# ENVIRONMENTAL COMMITMENTS

**1. Mitigation Measures and Avoidance and Minimization Measures Applicable to LGA Utility Potholing Activities**

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Air Quality | AQ-MM#2 | Reduce Criteria Exhaust Emissions from On-Road Construction Equipment | This mitigation measure applies to all on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel. Material-hauling trucks will consist of an average fleet mix of equipment model year 2010, or newer, but no less than the average fleet mix for the current calendar year as set forth in CARB's EMFAC 2011 database. The Contractor will provide documentation of efforts to secure such a fleet mix. The Contractor will keep a written record of equipment usage during project construction for each piece of equipment. | F-B EIR/EIS |
| Air Quality | AQ-AM#1 | Truck Equipment | • Trucks will be covered to reduce significant fugitive dust emissions while hauling soil and other similar material.<br>• All trucks and equipment will be washed before exiting the construction site. | F-B EIR/EIS |
| Air Quality | AQ-AM#2 | Fugitive Dust Emissions | • Exposed surfaces and unpaved roads will be watered three times daily.<br>• Vehicle travel speed on unpaved roads will be reduced to 15 miles per hour.<br>• Any dust-generating activities will be suspended when wind speed exceeds 25 mph.<br>• All disturbed areas, including storage piles that are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression.<br>• All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression.<br>• All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled for fugitive dust emissions by an application of water or by presoaking. With the demolition of buildings up to six stories in height, all exterior surfaces of the buildings will be wetted during demolition.<br>• All materials transported offsite will be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.<br>• All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.<br>• Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, piles will be effectively stabilized for fugitive dust emissions using sufficient water or a chemical stabilizer/suppressant. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression. For additional valley fever avoidance and mitigation measures and recommendations, see S&S – AM #4b and #4c | F-B EIR/EIS |
| Air Quality | AQ-AM#3 | Trackouts | • Within urban areas, trackout will be immediately removed when it extends 50, or more, feet from the site and at the end of each workday.<br>• Any site with 150, or more, vehicle trips per day will take actions specified in SJVAPCD's Rule 8041 to prevent carryout and trackout. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Noise and Vibration | N&V-MM#1 | Construction Noise Mitigation Measures | During construction the Contractor will monitor construction noise to verify compliance with the noise limits (An 8-hour Leq, dBA of 80 during the day and 70 at night for residential land use, 85 for both day and night for commercial land use, and 90 for both day and night for industrial land use). The Contractor would be given the flexibility to meet the FRA construction noise limits in the most efficient and cost-effective manner. This can be done by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. A noise-monitoring program will be developed to meet required noise limits, the following noise control mitigation measures will be implemented as necessary, for nighttime and daytime:<br><br>• Install a temporary construction site sound barrier near a noise source.<br>• Avoid nighttime construction in residential neighborhoods.<br>• Locate stationary construction equipment as far as possible from noise-sensitive sites.<br>• Re-route construction truck traffic along roadways that will cause the least disturbance to residents.<br>• During nighttime work, use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with spotters.<br>• Use low-noise emission equipment.<br>• Implement noise-deadening measures for truck loading and operations.<br>• Monitor and maintain equipment to meet noise limits.<br>• Line or cover storage bins, conveyors, and chutes with sound-deadening material.<br>• Use acoustic enclosures, shields, or shrouds for equipment and facilities.<br>• Use high-grade engine exhaust silencers and engine-casing sound insulation.<br>• Prohibit aboveground jackhammering and impact pile driving during nighttime hours.<br>• Minimize the use of generators to power equipment.<br>• Limit use of public address systems.<br>• Grade surface irregularities on construction sites.<br>• Use moveable sound barriers at the source of the construction activity. • Limit or avoid certain noisy activities during nighttime hours.<br>• To mitigate noise related to pile driving, the use of an auger to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur<br>• CHSRA will establish and maintain in operation until completion of construction a toll-free “hotline” regarding the Section construction activities. CHSRA shall arrange for all incoming messages to be logged (with summaries of the contents of each message) and for a designated representative of CHSRA to respond to hotline messages within 24 hours (excluding weekends and holidays). CHSRA shall make a reasonable good faith effort to address all concerns and answer all questions, and shall include on the log its responses to all callers. CHSRA shall make a log of the incoming messages and CHSRA’s responsive actions publicly available on its website.<br>• Mitigation for construction noise should include a requirement to adhere to the city's noise requirements and restrictions on construction activities in and around school areas to weekends and near all other sensitive receptors to weekdays and daytime hours only (Vol. V, City of Bakersfield comment). The Authority will consider the suggested mitigation measure for construction in conjunction with future decisions regarding an alignment through Bakersfield. | F-B EIR/EIS |
| Cumulative Impacts | CUM -N&V-MM#1 | Consult with agencies regarding construction activities. | To minimize the potential overlapping noise-generating construction activities within the same area, the Authority would consult with local city and county planning departments and other agencies as determined necessary. Consultation would entail notifying the departments/agencies regarding the anticipated HST construction schedule and would allow for adjustment of construction schedules for adjacent projects or projects in close proximity to the HST alignment, to the extent feasible. | F-B EIR/EIS |
| Noise and Vibration | NV-AM#1 | General Construction Guidelines-Noise and Vibration | FTA and FRA have guidelines for minimizing noise and vibration impacts at sensitive receptors that will be followed during construction. | F-B EIR/EIS |
| Biological Resources | BIO -MM#1 | Designate Project Biologist(s) and Project Biological Monitor(s) | A Project Biologist shall be designated by the Environmental Compliance Manager to oversee regulatory compliance requirements and monitor the restoration activities associated with ground-disturbing activities in accordance with the adopted mitigation measures and applicable laws. The Project Biologist, Regulatory Specialist, and Project Botanist are responsible for the timely implementation of the biological mitigation measures as outlined in the MMEP, construction documents, and pertinent resource agency permits. Resumes for the Designated Project Biologist(s), Regulatory Specialists (Waters), and Project Botanists, and Project Biological Monitors(s) must be submitted to the USFWS during final design. Additional duties of the Project Biologist, Regulatory Specialist (Waters) and Project Botanist include reviewing design documents and construction schedules, determining project biological monitoring needs, and guiding and directing the work of the Project Biological Monitors. The duties of the Project Biological Monitor include monitoring construction crew activities, as needed, to document applicable mitigation measures and permit conditions. The Project Biologist(s), Regulatory Specialist(s) (Waters), Project Botanist(s) and the Project Biological Monitor(s) report to the Mitigation Manager. The Project Biologist(s), Regulatory Specialist(s) (Waters), Project Botanist(s) and/or the Project Biological Monitor(s) may require special approval from the USFWS and CDFW to implement certain mitigation measures. In these circumstances, they are referred to as agency-approved biologist(s) | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Biological Resources | BIO -MM#3 | Prepare and Implement a Worker Environmental Awareness Program (WEAP) | Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters) and Project Botanist will prepare and implement a WEAP for construction crews. WEAP training materials will include the following: discussion of the federal Endangered Species Act (federal ESA), the California Endangered Species Act (CESA), the Bald and Golden Eagle Protection Act (BGEPA), the Migratory Bird Treaty Act (MBTA), and the Clean Water Act (CWA); the consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their value; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. In the WEAP, construction timing in relation to species' habitat and life-stage requirements will be detailed and discussed on project maps, which will show areas of planned minimization and avoidance measures. A fact sheet conveying this information will be prepared by the Project Biologist, Regulatory Specialist (Waters) and Project Botanist for distribution to the construction crews and to others who enter the construction footprint. On completion of the WEAP training, construction crews will sign a form stating that they attended the training, understood the information presented, and will comply with the WEAP requirements. The Project Biologist, Regulatory Specialist (Waters) and Project Botanist will submit the signed WEAP training forms to the Mitigation Manager on a monthly basis. Construction crews will be informed during the WEAP training that, except when necessary as determined in consultation with the Project Biologist, Regulatory Specialist (Waters) and Project Botanist travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved and improved roads. | F-B EIR/EIS |
| Biological Resources | BIO -MM#7 | Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field) | Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist will verify that ESAs and ERAs are delineated on final construction plans (including grading and landscape plans) and in the field and will update as necessary. ESAs are areas within the construction zone, or on compensatory mitigation sites, containing suitable habitat for special-status species and habitats of concern that may allow construction activities but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are sensitive areas that are typically outside the construction footprint that must be protected in place during all construction activities. Before and during the implementation of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist, will mark ESAs and ERAs with high-visibility temporary fencing, flagging, or other agency-approved barriers to prevent encroachment of construction personnel and equipment. Sub-meter accurate Global Positioning System (GPS) equipment will be used to delineate all ESAs and ERAs. The Contractor will remove ESA and ERA fencing when construction is complete or when the resource has been cleared according to agency permit conditions in the MMEP and construction drawings and specifications. The Project Biologist, Regulatory Specialist (Waters), and Project Botanist, will submit a memorandum regarding the field delineation and installation of all ESAs/ERAs to the Mitigation Manager. | F-B EIR/EIS |
| Biological Resources | BIO -MM#9 | Equipment Staging Areas | Before the start of ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist will confirm that staging areas for construction equipment are outside areas of sensitive biological resources, including habitat for special-status species, habitats of concern, and wildlife movement corridors, to the extent feasible. The Project Biologist, Regulatory Specialist (Waters), and Project Botanist will submit a memorandum to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#10 | Mono-Filament Netting | Thirty days before and during the implementation of ground-disturbing activities, the Project Biologist will verify that that the Contractor is not using plastic mono-filament netting (erosion-control matting) or similar material in erosion control materials; acceptable substitutes include coconut coir matting, tackified hydroseeding compounds, rice straw wattles (e.g., Earthsaver wattles: biodegradable, photodegradable, burlap), and other reusable erosion, sediment, and wildlife control systems that may be approved by the regulatory agencies (e.g., ERTEC Environmental Systems products). The Project Biologist will submit memoranda to the Mitigation Manager to document compliance with this measure; the memoranda will be submitted monthly or as appropriate throughout project construction. | F-B EIR/EIS |
| Biological Resources | BIO -MM#11 | Vehicle Traffic | During ground-disturbing activities, the contractor will restrict project vehicle traffic within the construction area to established roads, construction areas, and other designated areas. The contractor will establish vehicle traffic in locations disturbed by previous activities to prevent further adverse effects, require observance of a 15 mile per hour (mph) speed limit for construction areas with potential special-status species habitat, clearly flag and mark access routes, and prohibit off-road traffic. The Project Biologist will submit a memorandum to the Mitigation Manager to document compliance with this measure; memoranda will be submitted on a weekly basis or as appropriate throughout project construction. | F-B EIR/EIS |
| Biological Resources | BIO -MM#13 | Work Stoppage | During ground-disturbing activities, the Project Biologist, Regulatory Specialist (Waters), and Project Botanist or Project Biological Monitor will halt work in the event that a special-status wildlife species gains access to the construction footprint. This work stoppage will be coordinated with the resident engineer and/or the Authority or its designee. The Contractor will suspend ground-disturbing activities in the immediate construction area where the potential construction activity could result in "take" of special-status wildlife species; work may continue in other areas. Before construction, the Contractor will obtain written permission from CDFW to capture and relocate any non-listed wildlife species (does not included domesticated animals) from within the project footprint. | F-B EIR/EIS |
| Biological Resources | BIO -MM#14 | "Take" Notification and Reporting | The Project Biologist, Regulatory Specialist (Water), or Project Botanist will immediately notify the Mitigation Manager in the event of an accidental death or injury to a federal- or state-listed species during project activities. The Project Biologist will then notify USFWS and/or CDFW within 24 hours in the event of an accidental death or injury to a federal- or state-listed species during project activities. The Project Biologist will submit a memorandum to the Mitigation Manager to document compliance with this measure. The memorandum will also identify suggested revisions to the construction activities or additional measures that will be implemented to minimize or prevent future impacts. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Biological Resources | BIO -MM#16 | Conduct Protocol-Level Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities | Prior to construction, the Project Botanist will conduct protocol-level, pre-construction botanical surveys for special-status plant species and special-status plant communities in all potentially suitable habitats where permission to enter was not granted prior to construction. The surveys will be conducted during the appropriate blooming period(s) for the species before the start of ground-disturbing activities for salvage and relocation activities. The Project Botanist will mark the locations of all special-status plant species and special-status plant communities observed for the Contractor to avoid. Before the start of ground-disturbing activities, all populations of special-status plant species and special-status plant communities identified during pre-construction surveys within 100 feet of the construction footprint will be protected and delineated by the Contractor (directed by the Project Botanist) as ERAs. As appropriate, the Project Botanist will update the mapping of special-status species or habitats of concern within the construction limits based on resource agency permits.<br><br>Portions of the construction footprint that support special-status plant species that will be temporarily disturbed will be restored onsite to pre-construction conditions. Before disturbance, pre-construction conditions, including species composition, species richness, and percent cover of key species will be documented, and photo points will be established. If special-status plant species cannot be avoided, mitigation for impacts on these species will be documented (density, percent cover, key habitat characteristics, including soil type, associated species, hydrology, topography, and photo documentation of pre-construction conditions) and incorporated into a relocation/compensation program, as defined in BIO-MM#17. The Project Botanist will provide verification of survey results and report findings through a memorandum to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#22 | Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species | Before the start of ground-disturbing activities, the Project Biologist will conduct preconstruction surveys in suitable habitats to determine the presence or absence of special-status reptiles and amphibian species within the construction footprint. Surveys will be conducted no more than 30 days before the start of ground-disturbing activities and will be phased with project build-out. The results of the pre-construction survey will be used to guide the placement of the environmentally sensitive areas, ERAs, and wildlife exclusion fencing. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#29 | Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Other Breeding Birds | Before the start of ground-disturbing activities, the Project Biologist will conduct visual preconstruction surveys where suitable habitats are present for nesting birds protected by the MBTA if construction and habitat removal activities are scheduled to occur during the bird breeding season (February 1 to August 15). In the event active bird nests are encountered during the pre-construction survey, the Project Biologist in conjunction with the Contractor will establish nest avoidance buffer zones as appropriate. The buffer distances will be consistent with the intent of the MBTA. The Project Biologist will delineate nest avoidance buffers established for ground-nesting birds in a manner that does not create predatory bird perch points in close proximity (150 feet) to the active nest site. The Project Biologist or Biological Monitor will periodically monitor active bird nests. The Project Biologist will maintain the nest avoidance buffer zone until nestlings have fledged and are no longer reliant on the nest or parental care for survival or the nest is abandoned (as determined by the Project Biologist). The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#30 | Conduct Pre-construction Surveys and Monitoring for Raptors | No more than 14-days before the start of ground-disturbing activities, the Project Biologist will conduct visual pre-construction surveys where suitable habitats are present for nesting raptors if construction and habitat removal activities are scheduled to occur during the bird-breeding season (February 1 to August 15). Surveys will be conducted in areas within the construction footprint and, where permissible, within 500 feet of the construction footprint for raptor species (not Fully Protected species) and 0.5 mile of the construction footprint for Fully Protected raptor species. The required survey dates will be modified based on local conditions. If breeding raptors with active nests are found, the Project Biologist in conjunction with the Contractor will establish a 500-foot buffer around the nest to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or the nest fails (as determined by the Project Biologist). If fully protected raptors (e.g., white tailed-kite) with active nests are found, the Project Biologist in conjunction with Contractor will establish a 0.5mile buffer around the nest to be maintained until the young have fledged from the nest or the nest fails (as determined by the Project Biologist). Adjustments to the buffer(s) will require prior approval by USFWS and/or CDFW. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#32 | Conduct Protocol and Pre-construction Surveys for Swainson's Hawks | The Project Biologist will conduct preconstruction surveys for Swainson's hawks as described in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). Surveys will be performed during the nesting season (March 1 through August 1) in the year before ground-disturbing activities within the construction footprint and within a 0.5-mile buffer, where access is permitted. The pre-construction nest surveys following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000) will be phased with project build-out. The pre-construction surveys will determine the status (i.e., active, inactive) of observed nests. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#33 | Swainson's Hawk Nest Avoidance and Monitoring | If active Swainson's hawk nests (defined as a nest used one or more times in the last 5 years) are found within 0.5-mile of the construction footprint during the nesting season (March 1 to August 1), the active nests within the 0.50-mile buffer of the construction footprint will be monitored daily by the Project Biological Monitor to assess whether the nest is occupied. If the nest is occupied, the health and status of the nest will be monitored until the young fledge or for the length of construction, whichever occurs first. The Project Biologist in conjunction with the Contractor, will implement buffers restricting construction activities, following CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (CDFG 1994). Adjustments to the buffer(s) may be made in consultation with CDFW. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#35 | Conduct Protocol Surveys for Burrowing Owls | Before the start of ground-disturbing activities a qualified, agency-approved biologist, designated by the Project Biologist, will conduct protocol-level surveys in accordance with CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012c). The Project Biologist or designee will conduct these surveys at appropriate timeframes within suitable habitat located in the construction footprint. Results of the surveys will be used to inform BIO-MM#36. These surveys will be conducted within suitable habitat of the construction footprint and within a 150-meter (approximately 500-foot) buffer. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Biological Resources | BIO -MM#36 | Burrowing Owl Avoidance and Minimization | The Project Biologist will implement burrowing owl avoidance and minimization measures following CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012). During the nesting season (February 1 through August 31) occupied burrowing owl burrows will not be disturbed unless it is verified that either the birds have not begun egg-laying and incubation or the juveniles from the occupied burrows are foraging independently and are capable of independent survival (as determined by the Project Biologist). Unless otherwise authorized by CDFW, the Project Biologist in conjunction with the Contractor will establish buffers (as an ESA) between the construction work area and occupied burrowing owl nesting sites as described in Table 3.7-19. Adjustments to the buffer(s) will require prior approval by CDFW.<br><br>Eviction of burrowing owls outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFW authorizing the eviction. If burrowing owls must be moved from the project area, the Project Biologist will undertake passive relocation measures, including monitoring, in accordance with CDFW's (CDFG 2012) guidelines. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure.<br><br>Table 3.7-19 California Department of Fish and Wildlife recommended restricted activity dates and setback distances by level of disturbance for burrowing owls<br>Location Time of Year Level of Disturbance<br>Low Medium High<br>Nesting Sites April 1–Aug 15 200 m 500 m 500 m<br>Nesting Sites Aug 16-Oct 15 200 m 200 m 500 m<br>Nesting Sites Oct 16-March 31 50 m 100 m 500 m | F-B EIR/EIS |
| Biological Resources | BIO -MM#40 | Conduct Pre-construction Surveys for Special-Status Bat Species | Thirty days before the start of ground-disturbing activities, a qualified, agency-approved biologist, designated by the Project Biologist, will conduct a visual and acoustic pre-construction survey for roosting bats. A minimum of one day and one evening will be included in the visual pre-construction survey. The Project Biologist, in coordination with the Mitigation Manager and Authority, will contact CDFW if any hibernation roosts or active nurseries are identified within or immediately adjacent to the construction footprint, as appropriate. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#41 | Bat Avoidance and Relocation | During ground-disturbing activities, if active or hibernation roosts are found, the Contractor will avoid them, if feasible, for the period of activity. If avoidance of the hibernation roost is not feasible, the Project Biologist will prepare a relocation plan and coordinate the construction of an alternative bat roost with CDFW. The Contractor, under the direction of the Project Biologist will implement the Bat Roost Relocation Plan before the commencement of construction activities. The Contractor, under the supervision of the Biological Monitors, will remove roosts with approval from CDFW before hibernation begins (October 31), or after young are flying (July 31), using exclusion and deterrence techniques described in BIOMM#42, below. The timeline to remove vacated roosts is between August 1 and October 31. All efforts to avoid disturbance to maternity roosts will be made during construction activities. The Project Biologist will submit a memorandum to the Mitigation Manager, on a weekly basis or at other appropriate intervals, to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#43 | Conduct Pre-construction Surveys for American Badger and Ringtail | Before the start of ground-disturbing activities, the Project Biologist will conduct preconstruction surveys for den sites within suitable habitats in the construction footprint. These surveys will be conducted no more than 30 days before the start of ground-disturbing activities and phased with project build-out. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#44 | American Badger and Ringtail Avoidance | The Contractor, under the direction of the Project Biologist, will establish a 50-foot buffer around occupied dens. The Contractor and Project Biologist will establish a 100-foot buffer around maternity dens through the pup-rearing season (American badger: February 15 through July 1; Ringtail: May 1 through June 15). Adjustments to the buffer(s) will require prior approval by CDFW as coordinated by the Project Biologist, under the supervision of the Mitigation Manager. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#45 | Conduct Protocol-Level Pre-construction Surveys for San Joaquin Kit Fox | Before the start of ground-disturbing activities, the Project Biologist will conduct preconstruction surveys in accordance with USFWS' San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999b). Preconstruction surveys for the kit fox will be conducted between May 1 and September 30 within the study area in suitable habitat areas (alkali desert scrub, annual grassland, pasture, barren, and compatible-use agricultural lands) to identify known or potential San Joaquin kit fox dens. Pre-construction surveys will be conducted by a USFWS-approved project biologist within 30 days before the start of construction or ground-disturbing activities and will be phased with project build-out. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#46 | Minimize Impacts on San Joaquin Kit Fox | The Contractor, under direction of the Project Biologist, will implement USFWS' Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS [1999] 2011) to minimize ground disturbance-related impacts on this species. The Project Biologist will submit a memorandum, on a weekly basis or at other appropriate intervals, to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |
| Biological Resources | BIO -MM#50 | Mitigation and Monitoring of Protected Trees | Before, during, and after construction, the following methods to preserve and/or mitigate for impacts on protected trees will be implemented:<br><br>• A qualified biologist, designated by the Project Botanist, will conduct surveys before removal or disturbance to evaluate the condition of all protected trees found within areas directly and indirectly affected by the Fresno to Bakersfield Section.<br>• The Authority will compensate for impacts and effects to protected tree resources, including removal or trimming of naturally occurring native protected trees and landscape or ornamental trees (see BIO-MM#64, Compensate for Impacts on Protected Trees).<br>• The Contractor, under the direction of the Project Botanist, will fence protected trees that may be indirectly affected by construction activities 5 feet from their drip lines to form ERAs.<br>• The Authority will prepare and implement a monitoring and maintenance program that monitors transplanted trees for reestablishment of root systems. The Project Botanist will submit a memorandum to the Mitigation Manager to document compliance with this measure. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Biological Resources | BIO-AM#1 | Environmental Design | In addition to the mitigation measures described below in Section 3.7.7, multiple project design features have been developed for the Fresno to Bakersfield Section to avoid and minimize potential impacts and effects on biological resources. At multiple locations, the route of the alternative alignments was altered to avoid impacts and effects to biological resources. During project design and construction, the Authority and FRA would implement measures to reduce impacts on air quality and hydrology based on applicable design standards. Implementation of these measures would also reduce impacts to biological resources. The design standards applicable to the project are listed in Appendix 2-D and the measures to be applied are summarized in Section 3.3, Air Quality and Global Climate Change and Section 3.8, Hydrology and Water Resources. | F-B EIR/EIS |
| Biological Resources | BIO-AM#2 | Wildlife Crossings | Wildlife crossing opportunities will be available through a variety of engineered structures, including dedicated wildlife crossing structures, elevated structures, bridges over riparian corridors, road overcrossings and undercrossings, and drainage facilities (i.e., large-diameter [60- to 120-inch] culverts and paired 30-inch culverts). For a more detailed discussion of the crossing structures, including figures depicting the frequency and locations of these structures, refer to Figures 3-3a through 3-3d and Section 5.6 of the Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report (Authority and FRA 2012a). | F-B EIR/EIS |
| Hazardous Materials | HMW -MM#1 | Limit Use of Extremely Hazardous Materials near Schools during Construction | The Contractor shall not handle or store an extremely hazardous substance (as defined in California Public Resources Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code within 0.25 mile of a school. Prior to construction activities, signage will be installed to delimit all work areas within 0.25 mile of a school, informing the Contractor not to bring extremely hazardous substances into the area. The Contractor would be required to monitor all use of extremely hazardous substances. The above construction mitigation measure for hazardous materials and wastes is consistent with California Public Resources Code Section 21151.4, and would be effective in reducing the impact to a less-than-significant level. | F-B EIR/EIS |
| Safety and Security | S&S-AM#1 | Emergency Vehicle Access | Final design includes development of a detailed construction transportation plan that would include coordination with local jurisdictions on emergency vehicle access. The plan would establish procedures for temporary road closures including: access to residences and businesses during construction, lane closure, signage and flag persons, temporary detour provisions, alternative bus and delivery routes, emergency vehicle access, and alternative access locations. | F-B EIR/EIS |
| Safety and Security | S&S-AM#2 | Operation and Transportation Hazards | Engineering design and construction phases include preliminary hazard analysis (PHA), collision hazard analysis (CHA), and threat and vulnerability assessment (TVA) methods.<br>• PHAs follow the U.S. Department of Defense's System Safety Program Plan Requirements (MIL-STD-882) to identify and determine the facility hazards and vulnerabilities so that they can be addressed—and either eliminated or minimized by—the design.<br>• CHAs follow the Federal Railroad Administration's Collision Hazard Analysis Guide: Commuter and Intercity Passenger Service (FRA 2007) which provides a step-by-step procedure on how to perform a hazard analysis and how to develop effective mitigation strategies that will improve passenger rail safety. | F-B EIR/EIS |
| Safety and Security | S&S-IAM#4a | Construction Safety Plan | The SSMP will include construction safety and security plans to establish minimum safety and security guidelines during construction and security programs that address the safety of passengers and employees during emergency response. | F-B EIR/EIS Amended for LGA |
| Safety and Security | S&S-IAM#4b | Valley Fever | Provide a qualified person dedicated to overseeing implementation of Valley Fever prevention measures to encourage a culture of safety of the construction contractors and subcontractors. | F-B EIR/EIS Amended for LGA |
| Safety and Security | S&S-IAM#4c | Valley Fever | Addition of measures to the requirements of the Construction Safety and Health Plans regarding preventive measures to avoid Valley Fever exposure. | F-B EIR/EIS Amended for LGA |
| Safety and Security | S&S-AM#7 | Operating Procedure | Standard operating procedures and emergency operating procedures include industry best practices, such as the FRA-mandated Roadway Worker Protection Program. They address the day-to-day operation and emergency situations to maintain the safety of employees, passengers, and the public. | F-B EIR/EIS |
| Safety and Security | S&S-AM#9 | Worker Safety | Worker safety in the workplace is generally governed by the Occupational Health and Safety Act of 1970, which established the Occupational Safety and Health Administration (OSHA). OSHA establishes standards and oversees compliance with workplace safety and reporting of injuries and illnesses of employed workers. In California, OSHA enforcement of workplace requirements is performed by Cal OSHA. Under Cal OSHA regulations, as of July 1, 1991, every employer must establish, implement, and maintain an injury and illness prevention program. | F-B EIR/EIS |
| Cumulative Impacts | CUM -SO-MM#1 | Consult with agencies regarding construction activities. | To minimize the potential cumulative effects of overlapping construction activities within the same area, the Authority would consult with the local city and county planning departments and other agencies as determined necessary, to notify the departments/agencies regarding the anticipated HST construction schedule and allow for adjustment of construction schedules for adjacent projects or projects in close proximity to the HST alignment, to the extent feasible, in order to limit the overlap of community disruption. | F-B EIR/EIS |
| Cumulative Impacts | CUM -SO-MM#2 | Public Outreach. | For areas with potentially overlapping construction schedules for the HST and other projects, the Authority would continue to undertake environmental justice outreach prior to construction, as described in Mitigation Measure SO-6: Continue outreach to disproportionately and negatively impacted environmental justice communities of concern. The Authority would obtain feedback from the affected neighborhoods regarding these project construction schedules to address community concerns. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Aesthetics and Visual Resources | AVR-MM#1a | Minimize Visual Disruption from Construction Activities | The project will adhere to local jurisdiction construction requirements (if applicable) regarding construction-related visual/aesthetic disruption. In order to minimize visual disruption, construction will employ the following activities:<br><br>• Minimize Pre-construction clearing to that necessary for construction.<br>• Limit the removal of buildings to those that would obstruct project components.<br>• When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views.<br>• After construction, Regrade areas disturbed by construction, staging, and storage to original contours and revegetate with plant material similar in replacement numbers and types to that which was removed based upon local jurisdictional requirements. If there are no local jurisdictional requirements, replace removed vegetation at a 1:1 replacement ratio for shrubs and small trees, and 2:1 replacement ratio for mature trees. For example, if 10 mature trees in an area are removed, replant 20 younger trees that after 5 to 15 years (depending upon the growth rates of the trees) would provide coverage similar to the coverage provided by the trees that were removed for construction.<br>• To the extent feasible, do not locate construction staging sites within the immediate foreground distance (0 to 500 feet) of existing residential, recreational, or other high-sensitivity receptors. Where such siting is unavoidable, staging sites will be screened from sensitive receptors using appropriate solid screening materials such as temporary fencing and walls. Any graffiti or visual defacement of temporary fencing and walls will be painted over or removed within 5 business days. | F-B EIR/EIS |
| Aesthetics and Visual Resources | AVR-MM#1b | Minimize Light Disturbance during Construction | Where construction lighting will be required during nighttime construction, the Contractor will be required to shield such lighting and direct it downward in such a manner that the light source is not visible offsite, and so that the light does not fall outside the boundaries of the project site to avoid light spill offsite. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#1 | Complete Inventory for Archaeologic al Resources and Comply with the Stipulations Regarding the Treatment of Archaeologic al Resources in the PA and MOA | The contractor will complete the following management steps for currently inaccessible areas once permission to enter has been obtained:<br>• The contractor will complete an inventory and evaluation report for archaeological resources.<br>• This work will be led or supervised by cultural resources specialists who meet the SOI's professional qualification standards provided in 36 C.F.R. Part 61.<br>• All newly identified resources will be mapped and described on DPR forms. Mapping will be completed by recording data with GPS hardware through which data can be imported and managed in Geographic Information Systems. Mapping of previously identified resources will be limited to updates of existing records where necessary to describe the current boundaries of the resource and any change in condition that has occurred after the first recordation.<br>• The contractor will evaluate the eligibility of identified archaeological and built environment resources for listing on the CRHR.<br>• Under delegated authority provided in the PA and MOA the contractor will also evaluate identified archaeological resources for the NRHP.<br>• For archaeological resources that are NRHP eligible the contractor will assess the potential for adverse effects within the meaning of 36 C.F.R. Part 800.5(a)(1). For CRHR eligible resources the contractor shall assess the potential for significant impacts by applying the criteria in CEQA Guidelines 15064.5(b).<br>• For CRHR eligible archaeological resources the Authority shall determine if these resources can feasibly be preserved in place, or if data recovery is necessary. The methods of preservation in place shall be considered in the order of priority provided in CEQA Guidelines § 15126.4(b)(3). If data recovery is the only feasible treatment the Authority shall adopt a data recovery plan as required under CEQA Guidelines § 15126.4(b)(3)(C).<br>• For archaeological resources the Authority shall also determine if the resource is a unique archaeological site. If the resource is not an historical resource but is an archaeological site the resource shall be treated as required in California Public Resources Code 21083.2. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#2 | Conduct Archaeological Training | Before the start of ground-disturbing activities within the APE, a qualified professional archaeologist who meets the SOI Standards for Archaeology will develop a training program and printed material to be presented to construction personnel. The purpose of this training and accompanying materials will be to familiarize construction personnel with the relevant legal (Section 106/NEPA/CEQA) context for cultural resources of the project and with the types of cultural sites, features, and artifacts that could be uncovered during construction activities. These training sessions will be conducted before commencing construction within the APE or and will be repeated as needed as construction crews and supervisors change. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#3 | Conduct Archaeological Monitoring in Areas of Sensitivity, Halt Work in the Event of a Discovery | Prior to ground-disturbing construction the Authority will include a cultural resources discovery plan in the contract conditions of the Contractor, identifying the following steps to be taken in the event of the inadvertent discovery of cultural resources.<br><br>• An archaeological monitor will be present to observe construction at geographic locations that are sensitive for unidentified cultural resources. Such locations may consist of construction areas near identified cultural resources (within a 200-foot radius around the known boundaries of identified resources) and where ground-disturbing construction will occur within 1,500 feet of major water features, or in other areas of identified sensitivity based on inventory work to be completed when permission to enter is granted.<br>• In the event of an archaeological resource discovery, work will cease in the immediate vicinity of the find, based on the direction of the archaeological monitor or the apparent location of cultural resources if no monitor is present.<br><br>A qualified archaeologist will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These steps shall include evaluation for the CRHR and NRHP and necessary treatment to resolve significant effects if the resource is an historical resource or historic property. If the resource is eligible for the CRHR an archaeological resource methods of preservation in place shall be considered in the order of priority provided in CEQA Guidelines § 15126.4(b)(3). If data recovery is the only feasible mitigation The Authority shall adopt a data recovery plan as required under CEQA Guidelines § 15126.4(b)(3)(C). The California State Lands Commission (CSLC) will be notified if the find is a cultural resource on or in the submerged lands of California and consequently under the jurisdiction of the CSLC. The Authority will comply with all applicable rules and regulations promulgated by CSLC with respect to cultural resources in submerged lands. The project proponent will also comply with the PA. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Cultural Resources | CUL -MM#4 | Comply with State and Federal Law for Human Remains | Discoveries of human remains on private and state agency lands in California are governed by California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98. Native American remains discovered on federal lands are governed by NAGPRA (25 US Code Section 3001. If human remains are discovered on state-owned or private lands the contractor shall contact the relevant County Coroner to allow the Coroner to determine if an investigation regarding the cause of death is required. If no investigation is required and the remains are of Native American origin the Authority shall contact the Native American Heritage Commission to identify an MLD. The MLD shall be empowered to reinter the remains with appropriate dignity. If the MLD fails to make a recommendation the remains shall be reinterred in a location not subject to further disturbance and the location shall be recorded with the Native American Heritage Commission and relevant information center of the California Historical Resources Information System. If human remains are part of an archaeological site the Authority and contractor shall, in consultation with the MLD and other stakeholders, consider preservation in place as the first option, in the order of priority called for in CEQA Guidelines Section 15126.4(b)(3). In consultation with the relevant Native American stakeholders the Authority may conduct scientific analysis on the human remains if called for under a data recovery plan and amenable to all stakeholders. California and the Authority will work with the most likely descendant, to satisfy the requirements of California Public Resources Code Section 5097.98. Performance tracking of this mitigation measure will be based on successful implementation and approval of the documentation by the SHPO and appropriate consulting parties. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#5 | Conduct Additional Testing and Data Recovery | When access is obtained, conduct surveys, testing, and evaluation pursuant to the ATP. Follow treatments and data recovery, as required. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#6 | Complete Inventories for Historic Architectural Resources | Because design of the project is currently only at 15%, it may be necessary to conduct additional inventories for historic architectural resources as the design is finalized. The Authority, under delegated responsibility under the PA and MOA, shall complete inventory and evaluate historic architectural properties for the NRHP. The Authority will also evaluate historic architectural resources to determine if they are historical resources (CRHR-eligible). For identified NRHP historic properties the Authority will assess the potential for adverse effects by applying the effects criteria in 36 C.F.R. Part 800.5(a)(1). For CRHR historic resources the Authority shall assess the potential for significant impacts by applying the criteria in CEQA Guidelines 15064.5(b). | F-B EIR/EIS |
| Cultural Resources | CUL -MM#7 | Avoid and/or Monitor Adverse Construction Vibration Effects | The BETP will describe the methodology for the avoidance of adverse vibration effects and how such avoidance will be monitored and implemented during construction of the project. Implementation of avoidance measures will be monitored to ensure that damaging vibration levels are avoided during construction adjacent to the historic properties identified as requiring this treatment. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#8 | Implement Protection and/or Stabilization Measures | The BETP will identify historic properties/historical resources that may require treatment, protection and/or stabilization before the start of construction of the project. Treatment will be developed in consultation with the landowner or land-owning agencies as well as the SHPO and the MOA signatories, as required by the PA. Such measures will include, but will not be limited to, vibration monitoring of construction in the vicinity of historic properties; cordoning off of resources from construction activities (e.g., traffic, equipment storage, personnel); shielding of resources from dust or debris; and stabilization of buildings adjacent to construction. For buildings that would be moved, treatment will include stabilization before, during, and after relocation; protection during temporary storage; and relocation at a new site and during subsequent rehabilitation. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#11 | Minimize Adverse Operational Noise Effects | A BETP will identify the historic properties/historical resources that will be subject to treatment to minimize the indirect adverse effects caused by the operational noise of the HST project. Properties subject to this mitigation will be treated in consultation with the landowner or land-owning agencies and the CEQA lead agency (i.e., the Authority). Preliminary project design options, such as noise walls, have been developed to help reduce noise impacts and follow FRA methodologies for noise abatement. | F-B EIR/EIS |
| Cultural Resources | CUL -MM#18 | Halt Construction When Paleontological Resources Are Found | If fossil or fossil-bearing deposits are discovered during construction, regardless of the individual making a paleontological discovery, construction activity in the immediate vicinity of the discovery will cease. This requirement will be spelled out in both the PRMMP and the WEAP. Construction activity may continue elsewhere provided that it continues to be monitored as appropriate. If the discovery is made by someone other than a PRM or the PRS, a PRM or the PRS will immediately be notified. | F-B EIR/EIS |
| Cultural and Paleontological Resources | CUL-AM#1 | Protective Measures | Cultural resources mitigation measures and commitments could occur prior to, during, and following construction. Protective measures, such as conducting archaeological training, building stabilization or archaeological site capping, and recordation of resources would take place prior to construction; other protective measures such as vibration monitoring for built resources or monitoring for archaeological resources during ground-disturbing activities would occur during construction. Measures that could take place after construction may include interpretive programs, including displays, interpretive signage, etc. | F-B EIR/EIS |
| Cultural and Paleontological Resources | CUL-AM#2 | PA | The PA established the framework for the development and implementation of measures to avoid, minimize, and/or mitigate adverse effects on historic properties caused by the HST System, in compliance with Section 106 and NEPA. The PA also established that a MOA will be prepared for each section of the HST project to detail the HST project commitments to implement these treatments. | F-B EIR/EIS |
| Hydrology and Water Quality | HYD-AM#5 | Flood Protection | The CVFPB regulates specific river, creek, and slough crossings for flood protection. These crossings must meet the provisions of Title 23 of the CCR. Title 23 requires that new crossings maintain hydraulic capacity through such measures as in-line piers, adequate streambank height (freeboard), and measures to protect against streambank and channel erosion. Section 208.10 requires that improvements, including crossings, be constructed in a manner that does not reduce the channel's capacity or functionality, or that of any federal flood control project. The CVFPB reviews applications for encroachment permits for approval of a new channel crossing or other channel modification. For a proposed crossing or placement of a structure near a federal flood control project, the CVFPB coordinates review of the encroachment permit application with USACE pursuant to assurance agreements with USACE and the USACE Operation and Maintenance Manuals under Title 33 CFR, Section 208.10 and Title 33 U.S.C., Section 408. Under Section 408 of the Rivers and Harbors Act, the USACE must approve any proposed modification that involves a federal flood control project. A Section 408 permit would be required if construction modifies a federal levee. A Section 208.10 permit would be required where the project encroaches on a federal facility but does not modify it. | F-B EIR/EIS |
| Hydrology and Water Quality | HYD-AM#6 | Industrial Stormwater Pollution Prevention Plan | The stormwater general permit (Order No. 97-03-DWQ, NPDES No. CAS000001) requires preparation of a SWPPP and a monitoring plan for industrial facilities that discharge stormwater from the site, including vehicle maintenance facilities associated with transportation operations. The permit includes performance standards for pollution control. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#4 | Geotechnical Inspections | Prior to and throughout construction, conduct geotechnical inspections to verify that no new, unanticipated conditions are encountered, and to determine the locations of unstable soils in need of improvement. | F-B EIR/EIS |

| Environmental Issue Area | Mitigation Measure | Title | Mitigation Measure, Avoidance and Minimization Measure, or Other Environmental Technical Contract Requirement Text | Source |
|---|---|---|---|---|
| Geology and Soils | GEO-AM#6 | Improve Settlement-Prone Soils | Settlement-prone soils are improved prior to facility construction. Ground improvement is used to transfer new earth loads to deeper, more competent soils. Another alternative is to use preloads and surcharges with wick drains to accelerate settlement in areas that are predicted to undergo excessive settlement. By using the preload and surcharge with wick drains, settlement would be forced to occur. The application of these methods is most likely at stream and river crossings, where soft soils are more likely to occur. Where groundwater is potentially within 50 feet of the ground surface, any below-ground excavations use well points in combination with sheet pile walls to limit the amount of settlement of adjacent properties from temporary water drawdown. Alternately, water can be re-injected to make up for localized water withdrawal. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#7 | Prevent Water and Wind Erosion | Many mitigation methods exist for controlling water and wind erosion of soils. These include the use of straw bales and mulches, revegetation, and covering areas with geotextiles. Where the rate of water runoff could be high, riprap and riprap check dams could be used to slow the rate of water runoffs. Other BMPs for water are discussed in Section 3.8, Hydrology and Water Resources. Implementation of these methods is important where large sections of earth are exposed during construction, such as for retained-cut design segments. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#8a | Modify or Remove and Replace Soils with Shrink-Swell Potential | One option is to excavate and replace soils that represent the highest risk. In locations where shrink-swell potential is marginally unacceptable, soil additives will be mixed with existing soil to reduce the shrink-swell potential. The decision whether to remove or treat the soil is made on the basis of specific shrink-swell characteristics of the soil, the additional costs for treatment versus excavation and replacement, as well as the long-term performance characteristics of the treated soil. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#8b | Modify or Remove and Replace Soils Corrosion Characteristics | One option is to excavate and replace soils that represent the highest risk. In locations where corrosivity potential is marginally unacceptable, soil additives will be mixed with existing soil to reduce the corrosive potential. The decision whether to remove or treat the soil is made on the basis of specific corrosivity characteristics of the soil, the additional costs for treatment versus excavation and replacement, as well as the long-term performance characteristics of the treated soil. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#9 | Evaluate and Design for Large Seismic Ground Shaking | Prior to final design, additional seismic studies will be conducted to establish the most up-to-date estimation of levels of ground motion. Updated Caltrans seismic design criteria will be used in the design of any structures supported in or on the ground. These design procedures and features reduce the potential that moments, shear forces, and displacements that result from inertial response of the structure will lead to collapse of the structure. In critical locations, pendulum base isolators can reduce the levels of inertial forces. New composite materials can enhance seismic performance. | F-B EIR/EIS |
| Geology and Soils | GEO-AM#10 | Secondary Seismic Hazards | As discussed above, various ground improvement methods can be implemented to mitigate the potential for liquefaction, liquefaction-induced lateral spreading or flow of slopes, or post-earthquake settlement. Ground improvement around CIDH piles improves the lateral capacity of the CIDH during seismic loading. CDSM, stone columns, EQ drains or jet-grouting develop resistance to lateral flow or spreading of liquefied soils. | F-B EIR/EIS |
| Hazardous Materials and Waste | HMW-AM#1 | Transportation of Materials | Materials and wastes would be handled, transported, and disposed of in accordance with applicable state and federal regulations, such as Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (see Section 3.3, Air Quality, for regulations applying to hazardous air pollutants). | F-B EIR/EIS |
| Hazardous Materials and Waste | HMW-AM#3 | Landfill | All work within 1,000 feet of a landfill would require methane protection measures, including gas detection systems and personnel training, pursuant to Title 27, the hazardous materials contingency plan, and BMPs. | F-B EIR/EIS |
| Hazardous Materials and Waste | HMW-AM#5 | Undocumented Contamination | The Authority is aware that undocumented contamination could be encountered during construction activities and is committed to work closely with local agencies to resolve any such encounters. A construction management plan will be developed that will include provisions for the disturbance of undocumented contamination. | F-B EIR/EIS |
| Hazardous Materials and Waste | HMW-AM#7 | Spill Prevention | An SPCC plan or, for smaller quantities, a spill prevention and response plan, will be implemented that prescribes BMPs to follow to clean up any hazardous material release. During operation of the HST, hazardous materials monitoring plans, such as a hazardous materials business plan and an SPCC plan, will be implemented. | F-B EIR/EIS |
| Hazardous Materials and Waste | HMW-AM#8 | Storage of Hazardous Materials | Storage of hazardous materials during construction and operation will meet requirements for transport, labeling, containment, cover, and other BMPs to comply with the State Water Resources Control Board Construction General Permit conditions. | F-B EIR/EIS |
| Station Planning, Land Use and Development | LU-AM#1 | Zone of Responsibility | Although not strictly part of the project design, the Authority has established a certain “zone of responsibility” around the proposed stations. To that end, the Authority prepared and distributed Urban Design Guidelines (Authority [2010] 2011b) available on the Authority’s website to provide assistance in urban planning for the stations to help achieve great placemaking. The guidelines are based on international examples where cities and transit agencies have incorporated sound urban design principles as integrated elements of large-scale transportation systems. The application of sound urban design principles to the HST System will help to maximize the performance of the transportation investment, enhance the livability of the communities it serves, create long-term value, and sensitively integrate the project into the communities along the HST System corridor. The Authority and FRA have also provided planning grants for cities that could have an HST station to assist them in land use planning in the areas surrounding the stations. | F-B EIR/EIS |
| Station Planning, Land Use and Development | LU-AM#2 | Construction Management Plan | Project design features would reduce some of the temporary land use impacts from project construction. These features are described in Section 3.12.6, Socioeconomics, Communities, and Environmental Justice, and in Section 3.3.8, Air Quality and Global Climate Change. They include implementation of a construction management plan to minimize temporary impacts on adjacent land uses and implementation of dust control measures during project construction. | F-B EIR/EIS |
| Station Planning, Land Use and Development | LU-IAM#2 per Surface Transportation Board Order | Zone of Responsibility | This measure will reduce potential land use impacts by implementing sound design principles within the “zone of responsibility” around each HSR station. The Authority prepared Urban Design Guidelines (2011) to provide urban planning assistance to achieve great place making in the station areas. The application of sound urban design principles to the HSR system will help to maximize the performance of the transportation investment, enhance the livability of the communities it serves, create long-term value, and sensitively integrate the project into the communities along the HSR system corridor. | F-B EIR/EIS Amended for LGA |

**2. LGA Settlement Agreement Environmental Commitments Applicable to Utility Potholing**

**October 24, 2018 City of Shafter Settlement Agreement**

(Sacramento County Superior Court Case No. 34-2014-80001908)

- **Relocation of City Facilities and Utilities:** If HSRA approves an alignment that triggers Retained Fill Variation, the City agrees to allow HSRA to relocate utilities and facilities owned by the City (e.g., water, lights, traffic signals) to locations owned by the City, and to conduct road closures and/or road relocations as necessary for construction of the HSR alignment (collectively, the "Relocations") without the need for payment for or condemnation of City property by HSRA, provided that the Relocations are accomplished utilizing industry standard engineering practices, such that (i) the City-owned utilities and facilities function in a materially equivalent manner as prior to the Relocations, as reasonably determined by the City Engineer and subject to HSRA's evaluation of whether the Relocation has effectuated a betterment, (ii) the design of the facilities and utilities associated with the Relocations meets the City's published (or, if not published, established) design standards in place on the Effective Date and subject to HSRA's evaluation of whether the Relocation has effectuated a betterment, and (iii) the City bears no cost associated with the Relocations. If Relocations must be placed outside of City property, easements or right of way, HSRA shall be responsible, at its cost, for securing such property, easements or right of way; the City agrees to accept from HSRA conveyance of such interest after HSRA acquires it. HSRA shall not, in its acquisition of property, create remnant parcels that will result in maintenance obligations for the City and/or property owners absent consent from the affected party. HSRA will design and implement the Relocations to ensure that non-redundant utilities serving the City will be operational at all times during all construction. Subject to the reimbursement agreement as identified in Section 5.7, the City will work in good faith with HSRA and/or its contractor to prepare the necessary agreements and/or memoranda of understanding to implement the Relocations and to execute such documentation within one (1) year of being requested in writing to do so by HSRA.

**3. LGA Applicable F-B EIR/EIS and LGA SEIR/SEIS Assumptions Used to Avoid Significant Impacts**

**Locally Generated Alternative Characteristics and Elements (LGA SEIR/SEIS ROD)**

- The total length of the alignment will be 23.13 miles, including:
    - 10.52 miles on embankment or at grade
    - 0.43 mile on bridges
    - 0.31 mile on steel truss
    - 1.97 mile on retained fill
    - 9.90 miles on viaduct
- No length of alignment will be below grade or in a trench.
- The average height of the viaduct will be 60 feet above existing ground and the maximum height of the viaduct will be 73 feet in the vicinity of Weill Park in Bakersfield.
- Straddle bents will be constructed in various locations where center support columns cannot be used in order to avoid constraints, such as roadways. Figure 2-9 of the Draft Supplemental EIR/EIS shows the straddle bent design that will be implemented as part of the F-B LGA.
- The alignment will cross several existing railroads, including various BNSF and UPRR tracks.
- The alignment will cross one major waterway, the Kern River, within the city of Bakersfield.
- The alignment will cross seven canals.
- The F-B LGA will include 43 road crossings, including 41 undercrossings and 2 overcrossings. Of these road crossings, 12 will be in the city of Shafter, 30 will be in the city of Bakersfield; and one (7th Standard Road) will be co-located in the cities of Shafter and Bakersfield.
- The F-B LGA will cross 12 roads in the city of Shafter, as described below:
    - One overcrossing at Poplar Avenue
    - 11 undercrossings at the following locations: Fresno Avenue; W Shafter Avenue; Central Avenue; Mannel Avenue; E Lerdo Highway; Riverside Street; Cherry Avenue; Driver Road; Zachary Avenue; Zerker Road; and Verdugo Lane
    - The F-B LGA will cross 30 roads in the city of Bakersfield, all of which will be undercrossings at the locations listed below:
    - Fruitvale Avenue; Snow Road; Knudsen Drive; SR 99; State Road (first undercrossing); SR 99 on-and off-ramps; Olive Drive; State Road (second undercrossing); State Road (third undercrossing); Airport Drive; SR 99 northbound on-ramp; SR 99 northbound off-ramp; 32nd Street; Chester Avenue; 30th Street; M Street; O Street; Q Street; SR 178; Sumner Street (first undercrossing); Union Avenue; Sumner Street (second undercrossing); Baker Street; Beale Avenue; Truxtun Avenue; Ogden Street; Chamberlain Avenue; Mt. Vernon Avenue; Exchange Street; and Webster Street
    - One overcrossing (7th Standard Road) will be co-located in the cities of Shafter and Bakersfield. The existing roadway will be reconstructed as a viaduct over the F-B LGA. The existing interchange of 7th Standard Road/SR 99 will be modified, including the addition of a new westbound to southbound on-ramp.
- The F-B LGA will require 10 road closures: Madera Avenue (Shafter); Gold's Avenue (Shafter); Orange Avenue (Shafter); Mendota Street (Shafter); Golden State Frontage Road South (Bakersfield); Golden State Frontage Road North (Bakersfield); H Street (Bakersfield); 24th Street (Bakersfield); Miller Street (Bakersfield); and Haley Street (Bakersfield).

- The F-B LGA will require multiple roadway modifications in the cities of Shafter and Bakersfield. These modifications will generally include adding protective barriers, curbs, sidewalks and medians. In some cases, the roadway traffic network will be modified where crossings are closed, and new crossings are constructed.

**Project Design Features**

- Follows existing transportation corridors to the extent feasible
- Uses shared right-of-way when feasible
- Uses a narrowed footprint with elevated or retained cut profile
- Spans water crossings where practical
- Includes passages for wildlife movement
- Avoids sensitive environmental resources to the extent practical

**Best Management Practices**

- Erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs will include measures to provide permeable surfaces where feasible and to retain or detain and treat stormwater onsite.
- The Authority will apply these measures and BMPs to avoid impacts in several resource areas. Regulatory requirements for many activities provide additional assurance that impacts on the environment will not occur. The applicable regulatory requirements and the avoidance and minimization measures that are part of the F-B LGA are described in more detail in the MMEP.

**Aesthetics and Visual Resources Assumptions**

- Potential construction-related impacts on visual quality will include impacts from obstruction, light, and glare; disturbing undeveloped landscapes; introducing new features that contrast with the existing rural views; obstruct scenic views; and introduce new sources of light and glare.
- Even with implementation of mitigation, construction-related impacts on aesthetics and visual resources will still remain and will not fully mitigate the effect. The F-B LGA will introduce new features including elevated and non-elevated portions of the HSR guideways, guideway support columns, contact power system, bridges, and roadway grade separations within rural areas, resulting in impacts on visual quality and character of the area.
- Mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD will still be applicable to the F-B LGA and will reduce effects related to visual disruption during construction, changes to visual character, design of HSR structures, landscape screening, and light and glare. In addition, mitigation measures specific to F-B LGA (see MMEP amendment #4) include raising embankments adjacent to residential areas and installing decorative parapet design at the Kern River crossing to reduce visual effects; however, the measures will not fully mitigate the effect.

**Transportation Assumptions (source: LGA SEIR/SEIS ROD)**

- Potential construction-related impacts on transportation will include temporary road closures and delays. Disruptions and delays will be temporary and will be reduced through implementation of avoidance and minimization measures included in the 2014 FRA Fresno to Bakersfield ROD.
- The F-B LGA will benefit traffic safety and circulation by grade separating many existing at-grade crossings and removing at-grade intersections with the BNSF railway in the city of Shafter. In addition, the F-B LGA will benefit the regional transportation system by reducing vehicle trips on freeways and diverting patrons of intrastate commercial air trips to high-speed train travel. This reduction in vehicle trips from the regional roadway system will improve future levels of service and reduce overall vehicle miles traveled.

- However, project operation will increase traffic congestion at numerous intersections around the station and result in permanent road closures in urban and rural areas. Implementation of traffic mitigation measures discussed in the 2014 FRA Fresno to Bakersfield ROD and measures specific to the F-B LGA that the Authority in October 2018 committed to implementing in its capacity as state lead agency under CEQA (and repeated in Mitigation Monitoring and Enforcement Plan [MMEP] amendment #4 for tracking purposes), including roadway restriping, installation of signals, modification of signal timing, roadway widening, and conversion of intersections to stop-control from two-way stops to all-way stops, will reduce impacts and will still apply to the F-B LGA. Implementation of mitigation the Authority already committed to in October 2018 will improve traffic operations at multiple intersections and roadway segments within the study area.

**Air Quality and Global Climate Change (source: LGA SEIR/SEIS ROD)**

- The Authority will purchase emission credits to offset the impact through a VERA with the San Joaquin Valley Air Pollution Control District, which will reduce construction impacts.
- The F-B LGA construction GHG emissions will be offset in less than 12 months of the HSR operations resulting from the reduction in future car and plane trips resulting from the Project. Operation of the HSR project will have a beneficial effect on (i.e., reduce) statewide emissions of carbon monoxide, nitrogen oxides, reactive organic gas, sulfur oxide, and particulate matter smaller than or equal to 10 microns in diameter and smaller than or equal to 2.5 microns in diameter by diverting trips from modes with higher emissions (e.g., commercial air flights and automobile trips) to HSR, which has lower emissions. In addition, project operation will have a net beneficial impact on statewide GHG emissions through reducing statewide GHG emissions.

**Noise and Vibration (source: LGA SEIR/SEIS ROD)**

- The F-B LGA will result in noise impacts during construction. These impacts will be temporary and mitigated through the implementation of project design features and mitigation measures identified in the Fresno to Bakersfield Section Final EIR/EIS and the 2014 FRA Fresno to Bakersfield Section ROD. Mitigation for these impacts includes noise monitoring during construction and requiring the contractor to implement one or more noise control measures to meet the noise limits.
- Vibration from pile driving activities during construction of the F-B LGA could also result in damage to fragile/historic buildings within approximately 77 feet and residential structures within approximately 55 feet of pile driving activity. Mitigation for vibration impacts includes preconstruction surveys to document the existing condition of buildings located within 50 feet of pile installation and using methods other than a hammer to install piles close to buildings that could be damaged by vibration. Mitigation measures will reduce construction-related noise and vibration impacts.
- The existing noise environment near the BNSF rail line in the city of Shafter includes noise generated from BNSF rail operations and train horns. **The BNSF rail line in the city of Shafter will be elevated as part of the proposed F-B LGA**. Noise levels generated from the BNSF rail operations will continue, but they will generally be lower due to shielding of the retained fill and elimination of the train horns.
- The F-B LGA will result in operational noise impacts. Sound barriers will be used to reduce noise levels at sensitive uses. However, the construction of sound barriers may not be feasible or economically reasonable, sound insulation may not be acoustically feasible or practical for certain structures, and special track work may not reduce noise impacts. After mitigation, noise associated with operation of the F-B LGA will have severe impacts on a total of 152 sensitive receptors, including 149 residences. Therefore, even with the implementation of mitigation, operational noise effects will still remain for some receivers because they are located outside of the area where the barrier will be fully effective or because the sound barrier will not fully mitigate the effect.

**Biological Resources and Wetlands**

- With implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD and measures specific to the F-B LGA (see MMEP amendment #4), biological resources and wetlands impacts associated with the F-B LGA will be mitigated. The F-B LGA does not overlap any designated or proposed critical habitat units. Construction activities associated with the F-B LGA will result in both permanent and temporary direct or indirect impacts through the disturbance or removal of lands that have been determined to support, or could potentially support habitats of concern. Project operation will result in both permanent and temporary direct and indirect impacts on habitats of concern. However, implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD, including purchase of credits from an existing mitigation bank, conducting a special-status plant re-establishment program at a 1:1 ratio, and compliance with permit requirements will still apply to the F-B LGA and will mitigate impacts on habitats of concern. Construction of the Preferred Alternative will temporarily and permanently affect riparian habitat. Restoration of riparian habitat shortly after construction disturbance will mitigate construction-period impacts.
- The Authority will compensate for permanent impacts on riparian habitat, determined in consultation with the appropriate agencies (e.g., California Department of Fish and Wildlife), by restoring nearby riparian areas through permittee-responsible compensatory mitigation. Construction activities associated with, as well as operation of, the F-B LGA will result in both permanent and temporary direct or indirect impacts through the disturbance or removal of lands that have been determined to support or could potentially support special-status plant species. However, implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD, including purchase of credits from an existing mitigation bank, conducting a special-status plant re-establishment program at a 1:1 ratio, and compliance with permit requirements will still apply to the F-B LGA and will mitigate impacts on special-status plant species.
- Prior to implementation of mitigation measures, the F-B LGA will result in impacts on jurisdictional waters and wetlands. However, implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD, including compliance with permit requirements, will still apply to the F-B LGA and will mitigate impacts on jurisdictional waters and wetlands. Construction and operation of the F-B LGA will result in both permanent and temporary direct or indirect impacts through the disturbance or removal of lands that have been determined to support or could potentially support special-status wildlife species. However, implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD and measures specific to the F-B LGA (see MMEP amendment #4), including purchase of credits from an existing mitigation bank, conducting a special-status plant re-establishment program at a 1:1 ratio, and compliance with permit requirements will still apply to the F-B LGA and will mitigate impacts on special-status wildlife species.
- The F-B LGA will potentially result in interference with wildlife movement corridors during both construction and operation. However, implementation of mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD, including project design elements, purchase of credits from an existing mitigation bank, and compliance with permit requirements will still apply to the F-B LGA and will mitigate impacts on wildlife movement corridors.

**Hydrology and Water Resources**

- Construction and operations activities associated with the F-B LGA could potentially result in hydrology and water quality impacts on existing drainage, irrigation distribution systems, and water quality; however, avoidance and minimization measures have been incorporated into the design to reduce impacts on hydrology and water resources. These measures include, but are not limited to, project design features for stormwater management and flood protection, and erosion and sedimentation controls, tracking controls, and waste management and materials pollution controls. In addition to the avoidance and minimization measures identified in the 2014 FRA Fresno to Bakersfield ROD, LGA-specific mitigation was identified (see MMEP amendment #4) to mitigate impacts related to floodplains associated with construction and operation of the F-

B LGA. Therefore, with the implementation of avoidance and minimization measures and mitigation measures, impacts on hydrology and water resources will be mitigated.

**Geology, Soils, Seismicity, and Paleontological Resources**

- The F-B LGA could result in impacts associated with geologic, soils, and seismic hazards, including unstable slopes, soil settlement, accelerated erosion, expansive and corrosive soil properties, and earthquake-induced ground liquefaction and slope destabilization. Potential impacts will be addressed through implementation of conventional foundation design methods for elevated structure, retained-fill, at-grade, and retained-cut facilities. Standard engineering and design measures and BMPs will be incorporated into the project to avoid and/or minimize impacts related to geology, soils, and seismicity. No specific paleontological resources have been recorded within the F-B LGA study area, although five geologic formations intersect the study area and are considered highly sensitive for potentially significant, yet unidentified, paleontological resources. The potential for project activities to affect paleontological resources will depend upon the required depth of ground disturbances during construction. However, potential effects associated with disturbance of paleontological resources during construction will be mitigated by ensuring appropriate monitoring and cessation of ground-disturbing activities, as needed.

**Hazardous Materials and Wastes**

- Construction and operation of the F-B LGA could cause ground disturbance (including disturbance of groundwater or surface water) near known contaminated site or sites, or where contamination could exist in the study area. Approximately 149 Potential Environmental Concern sites are within 150 feet of the F-B LGA footprint, resulting in the need for investigation during the final engineering and design phase. Construction and operation of the F-B LGA could also involve the use, storage, and disposal of hazardous materials and wastes in the study area. Construction and operation activities associated with the F-B LGA will be required to comply with existing federal and state regulations, including requirements of the Phase I, II, or III Environmental Site Assessment to reduce potential impacts related to hazardous materials. In addition, implementation of the avoidance and minimization measures and mitigation measure identified in the 2014 FRA Fresno to Bakersfield ROD still apply to the F-B LGA and will reduce impacts related to hazardous materials and waste.

**Safety and Security**

- The F-B LGA will increase demand for local emergency responders around the stations due to station activity and associated redevelopment and increased commercial development/increased employees in the area. However, the station will have on-site security patrols and expanded facilities will be required to comply with local site development and permitting processes. In addition, the Authority will coordinate with all emergency responders to maintain existing traffic patterns and fulfill response route needs, as specified in the mitigation measures included the 2014 FRA Fresno to Bakersfield ROD. Operating on a fully grade-separated, dedicated track alignment, using contemporary safety, signaling, and automatic train control systems, the F-B LGA will provide a safe and reliable means of intercity travel. Design of the system also will avoid conflicts with other vehicles, existing rail systems, pedestrians, and bicyclists and will allow the trains to operate year-round under different weather conditions. The F-B LGA will also improve safety where existing at-grade railroad crossings are replaced with grade-separated crossings, resulting in a beneficial effect on safety at railroad crossings. F-B LGA-specific mitigation measures identified in the Final Supplemental EIS (see MMEP amendment #4) will ensure continued operation of specific parcels, including the Halliburton Facility, Rain-for-Rent Facility, and Golden Empire Gleaners Facility, due to placement of the F-B LGA alignment.

**Socioeconomic and Communities**

- Construction activities will generate direct, indirect, and induced jobs in the region. Given the high level of unemployment in the region, it is anticipated that most of these new construction jobs will

be filled by current residents. Project construction activities will have an overall negative impact on sales tax revenues collected by local governments during the construction period because the sales tax lost from displaced businesses will outweigh sales tax gains from construction activities. However, the loss in sales tax revenue will be temporary and will be negligible when compared to the total sales tax collected in the region. Potential impacts that will result from operation of the F-B LGA include disruption and division of communities and economic effects. Many of these impacts are related to the displacement and relocation of residences, businesses, agricultural operations, and community facilities as a result of property acquisitions for the F-B LGA. The F-B LGA will follow existing and long-established highway and railroad corridors through the urban areas and will not bisect established neighborhoods. Sufficient comparable residential units are available to accommodate displaced residents under the F-B LGA; therefore, no additional housing will need to be constructed. Most of the displacements will occur on industrially zoned land within the community of Oildale. However, sufficient replacement space for these businesses is available under the F-B LGA. The F-B LGA will result in loss of sales tax revenue associated with displacement of businesses. However, construction-related sales tax gains will help to offset these losses, and sales tax losses associated with displacements will begin to decrease as displaced businesses become re-established at new locations and new businesses move in to replace those that do not reopen. Project operation is expected to have an overall positive impact on sales taxes collected by local governments under F-B LGA implementation. Measures identified in the 2014 FRA Fresno to Bakersfield ROD are still applicable to the F-B LGA and will reduce impacts related to split agricultural parcels, rural communities, community facilities, displaced residences, and acquisitions.

**Agricultural Land**

- Construction of the F-B LGA will result in the temporary use of agricultural land, including Important Farmland, for construction sites outside of the permanent right-of-way, such as for staging and material laydown areas. This land will be restored and returned to agricultural use after project construction is completed. The F-B LGA will convert Important Farmland to nonagricultural uses, bisect agricultural parcels, and require full or partial acquisition of parcels under Williamson Act and Farmland Security Zones contracts (state laws). Overall, the F-B LGA will result in the permanent loss of 372 acres of Important Farmland. Mitigation measures included in the 2014 FRA Fresno to Bakersfield ROD will still be applicable to the F-B LGA and include preserving land for agriculture and consolidating remnant parcels so that they remain in agricultural production. The F-B LGA will also implement a Farmland Consolidation Program to reduce impacts caused by parcel severance; while parcel ownership may change due to severance, the larger remnant parcels will remain in agricultural use. However, these mitigation measures will not create new farmland nor will they replace the converted farmland in an area of high production agricultural soils that are threatened by development encroachment. The F-B LGA will result in the permanent loss of agricultural land with the implementation of mitigation.

**Parks, Recreation, and Open Space**

- The F-B LGA will result in temporary noise, dust, visual, and access effects on two parks. Construction impacts, such as property, noise, dust, and visual degradation associated with the F-B LGA will be short in duration. In addition, measures identified in the 2014 FRA Fresno to Bakersfield ROD will be implemented to minimize disruptions to recreational facilities during the construction period.
- As identified in the Final Supplement EIS, the F-B LGA will result in the permanent acquisition of approximately 0.76 acre of parkland, including 0.66 acre of land at Kern River Parkway and approximately 0.10 acre at Weill Park. The proposed Bakersfield F Street Station will include new park space that will at least partially offset the parkland that will be acquired for the Project and will be located in generally the same area as the parkland being acquired. In addition, operation and maintenance of the F-B LGA could result in changes to park character as a result of noise and/or visual changes associated with the F-B LGA that will disrupt recreational activities or opportunities at parks within the study area. As described in the 2014 FRA Fresno to Bakersfield

ROD, as part of project implementation the Authority will implement impact avoidance and minimization measures and mitigation measures (MMEP Amendment #4, Table 2) to reduce potential impacts on park resources, including working with affected jurisdictions to provide compensation for affected areas.

- Alternate access will be provided for temporary impacts on parks and recreational facilities, or compensation will be provided for permanent property acquisition.

**Aesthetics and Visual Resources**

- Construction of the F-B LGA will result in impacts on visual quality in the rural San Joaquin Valley and urban Bakersfield portions of the alignment, as well as through the City of Shafter, from obstruction, light, and glare. Construction activities will disturb undeveloped landscapes, introduce new features that contrast with the existing rural views, obstruct scenic views, and introduce new sources of light and glare. Even with implementation of mitigation, construction-related impacts on aesthetics and visual resources will still remain and will not fully mitigate the effect. The F-B LGA will introduce new features including elevated and non-elevated portions of the HSR guideways, guideway support columns, contact power system, bridges, and roadway grade separations within rural areas, resulting in impacts on visual quality and character of the area. Mitigation measures identified in the 2014 FRA Fresno to Bakersfield ROD will still be applicable to the F-B LGA and will reduce effects related to visual disruption during construction, changes to visual character, design of HSR structures, landscape screening, and light and glare. In addition, mitigation measures specific to F-B LGA (see MMEP amendment #4) include raising embankments adjacent to residential areas and installing decorative parapet design at the Kern River crossing to reduce visual effects; however, the measures will not fully mitigate the effect.

**Cultural Resources**

- Activities that cause impacts on cultural resources are typically associated with construction of a project: disturbance of the ground, material, or physical alteration of the built environment, or alteration of the visual setting. Construction of the F-B LGA will occur in both urban and rural/undeveloped areas. The F-B LGA will have the potential to affect historic architectural and historic-era archaeological resources in the urban areas and the potential to affect undisturbed prehistoric archaeological sites in rural/undeveloped areas. The F-B LGA will result in indirect visual effects on four historic architectural resources that are listed or eligible for listing on the National Register of Historic Places by introducing new visual elements into their setting that could affect the historic property's ability to convey its significance. However, affected historic resources within urbanized areas adjacent to the F-B LGA are also typically adjacent to other transportation infrastructure (i.e., freight lines and highways); therefore, the functional historical context of these resources will not substantially change and no adverse effect will result. Even with the implementation of mitigation measures, including preparing interpretive or educational materials and documenting and recording historical resources, the visual indirect effects cannot be fully avoided or minimized; however, the effects will not be adverse. No known archaeological resources were identified within the F-B LGA study area. However, the F-B LGA has the potential to affect unknown or unrecorded archaeological resources that may exist within the study area. Mitigation measures identified in the 2014 Fresno to Bakersfield ROD will still be applicable to the F-B LGA and will reduce impacts on archaeological resources, and no adverse effect will result.

**Measures to Minimize Harm/Mitigation**

- Measures to minimize harm include measures that were taken during project planning to avoid or minimize impacts, as well as mitigation and enhancement measures to compensate for
- unavoidable project impacts. Table 2 lists the measures identified by the Authority to minimize harm, as required by 49 U.S.C. Section 303(c)(2), which will be incorporated into the Project to address the impacts of the alternative alignment. It should be noted that not all parts of the measures to minimize harm will be applicable to the Preferred Alternative (for example no Section 106 properties will be affected by the F-B LGA and therefore measures to reduce Section 106

impacts are not applicable). Additionally, some mitigation measures below will act as minimization measures for the F-B LGA where mitigation is not required. The Authority is continuing ongoing coordination, as appropriate, with these officials; during the Authority's consideration of its decision and during final design, additional measures may be agreed on to further reduce potential impacts on Section 4(f) properties.

**Table 2 Measures to Minimize Harm: Historic Properties (Jurisdiction: SHPO)**

- Property acquisition
- Potential vibration impacts
- Potential visual intrusion
- The F-B LGA will develop construction methods to avoid indirect adverse effects on any historic properties from vibration caused by construction activities. Vibration from impact pile driving during construction is anticipated to reach up to 0.12 in/sec ppv at 135 feet from the project centerline, a level that could cause the physical destruction, damage, or alteration of historic properties or historical resources if the pile driving is within 80 to 140 feet of the building. Because impact pile driving could cause adverse effects, alternative construction methods causing less than 0.12 in/sec ppv measured at the receptor will be developed for construction activities near historic properties or historical resources if they are determined to be susceptible to vibration damage at or above 0.12 in/sec ppv (Authority and FRA 2012e). The development of alternative construction methods at these locations will avoid indirect adverse vibration effects on historic properties. Implementation of avoidance measures will be monitored to ensure that damaging vibration levels are avoided during construction adjacent to the historic properties identified as requiring this treatment.
- The mitigation measure described above is consistent with FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (2005) for evaluation of noise and vibration impacts associated with HSR. The BETP will describe the methodology for the avoidance of adverse vibration effects and how such avoidance will be monitored and implemented during construction of the Project.
- As identified in the MOA, the BETP will identify specific historical resources that will be physically altered, damaged, or destroyed by the Project and that will be documented in detailed recordation that includes photographs. This documentation may include preparation of updated recordation forms (Form 523), or may be consistent with the Historic American Building Survey, the Historic American Engineering Record, and the Historic American Landscape Survey programs. The recordation undertaken by this treatment will focus on the aspect of integrity that will be affected by the Project for each historic property subject to this treatment. For example, historic properties in an urban setting that will experience an adverse visual effect will be photographed to capture exterior and contextual views; interior spaces will not be subject to recordation if they would not be affected.
- Recordation documents will follow the appropriate guidance for the recordation format and program selected.
- The BETP will identify historic properties and historical resources that will be subject for historic interpretation. Interpretive exhibits will provide information regarding specific historic properties or historical resources and will address the aspect of the significance of the properties that will be affected by the Project. Interpretive materials could include, but are not limited to: brochures, videos, websites, articles, or reports for general publication, commemorative plaques, or exhibits. Historic properties and historical resources subject to demolition by the Project will be the subject of informative permanent metal plaques that will be installed at the site of the demolished historic property or at nearby public locations. Each plaque will provide a brief history of the subject property, its engineering/architectural features and characteristics, and the reasons for and the date of its demolition.

- The interpretive materials will utilize images, narrative history, drawings, or other material produced for the mitigation described above, including the additional recordation prepared, or other archival sources. The interpretive materials could be advertised and made available to and/or disseminated to the public at local libraries, historical societies, or public buildings.

This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with the treatment of historic properties in similar-scale transportation projects. Preparing interpretive exhibits has proven to be effective in achieving the stewardship goals of Section 106. Performance tracking of this mitigation measure will be described in the BETP and will be included in the Mitigation Monitoring and Enforcement Plan.

- The BETP will provide that a plan for the repair of inadvertent damage to historic properties or historical resources be developed before Project construction. The plan will consist of a general protocol for inadvertent damage to historic architectural resources and a listing of specific properties that should be the subject of an individual plan because of their immediate proximity to the project. Inadvertent damage from the project to any of the historic properties or historical resources near construction activities will be repaired in accordance with the USSOI's Standards for Rehabilitation.
- The plan may utilize photographic documentation prepared for the other mitigation measures (such additional recordation) as the baseline condition for assessing damage. The plan will include the protocols for notification, coordination, and reporting to the SHPO and the landowner or land-owning agencies. Before implementation of the plan, plans for any repairs to historic properties will be submitted for review and comment to the SHPO to verify conformance with the USSOI's Standards for Rehabilitation.

This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with treatment of historic properties in similar-scale transportation projects. This type of mitigation measure has proven to be effective in achieving the stewardship goals of Section 106. Performance tracking of this treatment will be described in the BETP.

**Table 2 Measures to Minimize Harm: Kern River Parkway; Weill Park (Jurisdiction: City of Bakersfield)**

- Property acquisition
- Visual intrusion from overhead HSR
- Temporary construction activities in the park
- Temporary construction noise impacts
- Offsite landscape screening will be planted to provide new, intermittent screening of project structures. Occasional groupings of new trees in the parkway will be placed to break up views of long expanses of the guideway. Extensive tall tree planting will be made at or near the edge of the Project right-of-way in the parkway.
- The Authority will continue to work with the City of Bakersfield to advance the final design through a collaborative, context-sensitive solutions approach. Participants in the consultation process will meet on a regular basis to develop a consensus on the urban design elements that are to be incorporated into the final guideway designs. The process will include activities to solicit community input in the affected neighborhoods.
- For the elevated guideways and columns, architectural elements, such as graceful curved or tapered sculptural forms and decorative surfaces, will be incorporated to provide visual interest. Decorative texture treatments will be included on large-scale concrete surfaces such as parapets and other segments of elevated guideways. A variety of texture, shadow lines, and other surface articulation will be added to provide visual and thematic interest. The design of guideway columns and parapets will be closely coordinated with station and platform architecture to promote unity and coherence where guideways lie adjacent to stations.

- Design features that provide interest and reflect the local design context will be incorporated. These features could include landscaping, lighting, and public art.
- After construction is complete, the Authority will plant vegetation within lands acquired for the Project features (e.g., shifting roadways) that are not used for the HSR Project or related supporting infrastructure. Plantings will allow adequate space between the vegetation and the HSR alignment and catenary lines. All street trees and other visually important vegetation removed in these areas during construction will be replaced with similar vegetation that, on maturity, will be similar in size and character to the removed vegetation. The Authority will ensure that vegetation will be continuously maintained and appropriate irrigation systems will be installed within the planting areas. No species listed on the Invasive Species Council of California's list of invasive species will be used for these plantings.
- The Authority will coordinate with the City of Bakersfield to provide alternative routes for bicycle or pedestrian paths that will be temporarily closed during construction of the HSR guideway.
- As part of ongoing coordination with the City of Bakersfield, the Authority will continue discussions and identification of opportunities to reduce impacts, such as minimizing the vertical clearance of the guideway.
- During construction, the contractor will monitor construction noise to verify compliance with the established noise limits. The contractor will be given the flexibility to meet the FRA and local construction noise limits in the most efficient and cost-effective manner. Meeting these limits can be done by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. The following noise control mitigation measures will be implemented as necessary, for nighttime and daytime:
    - Install a temporary construction site sound barrier near a noise source.
    - Locate stationary construction equipment as far as possible from noise-sensitive sites.
    - Use low-noise emission equipment.
    - Implement noise-deadening measures for truck loading and operations.
    - Monitor and maintain equipment to meet noise limits.
    - Line or cover storage bins, conveyors, and chutes with sound-deadening material.
    - Use acoustic enclosures, shields, or shrouds for equipment and facilities.
    - Use high-grade engine exhaust silencers and engine-casing sound insulation.
    - Minimize the use of generators to power equipment.
    - Limit use of public address systems.
    - Grade surface irregularities on construction sites.
    - Use moveable sound barriers at the source of the construction activity.
    - Limit or avoid certain noisy activities during nighttime hours.
    - To mitigate noise related to pile driving, the use of an auger to install the piles instead of a pile driver will reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.
    - In the procurement of an HSR vehicle technology, the Authority will require bidders to meet the federal regulations (40 C.F.R. Part 201.12/13) at the time of procurement for locomotives (currently a 90-decibel-level standard) for cars operating at speeds of greater than 45 miles per hour.

**Environmental Justice Finding**

- The Preferred Alternative (i.e., F-B LGA) will result in disproportionately high and adverse effects on minority and low-income populations in Shafter and Bakersfield. These impacts consist of an increase in both ambient noise levels; residential and business displacements, and the displacement of important community facilities; and decreases in visual quality.
- The Project includes the application of noise and vibration mitigation measures (see MMEP, in Appendix C) to reduce noise and vibration impacts resulting from HSR operations by constructing sound barriers, acquiring property easements, installing insulation, and providing a smooth running surface for the HSR, as appropriate. However, these measures will not completely eliminate the adverse impacts, which will likely be more severe in urban areas where minority and low-income populations reside. There are no practicable mitigation measures beyond these, or alternatives, available to completely eliminate these effects.
- The Project includes various mitigation measures that address relocation through locating suitable replacement properties and facilities. Mitigation measures also include additional outreach to affected minority and low-income populations, such as but not limited to facilitated community workshops. These measures will reduce but not eliminate the effects that result from displacements. There are no practicable mitigation measures beyond these, or alternatives, available to completely eliminate these effects.
- Similarly, the incorporation of context-sensitive design criteria for Project features and plantings and other landscape features to screen views of Project structures and sound walls will mitigate the light, glare, and blocked views that result from the Project, and therefore will reduce the adverse effects. Nevertheless, some decreases in visual quality will remain even with mitigation, and will disproportionately affect minority and low-income populations. There are no practicable mitigation measures beyond these, or alternatives, available to completely eliminate these effects.
- The Authority also considered the potential offsetting benefits associated with the Preferred Alternative. For example, construction and operation of the Preferred Alternative will result in employment growth in the region, and it will specifically benefit low-income and minority populations through special recruitment, training, and job set-aside programs.
- The California HSR System, of which the Fresno to Bakersfield Section is just one section, will improve transportation options throughout the state, improve long-term air quality, and reduce traffic congestion. These Project benefits will accrue not only to low-income and minority populations, but also to the broader community as a whole.
- As part of the Environmental Justice analysis and as discussed above, the Authority identified appropriate mitigation measures for the Preferred Alternative to address potentially adverse impacts on low-income and minority populations. One of the elements of the Project mitigation is continued outreach with affected communities to ensure their concerns are considered during final design and Project implementation.
- The Authority, as NEPA lead agency, finds that there is a substantial need, based on the overall public interest, for an HSR system that connects the southern Central Valley, including Bakersfield as its largest city, to the San Francisco Bay Area (of which connection the F-B LGA is an indispensable part), and which connects the Los Angeles area to the San Francisco Bay Area (of which connection the F-B LGA is also an indispensable part).
- The core substantial need for the project, as part of the Valley to Valley system and the longer Los Angeles to San Francisco Phase I system, is the increased intercity mobility the system would provide and to complement existing highway and airports that have not meaningfully expanded in decades despite significant populations growth in California. More specifically, on a state level, the overall HSR System, including the F-B LGA, will provide program benefits that are in the overall public interest. The benefits include:

- Improvements in mobility and travel time
- Reductions in vehicle miles traveled and commensurate drops in emissions of GHGs and criteria air pollutants
- Increased job creation both during construction and throughout operations, which is particularly important in the Central Valley as an economic matter
- Enhanced community planning leading to transit-oriented development and pedestrian scale communities
- Greater opportunities for walking and improved health outcomes as identified through the HSR planning and environmental documentation
- Operation of the first segment of the Phase 1 HSR system will remove the equivalent of 31,000 passenger cars from the highways per day, according to the California High-Speed Rail Project Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes (Authority and FRA 2012a).
- The HSR operation will present an alternative to the needed expenditure of $158 billion for new highway miles and airport infrastructure. Additionally, vehicle miles traveled (an indicator of energy consumption), GHG emissions, and criteria air pollution generation will be reduced from the diversion of travelers from passenger cars to rail.
- The implementation of HSR will have a beneficial effect on future community development around station sites and in proximity to intercity transit affected by HSR investment. Transit-oriented development will create denser community centers, leading to pedestrian scale planning.
- Provision of walkable and cycling infrastructure will reduce the demand for short-distance automobile travel and can spur economic development at the pedestrian level. The focus on transit-oriented development, complete streets, and walkable communities will have direct benefits to property values, community cohesion, and healthy outcomes as described in Vision California (Authority and Calthorpe Associates 2010).
- More locally, the City of Bakersfield will realize community and economic benefits surrounding the F Street Station development. As discussed in Appendix 8-A of the Draft Supplemental EIR/EIS, the F Street Station area (F-B LGA) contains more vacant but brownfield land compared to the Truxtun Avenue Station (May 2014 Project); therefore, the F Street Station presents more opportunities for infill development, revitalization of existing large buildings, new job creation, and transit-oriented housing. According to the City of Bakersfield Making Downtown Bakersfield Vision Plan (May 2018), the second phase of Plan implementation lays out a framework for redeveloping the area around the F Street Station. Garces Circle would be transformed from an automobile-oriented roundabout into a high-density, mixed-use retail, residential and office district. This new district will be supported by rehabilitating adjacent mixed-use and single-family neighborhoods.
- Furthermore, the Authority, as NEPA lead agency, finds that the other alternative under consideration, the May 2014 Project, would have greater effects on protected populations, as compared to the F-B LGA, related to operational land use and parks, recreation, and open space effects, and it would have similar effects on protected populations, as compared to the F-B LGA-related to operational noise and vibration, socioeconomics and communities, and aesthetics and visual resources effects. The Authority finds that the May 2014 Project would have other adverse social, economic, environmental, or human health impacts that are severe. For example, the May 2014 Project would have 302 severe noise impacts, a community effect in the community of Chrome, a Section 4(f) use in which the local jurisdiction did not concur with the proposed de minimis finding, and a land use incompatibility finding associated with the Truxtun AvenueStation.
- Moreover, the F-B LGA is superior in many community and natural environment regards compared to the May 2014 Project. Examples include:

- The F-B LGA, when compared to the May 2014 Project, will reduce the number of residential displacements. The F-B LGA will require 86 residential displacements compared to 384 residential displacements under the May 2014 Project.
- The F-B LGA, when compared to the May 2014 Project, will result in fewer business relocation impacts. The F-B LGA will require 377 business relocations displacements compared to 392 business relocations under the May 2014 Project.
- The F-B LGA, when compared to the May 2014 Project, results in fewer total direct impacts on protected waters. The F-B LGA will result in 17.14 acres of total direct impacts on waters compared to 20.14 acres of total direct impacts on waters under the May 2014 Project.
- With respect to resources protected by Section 4(f), both alternatives cross the Kern River Parkway, resulting in comparable impacts. The May 2014 Project would cross the Mill Creek Linear Park, while the F-B LGA will cross the northern half of Weill Park. In the 2014 Fresno to Bakersfield Section Final EIR/EIS, FRA determined the impacts to Mill Creek Linear Park and for the Kern River Parkway would be de minimis, but the City of Bakersfield, the official with jurisdiction, did not concur with the determination and therefore FRA instead found a 4(f) use of those resources. For the F-B LGA, the City of Bakersfield provided formal written concurrence on the de minimis use determination on September 12, 2018.
- The F-B LGA, when compared to the May 2014 Project, will result in fewer severe noise impacts. The F-B LGA will result in severe noise impacts at 152 sensitive receptors compared to 302 severe noise impacts associated with the May 2014 Project.
- The F-B LGA, when compared to the May 2014 Project, will result in fewer permanent impacts on Important Farmlands. The F-B LGA will permanently impact 372 acres of Important Farmlands compared to 485 acres under the May 2014 Project.
- The F-B LGA also will result in fewer overall impacts related to agricultural lands, noise, residential displacement, special-status species, aquatic habitats, and key community facilities.

**4. Biological Opinion Environmental Requirements** (Appendix G to LGA ROD)
**July 27, 2018 for Locally Generated Alternative (08ESMF00-2012-F-0247)**
At issue are revisions of effects on the following federally-listed species and critical habitats:

The federally-listed as endangered:

- San Joaquin kit fox *(Vulpes macrotis mutica)* (kit fox)
- Fresno kangaroo rat *(Dipodomys nitratoides exilis)*
- Tipton kangaroo rat *(Dipodomys nitratoides nitratoides)* (TKR)
- Buena Vista Lake ornate shrew *(Sorex ornatus relictus)* (shrew)
- blunt-nosed leopard lizard *(Gambelia sila)* (lizard)
- vernal pool tadpole shrimp *(Lepidurus packardi)* (tadpole shrimp) and designated critical habitat
- California jewelflower *(Caulanthus californicus)*
- Kern mallow *(Eremalche kernensis)*
- San Joaquin woolly threads *(Monolopia condonii)*

and the federally-listed as threatened:

- Central California distinct population segment of the California tiger salamander *(Ambystoma californiense)* ( central California salamander) and designated critical habitat
- Vernal pool fairy shrimp *(Branchinecta lynchi)* (fairy shrimp) and designated critical habitat
- Hoover's spurge *(Chamaesyce hooveri)*

*Description of Fresno to Bakersfield Locally Generated Alternative*

The F-B LGA provides an alternative alignment for a 23.13-mile segment of the project between the city of Shafter and the city of Bakersfield. The F-B LGA consists of the following characteristics and elements:

- The total length of the F-B LGA alignment includes 10.52 miles on embankment or at-grade, 0.43 mile on bridges, 0.31 mile on steel truss, 1.97 miles on retained fill, and 9.90 miles on viaduct. No length of the alignment will be below grade or in a trench.
- The average height of the viaduct is 60 feet above existing ground.
- Straddle bents will be constructed in various locations where center support columns cannot be used in order to avoid constraints, such as roadways.
- The F-B LGA alignment crosses several existing railroads, including various Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad tracks, one major waterway, the Kern River within the city of Bakersfield, and seven canals;
- The F-B LGA includes 43 road crossings, with 41 undercrossings and 2 overcrossings. Of these road crossings, 12 are within the city of Shafter, 30 will be within the city of Bakersfield, and one (7$^{th}$ Standard Road) will be co-located in the two cities;
- The existing interchange of 7$^{th}$ Standard Road and State Route (SR) 99 will be modified, including the addition of a new westbound to southbound on-ramp;
- The F-B LGA will require multiple roadway modifications in the cities of Shafter and Bakersfield, generally including addition of protective barriers, curbs, sidewalks, and medians. In some cases, the roadway traffic network will be modified where crossings are closed, and new crossings are constructed;
- The F-B LGA F Street Station will be located at the intersection of F Street and SR 204 in the city of Bakersfield. Circulation improvements that are part of the station plan include: elimination of the at-grade intersection of F Street and SR 204 and lowering of the F Street roadway below SR 204, a new roadway providing access from the 30$^{th}$ Street and Alder Street intersection, realignment of the Chester Avenue and 34$^{th}$ Street intersection, and conversion of the Chester Avenue and 32$^{nd}$ Street intersection to a right-in/right-out driveway into the station site;

- One infrastructure maintenance facility is proposed to be located in the city of Shafter between Fresno Avenue and Poplar Avenue; and
- Two electrical stations will be built within urban Bakersfield: one along Windsong Street in a barren lot, and a second in a barren lot bordered by 14and S Streets, a canal, and an existing railway.

**Mitigation Sites**

The April 2015 ***Fresno to Bakersfield Compensatory Mitigation Plan*** presented a strategy to accomplish the habitat compensation proposed by the Authority, including fee-title acquisition, conservation easement, or other legal agreement for protection of lands that have the potential to support federally-listed species. Currently, five mitigation sites have been proposed, described below (Figure 3). Additional mitigation sites may be selected, in coordination with the Service. A detailed mitigation plan will be prepared for each site, to be approved by the Service.

*Cross Creek Mitigation Site*

The Cross Creek Mitigation Site includes two properties, Cross Creek East and Cross Creek West (the former FCMS), totaling approximately 1,220 acres. The site is located 9 miles south of the city of Kingsburg, in Tulare and Kings Counties. Habitat on the site is composed of wetlands, including vernal pools, seasonal streams, and annual grassland. The majority the site will be preserved, with long-term management intended to maintain and enhance the functions and values of the habitat for federally-listed species found on-site. In addition, activities have been proposed to improve existing riparian habitat on-site, including the installation of exclusion fencing and replanting of native plants along the creek corridor. The *Fresno to Bakersfield Project Section Cross Creek Mitigation Site Final Mitigation Package,* including a Compensatory Mitigation Plan and Long Term Management Plan, was finalized in June 2018.

*Cottonwood Creek Mitigation Site*

The Cottonwood Creek Mitigation Site is located within the eastern portion of the Tulare-Buena Vista watershed, north of the city of Visalia. The 24 7-acre site is composed of wetlands, including vernal pools, intermittent drainages, annual grassland, mesic grassland, and agriculture (dry-farmed winter wheat). In addition to prese1-vation of existing habitat, additional activities are proposed, including wetland rehabilitation, enhancement, and creation. Rehabilitation will entail removing the existing cultivation and introducing grazing of disturbed wetlands on the site. Enhancement will entail excavating deeper areas in existing, very shallow seasonal wetlands to increase their value to vernal pool species. Establishment will entail the excavation of vernal pool basins in uplands that historically did not contain vernal pools.

Grading associated with enhancement and establishment will occur during the dry season. In total, proposed activities on the Cottonwood Creek Mitigation Site will result in approximately 3.6 acres of wetland rehabilitation, excavation of 8.5 acres of vernal pools consisting of a combination of enhancement and establishment, and prese1-vation of approximately 100 acres of wetlands. Enhancement and establishment also will include application of inoculum from vernal pools after excavation.

*Kings River Mitigation Site*

The Kings River Mitigation Site is approximately 53 acres located in the floodplain of the Kings River, just east of the city of Sanger. Seasonal riverine, seasonal wetland, and emergent marsh habitat will be re-established, rehabilitated, and enhanced. Wetland habitat will be re-established by grading upland portions of the site that are either within peak groundwater levels or adjacent to existing wetlands that support adequate surface hydrology to allow for expansion. After excavation of the re-establishment areas to design elevation, these areas will be planted with native riparian and wetland plant species and seeded with native grasses. Rehabilitation will be accomplished by either excavation or alteration of the existing management regime. Enhancement will take place by the removal of soil plugs to allow wetlands

to hydrologically reconnect to adjacent features, as well as planting native wetland and riparian vegetation.

*CD Hillman Mitigation Site*

The CD Hillman Mitigation Site is located on the east side of Corcoran Road, approximately 2 miles south of Garces Highway in the Wasco area of northern Kern County. The site is composed of 239 acres of annual grassland, shadscale scrub, alkali sink scrub, and seasonal wetlands. The site will primarily be preserved, with long-term management intended to maintain and enhance the functions and values of the habitat for federally-listed species found on-site. In addition, treatment of invasive tamarisk will occur. Translocation of TKR from portions of the construction area may occur on the mitigation site following a site-specific plan developed in coordination with the Service.

*Alkali Flats Mitigation Site*

The Alkali Flats Mitigation Site is 158 acres, located approximately 4 miles south of the Kern National Wildlife Refuge and composed of an alkali sink community, including alkali rain pools. The only known previous use of the site is periodic grazing. No habitat restoration activities are planned at this site. Fencing will be installed along Corcoran Road and two debris piles will be removed.

**Action Area (LGA Specific)**
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." For the purposes of the effects assessment, the action area includes the CHST-FB alignment footprint, lands surrounding it, the Early Work Variations area, and all Service-approved mitigation sites.

Several potential alignments have been identified in the Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement for the proposed project. These alternatives include varying siting for not only rail alignments, but also other project infrastructure, including passenger stations, power delivery stn1Ctures, maintenance-of-way facilities, operations control centers, and a Heavy Maintenance Facility. Since an alternative has not been selected to date for all components of the Fresno to Bakersfield Section, this biological opinion includes a project description and effects analysis for all alternative alignments, and assesses effects to federally-listed species based on a range of impacts from minimum to maximum (expressed in acreages). Regardless of the final alignment selected, project impacts will be similar geographically as well as in general nature and magnitude.

The project footprint extends to the physical limits of the construction activities associated with the proposed action. The project footprint includes all areas that will be permanently or temporarily affected by the proposed action. The footprint consists of the limits of cut and fill plus all access roads and areas required for operating, storing, and refueling construction equipment. The estimated project footprint for the CHST-FB Project alignment is expected to be no greater than approximately 7,189 acres.

The estimated length of the Fresno to Bakersfield alignment will extend up to 117 miles. The area affected by disturbance from noise and vibrations, dust, and lighting during project construction is expected to extend up to 1,000 feet from both sides of the track. Associated project structures, such as roadway improvements, overcrossings, related ancillary facilities, and other permanent project elements, are included in the estimated project action area for the CHST-FB Project. The project action area for the Fresno to Bakersfield alignment, including the project footprint, the Early Work Variations area, and mitigation sites is currently estimated to be no greater than 50,368 acres, which will be considered for the purposes of this opinion. Additional mitigation sites may be selected, in coordination with the Service, which will be considered part of the action area upon Service acceptance. Activities on these sites are expected to be similar in general nature and magnitude of those analyzed in this opinion.

**Environmental Baseline (LGA Specific)**

*San Joaquin kit fox,* at the end of second paragraph, **add:**

As of Junie 2018 no kit fox have been detected during preconstruction surveys or burrow monitoring and excavations within any portions of CP 2-3 or CP 4 that have been evaluated, including 851.00 acres of suitable habitat that has been reported as impacted.

On pages 65 and 66, under **Environmental Baseline,** *San Joaquin kit fox,* **replace** third paragraph **with:**

San Joaquin kit foxes are expected to occur within all areas of suitable habitat throughout the CHST-FB project action area. An estimated 5,475.18 acres of habitat (alkali desert scrub, annual grassland, pasture, barred, urban Bakersfield, and agricultural lands) occurs within the 7,189-acre CHST-FB Project alignment footprint. Approximately 1,771.09 of the 5,472.18 acres (32 percent) occur within satellite and corridor areas. Highly suitable habitat for the kit fox supports denning, foraging, and breeding; in the CHST-FB project action area it is composed of annual grasslands, alkali desert scrub, pasture, and barren land cover, as mapped for this project. Approximately 795.04 acres of the 5,472.18 acres (15 percent) of habitat is considered highly suitable for use by the kit fox (Table 4) About 51 percent (403.94 acres) of the 795.04 acres of highly suitable habitat occurs within satellite and corridor areas. The remaining 4,677.14 acres of kit fox habitat consists of agricultural and urban habitats between Fresno and Bakersfield (Table 4).

**Table 4. Range of potential habitat for the San Joaquin kit fox.**

| Land Prioritization[1] | CWHR Vegetation Community or Wildlife Association | Impact Type | Areas of Effect (Acres)[2] | |
|---|---|---|---|---|
| | | | MIN | MAX |
| **Southwestern Tulare County Satellite Area** | **Natural** | | **86.26** | **165.01** |
| | Annual Grassland | Direct | 86.12 | 112.59 |
| | Alkali Desert Scrub | Direct | 0.07 | 37.40 |
| | Barren | Direct | 0 | 9.98 |
| | Pasture | Direct | 0.07 | 5.04 |
| | Valley Oak Woodland | Direct | 0 | 0 |
| | **Agriculture** | | **511.36** | **687.86** |
| | Agriculture/Crop | Direct | 184.72 | 209.39 |
| | Dryland Grain Crop | Direct | 30.17 | 38.70 |
| | Deciduous Orchard | Direct | 228.81 | 255.10 |
| | Evergreen Orchard | Direct | 0 | 0 |
| | Irrigated Grain Crop | Direct | 10.69 | 75.75 |
| | Irrigated Row and Field Crop | Direct | 0 | 0 |
| | Irrigated Hayfield | Direct | 56.97 | 108.2 |
| | Vineyard | Direct | 0 | 0- |
| | **Urban/BNSF** | | **0** | **0** |
| | BNSF | Direct | 0 | 0 |
| | Urban Development | Direct | 0 | 0 |
| **Metropolitan Bakersfield Satellite Area (Urban Bakersfield)** | **Natural** | | ~~214.77~~ **51.72** | ~~218.15~~ **218.78** |
| | Annual Grassland | Direct | 34.67 | ~~36.55~~ 36.17 |
| | Alkali Desert Scrub | Direct | ~~10.13~~ 0 | 11.14 |
| | Barren | Direct | ~~169.11~~ 17.05 | 169.32 |
| | Pasture | Direct | ~~0.86~~ 0 | 1.15 |

| | | | | |
|---|---|---|---|---|
| **Metropolitan Bakersfield Satellite Area (Urban Bakersfield)** | Valley Oak Woodland | Direct | 0 | 0 |
| | **Agriculture** | | 0 | 0 |
| | Agriculture/Crop | Direct | 0 | 0 |
| | Dryland Grain Crop | Direct | 0 | 0 |
| | Deciduous Orchard | Direct | 0 | 0 |
| | Evergreen Orchard | Direct | 0 | 0 |
| | Irrigated Grain Crop | Direct | 0 | 0 |
| | Irrigated Row and Field Crop | Direct | 0 | 0 |
| | Irrigated Hayfield | Direct | 0 | 0 |
| | Vineyard | Direct | 0 | 0 |
| | **Urban/BNSF** | | **~~249.62~~ 238.34** | **301.56** |
| | BNSF | Direct | ~~13.5~~ 2.22 | 13.67 |
| | Urban development | Direct | 236.12 | 287.89 |
| **Linkage Area** | **Natural** | | **0** | **20.15** |
| | Annual Grassland | Direct | 0 | 1.27 |
| | Alkali Desert Scrub | Direct | 0 | 0 |
| | Barren | Direct | 0 | 18.88 |
| | Pasture | Direct | 0 | 0 |
| | Valley Oak Woodland | Direct | 0 | 0 |
| | **Agriculture** | | **104.69** | **377.73** |
| | Agriculture/Crop | Direct | 3.01 | 96.55 |
| | Dryland Grain Crop | Direct | 0 | 0 |
| | Deciduous Orchard | Direct | 88.81 | 92.49 |
| | Evergreen Orchard | Direct | 0 | 0 |
| | Irrigated Grain Crop | Direct | 7.90 | 25.80 |
| | Irrigated Row and Field Crop | Direct | 0 | 6.08 |
| | Irrigated Hayfield | Direct | 4.97 | 29.83 |
| | Vineyard | Direct | 0 | 126.98 |
| | **Urban/BNSF** | | 0 | 0 |
| | BNSF | Direct | 0 | 0 |
| | Urban development | Direct | 0 | 0 |
| **Remainder Areas (Outside of Recovery Areas)** | **Natural** | | **164.34** | **~~365.63~~ 391.10** |
| | Annual Grassland | Direct | 111.05 | ~~184.46~~ 184.93 |
| | Alkali Desert Scrub | Direct | 2.03 | 9.16 |
| | Barren | Direct | 28.58 | ~~134.~~24 159.24 |
| | Pasture | Direct | 22.69 | 37.77 |
| | Valley Oak Woodland | Direct | 0 | 0 |
| | **Agriculture** | | **~~1,643.94~~ 1,477.49** | **~~3,265.14~~ 3,309.99** |
| | Agriculture/Crop | Direct | ~~159.49~~ 155.75 | 516.12 |
| | Dryland Grain Crop | Direct | ~~34.85~~ 10.89 | 77.80 |
| | Deciduous Orchard | Direct | ~~733.19~~ 628.02 | 1,199.49 |
| | Evergreen Orchard | Direct | 3.42 | 3.42 |
| | Irrigated Grain Crop | Direct | ~~160.47~~ 158.14 | 382.44 |
| | Irrigated Row and Field Crop | Direct | ~~37.62~~ 29.68 | 131.24 |
| | Irrigated Hayfield | Direct | ~~242.04~~ 218.75 | 441.09 |
| | Vineyard | Direct | 272.84 | ~~513.54~~ 558.39 |
| | **Urban/BNSF** | | 0 | 0 |
| | BNSF | Direct | 0 | 0 |
| | Urban development | Direct | 0 | 0 |

[1]Land Prioritization categories are based on the *Recovery Plan of the Upland Species of the San Joaquin Valley, California* (Service 1999) and the *San Joaquin kit fox 5-Year Review* (Service 2010).

[1]The MIN-MAX tables presented within the Biological Assessment are not representative of any one alignment. The total acres of the table may exceed the project footprint because the sum of the maximum values is calculated across all potential project alignments.

On page 71, under **Environmental Baseline,** *Tipton kangaroo rat,* **replace** first line **with:**

Between 221.18 and 468.02 acres of potentially suitable habitat, such as alkali desert scrub, annual grassland, barren, and pasture land, for the Tipton kangaroo rat occurs within the project action area (Table 5).

On page 71, under **Environmental Baseline,** *Buena Vista Lake ornate shrew,* **replace** first paragraph:

About 79.99 acres of highly suitable habitat for the shrew occurs within the project action area (Table 5). This includes the more mesic areas of moist soil associated with rivers, creeks, canals, and water impoundments, and the associated riparian and emergent wetland vegetation with extensive cover and leaf litter (about 40.56 acres), and the more xeric annual grassland and alkali desert scrub with varying amounts and types of cover and substrate within 200 feet of rivers, creeks, canals, water impoundments and other water sources (about 39.43 acres). In addition, about 51.18 acres of marginal habitat for the shrew occurs within the project action area (Table 5). This habitat could be used by the shrew for movement and dispersal, or in the absence of more highly suitable habitat, although the extent to which they might use these areas is currently unknown. On page 72, under **Environmental Baseline,** *Blunt nosed leopard lizard,* **replace** first line **with:** Between 26.57 and 120.82 acres of potentially suitable habitat for the blunt-nosed leopard lizard, such as alkali desert scrub, annual grassland, barren lands, and valley foothill riparian occurs within the project action area (Table 5). On page 72, under **Environmental Baseline,** *Blunt nosed leopard lizard,* **replace** third paragraph **with:** In 2017, protocol surveys were conducted on a total of 625.73 acres within CP 2-3. No lizards were detected. Protocol surveys were conducted in two areas on CP 4 in 2016 and 2017. In 2016, one lizard was detected within the construction footprint, along County Line Road. In addition, four lizards were detected in the same survey area, along an access road east of the action area. In 2017, each survey area was able to be expanded, covering a total of 68.65 acres. Both adult and juvenile lizards were detected in the same area as the previous year, indicating that lizards are successfully breeding in the area. On page 73, under **Environmental Baseline,** *Vernal pool fairy shrimp,* **replace** third line of first paragraph **with:** Wetland delineation surveys identified between 1.82 and 29.77 acres of potentially suitable seasonal wetland and vernal pool habitat that could support the fairy shrimp within the project action area (Table 5).

On page 74, under **Environmental Baseline, replace** Table 5 **with:**

**Table 5. Range of potential federally-listed species habitat within the Fresno to Bakersfield alignment of the project (excluding mitigation properties)**

| Species | Habitat Type | Impact Type | Areas of Effect* | |
|---|---|---|---|---|
| | | | MIN | MAX |
| **Tipton kangaroo rat** | Alkali desert scrub, annual grassland, barren and pasture | Direct | ~~367.18~~ 221.18 | 468.02 |
| **Buena Vista Lake ornate shrew** | More mesic Highly Suitable: moist soil associated with rivers, creeks, canals, water impoundments; associated riparian, emergent wetland vegetation; with cover and leaf litter | Direct | - | ~~39.02~~ 40.56 |
| | More xeric Highly Suitable: grasslands, alkali desert scrub, alkali sink scrub within ~ 200 feet of rivers, creeks, canals, water impoundments, other water sources | | - | ~~37.79~~ 39.43 |
| **Central California tiger salamander** | AQUATIC: Vernal pools/seasonal wetlands | Direct | 6.2 | 18.30 |
| | UPLAND: alkali desert scrub, annual grasslands, pasture surrounding vernal pools/seasonal wetlands | | 18.6 | 18.70 |
| **Blunt-nosed leopard lizard** | Alkali desert scrub, annual grassland, barren and valley foothill riparian | Direct | 26.57 | ~~108.47~~ 120.82 |
| **Vernal pool fairy shrimp** | Vernal pools/seasonal wetlands | Direct | ~~2.33~~ 1.82 | 29.77 |
| | | Indirect | ~~14.55~~ 14.46 | 103.52 |
| **Vernal pool tadpole shrimp** | Vernal pools/seasonal wetlands (delineated within the geographic range of the species) | Direct | 0.0041 | 0.0041 |
| | | Indirect | 0.0560 | 0.0560 |
| **California jewelflower** | Unsurveyed alkali desert scrub, annual grassland, and pash1re in Fresno County | Direct | 0 | 15.00 |
| **Hoover's spurge** | Vernal pools/seasonal wetlands in Tulare County | Direct and Indirect bisected | - | 6.11 |
| **Kern mallow** | Unsurveyed alkali desert scrub, annual grassland, and pasture in Tulare and Kern counties | Direct | 0 | 217.93 |
| **San Joaquin woolly-threads** | Unsurveyed alkali desert scrub, annual grassland, and pasture in Fresno, Kings, and Kern counties | Direct | 0 | 491.77 |

On pages 78 to 81, **replace** the entire section **FCMS: Environmental Baseline with: Mitigation Sites: Environmental Baseline**

*Cross Creek Mitigation Site*

The Cross Creek Mitigation Site provides 804.16 acres of annual grassland habitat for the kit fox. The closest kit fox occurrence in the CNDDB is on a neighboring parcel, east of the southern portion of the mitigation site. No kit fox were detected during camera surveys conducted on the mitigation site in June 2017. The site also provides 1,183.53 acres of upland habitat and at least 2.4 acres of aquatic habitat for

the salamander. The entire site is within the Southern San Joaquin Region, Unit 5 of designated critical habitat for the salamander. There is a 1999 occurrence in the CNDDB of egg masses in the southwestern corner of the mitigation site. The closest known population is approximately 10 miles upstream on the Stone Corral Rese1-ve. No salamanders were detected during surveys conducted on the mitigation site between December 2016 and April 2017. In addition, the mitigation site provides 172.81 acres of wetland habitat suitable for the fairy shrimp and the tadpole shrimp. The site falls within the Cross Creek core area of the San Joaquin Valley Vernal Pool Region. The entire site is within critical habitat unit 26A for the fairy shrimp and 18A for the tadpole shrimp. There are three known occurrences of the fairy shrimp and six known occurrences of the tadpole shrimp on the mitigation site. During surveys conducted between December 2016 and March 2017, fairy shrimp were detected in 55 wetland features, and tadpole shrimp were found in 23 features. No federally-listed plants were detected during surveys conducted on the Cross Creek Mitigation Site in August 2016 and April 2017. *Cottonwood Creek Mitigation Site* The Cottonwood Creek Mitigation Site provides 132.68 acres of annual grassland habitat for the kit fox. The closest kit fox occurrence in the CNDDB is approximately 0.5 mile south of the site, along the St. John's River. No kit fox were detected during camera surveys conducted on the mitigation site in June 2017. The site has the potential to provide 226.25 acres of upland habitat and some aquatic habitat for the salamander; however the current build-up of thatch onsite may preclude use by salamanders. The entire site is within the Southern San Joaquin Region, Unit 5 of designated critical habitat for the salamander. The closest known population is approximately 4.5 miles upstream on the Stone Corral Reserve. No salamanders were detected during a one-day targeted survey in April 2017 or during su1-veys for vernal pool branchiopods conducted on the mitigation site between December 2016 and April 2017. In addition, the mitigation site provides 3.8 acres of wetland habitat suitable for the fairy shrimp and the tadpole shrimp. The site falls within the Cross Creek core area of the San Joaquin Valley Vernal Pool Region. The entire site is within critical habitat unit 26A for the fairy shrimp and 18A for the tadpole shrimp. There is one known occurrence in the CNDDB for each of the fairy shrimp and the tadpole shrimp on the mitigation site. During surveys conducted in March 2017, tadpole shrimp were detected in six features. Although fairy shrimp were not detected, the limited sui-vey was conducted late in the season. Based on the known occurrence and detections on the nearby Cross Creek Mitigation Site, it is likely that fairy shrimp may be found on the site. No federally-listed plants were detected during surveys conducted on tl-1e Cottonwood Creek Mitigation Site in April, May, and September 2017.

*Kings River Mitigation Site*

Based on the habitat requirements of the federally-listed species known to occur in the vicinity of the Kings River Mitigation Site, none are currently expected to utilize the riparian and floodplain habitat on the mitigation site.

*CD Hillman Mitigation Site*

The CD Hillman Mitigation Site is directly across Corcoran Road from the Kern National Wildlife Refuge (NWR) and within the Tulare Basin Wildlife Management Area, which was established to protect and manage key habitats for sensitive species in the Tulare Basin. The site is also located within a core area for tl1e protection of natural lands identified in the *Recovery Plan for Upland Species of the San Joaquin Valley, California.* The mitigation site provides 230.82 acres of alkali sink community habitat for the kit fox. There are three known occurrences of the kit fox in the CNDDB within 1 mile of the mitigation site. San Joaquin kit fox scat was detected on the mitigation site during transect surveys conducted in January and June 2017, indicating that kit fox are present on site. The alkali sink community on the mitigation site also provides habitat for the TKR. Small mammal trapping conducted in June 2017 did not detect TKR, instead capturing 62 Heermann's kangaroo rats. However concurrent trapping on the adjacent parcel to the east detected TKR, including one individual within 100 meters of the site. Due to the presence of suitable habitat, nearby occurrences, and cyclic nature of kangaroo rat populations, it is likely that TKR are present on the mitigation site, at least in some years. The mitigation site also provides habitat for the lizard, particularly in higher upland habitat that is not inundated during wet winter seasons. There are 14 known occurrences in the CNDDB within 5 miles of the mitigation site. Three transect surveys conducted

during 2017 failed to detect lizards on site. Kern mallow was documented on the CD Hillman Mitigation Site during a 2017 botanical survey.

*Alkali Flats Mitigation Site*

The Alkali Flats Mitigation Site is adjacent to parcels of the Semitropic Ridge Preserve managed by the Center for Natural Lands Management and within the Tulare Basin Wildlife Management Area, which was established to protect and manage key habitats for sensitive species in the Tulare Basin. The site is also located within a core area for the protection of natural lands identified in the *Recovery Plan for Upland Species of the San Joaquin Valley, California.* The mitigation site provides 157.05 acres of alkali sink community habitat for the kit fox. There are multiple known occurrences of the kit fox in the CNDDB within 5 miles of the mitigation site. At least two San Joaquin kit fox were documented on site during a camera trapping effort in June 2017. The alkali sink community on the mitigation site also provides habitat for the TKR and the lizard. Small mammal trapping conducted on the mitigation site in June 2017 detected 22 unique TKR, including reproductively active individuals. During transect surveys conducted in June 2017, one lizard was detected. In addition, two lizards were incidentally observed during a site visit in late March 2018. No federally-listed plants were detected during surveys conducted on the Alkali Flats Mitigation Site in August 2017.

On page 82, under **Effects of the Proposed Action,** *San Joaquin kit fox, Effects associated with construction activities,* **replace** the first three full paragraphs **with:**

The potentially suitable habitats occur as fragments or patches throughout the relatively narrow, linear project action area, primarily within Fresno, Tulare, Kings, and Kern Counties. Approximately 795.04 acres of the 5,472.18 acres (15 percent) of suitable habitat along the alignment is considered to be highly suitable for use by the San Joaquin kit fox (alkali desert scrub, annual grassland, pasture, barren lands, summed from Table 4). The remaining 4,677.14 acres of San Joaquin kit fox habitat consists of agricultural and urban habitats between Fresno and Bakersfield (Table 4). The 795.04 acres of highly suitable habitat that will be permanently lost as a result of the CHST-FB Project, including the Early Work Variations, represents a small fraction of the remaining highly suitable habitat within Fresno, Tulare, Kings, and Kern Counties (Cypher pers. comm. 2013).

Habitat loss and alteration may occur through degradation and placement of hardscape over suitable denning or foraging habitat as a result of the CHST-FB alignment component of the project. It is reasonably likely that construction activities will result in the destruction of dens. Highly suitable habitat that supports denning and breeding is essential for persistence of San Joaquin kit fox populations (Service 2010; Cypher et al. 2013; Cypher et al. 2014). Approximately 795.04 acres of high quality habitat for the San Joaquin kit fox will be permanently lost as a result of the CHST-FB alignment project action area and the Early Work Variations. High quality habitat already is extensively fragmented throughout the CHST-FB alignment component of the project action area. Although the total habitat loss will be spread out over the length of the alignment, the permanent loss resulting from the 100-foot wide CHST-FB alignment footprint will decrease available resources for San Joaquin kit foxes utilizing those areas.

Habitat loss and alteration may occur through degradation and placement of hardscape over suitable denning or foraging habitat as a result of the CHST-FB alignment component of the project. It is reasonably likely that construction activities will result in the destruction of dens. Highly suitable habit that supports denning and breeding is essential for persistence of San Joaquin kit fox populations (Service 2010; Cypher et al. 2013; Cypher et al. 2014).

Approximately 795.04 acres of high quality habitat for the San Joaquin kit fox will be permanently lost as a result of the CHST-FB alignment project action area. High quality habitat is already extensively fragmented throughout the CHST-FB alignment component of the project action area. Although the total habitat loss will be spread out over length of the alignment, the permanent loss resulting from the 100-foot wide CHST-FB alignment footprint will decrease available resources for San Joaquin kit foxes utilizing those areas.

On page 83, **replace Effects of the Proposed Action,** *San Joaquin kit fox, FCMS: Construction Activities for Habitat Restoration,* **with:**

*Effects associated with habitat restoration at mitigation sites*

Due to the limited restoration activities and the conservation measures proposed, no adverse effects to the kit fox are expected to occur on any of the mitigation sites. Together, the mitigation sites will provide 387.87 acres of alkali sink community and 936.84 acres of annual grassland habitat for the kit fox that will be protected and managed for the conservation of the species in perpetuity.

On page 89, under **Effects of the Proposed Action,** *Tipton kangaroo rat, Effects associated with construction activities,* **replace** the first line of the first full paragraph **with:**

Construction of the CHST-FB Project will result in the permanent loss of between 221.18 and 468.02 acres of potential habitat for the Tipton kangaroo rat (Table 5).

On page 89, under **Effects of the Proposed Action,** *Tipton kangaroo rat,* after the last full paragraph, **add:**

*Effects associated with habitat restoration at mitigation sites* Due to the limited restoration activities at the CD Hillman and Alkali Flats Mitigation Sites and the conservation measures proposed, no adverse effects to the TKR are expected to occur. Together, the mitigation sites will provide 387.87 acres of alkali sink community habitat for the TKR that will be protected and managed for the conservation of the species in perpetuity.

On page 91, under **Effects of the Proposed Action,** *Tipton kangaroo rat, Conservation measures for the Tipton kangaroo rat,* **replace** first paragraph **with:**

Implementation of the proposed conservation measures is expected to significantly reduce adverse effects to Tipton kangaroo rats during project construction, maintenance, and operational activities. However, some mortality of Tipton kangaroo rats may still occur because they may be difficult for operators of maintenance equipment and vehicles to observe. The FRA and the Authority have proposed to mitigate for the final calculated permanent habitat loss for Tipton kangaroo rat through the acquisition of permittee-responsible mitigation sites within Tulare, Kings, and Kern counties that will be protected in perpetuity through conservation easements. These lands will be protected and managed for the conservation of the Tipton kangaroo rat and provide habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project.

On page 91, under **Effects of the Proposed Action,** *Buena Vista Lake ornate shrew, Effects associated with construction activities,* at the end of the first paragraph, **add:**

Up to 40.56 acres of suitable mesic habitat, 39.43 acres of suitable xeric habitat, and 51.18 acres of marginal habitat will be permanently lost as a result of construction of the project (Table 5).

On page 91, under **Effects of the Proposed Action,** *Buena Vista Lake ornate shrew, Conservation measures for the Buena Vista Lake ornate shrew,* **replace** first paragraph **with:**

Implementation of the proposed conservation measures is expected to significantly reduce adverse effects to BVLOSs during project construction, maintenance, and operational activities. However, some mortality of BVLOS may still occur because they are cryptic and difficult for operators of maintenance equipment and vehicles to see; they have been previously documented running across active construction sites. The FRA and the Authority have proposed to mitigate for the final calculated disturbance to highly suitable habitat for BVLOS through the acquisition of permittee-responsible mitigation sites within Tulare, Kings, and Kern counties that will be protected in perpetuity through

conservation easements. These lands will be protected and managed for the conservation of the BVLOS and provide habitat for breeding, feeding, or sheltering commensurate to or better than habitat lost as a result of the proposed project. In addition, avoidance and minimization measures will be implemented at all highly suitable habitat locations, as well as at all marginal habitat locations. Compensatory habitat mitigation will not be provided for those areas characterized as marginal habitat for BVLOS for which use and degree of suitability are unknown.

On page 92, **replace Effects of the Proposed Action,** *California tiger salamander, FCMS: Construction Activities for Habitat Restoration,* **with:**

*Effects associated with habitat restoration at mitigation sites*

Construction activities associated with the proposed wetland and riparian restoration will occur on the Cottonwood Creek and Cross Creek Mitigation Sites, respectively. Construction activities will occur over a short duration (less than 3 months) during the dry season. Disturbance to upland habitat during construction activities is expected to be minimal on the Cottonwood Creek Mitigation Site because established routes for movement of equipment will be designated and monitored by the Service-approved biologist. Pre-construction surveys for potentially occupied burrows may be used to designate areas to be avoided by construction equipment and workers. However, some central California tiger salamanders that were not detected while inhabiting burrows during preconstruction surveys may suffer injury or mortality if the burrows are crushed by construction equipment. The FRA and the Authority are proposing to develop a plan for relocating central California tiger salamanders from burrows within work areas to burrows in upland habitat that will not be disturbed by construction activities. The relocation plan will be submitted to the Service for review and approval prior to implementation. It is reasonably likely that central California tiger salamanders will be subject to harassment during the relocation.

Effects to the central California tiger salamander resulting from disturbance generated by use of construction equipment and construction activities are expected to be minimal and temporary because the proposed habitat restoration will occur over a short duration (less than 3 months) during the summer months, and there is sufficient alternative habitat available for use and movement by the this species within the FCMS mitigation sites.

The Authority has proposed conservation measures, such as use of Service-approved biological monitors and daily inspections of construction areas to avoid injury and mortality of central California tiger salamander. Together, the mitigation sites will provide over 2.4 acres of aquatic breeding habitat and 1,409.78 acres of upland habitat for the salamander that will be protected and managed for the conservation of the species in perpetuity.

On page 93, under **Effects of the Proposed Action,** *California tiger salamander; Conservation measures far the central California tiger salamander,* **replace** second paragraph **with:**

The FRA and the Authority have proposed to mitigate for the final calculated permanent habitat loss for Central California tiger salamander through the purchase of mitigation credits at an approved conservation bank or the acquisition of permittee-responsible mitigation sites within Fresno, Tulare, and Kings counties that will be protected in perpetuity through conservation easements. These lands will be protected and managed for the conservation of the Central California tiger salamander and provide habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project.

On page 94,underEffectsoftheProposedAction, *Blunt-nosed leopard lizard, Effects associated with construction activities,* **replace** second paragraph **with:**

Access to suitable habitat such as alkali desert scrub, annual grasslands, and barren habitats will become restricted or permanently lost due to permanent structures associated with the CHST-FB Project. The project will result in the permanent loss of up to 120.82 acres of suitable habitat for the lizard (Table 5).

Movement of blunt-nosed leopard lizards within the project action area may be altered as a result of these effects.

On page 95, under **Effects of the Proposed Action,** *Blunt-nosed leopard lizard,* after the first paragraph, **add:**

*Effects associated with management activities at mitigation sites*

Due to the limited restoration activities at the CD Hillman and Alkali Flats Mitigation Sites and the conservation measures proposed, no adverse effects to the lizard are expected to occur. Together, the mitigation sites will provide 387.87 acres of alkali sink community habitat for the lizard that will be protected and managed for the conservation of the species in perpetuity.

On page 95,under **Effects of the Proposed Action**, *Blunt -nosed leopard lizard, Conservation measures for the blunt-nosed leopard lizard,* **replace** first paragraph **with:**

Implementation of the proposed conservation measures will significantly reduce adverse effects to blunt-nosed leopard lizards during project construction, maintenance, and operational activities. However, some mortality of blunt-nosed leopard lizards may still occur because they may be difficult for operators of maintenance equipment and vehicles to observe.

The FRA and the Authority have proposed to mitigate for the final calculated permanent habitat loss for blunt-nosed leopard lizard through the acquisition of permittee-responsible mitigation sites within Tulare, Kings, and Kern counties that will be protected in perpetuity through conservation easements. These lands will be protected and managed for the conservation of the blunt-nosed leopard lizard and provide habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project.

**INCIDENTAL TAKE STATEMENT**

On page 105, under **Amount or Extent of Take,** *San Joaquin kit fox,* **replace with:**

It is not possible to quantify the number of individual San Joaquin kit foxes that will be taken as a result of the proposed project because this species is relatively sparsely distributed and we believe that the number of individual foxes impacted will be relatively small. Therefore, the amount of habitat for this species that will be affected as a result of the CHST-FB Project-will be used as a surrogate for quantifying take. The Service anticipates that any San Joaquin kit foxes that may be in the section of the action area undergoing construction at any given time, a total area of 11,536 acres (including the project footprint, and areas within 200 feet of the project footprint) will be harassed by project activities in areas undergoing construction, operations, and maintenance activities which will result in the likelihood of injury by annoying foxes to such an extent as to significantly disrupt normal behavior patterns. In addition, the Service anticipates that 795.04 acres of highly suitable habitat will be directly impacted and permanently lost as a result of the CHST-FB Project alignment resulting in harm to the species by significantly impairing essential behaviors, including breeding, foraging, and denning. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the CHST-FB Project in the form of harm over 11,536 acres, and harm of the San Joaquin kit fox caused by the loss of 795.04 acres of highly suitable habitat, will become exempt from the prohibitions described under section 9 of the Act.

On page 105,under **Amount or Extent of Take,** *Buena Vista Lake ornate shrew,* **replace with:**

It is not possible to quantify the number of individual BVLOS that will be taken as a result of the proposed project because it is small, cryptic, difficult to detect, limited survey efforts have been conducted and its current distribution across the landscape is not well known, and its life history is not well understood. Further, the specific habitat requirements of BVLOS are poorly defined, and the potential distribution of the species is difficult to delineate or predict (Cypher 2016). The amount of BVLOS highly suitable habitat

that will be impacted as a result of the CHST-FB Project will be used as a surrogate for quantifying take. The Service anticipates that 40.56 acres of more mesic and 39.43 acres of more xeric highly suitable habitat will be directly affected and permanently lost as a result of the CHST-FB Project alignment resulting in harm to the species by significantly impairing essential behaviors, including breeding, foraging, and sheltering. The Service further anticipates that an additional 51.18 acres of marginal habitat will be directly affected. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-FB Project in the form of harm, capture, injury, and death of the BVLOS caused by habitat loss, construction activities, transport, handling and holding during relocation from the constructionfootprint,andanyrequiredCRMmitigationactivitieswillbecome exempt from the prohibitions described under section 9 of the Act.

Accordingly, the Service will consider take exceeded if more than 40.56 acres of more mesic and 39.43 acres of more xeric highly suitable habitat is permanently lost as a result of the proposed action.

On page 106, under **Amount or Extent of Take,** *blunt-nosed leopard lizard,* **replace with:**

It is not possible to quantify the number of individual blunt-nosed leopard lizards that will be taken as a result of the proposed project because the number of individuals within the project action area is unknown. The anticipated loss of individuals of this species also 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 this species that will be affected as a result of the CHST-FB Project will be used as a surrogate for quantifying take. The Service anticipates that up to 120.82 acres of suitable habitat for the blunt-nosed leopard lizard will be permanently lost as a result of the CHST-FB Project. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-FB Project in the form of harm, capture, injury, and death of the blunt-nosed leopard lizard caused by habitat loss, construction activities, exclusion from active construction areas, and any required ground-disturbing CRM mitigation activities or burrow excavation activities will become exempt from the prohibitions described under section 9 of the Act.

**REINITIATION CLOSING STATEMENT**

This concludes reinitiation of formal consultation on the California High-Speed Train System: Fresno to Bakersfield Section Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and will be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

(a) If the amount or extent of taking specified in the incidental take statement is exceeded;
(b) 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;
(c) 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
(d) If a new species is listed or critical habitat designated that may be affected by the identified action.