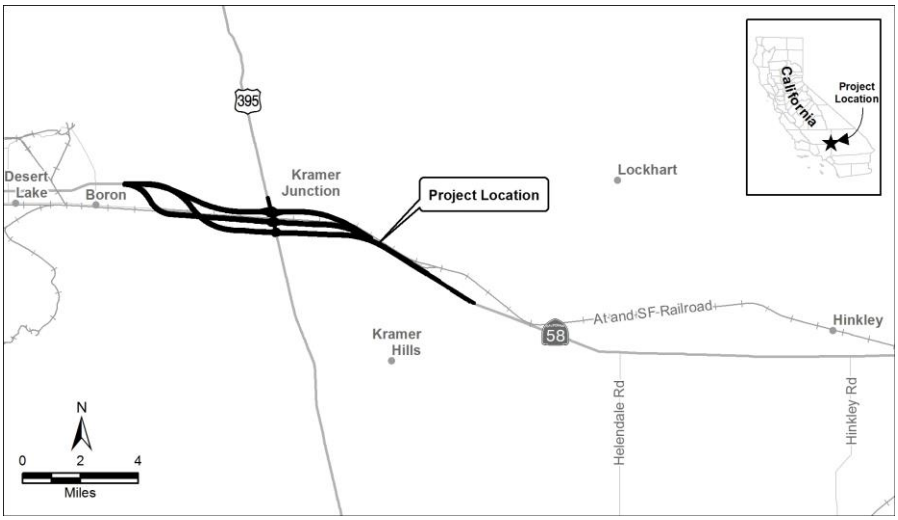
SCH#2007051051

State Route 58 (SR-58) Kramer Junction Expressway Project

SAN BERNARDINO COUNTY, CALIFORNIA
KERN COUNTY, CALIFORNIA
DISTRICT 06-KER-58(PM R143.5/R143.9)
8 – SBD – SR-58 (PM 0.0/12.9)
EA 08-347700
PN 0800000616

Final Environmental Impact Report/ Environmental Impact Statement Volume II: Appendices



Prepared by the
California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

JULY 2014

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Appendix A CEQA Environmental Checklist

Appendix A
CEQA Environmental Checklist

06-Ker-58 8-SBD-58	143.5/143.9 0.0/12.9	08-34770 (PN 08 0000 0616)
Dist.-Co.-Rte.	P.M/P.M.	E.A.

Supporting documentation of all CEQA checklist determinations is provided in Chapter 3 and 4 of this Environmental Impact Report/Environmental Impact Statement. Documentation of "No Impact" determinations is provided at the beginning of Chapter 3 and 4. Discussion of all impacts, avoidance, minimization, and/or compensation measures is under the appropriate topic headings in Chapter 3 and 4.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☒	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	☐	☐	☐	☐
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☒	☐	☐
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?	☐	☒	☐	☐
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

XI. MINERAL RESOURCES: Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

XII. NOISE: Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

XIII. POPULATION AND HOUSING: Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

XIV. PUBLIC SERVICES:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☐
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

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Appendix B Resources Evaluated Relative to the Requirements of Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

This section of the document discusses parks, recreational facilities, wildlife refuges and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection either because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 USC. 327.

The proposed project would realign and widen a 13.3-mile segment of SR-58 from a two-lane conventional highway to a four-lane expressway and construct a railroad grade separation and an interchange at the SR-58/US-395 Junction. The total length of the proposed project is approximately 13.3 miles (postmile 143.5 to 12.9), including transition striping areas and the limits for the installation of construction signage. Three build alternatives and a No-Build Alternative are being considered. The proposed project is included in the Southern California Association of Governments (SCAG) 2013 Federal Transportation Improvement Program (FTIP) as Project 34770, which was adopted by SCAG on September 19, 2012, and found to be conforming by FHWA in December 2012. This project is also included in the 2012 Regional Transportation Plan (RTP), which was found conforming by FHWA and the Federal Transit

Agency (FTA) on June 4, 2012. This project is listed as Project 34770. The primary purpose of the proposed project is to provide traffic relief for future demand, reduce maintenance costs, and improve traffic safety by reducing accidents within the project limits.

The following potential Section 4(f) resources were identified in the study area. A description of each resource is provided below. For each property, an explanation of why the resource is not protected by Section 4(f) or why the project does not "use"[1] the resource is also provided below.

Boron Park is located west of Boron Avenue and south of Twenty Mule Team Road in the City of Boron. It consists of two baseball fields, playground equipment, and ancillary structures. The park is located approximately 1.4 miles southwest of the western terminus of the proposed project. Due to the distance of the park site from the project site, there is no potential for constructive use or proximity impacts. Therefore, the provisions of Section 4(f) are not triggered.

West Boron Elementary School is located east of Del Oro Street and south of SR-58. The school has recreational facilities on its campus that are available for public use outside of school hours. It is located approximately 3.4 miles west of the western terminus of the proposed project. Due to the distance of the school site from the project site, there is no potential for constructive use or proximity impacts. Therefore, the provisions of Section 4(f) are not triggered.

Boron Junior-Senior High School is located west of Roberts Avenue and south of SR-58. The school has recreational facilities on its campus that are available for public use outside of school hours. It is located approximately 1.3 miles west of the western terminus of the proposed project. Due to the distance of the school site from the project site, there is no potential for constructive use or proximity impacts. Therefore, the provisions of Section 4(f) are not triggered.

Cultural Resources

For background information on cultural resources, please see Section 3.8 of Volume I of this Final EIR/EIS.

The project APE contains a total of 59 cultural resources that were either previously evaluated or required evaluation. Of this total, there are 42 archaeological resources and 17 built-environment resources. All 17 of the built-environment resources and eight of the archaeological resources were evaluated and determined not eligible for the National Register of Historic Places (NRHP) as a result of the current study, and are also not considered historical resources under CEQA because they do not meet the California Register of Historical Resources criteria. The SHPO concurred with the determinations on April 3, 2013. In addition, four of the identified archaeological sites were previously determined not eligible for the NRHP and CRHR with previous SHPO concurrence (see Section 3.8). Because they are not eligible for the NRHP, these 29 cultural resources do not meet the definition of an historic site for the purposes of Section 4(f).

[1] *Use* under Section 4(f) occurs when land is permanently incorporated into the a transportation facility, when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, or when proximity impacts of a transportation facility renders a resource impaired (*FHWA Section 4(f) Policy Paper* 2012).

The evaluation of the historic significance of the remaining individual archaeological sites, unlike the built environment properties, requires the gathering of additional information through some type of ground disturbing activity. Since ground disturbing activities destroy some of the value of the archaeological property, those activities were postponed until after public circulation of the Draft EIR/EIS. Upon identification of the Preferred Alternative, and prior to the approval of the Final EIR/EIS, Caltrans performed the Section 106 evaluations on the remaining five historical-period archaeological sites, one multicomponent archaeological site (historical-period component), and two prehistoric archaeological sites within the Alternative 1A alignment. Additionally, Caltrans assessed effects to the prehistoric archaeological site and prehistoric component of the multicomponent archaeological site that were assumed eligible for the purposes of the project only. By limiting subsurface testing and additional study to those sites within the Preferred Alternative (Alternative 1A), Caltrans avoided unnecessary impacts to sites on the other unselected alternatives.

Table B1: Cultural Resources within Alternative 1A Evaluated After Circulation of Draft

Trinomial	Description	Alternative	Disposition
CA-SBR-15098	Prehistoric lithic scatter	1A	Evaluated in AER (Phase II), ineligible
CA-SBR-15088	Prehistoric lithic scatter	1A	Evaluated in Supplemental CARIDAP Report, ineligible
CA-SBR-15085	Prehistoric lithic scatter	1A	Assumed eligible, Stipulation VIII.C.4
CA-SBR-2071H	Historical-period refuse scatter and well	1A	Evaluated in Supplemental HRER, ineligible
CA-SBR-6572H	Historical-period refuse scatter	1A	Evaluated in Supplemental HRER, ineligible
CA-SBR-15073/H (Historical component)	Historical-period refuse scatter and two foundations and lithic scatter	1A	Evaluated in Supplemental HRER, ineligible
CA-SBR-15073/H (Prehistoric component)	Historical-period refuse scatter and two foundations and lithic scatter	1A	Assumed eligible, Stipulation VIII.C.3
CA-SBR-15076H	Historical-period refuse scatter	1A	Evaluated in Supplemental HRER, ineligible
CA-SBR-15086H	Historical-period refuse scatter	1A	Evaluated in Supplemental HRER, ineligible
CA-SBR-15087H	Historical-period refuse scatter	1A	Evaluated in Supplemental HRER, ineligible

Results of the Phase II testing and evaluation performed for prehistoric archaeological site CA-SBR-15098 indicated the site does not and will not yield information important in prehistory. Caltrans also assessed the site's significance under Criteria A, B, and C and found that the site is not associated with events that have made a significant contribution to the broad patterns of our history, not associated with the lives of significant persons in the past, and does not embody the distinctive characteristics of a type, period, or method of construction or work of a master. Accordingly, Caltrans determined the site to be ineligible for listing in the NRHP under Criteria A, B, C, or D.

Prehistoric archaeological site CA-SBR-15088 was determined to meet the criteria for sparse lithic scatters as defined in the CARIDAP: Sparse Lithic Scatters, and per CARIDAP guidelines

was evaluated through implementation of the CARIDAP and found ineligible for listing in the NRHP.

Historical-period sites CA-SBR-2071H, -6572H, -15073/H (Historical component), -15076H, -15086H, and -15087H were evaluated in the Supplemental HRER and determined to be ineligible for listing the NRHP under any of the four criteria. The prehistoric component of site CA-SBR-15073/H is outside the area of direct impact and can be fully protected through the delineation of an Environmentally Sensitive Area.

One prehistoric archaeological site, CA-SBR-15085, has been assumed eligible for the purposes of this project only with Caltrans CSO approval, per Stipulation VIII.C.4 of the Caltrans Section 106 PA. A finding of "no adverse effect" was determined for this site.

Caltrans reported the findings of these evaluations in a Supplemental HPSR and sought concurrence on these findings from SHPO in a letter dated June 6, 2014. SHPO concurred with the evaluations and the finding of "no adverse effect" on June 10, 2014.

None of the archaeological sites evaluated in the Preferred Alternative alignment warrant preservation in place, and are therefore not subject to the provisions of Section 4(f). As mentioned in the regulatory setting, historic sites on or eligible for the NRHP and archaeological sites on or eligible for the NRHP, that warrant preservation in place as determined by Caltrans and the official(s) with jurisdiction, require evaluation to determine if use of a 4(f) resource is anticipated. As part of the project development for this project, Caltrans determined that the required archaeological excavations to further document the potential impacts would be completed between the Draft and Final EIR/EIS in order to reduce the amount of disruption and impact to potentially sensitive sites. After completion of the technical study, Caltrans updated the Cultural Resources section of this EIR/ EIS.

Since the sole assumed eligible resource is not determined to warrant preservation in place and is therefore not subject to the provisions of Section 4(f), there is no consequent 4(f) use of a cultural resource. All necessary evaluations and SHPO Concurrences under Section 106 have been obtained prior to completion of the Final EIR/EIS.

Appendix C Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

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March 16, 2012

NON-DISCRIMINATION
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Mario Solis, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353, TTY 711, fax (916) 324-1869, or via email: *mario_solis@dot.ca.gov*.

MALCOLM DOUGHERTY
Acting Director

"Caltrans improves mobility across California"

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Appendix D Summary of Relocation Benefits

The following provides a summary of the California Department of Transportation (Caltrans) relocation benefits and policies. For a full explanation, refer to Chapter 10 of the Caltrans Right of Way Manual available on the Caltrans website: http://www.dot.ca.gov/hq/row/rowman/ manual /ch10.pdf.

California Department of Transportation Relocation Assistance Program

RELOCATION ASSISTANCE ADVISORY SERVICES

Declaration of Policy

"The purpose of this title is to establish a ***uniform policy for fair and equitable treatment*** of persons displaced as a result of federal and federally assisted programs in order that such persons ***shall not suffer disproportionate injuries*** as a result of programs designed for the benefit of the public as a whole."

The Fifth Amendment to the U.S. Constitution states, "No Person shall…be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use without just compensation." The Uniform Act sets forth in statute the due process that must be followed in Real Property acquisitions involving federal funds. Supplementing the Uniform Act is the government-wide single rule for all agencies to follow, set forth in 49 Code of Federal Regulations, Part 24. Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and payments, as discussed below.

Fair Housing

The Fair Housing Law (Title VIII of the Civil Rights Act of 1968) sets forth the policy of the United States to provide, within constitutional limitations, for fair housing. This Act, and as amended, makes discriminatory practices in the purchase and rental of most residential units illegal. Whenever possible, minority persons shall be given reasonable opportunities to relocate to any available housing regardless of neighborhood, as long as the replacement dwellings are decent, safe, and sanitary and are within their financial means. This policy, however, does not require the Department to provide a person a larger payment than is necessary to enable a person to relocate to a comparable replacement dwelling.

Any persons to be displaced will be assigned to a relocation advisor, who will work closely with each displacee in order to see that all payments and benefits are fully utilized, and that all regulations are observed, thereby avoiding the possibility of displacees jeopardizing or forfeiting any of their benefits or payments. At the time of the initiation of negotiations (usually the first written offer to purchase), owner-occupants are given a detailed explanation of the state's relocation services. Tenant occupants of properties to be acquired are contacted soon after the initiation of negotiations, and also are given a detailed explanation of the Caltrans Relocation Assistance Program. To avoid loss of possible benefits, no individual, family, business, farm, or

nonprofit organization should commit to purchase or rent a replacement property without first contacting a Department relocation advisor.

Relocation Assistance Advisory Services

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, the Department will provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of the acquisition of real property for public use, so long as they are legally present in the United States. The Department will assist eligible displacees in obtaining comparable replacement housing by providing current and continuing information on the availability and prices of both houses for sale and rental units that are "decent, safe and sanitary." Nonresidential displacees will receive information on comparable properties for lease or purchase (For business, farm and nonprofit organization relocation services, see below).

Residential replacement dwellings will be in a location generally not less desirable than the displacement neighborhood at prices or rents within the financial ability of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings will be offered to displacees that are open to all persons regardless of race, color, religion, sex, national origin, and consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance will also include the supplying of information concerning Federal and State assisted housing programs, and any other known services being offered by public and private agencies in the area.

Persons who are eligible for relocation payments and who are legally occupying the property required for the project will not be asked to move without first being given at least 90 days written notice. Residential occupants eligible for relocation payment(s) will not be required to move unless at least one comparable "decent, safe and sanitary" replacement dwelling, available on the market, is offered to them by the Department.

Residential Relocation Payments

The Relocation Assistance Program will help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of a replacement dwelling and actual reasonable moving expenses to a new location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Assistance Program can be summarized as follows:

Moving Costs

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles, or a fixed payment based on a fixed moving cost schedule. Lawful occupants who move into the displacement property after the initiation of negotiations must wait until the Department obtains control of the property in order to be eligible for relocation payments.

Purchase Differential

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 180 days or more prior to the date of the initiation of negotiations (usually the first written offer to purchase the property), may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum combination of these three supplemental payments that the owner-occupant can receive is $22,500.

If the total entitlement (without the moving payments) is in excess of $22,500, the Last Resort Housing Program will be used (See the explanation of the Last Resort Housing Program below).

Rent Differential

Tenants and certain owner-occupants (based on length of ownership) who have occupied the property to be acquired by the Department prior to the date of the initiation of negotiations may qualify to receive a rent differential payment. This payment is made when the Department determines that the cost to rent a comparable "decent, safe and sanitary" replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property and the payment of certain costs incidental to the purchase, subject to certain limitations noted under the *Down Payment* section below. The maximum amount payable to any eligible tenant and any owner-occupant of less than 180 days, in addition to moving expenses, is $5,250. If the total entitlement for rent supplement exceeds $5,250, the Last Resort Housing Program will be used.

In order to receive any relocation benefits, the displaced person must buy or rent and occupy a "decent, safe and sanitary" replacement dwelling within one year from the date the Department takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

Down Payment

The down payment option has been designed to aid owner-occupants of less than 180 days and tenants in legal occupancy prior to the Department's initiation of negotiations. The down payment and incidental expenses cannot exceed the maximum payment of $5,250. The one-year eligibility period in which to purchase and occupy a "decent, safe and sanitary" replacement dwelling will apply.

Last Resort Housing

Federal regulations (49 CFR 24) contain the policy and procedure for implementing the Last Resort Housing Program on federal-aid projects. Last Resort Housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocation as explained above. Last Resort Housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable

replacement housing, or when the anticipated replacement housing payments exceed the $22,500 and $5,250 limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid circumstances.

After the initiation of negotiations, the Department will within a reasonable length of time, personally contact the displacees to gather important information, including the following:

- Number of people to be displaced;
- Specific arrangements needed to accommodate any family member(s) with special needs;
- Financial ability to relocate into comparable replacement dwelling which will adequately house all members of the family;
- Preferences in area of relocation;
- Location of employment or school.

Nonresidential Relocation Assistance

The Nonresidential Relocation Assistance Program provides assistance to businesses, farms, and nonprofit organizations in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program will provide current lists of properties offered for sale or rent, suitable for a particular business's specific relocation needs. The types of payments available to eligible businesses, farms, and nonprofit organizations are: searching and moving expenses, and possibly reestablishment expenses; or a fixed in lieu payment instead of any moving, searching and reestablishment expenses. The payment types can be summarized as follows:

Moving Expenses

Moving expenses may include the following actual, reasonable costs:

- The moving of inventory, machinery, equipment and similar business-related property, including: dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property. Items acquired in the Right of Way contract may not be moved under the Relocation Assistance Program. If the displacee buys an Item Pertaining to the Realty back at salvage value, the cost to move that item is borne by the displacee.
- Loss of tangible personal property provides payment for actual, direct loss of personal property that the owner is permitted not to move.
- Expenses related to searching for a new business site, up to $2,500, for reasonable expenses actually incurred.

Reestablishment Expenses

Reestablishment expenses related to the operation of the business at the new location, up to $10,000 for reasonable expenses actually incurred.

Fixed In Lieu Payment

A fixed payment in lieu of moving, searching, and reestablishment payments may be available to businesses which meet certain eligibility requirements. This payment is an amount equal to half

the average annual net earnings for the last two taxable years prior to the relocation and may not be less than $1,000 nor more than $20,000.

Additional Information

Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, or any other law, *except* for any Federal law providing local "Section 8" Housing Programs.

Any person, business, farm, or nonprofit organization which has been refused a relocation payment by the Department relocation advisor or believes that the payment(s) offered by the agency are inadequate, may appeal for a special hearing of the complaint. No legal assistance is required. Information about the appeal procedure is available from the relocation advisor.

California law allows for the payment for lost goodwill that arises from the displacement for a pubic project. A list of ineligible expenses can be obtained from Caltrans Right of Way. California's law and the federal regulations covering relocation assistance provide that no payment shall be duplicated by other payments being made by the displacing agency.

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Appendix E Air Quality Project-Level Conformity Determination

U.S. Department of Transportation
Federal Highway Administration

California Division

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001
(916) 498-5008 (fax)

January 30, 2014

In Reply Refer To:
HDA-CA

Mr. Basem Muallem
District Director
California Department of Transportation
District 8
464 West Fourth Street
San Bernardino, CA 92401-1400

Attention: Tony Louka, Office Chief, Environmental Engineering

SUBJECT: Project-Level Conformity Determination for the SR-58, Kramer Junction Expressway Project

Dear Mr. Muallem:

On December 30, 2013, the California Department of Transportation (Caltrans) submitted to the Federal Highway Administration (FHWA) a request for the project-level conformity determination for the SR-58, Kramer Junction Expressway Project in San Bernardino County, pursuant to 23 U.S.C. 327(a)(2)(B)(ii)(1). The project is in an area that is designated nonattainment for ozone and course particulate matter (PM_{10}) and unclassified/ attainment for fine particle particular matter ($PM_{2.5}$), carbon monoxide (CO), and nitrogen dioxide (NO_2).

The project-level conformity analysis submitted by Caltrans indicates that the project-level transportation conformity requirements of 40 C.F.R. Part 93 have been met. The project is included in the Southern California Association of Government's (SCAG) currently conforming *2012 Regional Transportation Plan (RTP),* and the *2013 Federal Transportation Improvement Program (FTIP).* The latest conformity determination for the 2012 RTP and the 2013 FTIP was approved by FHWA and the Federal Transit Administration (FTA) on December 14, 2012. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

As required by 40 C.F.R. 93.116 and 93.123, the localized CO and PM analyses are included in the documentation. The CO hotspot analysis was performed with the Caltrans' *Transportation Project-Level Carbon Monoxide Protocol.* The analyses demonstrate that the project will not create any new violation of the standards or increase the severity or number of existing violations.

Based on the information provided, FHWA finds that the SR-58, Kramer Junction Expressway Project in San Bernardino County conforms to the State Implementation Plan (SIP) in accordance with 40 C.F.R. Part 93.

If you have any questions pertaining to this conformity finding, please contact Stew Sonnenberg, FHWA Air Quality Specialist, at (916) 498-5889 or by email at Stew.Sonnenberg@dot.gov.

Sincerely,

For: Vincent P. Mammano
Division Administrator

Appendix F Glossary of Technical Terms

Active Fault: A fault that has moved recently and which is likely to move again. For planning purposes, an "active fault" is usually defined as one that shows movement within the last 11,000 years and can be expected to move within the next 100 years.

Aerially Deposited Lead (ADL): Lead deposited along highway shoulders from past leaded fuel vehicle emissions. Even though leaded fuel has been prohibited in California since the 1980s, ADL can still be found along highways that were in use prior to that time.

Alluvium: A general term for all detrital deposits resulting from the operations of modern rivers, thus including the sediments laid down in riverbeds, flood plains, lakes, fans at foot of mountain slopes, and estuaries.

Ambient Air Quality: The atmospheric concentration (amount in specified volume of air) of a specific compound as actually experienced at a particular geographic location that may be some distance from the source of the relevant pollutant emissions.

Ambient Noise Level: The composite of noise from all sources near and far.

Americans with Disabilities Act: The ADA was signed into law by President George Bush in 1990. Divided into four titles, it guarantees people with disabilities equal access to employment, transportation and public services, public accommodations, and telecommunications.

Archaeological: Pertaining to the material remains of past human life, culture, or activities.

Bedrock: The solid rock underlying unconsolidated surface materials.

Best Available Control Technology: The most stringent emission limit or control technique that has been achieved in practice that is applicable to a particular emission source.

Best Management Practices: The most current methods, treatments, or actions in regards to environmental mitigation responses.

California Department of Parks and Recreation: Established in 1961, it originally consisted of the statutory Divisions of Beaches and Parks, Small Craft Harbors, Recreation and Administration; it is organizationally within the Resources Agency. It is the legal name for California State Parks.

California Environmental Quality Act: A state law (PRC §21000 et al.) requiring state and local agencies to take actions on projects with consideration for environmental protection. If a proposed activity may result in a significant adverse effect on the environment, an EIR must be prepared. General plans require a "program EIR," and park development projects require a project environmental document.

California Native Plant Society: A statewide non-profit organization of amateurs and professionals with a common interest in increasing the understanding and appreciation of California's native plants and conserving them and their habitats through education, science, advocacy, horticulture, and land stewardship.

California Natural Diversity Database: Maintained by the California Department of Fish and Game, CNNDB is a statewide inventory of the locations and condition of the state's rarest species and natural communities. It is a "heritage program" and is part of the National Heritage Network, a nationwide network of similar programs. The goal of CNNDB is to provide the most current information on the state's most imperiled elements of natural diversity and to provide tools to analyze these data.

Clean Water Act: Enacted in 1972 to create a basic framework for current programs to control water pollution; it provides statutory authority for the National Pollutant Discharge Elimination System (NPDES).

Cultural Resource: A resource that exists because of human activities. Cultural resources can be prehistoric (dating from before European settlement) or historic (post-European contact).

Cumulative Impact: As defined by the state CEQA Guidelines (§15355), two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts.

Demographic: Having to do with a particular characteristic of a segment of the public at large; may be connected to the group's age, the region where the group resides, a particular recreational interest, economic status, etc.

Ecology: The study of the interrelationship of living things to one another and their environment.

Ecosystem: A community consisting of all biological organisms (plant, animals, insects, etc.) in a given area interacting with the physical environment (soil, water, air) to function together as a unit of nature.

Effect/Impact: An environmental change, as defined by State CEQA Guidelines §15358:
(1) Direct or primary effects are caused by the project and occur at the same time and place;
(2) Indirect or secondary effects that are caused by the project and are late in time or farther removed in distance, but still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water quality and other natural systems including ecosystems.

Endangered Species: A species of animal or plant is considered to be endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. The U.S. Fish and Wildlife Service and/or the California Department of Fish and Game make this designation.

Endemic: Indigenous to, and restricted to, a particular area.

Environment: As defined in State CEQA Guidelines §15360, "the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, mineral, flora, fauna, noise, and objects of historical and aesthetic significance."

Environmental Impact Report: A report required by CEQA that assesses all the environmental characteristics of an area and determines what effects of impacts will result if the area is altered or disturbed by a proposed action. If a proposed activity may result in a significant adverse effect on the environment, an EIR must be prepared. General plans require the preparation of a "program" EIR appropriate to its level of specificity.

Environmentally Sensitive: An area in which plant or animal life or their habitats are either rare or especially valuable because of their role in an ecosystem. Such areas can be easily disturbed or degraded by human activities and developments.

Floodplain: A lowland or relatively flat area adjoining inland or coastal waters that is subject to a one or greater chance of flooding in any given year (i.e., 100-year flood).

Floodway: The channel of a natural stream or river and portions of the floodplain adjoining the channel that are required to carry and discharge the floodwater or flood flow of any natural stream or river.

General Plan: A general plan is a legal planning document required for all cities by the State of California. A general plan lays out the future of a City's development in general terms through a series of policy statements depicted in text and maps. A general plan provides a comprehensive framework for addressing the current and future needs of a city. All city decisions related to development, growth, infrastructure, and environmental management must be consistent with the policies contained in the General plan.

Geology: The scientific study of the origin, history, and structure of the earth.

Grade: The degree of rise or descent of a sloping surface.

Habitat: The physical location or type of environment, in which an organism or biological population lives or occurs. It involves an environment of a particular kind, defined by characteristics such as climate, terrain, elevation, soil type, and vegetation. Habitat typically includes shelter and/or sustenance.

Hydrology: Pertaining to the study of water on the surface of the land, in the soil and underlying geology, and in the air.

Impervious surface: Any material that reduces or prevents absorption of water into land.

Infrastructure: Public services and facilities such as sewage-disposal systems, water supply systems, other utility systems, and road and site access systems.

Kilowatt Hour: A measure of quality of electrical consumption equal to the power of 1 kilowatt acting for 1 hour.

Kilowatt: A measure of the rate of electrical flow equal to 1,000 watts.

Landform: Configuration of land surface (topography).

Mitigation Measure: A measure proposed that would eliminate, avoid, rectify, compensate for, or reduce significant environmental effects (see State CEQA Guidelines §15370).

Morphology: Form and structure of a plant that is typical.

National Register of Historic Places: The official federal list of buildings, structures, objects, sites, and districts worthy of historic preservation. The register recognizes resources of local, state, and national significance. The register lists only those properties that have retained enough physical integrity to accurately convey their appearance during their period of significance.

Native Species: A plant or animal that is historically indigenous to a specific site area.

National Environmental Policy Act: The National Environmental Policy Act (NEPA) [42 U.S.C. 4321 et seq.] was signed into law on January 1, 1970. NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. NEPA also establishes the Council on Environmental Quality (CEQ).

Notice of Preparation: A document stating that an EIR will be prepared for a particular project. It is the first step in the EIR process.

Office of Historic Preservation: The governmental agency primarily responsible for the statewide administration of the historic preservation program in California. Its responsibilities include identifying, evaluating, and registering historic properties and ensuring compliance with federal and state regulatory obligations.

Project: As defined by the State CEQA Guidelines§ 15378, a project can be one of the following: a) activities undertaken by any public agency; b) activities undertaken by a person that are supported in whole or in part through contracts, grants, subsidies, loans or other forms of assistance from one or more public agencies; c) activities involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

Public Resources Code: In addition to the State Constitution and Statues, California Law consists of 29 codes covering various subject areas. The PRC addresses natural, cultural, aesthetic, and recreation resources of the state.

Runoff: That portion of rainfall or surplus water that does not percolate into the ground and flows overland and is discharged into surface drainages or bodies of water.

Significant Effect on the Environment: As defined by State CEQA Guidelines §15382, substantial or potentially substantial adverse change on any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be

considered a significant effect on the environment. A social or economic change related to physical change may be considered in determining whether the physical change is significant.

Special-Status Species: Plant or animal species that are typically Listed (state and federal) as endangered, rare, and threatened, plus those species considered by the scientific community to be deserving of such listing.

State Historic Preservation Officer: The chief administrative officer for the California Office of Historic Preservation and is also the executive secretary of the State Historic Resources Commission.

Threatened Species: An animal or plant species that is considered likely to become endangered throughout a significant portion of its range within the foreseeable future because its prospects for survival and reproduction are in jeopardy from one or more causes.

Topography: Graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations.

Watershed: The total area above a given point on a watercourse that contributes water to the flow of the watercourse; entire region drained by a watercourse.

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Appendix G Environmental Commitments Record

An environmental commitment is a measure that Caltrans commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. The purpose of the Environmental Commitments Record (ECR) is to ensure that Caltrans meets its environmental commitments by: (1) recording each environmental mitigation, compensation, and enhancement commitment made for a project; (2) specifying how each commitment will be met; and (3) documenting the completion of each commitment. The environmental commitments in the table below are commitments that will be included in the Plans, Specifications, and Estimates (PS&E) and construction phases so that the project can be properly built, operated, and maintained.

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.4 Community Impacts					
CI-1	Caltrans will ensure that direct vehicle access to all businesses and residences from both northbound and southbound directions of US-395 is achieved following construction.	District Design/District Right of Way/Resident Engineer/Contractor	Final Design/Construction		
CI-2	A Construction Management Plan and a Transportation Management Plan (see **TR-1**) will be prepared for the project and include coordination efforts that will inform the community about project activities, maintain access to and from the project area during construction, minimize construction-period traffic, and control glare, dust, and noise. Measures to minimize construction impacts in these sections also apply to minimizing permanent community cohesion/character impacts.	Resident Engineer/Contractor	Final Design		
CI-3	To address bypass impacts, Caltrans will coordinate with the community and County regarding the possibility of placing a Welcome sign at both ends of the proposed expressway with brief information encouraging visitors to visit services offered at Kramer Junction.	Project Engineer/Design/ Resident Engineer/	Design Phase		
CI-4	During Final Design and Construction, every effort will be made to further minimize the amount of right-of-way needed for the facility and to further minimize community and environmental impacts.	Project Engineer/Design/ Resident Engineer	Design/Construction		
ECON-1	Sufficient relocation resources will be made available to displaced businesses in accordance with the Uniform Relocation Assistance and Property Acquisition Act to 1970 as amended (42 USC Secs. 4601-4655).	Resident Engineer	Project Approval/ Environmental Document		
ECON-2	Businesses displaced by the project alternatives will be relocated in an area that is comparable to the existing location in terms of accessibility and traffic volume.	Resident Engineer/CT Right of Way Agent	Final Design/PS&E		
ECON-3	Signage provisions will be made available to businesses whose temporary or permanent visibility and vehicular access change as a result of the project.	Resident Engineer	Final Design/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
ECON-4	For APN# 049219104, the permanent replacement site or a reconfiguration on the current site will accommodate the hangars and runway.	Resident Engineer	Final Design/Construction		
Section 3.5 Utilities/Emergency Services					
UT-1	Caltrans will coordinate all utility relocation work with the affected utility companies to ensure minimum disruption to customers in the service areas during construction. If Alternative 2 is selected as the preferred alternative, a coordination plan shall be established with SCE. The coordination plan shall include specific measures to minimize electrical service disruption that would occur with relocation of the existing SCE substation. This coordination plan will be in place and agreed upon by Caltrans and SCE before any relocation activities occur as a result of the proposed project.	Resident Engineer	Final Design/PS&E		
TR-1	Preparation of a Traffic Management Plan (TMP) to ensure that local and regional traffic moves efficiently during construction. The information provided will include access and traffic management plans that describe any projected temporary street closures or expected traffic delays due to construction vehicles on the roadways.	Resident Engineer	Final Design		
TR-2	The TMP and the construction plans will be provided to the community business and local agencies as the fire department, prior to project commencement.	Resident Engineer	Final Design		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.6. Traffic and Transportation/Pedestrian and Bicycle Facilities					
TR-1	Caltrans will prepare a TMP to ensure that local and regional traffic moves efficiently during construction. The TMP and the construction plans will be provided to community agencies, such as the fire department, prior to project commencement. The information provided will include access and traffic management plans that describe any projected temporary street closures or expected traffic delays due to construction vehicles on the roadways. The following elements will be major components of the project TMP: • A public awareness campaign related to the scheduling of work; • A construction zone enforcement enhancement program (COZEEP); • Use of portable changeable message signs (PCMS); • Advance information signing that will communicate the date, time, and duration of ramp closures; • Plan road closures to minimize impacts on local circulation to the maximum extent feasible; and • Preparation of temporary detour plans, if needed, during the plans, specifications, and estimates (PS&E) phase of the project. (Note: No detours are anticipated at this time.)	District Design/Resident Engineer/Contractor	Final Design/Construction		
Section 3.7 Visual/Aesthetics					
AES-1	All lighting used for the project will be directional, directing light to the highway facility and away from homes and habitats to minimize glare impacts to the night sky, and to avoid affecting background sky views. Glare shields will be used.	District Design/District Landscape Architect/District Biological Studies/Resident Engineer/Contractor	Final Design/Construction		
AES-2	Detention basins and bioswales will be designed and addressed as visually integrated elements of the landscape planting. Contour grading of basins will minimize the visual impact by blending with the surrounding natural landscape features.	District Design/District Landscape Architect/ Resident Engineer/Contractor	Final Design/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
AES-3	Bridge structures will be pigmented an earth tone that is compatible with the native soil color within the project limits. Bridge structures, signs, and other highway appurtenances will be selected for their form, scale, color, aesthetic treatment, spacing, and configuration to enhance compatibility with the rural community and desert landscape design contexts.	District Design/District Landscape Architect/ Resident Engineer/Contractor	Final Design/Construction		
AES-4	Native plantings will be used to minimize the visual impact of the highway and associated detention basins. Drought-tolerant native trees and shrubs will be planted at appropriate locations, especially near the drainages and drainage basins, and at the two proposed interchanges and railroad overcrossing to soften the structures. These interchanges will become the gateways into the community and will be landscaped. Inert materials will also be considered where appropriate to beautify these areas and reduce erosion. The restoration of desert scrub vegetation will include replanting of native vegetation and Joshua trees on disturbed sites, including staging areas, borrow pits, and other areas of surface disturbance. Any portion of existing SR-58 roadway pavement which is no longer needed will be removed, leaving an earthen surface that will be seeded with native seeds.	District Design/District Landscape Architect/District Biological Studies/Resident Engineer/Contractor	Final Design/Construction		
AES-5	Where possible, concrete drainage ditches will be avoided in favor of soft-bottom ditches to reduce urbanizing elements, and to encourage infiltration and vegetation growth. Where required, concrete ditches will be pigmented to blend with adjacent soil.	District Design/District Landscape Architect/ Resident Engineer/Contractor	Final Design/Construction		
AES-6	All disturbed soil areas will be treated with erosion control measures, including seeding with native plant/native grass seeds. For further detail see Measure GEO-2.	District Design/District Landscape Architect/District Biological Studies/Resident Engineer/Contractor	Final Design/Construction		
AES-7	During construction, existing vegetation will be retained to the maximum extent feasible by minimizing the amount of clearing and earthwork. During construction, Environmentally Sensitive Area (ESA) fencing will be provided around trees and vegetation to ensure its preservation.	District Design/District Landscape Architect/District Biological Studies/Resident Engineer/Contractor	Final Design/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
AES-8	Joshua trees that would be removed will be replanted away from the proposed pavement areas. If onsite relocation is not feasible, Caltrans will contact the San Bernardino County Building and Safety Office for a list of residents willing to adopt and care for the relocated trees. Transportation standards will follow best nursery practices.	District Design/District Landscape Architect/District Biological Studies/Resident Engineer/Contractor	Final Design/Construction		
AES-9	Slopes will be landscaped with native vegetation to reflect vegetation in the surrounding area and to mask the hard lines created by engineered cuts and embankments.	District Design/District Landscape Architect/ Resident Engineer/Contractor	Final Design/Construction		
Section 3.8 Cultural Resources					
CR-1	If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.	Qualified Archaeologist/ Resident Engineer/Contractor	Construction		
CR-2	If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the MLD. At this time, the person who discovered the remains will contact Gary Jones, District 8 Native American Coordinator at (909) 383-7505 so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.	Resident Engineer/Contractor	Construction		
CR-3	An Osteologically Trained Archaeological Monitor(s) and Native American Monitor(s) shall be present during all ground disturbing construction activities in sensitive areas, which will be defined after the buried site testing and before completion of final design. In the event that additional cultural deposits are uncovered during construction operations, the archaeological monitor shall be empowered to halt or divert work in the vicinity of the find until the archaeologist is able to determine the nature and the significance of the discovery.	Qualified Archaeologist/ Resident Engineer/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
CR-3a	Prior to construction, buried site testing will be performed to further define the boundaries of the "sensitive areas." The buried site testing will include a geo-archaeological analysis of the potential for the presence of buried subsurface deposits. If the results of the buried sites testing indicate that the presence of buried subsurface deposits are "likely," a Discovery Plan will be prepared and implemented in the event of inadvertent discoveries.	Qualified Archaeologist/ Resident Engineer/Contractor	Construction		
CR-4	An Environmentally Sensitive Area (ESA) will be delineated around the prehistoric component of CA-SBR-15073/H as described in the ESA Action Plan in the Finding of Effect.	Resident Engineer/Contractor	Construction		
CR-5	An Environmentally Sensitive Area (ESA) will be delineated around a portion of site CA-SBR-15085 as described in the ESA Action Plan in the Finding of Effect.	Resident Engineer/Contractor	Construction		
Section 3.9 Hydrology and Floodplains					
HF-1	The project will be designed so that stormwater flows do not overtop the roadway section.	Project Engineer/Resident Engineer	Final Design/PS&E		
HF-2	Culverts in the part of the project area where it is very flat and no flow lines approach the new alignment may require training dikes to concentrate flows into the inlets. The exact size and location will be determined during the project's final design phase.	Resident Engineer	Final Design		
HF-3	All culverts will be constructed with their inverts on natural ground that approximates the gradient flow line they serve. Placement in such a manner helps prevent bedload deposition in the culvert.	Resident Engineer	Final Design/Construction		
HF-4	As the project area is entirely within a desert area, all culverts will be designed for the 100-year AMC II storm.	Resident Engineer	Final Design		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
HF-5	The following preliminary design features and recommendations will be incorporated during the final design phase of the project in accordance with Caltrans' standard design practice: • Stormwater flows will not be allowed to overtop the road section, • Channels and ditches will be used to collect and convey flows into one main flow before crossing the road, • A bulking factor between 25 and 50 percent will be considered, • Box culverts will be as wide in span as economically feasible, • Training dikes will be considered for culverts to concentrate flows into the inlets, • Box culverts will be constructed with their inverts on natural ground that approximates the gradient of the flow line they serve, • All culverts will be designed for the 100-year AMC II storm, and • Water velocity at the culvert will be limited to 10 feet per second to prevent excessive scour.	Resident Engineer	Final Design		
Section 3.10 Water Quality and Stormwater Runoff					
WQ-1	The project will comply with the provisions of the Statewide NPDES permit. Treatment BMPs, as described in Section 3 of the Department's Statewide SWMP (Department 2003b) and the Project Planning and Design Guide (PPDG) (Department 2010), will be evaluated prior to completion of the Project Approval and Environmental Document phase and incorporated into the project's engineering plans and specifications during final design. Design pollution prevention BMPs are selected to reduce post-construction discharges. If greater than 90 percent of the Water Quality Volume cannot be infiltrated within State right of way, approved Treatment BMPs will be included to remove general pollutants; for example, infiltration devices or detention basins. Construction site BMPs, as described in WQ-3, will be itemized in the final contract documents, incorporated into the SWPPP, and implemented during the construction period.	Resident Engineer/Contractor	Final Design/Construction		
WQ-2	The contractor will be responsible for preparing a SWPPP according to the Department's standards, incorporating all the BMPs listed in the contract plans, and amending the SWPPP during the course of construction as necessary. The Resident Engineer will review and	Resident Engineer/Contractor	Final Design/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	approve the SWPPP. The general contractor will also implement, inspect, and maintain all measures with oversight by the Resident Engineer.				
WQ-3	Table 1-1 of the Department's Construction Site Best Management Practices Manual (Department 2003c) and/or the Department's Storm Water Quality Handbooks, Project Planning and Design Guide (Department 2010) include the following BMPs: • Temporary soil stabilization • Temporary sediment control • Tracking control • Non-stormwater management • Waste management • Materials storage and handling controls At a minimum, the contractor will implement all of the appropriate BMPs under the minimum requirement column of Table 1-1of the Department's Construction Site Best Management Practices Manual (Department 2003c) and/or the Department's Storm Water Quality Handbooks, Project Planning and Design Guide (Department 2010). During completion of the final engineering and design plans, specific BMPs will be specified in the contract documents to protect water quality. Specified BMPs would be implemented by the contractor through the SWPPP. The plan will also include post-construction erosion control measures such as stabilization of all disturbed soil areas.	Resident Engineer/Contractor	Final Design/Construction		
WQ-4	Coordination with the LRWQCB and SCE will be required should Alternative 2 be selected to avoid water quality impacts from relocation of the utility substation and the waste water impoundments.	Resident Engineer/Contractor	Final Design/Construction		
WQ-5	Coordination with the USACE, CDFW, and LRWQCB is ongoing and required to minimize water quality impacts to the 13 natural drainages that cross the project alternatives. It is necessary to obtain a WDR from the LRWQCB. The project will require an Approved Jurisdictional Determination from the USACE, a 1602 Lake and Streambed Alteration Agreement from the CDFW, and a 401 Water Quality Certification from LRWQCB.	Resident Engineer/Contractor	Final Design/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
WQ-6	Construction staging areas are to be sited in upland areas outside stream channels and other surface waters on or around the project site.	Resident Engineer/Contractor	Final Design/Construction		
WQ-7	Buffer areas should be identified and exclusion fencing is to be used to protect the water resources and prevent unauthorized vehicles or equipment from entering or otherwise disturbing the stream channels.	Resident Engineer/Contractor	Final Design/Construction		
WQ-8	Construction equipment will use existing roads.	Resident Engineer/Contractor	Final Design/Construction		
Section 3.11 Geology/Soils/Seismic/Topography					
GEO-1	Earthwork in the project area shall be performed in accordance with the latest edition of the Caltrans Standard Specifications.	Resident Engineer/Contractor	Construction		
GEO-2	During grading and site preparation, all onsite earthwork would be performed in accordance with the following: 1. Cut slope. Cut slope for this project shall be 1:1.5 (V:H) or flatter. For planning purposes, the earthwork factor is 1.3 for rock cuts, and 1.05 for cut in alluvium. 2. Grading Factor. A value of 1.3 for earthwork factor in the rock cuts and a value of 1.05 for cuts in alluvium are recommended. These values may be adjusted based on further field exploration and laboratory testing. 3. Embankment. Embankment slope shall be 1:2 (V:H) or flatter. Where the future embankment will be constructed across natural drainage courses, 0.5 feet of alluvium shall be sub-excavated (over-excavated) from the embankment culvert foundation area and replaced as compacted fill. Embankment foundations shall be prepared in accordance with Section 19 of the Standard Specifications. Where embankment foundations cross existing cultivated land, the embankment foundation shall be sub-excavated 2.6 feet and restored to grade with compacted fill. The recommendation may be modified or deleted based on supplemental exploration and testing for the Geotechnical Design Report. Embankment foundations areas disturbed by building demolition or basement backfilling operations should be over-excavated and restored with compacted fill. 4. Structure Foundations. a. Retaining wall. The wall foundation soils should be sub-	Resident Engineer/District Landscape Architect/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	excavated and restored as compacted fill; either a Type 1 or Type 2 Standard Plan retaining wall can be used. Alternatively, a Mechanically Stabilized Embankment (MSE) wall could be used. The MSE walls are more tolerable to settlement and sub-excavation, and recompaction of the foundation soils would be significantly reduced or eliminated. For planning purposes, assume no sub-excavation for an MSE wall. b. During preparation of the Geotechnical Design Report, bulk samples will be taken from the proposed sub-excavated area for laboratory compaction, remolded, direct shear, sieve analysis, and sand equivalent testing. This data will be used to analyze the bearing capacity, external stability, and suitability of on-site soils as structure backfill. 5. Erosion. a. Vegetate and mulch the slope surface and include the use of erosion protection coverings. Specifications would require the embankment construction to be done in phases, with completed slopes covered following each phase of grading. The Preliminary Geotechnical Report defers to the District Landscape Architect for techniques, specifications, and materials in vegetating slopes. b. Time the embankment construction to minimize soil exposure. Precipitation is a key factor in slope erosion. If possible, it would be best not to perform embankment construction during the relatively wet season. The embankment could be constructed during late spring to early summer months and vegetated/mulched prior to the rainy season. c. Divert runoff away from slope surface. Use a combination of pavement cross-slope and AC dikes to prevent flow over the toe of the slope. d. Roughen the slope surface by applying salvaged topsoil (with vegetation) from the clearing and grubbing operation. This would reduce the runoff velocity and enhance the growth of native vegetation. e. Armor the slope using rock fragments derived from blasting/cutting the cut slopes section on the west side of the proposed alignment. f. Build “zoned” embankments such that the sides of the				

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	embankments are equipment width "shells" of rock fill derived from cutting the hard rock segments of the projects. 6. Excavation Techniques. Excavations can be accomplished by conventional techniques for this project. 7. Settlement. Consolidation tests to further review the primary consolidation estimates for the higher embankment as well as the potential for collapsible soils will be needed.				
Section 3.12 Paleontology					
PA-1	Grading, excavation, and other surface and subsurface excavation in defined areas of the proposed project have the potential to affect nonrenewable fossil resources. A Paleontological Mitigation Plan (PMP) shall be prepared during final project design by a qualified paleontologist. The PMP will detail monitoring and the measures to be implemented in the event of paleontological discoveries. The PMP will include, at a minimum, the following elements.	Qualified Paleontologist/Resident Engineer/Contractor	Pre-Construction/ Construction		
PA-2	Required 1-hour preconstruction paleontological awareness training for earthmoving personnel, including documentation of training, such as sign-in sheets, and hardhat stickers, to establish communications protocols between construction personnel and the Principal Paleontologist.	Qualified Paleontologist/Resident Engineer/Contractor	Pre-Construction		
PA-3	There will be a signed repository agreement with an appropriate repository that meets Caltrans requirements and is approved by Caltrans.	Environmental Liaison/Resident Engineer/Contractor	Final Design/ Pre-Construction		
PA-4	Monitoring, by a Principal Paleontologist, of Pleistocene older alluvium during excavation.	Qualified Paleontologist/Resident Engineer/Contractor	Construction		
PA-5	Field and laboratory methods that meet the curation requirements of the appropriate repository will be implemented for monitoring, reporting, collection, and curation of collected specimens. Curation requirements are available for public review at the appropriate repository.	Resident Engineer/Contractor	Construction		
PA-6	All elements of the PMP will follow the PMP Format published in the Caltrans Standard Environmental Reference (Caltrans 2003).	Resident Engineer/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
PA-7	A Paleontological Mitigation Report discussing findings and analysis will be prepared by a Principal Paleontologist upon completion of project earthmoving. The report will be included in the environmental project file and also submitted to the curation facility.	Qualified Paleontologist/ Resident Engineer/Contractor	Final Design/Construction		
Section 3.13 Hazardous Waste/Materials					
HAZ-2	A geophysical survey and exploratory potholing will be performed to confirm the location of the abandoned oil well and determine whether it is located within the construction zones of Alternative 1 and Alternative 1A. A Preliminary Site Investigation was performed; no evidence of an oil well was observed.	Resident Engineer/Contractor	Design/PS&E/ Construction	Site investigation	February 2014
HAZ-3	Shallow soil sampling for petroleum, VOCs, metals, and PCBs will be conducted near identified drum storage areas, USTs, ASTs, sumps/clarifiers, wastewater trenches, and debris-covered areas within the environmental footprint of all alternatives to determine if special handling and soil disposal is needed. A Preliminary Site Investigation was performed, including soil sampling; no hazardous waste was detected.	Resident Engineer/Contractor	Design/PS&E/Right of Way	Site investigation	February 2014
HAZ-4	Soil sampling for petroleum hydrocarbons, VOCs, metals, and PCBs will be conducted in the wastewater treatment pond where it encroaches onto the selected alternative's right-of-way. The preferred alternative (Alternative 1A) does not encroach in this area. No site investigations were performed.	Resident Engineer/Contractor	Design/PS&E/Right of Way		
HAZ-5	Shallow soil sampling for petroleum hydrocarbons, VOCs, metals, asbestos, pesticides, semi-VOCs, and PCBs will be performed at areas around the railroad tracks that may be disturbed during construction activities. A Preliminary Site Investigation was performed, including soil sampling. No hazardous waste was detected.	Resident Engineer/Contractor	Design/PS&E/ Construction		
HAZ-6	All soil excavation conducted on-site will be monitored by the construction contractor for visible soil staining, odor, and the possible presence of unknown hazardous-material sources. Contaminated soils will be segregated and profiled for disposal.	Resident Engineer/Contractor	Design/PS&E/ Construction		
HAZ-7	Septic tanks and leach fields that fall within the construction zone will be removed and disposed of.	Resident Engineer/Contractor	Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
HAZ-8	For structures within the proposed right-of-way of the selected alternative that require demolition, an asbestos pre-demolition survey will be completed prior to the disturbance of building materials to determine the asbestos content. A certified asbestos contractor will be retained to abate any identified ACM issues in accordance with all applicable laws, including OSHA guidelines.	Resident Engineer/Contractor	Design/PS&E/ Construction		
HAZ-9	In the event that ACMs that were not identified in the asbestos study are uncovered during demolition/renovation activities, the contractor must stop work and have the materials tested for asbestos content. Any demolition or renovation of a structure will require the Mojave Desert Air Quality Management District (MDAQMD) to be notified and fees to be submitted at least 10 days prior to proceeding with demolition work; failure to do so may result in being fined for regulatory non-compliance.	Resident Engineer/Contractor	Design/PS&E/ Construction		
HAZ-10	In the event that alteration or demolition of the painted roadway is required, a LBP survey shall be conducted prior to disturbing highway structural materials to evaluate the lead content of the painted surface.	Resident Engineer	Design/PS&E/ Pre-Construction		
HAZ-11	Because of the possible presence of elevated lead concentrations in the yellow thermoplastic and yellow painted traffic stripes along the existing highway, it is recommended that special provisions be included that require the contractor to manage removed striping and pavement markings properly (i.e., as a hazardous waste) and have and implement a lead compliance plan prepared by a Certified Industrial Hygienist (CIH).	Resident Engineer	Design/PS&E/ Pre-Construction		
HAZ-12	Caltrans Waste Management and Materials Pollution Control BMPs, Material Delivery and Storage and Material Use: Thermoplastic waste will be disposed of in accordance with Standard Specification 14-11.07. Environmental rules and requirements, as outlined in the Caltrans Construction Manual, 7-103D (1), Caltrans- and Contractor-Designated Disposal, Staging, and Borrow Sites, will be followed and/or implemented.	Resident Engineer/Contractor	Final Design/ PS&E/Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
HAZ-13	A site safety plan that addresses issues related to the management of potential health and safety hazards to workers and the public will be prepared and implemented prior to initiation of the proposed construction activities. Instructions, guidelines, and requirements for handling hazardous materials will be included in the site safety plan to ensure employee safety, as provided in Chapter 16, Hazardous Materials Communication Program, of the Caltrans Safety Manual.	Resident Engineer/Contractor	Final Design PS&E		
HAZ-14	Wastes and petroleum products used during construction will be collected, transported, and removed from the project site in accordance with RCRA regulations and federal OSHA standards, including Waste Management and Materials Pollution Control BMPs, Spill Prevention and Control, and Materials and Waste Management BMPs, Hazardous Waste Management. All hazardous waste will be stored, transported, and disposed of as required in Title 22, CCR, Divisions 4.5 and 49; CFR 261-263; and Caltrans requirements, as stated in Section 7-109, Solid Waste Disposal and Recycling Reporting, of the Caltrans Construction Manual.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		
HAZ-15	Additional ADL studies will be performed at locations where the selected right-of-way crosses or includes the existing right-of-way and previous ADL studies were not performed. An ADL survey was completed in December 2013. ADL is non-hazardous in the project area.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		
HAZ-16	A lead compliance plan will be prepared under Section 7-1.02K(6)(j)(ii) of the Caltrans Standard Specifications. The lead compliance plan will include provisions regarding the use of earth material. If earth material will be relinquished to the contractor, the level of lead concentration and the depth of the earth material in which the lead was detected will be disclosed. If earth material will not be relinquished to the contractor, all excavated earth material with lead, which is typically found within the top two feet of material in unpaved areas of the highway, will be reused within the project limits.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		
HAZ-17	Earth material containing lead will be handled according to all applicable laws, rules, and regulations, including those of the following agencies: (1) Cal/OSHA, (2) the California Regional Water Quality Control Board, Region 6 – Lahontan, and (3) the California Department of Toxic Substances Control.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
HAZ-18	As recommended in the BNSF railroad investigation conducted as part of the Preliminary Site Investigation, the contractor will ensure that excess soils not used on site are disposed of as non-hazardous waste at a Class II facility. Excess soils may be reused within the construction zone, but off-site reuse is not permitted. In the event that stained or odorous soils are encountered during excavation, soils will be segregated, stockpiled, and characterized for disposition in accordance with local, state, and federal regulations and requirements. All work will be conducted under the guidance of a soil management plan (SMP) prepared by a Professional Engineer or Professional Geologist. The purpose of the SMP is to identify measures that would be implemented during construction activities to minimize dust and potential exposure to workers.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		
HAZ-19	If a commercial landfill will be used to dispose of earth material, (1) the earth material will be transported to a Class II or Class III landfill that is appropriately permitted to receive the material and (2) the contractor will be responsible for identifying the appropriately permitted landfill that will receive the earth material and paying all associated trucking and disposal costs, including costs for any additional sampling and analysis required by the receiving landfill. If hazardous waste material is discovered during construction, such material must be transported under manifest to a permitted Class I disposal facility.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		
HAZ-20	Coordination with the San Bernardino County Department of Airports and impacted airstrip and Boron Airport owners will be conducted to establish the appropriate construction or closure notification and safety procedures. The airstrip and Boron Airport do not appear to meet the requirements of CFR Title 14 Part 77.9; however, if during the coordination process it is determined that the FAA should be notified, then all notification requirements in accordance with CFR Title 14 Part 77.9 will be followed.	Resident Engineer/Contractor	Final Design PS&E/ Pre-Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.14 Air Quality					
AQ-1	The Department will require implementation of effective and comprehensive avoidance and minimization measures, as detailed in the Department's Standard Specifications, Section 7-1.01F (Air Pollution Control), and MDAQMD Rule 403.2 (Fugitive Dust Control). Measures to reduce exhaust emissions specified in Section 7-1.01F (Air Pollution Control) may include the following: • Maintain and operate construction equipment to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues would have their engines turned off when not in use to reduce vehicle emissions. Construction emissions should be phased and scheduled to avoid emissions peaks and discontinued during second-stage smog alerts. • Properly tune and maintain all equipment in accordance with the manufacturer's specifications. • Use electricity from power poles rather than temporary diesel- or gasoline-powered generators if and/or where feasible. • Use on-site mobile equipment powered by alternative fuel sources (i.e., methanol, natural gas, propane, butane) as feasible. • Develop a construction traffic management plan that includes: (1) consolidating truck deliveries; (2) providing a rideshare or shuttle service for construction workers; and (3) providing dedicated turn lanes for construction trucks and equipment on- and off-site. • Use solar-powered changeable message signs.	Resident Engineer/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
AQ-2	Measures to reduce particle emissions specified in MDAQMD Rule 403.2 (Fugitive Dust Control) include the following: The owner or operator of any construction/demolition source shall: • Use periodic watering for short-term stabilization of disturbed surface areas to minimize visible fugitive dust emissions. For purposes of this rule, use of a water truck to moisten disturbed surfaces and actively spread water during visible dusting episodes shall be considered adequate to maintain compliance. • Take actions to prevent project-related trackout onto paved surfaces. • Cover loaded haul vehicles while operating on publicly maintained paved surfaces. • Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than 30 days, except when such a delay is due to precipitation that dampens the disturbed surface enough to eliminate visible fugitive dust emissions. • Clean up project-related trackout or spills on publicly maintained paved surfaces within 24 hours. • Reduce nonessential earthmoving activity under high wind conditions. For purposes of this rule, a reduction in earthmoving activity when visible dusting occurs shall be considered enough to maintain compliance.	Resident Engineer/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.15 Noise and Vibration					

NOI-1	To reduce noise levels from construction to the extent that is technically feasible and avoid unnecessary annoyance from construction noise, the construction noise control measures listed below will be implemented.
	• To the extent practicable, avoid using construction equipment or any other activity that could generate high noise levels near homes. If nighttime construction is required, the community will be advised.
	• Place maintenance yards, batch plants, haul roads, and other construction-oriented operations in locations that would be the least disruptive to the community.
	• Hold community meetings to explain to area residents the construction work, time involved, and control measures to be taken to reduce the impact of construction work, as appropriate.
	• Schedule the timing and duration of construction activities to minimize noise impacts at noise-sensitive locations.
	• As practicable, use noise-attenuating "jackets" or portable noise screens to provide shielding for pavement breaking, jack hammering, or other similar activities when work is close to noise-sensitive areas.
	• Comply with Caltrans' Standard Specification 14-8.02A (2010):
	  ○ Do not exceed 86 dBA Lmax at 50 feet from the job site activities from 9 p.m. to 6 a.m.
	  ○ Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.
		Resident Engineer/Contractor	Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.17 Natural Communities					
BIO-1	In coordination with USFWS and CDFW two oversized culverts, east and west of US-395, will be installed as part of the project. These culverts will be a minimum of six feet tall and 10 feet wide. These will be box culverts, which are a specific requirement for desert tortoise and Mohave ground squirrel and have been designed as such. They will also accommodate small to medium sized animals. Desert tortoise fencing will be used to direct wildlife to them.	Environmental Coordinator/District Biological Studies/Project Engineer/Resident Engineer/Contractor	Final Design/PS&E/ Construction		
Section 3.18 Wetlands and Other Waters					
BIO-2	Water Pollution Control: Avoidance and minimization measures to be utilized in order to protect aquatic resources during the course of the project will include the implementation of BMPs (Department 2003a) and the Storm Water Pollution Prevention Plan (SWPPP) (Department 2003b) during all phases of construction.	Environmental Coordinator/ District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-3	Temporary Environmentally Sensitive Area (ESA) fencing: An ESA fence will be installed around all washes within the right of way that will not be impacted by the project.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-4	Biological Monitor. A qualified construction monitor will assure that construction activities will not impact the washes delimited by the ESA fencing.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-5	The proposed project will require the acquisition of mitigation for federal and state listed species. Mitigation ratios varied from 3:1 to 5:1. This land is expected to include desert washes that should offset the impact for the project. There is no aquatic/riparian vegetation that will require any other additional mitigation. If the mitigation land acquired for the project does not include sufficient desert washes, supplementary mitigation may be required by the agencies with jurisdiction over the waters.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
Section 3.19 Plant Species					
BIO-6	Preconstruction surveys for rare plants will be conducted by a qualified biologist during the appropriate blooming period. Any plants identified will be flagged and avoided, if feasible.	Environmental Liaison/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-7	The project design will avoid impacts to special-status plants to the extent feasible.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-8	Temporary Fence (Type ESA). ESA fencing will be established around those populations of special-status plants that are to be protected in place to prohibit all construction activities and access from impacting the rare plant populations within the project area.	Environmental Liaison/ District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-9	Seeds will be collected from all those plant populations deemed appropriate for seed relocation if suitable habitat is available.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-10	Biological Monitor. A qualified biological monitor will monitor construction activities to ensure avoidance of any construction-related impacts to special status plant species.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-11	Species Protection Measures will be made to ensure that temporary staging areas, storage areas, and access roads involved with this project will occur in the area of permanent direct impact. Access to the project site will be gained from the existing SR-58. No new access roads will be built as part of this project. Staging areas and equipment storage will take place on existing roads or within the proposed right-of-way of the realigned SR-58.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-12	Joshua trees within the direct impact area with a circumference of 50 inches measured at four feet, measuring 15 feet high, or occurring in a cluster of 10 or more within close proximity to each other will be transplanted or stockpiled for future transplanting to the extent feasible. Joshua trees will be shown on the plans for avoidance or transplanting.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-13	An Environmentally Sensitive Area (ESA) will be established around all Joshua trees within the project area that are to be protected in place, as shown on plans. To prohibit all construction activities and access from impacting the Joshua trees within the project area, temporary ESA fencing would be placed around the Joshua trees.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
Section 3.20 Animal Species					
BIO-14	A preconstruction survey of the project site for burrowing owl will be conducted; the time lapse between surveys and site disturbance will be as short as possible and will be determined based on consultation with CDFW, but will not exceed 7 days prior to commencing construction activities.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-15	Species Protection. Measures will be implemented to ensure that temporary staging areas, storage areas, and access roads for this project will occur in the area of permanent direct impact. Access to the project site will be gained from the existing SR-58. No new access roads will be built as part of this project. Staging areas and equipment storage will take place on existing roads or within the proposed right-of-way of the realigned SR-58.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-16	Species Protection: If burrowing owls are found on-site during the preconstruction sweep: • Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a biologist can verify through non-invasive methods that either the owls have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent flight. • A Burrowing Owl Mitigation and Monitoring Plan will be submitted to CDFW for review and approval. • All relocation shall be approved by CDFW.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-17	If, during preconstruction surveys, a burrowing owl is encountered, habitat compensation will be assessed and coordinated with CDFW during preparation of the Burrowing Owl Mitigation and Monitoring Plan. Appropriate mitigation lands for burrowing owl will be determined during preparation and CDFW agency approval of the Burrowing Owl Mitigation and Monitoring Plan. CDFW may allow the mitigation lands acquired following the above mitigation ratios to account for more than just burrowing owl, if species-specific habitat criteria are met in the habitat acquisition proposal. As provided in CDFW (2012) the mitigation for permanent habitat loss necessitates replacement with an equal or greater habitat area.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-18	To avoid any impacts to migratory birds (including loggerhead shrike and Le Conte's thrasher), vegetation removal must take place between September 15 and February 15 (outside of the breeding season). If, because of construction schedules, it is necessary to remove vegetation, including trees, during the breeding season (February 16 through September 14), a biological construction monitor must perform a preconstruction survey of each individual tree and/or the entire area where vegetation will be removed. All measures shall be taken to minimize impacts on nesting birds. A preconstruction sweep for nesting birds will be conducted prior to construction activities outside of the nesting season as well. The sweep will include areas used for staging, storage, sign placement, or parking. If an active bird nest is detected during surveys, a nest avoidance buffer will be implemented with a radius of 100 feet or as determined by the biological monitor. Depending on the species and nesting stage, it may be prudent to have a biological monitor present during construction to monitor nest activity while still allowing construction to take place.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-19	A preconstruction survey will take place to ensure that no American badgers are located within the project limits.	Qualified Biologist District Biological Studies/Project Engineer/Resident Engineer/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-20	Biological Monitor: A qualified biological monitor will monitor construction activities to ensure avoidance of any construction-related impacts on American badger.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/ Construction Liaison	Final Design/PS&E/ Pre-Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-21	Species Protection: If a burrow occupied by badgers is found during construction, all construction activities will cease in the vicinity of the burrow, and coordination with CDFW will take place so that appropriate protective measures can be implemented.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
Section 3.21 Threatened and Endangered Species					
BIO-22	Field Contact Representative or Resident Engineer. Caltrans will assign/designate a staff person to act as the Field Contact Representative (FCR) or Resident Engineer (RE) with specific experience in the implementation of environmental compliance programs. The FCR/RE will serve as the environmental compliance monitor for the project. They will be present throughout construction period. This individual will be the liaison among the wildlife agencies, FHWA, Authorized Biologist(s), and Biological Monitor(s). The FCR/RE and Authorized Biologist will work closely together to ensure compliance with the various conditions and requirements of project permits and approvals set forth in the biological opinion and supporting plans appended to the biological assessment. Caltrans's FCR/RE will act on the advice of the Authorized Biologist(s) and Biological Monitor(s) to ensure conformance with the protective measures set forth in the biological opinion. The Authorized Biologist(s) will have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by an Authorized Biologist and Biological Monitor(s), Caltrans's FCR/RE will halt all construction-related ground disturbance and other activities in areas specified by the Authorized Biologist(s).	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-23	Authorized Biologists and Biological Monitors. Caltrans will review the credentials of all individuals seeking approval as Authorized Biologists prior to being submitted to USFWS to ensure the individuals possess the appropriate experience and training to serve as Authorized Biologists. Caltrans will then submit the credentials of appropriate individuals to USFWS and CDFW for approval at least 30 days prior to the time they must be in the field. The Authorized Biologist will be responsible for all aspects of clearance surveys, monitoring, developing and implementing the worker environmental awareness program, contacts with agency personnel, reporting, and long-term monitoring and reporting and be present, along with approved Biological Monitors, during construction, operation, and maintenance that could affect desert tortoises. Biological Monitors will be approved and supervised by the Authorized Biologist.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		
BIO-24	Pre-Construction Surveys. Within desert tortoise habitat, Authorized Biologists will conduct pre-construction surveys of the project area including the right-of-way, staging areas, access routes, and all other construction sites. The surveys will also cover the adjacent undeveloped lands located between the existing and new alignment. Authorized Biologists will survey the right-of-way for desert tortoises using techniques providing 100-percent coverage of the area proposed for disturbance. Additional transects will be conducted on each side of the right-of-way to locate tortoises and their burrows within 50 feet of the right-of-way. Transects will be no greater than 10 meters (30 feet) apart. If construction occurs during the desert tortoise active season (March 1 through October 31), or when temperatures and environmental conditions are conducive to tortoise activity as determined by an Authorized Biologist, the survey will occur within 48 hours of surface disturbance. During the inactive season (November 1 through February 28, except as noted above), when conditions are not conducive to tortoise activity as determined by an Authorized Biologist, one survey must occur within 72 hours of surface disturbance or up to five days in advance of disturbance. The Authorized Biologist will flag all desert tortoise burrows, and will only excavate burrows and move desert tortoises if project activities are likely to affect them. If a desert tortoise is moved, the Authorized Biologist will move it into appropriate habitat adjacent to the project site, but will not move it more than 1,000 feet if it is an adult or 300 feet if it is a juvenile or hatchling. Following the	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	preconstruction survey and the relocation of desert tortoises if determined necessary by the Authorized Biologist, the contractor will install permanent fencing to exclude desert tortoises from all work areas and rights-of-way, as specified in Measure BIO-29.				
BIO-25	Biological Resource Information Program. Caltrans will be responsible for ensuring that all workers at the site receive worker environmental awareness training (Worker Environmental Awareness Program [WEAP]) prior to and throughout construction. The training will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. Caltrans will implement the WEAP to ensure that project construction and operation are both conducted within a framework of safeguarding environmentally sensitive resources. The WEAP will be available in English and Spanish. The Applicant will present the WEAP to all workers on site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. The WEAP will include but will not be limited to the following: a. Be developed by or in consultation with the Authorized Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, are made available to all participants; b. Provide an explanation of the purpose and function of the desert tortoise minimization measures and the possible penalties for not adhering to them; c. Inform workers that the FCR/RE, Authorized Biologist(s), and Biological Monitor(s) have the authority to halt work in any area where there would be an unauthorized adverse impact to biological resources if the activities continued; d. Discuss general safety protocols such as hazardous substance spill prevention and containment measures and fire prevention and protection measures; e. Provide an explanation of the sensitivity and locations of the vegetation, biological resources, and habitat within and adjacent to work areas, and proper identification of these resources; f. Place special emphasis on desert tortoise and southwestern willow flycatcher, including information on physical	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	characteristics, photos, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and conservation measures required for the project; g. Provide contact information for the Authorized Biologist(s) and Biological Monitor(s) for WEAP trainees to submit late comments and questions about the material discussed in the program, as well as to report any dead or injured wildlife species encountered during project-related activities; h. Direct all WEAP trainees to report all observations of listed species and their sign to an Authorized Biologist for inclusion in the monthly compliance report; i. Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines; and j. Provide an explanation regarding the protective measures to reduce the adverse effects associated with predation of desert tortoises by common ravens (*Corvus corax*) and other known predators of desert tortoise. Only workers who have successfully completed the education program will be allowed to work on the project site.				
BIO-26	Species Protection. Caltrans will ensure that the Authorized Biologist(s) will follow the procedures for handling tortoises in the USFWS field manual (2009). Only the Authorized Biologist(s) will move desert tortoises and then solely for the purpose of moving them from harm's way. The Authorized Biologist(s) will document each desert tortoise encounter/handling with the following information, at a minimum: a narrative describing circumstances; vegetation type; date; conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released; maps; whether animals voided their bladders; and diagnostic markings (that is, identification numbers marked on lateral scutes). Tortoises found in the project area will be handled and relocated by an Authorized Biologist in accordance with the most current USFWS protocol in the Desert Tortoise Field Manual. Tortoises excavated from burrows must be relocated to unoccupied natural or artificially constructed burrows immediately following excavation. The artificial or unoccupied natural burrows must occur 150 to 300 feet from the original burrow. Relocated tortoises will not be placed in existing	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Pre-Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	occupied burrows. If an existing burrow that is similar in size, shape, and orientation to the original burrow is unavailable, the Authorized Biologist(s) would construct one. Desert tortoises moved during inactive periods will be monitored for at least two days after placement in new burrows to ensure their safety. The Authorized Biologist(s) would be allowed some judgment and discretion to ensure that survival of the desert tortoise is likely. The relocated tortoise will be monitored during construction activities to ensure that it shelters and does not return to the right-of-way and be in harm's way. Desert tortoises that are found aboveground and need to be moved from harm's way will be placed at unoccupied shelter sites including unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs at 150 to 300 feet from the point of encounter. During periods of the year when desert tortoises are generally active, a Biological Monitor will monitor these individuals to ensure that they do not move back into harm's way or exhibit signs of physiological stress (e.g., gaping, foaming at the mouth). If a desert tortoise exhibits any signs of physiological stress, the Authorized Biologist(s) will immediately undertake actions to stabilize it (e.g., place it in a climate-controlled facility, shade it, lightly mist it with water); the desert tortoise will be released only after it is exhibiting normal behavior and temperatures are appropriate. Whenever a vehicle or construction equipment is parked longer than two minutes within desert tortoise habitat, workers will inspect the ground around and underneath the vehicle for desert tortoises prior to moving the vehicle. If the worker observes a desert tortoise, he or she will contact an Authorized Biologist or Biological Monitor. If possible, the desert tortoise will be left to move out of harm's way on its own. If the desert tortoise does not move out of harm's way within 15 minutes, an Authorized Biologist will move it out of harm's way in accordance with the handling procedures. Caltrans will ensure that no project personnel will exceed a vehicle speed limit of 20 miles per hour during project activities on unpaved access roads within desert tortoise habitat. To prevent entry by common ravens (*Corvus corax*) and other predators such as the coyote (*Canis latrans*), trash will be placed in a sealed container and emptied at the close of business each day. The project area will be kept as clean of debris as possible. Each water				

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
	source will be caged or netted to prevent use by ravens. Caltrans will ensure that workers do not bring firearms and pets into the project area. This measure does not apply to law enforcement personnel and working dogs.				
BIO-27	Locating a Dead or Injured Tortoise. The Authorized Biologist will notify USFWS within 24 hours upon locating a dead or injured desert tortoise during construction, operation, and maintenance of the project. The notification will be made by telephone and in writing or by electronic mail to BLM and USFWS. The report will include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Caltrans will submit desert tortoises that are fatally injured during project-related activities for necropsy, at its expense, as outlined in Berry (2001).	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-28	Designated Areas. Caltrans will confine all project activities to the right-of-way, approved access roads, and storage areas. All storage areas and vehicle turn-around locations will use previously disturbed habitat as much as possible and will require USFWS approval prior to the initiation of project activities. Caltrans will restrict project vehicles to the right-of-way, designated areas, or existing roads and will prohibit off-road or cross-country travel except in emergencies. Caltrans will not create any new dirt or paved roads. The project construction boundaries will be clearly delineated with fencing, stakes, or flagging. If unforeseen circumstances require disturbance beyond the project right-of-way, Caltrans will notify USFWS immediately. Caltrans will ensure that the Authorized Biologist or Biological Monitor will inspect any open trenches or excavations within project work sites at least three times daily and prior to backfilling. If a desert tortoise is located within an open trench, a USFWS-authorized biologist will remove it. Project personnel will cover open trenches or excavations with metal plates if they are left open overnight or on the weekend to prevent desert tortoises from entering them.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-29	Permanent Fence. Following preconstruction surveys and the relocation of desert tortoises if determined necessary by the Authorized Biologist but prior to the start of construction, Caltrans will require the contractor to install permanent fencing to exclude desert tortoises from all work areas and rights-of-way under the direction of an Authorized Biologist. Caltrans will construct the fence according to the protocols provided in Chapter 8 of the Desert Tortoise Field Manual (USFWS 2009). If desert tortoises are encountered during installation of the fence, the Authorized Biologist will move the individual the shortest distance possible to an area outside the fence where it will be safe. The Authorized Biologist will use his or her judgment regarding the best measures to use to ensure the desert tortoise does not immediately return to the area inside of the fence. The Authorized Biologist may contact USFWS or CDFW to discuss specific situations if the need arises. After the fencing is installed and before the onset of ground-disturbing activities, the Authorized Biologist will survey the area and remove all desert tortoises. The Authorized Biologist will survey the area as much as is needed to ensure that all desert tortoises have been found; generally, all desert tortoises will be considered to have been removed once a complete survey of the work area is conducted without finding any additional animals. Desert tortoises that are found inside the fenced area will be placed on the other side of the desert tortoise exclusion fence. The Authorized Biologist will use his or her best judgment to determine the optimal location for placement of desert tortoises. In general, desert tortoises will be moved to the nearest safe area south of the road realignment. Caltrans will maintain the integrity of the fence to ensure that desert tortoises are excluded from the work area during construction and from the roadway thereafter. The fence will be inspected regularly; initially, it will be inspected on a monthly basis, but Caltrans may adopt a different schedule, based on experience. Caltrans will inspect and, if necessary, repair the fence immediately after any rainstorm that occurs during times of the year or at temperatures when desert tortoises are likely to be active.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-30	Construction Monitoring. An appropriate number of Authorized Biologists and Biological Monitors will be available during construction for the protection of desert tortoise. Authorized Biologists will be assigned to monitor each area of activity where conditions exist that may result in *take* of desert tortoise (e.g., clearing, grading, re-contouring, restoration activities). The Biological Monitor will survey ahead of the project activities and halt construction if he or she finds a desert tortoise in the path of construction equipment. Project activities will not resume until the desert tortoise moves out of harm's way or the Authorized Biologist has relocated it. An Authorized Biologist or Biological Monitor will inspect all excavations that are not within desert tortoise exclusion fencing on a regular basis (several times per day) and immediately prior to filling of the excavation. If project personnel discover a desert tortoise in an open trench, an Authorized Biologist will move it to a safe location in accordance with the Desert Tortoise Field Manual (2009).	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-31	Biological Monitor. A qualified biological monitor will monitor construction activities to ensure avoidance of any construction activities related to MGS.	Qualified Biologist/District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-32	Biological Resource Information Program. MGS Awareness Training will be provided and integrated with WEAP Training prior to construction.	Qualified Biologist/District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-33	Species Protection. If any MGS are injured or killed during the course of construction, work must stop in the immediate area, the animal must be left in place as is, and the project monitor and the Resident Engineer will be immediately notified. Only the authorized biologist will handle and transport the animal to a qualified veterinarian.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-34	Caltrans, CDFW, and USFWS agreed to mitigate affected areas east of Fornessa Road with a mitigation ratio of 5:1, including the critical habitat areas east of US-395. Due to habitat quality, all areas west of Fornessa Road will be mitigated at a ratio of 3:1. The total impact area to be mitigated is shown in Table 3.21-2 in Section 3.21.3.1. Alternative 3 is the alternative that would require more mitigation for desert tortoise, followed by Alternative 1 and Alternative 1A. Since Alternative 2 is located within more previously disturbed areas, and areas already mitigated by previous projects, it is the alternative that would require less mitigation for this project. These mitigation ratios are combined with the mitigation ratios for the MGS.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-35	In coordination with CDFW and USFWS, two oversized culverts, east and west of US-395, will be installed as part of the project. These culverts will be a minimum of 6 feet tall and 10 feet wide.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-36	Similar to compensatory mitigation for desert tortoise, Caltrans and CDFW have agreed to mitigate affected areas east of Fornessa Road with a mitigation ratio of 5:1. Due to habitat quality all areas west of Fornessa Road will be mitigated at a ratio of 3:1. The total impact area to be mitigated is disclosed on Table 3.21-2 in Section 3.21.3.1. Alternative 3 is the alternative that would require more mitigation for MGS, followed by Alternative 1 and Alternative 1A. Since Alternative 2 is located within more previously disturbed areas, and areas already mitigated by previous projects, it is the alternative that would require less mitigation for this project. These mitigation ratios are combined with the mitigation ratios for desert tortoise.	Qualified Biologist/District Biological Studies/Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
BIO-37	In coordination with CDFW two oversized culverts, east and west of US-395 will be installed as part of the project. These culverts will be a minimum of 6 feet tall and 10 feet wide.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		
Section 3.22 Invasive Species					
BIO-38	Measures to minimize the introduction or spread of nonnative species would include cleaning all equipment and vehicles with water (or another Caltrans approved method) to remove dirt, seeds, vegetative material, or other debris before entering and upon leaving the project site and the removal and disposal off site of existing nonnative species within the project area.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

No.	Task and Brief Description	Responsible Party	Timing/Phase	Action Taken to Comply with Task	Date
BIO-39	Landscaping and erosion control measures proposed during this Department project will not contain invasive species in the plant selections or seed mixtures.	District Biological Studies/ Project Engineer/Resident Engineer/Contractor/ Construction Liaison	Final Design/PS&E/ Construction		

Appendix H List of Acronyms

A-1	Agriculture
AADT	annual average daily traffic
AB	Assembly Bill
AB 1493	Assembly Bill 1493
ACMs	asbestos containing materials
ADA	Americans with Disabilities Act
ADI	area of direct impact
ADL	Aerially Deposited Lead
ADT	Average daily traffic
AER	Archaeological Evaluation Report
af	acre-feet
AG	Agricultural
amsl	above mean sea level
AOD	Assisted Other Department
APE	Area of Potential Effect
APN	assessor's parcel number
AQR	Air Quality Report
ARB	Air Resources Board
ARPA	Archaeological Resources Protection Act
ASR	Archaeological Survey Report
ASTM	American Standard Testing Methods
ASTs	Aboveground storage tanks
AT&SF	Atchison, Topeka & Santa Fe
Basin	Mojave Desert Air Basin
bgs	below ground surface
BHPO	Base Historic Preservation Officer
BLM	U.S. Bureau of Land Management
BMP	best management practices
BNSF	Burlington Northern Santa Fe
BSA	biological study area
BT&H	Business, Transportation, and Housing
BTEX	benzene, toluene, ethylbenzene, and xylenes
C-1, C-2, and CH	Commercial
CAFÉ	Corporate Average Fuel Economy
Caltrans or Department	California Department of Transportation
CARIDAP	California Archaeological Resource Identification and Data Acquisition Program
CBOC	California Burrowing Owl Consortium
CCR	California Code of Regulations
CDFG or CDFW	California Department of Fish and Game or California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980

CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CERFA	Community Environmental Response Facilitation Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH	Highway Commercial
CH_4	methane
CHHSL	California Human Health Screening Level
CHP	California Highway Patrol
CIA	Community Impact Assessment
CIH	Certified Industrial Hygienist
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO_2	carbon dioxide
CO-CAT	Coastal Ocean Climate Action Team
CORRACTS	Corrective Action Sites
COZEEP	construction zone enforcement enhancement program
CPUC	California Public Utilities Commission
CR	Rural Commercial
CrVI	Chromium VI
CTC	California Transportation Commission
CTP	California Transportation Plan
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted decibels
DCE	Dichloroethane
DDT	dichlorodiphenyltrichloroethane
DEHS	Department of Environmental Health Services
Department	California Department of Transportation
DFG	California Department of Fish and Game
DIB	Design Information Bulletin
DNAC	District 8 Native American Coordinator
DOC	California Department of Conservation
DOD	Department of Defense
DOGGR	Department of Conservation Division of Oil, Gas, and Geothermal Resources
DOMS	DOGGR Online Mapping System
DSA	Disturbed Soil Area
DWMA	Desert Wildlife Management Areas
DWR	Department of Water Resources
E	Estates
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EM	Executive Memorandum
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System

ESA	Environmental Site Assessment
ESA	Environmentally Sensitive Area
ESAL	Equivalent Single-Axle Load
FCR	Field Contact Representative
FCVs	fuel cell vehicles
FEMA	Federal Emergency Management Agency
FES	Freeway and Expressway System
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	Facility Index System
FIRMs	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
GWhs	gigawatt-hours
HFCs	hydrofluorocarbons
HPSR	Historic Property Survey Report
HRER	Historical Resources Evaluation Report
I-40	Interstate 40
I-5	Interstate 5
ICES	Intermodal Corridors of Economic Significance
ICES	Intermodal Corridor of Economic Significance Act establishes the
IPCC	Intergovernmental Panel on Climate Change
IR	Regional Industrial
IRRS	Interregional Road System
ISA	Initial Site Assessment
ITIP	Interregional Transportation Improvement Program
ITS	intelligent transportation systems
LBP	lead-based paint
LCFS	Low-carbon fuel standard
Ldn	Day-Night Level
LDVs	light-duty vehicles
LEDPA	least environmentally damaging practicable alternative
L_{eq}	Equivalent Sound Level
L_{max}	Maximum Sound Level
LOS	level of service
LQG	Large-Quantity Generator
LRWQCB	Lahontan Regional Water Quality Control Board
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act of 1918
MDAQMD	Mojave Desert Air Quality Management District
MDPA	Mojave Desert Planning Area
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MGS	Mohave ground squirrel
MLD	Most Likely Descendent
MMT	million metric tons
MOU	memorandum of understanding
mpg	miles per gallon

mph	miles per hour
MRZs	Mineral Resource Zones
MS4s	Municipal Separate Storm Sewer Systems
MSAT	mobile-source air toxics
MTBE	methyl-tert-butyl-ether
N_2O	nitrous oxide
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NHPA	National Historic Preservation Act of 1966
NHTSA	National Highway Traffic Safety Administration
NOA	Naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries Service	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Act
OSTP	Office of Science and Technology Policy
PA	Programmatic Agreement
pc/h/ln	number of passenger cars divided by the number of hours divided by the number of lanes
PCBs	polychlorinated biphenyls
PCE	perchloroethylene
pCi/L	picocuries per liter
PCMS	portable changeable message signs
PDT	Project Development Team
PFCs	perfluorocarbons
PG&E	Pacific Gas & Electric
PHV	peak-hour volume
PIR/PER	paleontological identification report and paleontological evaluation report
PM	post mile
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PMP	Paleontological Mitigation Plan
ppm	parts per million
PRC	Public Resources Code
PS&E	plans, specifications, and estimates
PSI	Preliminary Site Investigation
PUC	Public Utilities Commission
RAATS	RCRA Administrative Action Tracking System
RC	Resource Conservation
RCRA	Resource Conservation and Recovery Act of 1976
RE	Resident Engineer

RECs	recognized environmental conditions
Resources Agency	California Natural Resources Agency
RL	Rural Living
ROD	Record of Decision
RSL	Regional Screening Level
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Boards
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users
SANBAG	San Bernardino Associated Governments
SB	southbound
SB 97	Senate Bill 97
SBAIC	San Bernardino Archaeological Information Center
SBCFD	San Bernardino County Fire Department
SBCSD	San Bernardino County Sheriff's Department
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SD	Special Development
SDC	Seismic Design Criteria
septic	sewage treatment systems
SF_6	sulfur hexafluoride
SHC	Streets and Highways Code
SHELL	State Highway Extra Legal Load
SHPO	State Historic Preservation Officer
SHS	State Highway System
SLIC	Spills, Leaks, Investigations, and Cleanups
SMP	soil management plan
SR	State Route
STAA	Surface Transportation Assistance Act
STIP	State Transportation Improvement Plan
SVOC	semi-volatile organic compound
SWMD	Solid Waste Management Division
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCE	Trichloroethylene
TCWG	Transportation Conformity Working Group
TDM	Transportation Demand Management
TDS	total dissolved solids
TeNS	Technical Noise Supplement
TI	Traffic Indices
TMDLs	Total Maximum Daily Loads
TMP	traffic management plan
TNM	Traffic Noise Model
TPH	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facilities
TSM	Transportation Systems Management
TTLC	total threshold limit concentration

U.S.	United States
U.S. EPA	U.S. Environmental Protection Agency
UBC	Uniform Building Code
UC Davis	University of California Davis
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USTs	Underground Storage Tanks
VMT	vehicle miles traveled
VOCs	Volatile organic compounds
WDRs	Waste Discharge Requirements
WEAP	Worker Environmental Awareness Program
WMP	West Mojave Plan
WPCP	Water Pollution Control Plan
XPI	Extended Phase I Investigation
ZEV	zero emission vehicle
ZOI	zone of influence
$\mu g/m^3$	per cubic meter

Appendix I List of Technical Studies

Aerially Deposited Lead (ADL) Investigation Report. December 19, 2013.

Air Quality Conformity Analysis, State Route 58 Kramer Junction Expressway Project. December 2013.

Air Quality Report, State Route 58 Kramer Junction Expressway Project (Realign and Widen to Four-Lane Expressway). September 11, 2012.

Archaeological Survey Report (ASR). February 2013.

Memorandum: Biological Opinion Progress for the SR-58 Kramer Junction Project. February 2014.

California Archaeological Resource Identification and Data Acquisition Program Proposal. 2013.

California Archaeological Resource Identification and Data Acquisition Program Report. 2013.

Community Impact Assessment. February 2013.

Draft Relocation Impact Statement. February 2013.

Extended Phase I Investigation Proposal. 2013.

Extended Phase I Investigation Report. 2013.

Final Relocation Impact Statement. October 2013.

Finding of Effect. 2014.

Floodplain Evaluation Report Summary. September 2009.

Geotechnical Report. May 17, 2007.

Historic Property Survey Report. February 2013.

Historical Resources Evaluation Report. February 2013.

Supplemental Historical Resources Evaluation Report. 2013.

Initial Site Assessment (ISA). October 18, 2012.

Jurisdictional Delineation for SR-58 Re-Alignment and Widening Project. June 2011.

Location Hydraulic Study. February 2010.Natural Environment Study, Kramer Junction Expressway Project. August 2012.

Natural Environment Study, Kramer Junction Expressway Project. August 2012.

Noise Study Report on State Route 58 from Kern/San Bernardino County Line to 7.5 Miles East of United States Route 395. September 2012.

Revised Paleontological Identification Report and Paleontological Evaluation Report, State Highway 58 Realignment from Kern County Line to 7.5 Miles East of Kramer Junction, San Bernardino County, California. May 2013.

Draft Project Report on State Route 58 from Kern/San Bernardino County Line to 7.5 Miles East of United States Route 395. May 2013.

Traffic Study Report, SR-58 Widening Project. September 30, 2010.

Future (2019 and 2039) Build Conditions Analysis Results.

PC-Travel for Windows Reports for Study: SR-58 WO Kramer AM EB. December 13, 2010.

PC-Travel for Windows Reports for Study: SR-58 WO Kramer EB PM. December 13, 2010.

Preliminary Site Investigation Report: BNSF Railroad Kramer Junction Area. February 2014.

Preliminary Site Investigation Report: Kramer Junction Area Darr Property – Parcel #0492-191-04. February 2014.

Preliminary Site Investigation Report: Kramer Junction Area Oil Well Search. February 2014.

FREQ12PE Simulation. December 20, 2010.

Supplemental Traffic Speed Data Analysis (Kramer Junction). December 21, 2010.

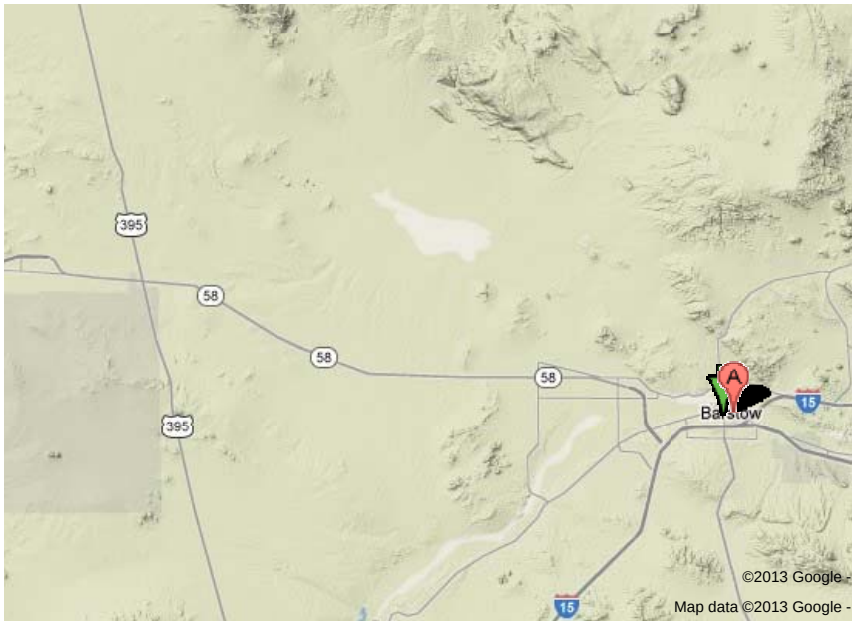
Visual Impact Assessment (VIA). November 2007.

Appendix J Barstow Air Quality Monitoring Station Map

Quality Assurance Air Monitoring Site Information

This page last reviewed on November 21, 2011

Site Information for



View Larger Map

AIRS Number	ARB Number	Site Start Date	Reporting Agency and Agency Code
060710001	36155	8/1/73	Mojave Desert AQMD (014)

Site Address	County	Air Basin	Latitude (N)	Longitude (W)	Elevation (m)
1301 W. Mountain View St., Barstow CA 92311	San Bernardino	Mojave Desert	34.89405	-117.02471	697

Pollutants Monitored (click on parameter link for real-time data) Note: multiple monitors may be available through the AQMIS query tool.
CO, NO_2, O_3, PM_{10}, Outdoor Temperature, Wind Direction, Horizontal Wind Speed, Barometric Pressure

Site Photos	Photo Sequences	Site Surveys
--Select Photos--	--Select Position And Direction--	--Select Survey--

Other ARB Database Information	Real-Time Met Data	Aerial Photos and Topo Maps Of Site
--Select Database--	--Select Data Server--	--Select External Map--

Site Information Menu Top Page Quality Assurance Programs Search QA Site Information Database

For real-time air quality data visit: Air Quality and Meteorological Information System (AQMIS)

Questions regarding data or the AQMIS search tool should be submitted to:
Air Quality and Meteorological Information System (AQMIS)

For Air Monitoring Site related inquiries, please contact:
Mr. Ranjit Bhullar, Manager
Quality Assurance Section

Appendix K 2013 Federal Transportation Improvement Program Listing and 2012 Regional Transportation Plan Listing

2013 Federal Transportation Improvement Program Listing

Final 2013 Federal Transportation Improvement Program

San Bernardino County Project Listing
State Highway
(In $000`s)

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
20110602	San Bernardino	MDAB		4AL04	LUM01	18	94.2	94.6	S	EXEMPT - 93.126	0
Description:							PTC	4,650	Agency	APPLE VALLEY	

SR18 AT APPLE VALLEY ROAD INTERSECTION REALIGNMENT WITH TURN AND APPROACH LANES

Fund	ENG	R/W	CON	Total	Prior	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	Total
CITY FUNDS	550	100	4,000	4,650	550		100	4,000				4,650
20110602 Total	550	100	4,000	4,650	550		100	4,000				4,650

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
4351	San Bernardino	MDAB		4351	CAX63	58	22.2	31.1	S	NON-EXEMPT	0
Description:							PTC	194,925	Agency	CALTRANS	

SR58 EXPRESSWAY-REALIGN AND WIDEN FROM 2-4 LANE EXPRESSWAY. NEW INTERCHANGES AT LENWOOD RD AND HINKLEY RD. 2.4 MILES WEST OF HIDDEN RIVER RD. TO 0.7 MILES EAST OF LENWOOD ROAD -- REALIGN AND WIDEN TO 4 LANE EXPRESSWAY (2-4 LANES) (PHASE 2)

Fund	ENG	R/W	CON	Total	Prior	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	Total
NATIONAL HWY SYSTEM - IIP	16,900			16,900	16,900							16,900
STIP ADVANCE CON-IIP		41,637	133,388	175,025		41,637	133,388					175,025
STP ENHANCE-IIP TEA	296		2,704	3,000		296	2,704					3,000
4351 Total	17,196	41,637	136,092	194,925	16,900	41,933	136,092					194,925

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
34770	San Bernardino	MDAB		34770	CAX67	58	143.5	12.9	S	NON-EXEMPT	0
Description:							PTC	199,509	Agency	CALTRANS	

0.4 MILES WEST OF KERN CO LINE TO 7.5 MI EAST OF JCT RTE 395 - CONSTRUCT 4 LANE EXPRESS WAY ON NEW ALIGNMENT, NEW INTERCHANGE AT US 395 AND SR 58

Fund	ENG	R/W	CON	Total	Prior	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	Total
NATIONAL HWY SYSTEM - IIP	16,600			16,600	16,600							16,600
STATE CASH - IIP		23,143		23,143	23,143							23,143
STIP ADVANCE CON-IIP			155,095	155,095						155,095		155,095
STP ENHANCE-IIP TEA	400		4,271	4,671		200	200			4,271		4,671
34770 Total	17,000	23,143	159,366	199,509	39,743	200	200			159,366		199,509

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
201132	San Bernardino	SCAB		4M07017	NCR88	60		.01	S	NON-EXEMPT	0
Description:							PTC	7,900	Agency	ONTARIO	

SR-60 AT ARCHIBALD AVENUE WIDEN ON AND OFF RAMPS (2-3 LANES EACH WAY)

Fund	ENG	R/W	CON	Total	Prior	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	Total
DEVELOPER FEES	783		4,439	5,222	783			4,439				5,222
SBD CO MEASURE I	402		2,276	2,678	402			2,276				2,678
201132 Total	1,185		6,715	7,900	1,185			6,715				7,900

FTIP Projects					
County	System	FTIP ID	Route	Description	Project Cost ($1,000's)
SAN BERNARDINO	STATE HIGHWAY	SBD031279	15	IN HESPERIA AT I-15 AND RANCHERO ROAD – CONSTRUCT 6 LANE INTERCHANGE WITH LEFT AND RIGHT TURN LANES, INCLUDING 1300 FT. AUX LANE PRIOR TO N/B OFF RAMP AND 3200 FT. AUX LANE FROM TO S/B LOOP ON RAMP	$80,625
SAN BERNARDINO	STATE HIGHWAY	35558	15	IN SAN BERNARDINO CO. – GATEWAY ENHANCEMENTS ON I-15 FROM MOJAVE DR. IN VICTORVILLE TO STODDARD WELLS RD. IN BARSTOW-RETENTION WALL ENHANCMENTS AND LANDSCAPING(PPNO0175N)	$2,446
SAN BERNARDINO	STATE HIGHWAY	35556	15	IN THE CITY OF VICTORVILLE FROM 0.6 MILES NORTH OF MOJAVE DRIVE TO 1.0 NORTH OF EXISTING STODDARD WELLS ROAD WELLS OVERCROSSING. RECONSTRUCT D/E/STODDARD WELLS RD IC'S. WIDEN BRIDGES (NO NEW LANES). CONSTRUCT NEW COLLECTOR DISTRIBUTOR RD OVER D/E/AND BNSF RR TO PARRALLEL I-15 NB INCLUDES ITS OWN BRIDGE. RECONST/REALIGN EAST/WEST FRONTAGE RDS. CONST NEW AUX LN. (REFER TO MODELING DETAILS)(CA061)	$146,676
SAN BERNARDINO	STATE HIGHWAY	34170	15	IN VICTORVILLE AT LA MESA ROAD/NISQUALLI ROAD CONSTRUCT I/C NEW 6 LANE INTERCHANGE	$90,009
SAN BERNARDINO	STATE HIGHWAY	200152	15	ON I-15 FROM 3,500 FT. S OF ARROW RTE. TO 3,500 ' N/O FOOTHILL BLVD AND AND ON ARROW RT. FROM 1000 FT.W/TO 100 FT. E/ OF I- 15-CONSTRUCT NEW I/C AR ARROW RTE, CONSTRUCT S/B DOUBLE DECEL LANES TO FOOTHILL BLVD OFFRAMP AND MODIFY RAMPS AT FOOTHILL.	$91,370
SAN BERNARDINO	STATE HIGHWAY	200078	15	PARK-N-RIDE LOT EXPANSION AND FACILITIES AT BEAR VALLEY RD & I-15 (70 EXISTING SPACES TO 300 SPACES)	$755
SAN BERNARDINO	STATE HIGHWAY	20061702	18	E-220 HIGH DESERT CORRIDOR-WEST TO EAST SR-14 TO US 395 CONNECTING AT SB COUNTY, . CONSTRUCT NEW 4-6 LANE FACILITY (PART OF 20020144) JPA PROJECT. SR. 138 PM 43.4 TO SR18T 17.0 S.B. COUNTY LINE 0.0.	$4,000,000
SAN BERNARDINO	STATE HIGHWAY	20020144	18	HI- DESERT CORR. PHASE 1, SR-18 REALIGNMENT FROM US 395 IN ADELANTO TO SR-18 E/O APPLE VALLEY. COONSTRUCT 4-6 LANE FREEWAY/EXPRESSWAY. CONSTRUCT NEW IC @I-15 W/AUX LANES NORTH AND SOUTH OF NEW IC. CONSTRUCT INTERSECTION @US 395 W/TURN POCKETS TO NORTH AND SOUTH	$1,156,000
SAN BERNARDINO	STATE HIGHWAY	0A7910	18	IN RUNNING SPRINGS FROM RTE. 18 FROM N/O NOB HILL DR. TO S/O R.S. SCHOOL RD. AND RTE 330 FROM S/O RTE. 18 TO RTE. 18-RURAL GATEWAY BEAUTIFICATION-AESTHETIC IMPROVEMTNS	$2,265
SAN BERNARDINO	STATE HIGHWAY	200612	18	SR 18 FROM APPLE VALLEY RD. TO CORWIN RD. – WIDEN FROM 4-6 LANES (APPROX. 3 MI)	$14,400
SAN BERNARDINO	STATE HIGHWAY	20110602	18	SR18 AT APPLEY VALLEY ROAD INTERSECTION REALIGNMENT WITH TURN AND APPROACH LANES	$4,650
SAN BERNARDINO	STATE HIGHWAY	34770	58	0.4 MILES WEST OF KERN CO LINE TO 7.5 MI EAST OF JCT RTE 395 – CONSTRUCT 4 LANE EXPRESS WAY ON NEW ALIGNMENT, NEW INTERCHANGE AT US 395 AND SR 58	$148,067
SAN BERNARDINO	STATE HIGHWAY	4351	58	SR58 EXPRESSWAY-REALIGN AND WIDEN FROM 2-4 LANE EXPRESSWAY. NEW INTERCHANGES AT LENWOOD RD AND HINKLEY RD. 2.4 MILES WEST OF HIDDEN RIVER RD. TO 0.7 MILES EAST OF LENWOOD ROAD – REALIGN AND WIDEN TO 4 LANE EXPRESSWAY (2-4 LANES) (PHASE 2)	$298,326
SAN BERNARDINO	STATE HIGHWAY	200602	60	SR 60 AND VINEYARD AVE. INTERCHANGE RECONSTRUCTION-LENGTHEN BRIDGE TO ACOMMODATE VINEYARD AVE WIDENING AND RAMP WIDENING 4-6 LANES	$50,810
SAN BERNARDINO	STATE HIGHWAY	201133	60	SR 60 AT EUCLID WIDEN W/B EXIT RAMP FROM 2-3 LANES	$1,620
SAN BERNARDINO	STATE HIGHWAY	201132	60	SR-60 AT ARCHIBALD AVENUE WIDEN ON AND OFF RAMPS (2-3 LANES EACH WAY)	$7,900

Appendix L Energy Calculations

USEPA: Unit Conversions, Emissions Factors, and other Referenced Data. November 2004
Available: http://www.epa.gov/cpd/pdf/brochure.pdf

Fuel Type	**lb CO2/gal**
Motor Gasoline	19.37
Diesel Fuel	22.23

System Metrics Group: Traffic Study Report fpr SR-58 Widening Project. September 2010

Truck % ADT	58%

2010 Average Fuel Economy Estimate (planning assumption by ICF)

Passenger	25	mpg	4.00	gallons/100 miles
Truck	7	mpg	14.29	gallons/100 miles
			18.29	

Estimate of CO2 Emissions per 100 miles of travel in pounds (fuel use in gallons)

Vehicle Type	**Fuel Use**	**lb CO2/gal**	**Fleet %**	**lbs CO2**	**% Total**
Passenger	4.00	19.37	42%	32.21	15%
Truck	14.29	22.23	58%	185.55	85%

CO2 Emissions in Tons/Year: from Air Quality Report

Year	**No-Build**	**Build**
2010	43,063	n/a
2019	57,444	58,382
2039	104,989	105,423

Estimate of CO2 Emissions per Year by Fuel Type (tons per year)

	No-Build		**Build**	
Year	**Gasoline**	**Diesel**	**Gasoline**	**Diesel**
2010	6,369	36,693	n/a	n/a
2019	8,497	48,947	8,635	49,746
2039	15,529	89,460	15,593	89,830

Estimate of Fuel Use (gallons per year)

	No-Build		**Build**	
Year	**Gasoline**	**Diesel**	**Gasoline**	**Diesel**
2010	657,664	3,301,235	n/a	n/a
2019	877,294	4,403,698	891,620	4,475,610
2039	1,603,412	8,048,543	1,610,045	8,081,841

Appendix M SHPO Concurrence Letter

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

April 03, 2013 In Reply Refer To: FHWA120510A

Gabrielle Duff
Office Chief, Environmental Support/Cultural Studies
Department of Transportation
District 8, Environmental Planning
464 W. Fourth Street, 6th Floor
San Bernardino, CA 92401-1400

Re: Section 106 Consultation for State Route 58 Realignment, Kramer Junction

Dear Ms. Duff:

Thank you for seeking my consultation regarding the above noted undertaking in accordance with the *Programmatic Agreement* (PA) *Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act.* Pursuant to Stipulation VIII.A of the PA, the California Department of Transportation (Caltrans) has determined the Area of Potential Effects (APE) and has completed identification and evaluation of historic properties within the APE pursuant to Stipulation VIII.B.

The undertaking proposes to widen and realign State Route 58 (SR-58) in the County of San Bernardino, beginning at the Kern/San Bernardino county line to 7.5 miles east of U.S. 395 (Kramer Junction).

By letter dated May 3, 2012, Caltrans notified the SHPO of its intention to phase the evaluation of historic properties in accordance with Stipulation XII of the Section 106 PA. Documentation to date consists of a Historic Property Survey Report (HPSR, February 2013). The HPSR defines the project's Area of Potential Effect (APE); documents Native American coordination and public participation efforts; identifies cultural resources within the APE and documents the evaluation of all properties within the APE that do not require Phase II archaeological testing.

At the present time, Caltrans is seeking my concurrence on determinations of eligibility for (see attachment) seventeen (17) built environment properties and eight (8) prehistoric sites. The prehistoric sites have been determined to be ineligible for listing on the National Register of Historic Places (NRHP) with only minimal archaeological testing as they meet the criteria of sparse lithic scatters defined in the California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (CARIDAP).

Based on my review of your letter and supporting documentation, I concur that the seventeen (17) built environment properties and eight (8) prehistoric lithic scatters are not eligible for listing on the NRHP.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you require further information, please contact Brendon Greenaway of my staff, at phone 916-445-7036 or email brendon.greenaway@parks.ca.gov.

Sincerely,

Susan K Stratton for

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Evaluated Properties

Number	Temporary No.	Description
1.	APN49823251	Converted railroad boxcar/building
2.	CA-SBR-6693H	Segment of Atchison, Topeka and Santa Fe Railroad
3.	CA-SBR-16144H	Historical dirt road
4.	APN49223106	Single-family residence
5.	CA-SBR-16145H	Historical dirt road
6.	CA-SBR-7431H	Historical Wagon Road
7.	CA-SBR-5731H	Randsburg Railroad Grade
8.	CA-SBR-16146H	Historical dirt road
9.	CA-SBR-10316H	“Tower Line” power transmission line
10.	APN49219212	Darr Motel
11.	40475 U.S. Hwy 395	Single-family residence
12.	Collar Residence	Single-family residence and three ancillary buildings
13.	U.S. 395/SR-58	Single-family residence
14.	CA-SBR-16147H	Historical dirt road
15.	CA-SBR-16148H	Historical dirt road
16.	CA-SBR-16149H	Historical dirt road
17.	Kramer Services	Commercial property
18.	CA-SBR-15074	Sparse lithic scatter
19.	CA-SBR-15075	Sparse lithic scatter
20.	CA-SBR-15079	Sparse lithic scatter
21.	CA-SBR-15080	Sparse lithic scatter
22.	CA-SBR-15081	Sparse lithic scatter
23.	CA-SBR-15089	Sparse lithic scatter
24.	CA-SBR-15096	Sparse lithic scatter
25.	CA-SBR-15097	Sparse lithic scatter

STATE OF CALIFORNIA – THE NATURAL RESOURCES AGENCY

EDMUND G. BROWN, JR., *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
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calshpo@parks.ca.gov
www.ohp.parks.ca.gov

June 6, 2014

Reply In Reference To: FHWA120510A

Gabrielle Duff
Branch Chief, Cultural Studies Office
Department of Transportation
District 8, Environmental Planning (MS 825)
464 West Fourth Street, 6th Floor
San Bernardino, CA 92401-1400

RE: Request for Concurrence on Determination of Eligibility for the Proposed State Route 58 Kramer Junction Realignment Project from Kern County Line to 7.5 Miles East of Kramer Junction in San Bernardino County, California (PM 0.0/12.9)

Dear Ms. Duff,

Thank you for seeking my consultation regarding the above referenced undertaking in accordance with the January 2014 *first Amended Programmatic Agreement (PA) among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Office, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the to the Administration of the Federal-Aid Highway Program in California*. In accordance with 36 CFR §800.4(c)(1) and Stipulation VIII.C of the PA, the California Department of Transportation (Caltrans) has evaluated the historic significance of identified properties and determined National Register of Historic Places (NRHP) eligibility within the undertaking's Area of Potential Effects APE. Caltrans is requesting my concurrence on determinations of eligibility for the above referenced undertaking in accordance with 36 CFR §800.4(c)(2) and Stipulation VIII.C.6 of the PA.

The undertaking proposes to widen and realign SR-58 in the County of San Bernardino, beginning at the Kern/San Bernardino County Line to 7.5 miles west of U.S. 395 (Kramer Junction). After the circulation of the draft environmental document, Alternative 1A was selected as the Preferred Alternative.

By letter dated May 3, 2012, Caltrans notified the State Historic Preservation Officer (SHPO) of its intention to phase the evaluation of historic properties in accordance with Stipulation XII of the PA. At this time, documentation to date consisted of a Historic Property Survey Report (HPSR, February 2013). The HPSR defined the APE, documented the Native American coordination and public participation efforts, identified cultural resources within the APE and documented the evaluations of all properties within the APE that did not require Phase II archaeological testing. By letter dated February 14, 2013, Caltrans submitted to the SHPO a request for concurrence on the determination of eligibility of 17 built environmental properties and eight prehistoric sites that were determined ineligible for listing on the NRHP. SHPO concurred with this determination by letter on April 3, 2013.

By letter dated May 27, 2014, Caltrans is seeking my concurrence on determinations of eligibility of five historical archaeological sites and two prehistoric sites. Supporting documentation includes a 1st Supplemental Historic Property Survey Report (SHRER) for the

SR-58 Kramer Junction Realignment Project and the HPSR (February 2013) attached for reference only. The five historical archaeological sites have been determined to be ineligible for listing on the NRHP through an extended Phase I (XPI) study. The SHRER only assessed the historical component of site CA-SBR-15073/H. Prehistoric site, CA-SBR-15088 was determined ineligible for listing on the NRHP through a XPI study using California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (CARDIP) guidelines. Prehistoric site, CA-SBR-15098 was determined ineligible for listing on the NRHP through a Phase II study.

Based on my review of your letter and supporting documentation, I concur that the five historical archaeological sites and two prehistoric sites are not eligible for listing on the NRHP. Your letter also states that the prehistoric component of site CA-SBR-15073/H and prehistoric site CA-SBR-15085 have been assumed eligible by Caltrans for listing on the NRHP for the purposes of this undertaking only because circumstances preclude their full evaluation, pursuant to Stipulation VIII.C.4 of the PA.

Thank you for seeking my comments and considering historic properties as part of your undertaking. Our office looks forward to continued consultation with Caltrans regarding the effects of this undertaking. If you require further information, please contact Alicia Perez of my staff at 916-445-7020 or at Alicia.Perez@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

STATE OF CALIFORNIA – THE NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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June 10, 2014

Reply in Reference To: FHWA120510A

Annmarie Medin, Chief
Department of Transportation, Cultural Studies Office
District 8, Environmental Planning (MS 825)
464 West Fourth Street, 6th Floor
San Bernardino, CA 92401-1400

Dear Ms. Medin:

Re: Requesting of Concurrence from the State Historic Preservation Officer (SHPO) on the Finding of No Adverse Effect for the Proposed State Route 58 New Alignment Project near Kramer Junction in San Bernardino County, California

Thank you for your June 6, 2014 letter in which you request my concurrence regarding the above referenced undertaking in accordance with the January 2014 *first Amended Programmatic Agreement (PA) among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Office, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the to the Administration of the Federal-Aid Highway Program in California*. Pursuant to 36 CFR §800.5(c) and Stipulation X.C.2 of the PA, Caltrans is requesting concurrence on the application of criteria of adverse effects for archaeological sites CA-SBR-15073/H and CA-SBR-15085.

The undertaking proposes to widen and realign SR-58 in the County of San Bernardino, beginning at the Kern/San Bernardino County Line to 7.5 miles west of U.S. 395 (Kramer Junction). After the circulation of the draft environmental document, Alternative 1A was selected as the Preferred Alternative.

By letter dated May 27, 2014, Caltrans sought SHPO concurrence on determinations of eligibility of five historical archaeological sites and two prehistoric sites. The letter also stated that the prehistoric component of site CA-SBR-15073/H and prehistoric site CA-SBR-15085 were assumed eligible by Caltrans for listing on the NRHP for the purposes of this undertaking only because circumstances preclude their full evaluation, pursuant to Stipulation VIII.C.4 of the PA. By letter on June 6, 2014, SHPO concurred that the five historical archaeological sites and two prehistoric sites are not eligible for listing on the National Register of Historic Places (NRHP).

A Finding of Effect (FOE) was submitted with your current letter and this assessment was conducted with the assistance of Caltrans Cultural Studies Office (Caltrans CSO) and San Manuel Band of Mission Indians. Under the PA Stipulation X.B.2 ("Finding of No Adverse

Effect"), Caltrans applied the criteria of adverse effect (36 CFR §800.5(a)(1) to the historic properties and determined that the undertaking will not have an adverse effect on archaeological sites CA-SBR-15073/H and CA-SBR-15085. Based on my review of your letter and supporting documentation, I concur with your finding of no adverse effects to archaeological sites SBR-15073/H and CA-SBR-15085 as a result of this undertaking.

Thank you for seeking my comments and considering historic properties as part of your undertaking. If you require further information, please contact Alicia Perez of my staff at 916-445-7020 or at Alicia.Perez@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Appendix N Biological Consultation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer To:
FWS-SB/KRN-12B0203-14F0423

June 30, 2014

Mr. Scott Quinnell, Office Chief
Biological Studies and Permits
District 8, California Department of Transportation
464 W. 4th Street, 6th Floor, MS-822
San Bernardino, California 92401-1400

Subject: Biological Opinion for State Route 58 Kramer Junction Expressway Project, Kern and San Bernardino Counties, California

Dear Mr. Quinnell:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the California Department of Transportation's (Caltrans) proposal to widen and realign approximately 13 miles of an existing 2-lane conventional highway into a 4-lane expressway. The project area is located on State Route 58 west of the city of Barstow between post mile R143.5 in Kern County to post mile 12.9 in San Bernardino County. This biological opinion addresses the effects of the proposed action on the federally threatened desert tortoise (*Gopherus agassizii*) and its designated critical habitat within the Fremont-Kramer Critical Habitat Unit.

We received your December 18, 2013, request for formal consultation on December 23, 2013. The Federal Highway Administration has delegated responsibility for consultation to Caltrans for federally funded actions. This document was prepared in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

We based this biological opinion on information that accompanied your request for consultation, the biological assessment (Caltrans 2013), additional information that you provided during the course of consultation, and information in our files. We can make a record of this consultation available at the Palm Springs Fish and Wildlife Office.

Consultation History

Caltrans, the Service, and Bureau of Land Management (BLM) began coordinating on this project in 2001. However, between 2002 and 2008, Caltrans halted coordination due to funding issues. In 2009, Caltrans re-started discussions with the Service on the project and subsequently we provided Caltrans with species lists in 2012 and 2013.

In 2013, we received a preliminary draft biological assessment from Caltrans for review and comment. On September 13, 2013, we provided comments to Caltrans on the preliminary draft biological assessment.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED PROJECT

We summarized the following description of the proposed action from the biological assessment (Caltrans 2013). Caltrans proposes to relocate the segment of the existing highway from approximately 7 miles west of Kramer Junction to approximately 6 miles east of Kramer Junction. The 13-mile-long project would result in a 4-lane divided expressway throughout the length of the project area. Design features include full-width shoulders, improved sight distances, full-access control to the freeway, and a clear recovery zone, which is an area clear of fixed objects adjacent to the road where drivers of out-of-control vehicles can attempt to regain control. The proposed action also includes an interchange east of Highway 395, between the new alignment and the exiting State Route 58.

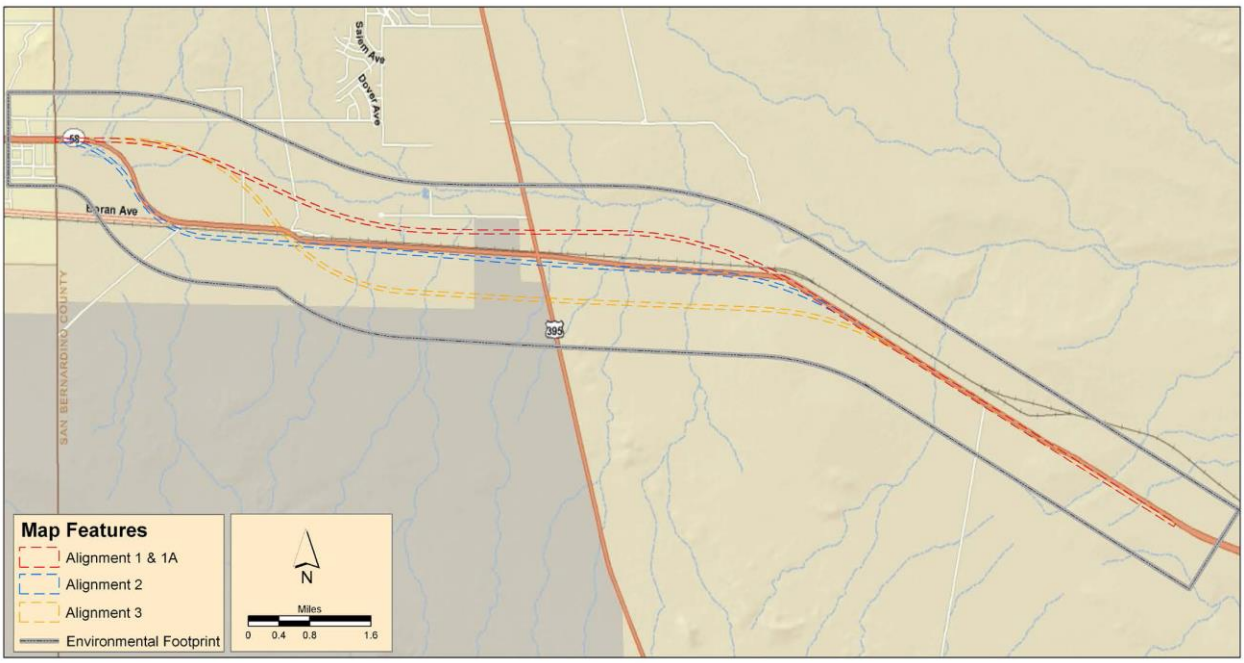


Figure 1. Proposed expressway. The red line depicts the location of the proposed expressway described in this biological opinion (Caltrans 2012).

Construction Activities

Caltrans anticipates that construction would begin in the spring of 2017 and last approximately 2 years. Caltrans would build the eastern and western portions of the new expressway in the

same alignment as the existing State Route 58; traffic would continue to use one lane of the existing State Route 58 in construction areas while the new road alignment is constructed. The middle section of new expressway would be located to the north of the existing road.

Caltrans would use typical highway construction equipment for the project, which includes excavators, backhoes, trucks, rollers, and paving machines. Staging areas would be located within the right-of-way at either end of the alignment. All activities would take place within the right-of-way.

Caltrans would also install two large soft-bottom culverts east and west of Highway 395, which crosses State Route 58. It has not finalized the design and location of these culverts.

Caltrans would also remove approximately 1.2 miles of the existing State Route 58 after construction of the new expressway. This segment of road is located between the border of Kern and San Bernardino counties and post mile 1.2 in San Bernardino County. Following removal, Caltrans would re-vegetate this section of the old road.

Avoidance and Minimization Measures

The proposed action includes the following measures that Caltrans will implement during construction to avoid and minimize adverse effects to the desert tortoise (Caltrans 2013). The Service and Caltrans revised these measures from those contained in the biological assessment to improve clarity and organization.

Field Contact Representative

1. Caltrans will assign a staff person to act as the field contact representative (e.g., Resident Engineer or Caltrans Staff Inspector) with specific experience in the implementation of environmental compliance programs. The field contact representative will serve as the environmental compliance monitor for the project and be present throughout construction. This individual will serve as liaison among the Service, Caltrans, construction workers, authorized biologist(s), and biological monitor(s). The field contact representative and authorized biologist will work closely together to ensure compliance with the conditions and requirements of project permits and approvals set forth in the biological opinion and supporting plans appended to the biological assessment.

2. The field contact representative will have the authority to stop project activities if a desert tortoise is in danger or protective measures are not adequately implemented.

Authorized Biologist and Biological Monitors

3. Caltrans will employ authorized biologists approved by the Service and biological monitors approved by an authorized biologist to ensure compliance with the protective

measures for the desert tortoise. Use of authorized biologists and biological monitors will be in accordance with the most up-to-date Service guidance and will be required for monitoring of any construction activities that may injure or kill desert tortoises. The current guidance may be found at: http://fws.gov/ventura/species_information/protocols_guidelines/index.html

4. Caltrans will review the credentials of all individuals seeking approval as authorized biologists. Caltrans will provide the credentials of appropriate individuals to the Service for approval at least 30 days prior to the time they must be in the field.

5. The authorized biologists will be responsible for all aspects of clearance surveys, monitoring, developing and implementing the worker environmental awareness program, contacts with agency personnel, reporting, and long-term monitoring and reporting and be present, along with approved biological monitors during construction, operation, and maintenance that could affect desert tortoises. Biological monitors will be supervised and trained by the authorized biologists. Training by authorized biologist(s) may include ensuring biological monitors are qualified to capture, handle, and move desert tortoises in situations where an authorized biologist is unavailable.

6. Caltrans' field contact representative will act on the advice of the authorized biologist(s) and biological monitor(s) to ensure conformance with the protective measures set forth in this biological opinion. The authorized biologist(s) will have the authority to immediately stop any activity that is not in compliance with these conditions.

Worker Environmental Awareness Program

7. Caltrans will ensure that all workers at the site receive worker environmental awareness training prior to construction and during construction. Only workers who have successfully completed the education program will be allowed to work on the project site. The field contact representative and authorized biologist will administer the training to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. Caltrans will implement the worker environmental awareness program to ensure the project's construction is conducted within a framework of safeguarding environmentally sensitive resources. The worker environmental awareness program will be available in English and Spanish. Wallet-sized cards summarizing the information will be provided to all construction personnel. The worker environmental awareness training will:

    a. Be developed by or in consultation with the authorized biologist and consist of an onsite or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;

b. Provide an explanation of the purpose and function of the desert tortoise avoidance and minimization measures and the possible penalties for not adhering to them;

c. Inform workers that the field contact representative and the authorized biologists have the authority to halt work in any area where there would be an unauthorized adverse impact to biological resources if the activities continued;

d. Discuss general safety protocols such as hazardous substance spill prevention and containment measures and fire prevention and protection measures;

e. Provide an explanation of the sensitivity and locations of the vegetation, biological resources, and habitat within and adjacent to work areas, and proper identification of these resources;

f. Place special emphasis on the desert tortoise, including information on physical characteristics, photographs, distribution, behavior, ecology, sensitivity to human activities, legal protection, reporting requirements, and protective measures required for the project;

g. Provide contact information for the authorized biologist(s) and biological monitor(s) to handle late comments and questions about the material discussed in the program, as well as notification of any dead or injured wildlife species encountered during project-related activities;

h. Direct all worker environmental awareness program trainees to report all observations of listed species and their sign to an authorized biologist for inclusion in the monthly compliance report;

i. Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines; and

j. Provide information regarding the effects of predation on the desert tortoise by common ravens (*Corvus corax*) and other predators and the measures that have been developed to reduce the likelihood predators will be attracted to the construction area.

<u>Exclusionary Fencing</u>

8. Prior to the start of construction, Caltrans will require the contractor to install permanent fencing to exclude desert tortoises from all work areas and right-of-way under the direction of an authorized biologist. The permanent fencing will extend from post mile R143.5 in Kern County to post mile 7.8 in San Bernardino County; exclusionary fencing currently exists between post miles 7.8 and 12.9. Caltrans will construct the fence according to the protocols provided in Chapter 8 of the Desert Tortoise Field Manual (Service 2009). If desert tortoises are encountered during installation of the fence, the

authorized biologist will move the individual the shortest distance possible to an area outside the fence where it will be safe. The authorized biologist will use his or her judgment regarding the best measures to use to ensure the desert tortoise does not immediately return to the area inside of the fence. The authorized biologist may contact the Service to discuss specific situations if the need arises.

9. After the exclusionary fencing has been installed and before the onset of ground-disturbing activities, the authorized biologist will survey the area and remove all desert tortoises. The authorized biologist will survey the area following established survey protocols to ensure that all desert tortoises have been found; generally, all desert tortoises will be considered to have been removed once a complete survey of the work area is conducted without finding any additional animals. Desert tortoises that are found inside the fenced area will be placed on the other side of the exclusion fence. The authorized biologist will use his or her best judgment to determine the optimal location for placement of desert tortoises, which would include ensuring the animals are not moved into areas that may isolate them from the desert tortoise population in the area. Caltrans will follow the guidance at http://www.fws.gov/carlsbad under "Survey Information" for current information on conducting clearance surveys for desert tortoises.

10. Caltrans will maintain the integrity of the fence to ensure that desert tortoises are excluded from the work area during construction and from the roadway thereafter. The fence will be inspected regularly; initially, it will be inspected on a monthly basis, but Caltrans may adopt a different schedule, based on acquired experience. Caltrans will inspect and, if necessary, repair the fence immediately after significant rainstorms that occur during times of the year or at temperatures when desert tortoises are likely to be active.

11. Caltrans will follow the direction in the most recent programmatic biological opinion for its maintenance activities that is in place at the time fences need repair.

Construction Monitoring

12. An appropriate number of authorized biologists and biological monitors will be available during construction for the protection of desert tortoise. Authorized biologists will be assigned to monitor each area of activity where conditions exist that may result in injury or mortality of desert tortoise (e.g., clearing, grading, re-contouring, and restoration activities).

13. The authorized biologist or a qualified biological monitor will survey ahead of the project activities and halt construction if he or she finds a desert tortoise in the path of construction equipment. Project activities will not resume until the desert tortoise moves out of harm's way or the authorized biologist or qualified biological monitor a has relocated it.

14. An authorized biologist or biological monitor will inspect all excavations that are not within desert tortoise exclusion fencing on a regular basis (several times per day) and immediately prior to filling of the excavation. If project personnel discover a desert tortoise in an open trench, an authorized biologist or qualified biological monitor will move it to a safe location in accordance with the Desert Tortoise Field Manual (2009).

15. Caltrans will use best management practices and measures to help reduce the possibility of introducing new invasive plants into the project area. These measures will include the inspection and cleaning of construction equipment, commitments to ensure the use of invasive-free mulches, topsoil, and seed mixes, and other strategies to help reduce existing populations of invasive non-native plants, or those that could occur in the future.

Desert Tortoise Translocation

16. Desert tortoises found on the project area will be handled and moved by an authorized biologist or qualified biological monitor in accordance with the most current Service protocol (currently Service 2009). Desert tortoises excavated from burrows will be moved to unoccupied natural or artificially constructed burrows immediately following excavation. The artificial or unoccupied natural burrows must occur 150 to 300 feet from the original burrow. Moved desert tortoises will not be placed in existing occupied burrows. If an existing burrow that is similar in size, shape, and orientation to the original burrow is unavailable, the authorized biologists or qualified biological monitor would construct one. Desert tortoises moved during inactive periods will be monitored for at least 2 days after placement in the new burrows to ensure their safety.

Designated Areas

17. Prior to the start of construction, work areas (e.g., staging areas, access roads, sites for temporary placement of construction materials and spoils) will be delineated with orange construction fencing or staking and flagging to identify clearly the limits of work. The fencing or markers will be verified after installation, periodically checked by an authorized biologist or biological monitor, and maintained until work is complete.

18. Caltrans will confine all project activities to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. It will use previously disturbed habitat as much as possible for all storage areas and vehicle turn-around locations. Caltrans will restrict project vehicles to the right-of-way, designated areas, or existing roads and will prohibit off-road or cross-country travel except in emergencies. Caltrans will not create any new dirt or additional paved roads. If unforeseen circumstances require disturbance beyond the project right-of-way, Caltrans will notify the Service immediately.

Vehicle Use

19. The field contact representative or authorized biologist will inform workers at morning tailgate briefings if desert tortoises are likely to be active that day or in the foreseeable future. When desert tortoises are expected to be active, workers will inspect the ground around and underneath any vehicle or construction equipment that has been parked longer than 2 minutes within habitat of desert tortoises prior to moving the vehicle. If the worker observes a desert tortoise, he or she will contact an authorized biologist or biological monitor. If possible, the desert tortoise will be left to move out of harm's way on its own. If the desert tortoise does not move out of harm's way of its own volition, an authorized biologist or qualified biological monitor will move it out of harm's way in accordance with the handling procedures.

Prohibited Activities

20. Caltrans will ensure that workers do not bring firearms and pets into the project area. This measure does not apply to law enforcement personnel and working dogs.

Trash and Food

21. To reduce the attractiveness of the construction area to common ravens and coyote (*Canis latrans*), trash will be placed in a sealed container and emptied at the close of business each day. The project area will be kept as clean of debris as possible.

Caltrans has also committed to implementing the following measures to contribute to the long-term conservation of the desert tortoise:

1. Installation of permanent exclusionary desert tortoise fencing along the new alignment from post mile R143.5 to post mile 7.8. Exclusionary fencing already exists between post miles 7.8 and 12.9;

2. Removal and re-vegetation of approximately 1.2 miles of the existing State Route 58 to improve connectivity of desert tortoise habitat;

3. Installation of two oversized soft bottom culverts to facilitate north-south movement of desert tortoises under State Route 58. These culverts will be approximately 6 feet tall and 10 feet wide (Caltrans 2013); and

4. Acquisition of desert tortoise habitat to mitigate for the loss of habitat because of construction. Caltrans will acquire habitat at the ratios of one to one for the area west of Highway 395 and of five to one east of Highway 395 because this area is within critical habitat (Quinnell 2014).

At this time, Caltrans is still developing the specific details and locations within the right-of-way for the permanent desert tortoise fencing and culverts. Therefore, the mapped locations of the culverts in the biological assessment are preliminary and could change. Caltrans also has not yet identified the location of the lands it proposes to acquire.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 Code of Federal Regulations 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the range-wide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild.

Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 Code of Federal Regulations 402.02. Instead, we have relied on the statutory provisions of the Endangered Species Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of designated critical habitat for the desert tortoise in terms of primary constituent elements, the factors responsible for that condition, and the intended recovery function of the

critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the primary constituent elements and how that will influence the recovery role of the affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future non-Federal activities in the action area on the primary constituent elements and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the critical habitat of the desert tortoise are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the primary constituent elements to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the desert tortoise.

The analysis in this biological opinion places an emphasis on using the intended range-wide recovery function of critical habitat for the desert tortoise and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

STATUS OF THE DESERT TORTOISE AND CRITICAL HABITAT

Status of the Desert Tortoise

Section 4(c)(2) of the Endangered Species Act requires the Service to conduct a status review of each listed species at least once every 5 years. The purpose of a 5-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review); these reviews, at the time of their completion, provide the most up-to-date information on the range-wide status of the species. For this reason, we are appending the 5-year review of the status of the desert tortoise (Appendix 1; Service 2010) to this biological opinion and are incorporating it by reference to provide most of the information needed for this section of the biological opinion. The following paragraphs provide a summary of the relevant information in the 5-year review.

In the 5-year review, the Service discusses the status of the desert tortoise as a single distinct population segment and provides information on the Federal Register notices that resulted in its listing and the designation of critical habitat. The Service also describes the desert tortoise's ecology, life history, spatial distribution, abundance, habitats, and the threats that led to its listing (i.e., the five-factor analysis required by section 4(a)(1) of the Endangered Species Act). In the 5-year review, the Service concluded by recommending that the status of the desert tortoise as a threatened species be maintained.

With regard to the status of the desert tortoise as a distinct population segment, the Service concluded in the 5-year review that the recovery units recognized in the original and revised recovery plans (Service 1994 and 2011, respectively) do not qualify as distinct population segments under the Service's distinct population segment policy (61 Federal Register 4722; February 7, 1996). We reached this conclusion because individuals of the listed taxon occupy habitat that is relatively continuously distributed, exhibit genetic differentiation that is consistent with isolation-by-distance in a continuous-distribution model of gene flow, and likely vary in behavioral and physiological characteristics across the area they occupy as a result of the transitional nature of, or environmental gradations between, the described subdivisions of the Mojave and Colorado deserts.

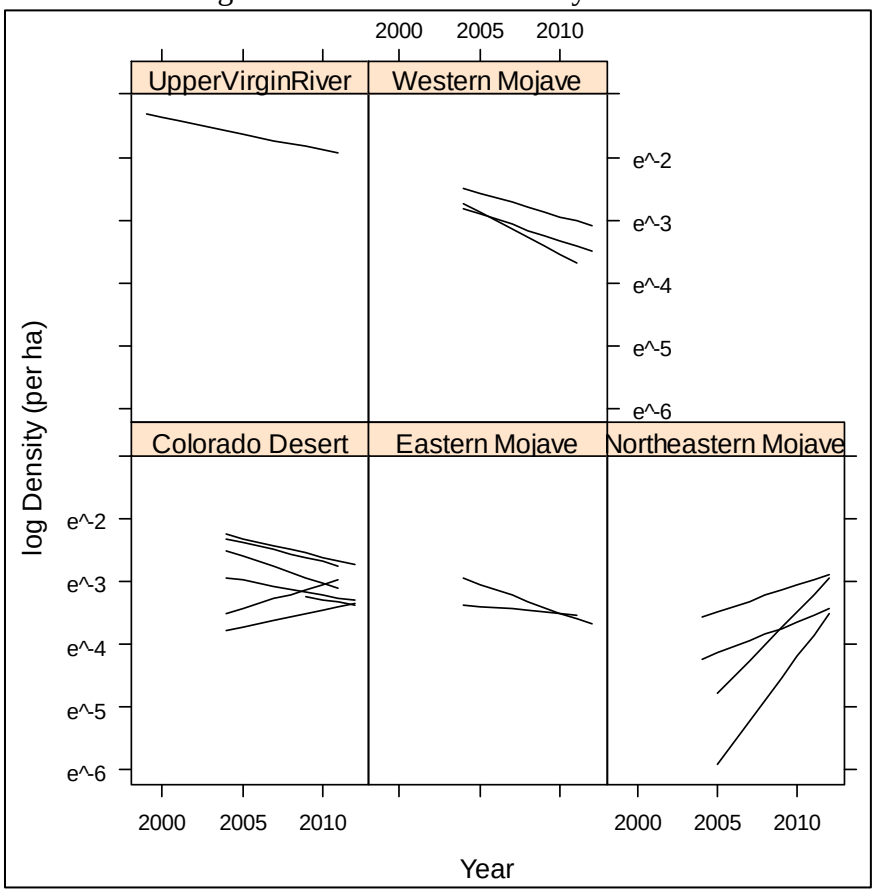
In the 5-year review, the Service summarizes information with regard to the desert tortoise's ecology and life history. Of key importance to assessing threats to the species and to developing and implementing a strategy for recovery is that desert tortoises are long lived, require up to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential. The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition. Predation seems to play an important role in clutch failure. Predation and environmental factors also affect the survival of hatchlings.

In the 5-year review, the Service also discusses various means by which researchers have attempted to determine the abundance of desert tortoises and the strengths and weaknesses of those methods. Due to differences in area covered and especially to the non-representative nature of earlier sample sites, data gathered by the Service's current range-wide monitoring program cannot be reliably compared to information gathered through other means at this time.

The Service provides a summary table of the results of range-wide monitoring, initiated in 2001, in the 5-year review. This ongoing sampling effort is the first comprehensive attempt to determine the densities of desert tortoises across their range. Table 1 of the 5-year review provides a summary of data collected from 2001 through 2007; we summarize data from the 2008 through 2012 sampling efforts in subsequent reports (Service 2012a, 2012b, 2012c, 2012d).

The Desert Tortoise Recovery Office (Service 2014) used these annual density estimates to evaluate range-wide trends in the density of desert tortoises over time. This analysis indicates that densities in the Northeastern Mojave Recovery Unit have increased by approximately 13.6 percent per year since 2004, with the rate of increase apparently resulting from increased survival of adults and subadults moving into the adult size class. The analysis also indicates that the populations in the other 4 recovery units are declining: Upper Virgin River (-5.1 percent), Eastern Mojave (-6.0 percent), Western Mojave (-8.6 percent), and Colorado Desert (-3.4 percent; however, densities the Joshua Tree and Piute Valley conservation areas within this unit seem to be increasing). Table 1 shows linear trends in the log-transformed densities in each desert tortoise conservation area by recovery unit. Data for the Upper Virgin River Recovery Unit are from 1999 to the present; data for all other recovery units are from 2004 to the present.

Table 1. Range-wide trends in the density of desert tortoises.



Allison (2014) also evaluated changes in size distribution of desert tortoises since 2001. In the Western Mojave and Colorado Desert recovery units, the relative number of juveniles to adults indicates that juvenile numbers are declining faster than adults. In the Eastern Mojave, the number of juvenile desert tortoises is also declining, but not as rapidly as the number of adults. In the Upper Virgin River Recovery Unit, trends in juvenile numbers are similar to those of adults; in the Northeastern Mojave Recovery Unit, the number of juveniles is increasing, but not as rapidly as are adult numbers in that recovery unit. Juvenile numbers, like adult densities, are responding in a directional way, with increasing, stable, or decreasing trends, depending on the recovery unit where they area found.

In the 5-year review, the Service provides a brief summary of habitat use by desert tortoises; the revised recovery plan contains more detailed information (Service 2011). In the absence of specific and recent information on the location of habitable areas of the Mojave Desert, especially at the outer edges of this area, the 5-year review also describes and relies heavily on a quantitative, spatial habitat model for the desert tortoise north and west of the Colorado River that incorporates environmental variables such as precipitation, geology, vegetation, and slope and is based on occurrence data of desert tortoises from sources spanning more than 80 years, including data from the 2001 to 2005 range-wide monitoring surveys (Nussear et al. 2009). The

model predicts the probability that desert tortoises will be present in any given location; calculations of the amount of desert tortoise habitat in the 5-year review and in this biological opinion use a threshold of 0.5 or greater predicted value for potential desert tortoise habitat. The model does not account for anthropogenic effects to habitat and represents the potential for occupancy by desert tortoises absent these effects.

To begin integrating anthropogenic activities and the variable risk levels they bring to different parts of the Mojave and Colorado deserts, the Service completed an extensive review of the threats known to affect desert tortoises at the time of their listing and updated that information with more current findings in the 5-year review. The review follows the format of the five-factor analysis required by section 4(a)(1) of the Endangered Species Act. The Service described these threats as part of the process of its listing (55 Federal Register 12178; April 2, 1990), further discussed them in the original recovery plan (Service 1994), and reviewed them again in the revised recovery plan (Service 2011).

To understand better the relationship of threats to populations of desert tortoises and the most effective manner to implement recovery actions, the Desert Tortoise Recovery Office is developing a spatial decision support system that models the interrelationships of threats to desert tortoises and how those threats affect population change. The spatial decision support system describes the numerous threats that desert tortoises face, explains how these threats interact to affect individual animals and habitat, and how these effects in turn bring about changes in populations. For example, we have long known that the construction of a transmission line can result in the death of desert tortoises and loss of habitat. We have also known that common ravens, known predators of desert tortoises, use the transmission line's pylons for nesting, roosting, and perching and that the access routes associated with transmission lines provide a vector for the introduction and spread of invasive weeds and facilitate increased human access into an area. Increased human access can accelerate illegal collection and release of desert tortoises and their deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive plants (Service 2011). Changes in the abundance of native plants because of invasive weeds can compromise the physiological health of desert tortoises, making them more vulnerable to drought, disease, and predation. The spatial decision support system allows us to map threats across the range of the desert tortoise and model the intensity of stresses that these multiple and combined threats place on desert tortoise populations.

The threats described in the listing rule and both recovery plans continue to affect the species. Indirect impacts to desert tortoise populations and habitat occur in accessible areas that interface with human activity. Most threats to the desert tortoise or its habitat are associated with human land uses; research since 1994 has clarified many mechanisms by which these threats act on desert tortoises. As stated earlier, increases in human access can accelerate illegal collection and release of desert tortoises and deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive weeds.

Some of the most apparent threats to the desert tortoise are those that result in mortality and permanent habitat loss across large areas, such as urbanization and large-scale renewable energy projects, and those that fragment and degrade habitats, such as proliferation of roads and highways, off-highway vehicle activity, and habitat invasion by non-native invasive plant species. However, we remain unable to quantify how threats affect desert tortoise populations. The assessment of the original recovery plan emphasized the need for a better understanding of the implications of multiple, simultaneous threats facing desert tortoise populations and of the relative contribution of multiple threats on demographic factors (i.e., birth rate, survivorship, fecundity, and death rate; Tracy et al. 2004).

The following map depicts the 12 critical habitat units of the desert tortoise, linkages between conservation areas for the desert tortoise, and the aggregate stress that multiple, synergistic threats place on desert tortoise populations (Figure 2). Conservation areas include designated critical habitat, lands managed by the National Park Service, and other lands managed for the long-term conservation of the desert tortoise (e.g., the Desert Tortoise Natural Area in Kern County, California). The revised recovery plan (Service 2011) recommended the linkages based on an analysis of least-cost pathways (i.e., areas with the highest potential to support desert tortoises) between conservation areas for the desert tortoise. This map illustrates that, across the range, desert tortoises in areas under the highest level of conservation management remain subject to numerous threats, stresses, and mortality sources.

Since the completion of the 5-year review, the Service has issued several biological opinions that affect large areas of desert tortoise habitat because of numerous proposals to develop renewable energy within its range. These biological opinions concluded that proposed solar plants were not likely to jeopardize the continued existence of the desert tortoise primarily because they were located outside of critical habitat and desert wildlife management areas that contain most of the land base required for the recovery of the species. The proposed actions also included numerous measures intended to protect desert tortoise during the construction of the projects, such as translocation of affected individuals. In aggregate, these projects would result in an overall loss of approximately 37,503 acres of habitat of the desert tortoise. We also predicted that these projects would translocate or kill up to 1,732 desert tortoises; we concluded that most of the individuals in these totals would be juveniles. To date, 372 desert tortoises have been observed during construction of projects; most of these individuals were translocated from work areas, although some desert tortoises have been killed (see Appendix 2). The mitigation required by BLM and California Energy Commission, the agencies permitting these facilities, will result in the acquisition of private land and funding for the implementation of various actions that are intended to promote the recovery of the desert tortoise. Although most of these mitigation measures are consistent with recommendations in the recovery plans for the desert tortoise and the Service continues to support their implementation, we cannot assess how desert tortoise populations will respond because of the long generation time of the species.

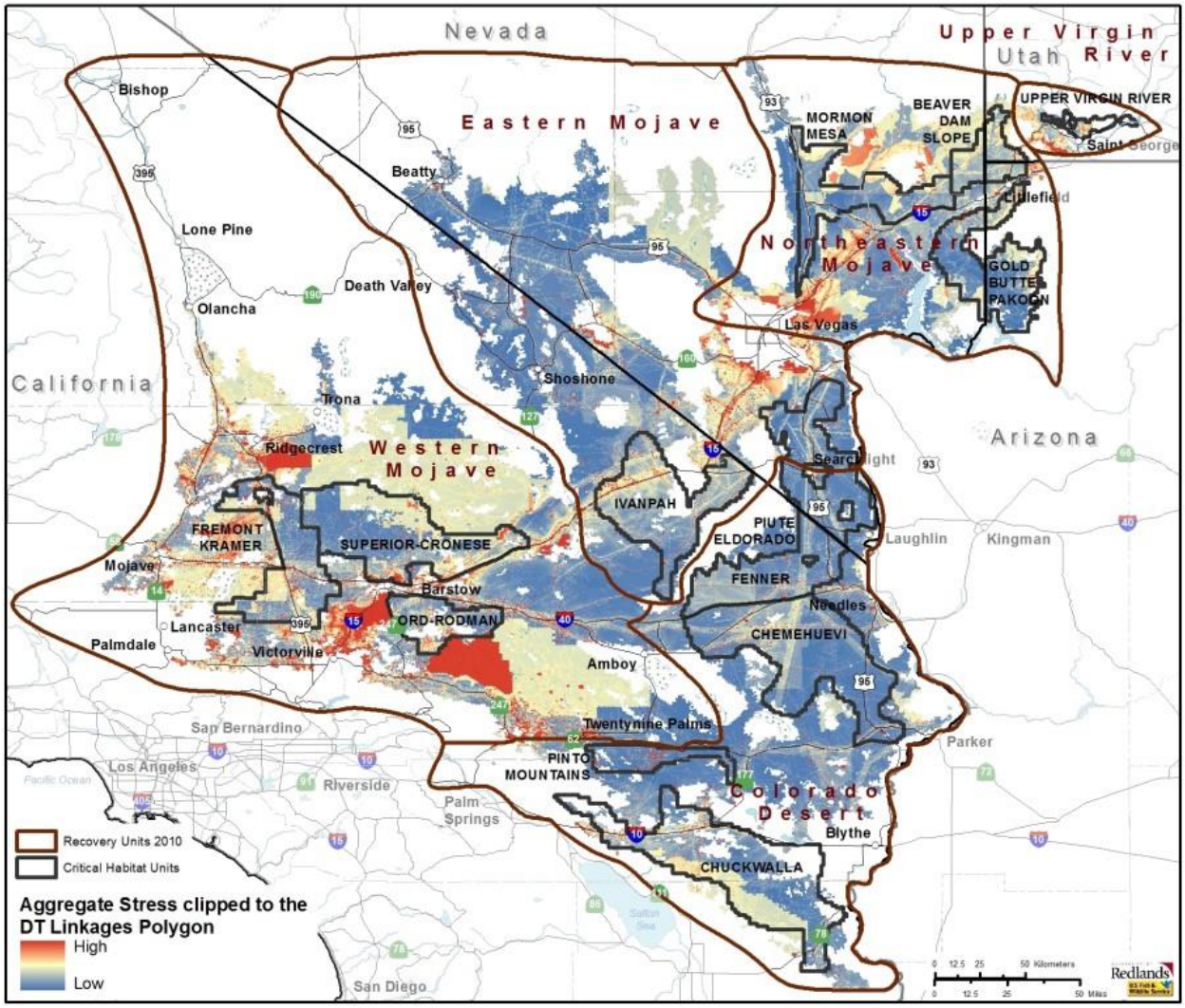


Figure 2. Critical habitat units of the desert tortoise, linkages between conservation areas for the desert tortoise, and the aggregate stress that multiple, synergistic threats place on desert tortoise populations.

In addition to the biological opinions issued for solar development within the range of the desert tortoise, the Service (2012e) also issued a biological opinion to the Department of the Army for the use of additional training lands at Fort Irwin. As part of this proposed action, the Department of the Army removed approximately 650 desert tortoises from 18,197 acres of the southern area of Fort Irwin, which had been off-limits to training. The Department of the Army would also use an additional 48,629 acres that lie east of the former boundaries of Fort Irwin; much of this parcel is either too mountainous or too rocky and low in elevation to support numerous desert tortoises.

The Service also issued a biological opinion to the Marine Corps that considered the effects of the expansion of the Marine Corps Air Ground Combat Center at Twentynine Palms (Service 2012f). We concluded that the Marine Corps' proposed action, the use of

approximately 167,971 acres for training, was not likely to jeopardize the continued existence of the desert tortoise. Most of the expansion area lies within the Johnson Valley Off-highway Vehicle Management Area.

The incremental effect of the larger actions (i.e., solar development, the expansions of Fort Irwin, and the Marine Corps Air Ground Combat Center) on the desert tortoise is unlikely to be positive, despite the numerous conservation measures that have been (or will be) implemented as part of the actions. The acquisition of private lands as mitigation for most of these actions increases the level of protection afforded these lands; however, these acquisitions do not create new habitat and Federal, State, and privately managed lands remain subject to most of the threats and stresses we discussed previously in this section. Although land managers have been implementing measures to manage these threats, we have been unable, to date, to determine whether the measures have been successful, at least in part because of the low reproductive capacity of the desert tortoise. Therefore, the conversion of habitat into areas that are unsuitable for this species continues the trend of constricting the desert tortoise into a smaller portion of its range.

As the Service notes in the 5-year review (Service 2010), "(t)he threats identified in the original listing rule continue to affect the (desert tortoise) today, with invasive species, wildfire, and renewable energy development coming to the forefront as important factors in habitat loss and conversion. The vast majority of threats to the desert tortoise or its habitat are associated with human land uses." Oftedal's work (2002 in Service 2010) suggests that invasive weeds may adversely affect the physiological health of desert tortoises. Current information indicates that invasive species likely affect a large portion of the desert tortoise's range (Figure 3). Furthermore, high densities of weedy species increase the likelihood of wildfires; wildfires, in turn, destroy native species and further the spread of invasive weeds.

Global climate change is likely to affect the prospects for the long-term conservation of the desert tortoise. For example, predictions for climate change within the range of the desert tortoise suggest more frequent and/or prolonged droughts with an increase of the annual mean temperature by 3.5 to 4.0 degrees Celsius. The greatest increases will likely occur in summer (June-July-August mean increase of as much as 5 degrees Celsius [Christensen et al. 2007 in Service 2010]). Precipitation will likely decrease by 5 to 15 percent annually in the region with winter precipitation decreasing by up to 20 percent and summer precipitation increasing by up to 5 percent. Because germination of the desert tortoise's food plants is highly dependent on cool-season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Although drought occurs routinely in the Mojave Desert, extended periods of drought have the potential to affect desert tortoises and their habitats through physiological effects to individuals (i.e., stress) and limited forage availability. To place the consequences of long-term drought in perspective, Longshore et al. (2003) demonstrated that even short-term drought could result in elevated levels of mortality of desert tortoises.

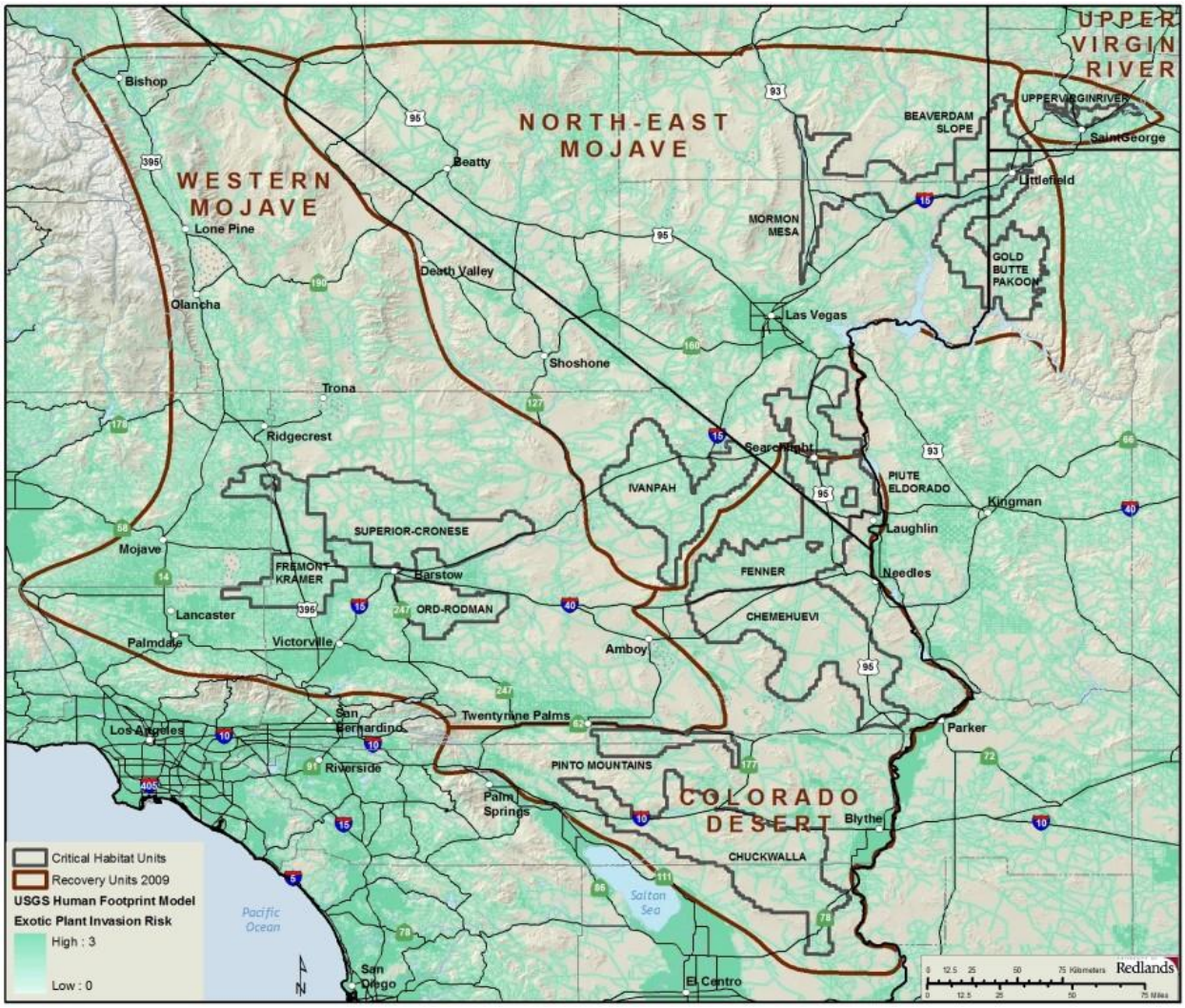


Figure 3. Invasion risk of non-native invasive plant species within the range of the desert tortoise.

Therefore, long-term drought is likely to have even greater effects, particularly given that the current fragmented nature of desert tortoise habitat (e.g., urban and agricultural development, highways, freeways, military training areas, etc.) will make recolonization of extirpated areas difficult, if not impossible.

The Service notes in the 5-year review that the combination of the desert tortoise's late breeding age and a low reproductive rate challenges our ability to achieve recovery. When determining whether a proposed action is likely to jeopardize the continued existence of a species, we are required to consider whether the action would "reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 Code of Federal Regulations 402.02). Although the Service does not explicitly address these metrics in the

5-year review, we have used the information in that document to summarize the status of the desert tortoise with respect to its reproduction, numbers, and distribution.

In the 5-year review, the Service notes that desert tortoises increase their reproduction in high rainfall years; more rain provides desert tortoises with more high quality food (i.e., plants that are higher in water and protein), which, in turn, allows them to lay more eggs. Conversely, the physiological stress associated with foraging on food plants with insufficient water and nitrogen may leave desert tortoises vulnerable to disease (Oftedal 2002 in Service 2010), and the reproductive rate of diseased desert tortoises is likely lower than that of healthy animals. Young desert tortoises also rely upon high-quality, low-fiber plants (e.g., native forbs) with nutrient levels not found in the invasive weeds that have increased in abundance across its range (Oftedal et al. 2002; Tracy et al. 2004). Compromised nutrition of young desert tortoises likely represents an effective reduction in reproduction by reducing the number that reaches adulthood. Consequently, although we do not have quantitative data that show a direct relationship, the abundance of weedy species within the range of the desert tortoise has the potential to affect the reproduction of desert tortoises and recruitment into the adult population in a negative manner.

Data from long-term study plots, which were first established in 1976, cannot be extrapolated to provide an estimate of the number of desert tortoises on a range-wide basis; historical densities in some parts of the desert exceeded 100 adults in a square mile (Desert Tortoise Recovery Office 2014). Using data from the long-term study plots, the Service (2010) concluded that "appreciable declines at the local level in many areas, which coupled with other survey results, suggest that declines may have occurred more broadly." Other sources indicate that local declines are continuing to occur. For example, surveyors found "lots of dead [desert tortoises]" in the western expansion area of Fort Irwin (Western Mojave Recovery Unit) in 2008 (Fort Irwin Research Coordination Meeting 2008). After the onset of translocation, coyotes killed 105 desert tortoises in Fort Irwin's southern translocation area (Western Mojave Recovery Unit); other canids may have been responsible for some of these deaths. Other incidences of predation were recorded throughout the range of the desert tortoise during this time (Esque et al. 2010). Esque et al. (2010) hypothesized that this high rate of predation on desert tortoises was influenced by low population levels of typical prey for coyotes due to drought conditions in previous years. Recent surveys in the Ivanpah Valley (Eastern Mojave Recovery Unit) for a proposed solar facility detected 31 live desert tortoises and the carcasses of 25 individuals that had been dead less than 4 years (Ironwood 2011); this ratio of carcasses to live individuals over such a short period of time may indicate an abnormally high rate of mortality for a long-lived animal. In summary, the number of desert tortoises range-wide likely decreased substantially from 1976 through 1990 (i.e., when long-term study plots were initiated through the time the desert tortoise was listed as threatened), although we cannot quantify the amount of this decrease. The Desert Tortoise Recovery Office (2014) used the acreages of remaining habitat (see Table 3) and the densities of the recovery units to develop the information in Table 2. We acknowledge that these numbers are not precise but consider this a reasonable way to describe overall changes in the population. For example, we base the density estimate of each recovery unit on surveys conducted with desert tortoise conservation areas and then extend this density to the entire recovery unit although we presume densities are highest within the conservation areas.

Table 2. Estimated number of desert tortoises greater than 1,800 millimeters in length in each recovery unit.

Recovery Units	2004	2012	Change
Western Mojave	152,967	76,644	-76,323
Colorado Desert	111,749	85,306	-26,443
Northeastern Mojave	13,709	40,838	+27,129
Eastern Mojave	68,138	42,055	-26,083
Upper Virgin River	12,678	8,399	-4,280
Total	359,242	253,242	-106,000

The distribution of the desert tortoise has not changed substantially since the publication of the original recovery plan in 1994 (Service 2010e) in terms of the overall extent of its range. Prior to 1994, desert tortoises were extirpated from large areas within their distributional limits by urban and agricultural development (e.g., the cities of Barstow and Lancaster, California; Las Vegas, Nevada; and St. George, Utah; etc.; agricultural areas south of Edwards Air Force Base and east of Barstow), military training (e.g., Fort Irwin, Leach Lake Gunnery Range), and off-road vehicle use (e.g., portions of off-road management areas managed by BLM and unauthorized use in areas such as east of California City, California). Since 1994, urban development around Las Vegas has likely been the largest contributor to habitat loss throughout the range. Desert tortoises have been essentially removed from the 18,197-acre southern expansion area at Fort Irwin (Service 2012e).

Table 3. Acreages of habitat (as modeled by Nussear et al. 2009, using only areas with a probability of occupancy by desert tortoises greater than 0.5 as potential habitat) within various regions of the desert tortoise's range and of impervious surfaces as of 2006 (Fry et al. 2011). Impervious surfaces include paved and developed areas and other disturbed areas that have zero probability of supporting desert tortoises.

Recovery Units	Modeled Habitat (acres)	Impervious Surfaces within Modeled Habitat	Percent of Modeled Habitat that is now Impervious
Western Mojave	7,582,092	1,864,214	25
Colorado Desert	4,948,900	494,981	10
Northeastern Mojave	3,013,677	378,497	13
Eastern Mojave	4,763,257	794,546	17
Upper Virgin River	232,320	80,853	35
Total	20,540,246	3,613,052	18

In conclusion, we have used the 5-year review (Service 2010), revised recovery plan (Service 2011), and additional information that has become available since these publications to review the reproduction, numbers, and distribution of the desert tortoise. The reproductive capacity of the desert tortoise may be compromised to some degree by the abundance and distribution of

invasive weeds across its range; the continued increase in human access across the desert likely continues to facilitate the spread of weeds and further affect the reproductive capacity of the species. Prior to its listing, the number of desert tortoises likely declined range-wide, although we cannot quantify the extent of the decline; since the time of listing, data suggest that declines continue to occur throughout most of the range, although recent information suggests that densities may have increased slightly in the Northeastern Mojave Recovery Unit. The continued increase in human access across the desert continues to expose more desert tortoises to the potential of being killed by human activities. The distributional limits of the desert tortoise's range have not changed substantially since the issuance of the original recovery plan in 1994; however, desert tortoises have been extirpated from large areas within their range (e.g., Las Vegas, other desert cities). The species' low reproductive rate, the extended time required for young animals to reach breeding age, and the multitude of threats that continue to confront desert tortoises combine to render its recovery a substantial challenge.

Status of Critical Habitat of the Desert Tortoise

The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule published February 8, 1994 (59 Federal Register 5820). The Service designates critical habitat to identify the key biological and physical needs of the species and key areas for recovery and to focus conservation actions on those areas. Critical habitat is composed of specific geographic areas that contain the biological and physical features essential to the species' conservation and that may require special management considerations or protection. These features, which include space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats, are called the primary constituent elements of critical habitat. The specific primary constituent elements of desert tortoise critical habitat are: sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

Critical habitat of the desert tortoise would not be able to fulfill its conservation role without each of the primary constituent elements being functional. As examples, having a sufficient amount of forage species is not sufficient if human-caused mortality is excessive; an area with sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow would not support desert tortoises without adequate forage species.

The final rule for designation of critical habitat did not explicitly ascribe specific conservation roles or functions to the various critical habitat units. Rather, it refers to the strategy of establishing recovery units and desert wildlife management areas recommended by the recovery plan for the desert tortoise, which had been published as a draft at the time of the designation of critical habitat, to capture the "biotic and abiotic variability found in desert tortoise habitat"

(59 Federal Register 5820, see page 5823). Specifically, we designated the critical habitat units to follow the direction provided by the draft recovery plan (Service 1993) for the establishment of desert wildlife management areas. The critical habitat units in aggregate are intended to protect the variability that occurs across the large range of the desert tortoise; the loss of any specific unit would compromise the ability of critical habitat as a whole to serve its intended function and conservation role.

Despite the fact that desert tortoises do not necessarily need to move between critical habitat units to complete their life histories, both the original and revised recovery plans highlight the importance of these critical habitat units and connectivity between them for the recovery of the species. Specifically, the revised recovery plan states that "aggressive management as generally recommended in the 1994 Recovery Plan needs to be applied within existing (desert) tortoise conservation areas (defined as critical habitat, among other areas being managed for the conservation of desert tortoises) or other important areas … to ensure that populations remain distributed throughout the species' range …. (Desert tortoise) conservation areas capture the diversity of the Mojave population of the desert tortoise within each recovery unit, conserving the genetic breadth of the species, providing a margin of safety for the species to withstand catastrophic events, and providing potential opportunities for continued evolution and adaptive change …. Especially given uncertainties related to the effects of climate change on desert tortoise populations and distribution, we consider (desert) tortoise conservation areas to be the minimum baseline within which to focus our recovery efforts (pages 34 and 35, Service 2011)."

The 12 critical habitat units range in area from 85 to 1,595 square miles. However, the optimal reserve size recommended to preserve viable desert tortoise populations was 1,000 square miles (Service 1994); only 4 critical habitat units meet this threshold. Consequently, for some smaller critical habitat units, their future effectiveness in conserving the desert tortoise is largely dependent on the status of populations immediately adjacent to their boundaries or within intervening linkages that connect these smaller critical habitat units to other protected areas. Although the Service (1994) recommended the identification of buffer zones and linkages for smaller desert tortoise conservation areas, land management agencies have generally not established such areas.

Population viability analyses indicate that reserves should contain from 10,000 to 20,000 adult desert tortoises to maximize estimated time to extinction (i.e., approximately 390 years, depending on rates of population change; Service 1994). However, during the three most recent years of monitoring within the critical habitat units, only three (in 2009 and 2010) to five (in 2008) of the critical habitat units met this target (McLuckie et al. 2010; Service 2012a, 2012b). Some critical habitat units share boundaries and form contiguous blocks (e.g., Superior-Cronese and Fremont-Kramer Critical Habitat Units), and those blocks in California include combined estimated abundances of over 10,000 adult desert tortoises. These blocks are adjacent to smaller, more isolated units (e.g., Ord-Rodman Critical Habitat Unit) that are not currently connected to other protected habitat by preserved habitat linkages.

We did not designate the Desert Tortoise Natural Area and Joshua Tree National Park in California and the Desert National Wildlife Refuge in Nevada as critical habitat because they are "primarily managed as natural ecosystems" (59 Federal Register 5820, see page 5825) and provide adequate protection to desert tortoises. Since the designation of critical habitat, Congress increased the size of Joshua Tree National Park and created the Mojave National Preserve. A portion of the expanded boundary of Joshua Tree National Park lies within critical habitat of the desert tortoise; portions of other critical habitat units lie within the boundaries of the Mojave National Preserve.

Within each critical habitat unit, both natural and anthropogenic factors affect the function of the primary constituent elements of critical habitat. As an example of a natural factor, in some specific areas within the boundaries of critical habitat, such as within and adjacent to dry lakes, some of the primary constituent elements are naturally absent because the substrate is extremely silty; desert tortoises do not normally reside in such areas. Comparing the acreage of desert tortoise habitat as depicted by Nussear et al.'s (2009) model to the gross acreage of the critical habitat units demonstrates quantitatively that the entire area within the boundaries of critical habitat likely does not support the primary constituent elements. The acreage for modeled habitat is for the area in which the probability that desert tortoises are present is greater than 0.5. The acreages of modeled habitat are from Service (2012b); they do not include loss of habitat due to human-caused impacts. The difference between gross acreage and modeled habitat is 653,214 acres; that is, approximately 10 percent of the gross acreage of the designated critical habitat is not considered modeled habitat.

Table 4. Comparison of the gross acreages of critical habitat units of the desert tortoise with the acreages of modeled habitat.

Critical Habitat Unit	**Gross Acreage**	**Modeled Habitat**
Superior-Cronese	766,900	724,967
Fremont-Kramer	518,000	501,095
Ord-Rodman	253,200	184,155
Pinto Mountain	171,700	144,056
Piute-Eldorado	970,600	930,008
Ivanpah Valley	632,400	510,711
Chuckwalla	1,020,600	809,319
Chemehuevi	937,400	914,505
Gold Butte-Pakoon	488,300	418,189
Mormon Mesa	427,900	407,041
Beaver Dam Slope	204,600	202,499
Upper Virgin River	54,600	46,441
Totals	6,446,200	5,792,986

Condition of the Primary Constituent Elements of Critical Habitat

Human activities can have obvious or more subtle effects on the primary constituent elements. The grading of an area and subsequent construction of a building removes the primary

constituent elements of critical habitat; this action has an obvious effect on critical habitat. The revised recovery plan identifies human activities such as urbanization and the proliferation of roads and highways as threats to the desert tortoise and its habitat; these threats are examples of activities that have a clear effect on the primary constituent elements of critical habitat.

We have included the following paragraphs from the revised recovery plan for the desert tortoise (Service 2011) to demonstrate that other anthropogenic factors affect the primary constituent elements of critical habitat in more subtle ways. All references are in the revised recovery plan (i.e., in Service 2011); we have omitted some information from the revised recovery plan where the level of detail was unnecessary for the current discussion.

> Surface disturbance from [off-highway vehicle] activity can cause erosion and large amounts of dust to be discharged into the air. Recent studies on surface dust impacts on gas exchanges in Mojave Desert shrubs showed that plants encrusted by dust have reduced photosynthesis and decreased water-use efficiency, which may decrease primary production during seasons when photosynthesis occurs (Sharifi et al. 1997). Sharifi et al. (1997) also showed reduction in maximum leaf conductance, transpiration, and water-use efficiency due to dust. Leaf and stem temperatures were also shown to be higher in plants with leaf-surface dust. These effects may also impact desert annuals, an important food source for [desert] tortoises.
>
> [Off-highway vehicle] activity can also disturb fragile cyanobacterial-lichen soil crusts, a dominant source of nitrogen in desert ecosystems (Belnap 1996). Belnap (1996) showed that anthropogenic surface disturbances may have serious implications for nitrogen budgets in cold desert ecosystems, and this may also hold true for the hot deserts that [desert] tortoises occupy. Soil crusts also appear to be an important source of water for plants, as crusts were shown to have 53 percent greater volumetric water content than bare soils during the late fall when winter annuals are becoming established (DeFalco et al. 2001). DeFalco et al. (2001) found that non-native plant species comprised greater shoot biomass on crusted soils than native species, which demonstrates their ability to exploit available nutrient and water resources. Once the soil crusts are disturbed, non-native plants may colonize, become established, and out-compete native perennial and annual plant species (DeFalco et al. 2001, D'Antonio and Vitousek 1992). Invasion of non-native plants can affect the quality and quantity of plant foods available to desert tortoises. Increased presence of invasive plants can also contribute to increased fire frequency.
>
> Proliferation of invasive plants is increasing in the Mojave and Sonoran deserts and is recognized as a substantial threat to desert tortoise habitat. Many species of non-native plants from Europe and Asia have become common to abundant in some areas, particularly where disturbance has occurred and is ongoing. As non-native plant species become established, native perennial and annual plant species may decrease, diminish, or die out (D'Antonio and Vitousek 1992). Land managers and field scientists identified

> 116 species of non-native plants in the Mojave and Colorado deserts (Brooks and Esque 2002).
>
> Increased levels of atmospheric pollution and nitrogen deposition related to increased human presence and combustion of fossil fuels can cause increased levels of soil nitrogen, which in turn may result in significant changes in plant communities (Aber et al. 1989). Many of the non-native annual plant taxa in the Mojave region evolved in more fertile Mediterranean regions and benefit from increased levels of soil nitrogen, which gives them a competitive edge over native annuals. Studies at three sites within the central, southern, and western Mojave Desert indicated that increased levels of soil nitrogen can increase the dominance of non-native annual plants and promote the invasion of new species in desert regions. Furthermore, increased dominance by non-native annuals may decrease the diversity of native annual plants, and increased biomass of non-native annual grasses may increase fire frequency (Brooks 2003).

This summary from the revised recovery plan (Service 2011) demonstrates how the effects of human activities on habitat of the desert tortoise are interconnected. In general, surface disturbance causes increased rates of erosion and generation of dust. Increased erosion alters additional habitat outside of the area directly affected by altering the nature of the substrate, removing shrubs, and possibly destroying burrows and other shelter sites. Increased dust affects photosynthesis in the plants that provide cover and forage to desert tortoises. Disturbed substrates and increased atmospheric nitrogen enhance the likelihood that invasive species will become established and outcompete native species; the proliferation of weedy species increases the risk of large-scale fires, which further move habitat conditions away from those that are favorable to desert tortoises.

The following paragraphs generally describe how the threats described in the revised recovery plan affect the primary constituent elements of critical habitat of the desert tortoise.

<u>Sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow</u>.

In considering the following discussion, bear in mind the information provided previously in this biological opinion regarding the recommended and actual sizes of critical habitat units for the desert tortoise. The original recovery team based the recommended size of desert wildlife management areas on the amount of space required to maintain viable populations. (The recovery plan [Service 1994] defined conservation areas for the desert tortoise as ‘desert wildlife management areas;’ we based the boundaries of critical habitat on the recovery team’s general recommendation for the desert wildlife management areas.) The current low densities of desert tortoises within critical habitat units exacerbate the difficulties of effecting recovery within these areas.

Urban and agricultural development, concentrated use by off-road vehicles, and other activities of this nature completely remove habitat. Although we are aware of local areas within the

boundaries of critical habitat that have been heavily disturbed, we do not know of any areas that have been disturbed to the intensity and extent that this primary constituent element has been compromised. To date, the largest single loss of critical habitat is the use of 18,197 acres of additional training land in the southern portion of Fort Irwin. In our biological opinion for that proposed action (Service 2012e), we stated:

> The proposed action would essentially eliminate the primary constituent elements from approximately 2.40 percent of the Superior-Cronese Critical Habitat Unit; additionally, the conservation role of the remainder of this critical habitat unit and the other critical habitat units has been compromised by substantial human impact on the second and sixth primary constituent elements. However, the protective measures that the Army implemented as part of the proposed action offset, at least to some extent, the adverse effects of the use of the additional training lands in the southern expansion area. Consequently, we have concluded that, although the second and sixth primary constituent elements are not functioning appropriately throughout most of designated critical habitat of the desert tortoise and the proposed action would result in substantial disturbance to 18,197 acres of the Superior-Cronese Critical Habitat Unit, the change in the condition of critical habitat brought about by the Army's proposed action (i.e., use of the southern expansion area for training and implementation of the conservation actions) is not likely to cause an overall decrease in the conservation value and function of the Superior-Cronese Critical Habitat Unit.

The widening of existing freeways likely caused the second largest loss of critical habitat. Despite these losses of critical habitat, which occur in a linear manner, the critical habitat units continue to support sufficient space to support viable populations within each of the six recovery units.

In some cases, major roads likely disrupt the movement, dispersal, and gene flow of desert tortoises. State Route 58 and Highway 395 in the Fremont-Kramer Critical Habitat Unit and Fort Irwin Road in the Superior-Cronese Critical Habitat Unit are examples of large and heavily travelled roads that likely disrupt movement, dispersal, and gene flow. Roads that have been fenced and provided with underpasses may alleviate this fragmentation to some degree; however, such facilities have not been in place for sufficient time to determine whether they will eliminate fragmentation.

The threats of invasive plant species described in the revised recovery plan generally do not result in the removal of this primary constituent element because they do not convert habitat into impervious surfaces, as would urban development.

<u>Sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species</u>.

This primary constituent element addresses the ability of critical habitat to provide adequate nutrition to desert tortoises. As described in the revised recovery plan and 5-year review,

grazing, historical fire, invasive plants, altered hydrology, drought, wildfire potential, fugitive dust, and climate change/temperature extremes contribute to the stress of "nutritional compromise." Paved and unpaved roads through critical habitat of the desert tortoise provide avenues by which invasive native species disperse; these legal routes also provide the means by which unauthorized use occurs over large areas of critical habitat. Nitrogen deposition from atmospheric pollution likely occurs throughout all the critical habitat units and exacerbates the effects of the disturbance of substrates. Because paved and unpaved roads are so widespread through critical habitat, this threat has compromised the conservation value and function of critical habitat throughout the range of the desert tortoise, to some degree. See the Status of the Desert Tortoise section of this biological opinion for a map that depicts the routes by which invasive weeds have access to critical habitat; the routes shown on the map are a subset of the actual number of routes that actually cross critical habitat of the desert tortoise.

Suitable substrates for burrowing, nesting, and overwintering.

Surface disturbance, motor vehicles traveling off route, use of off-highway vehicles management areas, off-highway vehicles events, unpaved roads, grazing, historical fire, wildfire potential, altered hydrology, and climate change leading to shifts in habitat composition and location, storms, and flooding can alter substrates to the extent that they are no longer suitable for burrowing, nesting, and overwintering. Erosion caused by these activities can alter washes to the extent that desert tortoise burrows placed along the edge of a wash, which is a preferred location for burrows, could be destroyed. We expect that the area within critical habitat that is affected by off-road vehicle use to the extent that substrates are no longer suitable is relatively small in relation to the area that desert tortoises have available for burrowing, nesting, and overwintering; consequently, off-road vehicle use has not had a substantial effect on this primary constituent element.

Most livestock allotments have been eliminated from within the boundaries of critical habitat. Of those that remain, livestock would compact substrates to the extent that they would become unsuitable for burrowing, nesting, and overwintering only in areas of concentrated use, such as around watering areas and corrals. Because livestock grazing occurs over a relatively small portion of critical habitat and the substrates in most areas within livestock allotments would not be substantially affected, suitable substrates for burrowing, nesting, and overwintering remain throughout most of the critical habitat units.

Burrows, caliche caves, and other shelter sites.

Human-caused effects to burrows, caliche caves, and other shelter sites likely occur at a similar rate as effects to substrates for burrowing, nesting, and overwintering for the same general reasons. Consequently, sufficient burrows, caliche caves, and other shelter sites remain throughout most of the critical habitat units.

Sufficient vegetation for shelter from temperature extremes and predators.

In general, sufficient vegetation for shelter from temperature extremes and predators remains throughout critical habitat. In areas where large fires have occurred in critical habitat, many of the shrubs that provide shelter from temperature extremes and predators have been destroyed; in such areas, cover sites may be a limiting factor. The proliferation of invasive plants poses a threat to shrub cover throughout critical habitat as the potential for larger and more frequent wildfires increases.

In 2005, wildfires in Nevada, Utah, and Arizona burned extensive areas of critical habitat (Service 2010). Although different agencies report slightly different acreages, the following table provides an indication of the scale of the fires.

Table 5. Acreages of critical habitat burned in the 2005 wildfires.

Critical Habitat Unit	**Total Area Burned (acres)**	**Percent of the Critical Habitat Unit Burned**
Beaver Dam Slope	53,528	26
Gold-Butte Pakoon	65,339	13
Mormon Mesa	12,952	3
Upper Virgin River	10,557	19

The revised recovery plan notes that the fires caused statistically significant losses of perennial plant cover, although patches of unburned shrubs remained. Given the patchiness with which the primary constituent elements of critical habitat are distributed across the critical habitat units and the varying intensity of the wildfires, we cannot quantify precisely the extent to which these fires disrupted the function and value of the critical habitat.

Habitat protected from disturbance and human-caused mortality.

In general, the Federal agencies that manage lands within the boundaries of critical habitat have adopted land management plans that include implementation of some or all of the recommendations contained in the original recovery plan for the desert tortoise. (See pages 70 to 72 of Service 2010.) To at least some degree, the adoption of these plans has resulted in the implementation of management actions that are likely to reduce the disturbance and human-caused mortality of desert tortoises. For example, these plans resulted in the designation of open routes of travel and the closure (and, in some cases, physical closure) of unauthorized routes. Numerous livestock allotments have been relinquished by the permittees and cattle no longer graze these allotments. Because of these planning efforts, BLM's record of decision included direction to withdraw some areas of critical habitat from mineral entry. Because of actions on the part of various agencies, many miles of highways and other paved roads have been fenced to prevent desert tortoises from wandering into traffic and being killed. The Service and other agencies of the Desert Managers Group in California are implementing a plan to remove common ravens that prey on desert tortoises and to undertake other actions that would reduce

subsidies (i.e., food, water, sites for nesting, roosting, and perching, etc.) that facilitate their abundance in the California Desert (Service 2008).

Despite the implementation of these actions, disturbance and human-caused mortality continue to occur in many areas of critical habitat (which overlap the desert wildlife management areas for the most part and are the management units for which most data are collected) to the extent that the conservation value and function of critical habitat is, to some degree, compromised. For example, many highways and other paved roads in California remain unfenced. Twelve desert tortoises were reported to be killed on paved roads from within Mojave National Preserve in 2011, and we fully expect that desert tortoises are being killed at similar rates on many other roads, although these occurrences are not discovered and reported as diligently as by the National Park Service. Employees of the Southern California Gas Company reported two desert tortoises in 2011 that were crushed by vehicles on unpaved roads.

Unauthorized off-road vehicle use continues to disturb habitat and result in loss of vegetation within the boundaries of critical habitat (e.g., Coolgardie Mesa in the Western Mojave Recovery Unit); although we have not documented the death of desert tortoises as a direct result of this activity, it likely occurs. Additionally, the habitat disturbance caused by this unauthorized activity exacerbates the spread of invasive plants, which displace native plants that are important forage for the desert tortoise, thereby increasing the physiological stress faced by desert tortoises.

Although BLM has approved, through its land use planning processes, the withdrawal of areas of critical habitat from mineral entry, it has not undertaken the administrative procedures to complete withdrawals in all areas. Absent this withdrawal, new mining claims can be filed and further disturbance of critical habitat could occur.

Finally, BLM has not allowed the development of solar power plants on public lands within the boundaries of its desert wildlife management areas (which largely correspond to the boundaries of critical habitat). Conversely, the County of San Bernardino is considering the approval of the construction and operation of at least two such facilities within the boundaries of the Superior-Cronese Critical Habitat Unit north of Interstate 15 near the Minneola Road exit.

Summary of the Status of Critical Habitat of the Desert Tortoise

As noted in the revised recovery plan for the desert tortoise and 5-year review (Service 2011, 2010), critical habitat of the desert tortoise is subject to landscape level impacts in addition to the site-specific effects of individual human activities. On the landscape level, atmospheric pollution is increasing the level of nitrogen in desert substrates; the increased nitrogen exacerbates the spread of invasive plants, which outcompete the native plants necessary for desert tortoises to survive. As invasive plants increase in abundance, the threat of large wildfires increases; wildfires have the potential to convert the shrubland-native annual plant communities upon which desert tortoises depend to a community with fewer shrubs and more invasive plants. In such a community, shelter and forage would be more difficult for desert tortoises to find.

Invasive plants have already compromised the conservation value and function of critical habitat to some degree with regard to the second primary constituent element (i.e., sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species). These effects likely extend to the entirety of critical habitat, given the numerous routes by which invasive plants can access critical habitat and the large spatial extent that is subject to nitrogen from atmospheric pollution. (See maps from previous sections of this biological opinion regarding the extent of the threat of invasive plants and the aggregate stress that multiple threats, including invasive plants, place on critical habitat.)

Critical habitat has been compromised to some degree with regard to the last primary constituent element (i.e., habitat protected from disturbance and human-caused mortality) as a result of the wide variety of human activities that continues to occur within its boundaries. These effects result from the implementation of discrete human activities and are thus more site-specific in nature.

Although the remaining primary constituent elements have been affected to some degree by human activities, these impacts have not, to date, substantially compromised the conservation value and function of the critical habitat units. We have reached this conclusion primarily because the effects are localized and thus do not affect the conservation value and function of large areas of critical habitat.

Land managers have undertaken actions to improve the status of critical habitat. For example, as part of its efforts to offset the effects of the use of additional training maneuver lands at Fort Irwin (Service 2004), the Department of the Army acquired the private interests in the Harper Lake and Cronese Lakes allotments, which are located within critical habitat in the Western Mojave Recovery Unit; as a result, cattle have been removed from these allotments. Livestock have been removed from numerous other allotments through various means throughout the range of the desert tortoise. The retirement of allotments assists in the recovery of the species by eliminating disturbance to the primary constituent elements of critical habitat by cattle and range improvements.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Endangered Species Act define the action area as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 Code of Federal Regulations 402.02). The action area begins at post mile R143.5 in Kern County in the west and ends at post mile 12.9 in San Bernardino County in the east. The action area includes the construction zone within the new alignment, temporary staging areas, and 300 feet beyond the outer edge of the construction right-of-way. We included the 300-foot-wide area beyond the construction right-of-way and staging areas because Caltrans would move desert tortoises from the right-of-way into this area.

In this biological opinion, we use the term "project area" to indicate areas that Caltrans may disturb during construction (e.g., roadways and staging areas); this area covers approximately 667.7 acres. Therefore, the action area comprises the 667.7-acre project area and the 300-foot-wide area beyond the project area into which Caltrans may translocate desert tortoises.

Previous Consultations in the Action Area

We issued a biological opinion to BLM regarding the effects of a proposed amendment to the California Desert Conservation Area Plan for the western Mojave Desert on the desert tortoise and its critical habitat (Service 2006). BLM's proposed action was a substantial revision of the California Desert Conservation Area Plan, with the fundamental goal of adopting numerous management prescriptions intended to promote the recovery of the desert tortoise. These prescriptions addressed grazing, land use classification, recreation, and numerous other elements of BLM's management of the western Mojave Desert. Through the land use plan amendment, BLM also established a mitigation policy for projects on its lands; within areas to be managed for the recovery of the desert tortoise, BLM would require compensation for disturbance at a ratio of five to one; outside of areas deemed important for recovery, BLM's mitigation ratio is one to one. The Service concluded that BLM's amendment of the California Desert Conservation Area Plan for the western Mojave Desert was not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat because the vast majority of changes addressed in the amendment reduced the intensity of use and were protective of the desert tortoise. We established thresholds for the re-initiation of formal consultation in an amendment to this biological opinion (Service 2007). To date, although some desert tortoises have been killed, none of the re-initiation thresholds have been met. The entire action area for this project is within the action area for the California Desert Conservation Area Plan consultation.

Characteristics of the Action Area

To the best of our knowledge, lands within the action area to the west of Highway 395 are privately owned. BLM manages most of the lands to the east of Highway 395.

We summarized the following description of the action area from the biological assessment (Caltrans 2013). The topography in the project area is gently to moderately undulating with elevations ranging from approximately 2,300 to 2,500 feet above sea level. Habitat types within the action area include atriplex scrub, creosote bush scrub, and desert sink scrub.

Within the 667.7-acre project area, approximately 524.7 acres support scrub vegetation that could provide habitat for desert tortoises. Because of the fence that Caltrans installed to prevent desert tortoises from accessing the highway, approximately 104.9 acres of habitat are no longer available for their use. Consequently, the project area contains approximately 419.8 acres of available habitat for the desert tortoise.

Human-caused disturbances are evident within the action area; they include Highway 395, off-highway vehicle use, numerous unpaved roads, sites where the public has illegally dumped trash, transmission line and pipeline corridors with their associated maintenance roads, and residential, industrial, and commercial developments (e.g., homes, gas stations, restaurants, truck stop). The action area also includes the potions of the existing State Route 58 where the widened roadway would occur within its right-of-way; it would also include the portion of the old road that Caltrans proposes to remove and restore. The eastern portion of the project area, between post miles 7.8 and 12.9, is currently fenced to prevent desert tortoises from entering the highway and is no longer available as habitat.

In the eastern portion of the action area, the Burlington Northern and Santa Fe Railroad runs parallel to and several hundred north of State Route 58; it may lie partially within the action area. The solar power plant to the northwest of Kramer Junction covers a large area to the north of the action area and contributes to the overall degradation of the quality of desert tortoise habitat in this portion of the western Mojave Desert.

Highway 395, State Route 58, and the railroad likely restrict the movement of desert tortoise in this area. Desert tortoise may be able to cross the highways occasionally when traffic is light; however, desert tortoises are also likely to be killed when attempting to cross. Desert tortoises can sometimes cross railroad tracks; however, we are aware that they have been struck by trains and have died of heat stress while walking between the rails.

Status of the Desert Tortoise in the Action Area

We summarized the following description of the action area from the biological assessment (Caltrans 2013). Caltrans surveyed the project area for desert tortoises in May 2001. The survey consisted of walking 33-foot-wide transects throughout the project area and belt transects around the perimeter of the project area at approximately 100, 300, 600, 1,200, and 2,400 feet from edge of the area. Caltrans found 7 desert tortoises, 75 burrows, 5 pallets, 86 pieces of scat, and 22 carcasses in the surveyed area. The biological assessment does not contain a map that depicts the location of the desert tortoises or the sign.

In 2009, Caltrans conducted similar surveys between post miles 0.0 and 13.8 and found 2 desert tortoises and 101 sign (i.e., shelter sites, scat, carcasses, tracks, etc.). Although the desert tortoises occurred immediately adjacent to the project area, most of the sign was located along the belt transects outside of the project area. We do not know if these desert tortoises were different individuals than the animals encountered in 2001. The surveyors found the desert tortoises at the far eastern end of the study area and most of the sign east of Highway 395.

The information in the biological assessment is not adequate to estimate the likely number of desert tortoises in the project area. The project area is linear in configuration and narrow; desert tortoises could move into and out of the area in a relatively brief time. Consequently, we used the density estimate that the Service derived for the Fremont-Kramer Critical Habitat Unit during range-wide sampling in 2012 to estimate the number of desert tortoises greater than

180 millimeters in length that may be in the project area. (We will refer to desert tortoises that are greater than 180 millimeters in length as large desert tortoises and those under this size as small.) The Service (2012d) estimated this density to be approximately 5.72 animals per square mile. Based on this information, the 419.8 acres of habitat within the project area should support approximately 4 large desert tortoises. (See Appendix 3.)

We expect that the project area may support fewer than four large desert tortoises for several reasons. Von Seckendorff Hoff and Marlow (2002) found that the density of desert tortoises adjacent to heavily used roads is depressed; portions of the project area overlie the existing road, which likely has resulted in a lower density of animals in adjacent areas. Highway 395, which crosses the action area, likely also contributes to a depressed density within the action area. In addition to these roads, the action area is located in an area that has experienced, and continues to experience, various types of disturbances due to its proximity to scattered residential, industrial, and commercial development. In the eastern portion of the project area, the rail line to the north of the existing State Route 58 and the existing State Route 58 itself confine a narrow strip of habitat; we expect that desert tortoise densities in that area are below average. Finally, the western portion of the action area contains alkali scrub and sink habitat; we generally do not consider these habitats as being suitable for desert tortoises.

We have not attempted to estimate the number of small desert tortoises (i.e., those less than 180 millimeters in length) or eggs in the action area because of the numerous variables involved. We expect that the action area likely supports few, if any, small desert tortoises and eggs because of the scarcity of large animals.

Status of the Desert Tortoise Critical Habitat in the Action Area

The portion of the action area east of Highway 395 is located within the Fremont-Kramer Critical Habitat Unit. The biological assessment (Caltrans 2013) states that 539.4 of the project area's 667.7 acres lie within critical habitat; it also characterizes 95 acres of critical habitat as being developed or disturbed. We are unable to discern from the biological assessment how Caltrans arrived at these acreages or determined what it considered to be disturbed or developed.

The section of the existing State Route 58 between post miles 7.8 and 12.9 has been fenced to prevent desert tortoises from entering the roadway. Although habitat persists between the fence and the road, it no longer supports the conservation function of the critical habitat unit. Caltrans did not provide acreage of the area of critical habitat within the fence.

The critical habitat within the action area has been disturbed by historical and ongoing human activities such as off-road vehicle use and transmission line and pipeline corridors with their associated maintenance roads. The developed area at Kramer Junction also lies within the boundaries of critical habitat; this area no longer contains any of the primary constituent elements of critical habitat. In general, human activities in this region of the desert have negatively affected the primary constituent elements and compromised the conservation value and function of the critical habitat within the action area to some degree.

EFFECTS OF THE ACTION

Effects of the Proposed Action on Desert Tortoises

Capture and Translocation of Desert Tortoises

Caltrans proposes to remove all desert tortoises from the project area. Caltrans will install desert tortoise exclusion fencing around all areas affected by the project. An authorized biologist will perform clearance surveys (in accordance with the most recent Service survey protocols) of the enclosed area and translocate any desert tortoises found within the enclosure to areas immediately adjacent to and outside of the fence.

We estimated that four large desert tortoises occur within the project area; we expect that some small desert tortoises and eggs may also be present but did not attempt to estimate their numbers. We expect that Caltrans is likely to find most, if not all, of the large desert tortoises during its surveys; we expect that Caltrans will not detect all of the small desert tortoises and eggs.

Capturing desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease or directly result in injury or mortality. Handling desert tortoises sometimes causes them to void the contents of their bladder, which may represent loss of important fluids that could be fatal (Averill-Murray 1999 in Boarman 2002). Averill-Murray 1999 (in Boarman 2002) provided some evidence that handling-induced voiding may adversely affect survivability, although the amount of fluid discharged is usually small. However, because Caltrans will use only experienced biologists (i.e., authorized biologists) approved by the Service and approved handling techniques, collected desert tortoises are unlikely to suffer substantially elevated stress levels, or be killed or injured.

Biologists considered translocation to be an ineffective tool in reducing the impacts of projects on desert tortoises and raised concerns regarding its numerous potential adverse effects (e.g., overcrowding, increased disease transmission, increased mortality, elevation of stress hormones, vulnerability to drought, etc.). Over the past approximately 10 years, several researchers have undertaken studies to more carefully evaluate the effects of translocation on desert tortoises; some of these studies have included the monitoring of control and resident animals. (Desert tortoises used as controls inhabit areas that are disjunct from those occupied by translocated animals; resident animals occupy areas into which desert tortoises have been translocated.) These studies have indicated that translocated, resident, and control animals do not have significant differences in mortality rates or in levels of stress hormones. The reproductive output of translocated is slightly lower than that of residents or controls for the first year after translocation and translocated animals tend to move more but settle down after a period of time.

The Service's (2013) biological opinion for the Stateline and Silver State South solar projects contains an extensive discussion of the potential effects of translocation on desert tortoises; we incorporate that analysis herein by reference. Because the action area for the action under

consideration in this biological opinion supports a very small number of desert tortoises, we anticipate that any effects of translocation on either resident or translocated animals are likely to be negligible. The potential exists that a small number of translocated or resident desert tortoises may die or be injured during the translocation because of the specific circumstances; however, we consider this likelihood.to be extremely low.

Caltrans has proposed to monitor desert tortoises moved during inactive periods for at least 2 days after placement in the new burrows to ensure their safety. This statement seems to contradict the commitment in Caltrans' protective measure 16 to follow the Service's guidance with regard to translocation of desert tortoises, which calls for translocation to occur during active periods. Despite the overall success of well-planned efforts to translocate desert tortoises, this activity is not without risk. We will discuss these issues in the remaining paragraphs in this section.

The successful translocation of desert tortoises depends greatly on the techniques used. Research on translocated desert tortoises indicates that they tend to spend more time above ground and move more than resident or control animals. The extended time above ground can increase the exposure of desert tortoises to predators and weather extremes; we are aware that desert tortoises will occasionally walk along newly installed fences within their territories until they become overheated and die. For these reasons, the Service's (2009) guidance recommends that workers translocate desert tortoises when weather conditions are the most conducive to the desert tortoise's activity patterns (April and May and September and October, although translocation slightly before or after these months may be appropriate, depending on the weather in any given year).

Caltrans' proposal to move desert tortoises during inactive periods is likely to place these animals at increased risk of predation or exposure to unfavorable weather conditions, regardless of whether it moves the animals during inactive seasons or times of the day. Desert tortoises moved during these times may continue to spend excessive time above ground well beyond the 2 days during which Caltrans has proposed to monitor them; additionally, Caltrans has not proposed any actions that it may undertake if monitoring provides evidence that translocation has caused desert tortoises to behave in an unsafe manner. Desert tortoises also generally do not remain in artificial or natural burrows immediately after translocation; attempting to force them to stay in the burrows may increase their stress levels. Taken together, these issues indicate the importance of a well-conceived approach to moving desert tortoises from harm's way.

Construction on Desert Tortoises

Desert tortoises may be killed or injured by construction activities associated with the proposed project if they are not removed from work areas prior to the onset of ground-disturbing activities. Because of the desert tortoise's cryptic coloration and fossorial habits, all individuals may not be detected during surveys; smaller individuals and eggs are more likely to be missed than larger animals. Desert tortoises could also be killed or injured if the re-enter the work area through a breech in the exclusion fencing. Because of the numerous protective measures that Caltrans will

implement and the small number of desert tortoises likely to occur within the action area, we expect that few desert tortoises are likely to be killed or injured during construction.

Desert tortoises may be killed or injured by vehicles associated with the proposed project as they travel along access roads to work sites. We are unable to separate the potential effects of project-associated vehicles from those of the general public. On paved roads, the general volume of traffic would likely mask any effect of the project vehicles; on unpaved routes, project vehicles may comprise a measurable, although still small portion of the traffic. Because all workers will have undergone a worker awareness and education program about desert tortoises, workers are less likely to strike desert tortoises than a casual user. Additionally, we expect much of the access to the project area would occur along the existing State Route 58. Therefore, we expect that few desert tortoises are likely to be killed or injured along access roads.

Lastly, desert tortoises may be killed or injured by uninformed workers; for example, workers may collect them as pets. However, we do not expect any desert tortoises would be killed or injured in this manner because all project personnel will receive specific training, which would increase their awareness of this potential threat and inform them of the prohibitions against unauthorized handling of desert tortoise.

Habitat

Table 1 of the biological assessment (Caltrans 2013) states that Caltrans would affect approximately 525 acres of habitat during the construction of the new road alignment. This amount includes approximately 236 acres that would be permanently lost and approximately 289 acres of temporary impacts. (Of this total, the fence to prevent desert tortoises from entering State Route 58 in the easternmost portion of the project area precludes their use of approximately 104.9 acres.) We are unable to predict how long desert tortoises would be unable to use areas of temporary impact because of the many variables involved. For example, the extent of damage during construction, the extent of restoration efforts, weather, and the habitat types involved all affect the amount of time before the disturbed areas are of value to the desert tortoise.

The project area west of Kramer Junction is more degraded than that to the east; it also includes habitat types that are not of high value for desert tortoises (e.g., alkali sink and scrub). Consequently, disturbance and loss of desert tortoise habitat in this area are not likely to affect the status of the desert tortoise in a measurable manner.

Construction of the new alignment east of Highway 395 (i.e., that part of the project that would be located outside the existing right-of-way of State Route 58) would be the most detrimental aspect of this proposed project because it is located within higher quality and less disturbed habitat. Caltrans did not provide an estimate of the amount of habitat that would be permanently lost or temporarily disturbed in this area.

Installation of Culverts

The presence of State Route 58 and Highway 395 in the action area has caused fragmentation of habitat and probably substantially disrupted the movement of desert tortoises across this portion of the desert; we expect that few desert tortoises are able to cross over the highways, although they may use culverts to pass under it. Caltrans has proposed to install a large, soft-bottomed culvert on each side of Highway 395 to allow desert tortoises to cross under the new expressway; it also proposes to install permanent fencing to exclude desert tortoises from the right-of-way of the new alignment.

The presence of the new expressway will not substantially alter the degree of fragmentation to the west of Highway 395 because few desert tortoises reside in that area; the low density of desert tortoises in this area may be a function of the habitat being less suitable and more disturbed by human activities. Because of the low density of desert tortoises in this portion of the action area, the installation of a large culvert to facilitate the movement of desert tortoises under State Route 58 to the west of Highway 395 is unlikely to have much effect.

To the east of Kramer Junction, the new road alignment would increase the amount of fragmentation of habitat in the western Mojave Desert because it would introduce a new barrier to the north-south movement of desert tortoises in this area and at least partially isolate desert tortoises between it and the rail line. In this area, the installation of a large culvert to allow for the movement of desert tortoises under State Route 58 would likely offset the fragmentation to some degree. In both cases, the maintenance of the exclusion fence is key to the function of the culverts; absent the fences, most desert tortoises would continue to attempt to cross the expressway and be killed.

We do not know how the existing State Route 58 would function east of Highway 395 after the Caltrans completes the new expressway. Because it is not fenced to prevent entry by desert tortoises onto the road, it would continue to function as a mortality sink for desert tortoises if traffic levels remain high on this unfenced road.

Removal of the Existing State Route 58

Caltrans is proposing to obliterate and re-vegetate approximately 1.2 miles of the existing State Route 58 near the Kern County line as a means to facilitate the movement of desert tortoises. The work associated with obliterating the old road and re-vegetate the area is unlikely to adversely affect desert tortoises because the road currently does not support desert tortoises and Caltrans will fence the work area to prevent entry by desert tortoises. The potential exists that a desert tortoise may find a break through the fence, enter the work area, and be killed or injured; however, the likelihood of this event occurring is low, given the paucity of individuals in this area.

Regardless of the success of the re-vegetation effort, this action is unlikely to provide a measurable benefit to desert tortoises because surveys detected few signs of desert tortoises in

this area and, after Kramer Junction itself, is the portion of the action area most disturbed by human activities.

Invasive Non-Native Plant Species

Invasive non-native plant species have evolved outside of the area into which they are introduced. These plant species are not controlled by native predators and, therefore, may proliferate in an area into which they have been introduced. Invasive non-native plant species compete with native plant species for nutrients, light, and space.

Non-native plant species currently occur on the project area and are likely to occur in other portions of the action area at varying densities. Road construction activities have the potential to increase the distribution and abundance of non-native weed species within the action area due to surface-disturbing activities that favor the establishment of these species; equipment being brought in from off site may also introduce new species of weeds into the action area. In addition, access to the project site by personnel may increase the volume and distribution of non-native seed carried into the action area. If the proposed action results in an increased abundance of non-native weed species in the action area, they would likely reduce the quantity and quality of forage for desert tortoises and increase fire risk, which may result in future habitat loss beyond the action area. Wildfires also kill desert tortoises that are above ground and can deprive those that survive the fire of plants that they eat and use for shelter.

Caltrans will include, in the construction contract stipulations, measures to help reduce the possibility of introducing new invasive plants into the action area. These measures will include the inspection and cleaning of construction equipment; commitments to ensure the use of invasive-free mulches, topsoils, and seed mixes; and other strategies to help reduce existing populations of invasive non-native plants, or those that could occur in the future. We cannot reasonably predict the increase in non-native weed species abundance that this project will create within the action area nor the effects to the desert tortoise from the introduction of non-native weed species.

Increased Subsidies for Predators

Common ravens and coyotes are often attracted to human activity in the desert. Consequently, the proposed action has the potential to attract common ravens and coyotes; additional food sources for predators may also lead to increases in their reproductive rates. Increased numbers of predators would likely lead to further predation on desert tortoises in the vicinity of the project. Securing trash will eliminate it as a source of food for these and other predators, thereby reducing the attractiveness of the area to these predators. Caltrans proposes to provide animal resistant/proof trash containers and to remove trash in a timely manner. Implementation of these proposed measures should reduce the attraction of common ravens and coyotes to the new facilities; therefore, the proposed action is unlikely to cause a measurable increase in the level of predation of desert tortoises.

Effects of the Proposed Action on Critical Habitat

The proposed action would affect approximately 439 acres of designated critical habitat within the Fremont-Kramer Critical Habitat Unit; it would permanently cause the loss of approximately 198 acres and temporarily disturb approximately 242 acres (Caltrans 2013). These totals include critical habitat along the existing State Route 58 between post miles 7.8 and 12.9 that is fenced to prevent desert tortoises from entering the roadway. The approximately 104.9 acres of critical habitat that lie within this fenced area no longer provide the conservation function of critical habitat and their loss or disturbance does not comprise a new impact. Consequently, the proposed action would adversely affect approximately 334 acres of critical habitat.

In the following paragraphs, we consider the effects of the proposed action on the primary constituent elements of desert tortoise critical habitat.

Sufficient Space to Support Viable Populations within Each of the Six Recovery Units and to Provide for Movement, Dispersal, and Gene Flow

The proposed project would result in the reduction of the space available to support viable populations; because Caltrans would build the new alignment east of Highway 395 away from the existing State Route 58, the proposed action would reduce to some degree the ability of this area to support movement, dispersal, and gene flow. The proposed culvert in this area would assist in promoting movement, dispersal, and gene flow, albeit at a much reduced rate than currently occurs in the area.

Sufficient Quality and Quantity of Forage Species and the Proper Soil Conditions to Provide For the Growth of These Species; Suitable Substrates for Burrowing, Nesting, and Overwintering; Burrows, Caliche Caves, and Other Shelter Sites; Sufficient Vegetation for Shelter from Temperature Extremes and Predators

The second through fifth primary constituent elements represent the plant species desert tortoises require for food and shelter, the substrates that are necessary for these plants to grow and for desert tortoises to construct burrows, and the burrows and other shelter sites they use. These features are the components of the environment necessary to meet desert tortoises' need for food and shelter.

The proposed project would result in the disturbance and loss of 334 acres of critical habitat that provide those features necessary for food and shelter. The Fremont-Kramer Critical Habitat Unit includes 518,000 acres, of which 501,095 acres have a model value of 0.5 or greater (Nussear et al. 2009).

The potentially more damaging effect of the proposed action on these primary constituent elements would be longer-term degradation of habitat that could occur if non-native invasive plant species established currently in the project area were to spread and become more abundant because of construction activities or if Caltrans introduces new weeds during construction.

Caltrans' proposed measures to prevent the introduction of non-native species would help in minimizing the potential spread of these plant species to undisturbed habitats.

Habitat Protected from Disturbance and Human-caused Mortality

The sixth primary constituent element is habitat protected from disturbance and human-caused mortality. In the portion of critical habitat where the new expressway would replace the existing State Route 58, the proposed action would lead to an increase in disturbance and human-caused mortality only during the brief period during construction. The construction of the expressway in the new alignment (i.e., where it does not overlap the existing road) would cause an increase in disturbance and human-caused mortality.

The presence of the new alignment in critical habitat is likely to increase the level of human-caused disturbance in this area, relative to current conditions, during operation of the new roadway. The new, heavily used route through critical habitat would facilitate the spread of weeds and trash through this area, attract common ravens to road-killed animals (despite the presence of a fence to exclude desert tortoises, animals of other species are still likely to be killed on the road), and increase the potential for wildfires caused by humans.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Endangered Species Act. A portion of the action area crosses land managed by BLM; any future actions on these lands would be subject to the consultation requirements of section 7(a)(2) of the Endangered Species Act and are therefore not considered cumulative effects. We are unaware of any non-Federal actions that are reasonably certain to occur in the action area.

CONCLUSIONS

Desert Tortoise

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

Additionally, we determine whether a proposed action is likely "to jeopardize the continued existence of the species" through an analysis of how a proposed action affects the listed taxon within the action area in relation to the range of the entire listed taxon. For the desert tortoise, this process involves considering the effects at the level of the action area, then at the level of the recovery unit (in this case, the Western Mojave Recovery Unit), and then finally for the range of the listed taxon. Logically, if a proposed action is unlikely to cause a measurable effect on the listed taxon within the action area, it is unlikely to affect the species throughout the recovery unit or the remainder of its range. Conversely, an action with measurable effects on the listed entity in the action area may degrade the status of the species to the extent that it is affected at the level of the recovery unit or range-wide.

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

Reproduction

Caltrans will move most, if not all, of the reproductive desert tortoises from work areas to adjacent habitat where they would continue to live and reproduce. Translocated desert tortoises may exhibit decreased reproduction in the first year following translocation. Based on research conducted by Nussear et al. (2012), however, the reproductive rates of translocated desert tortoises are likely to be the same as those of resident animals in subsequent years. Based on work conducted by Saethre et al. (2003), we do not expect the increased density of desert tortoises that would result from translocation to affect the reproduction of resident animals; additionally, as the generally lower densities of desert tortoises along roads provides an additional assurance that overcrowding would not occur. Construction would occur over a brief period relative to the reproductive lifespan of female desert tortoises. Finally, desert tortoises are well adapted to highly variable and harsh environments and their longevity helps compensate for their variable annual reproductive success (Service 1994). Consequently, the proposed action is not likely to have a measurable long-term effect on reproduction of desert tortoises that live adjacent to State Route 58

Numbers

We estimate that 4 large desert tortoises are likely to occur within 419.8 acres of available habitat for the desert tortoise within the project area. The proposed action is likely to result in the injury or mortality of few, if any, of these individuals because most construction activities will occur in areas that are fenced and cleared of desert tortoises and Caltrans will implement numerous avoidance and minimization measures. The proposed action is likely to result in injury or mortality of some small desert tortoises and eggs; because of their small size and cryptic nature, biologists are more likely to miss them during surveys, which would expose them to construction activities.

Implementation of the proposed action would have a negligible effect on the number of desert tortoises in the Western Mojave Recovery Unit. In a worst-case scenario (that is, all four large desert tortoises we estimate to be in the project area are killed during construction), the loss of 4 individuals from the overall number of large desert tortoises in the Western Mojave Recovery Unit (76,644; see Desert Tortoise Recovery Office 2014) would comprise 0.005 percent of the individuals in the recovery unit. We expect that Caltrans would not kill every large desert tortoise during construction because of the protective measures it will implement.

Distribution

The permanent loss of approximately 236 acres of desert tortoise habitat that would result from implementation of the proposed action would have a negligible effect on the distribution of the desert tortoise. The Western Mojave Recovery Unit may support as much as 11,847 square miles of desert tortoise habitat (Allison 2013). Consequently, the proposed actions would result in the loss of approximately 0.003 percent of the habitat in the Western Mojave Recovery Unit and an even smaller effect on the amount of habitat available range-wide.

Effects on Recovery

Caltrans has proposed to implement four actions to promote the recovery of the desert tortoise. We will review each of those actions to assess the value of its long-term contribution to the recovery of the species.

Installation of permanent exclusionary desert tortoise fencing along the new alignment from post mile R143.5 to 7.8.

Post mile R143.5 is located at the Kern County line. Based on the information in the biological assessment (Caltrans 2013), the area from the county line to Kramer Junction supports few desert tortoises; we expect that the habitat types and human disturbance in this area are responsible for the low density of desert tortoises. This area is mainly in private ownership and the Service does not consider it important to the long-term conservation of the desert tortoise. Consequently, the installation of desert tortoise fencing from post mile R143.5 to Highway 395 will not provide measurable benefit to the long-term conservation of the desert tortoise.

Conversely, the installation of desert tortoise fencing from Highway 395 to post mile 7.8 is likely to reduce the number of desert tortoises that are killed on the expressway. This fencing may prevent a zone of depressed density of desert tortoises from developing adjacent to the new alignment and should allow for the recolonization of habitat adjacent to the area where fencing will be installed along the existing highway. This segment of fencing will connect with existing fencing to the east along State Route 58. The installation of this fencing is highly consistent with recommendations in the recovery plans for the desert tortoise (Service 1994, 2011).

Removal and re-vegetation of approximately 1.2 miles of the existing State Route 58

Caltrans has this action to improve connectivity of desert tortoise habitat in the western portion of the action area. As we noted in the previous section and elsewhere in this biological opinion, this area supports few desert tortoises, supports habitat types that are generally not favored by desert tortoises, and is subject to numerous human disturbances. Additionally, the Service does not consider it important to the long-term conservation of the desert tortoise. Consequently, the removal and re-vegetation of approximately 1.2 miles of the existing State Route 58 will not provide measurable benefit to the long-term conservation of the desert tortoise.

Installation of two oversized soft bottom culverts to facilitate north-south movement of desert tortoises under State Route 58

The culvert that Caltrans proposes to install to the west of Highway 395 would have little to no value for the long-term conservation of the desert tortoise for the reasons mentioned in the previous two sections. The culvert that Caltrans proposes to install to the east of Highway 395 would be essential to maintaining some connectivity in the area of the new alignment; this culvert should benefit the long-term conservation of the desert tortoise.

Acquisition of 419.76 acres of desert tortoise habitat to mitigate for the loss of habitat

The acquisition of private lands and their subsequent management by a resource agency, BLM, or a conservation organization would greatly reduce the likelihood of future development that may adversely affect the desert tortoise or its critical habitat. If the acquired lands were donated to BLM, the consultation provisions of section 7(a)(2) of the Endangered Species Act would apply. Such an acquisition would support the long-term conservation of the desert tortoise, if the acquired lands were within a larger area that is being managed for the desert tortoise; the acquisition of isolated parcels would render long-term, large-scale management difficult and severely compromise the effectiveness of the acquisition.

The construction and operation of the portion of the new alignment east of Highway 395 is likely to impair the recovery of the desert tortoise to some degree, primarily by further fragmenting critical habitat in this region of the Western Mojave Recovery Unit. Caltrans' proposals to fence State Route 58 east of Highway 395 and install a large culvert in this area should lessen this impairment to some degree. Although acquisition of private lands may further mitigate the adverse effects on recovery to some degree, we cannot assess how effective the acquisition would be because Caltrans has not identified the parcel to be acquired. Overall, we conclude that the proposed action is likely to diminish the likelihood of recovery of the desert tortoise by a negligible amount.

After reviewing the current status of the species, the environmental baseline for the action area, the effects of the proposed actions, and the cumulative effects, it is the Service's biological opinion that the proposed State Route 58 Kramer Junction Expressway Project is not likely to

jeopardize the continued existence of the desert tortoise. We reached this conclusion for this project because:

1. The proposed action will not affect the reproductive capacity of desert tortoises in the action area, Western Mojave Recovery Unit, or range-wide because Caltrans will move most large (reproductive) individuals from harm's way and research has demonstrated that such movements have only minor, short-term effects on reproductive capacity.

2. The proposed action will have negligible effect on the number of desert tortoises in the Western Mojave Recovery Unit and range-wide because Caltrans has proposed numerous measures to minimize injury and mortality during construction.

3. The proposed action will have negligible effect on the distribution of the desert tortoise because it would result in the loss of approximately 0.003 percent of desert tortoise habitat in the Western Mojave Recovery Unit and even less range-wide.

4. The actions proposed by Caltrans to mitigate for the loss of habitat and fragmentation would contribute, to a small degree, to the recovery of the desert tortoise.

Critical Habitat of the Desert Tortoise

After reviewing the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to result in the destruction or adverse modification of critical habitat of the desert tortoise. We have reached this conclusion because the amount of affected critical habitat comprises approximately 0.065 percent of the total amount of the critical habitat within the Fremont-Kramer Critical Habitat Unit (334 acres of disturbance within the 518,000-acre critical habitat unit) and an even smaller portion of critical habitat range wide. More conservatively, the 334 acres of disturbance comprises approximately 0.067 percent of modeled habitat within this critical habitat unit. Therefore, the amount of disturbance is not likely to compromise the conservation function and value of critical habitat for the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulations pursuant to section 4(d) of the Endangered Species Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission that creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to,

breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Endangered Species Act provided that such taking is in compliance with the protective measures proposed by Caltrans and the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by Caltrans for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activities covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to require any contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any contract document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 Code of Federal Regulations 402.14(i)(3)]. We also note that, because the Service considered the effects of the protective measures proposed by Caltrans in its analysis of the proposed action, these measures are also non-discretionary.

We estimated that four large desert tortoises are present within the project area. Desert tortoises are cryptic (i.e., individuals spend much of their lives underground or concealed under shrubs), they are inactive in years of low rainfall, and their numbers and distribution within the action area may have changed since the surveys were completed because of hatchings, deaths, immigration, and emigration. The numbers of hatchlings and eggs are even more difficult to quantify because of their small size, the location of eggs underground, and the fact that their numbers vary depending on the season; that is, at one time of the year, eggs are present but they become hatchlings later in the year. We did not attempt to estimate the number of small desert tortoises or eggs that may be present because of the numerous variables involved but expect that only few are present because of the overall low density of desert tortoises in the project area.

Determining the amount or extent of the forms in which the take is likely to occur (killed, injured, or captured) is also difficult. As we noted previously, Caltrans will likely capture and move most of the large individuals (i.e., those greater than 180 millimeters in length) within the project area from harm's way to adjacent habitat. Furthermore, Caltrans proposes to implement measures that will minimize the mortality or injury of desert tortoises. However, occasionally even larger animals remain undetected during clearance surveys. Also, as we have stated previously, small tortoises may be captured and moved during pre-construction clearance surveys. Any undetected animals are likely to be killed or injured during construction.

Therefore, we anticipate that all desert tortoises within the project site are likely to be taken. We anticipate that Caltrans will likely capture and move most of the large individuals within the project area from harm's way to adjacent habitat; any that are not detected during clearance surveys prior to construction may be killed or injured. Because of the difficulty in finding small desert tortoises (i.e., those less than 180 millimeters in length), we expect that most of these

individuals are likely to be killed or injured during construction. The protective measures proposed by Caltrans are likely to prevent mortality or injury of most large desert tortoises, and to a certain extent, some small tortoises. In addition, finding a dead or injured desert tortoise is unlikely.

Because we cannot precisely quantify the number of individuals that are likely to be killed, injured, or captured during construction of the proposed project, we will consider the amount or extent of take to be exceeded if two large desert tortoises are killed or injured within the project area. We are not establishing a re-initiation criterion for the number of large or small desert tortoises that would be moved out of harm's way during construction of the proposed project. Furthermore, we are not establishing a re-initiation criterion for the loss of small desert tortoises or eggs.

The exemption provided by this incidental take statement to the prohibitions against take contained in section 9 of the Endangered Species Act extends only to the action area as described in the Environmental Baseline section of this biological opinion.

REASONABLE AND PRUDENT MEASURE

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize take of desert tortoises during the construction of the proposed State Route 58 project:

> Caltrans must implement measures to protect desert tortoises during their translocation from the project area.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, Caltrans must implement the following terms and conditions, which implement the reasonable and prudent measure, and the following reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement the reasonable and prudent measure. They replace protective measure 16, as described in the Description of the Proposed Action section of this biological opinion.

1. Desert tortoises found on the project area must be handled and moved by an authorized biologist or qualified biological monitor in accordance with the most current Service protocol (currently Service 2009).

2. The authorized biologist or qualified biological monitor must move the desert tortoise to the closest suitable habitat to the location at which it was found. Prior to the onset of

construction, Caltrans must submit to the Service, for its review and approval, a list of the potential suitable locations to which desert tortoises may be translocated; the suitability criteria will include land ownership, habitat type, and amount of disturbance. Longer distance translocations may require testing blood for the presence of disease and additional monitoring to ensure that the desert tortoises do not endanger themselves by spending excessive time above ground. The authorized biologist may exercise his or her discretion regarding the most suitable place to release the desert tortoise within parcels that the Service and Caltrans deem suitable.

3. If Caltrans intends to move desert tortoises during seasons when they are inactive, it must first develop a disposition plan for the Service's review and approval that provides a detailed description of the manner in which these desert tortoises will be moved such that they are not unduly exposed to predators or extreme weather conditions. Such a plan may involve maintaining the animals in captivity where a qualified caretaker can monitor and protect them from predators and weather and keep them from contact with other desert tortoises or other animals.

4. The authorized biologist or qualified biological monitor must monitor each desert tortoise that they move from the project area until the authorized biologist is reasonably certain that the desert tortoise is unlikely to pace along the exclusion fence or spend an excessive amount of time above ground. Authorized biologists may attach radio transmitters to desert tortoises to assist in this task, provided that they have been specifically authorized by the Service to do so for this project.

5. If monitoring indicates that desert tortoises are pacing along the exclusion fence, Caltrans must place shade shelters at 100-foot intervals along the area where the animals are pacing.

REPORTING REQUIREMENTS

Within 60 days of the completion of the proposed action, Caltrans must provide a report to the Service that provides details on the effects of the action on the desert tortoise. Specifically, the report must include information on any instances when desert tortoises were killed, injured, or handled, the circumstances of such incidents, and any actions undertaken to prevent similar mortalities or injuries from re-occurring. In addition, Caltrans must provide an annual report by January 31 each year during the construction period with this information; if animals are moved from harm's way during this period, Caltrans must include that information in these reports.

We also request that Caltrans provide us with the names of any biological monitors who assisted the authorized biologist and an evaluation of the experience they gained on the project; the qualifications form on our website at http://www.fws.gov/carlsbad under "Survey Information," filled out for this project, along with any appropriate narrative would provide an appropriate level of information. This information would provide us with additional reference material in the event these individuals are submitted as potential authorized biologists for future projects.

DISPOSITION OF DEAD OR INJURED DESERT TORTOISES

Within 3 days of locating any dead or injured desert tortoises, you must notify the Palm Springs Fish and Wildlife Office by telephone 760-322-2070 or email at raymond_vizgirdas@fws.gov. The report must include the date, time, and location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

Caltrans must take injured desert tortoises to a qualified veterinarian for treatment. If any injured tortoises survive, Caltrans must contact the Service regarding their final disposition.

Caltrans must take care in handling dead specimens to preserve biological material in the best possible state for later analysis, if such analysis is needed. The Service will provide the appropriate guidance when Caltrans provides notice that a desert tortoise has been killed by project activities.

CONSERVATION RECOMMENDATIONS

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

1. We recommend that Caltrans redirect funding for the installation of permanent exclusion fencing and large culvert, and the removal and re-vegetation of 1.2 miles of the old State Route 58 west of Highway 395 to the implementation of actions within the boundaries of critical habitat that would be more beneficial to the recovery of the desert tortoise. Such actions could include the restoration of disturbed areas, physical closure of unauthorized routes, and signing of conservation lands. We recommend that Caltrans participate in the recovery implementation team for the Western Mojave Recovery Unit to determine the best use of the redirected funds.

2. We recommend that Caltrans involve the Service in the selection of the lands it intends to acquire as mitigation. Our foremost recommendation is that Caltrans acquire lands within the Fremont-Kramer Desert Wildlife Management Area.

RE-INITIATION NOTICE

This concludes formal consultation on the proposed State Route 58 Kramer Junction Expressway Project in San Bernardino and Kern counties. As provided in 50 Code of Federal Regulations 402.16, re-initiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained or is authorized by law and if: (1) the amount or

extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation.

If you have any questions regarding this biological opinion, please contact Ray Vizgirdas of my staff at 208-373-4020 or at raymond_vizgirdas@fws.gov.

Sincerely,

For Scott A. Sobiech
Acting Field Supervisor

APPENDICES

1. Mojave population of the desert tortoise (*Gopherus agassizii*). 5-year review: summary and evaluation. Available on disk or hard copy by request or at: http://ecos.fws.gov/docs/five_year_review/doc3572.DT%205Year%20Review_FINAL.pdf

2. Solar projects for which the U.S. Fish and Wildlife Service has issued biological opinions or incidental take permits.

3. Methodology used to estimate the number of desert tortoises present in the action area.

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Appendix 2. Solar projects for which the U.S. Fish and Wildlife Service has issued biological opinions or incidental take permits.

The following table summarizes information regarding the proposed solar projects that have undergone formal consultation with regard to the desert tortoise. In the Citations column, a single reference indicates that the acres of desert tortoise habitat and number of desert tortoises are estimates from the biological opinion; when the column includes two citations, the first is for the acres of desert tortoise habitat from the biological opinion and the second is for number of desert tortoises that are known to have been translocated or killed during construction.

Project and Recovery Unit	**Acres of Desert Tortoise Habitat**	**Desert Tortoises Estimated[1]**	**Desert Tortoises Observed[2]**	**Citations[3]**
Eastern Mojave				
Ivanpah Solar Electric Generating System	3,582	1,136	173	Service 2011a, 2013d
Stateline Solar	1,685	94	-	Service 2013a
Silver State North – NV	685	14	4	Service 2010a, Cota 2013
Silver State South – NV	2,427[4]	122[4]	-	Service 2013a
Amargosa Farm Road – NV	4,350	4	-	Burroughs 2012
Western Mojave				
Abengoa Harper Lake	Primarily in abandoned agricultural fields	4	-	Service 2011b
Chevron Lucerne Valley	516	10	-	Service 2010b
Northeastern Mojave				
Nevada Solar One - NV	400	[5]	[5]	Burroughs 2012, 2014
Copper Mountain North - NV	1,400	30[5]	30[5]	Burroughs 2012, 2014
Copper Mountain - NV	380	[5]	[5]	Burroughs 2012, 2014
Moapa K Road Solar - NV	2,141	186	157	Service 2012, Burroughs 2013

Colorado				
Genesis	1,774	8	0	Service 2010c, Fraser 2014
Blythe	6,958	30	-	Service 2010d
Desert Sunlight	4,004	56	7	Service 2011c, Fraser 2014
McCoy	4,533	15	-	Service 2013b
Desert Harvest	1,300	5	-	Service 2013c
Rice	1,368	18	1	Service 2011d, Fraser 2014
Total	**37,503**	**1,732**	**372**	

1. The numbers in this column are not necessarily comparable because the methodologies for estimating the numbers of desert tortoises occasionally vary between projects.
2. This column reflects the numbers of desert tortoises observed within project areas. It includes translocated animals and those that were killed by project activities. Project activities may result in the deaths of more desert tortoises than are found.
3. The first citation in this column is for the biological opinion or incidental take permit and is the source of the information for both acreage and the estimate of the number of desert tortoises. The second is for the number of desert tortoises observed during construction of the project; where only one citation is present, construction has not begun or data are unavailable at this time.
4. These numbers include Southern California Edison's Primm Substation and its ancillary facilities.
5. These projects occurred under the Clark County Multi-species Habitat Conservation Plan; the provisions of the habitat conservation plan do not require the removal of desert tortoises. We estimate that all three projects combined will affect fewer than 30 desert tortoises.

The Service completed consultation on the Calico and Palen projects. The applicant for the Calico project, which was located in the Western Mojave Recovery Unit, has abandoned the project and the Bureau of Land Management has withdrawn the request for consultation (Bureau of Land Management 2013). For the Palen project, which is located in the Colorado Desert, BrightSource Energy acquired the project from its former owner and proposed to use power tower technology. The California Energy Commission initially denied the application but is currently evaluating BrightSource Energy's re-application to determine if it can resolve the issues the California Energy Commission raised.

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Appendix 3. Estimating the number of large desert tortoises in the project area.

We used the estimated density derived by range-wide sampling within the Fremont-Kramer Critical Habitat Unit as the density within the project area (Service 2012). Large desert tortoises are those individuals that are greater than 180 millimeters in length.

Average density of large desert tortoises in the Fremont-Kramer Critical habitat Unit
5.72 desert tortoises/square mile

Project area of the proposed State Route 58 Kramer Junction Expressway project
667.7 acres

Acreages within the project area that do not support desert tortoises
Pavement – 143 acres
Area within exclusion fence – 104.9 acres

Suitable and potentially occupied habitat
667.7 – (143 + 104.9) = 419.8 acres = 0.66 square miles

5.72 large desert tortoises/square mile x 0.66 square miles = 3.8 desert tortoises

Reference Cited

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Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Area.

Scientific Name Common Name	**Status**	**Habitat Present/ Absent**	**Rationale**
REPTILES			
Gopherus agassizi desert tortoise	Fed: THR Ca: THR CNPS: None BLM: None	P	Suitable habitat and previous records exist throughout the BSA (CNDDB 2009). Survey for a smaller project detected desert tortoise in the area. Critical Habitat is present within the BSA.
BIRDS			
Athene cunicularia burrowing owl	Fed: None Ca: CSC CNPS: None BLM: SEN	P	Suitable habitat and previous records exist within the BSA (Caltrans 2007, CNDDB 2009).
Falco mexicanus prairie falcon (nesting)	Fed: None Ca: WL CNPS: None BLM: None	A	Presumed absent; No suitable habitat is present for nesting and although records exist within BSA (Caltrans 2007, CNDDB 2009), no documented nesting occurrences are within 10 miles of BSA.
Lanius ludovicianus loggerhead shrike (nesting)	Fed: None Ca: WL CNPS: None BLM: None	P	Suitable habitat and previous records exist within the BSA (Caltrans 2007, CNDDB 2009).
Toxostoma lecontei Le Conte's thrasher	Fed: None Ca: CSC CNPS: None BLM SEN	P	Suitable habitat is present and previous records exist within the BSA (Caltrans 2007, CNDDB 2009).
MAMMALS			
Lasionycteris noctivagans Silver-haired bat	Fed: None Ca: None CNPS: None BLM SEN	A	Its habitat consists of conifer and mixed conifer/hardwood forests. In winter and during seasonal migrations, it may be present at lower elevations, in more xeric habitats; therefore, there is no habitat present within the BSA.
Taxidea taxus American badger	Fed: None Ca: CSC CNPS: None BLM None	P	Suitable habitat and previous records exist within the BSA (Caltrans 2007, CNDDB 2009).
Spermophilus mohavensis Mohave ground squirrel	Fed: None Ca: THR CNPS: None BLM None	P	Suitable habitat and previous records exist throughout the BSA (Leitner 2008, CNDDB 2009).
PLANTS			
Calochortus striatus alkali mariposa lily	Fed: None Ca: None CNPS: 1B.2 BLM: SEN	A	**N**o historical occurrences within the project area, chaparral, chenopod scrub, Mojave desert scrub, meadows, alkaline meadows and ephemeral washes. Surveys conducted during its blooming period (April-June) did not detect

Scientific Name Common Name	**Status**	**Habitat Present/ Absent**	**Rationale**
			the presence of this species within the BSA.
Camissonia boothii ssp. boothii Booth's evening primrose	Fed: None Ca: None CNPS: 2.3 BLM: None	P	Suitable habitat exists within project area. Surveys conducted during its blooming period (April-September) did not detect the presence of this species within the BSA.
Canbya candida pygmy poppy	Fed: None Ca: None CNPS: 4.2 BLM: None	P	Suitable habitat exists with a recorded observation in 1906 at Kramer Junction, which is now developed/disturbed; no other records exist within 10 miles (CNDDB 2009). Surveys conducted during its blooming period (March-June) did not detect the presence of this species within the BSA.
Chorizanthe spinosa Mojave spineflower	Fed: None Ca: None CNPS: 4.2 BLM: None	P	Suitable habitat and multiple records exist within and in the vicinity of the BSA.
Cymopterus deserticola desert cymopterus	Fed: None Ca: None CNPS: 1B.2 BLM: SEN	P	Suitable habitat occurs within the BSA. Several individuals were detected while conducting rare plant surveys.
Delphinium recurvatum recurved larkspur	Fed: None Ca: None CNPS: 1B.2 BLM: None	A	The BSA is outside of the known geographic range of this species. Although the closest known occurrence is located 5 miles west of the BSA (from 1952) this record is considered to be a disjunct occurrence or misidentification (CNDDB 2009). This species is known to occur in the southern Central Valley. Surveys conducted during its blooming period (March-June) did not detect the presence of this species within the BSA.
Eriophyllum mohavense Barstow woolly sunflower	Fed: None Ca: None CNPS: 1B.2 BLM: SEN	P	Species present/ observed on plot establishment within project site; Habitat Present; creosote bush scrub/desert chenopod scrub, Mojavean desert scrub, desert playas.
Eschscholzia minutiflora ssp. twisselmannii red rock poppy	Fed: None Ca: None CNPS: 1B.2 BLM: None	A	No suitable habitat exists [Mojavean desert scrub (volcanic tuff, consolidated volcanic ash)]; and there are no records within 10 miles of BSA (CNDDB 2009). Surveys conducted during its blooming period (March-May) did not detect the presence of this species within the BSA.
Loeflingia squarrosa var. artemisarum sagebrush loeflingia	Fed: None Ca: None CNPS: 1B.2 BLM: SEN	P	Although suitable habitat exists, surveys conducted during its blooming period (April-May) did not detect the presence of this species within the BSA.

Scientific Name Common Name	**Status**	**Habitat Present/ Absent**	**Rationale**
Muilla coronata crowned muilla	Fed: None Ca: None CNPS: 4.2 BLM: None	P	Suitable habitat and multiple records exist within the BSA (CNDDB 2009).
Sarcornia utahensis Utah glasswort	Fed: None Ca: None CNPS: 2.2 BLM: None	P	Suitable habitat exists, however one of only two recorded occurrences in California are at Harper Dry Lake East of BSA (CNDDB 2009). Surveys conducted during its blooming period (March-May) did not detect the presence of this species within the BSA.

Federal Designations (Federal Endangered Species Act, USFWS)**:** **END:** Federal-listed, endangered **THR**: federal-listed, threatened **SOC**: USFWS Specie so Concern	**State Designations**: (California Endangered Species Act, CDFG) END: state-listed, endangered THR: state-listed, threatened, **CSC** California Species of Concern, **WL** Watch List, **FP** fully protect.
California Native Plant Society (CNPS) Designations*:* ****Note: according to CNPS [Skinner and Pavlik 1994], plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code. This interpretation is inconsistent with other definitions. (See text to the right)***	**1A:** Plants presumed extinct in California. **1B:** Plants rare and endangered in CA and throughout their range. **2:** Plants rare, threatened, or endangered in CA but more common elsewhere in their range. **3:** Plants about which need more information; a review list. **4:** Plants of limited distribution; a watch list. **Plants 1B, 2, and 4 extension meanings:** **.1 Seriously endangered in CA (over 80% of occurrences threatened / high degree and immediacy of threat)** **.2 Fairly endangered in California (20-80% occurrences threatened)** **.3 Not very endangered in CA (<20% of occurrences threatened or no current threats known)**

Potential for Occurrence Criteria:
Present: Species was observed on site during a site visit or focused survey.
High: Habitat (including soils and elevation factors) for the species occurs on site and a known occurrence has been recorded within 5 miles of the site.
Moderate: Either habitat (including soils and elevation factors) for the species occurs on site and a known occurrence occurs within the database search, but not within 5 miles of the site; or a known occurrence occurs within 5 miles of the site and marginal or limited amounts of habitat occurs on site.
Low: Limited habitat for the species occurs on site and a known occurrence occurs within the database search, but not within 5 miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found within the database search.
Unlikely: Species was found within the database search, but habitat (including soils and elevation factors) do not exist on site or the known geographic range of the species does not include the survey area.

Source: California Natural Diversity Data Base (CNDDB); California Native Plant Society Electronic Inventory (CNPS 2009); Astley Rancho, Bird Spring, Boron, Boron NE, Boron NW, The Buttes, Fremont Peak, Galileo Hill, Jackrabbit Hill, Kramer Hills, Kramer Junction, Leuhman Ridge, North Edwards, Red Buttes, Rogers Lake North, Rogers Lake South, Saddleback Mountain, Twelve Gauge Lake, and Wild Crossing 7.5 minute USGS quads.

From: Vizgirdas, Raymond [mailto:raymond_vizgirdas@fws.gov]
Sent: Tuesday, June 17, 2014 6:43 AM
To: Myrick, Kyle K@DOT
Subject: Re: Kramer Junction Species List

the species list is current.

On Mon, Jun 16, 2014 at 3:09 PM, Myrick, Kyle K@DOT <kyle.myrick@dot.ca.gov> wrote:

Ray,

We are preparing the Final EIR/EIS and need a current species list, can you confirm that this list is still valid?

Thank you,

Kyle Myrick,

Environmental Planner, Biologist

Biological Studies and Permits Branch

District 8/Riverside and San Bernardino Counties

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