriate habitat limit population growth for SBKR (Goldingray et al. 1997). Existing threats are moderate and primarily result from development, recreational vehicles, and alterations in hydrology (USFWS 2008).

Listing Status

The SBKR was listed as federally endangered under the ESA in 1998 (USFWS 1998b) due to loss and fragmentation of habitat; the most recent 5-year review indicated habitat loss continues to be the primary threat for the species (USFWS 2020).

2.2 Range Distribution, Critical Habitat and Documented Occurrences

Range Distribution

The SBKR historical range is from the San Bernardino Valley in San Bernardino County west to the Menifee Valley in Riverside County within coastal sage scrub habitat that forms on alluvial fans. Currently the majority of the SBKR populations are predominantly localized in three areas, the Santa Ana Wash, the San Jacinto Wash, and Lytle Creek and Cajon Wash (USFWS 2002).

Designated Critical Habitat

Designated critical habitat (USFWS 2002, USFWS 2008) for the SBKR was final and effective on May 23, 2002. The critical habitat area totals approximately 33,295 acres and is classified into four units—one of which occurs along Lytle and Cajon Creeks, from the point the creeks emerge from the San Bernardino National Forest to flood control channels downstream where these creeks transition to washes (USFWS 2002). The Lytle and Cajon Creeks unit (Unit 2) encompasses approximately 3,421 acres in total and provides varying habitat value, including the SBKR's three Physical and Biological Features (PBFs; previously Primary Constituent Elements [PCEs]) that are further defined in Section 2.3 (USFWS 2002). On June 19, 2007, the USFWS proposed to revise the designated critical habitat with the addition of approximately 9,079 acres in San Bernardino and Riverside Counties (USFWS 2008), currently totaling 42,374 acres of designated critical habitat. Approximately 77 acres of SBKR designated critical habitat is located within the project limits of disturbance.

Documented Occurrences

The CNDDDB documents SBKR occurrences within the project limits of disturbance at the following locations: I-15/1-210 (Occurrence No. 100, dated 199x), 0.4 miles east of Citrus Avenue (Occurrence No. 61, dated 2002), around Lytle Creek Wash (Occurrence No. 27, dated 2013) and Cajon Wash (Occurrence No. 5 and 27, dated 200 and 2013) (CDFW 2022). Additional occurrences of SBKR have been documented around Etiwanda Creek Wash (Occurrence No. 28, dated 2005) and San Sevaine Canyon Wash (Occurrence No. 29, dated 2002) west of the project limits of disturbance (CDFW 2022).

2.3 Habitat Requirements

The final critical habitat rule for SBKR lists the following PBFs that are essential to the conservation of the species (USFWS 2002, USFWS 2008):

- PBF 1: Alluvial fans, washes, and associated floodplain areas containing soil series consisting predominantly of sand, loamy sand, sandy loam, or loam.
- PBF 2: Upland areas adjacent to PBF 1 containing alluvial sage scrub habitat and associated vegetation, such as coastal sage scrub and chamise chaparral.
- PBF 3: Upland areas adjacent to PBF 1 with marginal habitat that support individuals for repopulating wash areas following flood events.

SBKR habitat has been described as confined to primary and secondary alluvial fan sage scrub habitats, with sandy soils deposited by fluvial (water) rather than aeolian (wind) processes (USFWS 2008).

SBKR have very specific habitat requirements that provide successful burrowing opportunities, cover from predators, and bipedal movement. Soils must be sandy with at least 25 percent gravel. Vegetative cover must be present, but generally sparse. Habitats with over 50 percent bare ground, less than 20 percent shrub cover, less than 30 percent annual grass cover, and between six and 13 percent woody debris have been found to be suitable (Daly et al. 2000).

SBKR can occupy mature coastal sage scrub and even chaparral vegetation types (USFWS 2002) but prefer Riversidean alluvial fan sage scrub. Riversidean alluvial fan sage scrub is a distinct and rare plant community of coastal sage scrub habitat that occurs on alluvial fan landforms and is geographically confined to the western Los Angeles basin (White and Padley 1997). Plant species present in the Riversidean alluvial fan sage scrub plant community include California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), various buckwheat species (*Eriogonum* spp.), golden yarrow (*Eriophyllum confertiflorum*), and coastal pricklypear (*Opuntia littoralis*). Scale-broom (also known as California broomsage; *Lepidospartum squamatum*) is an indicator species for the Riversidean Alluvial Fan Sage Scrub association (Holland 1986).

SBKR habitat generally correlates with areas having flooded within the last 40 to 70 years, but not areas that flood annually. SBKR do not retreat to upland areas during flood events; rather, populations from the upper floodplain repopulate the lower elevations over time, underlining the importance for habitat connectivity (USFWS 2021a). As they are most active and forage during the night, they are susceptible to effects of artificial light at night (USFWS 2002).

2.4 Potential to Occur within Project Limits of Disturbance

This section summarizes the determinations of potential occurrence of SBKR within the project limits of disturbance from the project's Biological Technical Report and Biological Assessment (HNTB 2020a, HNTB 2022b). These assessments were based on desktop review and modeling; no fieldwork has yet been conducted to verify conditions on the ground.

As detailed in the Biological Assessment, approximately 77 acres of suitable SBKR habitat would be temporarily disturbed by project activities. Core habitat for SBKR includes pioneer and intermediate Riversidean Alluvial Fan Sage Scrub habitat where shelter and patches of suitable soils for burrowing

are present (USFWS 2008). Within the project limits of disturbance, suitable habitats are expected to exist in Cajon Wash and Lytle Creek. The CNDDDB reports multiple sightings of SBKR around Etiwanda Creek Wash and San Sevaine Canyon Wash west of the project limits of disturbance, and around Lytle Creek and Cajon Wash within the project limits of disturbance. Suitable habitat is also present at the I-15/I-10 interchange where the project limits of disturbance cross Cajon Wash (CNDDDB 2022).

3 SBKR Pre-Construction Survey

Per species-specific measure SBKR-1, SBKR Restricted Work Areas will be established prior to the start of any ground disturbance. SBKR Restricted Work Areas are defined as areas mapped as suitable SBKR habitat in the project's Biological Technical Report and Biological Assessment (HNTB 2020a, HNTB 2022b), excluding areas of existing infrastructure and areas lying between I-15 highway lanes (median). In accordance with species-specific measure SBKR-2, pre-construction SBKR surveys will be conducted within the SBKR Restricted Work Areas prior to initiation of ground-disturbing activities. One of the goals of pre-construction SBKR surveys will be to field-verify the habitat conditions of areas that were remotely assessed as potentially occupied. The results of field-verification of suitable habitat may result in modifications to the extent and/or limits of SBKR suitable habitat areas. All suitable habitat areas will be delineated as SBKR Restricted Work Areas for the duration of construction.

3.1 Pre-Construction Survey

The pre-construction survey will consist of two primary objectives: 1) field-verify all areas mapped as SBKR suitable habitat; and 2) document presence or sign of presence of SBKR within the project limits of disturbance. The survey will be conducted by a qualified biologist¹ and will include a habitat suitability evaluation of the SBKR PBFs and other habitat requirements outlined in Section 2.3 above. The survey will include documentation/mapping of all potential SBKR active burrows and any SBKR individuals or sign (i.e., tail drags, tracks, food caches and stacking, dust baths). The surveyor(s) will document the spatial arrangement of active burrows to determine the appropriate spatial placement of individual release sites for translocated SBKR. Based on the results of the pre-construction survey, the qualified biologist will refine the SBKR Restricted Work Area in coordination with USFWS to determine the limits of the area requiring SBKR capture and translocation. Areas determined not suitable for SBKR and lacking sign of SBKR will be excluded from the SBKR Restricted Work Area. Results of the pre-construction survey and the proposed SBKR Restricted Work Area refinement will be documented in the Pre-Construction Survey Report which will be submitted to USFWS prior to SBKR capture and translocation.

Identification of SBKR Translocation Release Sites

Potential translocation release sites adjacent to each SBKR Restricted Work Area will be investigated during the pre-construction survey. Potential release sites will be selected within the Caltrans right-of-way and outside the project limits of disturbance and will be evaluated based on presence of equivalent or superior habitat suitability and proximity to the areas of SBKR capture (i.e., SBKR Restricted Work Areas). Release sites will be selected based on the presence of SBKR habitat requirements including suitable soils and vegetation communities as described in Section 2.3. Additionally, all potential SBKR active burrows will be identified within each potential release site. Areas with low SBKR activity will be prioritized to limit competition with resident individuals present

¹ For the purpose of this Plan, a qualified biologist is defined as any person who has completed at least four years of university training in wildlife biology or a related science and has demonstrated field experience in the identification and life history of SBKR. Where specific activities outlined in this Plan require additional certifications/approvals (i.e., 10(a)(1)(A) permit), those have been specified in the relevant sections. With the exception of activities specifically requiring a 10(a)(1)(A) permit, the qualified biologist may delegate responsibilities to a designated representative which may include a biological or construction monitor.

within the release sites. Proposed release sites and their selection rationale will be documented in the Pre-Construction Survey Report which will be submitted to USFWS prior to translocation.

Pre-Construction Survey Report

Results of the pre-construction survey will be documented in a Pre-Construction Survey Report which will be submitted to USFWS prior to SBKR capture and translocation. The Pre-Construction Survey Report will include, at minimum, documentation of the following:

- Survey area limits
- Survey methodology
- SBKR habitat suitability evaluation of the survey area
- Descriptions and map of all potential SBKR active burrows, including spatial arrangement of active burrows, and any SBKR individuals or sign observed
- Proposed refinement of the SBKR Restricted Work Area based on field verification of SBKR habitat suitability
- Locations and habitat suitability of proposed release sites, including presence of SBKR habitat requirements, identification of all potential SBKR active burrows, proximity to capture sites, and comparison of release site habitat quality to capture site quality

4 Project Site/Worker Preparation

Following the pre-construction survey (SBKR-2), the SBKR Restricted Work Areas (SBKR-1) will be refined, and the site will be prepared for SBKR capture and translocation. Project site and worker preparation will include presentation of an environmental awareness training and installation of temporary exclusion fencing.

4.1 Environmental Awareness Training

In accordance with GM-3, all project staff, contractors, operators, consultants, field personnel, and subcontractors, shall attend a mandatory environmental awareness training program. The program will be developed by a qualified biologist and will include focused information regarding SBKR and work limitations within SBKR Restricted Work Area. The program will also include a review of the project's avoidance and minimization measures applicable to all species that would further reduce impacts to SBKR, including inspection of supplies, equipment and excavations for wildlife prior to movement of materials or work within excavations (GM-6).

4.2 Exclusion Fencing Installation

In accordance with species-specific measure SBKR-5, exclusion fencing will be installed along the perimeter of the SBKR Restricted Work Area prior to initiation of ground-disturbing activities (Appendix D). The exclusion fence will remain in place until all construction within the SBKR Restricted Work Areas are completed to ensure translocated animals do not attempt to move back in and reestablish.

Fence Materials and Design

The exclusion fencing will meet the following specifications:

- Material is 0.5-inches or smaller opening
- Height of 30 to 36-inches above ground with the bottom buried at least 12 inches deep with a 6-inch apron lying at 12 inches deep at a right angle.
- No gaps greater than 0.5-inch
- Uses anti-climb technology

Fence material should be buried two feet below grade where feasible; however, if the substrate does not allow for this depth (e.g., a high percentage of rocks), the fence material can be placed at grade as follows:

- Bend two feet of fence at grade facing out away from the work area and cover it with sandbags
- Drive "T-posts" to hold the fence in place; if "T-posts" cannot be driven in the ground, rebar uprights can be fabricated which have three rebar legs welded at their base, so they are free standing.

Access points to the SBKR Restricted Work Area will be constructed using the at grade fencing technique and will be secured at the end of each workday.

Exclusion Fence Monitoring

The qualified biologist or the biologist's representative will be present when the exclusion fence is installed to ensure that no burrows or burrow entrances are covered by the apron of the barrier fence. Once installed, the construction monitor will check the temporary barrier fencing at the close of each workday to ensure it is in place and properly maintained. Fence gaps greater than 0.5-inch will be repaired within 24-hours of detection.

5 SBKR Capture and Translocation

Capture and translocation of SBKR located within the SBKR Restricted Work Area will occur as detailed herein. No capture or translocation will occur prior to the complete installation of exclusion fencing. This section outlines specific protocols and standards, including timing of, and procedures for capture, handling and release; however, because translocation of small mammals is a dynamic and unpredictable process, the qualified biologist may adapt the Plan according to site-specific conditions, within allowable thresholds as outlined in this Plan. The methodology described below has been adapted from other successful kangaroo rat translocation efforts (Bender et al. 2010; Germano 2010; McCormick 2014, Shier 2008, and Tennant et al. 2013, 2017) and tailored to SBKR species-specific requirements. Other small mammals encountered during SBKR capture and translocation will be translocated outside the exclusion fencing as feasible.

5.1 Pre-Construction Trapping

In accordance with species-specific measure SBKR-6, prior to ground disturbance, a qualified biologist will conduct pre-construction trapping inside SBKR Restricted Work Areas. Initial trapping will be performed on the evening of the first day on which the exclusion fence installation is complete. Trapping will be conducted within each SBKR Restricted Work Area until no SBKR are trapped for two consecutive nights.

Pre-construction trapping for SBKR will be conducted according to established USFWS protocols for 10(a)(1)(A) permit specifications where feasible. The trapping will be led by a qualified biologist with a 10(a)(1)(A) permit for SBKR and will consist of baited 12-inch Sherman traps (or modified 9-inch traps to reduce the risk of tail injury). A maximum of 100 traps will be deployed each trapping night in proximity to documented active burrows. The total number of traps will be determined based on the number of active burrows (minimum of one trap per active burrow). If the number of active burrows requires greater than 100 traps, trapping will be conducted over multiple nights to avoid exceeding the 100 trap maximum outlined in the qualified biologist's 10(a)(1)(A) permit. Trapping activity will not be undertaken during periods of precipitation or extreme heat/cold, above 105 degrees Fahrenheit (F) or below 50 degrees F. Traps will be baited no more than 2-hours before sunset to minimize the potential of inadvertent capture during daylight hours. Traps will be checked at midnight and at sunrise to minimize the time SBKR are kept in the traps. During trap checks, captured SBKR will be removed from the traps and placed into captive holding or directly into the release site as outlined in Section 5.2. The following protocol will apply to all trapping activity:

- Nighttime temperatures must be above 50 degrees F to initiate trapping. Should air temperatures exceed 105 degrees F, all traps will be closed and will not be reopened until temperatures drop below 105 degrees F.
- Trapping each night will include two (2) trap checks; midnight and sunrise.

Should trapping occur during the breeding season and lactating females are trapped, the following protocol will apply:

- All captured lactating females will be immediately released back into the SBKR Restricted Work Area.
- Re-trapping in areas where lactating females were captured will not be initiated until one week following initial capture unless approved by the qualified biologist.

5.2 Handling/Captive Holding/Release

The housing and release methodology has been designed to meet the specifications of species-specific measure SBKR-7.

Handling

Handling of SBKR will be conducted by, or directly supervised by a qualified biologist with a 10(a)(1)(A) permit for SBKR, in accordance with the following standards:

- Each individual will be removed following industry standards for safe extraction of an animal from a Sherman trap, examined and placed into temporary captive holding. To reduce stress to the individual SBKR, handling will be kept to the shortest time feasible for examination. Individuals will be monitored for signs of stress, and handling will be discontinued if necessary to reduce stress levels. Data collection and processing may require intermittent handling for up to one hour. The following data will be collected for each trapped individual:
 1. Trapped location (GPS coordinates and maps)
 2. Time of capture or observation
 3. Ambient weather conditions
 4. Individual's sex
 5. Approximate age (adult/juvenile)
 6. Weight
 7. General physical condition and health (documentation of all visible conditions including behavior, signs of emaciation, hair loss, ectoparasites, injuries, etc.)

Captive Holding

Temporary captive holding of SBKR may be required if release cannot occur immediately. Captive holding should be limited to less than 24 hours, when feasible, and no longer than 12 days. Long holding periods beyond 24 hours should be avoided unless inclement weather conditions (i.e., precipitation or temperatures above 105 degrees) warrant a longer holding period.

In accordance with species-specific measure SBKR-7, the protocol for housing trapped SBKR will follow standard holding/animal care requirements including appropriate nutrition, suitable housing to meet fundamental species requirements, and overall health monitoring as follows:

- If necessary due to weather, time, or site preparation at release sites, captured SBKR will be held in captivity by a qualified biologist with a 10(a)(1)(A) permit for SBKR. Captive SBKR would be subject to holding for no more than 12 days.
- Each individual captured SBKR will be housed in a separate plastic, glass, or other rigid non-toxic container at least five gallons in size. Containers will be stored in a climate-controlled space (between 60°F and 85°F) until released. Each individual will be checked daily to assess indicators of stress and evaluate if holding containers require cleaning or replenishment of food supply. If SBKR exhibit signs of stress, release of the individual will be scheduled as soon as feasible under the guidance of the qualified biologist.
- Individual SBKR will be provided with non-tinted, unbleached paper towels and enough suitable substrate (soil, sand, or similar) to cover the bottom of the container. Each SBKR will be

provided with sufficient bird seed mix (mixture of approximately 75% proso white millet and 25% oats groats) to provide 24-hours of food supply that will be maintained daily until release.

Soft-Release

Measure SBKR-7 requires that the qualified biologist release all captured SBKR as soon as possible following trapping. Captured SBKR will be released by soft-release into artificial burrows within the release sites described in Section 5.3. Soft-release is defined as the release of a SBKR wherein the individuals are held in confinement in an artificial burrow within the release site to allow the individual to acclimate to the new area (Tennant et al. 2013). The confinement period under this Plan is a minimum of 24 hours, but not more than 36 hours.

The soft-release of each individual will be scheduled as soon as possible following capture, not to exceed 12 days, and will be implemented as follows.

- Soft-release will occur during the new moon period of the lunar cycle to decrease the predation risk, when feasible.
- Soft-release will occur as soon as possible following capture. Individuals released during daytime hours will be covered with sunlight blocking material (i.e., towel, fabric bag) during transfers to artificial burrows.
- Individuals will be released into artificial burrows constructed within the designated release sites. The spatial arrangement of released individuals will be designed to match the natural burrow spacing documented during the pre-construction survey, where feasible. If natural burrow spacing is not feasible, artificial burrows will be spaced no less than 10 meters apart and no less than 10 meters from existing natural active burrows.
- Where appropriate based on site-specific conditions (i.e., limited availability of high quality habitat and ample refugia), the qualified biologist may decide to install cages over the artificial burrows. Cages would be constructed of 6.4 mm (1/4 inch) hardware cloth. Each cage would be approximately 90 × 60 cm, closed on the top, and open on the bottom. The edges of the cage would be buried to discourage individuals from digging out (Tennant et al. 2017).

Artificial Burrows

All translocated SBKR will be placed inside an artificial burrow as depicted in Appendix E. Each artificial burrow will consist of one three-foot long by 1.5-inch diameter tube, made of cardboard or other biodegradable material. One end of the tube will be buried at an approximately 45-degree angle. Burrow construction will be as follows (Appendix E):

Artificial Burrow Features and Dimensions

- Small slits will be cut perpendicular to the length of the tube, at intervals of approximately 1-2 inches to provide traction for SBKR movement inside the tube.
- A plastic top cap or cover will be faceted to the surface end of the artificial burrow tube to eliminate escapement to the surface. In the plastic top cap or cover of the artificial burrow tube, a minimum of 10 small air holes for ventilation will be drilled with a 1/8-inch drill bit, from the inside towards the outside. The plastic extensions of each drilled hole will be on the outside of the cap to prevent the SBKR from gripping (and chewing) the cap from the inside of the tube. All drilled holes will be completely open to allow for clear flow of air into the tube.
- Additional holes will be drilled on each side of the tube approximately ¼-inch from the top. To ensure the cap remains in place once the SBKR is placed inside, a piece of wire will attach

through a hole in the cap, running the wire through both holes in the tube and back through the cap.

- The bottom cap will be left off the tube and an uncapped plastic “T” fitting will be placed on the end.
- Alternative materials should be used under inclement precipitation events. Cardboard tubes can be substituted with corrugated flexible plastic tubing. Cutting slits along the bottom of the tubing is not necessary to provide traction with corrugated tubing. A perforated polyvinyl chloride (PVC) drainage cap will be attached to the upper end of the tube and the cap will be pressure fit to the tubing such that it cannot be forced outward by a SBKR inside the tube.

Artificial Burrow Installation

- A trench will be excavated the length of the tube, at an approximately 45 degree angle from the soil surface, removing all cobbles and rocks. The bottom of the tube will rest at a point at least 24-inches vertically below the surface. Placement of the tube will be such that the top of the tube is flush with the soil’s surface. The side of the tube with the slits will be placed facing downward. The bottom cap of the tube will remain off, exposing the bottom end of the tube to the soil for SBKR to naturally burrow. Pin-flags or other identification markers will be placed at each burrow to expedite locating the burrow at a later date.
- Each artificial burrow will be provided with enough seed (mixture of approximately 75% proso white millet and 25% oats groats) to provide 24-36 hours of food supply, while maintaining space for the individual to move around within the burrow. Seed will be placed at the bottom of the burrow and will be supplied to each artificial burrow once per week until green-up of vegetation or until deemed unnecessary by the qualified biologist due to availability of natural food sources.

Translocating SBKR to Artificial Burrows

Translocated individuals have a higher success rate of survival if translocated as close to the capture site as feasible and if translocated with familiar neighbors (Bender *et al* 2010, Shier 2008, Tennant et al. 2013). Translocation into nearby habitat with other familiar individuals reduces the potential of conflict with other unfamiliar SBKR. Therefore, to increase the likelihood of survivability of the translocated SBKR, all individuals will be translocated in the order of capture and will be placed adjacent to individuals that were captured nearby.

Once artificial burrow construction is complete, a single SBKR will be placed inside each artificial burrow with their head toward the bottom of the tube. The top cap of the tube will be placed on the tube once the SBKR is inside the tube and wired in place to prevent the SBKR from pushing it open. SBKR will be left in the artificial burrow for a minimum of 24 hours. Top caps will be removed from the tubes 24 to 36 hours following initial release to allow SBKR to exit the artificial burrow.

5.3 Release Sites

SBKR release sites within the Caltrans right-of-way will be identified during the pre-construction survey, and reviewed by USFWS, as discussed in Section 3.1. SBKR will be released to the closest portion of right-of-way containing suitable habitat and preferably located adjacent to the capture site outside of the project limits of disturbance. Release site habitat suitability will be of equivalent or superior quality than the capture site. As discussed in Section 3.1, release sites will be selected based on the presence of SBKR habitat requirements including suitable soils and vegetation

communities as described in Section 2.3. Release sites with no sign of SBKR occupancy will be prioritized over release sites with sign of SBKR occupancy. Release sites will be selected to contain similar occupancy densities as the capture sites post-release of translocated individuals, where feasible. Because of the project location immediately adjacent to I-15, selected release sites may experience vehicular lighting and routine ground disturbance from I-15 shoulder maintenance. This is allowable only if these conditions are consistent with those experienced at the capture sites.

5.4 Hand Excavation

Upon completion of pre-construction trapping with SBKR Restricted Work Areas, hand excavation of all active burrows within the limits of disturbance will be implemented as follows:

- All small mammal burrows suitable for SBKR present within the SBKR Restricted Work Areas will be hand-excavated using hand tools, to the greatest extent feasible. In cases where hand-excavation is impossible or infeasible (e.g., soil conditions, burrow depths, etc., make manual excavation impractical or unsafe) the qualified biologist may implement the use of hand-held power tools to assist in direct excavation of burrows.
- If hand-held power tools are required, a protective barrier (such as PVC tube, or similar) will be placed within the burrow to prevent injury/mortality to small mammals that may be in the burrow or attempt to escape burrows during excavation procedures.
- Mechanized equipment (e.g., backhoe) may be used to support burrow excavation but will not be used directly for burrow excavation. Appropriate uses of mechanized equipment include to slope expansion and terrace excavations for staff safety, and will only be utilized with approval of the qualified biologist.
- All work conducted with hand power tools or other mechanized equipment will be under the direct supervision of the qualified biologist.
- Prior to the start of soil removal at each burrow, the biologist will insert a section of PVC pipe (or similar material) not to exceed 12 inches in length, into the burrow opening. The placement of PVC or similar is intended to prevent the side walls from collapse inward during excavation, and potentially burying small mammals inside the burrow. Burrows will be excavated with hand tools along the length of the PVC pipe, and the pipe will then be reinserted farther into the burrow, with the process being repeated until the endpoint of the burrow is reached. PVC pipes will be selected with dimensions that most closely match the diameter of the burrow being excavated.
- If any SBKR are detected during burrow excavation, they will be captured by hand if possible. Excavation of the burrow with SBKR detection will cease and additional trapping will occur the night following the encounter. Trapping will continue until the individual is captured and translocated to the release site. Burrow excavation of the burrow where the SBKR was encountered will resume following capture of the SBKR.

6 Monitoring and Reporting

6.1 Construction Monitoring and Reporting

In accordance with measures GM-1 and SBKR-3, all construction within the SBKR Restricted Work Areas will be monitored daily during active ground disturbance and weekly during non-ground disturbing construction activities by a qualified biologist. The biologist will conduct a pre-construction sweep of the SBKR Restricted Work Areas each morning prior to ground disturbing activities to identify SBKR individuals or sign thereof. If SBKR individuals or sign are observed following initial capture and translocation, USFWS will be notified and additional trapping and translocation will be implemented to translocate any remaining individuals from the SBKR Restricted Work Areas. The biologist will inspect the SBKR exclusion fence daily during ground disturbing activities and weekly during non-ground disturbing activities to confirm it is secure and properly maintained. Weekly monitoring reports will be submitted to USFWS as detailed below.

Weekly Monitoring Reports

Weekly monitoring reports will be submitted to USFWS within 4 business days following the end of each week during which ground-disturbing construction activity occurred within the SBKR Restricted Work Areas. Weekly monitoring reports will include, at minimum, documentation of the following:

- Summary of construction activities that occurred within the SBKR Restricted Work Area
- Summary of biological monitoring
- Observations of SBKR individuals or sign
- Condition of SBKR exclusion fencing and any maintenance recommendations or actions taken to repair the fence
- Representative photographs

6.2 Release Site Monitoring and Reporting

Monitoring of release sites will be the responsibility of the qualified biologist(s) or biologist's representative. Monitoring at the release sites will occur for ten days after release has occurred to document the immediate success of SBKR translocation. Monitoring will be conducted using track plates and/or remote cameras as follows:

- Track plates will be placed at the entrance to the artificial burrows and will be checked every morning for new evidence of SBKR entering/leaving the burrow. Following the morning inspection of the plates for tracks, the plates will be brushed clean of all tracks so any new SBKR sign can be detected the following night.
- Remote cameras will be placed at the entrance to the artificial burrows. Cameras will be attached to t-post stakes and positioned approximately two feet above ground and angled towards the burrow entrances.

Results of release site monitoring will be documented in a Translocation Report.

Translocation Report

Following completion of release site monitoring, the qualified biologist(s) or biologist's representative will prepare a Translocation Report for submittal to USFWS. The Translocation Report will include, at a minimum, documentation of the following:

- Final SBKR Restricted Work Areas within which SBKR capture and translocation occurred
- Pre-construction trapping methodology and results including trapping dates, weather conditions, number and locations of traps deployed, and number and description of individuals trapped (including data on other small mammals incidentally encountered)
- Handling and captive holding methodology and results including specific techniques and materials utilized, duration, and SBKR response to handling and captive holding
- Soft-release methodology and results including dates of release and locations and spatial arrangement of artificial burrows
- Summary of burrow excavation methodology and any SBKR observed during excavation
- Methodology and results of release site monitoring including direct visual observations and track plate and/or remote camera detections

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Appendix A

Figures

Figure 1. SBKR Plan Area



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Additional Data: USFWS, 2021

Fig 1b - SBKR Capture and Relocation Plan Location

Appendix B

General Measures and SBKR Species-Specific Measure

Appendix C

Habitat Restoration Plan

Appendix D

Exclusion Fencing Example Photograph



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Appendix E

Artificial Burrow Plans

