

APPENDIX B: U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION, APRIL 22, 2022



United States Department of the Interior

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In Reply Refer to:
2022-0001884-S7

April 22, 2022

Serge Stanich
Director of Environmental Services
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770 L Street, Suite 620
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Subject: Formal Consultation on the California High-Speed Rail System: San Francisco to San Jose Project Section

Dear Serge Stanich:

This letter is in response to the California High-Speed Rail Authority's (Authority) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the San Francisco to San Jose Project Section of the California High-Speed Rail (HSR) System (project) in San Francisco, San Mateo, and Santa Clara counties, California. This letter is sent to the Authority in its role as the federal lead agency for the project under the National Environmental Policy Act (NEPA) and other federal laws. Pursuant to 23 United States Code (U.S.C.) 327, under the NEPA Assignment Memorandum of Understanding (MOU) between the Federal Railroad Administration (FRA) and the State of California, effective July 23, 2019, the Authority is the federal lead agency for environmental reviews and approvals for all Authority Phase 1 and Phase 2 projects. Under the MOU, the Authority has been assigned FRA's Endangered Species Act (Act) Section 7 (16 U.S.C. 1536) responsibilities for consultations (formal and informal) with respect to HSR and other projects described in subpart 3.3 of the MOU.

At issue are the project's effects on the following federally listed species and critical habitats:

Species federally listed as endangered:

- Callippe silverspot butterfly (*Speyeria callippe callippe*) (callippe; butterflies)
- Mission blue butterfly (*Icaricia icarioides missionensis*) (mission; butterflies)
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) (snake)

Species federally listed as threatened:

- Bay checkerspot butterfly (*Euphydryas editha bayensis*) (checkerspot; butterflies)
- California red-legged frog (*Rana draytonii*) (frog)

Critical habitat has been designated for the frog but does not occur within the action area and is not considered further in this biological opinion.

The project action area encroaches into checkerspot critical habitat Unit 1 (San Bruno Mountain Unit) and Franciscan Manzanita (*Arctostaphylos franciscana*) critical habitat Unit 11 (Bayview Park Unit). However, there is no effect to these critical habitat units because the primary constituent elements (PCE's) are not affected by project activities. Therefore, these critical habitats will not be discussed further in this biological opinion.

This response is provided under the authority of the Act of 1973, as amended (16 U.S.C.. 1531 et seq.), and in accordance with the implementing regulation pertaining to interagency cooperation (50 Code of Federal Regulations [CFR]] Part 402).

The federal action on which we are consulting is the construction, operation, and maintenance of the Authority's San Francisco to San Jose Project Section of the HSR. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment (BA) and a BA supplement for our review and requested concurrence with the findings presented therein. These findings conclude the project may affect and is likely to adversely affect the following federally listed species: the callippe, the mission, the snake, the checkerspot, and the frog.

In considering your request, we based our evaluation on the following:

- 1) Extensive coordination between the Service and the Authority (and the FRA prior to the MOU, as described above) from April 2015 to January 2022 regarding the project, conservation measures, and framework for evaluating the effects on federally listed species;
- 2) The December 2, 2021, letter from the Authority to the Service requesting initiation of formal consultation;
- 3) The *San Francisco to San Jose Project Section Biological Assessment*, dated June 2021, and supplemental information provided December 2, 2021;
- 4) Correspondence between the Authority and the Service; and
- 5) Other information available to the Service.

Consultation History

April to December 2015	The Authority initiated informal consultation with the Service; coordinated meetings with the Service; provided maps of the proposed alignments and species models to the Service; and requested a list of species for consideration for the BA.
January to December 2016	The Authority coordinated with the Service regarding species information, modeling, and mitigation.
January 2017 to May 2020	The Authority coordinated with the Service regarding species information, modeling, mitigation, and effects analysis.
June 24, 2021	The Authority submitted the June 2021 <i>San Francisco to San Jose Project Section Biological Assessment</i> (BA) for review.
June 24 to October 26, 2021	The Service requested additional information from the Authority necessary to complete formal consultation. The Authority and the Service held meetings and conferences to discuss the need for additional information.

December 2, 2021

The Authority requested formal consultation with the Service for the project and submitted supplemental information to the BA.

BIOLOGICAL OPINION

Description of the Project

Project Overview

The State of California proposes to build a HSR system to connect the major population centers of the San Francisco Bay Area with the Los Angeles metropolitan region. The HSR system is envisioned as an electrically powered, high-speed, steel-wheel-on-steel-rail technology with state-of-the-art safety, signaling, and automated train-control systems. The trains will be capable of operating at speeds of up to 220 miles per hour (mph) over a fully grade-separated, dedicated track alignment.

The project is the construction, operation, and maintenance of the approximately 43-mile portion of the San Francisco to San Jose Project Section between the Salesforce Transit System in San Francisco to Scott Boulevard (Blvd) in the City of San Jose as part of Phase 1 of the HSR system. The project will be a blended rail system, operating the HSR trains with existing intercity and commuter and regional rail trains on common infrastructure, with Caltrain and HSR service sharing tracks; HSR stations at 4th and King Street and Millbrae; and a light maintenance facility (LMF) in the City of Brisbane (Figure 1).

The project is divided into the following 4 geographic subsections: San Francisco to South San Francisco, San Bruno to San Mateo, San Mateo to Palo Alto, and Mountain View to Santa Clara (Figure 1).



Figure 1. San Francisco to San Jose Project Section Infrastructure and Subsections

The San Francisco to San Jose Project Section will modify approximately 14.5 miles of existing Caltrain track, predominantly within the existing Caltrain right-of-way; build the East Brisbane LMF; modify seven existing stations or platforms to accommodate HSR; and install safety improvements and communication radio towers. Caltrain has several locations of four-track segments where trains can pass; no additional passing tracks will be built.

The blended system includes HSR trains, station and platform modifications to accommodate HSR trains passing through or stopping at existing stations; track modifications to support higher speeds while maintaining passenger comfort; modifications to the overhead contact system (OCS) (a series of wires strung above the tracks on poles); and potential equipment upgrades at traction power facilities installed by Caltrain as part of the Peninsula Corridor Electrification Project (PCEP). The project will implement safety improvements at existing at-grade roadway crossings and Caltrain stations and platforms, as well as security modifications such as installing perimeter fencing along the right-of-way. The project will also build an LMF to accommodate planned operational needs for high-capacity rail movement and install communication radio towers at approximately 2.5-mile intervals.

The project will operate on a predominantly two-track system primarily within the existing Caltrain right-of-way, utilizing existing and in-progress infrastructure improvements developed by Caltrain for its Caltrain Modernization Program, including electrification of the Caltrain corridor between San Francisco and San Jose as part of the PCEP. The blended system of previous existing track and high-speed track will require curve straightening, track center modifications, and superelevation¹ of existing Caltrain tracks along approximately 33 percent of the project corridor to support higher speeds of up to 110 mph. Where horizontal track modifications will be greater than 1 foot, the OCS poles and wires will require relocation.

The blended system will consist of predominantly ballasted track of varying profiles. Low, near-the-ground tracks will be at grade; higher tracks will be elevated on embankment (earthen fill graded to a slope on either side or supported by retaining walls) and structure (viaduct); and below-grade tracks will extend through four existing short tunnels in the City of San Francisco.

Operation of the blended system will require additional infrastructure improvements and project elements. Limited freight service (approximately three round trips per day) operates between San Francisco and San Jose using the same tracks as Caltrain; this service will continue to operate with PCEP and with HSR using the same tracks as Caltrain and HSR.

In the blended portions of the system, HSR and Caltrain will operate at speeds of up to 110 mph and will have a coordinated schedule to allow both services to efficiently serve their respective stations. HSR trains will be able to pass Caltrain trains in existing four-track segments and at the Millbrae Station.

Security lights will be required on permanent facilities. These facilities include radio communication towers; the Brisbane LMF; traction power facilities; and new structures and facilities at the existing 4th and King Station and the Millbrae Station.

Project Footprint

The project footprint extends to the physical limits of the construction activities associated with the action and includes all areas that will be permanently or temporarily affected by the action. The project footprint includes all components and rights-of-way (ROW) needed to construct,

¹ *Superelevation* is the vertical distance between the height of the inner and outer rails at a curve. Superelevation is used to partially or fully counteract the centrifugal force acting radially outward on a train when it is traveling along the curve.

operate, and maintain all permanent HSR features between the 4th and King Street Station in the City of San Francisco and Scott Boulevard in the City of San Jose. The estimated project footprint (i.e., combined permanent and temporary disturbance areas) for the action is expected to be no greater than approximately 830 acres.

The project footprint primarily consists of the existing Caltrain ROW, which predominately consists of a two-track at-grade profile, with a minimum of 15 feet between track centerlines. Additional ROW will be required to accommodate track modifications, maintenance facilities and equipment storage areas, stations improvements, permanent access roads, train signaling and communication facilities, and safety improvements such four-quadrant gates. The project footprint also includes areas for utility relocations, roadway relocations, and construction activities (e.g., laydown, storage, and similar areas). The project footprint consists of the limits of ground disturbance, plus all access roads and areas required for operating, storing, and refueling construction equipment.

Due to the Design/Build nature of the project, design refinements will occur as construction progresses, which may result in minor modifications to the footprint into adjacent habitat. In addition, acquisition of ROW will provide access for surveys and updated habitat mapping. The HSR system, project footprint, and modeled habitat acreages included in the text below are based on the best available information at this time. Regardless of the final project footprint, project impacts will be similar geographically as well as in general nature and magnitude.

San Francisco to South San Francisco Subsection

The San Francisco to South San Francisco Subsection will extend approximately 10 miles from the 4th and King Street Station in downtown San Francisco to Linden Avenue in the City of South San Francisco, through the cities of San Francisco, Brisbane, and South San Francisco. The existing Caltrain track in this subsection is predominantly two-track at grade, with four two-track tunnel segments in San Francisco, and a four-track at-grade section through Brisbane. This project will modify the existing 4th and King Street and Bayshore Stations, build the East Brisbane LMF and associated track modifications, reconfigure Tunnel Avenue, relocate the Tunnel Avenue overpass, install four-quadrant gates at three existing at-grade crossings, and install six communication radio towers. Additional right-of-way will be required in the cities of San Francisco and Brisbane to accommodate track modification, the East Brisbane LMF, Tunnel Avenue reconfiguration, four-quadrant gates, and communication radio towers.

San Bruno to San Mateo Subsection

The San Bruno to San Mateo Subsection will extend approximately 8 miles from Linden Avenue in South San Francisco to Ninth Avenue in San Mateo through the cities of South San Francisco, San Bruno, Millbrae, Burlingame, and San Mateo. The existing Caltrain track in this subsection is predominantly two-track at grade on retained fill with a three-track at-grade section south of the Millbrae Caltrain Station. This project will modify the existing San Bruno, Millbrae, and Broadway Caltrain Stations; modify track; install four-quadrant gates at 16 existing at-grade crossings; and install three communication radio towers.

San Mateo to Palo Alto Subsection

The San Mateo to Palo Alto Subsection will extend approximately 16 miles from Ninth Avenue in San Mateo to San Antonio Road in Palo Alto through the cities of San Mateo, Belmont, San Carlos, Redwood City, Atherton, Menlo Park, and the northern portion of Palo Alto. The existing Caltrain track in this subsection is predominantly two-track at grade on retained fill. This project will modify platforms at the existing Hayward Park and Atherton Stations, modify tracks, install four-quadrant gates at 15 existing at-grade crossings, and install 7 communication radio towers.

Mountain View to Santa Clara Subsection

The Mountain View to Santa Clara Subsection will extend approximately 9 miles from San Antonio Road in Palo Alto to Scott Boulevard in Santa Clara through Palo Alto (southern portion), Mountain View, Sunnyvale, and Santa Clara. The existing Caltrain track in this subsection is predominantly two-track at grade (except for the four-track section from North Fair Oaks to north of Bowers Avenue) and there are no major project features in this subsection. The project will make minor track modifications, install four-quadrant gates at four at-grade crossings, and install four communication radio towers.

Pre-Construction Activities

During final design, the Authority and its contractors will conduct several pre-construction activities to optimize construction staging and management. These activities include the following:

- Conducting geotechnical investigations to define precise geologic, groundwater, and seismic conditions along the alignment. The results of this work will guide final design and construction methods for foundations, stations, and aerial structures.
- Identifying construction laydown and staging areas used for mobilizing personnel, stockpiling materials, and storing equipment for building HSR or related improvements. In some cases, these areas will also be used to assemble or prefabricate components of guideway or wayside facilities before transport to installation locations. Field offices and temporary jobsite trailers will also be located at the staging areas. Construction laydown areas are part of the project footprint that is evaluated for potential environmental impacts; however, actual use of the area will be at the discretion of design-build contractor. After completing construction, the staging and laydown areas will be restored to pre-construction condition.
- Initiating site preparation and demolition, such as clearing, grubbing, and grading, followed by the mobilization of equipment and materials. Demolition will require strict controls so that adjacent buildings, infrastructure, and natural and community resources are not damaged or otherwise affected by the demolition efforts.
- Relocating utilities prior to construction. The contractor will work with the utility companies to relocate or protect in place high-risk utilities, such as overhead tension wires, pressurized transmission mains, oil lines, fiber optical conduits or cables, and communications lines or facilities prior to construction.
- Implementing temporary, long-term, and permanent road closures to reroute or detour traffic away from construction activities. Handrails, fences, and walkways will be provided for the safety of pedestrians and bicyclists.
- Conducting other studies and investigations, as needed, such as surveys of local business to identify usage, delivery, shipping patterns, and critical times of the day or year for business activities, as well as necessary cultural resource investigations, and historic property surveys. This information will help develop construction requirements and worksite traffic control plans and identify potential alternative routes and resource avoidance plans.

Temporary staging will occur primarily within the existing Caltrain right-of-way, except for temporary staging areas outside of the existing Caltrain right-of-way for construction of the East Brisbane LMF and Millbrae Station. Track modifications will mostly be performed by track-mounted equipment, and construction materials (e.g., rail, ties, ballast) will be delivered by rail.

Modifications to existing Caltrain station platforms will be isolated to each Caltrain station and associated parking lots, which are within the existing Caltrain right-of-way. At-grade crossing improvements will not require separate construction staging areas.

There are two locations where construction staging areas greater than 5 acres outside the existing Caltrain right-of-way will be required:

- Brisbane LMF—Construction of the East Brisbane LMF will require temporary construction easements (TCEs) (approximately 65 acres) to establish equipment and materials storage areas close to construction sites for the LMF and the realigned Tunnel Avenue overpass.
- Millbrae Station—Construction will require approximately 8 acres of TCE east and west of the Millbrae Station to establish equipment and materials storage areas close to construction sites, build a new HSR station concourse and platforms, build overhead circulation elements between the new station and platforms, and modify roadways.

Land needed for temporary construction activities will be leased from landowners, taken out of its current use, used temporarily for construction, and restored to its pre-construction state after construction is completed. Construction will require the temporary use of 103.4 acres of land outside the Caltrain right-of-way. TCEs will typically be on roadway rights-of-way, shoulders of the existing railroad tracks, backyards, or vacant areas adjacent to structures that are used for residential, commercial, mixed use, industrial, public facilities, and parks/open-space purposes. These TCEs will be used for construction equipment and materials staging; no precasting yards or batch plants for concrete manufacturing will be required for project construction.

Major Construction Activities

Major types of construction activities for the project include demolition, grubbing, and earthwork; trackwork; station modifications; construction of the Brisbane LMF; construction of aerial structures; and roadway modifications.

Demolition, Grubbing, and Earthwork

The first stage of construction will involve the demolition of building and roadway structures directly affected by the HSR system. Several activities will need to be conducted before demolition work can commence, including:

- Relocation of building occupants and roadways
- Completion of a demolition survey and demolition plan
- Removal and disposal of hazardous materials in a safe and controlled manner, if any hazardous materials such as asbestos are identified
- Obtaining permits from the Bay Area Air Quality Management District

After mobilizing and setting up the construction staging areas, the contractor will commence with clearing and grubbing areas of new right-of-way in advance of the major structures, roadway and utility relocations. This activity (clearing and grubbing) consists of the removal of topsoil, trees, minor physical objects, and other vegetation from the construction site with use of specialized equipment for raking, cutting, and grubbing.

Construction will also involve earthwork, which includes both excavation and embankment. Excavation is the removal of soils by use of mechanical equipment, and embankment is the placing and compacting of soils for the construction process with use of mechanical equipment. The HSR system seeks to balance the volume of soils needed for excavation and embankment and to minimize the input of materials from quarries and disposal of materials outside of the right-of-way.

Overall, earthwork activities for the project will be minor because construction will occur mostly on the existing at grade Caltrain alignment. The exceptions are earthwork required for construction of the Brisbane LMF. Construction will require the disposal of excavated materials to an appropriate offsite location. Construction will reuse approximately 22 percent of excavated materials suitable for embankment construction. Excavated material kept for reuse will be stored within the project footprint.

Track Modifications and Overhead Contact System Adjustments

Within the blended Caltrain corridor, trackwork will follow Caltrain practices and standards for conventional ballast track for at-grade alignments. Since the Caltrain tracks will be upgraded to meet FRA Class 6 Track standards, the construction methods will follow 49 C.F.R. Part 213 Subpart G requirements. Construction will include the following:

- Lateral alignment adjustments—The primary track modifications in the Project Section will be for curve straightening to allow for increased operational speeds on the corridor. Track realignments of less than 1 foot will be performed by track-mounted equipment that will operate along the existing Caltrain tracks as it adjusts track alignment and ballast; these track realignments will not require relocation of OCS poles and will be completed within several days at any given location. Track realignments of less than 10 feet will be done at night or on weekends over several work windows to allow continued passenger service; relocation of OCS poles will be required, and speed restrictions will be imposed until the track realignment is completed.

For realignments of more than 10 feet, a parallel track and new OCS poles will be built first and then connected to the existing track. Temporary track closure for reconnecting tracks will occur at night or on weekends and will take 1 to 2 days each. The track realignment works will be carried out according to track possession work windows.

- Vertical alignment adjustment—The existing track profile will require modification to allow for increased operational speeds on the corridor, including raising or lowering the profile up to and greater than 6 inches.

Station Modifications

Construction of the project will require relocation and modification of existing Caltrain stations to accommodate HSR trains passing through or stopping at the stations. Construction at these stations will primarily entail modifications to the existing platforms, minor track shifts, modifications to pedestrian crossings, new pedestrian crossings, and relocation of several existing stations. More extensive construction will be required at the Millbrae Station.

Brisbane Light Maintenance Facility

The project will include construction of an LMF in Brisbane. Construction will occur over an approximately 2- to 3-year period and will involve demolition, grubbing, extensive earthwork, and utilities relocation. Because the site of the Brisbane LMF is relatively hilly, both cut and fill will be required to create a level surface for the workshop, yard, tracks, and supporting systems and utilities.

Bridge and Aerial Structures

Aerial structures for this section will be limited to: (1) the Brisbane LMF lead tracks; (2) the realigned Tunnel Avenue overpass; (3) either widening existing bridges or building parallel bridges through the four tracking areas of Millbrae Station.

Most of the elevated guideways will be designed and built using single box segmental girder construction. Where needed, other structural types and construction methods will be considered.

This section provides an overview of the construction methods required for foundations, substructures, and superstructures of bridges, aerial structures, and roadway crossings.

Foundations

A typical aerial structure foundation pile cap is supported by an average of four large-diameter (5 to 9 feet) bored piles. Depth of piles depends on the geotechnical conditions at each pile site. Pile construction can be achieved by using rotary drilling rigs, and either bentonite slurry or temporary casings may be used to stabilize pile shaft excavation. The estimated pile production rate is 4 days per pile installation. Additional pile installation methods available to the contractor include bored piles, rotary drilling cast-in-place piles, driven piles, and a combination of pile jetting and driving. Following completion of the piles, pile caps can be built using conventional methods supported by structural steel: either precast and pre-stressed piles or cast-in-drilled-hole piles.

Substructure

Typical aerial structures of up to 90 feet will be built using cast-in-place bent caps and columns supported by structural steel and installed upon pile caps.

Superstructure

The selection of superstructure type will consider the loadings, stresses, and deflections encountered during the various intermediate construction stages, including changes in static scheme, sequence of tendon installation, maturity of concrete at loading, and load effects from erection equipment. Accordingly, the final design will depend on the contractor's selected means and methods of construction, such as full-span precast, span-by-span, balanced cantilever segmental precast, and cast-in-place construction on falsework. These superstructure construction methods are summarized as follows:

- Full-span precast construction—Box girders will be precast and pre-stressed in advance as a full span and stored in a precasting yard. The 110-foot precast segments, weighing around 900 tons, will be transported along the previously built aerial guideway using a special gantry system.
- Span-by-span precast segmental construction—Shorter box girder segments will be precast and pre-stressed and stored in a precasting yard. These segments, limited to 12-foot segments weighing less than 70 tons, will likely be individually transported to the construction site by ground transportation. Once the gantry system is in place, construction will involve hoisting the segments from the ground and installing and tensioning the pre-stressing tendons to create the box girder.
- Balanced cantilever segmental construction—In locations where construction will occur over existing facilities that prevent equipment and temporary supports on the ground, balanced cantilever segmental construction may be used. Under this construction method, box girder segments (12-foot segments weighing less than 70 tons) that are either precast or cast in place will be placed in a symmetrical fashion around a bent column. The segments will be anchored at the ends by cantilever tendons in the deck slab, with midspan tendons balancing the weight between two cantilevers. Precast segments will be precast off-site, transported to the construction site, and installed incrementally onto a portion of the existing cantilever using ground cranes, hoisting devices, or a self-launching gantry. Segments can also be cast in place and installed two at a time, one at each end of the balanced cantilever. Segments generated by casting in place are generally longer than those in precast construction because they do not need to be transported to the construction site.

- Cast in place construction on falsework—The method involves creating a suspended formwork with either a launching girder or gantry system. Once the formwork is in position and reinforcements and pre-stressing are placed, concrete is poured, and the pre-stressing is stressed. The formwork is then removed and moved to the next segment.

Construction of road crossings and bridges will be similar to the approach for aerial structures. The superstructure will likely be built using precast, pre-stressed, concrete girders and cast-in-place deck. Approaches to bridges will be earthwork embankments, mechanically stabilized earth wall, or other retaining structures.

Crossings of existing railroads, roads, and the HSR will be built on the line of the existing road or offline at some locations. When built online, the existing road will be closed or temporarily diverted. Where HSR will cross over existing railroads, the Authority will coordinate with the rail operators to avoid operational effects during construction.

Roadway Modifications

The most common type of roadway modification within the Project Section will be the installation of four-quadrant gates at at-grade crossings, required at 38 at-grade crossings. The installation of four-quadrant gates at each at-grade crossing will occur within roadway rights-of-way over a period of 4 to 6 months, with the greatest level of construction activity occurring over a period of 2 to 4 weeks.

Construction of the project will also involve roadway reconstructions at several locations. Portions of Tunnel Avenue and the existing Tunnel Avenue grade separation in Brisbane will require relocation. Construction of the new Tunnel Avenue overpass will occur prior to removing the existing Tunnel Avenue roadway and overpass from operation, which will maintain access to Tunnel Avenue from Bayshore Boulevard throughout the construction process. Roadway work associated with the project will be done using conventional methods in the following sequence as appropriate: demolition, utility relocation, excavation, grading, placing aggregate base, building concrete curb and gutter, and placing concrete or asphalt concrete top surface base and top surfaces.

Operations and Maintenance

High-Speed Rail Service

The conceptual HSR service plan for Phase 1 describes service from Anaheim/Los Angeles through the Central Valley from Bakersfield to Merced and northwest into the San Francisco Bay Area (Authority and FRA 2017). Subsequent stages of the HSR system include a southern extension from Los Angeles to San Diego via the Inland Empire and an extension from Merced north to Sacramento.

Train service will operate in diverse patterns between various terminals. Three basic service types are envisioned:

- Express trains, which will serve major stations only, providing fast travel times between Los Angeles and San Francisco during the morning and afternoon peak
- Limited-stop trains, which will skip selected stops along a route to provide faster service between stations
- All-stop trains, which will focus on regional service

Most trains will provide limited-stop services and offer a relatively fast run time along with connectivity among various intermediate stations. Numerous limited-stop patterns will be

provided to achieve a balanced level of service at the intermediate stations. The service plan envisions at least four limited-stop trains per hour in each direction, all day long, on the main route between San Francisco and Los Angeles. Each intermediate station in the Bay Area, Central Valley between Fresno and Bakersfield, Palmdale in the High Desert, and Sylmar and Burbank in the San Fernando Valley will be served by at least two limited-stop trains every hour—offering at least two reasonably fast trains an hour to San Francisco and Los Angeles. Selected limited-stop trains will be extended south of Los Angeles as appropriate to serve projected demand.

Including the limited-stop trains on the routes between Sacramento and Los Angeles, and Los Angeles and San Diego, and the frequent-stop local trains between San Francisco and Los Angeles/Anaheim, and Sacramento and San Diego, every station on the HSR network will be served by at least two trains per hour per direction throughout the day and at least three trains per hour during the morning and afternoon peak periods. Stations with higher ridership demand will generally be served by more trains than those with lower estimated ridership demand.

The service plan provides direct train service between most station pairs at least once per hour. Certain routes may not always be served directly, and some passengers will need to transfer from one train to another at an intermediate station, such as Los Angeles Union Station, to reach their destination. Generally, the Phase 1 conceptual operations and service plans offer a wide spectrum of direct service options and minimize the need for passengers to transfer.

In 2029, the assumed first year of Phase 1 HSR operation, two trains per hour will operate during peak and one train per hour off peak between San Francisco and Bakersfield. When Phase 1 operations occur, the following service is assumed:

- Two peak trains per hour from San Francisco and Los Angeles (one in off peak)
- Two peak trains per hour from San Francisco and Anaheim (one in off peak)
- Two peak trains per hour from San Jose and Los Angeles
- One peak train per hour from Merced and Los Angeles
- One train per hour (peak and off peak) from Merced and Anaheim

Total projected daily operations for the Project Section in 2029 and 2040 are shown in Table 1.

Table 1 Total Daily Train Operations—San Francisco to San Jose Project Section

Service Description	2029	2040
HSR Nonrevenue Trains¹		
Between Brisbane LMF and San Francisco	11	22
Between San Jose Diridon Station and Millbrae Station	0	12
HSR Revenue Trains		
Trains per peak hour (max, one-way)	2	4
Trains per off-peak hour (max, one-way)	1	3
Trains per peak period per day (max)	24	48
Trains per off-peak period per day (max)	24	74
Number of daytime operations: 7 a.m.–10 p.m. (max)	40	102
Number of nighttime operations: 10 p.m.–7 a.m. (max)	8	20
Total HSR Trains, San Francisco and Brisbane LMF		
Trains per peak period per day (max)	28	56
Trains per off-peak period per day (max)	31	88
Number of daytime operations: 7 a.m.–10 p.m. (max)	44	110
Number of nighttime operations: 10 p.m.–7 a.m. (max)	15	34
Total HSR Trains, San Francisco and San Jose Diridon Station		
Trains per peak period per day (max)	24	80
Trains per off-peak period per day (max)	24	96
Number of daytime operations: 7 a.m.–10 p.m. (max)	40	148
Number of nighttime operations: 10 p.m.–7 a.m. (max)	8	28

HSR = high-speed rail

LMF = light maintenance facility

¹ Nonrevenue train trips include the operation of trains entering or leaving service at a terminal station to and from a maintenance facility, test runs, and operation of on-track maintenance equipment.

Maintenance Activities

Blended Portions of the Project Section

The Authority will be a tenant operating within the Caltrain ROW for the blended portions of the Project Section. The Peninsula Corridor Joint Powers Board (PCJPB) will continue to perform regular maintenance along the track and railroad ROW as well as on the power systems, train control, signaling, communications, and other vital systems required for the safe operation of the blended system. Maintenance methods will be like those currently used for the existing Caltrain system and will involve:

- Inspection and routine maintenance of the track and ballast, including tamping; OCS; structures; and signaling, train control, and communications components
- Inspections and daily maintenance of the stations and the LMF
- Maintenance of the ROW including culvert and drain cleaning, vegetation control, litter removal, and other inspection that will typically occur monthly to several times a year

Dedicated Portions of the Project Section

The Authority will regularly perform maintenance along the dedicated track and railroad ROW as well as on the power systems, train control, signaling, communications, and other vital systems required for the safe operation of the HSR system. Maintenance methods are expected to be similar to existing European and Asian HSR systems, adapted to the specifics of the California HSR. However, the FRA will specify standards of maintenance, inspection, and other items in a set of regulations (i.e., Rule of Particular Applicability) to be issued in the next several years, and the overseas practices may be amended in ways not currently foreseen. The brief descriptions of maintenance activities provided in the following subsections are thus based on best professional judgment about future practices in California.

Track and Right-of-Way

The track at any point will be inspected several times each week using measurement and recording equipment aboard special measuring trains. These trains are of similar design to the regular trains but will operate at a lower speed. They will run between midnight and 5 a.m. and will usually pass over any given section of track once in the night.

Most adjustments to the track and routine maintenance will be accomplished in a single night at any specific location with crews and material brought by work trains along the line. When rail resurfacing (i.e., rail grinding) is needed, several times a year, specialized equipment will pass over the track sections at 5 to 10 mph.

Approximately every 4 to 5 years, ballasted track will require tamping. This more intensive maintenance of the track uses a train with a succession of specialized cars to raise, straighten, and tamp the track, using vibrating “arms” to move and position the ballast under the ties. The train will typically cover a 1-mile-long section of track in the course of one night’s maintenance.

Slab track, the track support type anticipated at elevated sections, will not require this activity. No major track components are expected to require replacement through 2040.

Other maintenance of the ROW, aerial structures, culverts, drains, and bridge sections of the alignment will include culvert and drain cleaning, vegetation control, litter removal, and other inspection that will typically occur monthly to several times a year and will be performed by Caltrain. Maintenance activities, including vegetation control, litter removal, and inspections at radio communication towers and the East Brisbane LMF, will be performed by the Authority.

Power

The OCS along the ROW will be inspected nightly, with repairs being made when needed; these will typically be accomplished during a single night maintenance period. Other inspections will be made monthly. Many of the functions and status of substations and smaller facilities outside the trackway will be remotely monitored. However, visits will be made to repair or replace minor items and will also be scheduled several times a month to check the general site. No major component replacement for the OCS or the substations is expected through 2040.

Structures

Visual inspections of the structures along the ROW and testing of fire/life safety systems and equipment in or on structures will occur monthly, while inspections of all structures for structural integrity will be conducted at least annually. Steel structures will require painting every several years. Repair and replacement of lighting and communication components of tunnels and buildings will be performed on a routine basis. No major component replacement or reconstruction of any structures is expected through 2040.

Signaling, Train Control, and Communications

Inspection and maintenance of signaling and train control components will be guided by FRA regulations and standards to be adopted by the Authority. Typically, physical in field inspection and testing of the system will be conducted four times a year using hand-operated tools and equipment. Communication components will be routinely inspected and maintained, usually at night, although daytime work may be undertaken if the work area, defined as the portion of the project footprint that is currently under active construction, is clear of the trackway. No major component replacement of these systems is expected through 2040.

Perimeter Fencing and Intrusion Protection

Fencing and intrusion protection systems will be remotely monitored, as well as periodically inspected. Maintenance will take place as needed; however, fencing and intrusion protection systems are not expected to require replacement before 2040.

Vegetation and Pest Control

The Brisbane LMF may require vegetation control, litter removal, rodent control and, as described in the sections above, infrastructure inspection. Vegetation control may include mowing, disking, or herbicide application. Rodent control may include manual exclusion methods but could also include application of pesticides.

Conservation Measures

The Authority has proposed the following measures to minimize effects on federally listed species. The measures below are considered part of the project evaluated by the Service in this biological opinion.

The results of the habitat suitability modeling, described below, will be used as a guide during species' habitat assessment surveys. However, Designated Biologists, described below, will consider all areas in and adjacent to the project footprint when determining where surveys are warranted. Habitat assessment, protocol-level surveys when available, and pre-construction surveys will be phased with project buildout and the start of activities at each work area.

General Conservation Measures

CM-GEN-01: Establish Qualified Biologists and Biological Monitors

At least 15 days prior to the onset of activities, the Authority will submit, for review and approval by the Service, the name(s), contact information, and relevant qualifications and experience of Project Biologists and Designated Biologists who will conduct activities specified in the following measures. The roles of biologists will be as follows:

- **Project Biologists.** For each section or CP, the Authority will identify a Project Biologist(s). For their section or CP, the Project Biologist(s) will be responsible for implementation of the conservation measures, oversee the scheduling and work of Designated Biologists and Biological Monitors, and develop compliance reporting.
- **Designated Biologists.** Designated Biologists will be responsible for directly overseeing and reporting the implementation of general and species-specific conservation measures. Designated Biologists may be Service-approved on a species-specific basis, in which case Designated Biologists will only be authorized to conduct surveys and implement other measures for the covered species for which they have been approved. The Designated Biologists will have support from Biological Monitors. Designated Biologists will submit

memoranda and reports to the Authority to document compliance with conservation measures.

- **Biological Monitors.** Biological Monitors will report directly to a Designated Biologist for implementation of species measures or directly to the Project Biologist for implementation of general measures. Biological Monitors will be selected by the Authority based on their documented experience with and understanding of the ecology of the species included in the biological opinion. Biological Monitors will be responsible for conducting Worker Environmental Awareness Program (WEAP) training, implementing general conservation measures, conducting compliance monitoring, and reporting their compliance monitoring activities. Biological Monitors also may assist Designated Biologists in implementing species-specific conservation measures under the direct, on-site, supervision of the Designated Biologist.

CM-GEN-02: Conduct Monitoring of Construction Activities

The Designated Biologist or Biological Monitor will be present in the work area to verify compliance with avoidance and minimization measures, including during ground- or vegetation-disturbing activities in or adjacent to environmentally sensitive areas (ESA), wildlife exclusion fencing (WEF), and construction exclusion fencing (exclusion fencing).

CM-GEN-03: Prepare and Implement a Biological Resources Management Plan

Prior to construction activities, the Project Biologist will prepare the Biological Resources Management Plan (BRMP). The goal of the BRMP will be to provide the Project Biologist, Designated Biologists, and Biological Monitors with an organized reference and reporting tool to verify that the conservation measures and terms and conditions are implemented and reported in a timely manner. The BRMP will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility designations. These will include all conservation measures and repair, mitigation, and compensatory actions included in the biological opinion. These measures and conditions will be tracked through final design, implementation, and post-construction phases. For all measures, terms, and conditions, requirements and planned mechanisms for documenting and reporting compliance will be identified. The BRMP will also identify the individual responsible for post-construction compliance reporting. All project environmental plans, such as the Restoration and Revegetation Plan (RRP) and Weed Control Plan (WCP), will be included as appendices to the BRMP. The BRMP will contain, but not be limited to, the following information:

- A master schedule that shows construction of the project, pre-construction surveys, and establishment of buffers and exclusions zones to protect sensitive biological resources
- Specific measures for the protection of special-status species
- Identification (on construction plans) of the locations and quantity of habitats to be avoided or removed, along with the locations where habitats are to be restored
- Identification of agency-approved Project Biologist(s), Designated Biologists, and Biological Monitor(s), including those responsible for notification and report of injury or mortality of federally- or state-listed species
- Measures to preserve topsoil and control erosion
- Design and locations of protective fencing around ESA and the construction staging areas
- Locations of trees to be protected as wildlife habitat (roosting sites) and locations for planting replacement trees

- Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance in sensitive habitat areas
- Specific measures for the protection of riparian areas. These measures may include erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements
- Provisions for biological monitoring during ground-disturbing activities to confirm compliance and success of protective measures will: (1) identify specific locations of wildlife habitat and sensitive species to be monitored; (2) identify the frequency of monitoring and the monitoring methods (for each habitat and sensitive species to be monitored); (3) list required qualifications of Biological Monitor(s); (4) identify the reporting requirements; and (5) provide an accounting of impacts to special-status species habitat compared to pre-construction impact estimates
- Notification and reporting requirements in the event of an accidental death or injury to a federally listed species during project activities or failure to meet conservation measures included in the biological opinion

The BRMP will be submitted to the Authority for review and approval prior to any ground- disturbing activity.

CM-GEN-04: Prepare and Implement a Restoration and Revegetation Plan

Prior to any ground-disturbing activity, the Project Biologist will prepare an RRP to address temporary impacts resulting from ground-disturbing activities in areas that potentially support special-status species, wetlands and/or other aquatic resources. Restoration activities may include but not be limited to: grading landform contours to approximate pre-disturbance conditions, re-vegetating disturbed areas with native plant species, and using certified weed-free straw and mulch. The Authority will implement the RRP in all temporarily disturbed areas outside of the permanent ROW that potentially support special-status species, wetlands, and/or other aquatic resources.

Consistent with section 1415 of the Fixing America's Surface Transportation Act, restoration activities will provide habitat for native pollinators by planting native forbs and grasses. The Project Biologist will obtain a locally sourced native seed mix. The restoration success criteria will include limits on non-native invasive species, as defined by the California Invasive Plant Council, to an increase no greater than 10 percent compared to the pre-disturbance condition, or to a level determined through a comparison with an appropriate reference site consisting of similar natural communities and management regimes. The RRP will be submitted to the Authority for review and approval.

CM-GEN-05: Prepare and Implement a Weed Control Plan

Prior to any ground-disturbing activity during the construction phase, the Project Biologist will develop a WCP.

The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground-disturbing activities during construction and operations and maintenance. The WCP will include, at a minimum, the following:

- A requirement to delineate ESAs in the field prior to weed control activities
- A schedule for weed surveys to be conducted in coordination with the BRMP

- Success criteria for invasive weed control will be linked to the BRMP standards for on-site work during ground-disturbing activities. In particular, the criteria will establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in the area temporarily affected by ground-disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort will be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority will continue the monitoring and control efforts, and remedial actions will be identified and implemented until the success criteria are met.
- Provisions to ensure consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread and/or establishment of invasive species and reflects the same revegetation performance standards as the WCP
- Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods
- Timeframes for weed control treatment for each plant species
- Identification of fire prevention measures
- All vehicles and equipment will arrive at project sites free of plant and soil material within or near serpentine habitat

CM-GEN-06: Facilitate Regulatory Agency Access

Throughout the construction period, the Authority or its designee will allow access by the Service or other resource agency staff to the project site. Because of safety concerns, all visitors will check in with the Authority's resident engineer prior to entering the project footprint. If agency personnel visit the project footprint, the Project Biologist will prepare a memorandum within three business days after the visit documenting the issues raised during the field meeting. The Project Biologist will report any issues regarding regulatory compliance raised by agency personnel to the Authority.

CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training

Prior to any ground-disturbing activity, the Project Biologist will prepare a WEAP to train construction crews to recognize and identify sensitive biological resources that may be encountered in the vicinity of the project footprint. The WEAP training materials will be submitted to the Authority for review and approval. A video of the WEAP training prepared and presented by the Project Biologist and approved by the Authority may be used if the Designated Biologist or Biological Monitor is not available to present the training in person.

At a minimum, WEAP training materials will include the following information: key provisions of the Act, the California Endangered Species Act, the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, California Fish and Game Code 1600, Porter-Cologne Water Quality Control Act, and the Clean Water Act; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; the contact person and procedures in the event of the discovery of a dead or injured wildlife species; and review of avoidance, minimization, and mitigation measures.

The Designated Biologist or Biological Monitor will present WEAP training to all construction personnel prior to working in the project footprint. As part of the WEAP training, construction timing in relation to species' habitat and life-stage requirements will be detailed and discussed on project maps, which will show areas of planned minimization and avoidance measures. Crews will be informed during the WEAP training that, except when necessary as determined in consultation with the Designated Biologist or Biological Monitor, travel in the project footprint is restricted to established roadbeds, which include all pre-existing and project-constructed unimproved and improved roads. Training materials will include a fact-sheet handout or wallet-sized card conveying this information to be distributed to all participants in WEAP training sessions and will be provided in other languages as necessary to accommodate non-English speaking workers. All construction staff will attend WEAP training prior to beginning work on-site and will attend the WEAP training on an annual basis thereafter.

Upon completion of the WEAP training, each construction crew training attendee will sign a form stating that they attended the training, understood the information presented, and agreed to comply with the requirements set out in the WEAP training. The Project Biologist will submit the signed WEAP training forms to the Authority monthly, and annually the Authority will certify that WEAP training had been provided to all construction personnel. Each month, the Project Biologist will provide updates relevant to the training to construction personnel during the daily safety (tailgate) meeting.

CM-GEN-08: Conduct Operations and Maintenance Period WEAP Training

Prior to initiating operation and maintenance (O&M) activities, O&M personnel will attend a WEAP training session arranged by the Authority. At a minimum, O&M WEAP training materials will include the following information: key provisions of the Act, the California Endangered Species Act, the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, Porter-Cologne Water Quality Control Act, and the Clean Water Act; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a dead or injured wildlife species. The training will include an overview of provisions of the BRMP, annual vegetation and management plan, WCP, and security fencing, ESAs, and WEF maintenance plans pertinent to O&M activities. A fact sheet prepared by the Authority environmental compliance staff will be prepared for distribution to the O&M employees. The training will be provided by the Authority's environmental compliance staff. The training sessions will be provided to employees prior to their involvement in any O&M activity and will be repeated for all O&M employees on an annual basis. Upon completion of the WEAP training, O&M employees will, in writing, verify their attendance at the training sessions and confirm their willingness to comply with the requirements set out in those sessions.

CM-GEN-09: Establish Monofilament Restrictions

Prior to any ground-disturbing activity, the Biological Monitor will verify that plastic monofilament netting (erosion control matting) or similar material is not being used as part of erosion control materials. Non-monofilament substitutes including coconut coir matting, tackified hydroseeding compounds, rice straw wattles, and reusable erosion, sediment, and wildlife control systems that have been approved by the regulatory agencies (e.g., ERTEC Environmental Systems products) may be used.

CM-GEN-10: Avoid Animal Entrapment

At the beginning and end of each workday all excavated, steep-walled holes or trenches that are more than eight inches deep with sidewalls steeper than a 1:1 (45 degree) slope will be inspected for trapped animals and, at the close of each day, will be covered with plywood or similar materials or provided a minimum of one escape ramp constructed of fill earth per 10 feet of trenching. Before such holes or trenches are filled, they will be thoroughly inspected for trapped wildlife by the Biological Monitor(s).

All construction pipe, culverts, or similar structures with a diameter of three inches or greater that are stored overnight in the project footprint will be covered and elevated at least one foot above ground. Pipes or similar structures, regardless of diameter, will be covered such that avian entrapment is avoided. All pipes, culverts, and similar structures will be inspected for wildlife before such material is moved, buried, or capped.

CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes

Prior to any ground-disturbing activity, the Designated Biologist and Biological Monitor(s) will establish staging areas for construction equipment in areas that minimize effects to sensitive biological resources, including habitat for special-status species, seasonal wetlands, and wildlife movement corridors. Staging areas (including any temporary material storage areas) will be in areas that will be occupied by permanent facilities, where practicable. Equipment staging areas will be identified on final project construction plans. The Designated Biologist and Biological Monitor(s) will flag and mark access routes to ensure that vehicle traffic in the project footprint is restricted to established roads, construction areas and other designated areas.

CM-GEN-12: Dispose of Construction Spoils and Waste

The contractor will dispose of waste materials associated with construction, including soil materials unsuitable for reuse, in local landfills permitted to take these types of materials, and in conformance with State and federal laws.

CM-GEN-13: Establish Environmentally Sensitive Areas and Non-Disturbance Zones

Prior to any ground-disturbing activity in a work area, the Project Biologist will use flagging to mark ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The Project Biologist will also direct the installation of WEF to prevent special-status wildlife species from entering work areas. The WEF will have exit doors to allow animals that may be inside an enclosed area to leave the area. The Project Biologist will also direct the installation of construction exclusionary fencing (exclusionary fencing) at the boundary of the work area, as appropriate, to avoid and minimize impacts to special-status species or aquatic resources outside of the work area during the construction period. The ESAs, WEF, and exclusionary fencing will be fine mesh material (e.g., Animex Fencing or similar) and delineated by the Designated Biologist based on the results of habitat mapping or modeling and any pre-construction surveys, and in coordination with the Authority. The ESA, WEF, and exclusionary fencing locations will be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and WEF will be explained at WEAP training and the locations of the ESA and WEF areas will be noted during worker tailgate sessions.

Fencing installation will be monitored by a Designated Biologist or Biological Monitor to ensure that federally listed species are not injured or killed during installation. Temporary fencing will be installed in areas of construction that are beyond the perimeter of the ROW or in areas where

construction staging will occur. After installation of the temporary fencing, the work area will be surveyed by a Designated Biologist(s) to confirm the absence of federally-listed wildlife. The ESA, WEF, and exclusionary fencing will be regularly inspected and maintained by the Designated Biologist or Biological Monitors to ensure its integrity and that wildlife are not trapped.

CM-GEN-14: Install Aprons or Barriers within Security Fencing

Prior to final construction design, the Project Biologist will review the fencing plans along any portion of the permanent ROW adjacent to natural habitats and confirm that the permanent security fencing will be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below ground and 12 inches above ground to prevent special-status reptiles, amphibians, and mammals from moving through or underneath the fencing and gaining access to areas in the ROW. At the 12-inch depth of the below grade portion of the apron, it will extend or be bent at an approximately 90-degree angle and oriented outward from the ROW a minimum of 12-inches, to prevent fossorial wildlife from digging or tunneling below the security fence. A climber barrier (e.g., rigid curved or bent overhang) will be installed at the top of the apron to prevent wildlife from climbing over the apron. The Project Biologist may coordinate with the Service prior to completion of the fencing design.

The Project Biologist will ensure that the selected apron material and climber barrier will not have the potential to cause harm, injury, entanglement, or entrapment to wildlife species. The Authority will provide for yearly inspection and repair of the fencing.

Prior to construction and operation, the Project Biologist will field inspect the fencing along any portion of the permanent ROW that is adjacent to natural habitats and confirm that the fencing has been appropriately installed. Both the fencing plan review and field inspection will be documented in memorandums from the Project Biologist and provided to the Authority.

CM-GEN-15: Work Stoppage

During construction activities, the Designated Biologists and Biological Monitors will have stop work authority to protect any federally listed wildlife species in the project footprint. This work stoppage will be coordinated with the Authority or its designee. The Contractor will suspend vegetation- or ground-disturbing activities in the work area(s) where the potential construction activity could result in injury or mortality of listed species; work may continue in other areas. The Contractor will continue the suspension until the individual leaves voluntarily or is moved to an approved release area using Service-approved handling techniques and methods, or as required by the Service. Measures from *The Declining Amphibian Task Force Fieldwork Code of Practice* (DAPTF 1998) will be implemented to prevent the introduction and spread of amphibian diseases.

CM-GEN-16: Enforce Construction Speed Limit

A speed limit of 15 mph will be enforced during project construction for all vehicles operating on unimproved access roads and in temporary and permanent construction areas in the limit of direct effect.

CM-GEN-17: Implement Avoidance of Nighttime Light Disturbance

Prior to construction requiring nighttime lighting, the Contractor will prepare a Lighting Plan verifying how the Contractor will shield nighttime construction lighting and direct it downward in such a manner to minimize the light that falls outside the construction site boundaries. The Lighting Plan will be submitted to the Authority for review and approval prior to any work requiring nighttime lighting. The Lighting Plan will describe the type of lighting that will be

used, maximum level of lumens to be emitted, and a schematic showing where lighting equipment will be stationed and which cardinal direction(s) the lighting equipment will face.

Permanent or temporary, fixed, exterior lighting, including motion triggered security lighting that casts light beyond the project footprint between sunset and sunrise will not be used.

CM-GEN-18: Implement Water of Dust Palliative Measures

Water or dust palliatives will be applied to the construction ROW, dirt roads, trenches, spoil piles, and other areas where ground disturbance takes place to minimize dust emissions and topsoil erosion. Dust palliatives will be nontoxic to wildlife and plants. For construction in suitable habitat for listed species, the Biological Monitor will patrol areas of disturbance to ensure that water does not puddle for long periods and attract listed species or other wildlife to the project site. Operational ponding will be avoided through careful grading and hydrologic design. Water tanks will be covered with secure lids. Leaking hoses, tanks, or other sources of inadvertent pooling will be repaired immediately or moved offsite.

CM-GEN-19: Design the Project to Be Bird Safe

Prior to final construction design, the Authority, in consultation with the Project Biologist, will ensure that the catenary system, masts, and other structures such as fencing, electric lines, communication towers and facilities are designed to be bird and raptor-safe in accordance with the applicable recommendations presented in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (APLIC 2012).

Applicable APLIC recommendations include, but are not limited to:

- Ensuring sufficient spacing of phase conductors to prevent bird electrocution
- Configuring lines to reduce vertical spread of lines and/or decreasing the span length if such options are feasible
- Marking lines and fences (e.g., Bird Flight Diverter for fencing and lines) to increase the visibility of lines and reduce the potential for collision. Where fencing is necessary, using bird compatible design standards to increase visibility of fences to prevent collision and entanglement
- Installing perch guards to discourage avian presence on and near project facilities
- Minimizing the use of guy wires. Where the use of guywires is unavoidable, demarcating guywires using the best available methods to minimize avian strikes (e.g. line markers)
- Structures will be monopole or dual-pole design versus lattice tower design to minimize perching and nesting opportunities. Communication towers will conform to *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning* (Service 2018)
- Reusing or co-locating new transmission facilities and other ancillary facilities with existing facilities and disturbed areas to minimize habitat impacts and avoid collision risks
- Use of facility lighting that does not attract birds or their prey to project sites. These include using non-steady burning lights (red, dual red and white strobe, strobe-like flashing lights) to meet Federal Aviation Administration requirements, using motion or heat sensors and switches to reduce the time when lights are illuminated, using

appropriate shielding to reduce horizontal or skyward illumination, and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen). Lighting will not be installed under viaduct and bridge structures in riparian habitat areas

- Ensuring poles do not have openings that could entrap birds; including sealing or capping all openings in poles or providing for escape routes (e.g., openings accommodating escape for various species)
- Designing aerial structures (e.g., viaducts and bridges) and tunnel portals to discourage birds and bats from roosting in expansion joints or other crevices
- Insulated wire or tree wire will be used for all electrical conduits to increase visibility of wires and minimize potential for collision

Additional bird operational actions will be required for dry lakes and playas, Audubon Important Bird Areas, and documented avian movement corridors. These measures include:

- Avoid, to the extent feasible, siting transmission lines across canyons or on ridgelines to prevent bird and raptor collisions
- Install bird flight diverters on all facilities spanning or within 1,000 feet of stream and wash channels, canals, ponds, and any other natural or artificial body of water

Fencing or other type of flight diverter will be installed on all viaduct structures to encourage birds and raptors to fly over the HSR and avoid flying directly in the path of on-coming trains.

CM-GEN-20: Prohibit Pets in Work Areas

No pets will be allowed on site during construction or O&M.

CM-GEN-21: Prepare Post-Construction Compliance Report

A post-construction compliance report will be submitted to the Service upon completion of each construction package, as defined by the Authority-Contractor D/B contracts. The post-construction compliance report will provide the following information:

- Dates of project groundbreaking and completion
- Pertinent information concerning the success of the project in meeting compensation and other conservation measures
- Known project effects on listed species
- Observed incidences of injury or mortality of any listed species
- Other pertinent information

CM-GEN-22: Notification of Dead, Injured, or Sick Wildlife

The Authority will notify the Service within 24 hours if dead, injured, or sick listed species are observed.

Conservation Measures Specific to Bay Checkerspot, Callippe Silverspot, and Mission Blue Butterflies

CM-INS-01: Avoiding Direct Impacts on Bay Checkerspot, Callippe Silverspot, and Mission Blue Butterfly Larvae

Prior to construction, the Designated Biologist will survey for checkerspot, callippe, and mission larval host plants, such as dwarf plantain, densenflower Indian paintbrush, English plantain,

purple owl's-clover, exerted paintbrush, johnny jump-up, silver lupine, summer lupine, manycolored lupine, within suitable habitat. If host plants are found within the project footprint, the Designated Biologist will search the plant and immediate area for eggs or larvae. If eggs or larvae are found, the Service will be contacted.

Conservation Measures Specific to California Red-legged Frog and San Francisco Garter Snake

CM-HERP-01: Conduct Pre-Construction Surveys for California Red-Legged Frog and San Francisco Garter Snake

Where suitable habitat has been identified within the project work area and prior to any ground-disturbing activities a Designated Biologist will conduct a pre-construction survey of the work area and the suitable habitat immediately adjacent to the work area. The results of the pre-construction survey will be used to guide the placement of ESAs and WEF, as described below in CM-HERP-3.

CM-HERP-02: Implement Avoidance and Minimization Measures for California Red-Legged Frog and San Francisco Garter Snake

Construction activities within 100 feet of suitable aquatic habitat will take place May 15 through October 31, when the watercourses are dry or at their lowest water level and the frog and the snake are less likely to be present. Construction will also include, but will not be limited to, the following design restrictions within the narrow strip of modeled habitat between the Caltrain ROW and the suburban development of the City of San Bruno in order to avoid the maximum amount of suitable habitat:

- The middle TCE at approximately San Felipe Avenue will be removed in order to avoid Drainage Ditch 7.
- The northern communication radio tower antennae at approximately San Mateo Avenue will be shifted to the north to avoid aquatic and refugia/foraging habitat, including Highline Creek Tributary.
- The TCE located just south of Santa Helena Avenue will be reduced in size to avoid Highline Creek and the associated drainage ditch.

All leaf litter and ground vegetation present within each work and access area will be cleared by hand under the direct supervision of the Designated Biologist or Biological Monitor. No worker foot traffic will occur in areas where leaf litter or vegetation debris is present, and no construction equipment or materials will be driven, parked, or placed on leaf litter or vegetation in suitable habitat. Any leaf litter or vegetation remaining will be fenced with WEF at the direction of the Designated Biologist or Biological Monitor (Service 2015).

The Designated Biologist or Biological Monitor will monitor all initial ground-disturbing activities that occur within suitable habitat for the frog and the snake and will conduct clearance surveys of suitable habitat in the work area on a daily basis. If the frog or the snake are observed within the work area, all work within 100 feet of the individual will stop until the Designated Biologist or Biological Monitor confirms the individual has left the work area of its own volition. Such actions may include establishing a temporary ESA in the area where a frog or a snake has been observed and delineating a 100-foot no-work buffer around the ESA. If the individual needs to be moved, it will be relocated by the Designated Biologist outside the project footprint but within the action area. Measures from *The Declining Amphibian Task Force Fieldwork Code of Practice* (DAPTF 1998) will be implemented to prevent the introduction and spread of amphibian diseases.

Work activities that will be conducted at night within 50 feet of sensitive habitats for the frog and snake identified during pre-construction surveys (including riparian habitat, streams, creeks, or freshwater marsh) will direct construction light inward toward the ROW and away from sensitive habitat areas. If lights cannot be directed in a way to avoid fugitive light from leaving the project footprint, then fully and/or partially shielded lights will be used to restrict all light to the project footprint during night work.

Disturbance of riparian vegetation types identified as providing habitat for frog or snake during pre-construction surveys will be minimized to the extent feasible, and any riparian vegetation removed will be replaced at a 2:1 ratio. Removed riparian trees will be planted along the affected stream corridor, wherever feasible. Although the planting will not be in the original locations, new riparian plantings will provide shade for the affected creeks in nearby unshaded areas to offset any potential habitat effect from construction or maintenance.

CM-HERP-03: Install, Monitor, and Maintain Exclusion Barriers for San Francisco Garter Snake and California Red-Legged Frog

Prior to any ground-disturbing activity adjacent to or within snake and frog suitable habitat, including artificial features such as culverts and constructed basins, the contractor, under the direction of the Designated Biologist, will install temporary WEF along the boundary of the work area consistent with CM-GEN-13. WEF must be installed for a 2-week period prior to the initiation of ground-disturbing activity and trenched into the soil at least 6 inches deep, with the soil compacted against both sides of the fence for its entire length to prevent snakes and frogs from passing under the fence. The WEF must have exit funnels every 200 feet. Cover boards will be provided along the inside and outside of the WEF to provide shade and refugia from predators. Shrubs within 5 feet of the outside of the fence will be trimmed if they provide climbing opportunities. The fence will be secured to metal posts and/or wooden stakes to ensure it remains upright and does not fall over. Posts/stakes will be placed on the inside of the fence to prevent climbing (Service 2015).

As appropriate to discourage frogs from entering the project impact areas via freshwater ditches, the ditches will be equipped with lightweight, one-way flow gates. These will be designed so that water can easily pass from the project site to the ditches, but small vertebrates such as the frog cannot move upstream from the ditches to the project site. This measure will only apply between November 1 and March 31 (e.g., rainy season).

The Designated Biologist or Biological Monitor will monitor construction activities inside the WEF on a full-time basis during the peak activity period for snakes and frogs (March to October) and will conduct daily inspections of the WEF prior to and during any construction activities inside the WEF from August to February. No work will occur within WEF areas on days with a 40 percent chance or greater for rain or within 24 hours after a rain event. Vehicle speeds inside WEF work areas will be limited to 5 mph. Any needed repairs to the WEF will be made within 24 hours. During monitoring and daily inspections, the Designated Biologist or Biological Monitor will check for snakes and frogs under vehicles and equipment that have been inactive for periods of 8 hours or more. Temporary WEF will be removed after all ground disturbance and equipment use (including vehicles) for the activity is completed. Post-construction inspections of the work area on foot will not require the installation of additional WEF.

Compensatory Habitat

To offset project impacts, the Authority will provide compensatory habitat mitigation that seeks to increase the amount of protected habitat for federally listed species; preserve and

enhance important wildlife movement corridors; and consolidate and expand existing protected habitat.

The Authority will secure conservation easements, and develop long-term management plans, for compensatory mitigation sites. The list of potential compensatory mitigation sites has not been finalized and is subject to augmentation with Service approval. The final compensatory mitigation sites will be selected based on their relatively high conservation value (e.g., proximity to other protected habitats or conserved areas such as core habitat areas, linkages connecting core habitat patches); location within important wildlife movement corridors, recovery areas, or designated critical habitat; presence of listed species and/or suitable habitat (i.e., high species richness/high biodiversity sites); mitigation habitat overlap among species; and ability to satisfy the requirements of the Service and other permitting agencies. The permanent protection of the compensatory mitigation sites will also support goals identified for the butterflies, the frog, and the snake in the recovery plans for these species by protecting habitat (Service 1984, Service 1985, Service 2002, Service 2019).

For all proposed mitigation sites, long-term management plans, conservation easements, and funding analyses for the long-term endowments will be submitted to the Service for review and approval before the plans are finalized and implemented. The Authority may also purchase species habitat credits at a Service-approved conservation or mitigation bank in addition to securing compensatory sites.

If newly protected habitat with conservation easements and Service-approved mitigation conservation banks are not available for the Authority, restoration projects may be approved by the Service in protected areas where the species is known to occur and where the greatest benefit to the species would occur.

To avoid a temporal loss of habitat and reduce project effects to listed species, the Authority's proposed mitigation strategy includes securing compensatory mitigation prior to the start of or concurrent with the commencement of construction. Compensatory mitigation will be secured in phases in accordance with the progress of construction of the project. As such, the Authority's proposed mitigation strategy will ensure that the compensatory mitigation will be secured before or concurrent with the commencement of construction for each Construction Package (CP) that may impact listed species. In the event that it is not possible to secure all of the compensatory mitigation for each CP in advance, it will be completed no later than 18 months after the initiation of ground disturbance of each CP.

Reporting

The Authority will submit monthly and annual reports to the Service documenting compliance with the conservation measures and this biological opinion. The reports will include summaries of the habitat assessment and species-specific pre-activity surveys and findings, observations and incidental take of threatened or endangered species, compliance with conservation measures successfully implemented, noncompliance events and corrections or adjustments to meet compliance, an accounting of the cumulative total number of acres of species suitable habitat that has been disturbed (with associated GIS layers, associated metadata, and photo documentation), and the type and number of acres for which compensatory mitigation has been secured. For each species, a cumulative acreage of habitat loss will be presented in a table.

Action Area

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” The action area (Figure 2) includes the project footprint and the lands surrounding it. The project footprint includes the rail alignment as well as associated project structures such as roadway improvements, overcrossings, related ancillary facilities, and other permanent project elements, such as the East Brisbane LMF. The project footprint includes 830 acres. The area affected by disturbance from noise, vibration, dust, and lighting during project construction and operations extends 1,000 feet from both sides of the project footprint and is estimated to include 10,776 acres. Therefore, the total action area that will be evaluated for potential effect from the San Francisco to San Jose Project Section of the HSR system under this biological opinion is 11,606 acres.



MAY 2020

Figure 2 Action Area

Analytical Framework for the 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 will 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 considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the project, 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 determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the project is likely to jeopardize the continued existence of the listed species.

Status of the Species

Callippe Silverspot Butterfly

Please refer to the *Species Status Assessment for the Callippe Silverspot Butterfly (Speyeria callippe callippe)* (Service 2020a) and the *5-Year Review Callippe Silverspot Butterfly (Speyeria callippe callippe)* (Service 2020b) for the most recent comprehensive assessment of the species' range-wide status. The 5-year review found habitat loss and degradation, including invasion by nonnative species, continue to be the primary threats to the species' recovery and that the species continues to meet the criteria for the endangered listing (Service 2020b). To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

Bay Checkerspot Butterfly

Please refer to the *Bay Checkerspot Butterfly (Euphydryas editha bayensis) 5-Year Review: Summary and Evaluation* (Service 2009) for the most recent comprehensive assessment of the species' range-wide status. The review found that because of continued population declines and habitat loss, the butterfly is at greater risk of extinction now than at the time of listing and may warrant reclassification to endangered status. Threats evaluated during that review have continued to act on the species since the 2009 5-year review was finalized. After being extirpated from San Bruno Mountain in northern San Mateo County in the 1980s, Bay checkerspot butterfly larvae were reintroduced to San Bruno Mountain in 2017-2021 (Creekside Science 2022). Bay checkerspot butterfly larvae at San Bruno Mountain were observed utilizing the more abundant nonnative English plantain (*Plantago lanceolata*) as a larval host plant in addition to its traditional native host plant dwarf plantain (*Plantago erecta*) (Creekside Science 2022). To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

Mission Blue Butterfly

Please refer to the *Mission Blue Butterfly (Icaricia icariodes missionensis) 5-Year Review* (Service 2010b) and the *Recovery Plan for San Bruno Elfín Butterfly (Callophrys mossii)*

bayensis) and *Mission Blue Butterfly* (*Icaricia icariodes missionensis*) *Recovery Plan Amendment* (Service 2019b) for the most recent comprehensive assessment of the species' range-wide status. The 5-year review reaffirms the species' endangered status. Habitat degradation by encroachment of coastal chaparral, coastal scrub succession, and non-native grasses and associated thatch build-up is now considered the most serious threat to the species. To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

California Red-Legged Frog

Please refer to the *Recovery Plan for the California Red-Legged Frog (Rana draytonii)* (Service 2002) for the most recent comprehensive assessment of the species' range-wide status. Threats evaluated during that review and discussed in the recovery plan have continued to act on the species since the review was published, with loss of habitat and invasive species (e.g., bullfrogs) being the most significant effect. To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

San Francisco Garter Snake

Please refer to the *Species Status Assessment for the San Francisco Garter Snake (Thamnophis sirtalis tetrataenia)* (Service 2020c) for the most recent comprehensive assessment of the species' range-wide status. A recent *5-Year Review for the San Francisco Garter Snake (Thamnophis sirtalis tetrataenia)* (Service 2020d) reaffirmed the species' endangered status. Current threats include fragmentation and urbanization, changes to aquatic habitat, seral succession, illegal collection, predation from non-native species, and small population sizes (Service 2020d). To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

Environmental Baseline

Environmental baseline refers to 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 project. 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.

The action area is within one U.S. Department of Agriculture Ecoregion section; the Central California Coast. This section includes the eastern side of the San Francisco Peninsula and the northern portion of the Santa Clara Valley. Terrain is low to moderate elevation with parallel ranges and valleys. The bedrock is sedimentary, granitic, and ultramafic formations. Vegetation is a mixture of western hardwoods, chaparral-mountain shrub, and annual grassland cover types, with many of the species adapted to fire. The Central California Coast ecoregion includes South San Francisco Bay, San Bruno Mountain, Edgewood Park, and the South Bay Baylands. The climate for the ecoregion is Mediterranean-like, with mild, wet winters and hot, dry summers with brief periods of drought (USDA 2007).

Stressors

Common stressors in the action area to most or all the species include:

- Disturbance to habitat from urbanization, energy development (oil, gas, and solar), grazing, and agriculture
- Impacts from introduction of non-native invasive species (plants and insects)
- Herbicide and pesticide use
- Small population size
- Predation
- Climate change (including impacts from regional flooding, drought and fire)
- Inadequacy of existing regulatory mechanisms
- The presence of roads, routes, trails, railroads, and utility corridors in suitable habitat.
- Vehicle-caused mortality

Species

The Authority used species habitat suitability modeling initially to delineate potentially suitable habitat (hereinafter referred to as *modeled habitat*) and to estimate potential species distribution in the action area along the alignment. It can be reasonably assumed that not all modeled habitat will be occupied. The modeling effort used rule-based models for the butterflies, the frog, and the snake.

The rule-based models identified potentially suitable habitat based on scientific literature and species expert input related to the physical and biological habitat parameters associated with species occurrence. In the BA, *Suitable habitat* is defined as any land cover type that is known to provide the resources and conditions necessary for survival and reproduction of a listed species (Hall et al. 1997). The precision of the species models is greatest in the project footprint, and within 1,000 feet of the edge of the project footprint, where detailed vegetation mapping was conducted using high resolution aerial photography and field reconnaissance surveys where access was available.

The results of the species habitat suitability modeling were applied to the following:

The species habitat suitability models were overlain with the project footprint to determine the total area of potential impact to each species' modeled habitat within the action area.

Species habitat suitability models provided information for the development and application of species-specific conservation measures and for the determination of the amount of compensatory mitigation that may be necessary to offset impacts to species and their habitat.

Butterflies

The action area contains 300 acres of modeled butterfly habitat in the San Francisco to South San Francisco project section. Approximately 31 acres of modeled dispersal and nectaring habitat for the butterflies are in the project's temporary disturbance footprint, and approximately 66 acres are in the permanent disturbance footprint.

The project alignment is within the range of the butterflies. There is suitable breeding (grasslands with sufficient larval host plants, proper topography, adequate nectar sources, areas influenced by coastal fog, and hilltops for mating congregations) and dispersal and nectaring habitat (ruderal or annual grassland with native and non-native flowering plants, e.g., thistles, within dispersal distance of occupied habitat) has been mapped within the action area, and there are documented occurrences within the action area.

In the action area, suitable breeding habitat and known occurrences of the butterflies are on San Bruno Mountain (San Mateo County Parks Department 2018), which is outside of the project footprint. Suitable dispersal and nectaring habitat is mapped in the grassland areas between Highway 101 and Bayshore Drive north of San Bruno Mountain and south of Bayview Park.

Between the existing railway and occupied habitat on San Bruno Mountain, there is Bayshore Boulevard and eight lanes of Highway 101 traffic, as well as the existing train traffic, which pose collision risks to dispersing butterflies.

California Red-Legged Frog

The action area contains 167 acres of modeled habitat for the frog in the San Bruno to South San Mateo project section. Approximately 0.1 acre of modeled aquatic habitat and 0.1 acre of upland habitat are in the project's temporary disturbance footprint, and approximately 0.4 acre of aquatic habitat and 6.0 acres of upland habitat are in the permanent disturbance footprint.

The project alignment is within the range of the frog. Suitable breeding aquatic (freshwater wetlands) and upland habitat (grassland, riparian) has been mapped within the action area, and there are documented occurrences within the action area. In the action area, suitable habitat and frog occurrences occur on the San Francisco International Airport West-of-Bayshore property, located between Angus Avenue in San Bruno and the Millbrae Station. Between Highway 101 and the occupied marsh complex, runs the existing railway for Caltrain and the BART ROW. Specifically, BART's cement fence serves as the western-most boundary to the marsh complex and is considered a complete barrier to western movement of the frog. However, several culverts under the Caltrain and BART railways provide connectivity to the ruderal grassland patches on the western side of the Caltrain ROW. Once on the western side of the Caltrain ROW, frogs could enter the Caltrain railway through the existing cyclone fence. While no other occurrences are known within the action area, suitable habitat is mapped within the action area at the following 20 watercourses south of the West-of-Bayshore property.

- Mills Creek
- Highline Creek Tributary
- Easton Creek
- Sanchez Creek
- Burlingame Creek
- San Mateo Creek
- Borel Creek
- Laurel Creek
- Belmont Creek
- Pulgas Creek
- Cordilleras Creek
- San Francisquito Creek
- Matadero Creek
- Barron Creek

- Adobe Creek
- Permanente Creek
- Stevens Creek
- Sunnyvale East Channel
- Calabazas Creek
- San Tomas Aquino Creek

San Francisco Garter Snake

The action area contains 132 acres of modeled habitat for the snake in the San Bruno to South San Mateo project section. Approximately 0.1 acres of modeled aquatic habitat and 0.1 acres of modeled upland habitat are in the project's temporary disturbance footprint, and approximately 0.4 acre of aquatic habitat and 6.0 acres of upland habitat are in the permanent disturbance footprint.

The project alignment is within the range of the snake. Suitable breeding aquatic (freshwater wetlands) and upland habitat (grassland, riparian) has been mapped within the action area, and there is one documented occurrence within the action area. In the action area, suitable habitat and the snake occurrence are located at the San Francisco International Airport West-of-Bayshore property, located between Angus Avenue in San Bruno and the Millbrae Station.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the project, including the consequences of other activities that are caused by the project. A consequence is caused by the project if it will not occur but for the project 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.

The project will result in the temporary and permanent loss of suitable habitat for the butterflies, frog, and snake. Temporary habitat loss is any ground disturbance that can be restored to pre-disturbance conditions within 1 year. Permanent habitat loss includes ground disturbance that will last more than 1 year or any habitat conversion from suitable to non-suitable.

Table 2 shows maximum habitat loss for the 5 federally listed species addressed in this biological opinion. Adverse effects or impacts on species habitat are expressed as the maximum estimated acreage of suitable habitat affected by construction and operation of the project. Habitat models were developed to estimate habitat suitability and the presence of federally listed species is assumed in the absence of surveys.

Table 2 Maximum Temporary and Permanent Suitable Habitat Loss

Species	Habitat Type	Maximum Temporary Habitat Loss (acres)	Maximum Permanent Habitat Loss (acres)
Callippe silverspot butterfly	Occupied breeding and rearing	0.0	0.0
Bay checkerspot butterfly	Potentially suitable breeding and rearing	0.0	0.0
Mission blue butterfly	Nectaring and dispersal	31	66
California red-legged frog	Aquatic	0.1	0.4
	Refugia/foraging	0.1	6.0
San Francisco garter snake	Aquatic	0.1	0.4
	Refugia/foraging	0.1	6.0

Butterflies

The project is anticipated to affect the butterflies where suitable habitat is identified in the action area. The butterflies are reasonably certain to occur on all modeled habitat in the project footprint which is 97 acres of nectaring and dispersal habitat (Table 2).

The construction of a radio communications tower will result in the permanent loss of less than 0.1 acre, and the temporary loss of 0.1 acre, of nectaring and dispersal habitat on San Bruno Mountain. The radio communications tower is located just north of MK Pipelines, Inc. on Bayshore Boulevard. The impacted location is at the bottom of San Bruno Mountain, to the north of the main, occupied hilltop habitat and is partially fragmented by private homes off San Bruno Avenue (e.g., Firth Park).

Construction of the East Brisbane LMF will result in the permanent loss of 65.7 acres, and the temporary loss of 30.6 acres, of modeled nectaring and dispersal habitat which occurs between the currently occupied habitat on San Bruno Mountain and the potentially suitable breeding habitat at Bayview Park. The loss of habitat will be offset by compensatory habitat mitigation which will provide for the additional protection of 66 acres of listed butterfly habitat or 198 acres of restoration to known occupied and protected habitat. This will occur through the development of permittee responsible mitigation site(s), purchase of species credits at a Service- approved conservation or mitigation bank, and/or performing restoration activities on protected lands.

Eggs or larvae are not expected to be affected by the project, but there is potential for dispersing adults to be injured or killed as a result of project construction. Injury and mortality could result from the following:

- Collisions with or crushing of adults feeding on nectar plants by vehicles or equipment operating during the adult flight season (late February to late July)
- Disturbance and displacement of individuals from noise, vibration, and air turbulence.

Train operation has the potential to increase the risk of vehicle-related mortality in the area, as some individuals could be struck by a passing train. However, because most movement distances for these butterfly species are short, train collision is likely to be low.

The checkerspot and the mission have small home ranges and are unlikely to disperse far from the hilltop portions of the mountain where breeding occurs. McKechnie et al. observed that only 1.7 percent of males and 4.8 percent of female checkerspots moved a distance of approximately

1,600 feet (Service 2009). These figures are consistent with observations made by Weiss (1996, p. 93) who reported that adult movement declined with increasing distance with only about 5 percent moving between 656 to 984 feet. (200 to 300 meters). Mission are described as weak fliers, but are capable of 400–600-meter flights or farther between habitat patches (MacDonald et al. 2012). The callippe is known to disperse longer distances and thus has the greatest potential for collision. The callippe moves at least 0.8 mile between habitat patches and likely can move farther (1.5 miles) in multiple movement sequences (Service 2009b: page 23).

Train maintenance vehicles or staff could crush adults during inspections, emergency repairs, or vegetation management activities. Use of herbicides for weed abatement during operations or maintenance activities could affect butterfly host plants and nectar plants outside the ROW if applied near populations (e.g., drift effect). Chemical runoff from trucks or equipment along the ROW for access roads could leach into soils and reduce the vigor of or kill host plants and nectar plants. Construction could introduce nonnative invasive plant species that could permanently degrade grassland habitat by displacing the butterflies' host and nectar plants.

To avoid and minimize adverse effects on the butterflies from the project, the Authority has proposed general and species-specific conservation measures including but not limited to pre-construction surveys, Biological Monitors, establishment of ESAs, Weed Control Plan, Biological Resources Management Plan, and water and dust palliative measures. Suitable habitat for the butterfly that is temporarily disturbed will be restored to pre-disturbance conditions following construction. Compensatory mitigation, as described in the *Description of the Project*, for the butterflies will be implemented for permanent impacts to suitable nectaring and dispersal habitat between San Bruno Mountain and Bayview Park. This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the project. Providing this compensatory habitat mitigation will offset the loss of habitat and may contribute to other recovery efforts for the species.

California Red-Legged Frog

The project is anticipated to affect the frog where suitable habitat is identified in the action area. Of the 14.3 acres of modeled habitat in the project footprint, frogs are reasonably certain to occur in approximately 6.6 acres (0.5 acres of modeled aquatic habitat and 6.1 acres of modeled upland habitat). Modeled habitat that overlaps with the action area is made up of aquatic and upland land cover types that exist primarily as small patches of stream, wetland, grassland, and riparian habitat along the otherwise highly developed railway corridor with one exception: the West-of-Bayshore property west of the San Francisco International Airport. This approximately 80-acre parcel is an intact, remnant freshwater marsh, grassland, and scrub community that is occupied by a population of frogs.

The amount of modeled habitat that overlaps with the project footprint occurs to the west of the Caltrain alignment between Center Street and San Felipe Avenue in San Bruno. The modeled habitat occurs in a narrow strip of undeveloped land that is made up of non-native grassland, riparian scrub, and small patches of wetland and constructed watercourse. Several small creeks that drain the nearby San Bruno neighborhoods contribute runoff to this narrow strip of land. Runoff water is then moved by gravity through culverts under the Caltrain and BART ROWs and into the West-of-Bayshore property.

Frogs are not expected to be present on the remaining 7.7 acres of modeled habitat due to distance from suitable aquatic breeding habitat, fragmentation by roads and other infrastructure, and development density.

There is potential for individuals to be injured or killed as a result of project construction and relocation. Injury and mortality could occur from the following:

- Construction-related ground disturbance (e.g., grading, earth-moving, vibration, excavation, exclusion fencing) and vehicle and equipment operation that could crush, entomb, or physically harm individual frogs.
- Construction activities may result in the degradation, destruction, or dewatering of an aquatic feature containing frog adults, juveniles, or eggs.
- Dispersing frogs may become entrapped in construction materials or in excavation(s).
- Disturbance and displacement of individuals from noise and vibration.
- Capture, transport, and release of individual frogs found within the construction site.

Train O&M activities have the potential to injure or kill frogs. Trains can strike an individual that has entered the railway. The use of chemicals and hazardous substances during construction (e.g., oils, gasoline) may cause frog mortality if individuals enter aquatic habitat that has been contaminated by accidental spills or other vehicle and equipment leaks. The introduction of nonnative plant species to upland habitat could reduce frog dispersal because dense herbaceous vegetation could impede movement. Conservation measures such as exclusion fencing will reduce potential to injure or kill frogs.

Amphibian pathogens and parasites can be carried between habitats on the hands, footwear, or equipment of fieldworkers, spreading such pathogens or parasites to novel localities containing species that have had little or no prior contact with them. Construction could introduce nonnative diseases that could kill frogs. One example is chytridiomycosis, an infectious disease that affects amphibians worldwide. It is caused by the chytrid fungus (*Batrachochytrium dendrobatidis*), a fungus capable of causing sporadic deaths in some amphibian populations and 100 percent mortality in others. Conservation measures from *The Declining Amphibian Task Force Fieldwork Code of Practice* (DAPTF 1998) will be implemented to prevent the introduction and spread of amphibian diseases and parasites.

The modeled habitat to the west of the Caltrain ROW the West-of-Bayshore property, because it is occupied and in proximity to the railway, is the only location where there is the likelihood of a small increase to existing train strike potential because of the increase in the number of trains under project operations. The West-of-Bayshore property is located between Highway 101 and the San Francisco International Airport. As noted above, the increase in potential for strike is related to an increase in the number of trains and not any other change in connectivity or habitat suitability.

To minimize and avoid the effects of the project on the frog, the Authority has proposed general and frog-specific conservation measures, including pre-construction surveys, daily surveys, exclusion fencing, and Biological Monitors. Security fencing will be designed to exclude the species from accessing the ROW to avoid injury and mortality of individuals from vehicle or train strikes. Suitable habitat for the frog that is temporarily disturbed will be restored to pre-disturbance conditions following construction, and large continuous swaths of habitat will remain intact adjacent to the project. Compensatory mitigation, as described in the *Description of the Project*, for the frog will also be implemented for permanent impacts on suitable habitat. This component of the action will have the effect of protecting and managing lands for the species'

conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the project. Providing this compensatory habitat mitigation will offset the loss of habitat and may contribute to other recovery efforts for the species.

San Francisco Garter Snake

The project is anticipated to affect the snake where suitable habitat is identified in the action area. The snake is reasonably certain to occur on all modeled habitat in the project footprint, which is 6.6 acres (0.5 acre of modeled aquatic habitat and 6.1 acres of modeled upland habitat). Modeled habitat is made up of aquatic and upland land cover types that exist primarily as small patches of stream and riparian habitat along the otherwise highly developed railway corridor with one exception: the West-of-Bayshore property west of the San Francisco International Airport. This approximately 80-acre parcel is an intact, remnant freshwater marsh, grassland, and scrub community that is occupied by snakes.

There is potential for individuals to be injured or killed as a result of project construction and relocation. Injury and mortality could occur from the following:

- Construction-related ground disturbance (e.g., grading, earth-moving, vibration, excavation, exclusion fencing) and vehicle and equipment operation that could crush, entomb, or physically harm individual snakes.
- Construction activities may result in the degradation, destruction, or dewatering of an aquatic feature and could limit prey items and escape habitat for the snake.
- Dispersing snakes may become entrapped in construction materials or in excavation(s).
- Disturbance and displacement of individuals from noise and vibration.
- Capture, transport, and release of individual snakes found within the construction site.
- Chemicals and hazardous substance leaks during construction (e.g., oils, gasoline) may cause mortality of snakes and their prey if individuals enter aquatic habitat that has been contaminated by accidental spills or other vehicle and equipment leaks.

Train O&M activities have the potential to injure or kill snakes. Trains can strike an individual that has entered the railway. Occupied snake habitat is located east of the project footprint at the West-of-Bayshore property which is located between Highway 101 and the San Francisco International Airport. Between Highway 101 and the occupied marsh complex runs the existing railway for Caltrain and the BART ROW. Specifically, BART's cement fence serves as the western-most boundary to the marsh complex. BART's cement fence is considered a complete barrier to western movement of the snake. However, several culverts under the Caltrain and BART railways provide connectivity to the ruderal grassland patches on the western side of the Caltrain ROW. Once on the western side of the Caltrain ROW, snakes could enter the Caltrain railway through the existing cyclone fence. As noted above, the increase in potential for strike is related to an increase in the number trains and not any other change in connectivity or habitat suitability.

To minimize and avoid the effects of the project on the snake, the Authority has proposed general and snake-specific conservation measures, including pre-construction surveys, daily surveys, exclusion fencing, and Biological Monitors. Security fencing will be designed to exclude the species from accessing the ROW to avoid injury and mortality of individuals from vehicle or train strikes. Suitable habitat for the snake that is temporarily disturbed will be

restored to pre-disturbance conditions following construction, and large continuous swaths of habitat will remain intact adjacent to the project. Compensatory mitigation, as described in the *Description of the Project*, for the snake will also be implemented for permanent impacts on suitable habitat. This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the project. Providing this compensatory habitat mitigation will offset the loss of habitat and may contribute to other recovery efforts for the species.

Compensatory Habitat

As described in the *Description of the Project*, the Authority is proposing to provide compensatory habitat as part of the project. This compensatory habitat mitigation is intended to offset the effect on the species of the project's anticipated incidental take, resulting from the permanent and temporary loss, modification, and/or degradation of habitat described above. The compensatory habitat proposed will be in the form of placing conservation easements with long-term management plans on compensatory mitigation sites and/or the purchase of species habitat credits at a Service- approved mitigation or conservation bank. If these options are unavailable, the Service can approve appropriate restoration activities on land already protected and conserved for the species where the species is known to occur.

The amount of suitable habitat for each species that will be provided as compensatory habitat is as follows:

- butterflies – 66 acres newly conserved land or 198 acres of restoration activities on land already protected
- frog, aquatic– 1.2 acres
- frog, upland – 6.1 acres
- snake, aquatic – 1.2 acres
- snake, upland – 6.1 acres

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the project. Providing this compensatory habitat mitigation will offset the loss of habitat and may contribute to other recovery efforts for the species.

Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the project are not considered in this section because they require separate consultation pursuant to Section 7 of the Act.

The Service does not have specific information regarding future non-federal actions within the project action area.

Conclusion

After reviewing the current status of the butterflies, the frog, and the snake; the environmental baseline for the action area; the effects of the project; and the cumulative effects, it is the Service's biological opinion that the construction of the San Francisco to San Jose Project

Section, as proposed, is not likely to jeopardize the continued existence of these species. The Service reached this conclusion because the project-related effects on the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not result in precluding recovery or appreciably reducing the likelihood of survival of these species based on the following:

- 1) The conservation measures are designed to avoid or minimize and offset adverse impacts on these species and their habitat.
- 2) Project activities that will result in temporary and permanent impacts to species habitat only occur on a small percentage of habitat within the action area and a small percentage of habitat throughout the full range of these species.
- 3) Protection of habitats with compensatory mitigation will preserve and/or restore habitat in the same recovery areas (as applicable) affected by construction and operation of the project.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened 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. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Authority so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Authority has a continuing duty to regulate the activity covered by this incidental take statement. If the Authority (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant 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 Authority 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

Butterflies

The Service anticipates that incidental take of the butterflies will be difficult to detect due to their life history and ecology. The butterflies inhabit host plants (dwarf plantain, denseflower Indian

paintbrush, English plantain, purple owl's-clover, exserted paintbrush, johnny jump-up, silver lupine, summer lupine, manycolored lupine) and spend most of their lifespan in the egg, larva, or pupa stage, making them difficult to detect. Therefore, the amount of habitat for these species that will be impacted as a result of the project will be used as a surrogate for quantifying take. The Service anticipates that dispersing adult butterflies within the 31 acres of nectaring and dispersal habitat that will be temporarily disturbed and the 66 acres of nectaring and dispersal habitat that will be permanently removed by the project could be subjected to incidental take in the form of injury, killing, harm, or harassment. The Service does not anticipate mortality of larvae, pupae, or eggs due to the lack of host plants within the project footprint.

California Red-Legged Frog

The Service anticipates that incidental take of the frog will be difficult to detect due to its life history and ecology. Specifically, the frog can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of the frog may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in their habitat, or additional environmental disturbances. Therefore, the amount of habitat for the frog that will be impacted as a result of the project will be used as a surrogate for quantifying take. The Service anticipates that all frogs, in all life stages, within 0.4 acre of suitable aquatic breeding habitat and 6.1 acres of suitable upland and refugia habitat that will be disturbed by the project could be subjected to incidental take in the form of injury, mortality, capture, harm, or harassment.

San Francisco Garter Snake

The Service anticipates that incidental take of the snake will be difficult to detect due to its life history and ecology. The snake can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of the snake may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in their habitat, or additional environmental disturbances. The Service anticipates that all snakes within 0.4 acre of suitable aquatic habitat and 6.1 acres of suitable upland and refugia habitat that will be disturbed by the project could be subjected to incidental take in the form of injury, mortality, capture, harm, or harassment.

The Service cannot precisely state the number of individuals within the project area due to the reasons mentioned above. In order to develop an estimate of the number of snakes within the project area, we will use the population estimates developed by Wood, et al. (2020) on the nearby West-of-Bayshore property. Wood et al. estimated 1,317 snakes on the 180-acre property (100 acres upland, 80 acres wetland), or 16 snakes per wetland acre. This project will disturb 0.4 acres of suitable wetland habitat which, based on the population estimate of 16 snakes per wetland acres, could contain 6 snakes. Therefore, the Service anticipates that 6 snakes will be subject to incidental take in the form of injury, mortality, capture, harm or harassment.

Upon implementation of the following Reasonable and Prudent Measures, these levels of incidental take associated with the San Francisco to San Jose Project Section in the form of harm, harassment, injury, and death of the butterflies and harm, harassment, capture, injury, and death of the snake and frog caused by habitat loss, construction activities, and O&M activities will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to jeopardize the continued existence of the butterflies, the frog, and the snake.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the butterflies, the snake, and the frog resulting from implementation of the San Francisco to San Jose Project Section have been incorporated into the project's conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the butterflies, the frog, and the snake:

- 1) All conservation measures, as described in the *Description of the Project* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Authority must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

- 1) The Authority will include full implementation and adherence to the conservation measures described in the *Description of the Project* section of this biological opinion as a condition of any permit or contract issued for the project.
- 2) The Authority will require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
- 3) In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, the Authority will adhere to the reporting requirements described in the *Description of the Project*. Should this anticipated amount or extent of incidental take be exceeded, the Authority must immediately reinstate formal consultation, as per 50 CFR 402.16(a).
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, the Authority will provide a precise accounting of the total acreage of habitat impacted to the Service on a monthly and annual basis as described in the reporting section of the *Description of the Project*.
- 4) The San Joaquin Valley Division Supervisor at the Sacramento Fish and Wildlife Office, (916) 414-6544, should be included in all reporting and Service notification referenced in the *Description of the Project*.
- 5) Because it is likely that the Authority will not begin construction on the project for a number of years, the Authority will confer with the Service no less than 1 year before the start of project construction to assess any changes to the project, the species baseline in the action area, and potential changes to the effects from the project on listed species. This process will ensure that the assessment of impacts and proposed avoidance and minimization measures within this biological opinion are still accurate and reflect existing conditions on the ground.

Salvage and Disposition of Individuals:

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the San Joaquin Valley Division Supervisor at the Sacramento Fish and Wildlife Office at (916) 414-6544.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize 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 project on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

- 1) The Authority should continue to work with the Service to assist us in meeting the goals of the *Recovery Plan for Serpentine Soil Species of San Francisco Bay Area* (Service 1998), *Recovery Plan for Mission Blue Butterfly* (*Icaricia icariodes missionensis*) *Recovery Plan Amendment* (Service 2019b), *Recovery Plan for the California Red-Legged Frog* (*Rana aurora draytonii*) (Service 2002), and the *Recovery Plan for the San Francisco Garter Snake* (*Thamnophis sirtalis tetrataenia*) (Service 1985).
- 2) The Authority should continue to work with the Service to implement the conservation recommendations in the *Species Status Assessment for the Callippe Silverspot Butterfly* (*Speyeria callippe callippe*) (Service 2020a) and the *5-Year Review Callippe Silverspot Butterfly* (*Speyeria callippe callippe*) (Service 2020b).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the California High-Speed Rail System: San Francisco to San Jose Project Section. As provided in 50 CFR §402.16(a), reinitiation of consultation is required and shall be requested by the federal agency or by the Service where discretionary federal involvement or control over the action has been retained or is authorized 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 the biological opinion; or written concurrence, or

- 4) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Maggie Sepulveda, Senior Fish and Wildlife Biologist, at margaret_sepulveda@fws.gov or (916) 414-6512 or Patricia Cole, Supervisor, San Joaquin Valley Division, at patricia_cole@fws.gov or (916) 414-6544, or the letterhead address

Sincerely,

Michael Fris
Field Supervisor

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PERSONAL COMMUNICATIONS

Weiss, S. P. 2021. Creekside Science. Email communication to Rebecca Sloan of ICF regarding larval and adult butterfly counts in Spring 2021. May 12, 2021.