High Desert Corridor ***BA***

Biological Assessment

High Desert Corridor/Los Angeles and San Bernardino Counties
63-mile (101-kilometer) Connection Between
SR-14 and SR-18
District 7 & 8 LA & SB-New Highway
EA 2600U0/EFIS 0712000035
August 2015

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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August 2015

US Department of Transportation
Federal Highway Administration and
California Department of Transportation
Los Angeles County Metropolitan Transportation Authority

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Summary of Findings, Conclusions and Determinations

The environmental summary provides a description of the proposed High Desert Corridor Project. It outlines the project purpose and need, biological database query results, field survey data, project effect analyses, and other supporting data. Potential effects resulting from anticipated project construction activities and proposed environmental mitigation measures are described in this section.

Project Description

The California Department of Transportation (Caltrans), in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes construction of the High Desert Corridor (HDC) as a new transportation facility in the High Desert region of Los Angeles and San Bernardino counties. The proposed 63 mile (mi) (101-kilometer [km]) long west-east facility would provide route continuity and relieve traffic congestion between State Route (SR-) 14 in Los Angeles County and SR-18 and Interstate (I-) 15 in San Bernardino County. The Preferred Alternative has been developed by a multi-agency Project Development Team to provide broad geographic coverage and regional transportation benefits based on community desires and planning goals.

Twenty-nine vegetation communities and six land cover types would be affected by the implementation of the Preferred Alternative. The listed species that may be affected by this project include the federally-listed as threatened desert tortoise (*Gopherus agassizii*), the federally-listed as endangered southwestern willow flycatcher (*Empidonax trailii extimus*) and least Bell's vireo (*Vireo bellii pusillus*), the federally-listed threatened western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and the United States Fish and Wildlife Service (USFWS) designated Critical Habitat for southwestern willow flycatcher. This biological assessment is being prepared to initiate USFWS Section 7 formal consultation for potential impacts to these species.

A maximum of 193 desert tortoises are expected to be affected by the Preferred Alternative. Approximately 507.10 acres (205.22 hectares [ha]) of suitable tortoise habitat would be temporarily affected, while 1,554.83 acres (629.22 ha) would be permanently affected. Permanent impacts to the desert tortoise will be compensated at a 1:1 ratio. Therefore, Caltrans will acquire 1,554.83 acres (629.22 ha) of

compensatory land within a Desert Wildlife Management Area (DWMA) and/or monetary contributions to other recovery efforts in the West Mojave.

Four years of focused listed bird surveys in the Mojave River have not detected any of the federally listed birds within the Preferred Alternative footprint or action area. Approximately 12.74 acres (5.16 ha) of southwestern willow flycatcher Critical Habitat occurs within the Preferred Alternative, of which 4.19 acres (1.7 ha) is of low quality riparian habitat that does not contain the Primary Constituent Elements that are known to support this species. The three separate bridges over the Mojave River will be approximately 80 feet (ft) (24 meters [m]) above the river and are not expected to affect the riparian vegetation within and adjacent to the river.

Avoidance measures including, but not limited to pre-construction surveys, installation of tortoise exclusion fencing and identification of Environmentally Sensitive Areas (ESAs), worker education programs, seasonal work-restrictions, a waste and trash program, use of biological monitors during construction, and habitat compensation would be implemented to minimize effects to the desert tortoise, southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and the designated Critical Habitat for the southwestern willow flycatcher.

The following table shows the determination of effects summary for listed species potentially found within or near the biological study area.

Scientific Name	Common Name	Listing	Effect Determination
Gopherus agassizii	Desert tortoise	FT	May affect, not likely to adversely affect
Empidonax traillii extimus	Southwestern willow flycatcher	FE CH	May affect, not likely to adversely affect
Vireo bellii pusillus	Least Bell's vireo	FE	May affect, not likely to adversely affect
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FT	No effect

FT (Federally Threatened); FE (Federally Endangered)

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List of Abbreviated Terms

APLIC	Avian Power Line Interaction Committee
ATC	Automatic Train Control
BA	Biological Assessment
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
BSA	Biological Study Area
Cal-IPC	California Exotic Plant Council
Caltrans	California Department of Transportation
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
DEMU	Diesel Electric Multiple Unit Train
DWMA	Desert Wildlife Management Area
ECORP	ECORP Consulting, Inc.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMU	Electric Multiple Unit Train
EO	Executive Order
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
FRA	Federal Railroad Administration
FRP	Federal Recovery Permit
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HDC	High Desert Corridor
HMMP	Habitat Mitigation Monitoring Plan

HSR	High-Speed Rail
HST	High-Speed Train
HUC	Hydrologic Unit Code
I-	Interstate
ICF	ICF International
IPaC	Information, Planning, and Consultation System
ITP	Incidental Take Permit
LAWA	Los Angeles World Airport
LBVI	Least Bell's Vireo
Metro	Los Angeles County Metropolitan Transportation Authority
Monitor	Desert Tortoise Monitor
MSL	Mean Sea Level
NES	Natural Environmental Study
OHV	Off-Highway Vehicle
PCEs	Primary Constituent Elements
PTC	Positive Train Control
ROW	Right-of-Way
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act
SANBAG	San Bernardino Associated Governments
SCP	Scientific Collecting Permit
SR	State Route
SWFL	Southwestern willow flycatcher
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
YBCU	Western yellow-billed cuckoo

Chapter 1. Introduction

The purpose of this biological assessment (BA) is to provide technical information and to review the proposed project in sufficient detail to determine to what extent the proposed project may affect threatened, endangered, or proposed species. The BA is prepared in accordance with legal requirements found in Section 7 (a)(2) of the Endangered Species Act (FESA) (16 U.S. C 1536(c)) and with Federal Highway Administration and California Department of Transportation (Caltrans) regulation, policy and guidance.

1.1. Project History

A new cross-desert east/west route located parallel to and between Highway 58 and SR-138 has been under consideration and planning for many years. Numerous alignments have been considered, and most recently, various elements and modes of travel have been considered and included. The reader will note in some technical studies additional areas have been included as part of the study area and not in others. This was due to the ever-changing proposed alignments and variations under consideration. This document presents results of studies from all proposed alternatives and variations (Biological Study Area [BSA]) with analysis of the most preferred alignment.

The purpose of the Preferred Alternative is to improve east-west mobility through the High Desert region of southern California by addressing present and future travel demand and mobility needs within the Antelope and Victor valleys. The Preferred Alternative is intended to achieve the following objectives:

- Increase capacity of west-east transportation facilities to accommodate existing and future transportation demand;
- Improve travel safety and reliability within the High Desert region;
- Improve the regional goods movement network;
- Provide improved access and connectivity to regional transportation facilities, including airports and existing and future passenger rail systems, which include the proposed California high-speed rail (HSR) system and the proposed XpressWest (formerly DesertXpress) HSR system; and

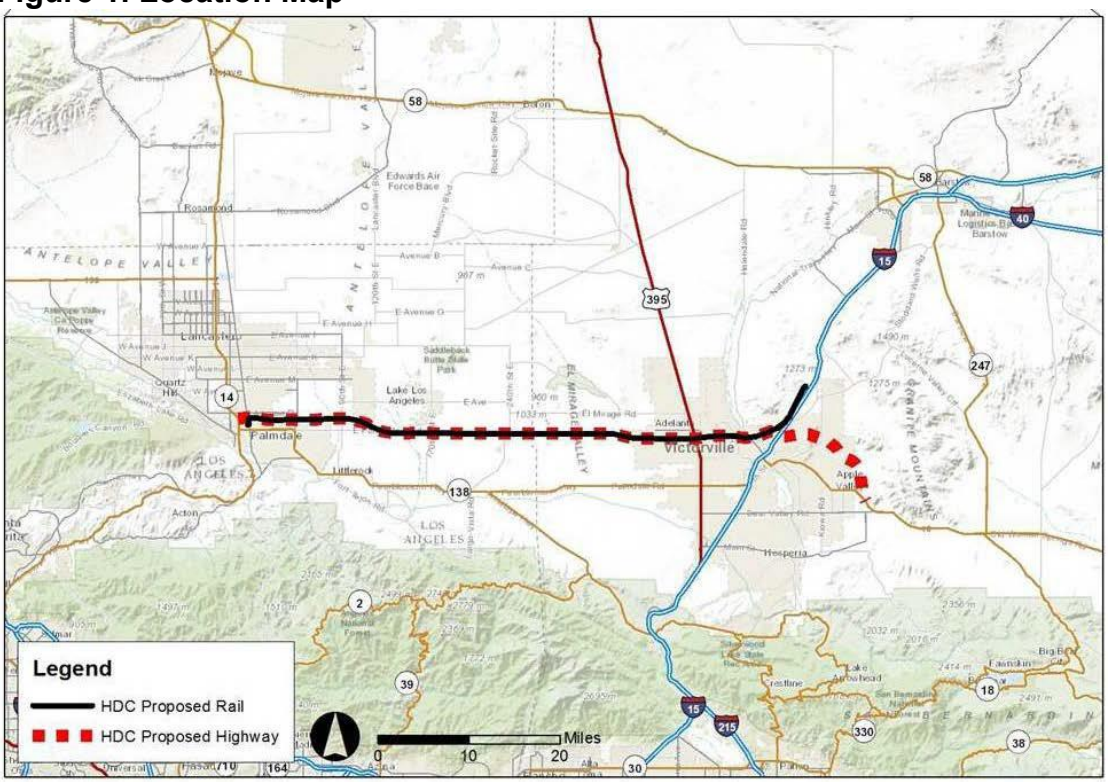
The specific needs to be addressed by the proposed action include:

- Recent and future planned population growth within the High Desert region;
- Limited and unreliable west-east connectivity within the High Desert region; and
- Regional demands for goods movement to support the growth of the regional economy.

1.2. Project Description

Caltrans, in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes construction of the High Desert Corridor (HDC) as a new transportation facility in the High Desert region of Los Angeles and San Bernardino counties. The proposed 63-mile (mi) (101-kilometer [km]) long west-east facility (Figure 1) would provide route continuity and relieve traffic congestion between State Route (SR-) 14 in Los Angeles County and SR-18 and Interstate (I-) 15 in San Bernardino County. The HDC was identified in SAFETEA-LU (the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, signed into law on August 10, 2005) and is officially designated as a high-priority corridor on the National Highway System.

Figure 1. Location Map



The HDC Project would entail construction of a new multimodal link between SR-18 in San Bernardino County and SR-14 in Los Angeles County. It would connect some of the fastest growing residential, commercial, and industrial areas in southern California, including Palmdale, Lancaster, Adelanto, Victorville, Hesperia, and Apple Valley. As currently planned, the project would be implemented in three segments: the Antelope Valley segment, the High Desert segment, and the Victor Valley segment.

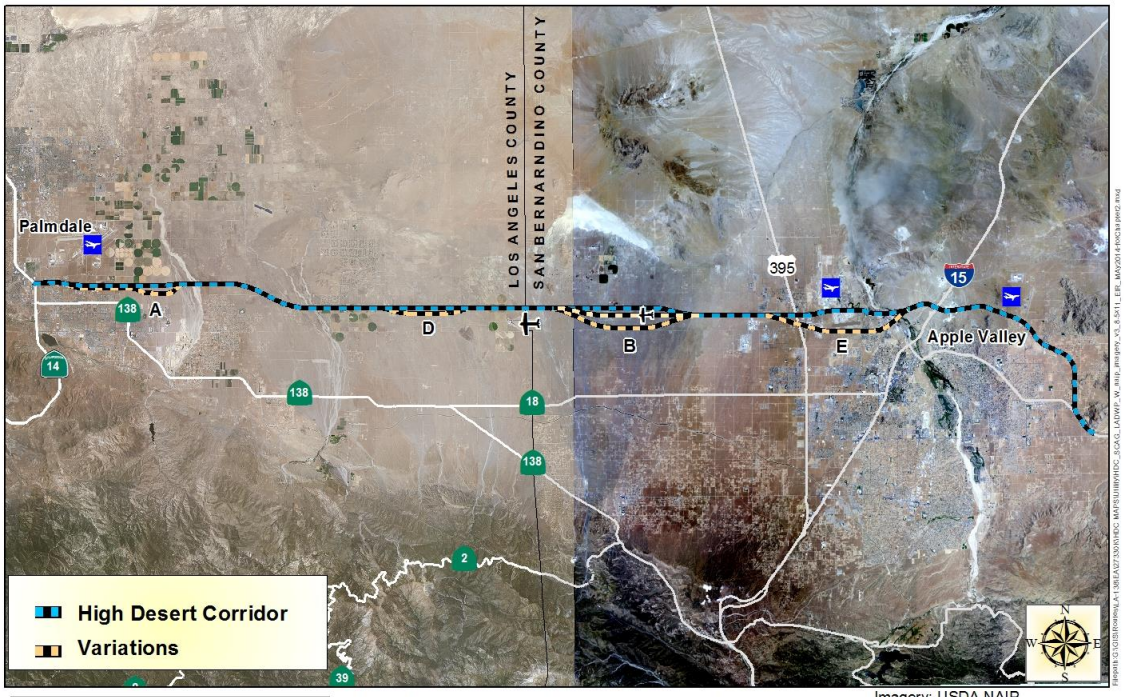
There were several alternatives and variations proposed and analyzed in the draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), as shown in Figure 2 (Caltrans 2014). The Preferred Alternative is what is described and analyzed in this BA, as shown in Figure 3. Some areas of this report refer to the proposed project or BSA. These areas refer to all of the proposed alternatives and variations at the time the surveys were being conducted, not necessarily the Preferred Alternative.

The 10-mi (16-km)-long Antelope Valley segment would start from a new freeway-to freeway SR-14/HDC interchange and extend east parallel with and near Avenue P-8 to 100th Street East in Palmdale. The right-of-way (ROW) to be acquired for this segment would accommodate ultimate expansion to four lanes in each direction plus a high-speed passenger rail line.

The 26-mi (42 km)-long High Desert segment would extend from Palmdale to Adelanto, running in a west-east direction parallel and south of Palmdale Boulevard. The freeway would be three lanes in each direction, with ROW acquired to support an ultimate facility of four lanes in each direction plus a high-speed passenger rail line.

The 27-mi (43-km) long Victor Valley segment would generally follow the alignment of Air Expressway Boulevard, between Caughlin Road in Adelanto and Dale Evans Parkway east of I-15 in Apple Valley, and continuing southeasterly as an expressway to join SR-18 just east of Joshua Street. The freeway portion of this segment between Caughlin Road and I-15 would be six lanes wide, continuing to Dale Evans Parkway as a four- or six-lane freeway. ROW would be acquired to support a future freeway of four lanes in each direction plus a high-speed passenger rail line.

Figure 2. Alternative Alignments Analyzed in the Draft EIR/EIS



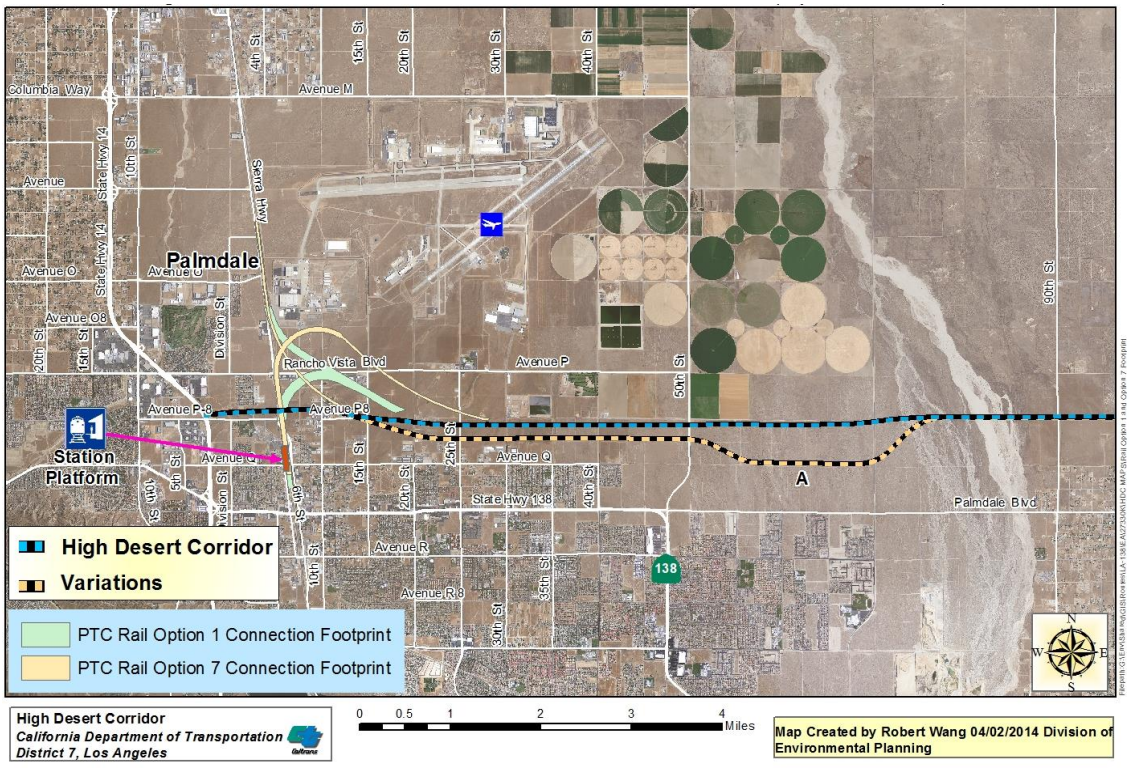
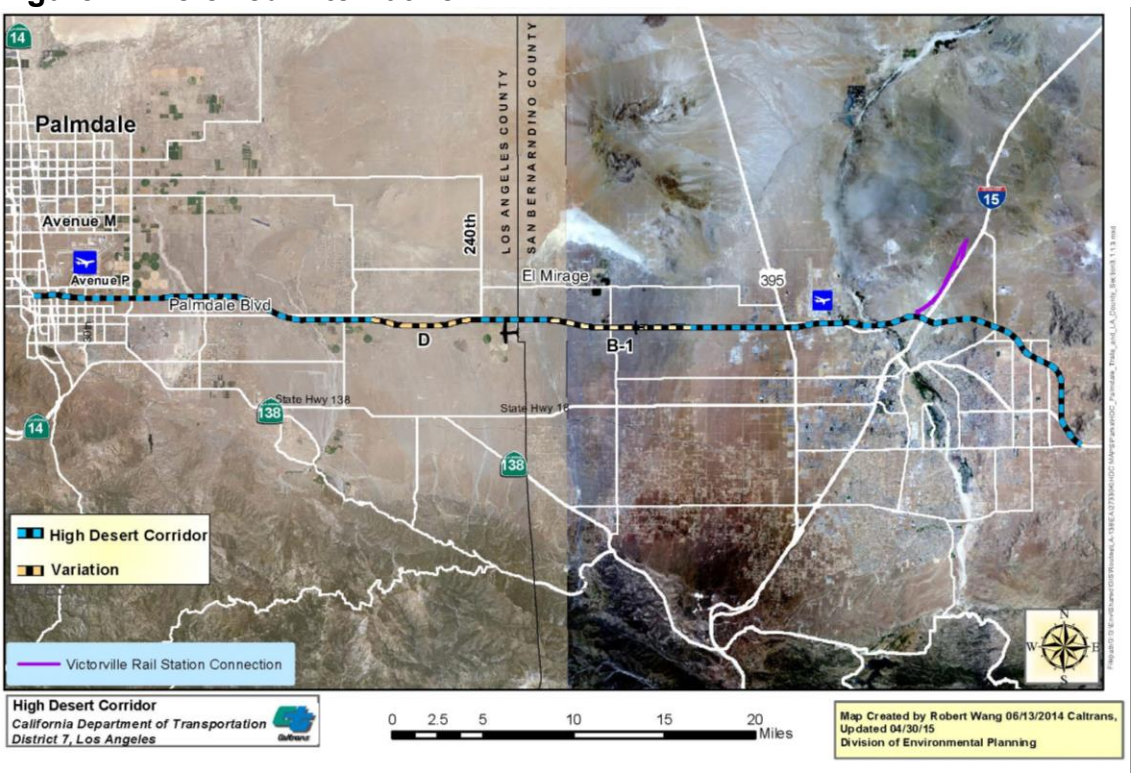


Figure 2. Preferred Alternative



Recognizing the HDC as a multipurpose corridor with potential to connect to the expanding regional rail system, the Preferred Alternative would include a center-median HSR feeder service between Palmdale and Victorville. This feeder service would connect the XpressWest System (a planned HSR service from Victorville to Las Vegas) with Metrolink at the Palmdale Transportation Center and a planned future California HSR stop at Palmdale.

The Preferred Alternative would include Class I bicycle paths and/or Class III bicycle routes, extending approximately 39 mi (63 km) along the corridor from US 395 in Adelanto to the Palmdale Transportation Center in Palmdale.

Interrelated and interdependent projects include **t**wo proposed HSR projects: the California HSR and XpressWest. Metro, Caltrans, and San Bernardino Associated Governments (SANBAG) have agreed to study an HSR feeder service as part of the HDC that would potentially link these two major rail systems in Palmdale and Victorville, respectively, and would also connect with Metrolink in Palmdale. This would create the potential to connect the San Francisco, Central Valley, Los Angeles, Las Vegas, and San Diego regions through an HSR system.

1.2.1. Construction Sequence

Project construction would commence after acquisition by Caltrans of all ROW. The construction sequence would begin with site clearing of all improvements, which includes demolition of buildings and structures, followed by utility relocation, facility construction, and landscaping/finishing work. Construction would be in phases to minimize impacts to local residents and businesses. The timing of construction in certain areas, such as in the vicinity of active bird nests, would be scheduled in accordance with the seasonal restrictions established by the regulatory agencies, as described below under Avoidance and Minimization Measures.

Step 1: Mobilization and Staging. The first step in the construction process involves contractor preparation of the site for construction activities. This would occur after all required preconstruction surveys are conducted and permits are obtained.

Step 2: Site Clearing and Demolition. Under this step, the roadway/railway alignment would be cleared of conflicting structures and vegetation to prepare the site for construction. Asphalt and concrete from roadways, parking lots, and walkways would be removed and disposed.

Step 3: Utility Relocation. Utilities that would interfere with construction would be removed and relocated, or encased for continuing service, by the utility provider or their contractors. Utilities involved include electric and gas power, water and wastewater distribution, stormwater, cable, and other providers. Each utility would be restored or replaced in accordance with design plans and within proximity to its former location to allow access in conjunction with the new highway/railway facility. Not all utility relocations would occur at the beginning of the project; some could be done at a later stage of construction, as appropriate.

Step 4: Construct Guideway and Highway. Roadway/railway construction activities would involve site excavation, grading, fill, and pavement installation. Bridges, overcrossings, undercrossings, soundwalls, and retaining walls along the Preferred Alternative would be built in parallel with roadway/rail guideway construction. Construction of the Preferred Alternative would require a substantial amount of grading and excavation. The freeway/expressway/tollway component of the Preferred Alternative would require approximately 9 ft (3 m) of fill above grade upon which to build the highway. The HSR component of the project would require approximately 15 ft (5 m) of fill above grade. Given the amount of soil needed to construct the new infrastructure, the import of fill material from offsite locations would be required in

addition to fill material produced during earth-moving activities within the ROW. While grading and fill operations are being conducted to establish the roadbed for both the highway and railroad, simultaneous construction of aerial structures, grade separations, highway realignments, and surface street modifications would occur.

The bridges spanning the Mojave River would be constructed as three separate spans, each approximately 260 ft (79 m) long and 80 ft (24 m) above the river: one for eastbound traffic, one for HSR tracks (both eastbound and westbound) and one for westbound traffic. Each roadway will be approximately 56 ft (17 m) wide and 34 ft (10 m) from the HSR in the middle, which will be approximately 49 ft (15 m) wide. The bridge pylons and abutments will be built using techniques to avoid permanent or temporary impacts to the jurisdictional features of the river. Construction would be from the edges of the river outside of the jurisdictional limits working toward the middle. Should blasting be needed to remove a large boulder, protective restraints/devices will be installed to prevent rocks from falling into the river and/or crushing riparian vegetation. Appendix A illustrates with several cross-sections how the bridge will span the Mojave River.

There would be seven viaducts (elevated roadways) over the washes throughout the Preferred Alternative. The viaducts would be approximately 10 to 12 ft (3 to 4 m) above ground surface and would vary in length. Overall, there are approximately 5.34 mi (8.59 km) of viaducts in the Preferred Alternative. Approximately 1.64 mi (2.64 km) not included in that amount is between the Mojave River and Victorville Landfill where the highway will be elevated above the ground but the HSR will be approximately 30 ft below grade. The pylons supporting the viaducts are expected to be placed outside of jurisdictional limits. Fencing will be used to guide wildlife into and underneath the viaducts and along the ROW to prevent wildlife from trying to cross the highway. Appendix B shows the project impact areas for the entire Preferred Alternative, including the areas of viaducts and the Mojave River bridge.

Approximately 132 culverts will be installed in order to allow continued wildlife movement during the operation phase of the Preferred Alternative (Caltrans 2014). The culverts range in size from 7 ft by 3ft (2 m by 1 m) to 12 ft by 8 ft (2 m by 4 m) and vary on whether or not they have soft bottoms. In addition to the culverts, a 90-foot wide overpass over the HSR along Quarry Road will be a part of the Preferred Alternative that will serve both as a wildlife crossing as well as a vehicular crossing.

Step 5: Install Tollway and Railroad Infrastructure. For tollway, the contractor would install the electronic toll collection system, violation enforcement system, variable message and other signage, barriers, lane striping, and enforcement areas. Traffic signals on surface streets at ramp termini would also be installed.

The railroad component will use electric infrastructure technology. This technology will require intricate electrical infrastructure characterized by electrification. The primary service from the local utility network would be via either overhead or underground transmission lines. Electrical substation sites would typically be finished with fencing and landscaping along their periphery.

Step 6: Manufacture and Commission Rolling Stock. Train technologies for the HSR build alternatives will use electric infrastructure technology. The California High-Speed Train (HST) Project is going forward using an electric multiple unit train (EMU) system. For XpressWest, an electric multiple unit train (DEMU) is being evaluated in addition to the EMU. The rolling stock would be manufactured at a remote factory and transported to the project site for assembly and commissioning. A computer-based automatic train control (ATC) system would be designed and installed to control the trains. The ATC system would provide for the Federal Railroad Administration (FRA)-mandated positive train control (PTC) safety requirements, including safe separation of trains, over-speed prevention, and work zone protection.
Step 7: Pre-revenue Testing. During the pre-revenue service period, the system (e.g., train control system, overhead contact system, communication system) would be tested, accepted, and commissioned. Implementation of the testing, acceptance, and commissioning activities would be conducted on a mainline test track of several miles in length. This process would take several months.

Step 8: Landscaping and Finish Work. Work under this step would include installation of irrigation systems and plant materials, street lighting, lane striping, signage installation, closing of detours, removal of temporary structures, and site cleanup. Permanent best management practices (BMPs) would be installed and maintained until the Notice of Termination is issued in compliance with the General Construction Stormwater Permit.

Routine maintenance would occur as needed during operation of the Preferred Alternative. Typical post-construction maintenance activities would include routine highway drainage and culvert cleaning to prevent flooding, landscape vegetation trimming, fence repairs, and trash, debris, and roadkill removal.

1.2.2. Project Footprint

The proposed project footprint includes a ROW width to accommodate four to six lanes of new freeway in each direction, high-speed passenger rail line, a bicycle path, water detention basins, seven viaducts, three separate bridges over the Mojave River, and the utilities to support the infrastructure of the new highway and HSR. The overall footprint of the Preferred Alternative is approximately 4,718.96 acres (1,909.7 ha) (Figure 2). Appendix B shows the project impact areas for the entire Preferred Alternative and Appendix A illustrates how the bridge will span the Mojave River.

1.2.2.1. Temporary and Permanent Impact Area

The area of temporary impact includes approximately 857.58 acres (347.05 ha). The area of permanent impact includes approximately 3,860.23 acres (1,562.18 ha). Approximately 1.15 acres (0.47 ha) of the Preferred Alternative area will not have an impact. Appendix A illustrates how the bridge will span the Mojave River and not have an impact.

1.2.3. Avoidance and Minimization Measures

The following measures have been developed to reduce and/or eliminate potential project effects to federally listed species that are known to occur or have potential to occur and designated Critical Habitat located within the Preferred Alternative. The species addressed in this document include desert tortoise (*Gopherus agassizii*), least Bell's vireo (*Vireo bellii pusillus*; LBVI), southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL), and western yellow-billed cuckoo (*Coccyzus americanus*; YBCU). Designated SWFL Critical Habitat occurs in a portion of the Preferred Alternative. The only measures discussed in this BA will be those that avoid or minimize effects to desert tortoise, LBVI, SWFL, and SWFL designated Critical Habitat. The project is not expected to have effects on YBCU. The Final EIR and other permitting documents will contain additional avoidance and minimization measures not pertaining to resources addressed in this BA.

1.2.3.1. Desert Tortoise

- At least 30 days prior to any construction activity, Caltrans will submit the credentials of personnel to be designated as Authorized Biologists to the United States Fish and Wildlife Service (USFWS).
- The Authorized Biologist will be responsible for conducting clearance surveys, ensuring proper implementation of protective measures, making certain that project related impacts are mitigated, reporting all incidents of non-compliance, and halting project activities, if necessary, all in accordance with the Biological

Opinion (BO). Authorized Biologists may be required to handle and temporarily hold desert tortoises, move desert tortoises from harm's way when they enter project sites, relocate desert tortoises prior to implementation of project, excavate burrows, construct artificial burrows, and unearth and relocate desert tortoise eggs. Authorized Biologists approve and train desert tortoise monitors (Monitors). Monitors are responsible for monitoring project activities within desert tortoise habitat, ensuring proper implementation of protective measures, and recording and reporting desert tortoise observations. They report incidents of non-compliance to the Authorized Biologist. If necessary, monitors move desert tortoises from harm's way and place the animal in areas selected by the Authorized Biologist, until the Authorized Biologist assumes care of the animal. Monitors assist with clearance surveys under the direct supervision of the Authorized Biologist. The Monitor will have the authority to stop all activities if avoidance and minimization measures are found to be lacking, or insufficient to protect the species from harm.

- Desert tortoise-proof fences will be installed around all work areas in desert tortoise habitat where the probability of injuring or killing a desert tortoise, without such fencing in place, is considered to be reasonably foreseeable. Biological monitors will conduct daily clearance surveys in the areas where fencing is being installed and monitor the installation. The fencing will be required to be maintained by the contractor, and will be inspected twice per week by a Monitor to ensure its integrity. Desert tortoise fencing will be installed according to USFWS 2009 fencing standards around all areas that will be used for construction, including staging and storage areas, and in all areas of suitable habitat determined by the Authorized Biologist between 240th Street East and the eastern extent of the Project. All areas outside the tortoise fencing will be considered an Environmentally Sensitive Area (ESA) during construction, as tortoise habitat is adjacent to project boundaries. After exclusion fencing is installed, the Authorized Biologist(s) and Monitor(s) will conduct 100% clearance surveys. No desert tortoise will be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 degrees Fahrenheit (°F) (35° Celsius [C]). No desert tortoise will be captured if the ambient air temperature is anticipated to exceed 95°F before handling or processing can be completed. If the ambient air temperature exceeds 95°F during handling or processing, desert tortoises will be kept shaded in an environment that does not exceed 95°F, and not released until ambient air temperature declines to below 95°F.

- If a desert tortoise is found within the Preferred Alternative after the exclusion fencing has been installed or during construction, it will be relocated by the Authorized Biologist to the nearest possible location that is agreeable with USFWS and the California Department of Fish and Wildlife (CDFW). The appropriate permits and permissions will be in place prior to relocation.
- Caltrans will incorporate the following measure or equivalent into the Contractor Special Provisions section of the bid documents: Contractors are required to comply with the Endangered Species Act for project-related activities (stockpile sites, borrow locations, haul roads, access routes, contractor yards, etc.) that are outside of the approved footprint of the Preferred Alternative. Contractor must show they contacted the USFWS and have authorization or demonstrate they are not affecting listed species or their habitat.
- Desert tortoise burrows within the work areas that cannot be avoided will be excavated by hand either by or under the direct supervision of the Authorized Biologist. Burrow excavation will follow the most up-to-date guidelines that are acceptable to USFWS.
- Desert Tortoise Awareness Training will be given by either the Authorized Biologist or Monitor prior to construction for all personnel working in desert tortoise habitat. These briefings will be conducted either in person or via a video presentation of the briefing. At a minimum, the briefings will include discussions of:
  - General provisions of the FESA;
  - Necessity for adhering to the provisions of the FESA;
  - Potential for civil and criminal penalties associated with violating the provisions of the FESA;
  - Specific requirements for complying with the provisions of the FESA as they relate to each project;
  - The exact boundaries of the site within which the project activities may be accomplished;
  - Procedures to be accomplished by project personnel should any problem arise with respect to complying with environmental requirements;
  - General behavior and ecology of the desert tortoise and its sensitivity to human activities;
  - All personnel will be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event; and

  - Specific procedures to be followed to move a desert tortoise that may be in imminent danger (on a heavily traveled road, on an active project site, or under a vehicle).
- An Authorized Biologist and/or Monitor will be present during the removal of desert tortoise habitat east of 240th Street East. As long as the Authorized Biologist is within the vicinity of the habitat removal, a Monitor can be used.
- If a desert tortoise, whether dead, injured, or entrapped, is found in the project area after the 100% clearance survey is completed, all work within the area will halt, and it must be reported to the Authorized Biologist immediately, who will then follow the measures in the BO. Given the tortoise was found after clearance surveys were conducted, a protective measure failed. No work will be conducted until appropriate corrective measures have been completed. The disposition of any carcasses or recovery of dead animals will be coordinated through USFWS.
- If a desert tortoise is found in a construction area where fencing was deemed unnecessary, work will cease until the animal leaves on its own. The area, as determined by the Authorized Biologist, will become an ESA. The Authorized Biologist will then determine extent of additional surveys and fencing as needed.
- Signs will be placed, as needed, to indicate the need to reduce speeds on roadways and that activities are to be strictly confined to the project footprint.
- Project personnel will ensure water used for construction does not create standing water that could attract tortoises or unwanted predators such as common ravens (*Corvus corax*) and coyotes (*Canis latrans*) to the site. When not in use, all water sources such as hydrants or open water trucks will be caged or netted to prevent use by ravens and other nuisance species.
- Standard BMPs will be implemented by Caltrans and the contractor with regard to dust, erosion, and sediment control.
- No firearms or pets will be allowed at the work area. Firearms carried by authorized security and law enforcement personnel are exempt from this measure.
- Culverts will be designed with soft bottoms and installed in such a way for tortoises to enter and exit safely from each end.
- All construction related vehicles and equipment, including private automobiles parked outside of areas that have tortoise exclusion fencing, must be inspected by drivers prior to moving them to ensure that desert tortoises have not moved underneath the parked vehicle. Inspection flags will be placed on heavy equipment at the end of the day to remind drivers to look under them prior to startup.

- All trash and debris will be promptly disposed of within wildlife-proof containers that common ravens cannot access. Trash and debris within these containers will be regularly removed from the construction area to reduce the attractiveness of the area to common ravens and other desert tortoise predators.
- To minimize perching opportunities for ravens and raptors near habitat supporting desert tortoise, structures incorporating a design to discourage raven and raptor perching should be selected including Avian Power Line Interaction Committee (APLIC) guidelines for avoiding unintended injuries to birds.
- Permanent desert tortoise fencing, or general wildlife exclusion fencing that meets the standards to exclude tortoise, will be installed parallel to the outside edge of the operational areas of the project, not necessarily the ROW edge, in areas of suitable habitat where bridges and viaducts (which allow passage underneath) are not located. This fencing will be a part of standard highway inspections and maintained in perpetuity.
- In compliance with Executive Order (EO) 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur to avoid impacts to adjacent tortoise habitat.
- Wildlife-proof trash containers will be installed and regularly emptied at all rest stops or train stations associated with the Preferred Alternative.

1.2.3.2. LEAST BELL'S VIREO, SOUTHWESTERN WILLOW FLYCATCHER, AND SOUTHWESTERN WILLOW FLYCATCHER CRITICAL HABITAT

- Areas outside of the proposed construction zone will be designated as an ESA and no work will be conducted within these areas to avoid the potential impacts to SWFL Critical Habitat. These areas will be fenced off clearly by use of obvious exclusion fencing prior to the onset of ground disturbance. The fencing will remain in place while the project is being constructed. An approved avian biologist will oversee the placement and design of this fencing. This measure applies to work activities in or around riparian vegetation within the Preferred Alternative.
- Standard BMPs will be implemented by Caltrans to protect ecologically important resources in the construction zone. General stormwater BMPs and conservation measures would be implemented during project construction to avoid any potential for downstream sedimentation effects on SWFL Critical Habitat. The BMPs of the Stormwater Pollution and Prevention Plan (SWPPP) will be designed to avoid potential indirect impacts to SWFL Critical Habitat downstream.

- Noise effects will not exceed 60 decibels at 1,000 feet (304 m) averaged over one hour (dBA Leq) from the boundaries of the Preferred Alternative. Prior to the initiation of construction activities, all project personnel will be educated regarding the LBVI, SWFL, and SWFL Critical Habitat within and adjacent to the project area. Construction personnel are to remain outside of the Critical Habitat, unless within the approved work area.
- The lighting on the new bridge over the Mojave River, the viaduct west of Gas Line Road, and along constructed roadways will consist of directional lighting that focuses the light on the roadway or the HSR.
- During rock blasting activities for bridge construction over the Mojave River, rockfall protection measures will be implemented to prevent any rock or debris resulting from the blasting to roll into the Mojave River to avoid impacts to water flow downstream. This measure applies to project activities in the Mojave River only.
- In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction to avoid impacts to riparian vegetation downstream. Eradication strategies would be employed should an invasion occur.

1.2.4. Construction Timing

A construction schedule of about 36 to 48 months is expected to complete each of the Preferred Alternative's projected eight phases. However, because the Preferred Alternative would be incrementally built over many years as funding becomes available, the construction schedule is currently expected to extend from 2016 to 2040.

1.3. Summary of Agency Coordination to Date

Numerous early coordination meetings occurred between Caltrans and resource agencies including USFWS, CDFW, and U.S. Army Corps of Engineers (USACE). In general, the purpose of these meetings was to provide agency personnel with the latest project design information, proposed approaches to survey protocol, impact analysis, and to evaluate potential mitigation measure potential. Input from the agencies was helpful with regard to all of these topics, especially design criteria, survey protocol, and impact analysis.

Twice in March 2013 Caltrans personnel (Paul Caron and Jeff Johnson) met with USFWS (Ray Bransfield) and CDFW (Jamie Jackson) in the USFWS Ventura Office to specifically discuss survey needs, impact analysis, and potential mitigation

measures for desert tortoise and SWFL. Mr. Johnson provided a map to Mr. Bransfield of the studies being conducted with preliminary results, the project map, their approach to surveys, and additional surveys that were added because of alignment changes. On July 17, 2015, Caltrans biologists (Mr. Johnson and Andrew Johnstone) and ECORP Consulting, Inc. (ECORP) biologists (Don Mitchell and Brad Haley) had a conference call with Mr. Bransfield to discuss effects determination, potential mitigation measures, desert tortoise density calculations, and results of studies to date. Mr. Bransfield was notified that Caltrans plans to have a BA and BO issued before the Final Environmental Document is submitted, while the CDFW Incidental Take Permit (ITP) and 1600 permit will not be requested until after the Final Environmental Document is submitted. Appendix C contains detailed notes on what was discussed and determined during this meeting.

1.4. Document Preparation History

The following personnel acted as preparers and assistants to the creation of this document. Additional assistance and guidance was also provided by Ray Bransfield from USFWS through coordination and informal contacts.

California Department of Transportation

Jeff Johnson and Andrew Johnstone

Supporting Staff and Other Personnel

Donald Mitchell, Anne Surdzial, Scott Taylor, Brad Haley, Kristen (Mobraaten) Wasz, Benjamin Smith, Wendy Turner, Amy Trost, Kevin Cornell, Jerry Aguirre, Marc Guidry, Jeff Swager, Emily Graf, Alfredo Aguirre, and Keith Kwan.

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Chapter 2. Study Methods

Standard methods were used to evaluate the potential for impacts to environmental resources depending on the type of resource. Abundant information is available regarding general characteristics of the ecologically significant Mojave Desert area. Research was conducted to assess regional species and habitats that may be present using databases including the California Natural Diversity Database (CNDDB). Field surveys were conducted to ground truth the data available and detailed, site-specific information was collected. The following sections describe the BSA in a regional context based on publically available information and field surveys conducted. Potential impacts to biological resources were analyzed based on the proposed design of the Preferred Alternative and the results of the field surveys. The following sections provide an overview of the characteristics found throughout the BSA, detailed information on ecological resources present in the Preferred Alternative, and potential impacts to those biological resources.

2.1. Listed and Proposed Species Potentially in the Biological Study Area

A federal special-status species list, dated July 16, 2015, was generated by ECORP on USFWS's Information, Planning and Consultation System (IPaC) website (USFWS 2015a). Appendix D contains the query results. Caltrans has generated several of these species lists since the inception of the project; however, the most recent was from 2014 and was no longer considered valid. The federal list is derived from a regional species database that determines species occurrences on a spatially non-specific basis. Table 1 provides a summary of the USFWS list and rationale for their evaluation or exclusion in this BA.

Table 1: Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Area.

Common Name	Scientific Name	Federal Status	General Habitat Description	Habitat Present/ Absent	Rationale
PLANTS					
Cushenbury oxytheca	*Oxytheca parishii var. goodmaniana*	FE	Pinyon-juniper woodland at 4460 to 8130 feet elevation	HP	Suitable habitat is present within the BSA. Species not observed during focused surveys.
INVERTEBRATES					
Vernal Pool fairy shrimp	*Branchinecta lynchi*	FT	Restricted to vernal pools, and on occasion artificial pools created by roadside ditches.	A	Suitable habitat is not present within the BSA.
Riverside fairy shrimp	*Streptocephalus woottoni*	FE	Restricted to deep vernal pools and ponds with chemistry and temperature conditions specific to nonmarine and nonriverine waters. Vernal pool habitat lies within annual grasslands, which may be interspersed with chaparral or coastal sage scrub vegetation.	A	Suitable habitat is not present within the BSA.
FISHES					
Mohave tui chub	*Gila bicolor ssp. Mohavensis*	FE	Historically occurred within the Mojave River, associated with deep pools and sloughs of the river. This species does not currently occupy the Mojave river, but a few perennial stretches of the river remain that could support the species. Current populations are located in man-made or man-supported habitats.	A	Suitable habitat is not present within the BSA.
AMPHIBIANS					
Arroyo toad	*Anaxyrus californicus*	FE	Washes and arroyos with open water; sand or gravel beds; for breeding, pools with sparse overstory vegetation. Coastal and a few desert streams from Santa Barbara County to Baja California.	A	Suitable habitat is not present within the BSA.

Common Name	Scientific Name	Federal Status	General Habitat Description	Habitat Present/ Absent	Rationale
California red-legged frog	*Rana draytoniil*	FT	Occurs in or near quiet permanent water of streams, marshes, ponds, and lakes. Individuals may range far from water along riparian corridors and in damp thickets and forests.	A	Suitable habitat is not present within the BSA.
Mountain yellow-legged frog	*Rana muscosa*	FE	Habitat includes sunny riverbanks, meadow streams, isolated pools, and lake borders in the Sierra Nevada, rocky stream courses in southern California. Prefers sloping banks with rocks or vegetation to the water's edge. USFWS concluded this species requires water source found between 1210 -7540 feet elevation that are permanent	A	Suitable habitat is not present within the BSA.
REPTILES					
Desert tortoise	*Gopherus agassizii*	FT	Historically found throughout the Mojave and Sonoran Deserts into Arizona, Nevada, and Utah. Occurs throughout the Mojave Desert in scattered populations. Found in creosote bush scrub, saltbush scrub, thornscrub (in Mexico), and Joshua tree woodland. Found in the open desert as well as in oases, riverbanks, washes, dunes, and occasionally rocky slopes.	P	Suitable habitat is present within the BSA. Species observed during focused surveys.
BIRDS					
Golden eagle	*Aquila chrysaetos*	FP	Wide range of flat or mountainous, largely open habitats, often above the tree line from seal level to 13100 feet elevation.	HP	Suitable foraging habitat is present within the BSA. Species not observed during site visits.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT	Riparian obligate species primarily with large, dense willow-cottonwood riparian forests, but other species can occur in alder and box elder dominated riparian habitats	HP	No suitable breeding habitat within BSA. Limited suitable migratory habitat present within BSA. Species not observed during site visits.

Common Name	Scientific Name	Federal Status	General Habitat Description	Habitat Present/ Absent	Rationale
Southwestern willow flycatcher	*Empidonax trailii extimus*	FE	Breeds and nests in riparian forest with dense understory. Rare and local in southern California.	P CH	Suitable habitat present within the BSA. Species observed during focused surveys.
California condor	*Gymnogyps californianus*	FE	Range includes rocky, open-country scrubland, coniferous forest and oak savanna. Cliffs, rocky outcrops or large trees are used as nest sites.	A	Suitable habitat is not present within the BSA.
Least Bell's vireo	*Vireo bellii pusillus*	FE	Riparian forests and willow thickets. Breeds and nests only in southwestern California; winters in Baja California.	P	Suitable habitat is present within the BSA. Species observed during focused surveys.
MAMMALS					
San Bernardino kangaroo rat	*Dipodomys merriami parvus*	FE	Inhabits sandy loam substrates, characteristic of alluvial fans and flood plains. Surrounding vegetation is dominated by chaparral and coastal sage scrub.	A	Suitable habitat is not present within BSA.

Absent [A] - No habitat present and no further work needed.
Habitat Present [HP] - Habitat is, or may be present. The species may be present.
Present [P] - Species is present
Critical Habitat [CH] - Project footprint is located within a designated Critical Habitat unit, but does not necessarily mean that appropriate habitat is present.
Status: -Federal Endangered (FE); Federal Threatened (FT); Federal Proposed Endangered (FPE); Federal Proposed Threatened (FPT); Federal Candidate (FC), Federal Species of Concern (FSC); Fully Protected (FP).

2.2. Studies Required

This chapter presents the numerous individual technical studies conducted, and rationale for methodology. The regulatory framework necessitating the various surveys is presented further below followed by a brief discussion of each survey and a summary table. For more detailed methodology information on each of the studies, see the referenced appendices.

2.2.1. Biological Study Area

The BSA was defined during development of the project purpose and need, and has been developed through a collaborative process between the transportation agencies (Caltrans, the Federal Highway Administration, Metro, Los Angeles and San Bernardino Counties). It is generally 500 ft (152 m) in width over most of the 63-mi (101-km) length with few exceptions at interchanges, intersections with on/off ramps, where the rail line and highway separate, and in few areas where the roadway narrows.

The BSA includes the areas anticipated to be directly and indirectly affected by the Preferred Alternative. It should be noted that alignments and variations have changed over time since initial studies were conducted. Areas not previously studied were addressed in additional surveys and included in this analysis and report. As such, the reader should note there can be several supporting technical reports for any one topic discussed in this document.

2.2.1.1. BIOLOGICAL STUDIES

In order to comply with the provisions of various state and federal environmental statutes and executive orders, the potential impacts to natural resources of the region were investigated and documented. A list of species and habitats within the project region was developed based on information compiled by the USFWS, CNDDB, the California Native Plant Society (CNPS), and other current publications. Focused protocol surveys were conducted for rare plants, desert tortoise, SWFL, LBVI, and YBCU. Vegetation communities were also mapped to identify suitable habitat for these species. The remaining species in Table 1 were determined to not have suitable habitat within the BSA, therefore not warranting discussion in this BA.

Surveys for federally listed plants and animals were conducted in 2008, 2011, 2012, 2013, 2014, and 2015. Based on a review of records and the proposed project location, the USFWS determined that all areas west of 100th Street East could not support any listed, proposed, or candidate species for which they are responsible (Appendix E). Table 2 provides a summary of the biological reports that have been completed for this project for the species and resources discussed in this report for which the methods used for each are presented following the table. The personnel and survey dates for each survey are presented in Section 2.3.

Table 2. Biological Studies Summary

Study Type	Report Title	Date	Area of Coverage	Company
Plant Survey/ Vegetation Mapping	2011 Special Status Plant Survey Report	August 2012	Los Angeles County	ICF
Plant Survey/ Vegetation Mapping	Spring 2011 Rare Plant Species Survey and Plant Community Mapping Report	September 2011	San Bernardino County	AMEC

Study Type	Report Title	Date	Area of Coverage	Company
Vegetation Mapping	Updated Plant Community Mapping Report	August 2012	San Bernardino County	AMEC 2012a
Desert Tortoise, Plant Survey, Vegetation Mapping	Biological Survey Results Report for the State Route 138 New Freeway Construction Project	April 2012	Los Angeles County	ECORP
Vegetation Mapping	Summary Plant Community Map	September 2014	Entire BSA	ECORP
Vegetation Mapping	HDC Palmdale Biological Technical Memorandum	July 2014	Los Angeles County	ECORP 2014a
Plant Survey	2015 Focused Rare Plant Survey	PENDING	Entire BSA	ECORP
Desert Tortoise	Focused Desert Tortoise Survey and Burrowing Owl Habitat Assessment Results Report	December 2011	Los Angeles County	ECORP
Desert Tortoise	HDC Focused Desert Tortoise Survey, SR-18 to LA County Line	September 2011	San Bernardino County	AMEC
Desert Tortoise	HDC Focused Desert Tortoise Survey, SR-18 to LA County Line	August 2012	San Bernardino County	AMEC
Desert Tortoise	2013 Focused Desert Tortoise Survey HDC	July 2013	San Bernardino County	Caltrans ECORP
SWFL and LBVI	2012 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys	August 2012	Mojave River	ECORP

Study Type	Report Title	Date	Area of Coverage	Company
SWFL and LBVI	2013 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys	August 2013	Mojave River	ECORP
SWFL and LBVI	2014 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys	August 2014	Mojave River	ECORP
SWFL, LBVI, and YBCU	2015 Southwestern Willow Flycatcher, Least Bell's Vireo, and Western Yellow-billed Cuckoo Surveys	PENDING	Mojave River	ECORP

2.2.1.2. VEGETATION MAPPING AND SENSITIVE PLANT SURVEYS

Plant community evaluation and mapping is typically the basis for determining potential presence for all other biological resources: plants, wildlife, and jurisdictional waters. Caltrans' consultants ICF International (ICF), AMEC, and ECORP conducted plant community evaluations and mapping as well as focused plant surveys for the proposed alignments from 2008 to 2015 (Table 2). As the alignments and variations changed due to the engineering and design changes, Caltrans biologists or their consultants surveyed those new areas.

Plant communities were classified consistent with "A Manual of California Vegetation" (Sawyer et al. 2009) and "List of Vegetation Alliances and Associations" (CDFG 2010). Sensitive plant surveys were conducted with the intent to identify all plant species, common and special-status, occurring within the limits of the BSA. Presence or absence of all special-status plant species with potential to occur within the BSA was a special focus. Prior to field surveys, a review of available databases and reports was conducted to identify special-status species that occur within the region of the BSA. Based on literature and database review, a list of potentially occurring special-status plant species was prepared. Although all special-status plants, those that are considered rare, threatened, or endangered within the state or region by local, state, or federal resource conservation agencies and the CNPS, were surveyed for in the BSA, only those that are federally listed are presented in this document.

Qualified personnel surveyed the BSA on foot during the time of year for optimal detection. Survey methods were devised with consideration of the following resources: 1) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 1996), 2) CNPS Botanical Survey Guidelines (CNPS 2001), and 3) Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2009).

As a result of design refinements since the vegetation mapping was completed, separate mapping studies were completed without completing a report. Some of these new areas were mapped by Caltrans, with the assistance of ECORP, using aerial photographs at 1-meter resolution and used at a scale from 1:500 to 1:800 to digitize plant communities using ArcGIS™. The imagery was analyzed during a preliminary desktop delineation effort to identify differences in vegetative cover. Areas that required further evaluation were viewed in the field.

Appendix F contains the full methodology and survey area maps for each of these surveys.

2.2.1.3. DESERT TORTOISE SURVEYS

Focused USFWS protocol presence/absence surveys were conducted by ECORP in 2008, 2011, and 2013 using the Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992). The 2008 survey was conducted west of 100th Street East at the request of CDFW, not the USFWS. Regardless, the same survey methods were used. The surveyors walked pedestrian transects spaced at 33 ft (10 m) apart throughout the proposed project footprint (100 percent coverage area). Five concentric transects surrounding the project footprint boundaries were also surveyed within the "zone of influence" of the proposed project at approximately 100, 300, 600, 1,200, and 2,400 ft (30, 91, 183, 366, and 732 m).

Focused USFWS protocol presence/absence surveys were conducted by AMEC in 2011 and 2012 using protocols specified in "*Preparing For Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii)*" (USFWS 2010). Using this protocol, the surveyors walked pedestrian transects spaced at 33 ft (10 m) apart 150 ft (50 m) from each side of the proposed centerline of the project east of I-15 (100 percent coverage area). The 100 percent coverage area on the west side of I-15 widened to a width of 250 ft (76 m) from the proposed centerline of the project. Additional belt transects were conducted at 656 ft (200 m), 1,312 ft (400 m) and 1,969 ft (600 m) intervals from the edge of the 100 percent coverage area.

Appendix G contains the full methodology and survey area maps for each of these surveys.

2.2.1.4. SOUTHWESTERN WILLOW FLYCATCHER SURVEYS

The Preferred Alternative is located within the known range and designated Critical Habitat of the SWFL. During initial site visits by Caltrans biologist Jeff Johnson in 2010 and early 2011, potentially suitable habitat was observed within the Mojave River. Because suitable habitat was observed, focused protocol presence/absence surveys were conducted in 2012, 2013, 2014, and 2015 (ECORP 2012b, 2013, 2014a, 2015b). All surveys were conducted in riparian vegetation within the Mojave River. Surveys conducted in 2013, 2014, and 2015 included the smaller patches of riparian vegetation located approximately one mi (2 km) west of the river and west of Gas Line Road. These surveys were all conducted for the HDC project, but the specific survey areas changed from year to year (Figure 4). The majority of the habitat, however, was surveyed consistently all four years.

Surveys for the SWFL followed the protocol outlined by Sogge et al. (2010). The 2010 protocol recommends five surveys during three survey periods, with two surveys occurring within each of the last two survey periods. These three survey periods are Period 1: May 15 to 31, Period 2: June 1 to 24, and Period 3: June 25 to July 17.Surveys were conducted along northeast/southwest transects spaced approximately 100 ft (30 m) apart. SWFL vocalizations were played at approximately 100-ft (30-m) intervals along each transect using an MP3 player and portable speaker system. The vocalization was played following an initial approximate one-minute period of listening. The period of listening followed by audio playback was repeated with another period of listening at the end before moving to the next 100-ft (30-m) interval. The locations of willow flycatcher detections were recorded using a handheld global positioning system (GPS) unit capable of 3- to 10-ft (1- to 3-m) accuracy. Survey data were recorded in the field and copied onto Willow Flycatcher Survey and Detection Forms.

In 2012, a delay in authorization to conduct the surveys prevented completion of the Period 1 survey prior to the May 31 deadline; therefore, on May 31, 2012 (USFWS) and June 5, 2012 (CDFW) permission was obtained from the permitting agencies to extend the Period 1 survey deadline to June 9 (Appendix E). The remaining four surveys of 2012 were completed within the timeframes specified by Sogge et al. 2010.

Figure 4 shows the areas surveyed for each survey year. Appendix H contains the full methodology for each of these surveys.

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Figure 4.
Focused Survey Areas
for Southwestern Willow Flycatcher
Least Bell's Vireo and
Western Yellow-Billed Cuckoo

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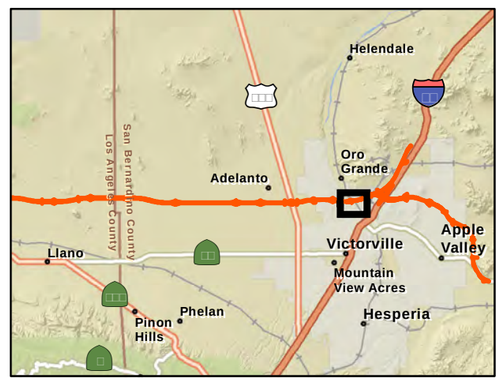
Wilderness Ct
National Trails Hwy
BNSF Railroad
Mojave River
Turner Rd
Mathews Ln
Gas Line Rd
Old Turner Rd
Seals Rd
Bryman Rd
Air Expy
Poppyline Rd
Panorama Ln
Ranch Rd
Labp And I Rd
Gasline Rd
Crabapple Ln
N D St
E St
Mojave Nor Mining Railroad
Mojave River
Mojave River
Rancho Rd
Odell Ave
Hagador Ave
Filkins St
Loften St
Vasquez Ave
Boh Ln
Odell Ct



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2012\2012-061.014 HDC GIS\MAPS\sss_survey_and_mapping\SWWF_LBV\HDC_SWFF_LBV_BA_SurveyAreas_20150811.mxd (MAG/JDS) JSwager 8/12/2015

2012-061 High Desert Corridor

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Photo Source: USGS 2011
[1] Caltrans

Map Date: 8/12/2015

2.2.1.5. LEAST BELL'S VIREO SURVEYS

The Preferred Alternative is located within the known historic range of the LBVI. During initial site visits by Caltrans biologist Jeff Johnson in 2010 and early 2011, potentially suitable habitat was observed within the Mojave River. Because suitable habitat was observed, focused protocol presence/absence surveys were conducted in 2012, 2013, 2014, and 2015 (ECORP 2012b, 2013, 2014a, 2015b). USFWS protocol for LBVI surveys specifies eight surveys conducted at least ten days apart (USFWS 2001). Surveys for LBVI were conducted concurrently with SWFL surveys. All areas of suitable LBVI habitat within the survey area were traversed on foot with frequent stops to look and listen for LBVI. The SWFL Section above explains how the survey areas changed from year to year (Figure 4).

The 2012 surveys for LBVI did not meet the criteria specified by USFWS protocol in that only five visits were made rather than the required eight, and visits were spaced fewer than ten days apart.

For the 2013 survey, a slight modification to the survey method for LBVI was approved by the USFWS for the 25-acre (10-ha) parcel and 10-acre (4-ha) woodland that were added after the second survey was completed. The modification consisted of these two areas receiving seven rather than eight visits and the second survey for these two areas being spaced seven rather than ten days from the first (Appendix E). However, it should be noted that habitat in these areas was limited to two small stands of sandbar willows and was marginal at best.

Figure 4 shows the area surveyed for each survey year. Appendix H contains the full methodology for each of these surveys.

2.2.1.6. WESTERN YELLOW-BILLED CUCKOO SURVEY

On October 3, 2014, the western population of the YBCU was federally listed as Threatened. Prior to the 2015 riparian bird survey season, a protocol for conducting focused surveys for this species had not been developed. On March 11, 2015, the USFWS approved an interim survey protocol for YBCU for this project (USFWS 2015b; Appendix E). Surveys for YBCU were conducted concurrently with LBVI surveys using similar methods. Although limited suitable habitat for this species had been identified previously in the BSA, it was not until the species became federally listed that surveys were conducted. Surveys were conducted six times during the breeding season, between May 15 and July 31, with a minimum of ten days between each survey. A final draft of the YBCU protocol was developed on April 22, 2015;

however, it was not released to the public until June 2015. As such, the modified protocol was followed through the completion of the 2015 study to remain consistent.

Figure 4 shows the area surveyed for 2015. Appendix E contains the methodology approved for these surveys.

2.2.1.7. HABITAT CONSERVATION PLANS

The West Mojave Plan (United States Department of the Interior, Bureau of Land Management [BLM] 2006) consists of two components: a Federal Component that will amend the existing 1980 California Desert Conservation Area Plan (CDCA), and a Habitat Conservation Plan (HCP) that will cover private lands. The West Mojave Plan is a regional HCP amendment that (1) presents a comprehensive strategy to conserve and protect desert tortoise and nearly 100 other sensitive plants and animals and the natural communities of which they are a part, and (2) provides a streamlined program for complying with the requirements of the California Endangered Species Act (CESA) and FESA. On January 9, 2006, the USFWS finalized its BO for the Federal portion of the West Mojave Plan, and on March 13, 2006, the BLM signed the Record of Decision for the Final Version of the West Mojave Plan. The private HCP component of the West Mojave Plan is still to be formulated and will include measures to meet the "fully mitigated" requirement of the CESA. The CDFW is currently working with local and county jurisdictions to develop conservation measures sufficient for the HCP to fulfill the fully mitigated requirement of the CESA. At the time this BA was prepared, the West Mojave Plan has not been accepted by all entities.

2.3. Personnel and Survey Dates

Table 3 identifies the personnel, company, qualifications, applicable permit numbers, survey method/protocol used, and the survey dates for the species and resources discussed in this report.

Table 3. Personnel and Survey Dates

Survey Type	Survey Number	Lead Surveyor	Assistant Surveyors	Company	Qualifications/ Permit Numbers	Survey Method/ Survey Protocol	Survey Date
SWFL, LBVI	SWFL #1, LBVI #1	BS	AA, KD, BH	ECORP	Federal Recovery Permit (FRP): TE-67390A-0, Scientific Collecting Permit (SCP): SCP-10933	SWFL: Sogge et al. 2010, modified, LBVI: non-protocol	6/7-9/2012
SWFL, LBVI	SWFL #2, LBVI #2	BS	BH, KD	ECORP	FRP: TE-67390A-0, SCP: SCP-10934	Sogge et al. 2010, LBVI: non-protocol	6/13-15/2012
SWFL, LBVI	SWFL #3, LBVI #3	BS	KD, BH, CSt	ECORP, Caltrans	FRP: TE-67390A-0, SCP: SCP-10935	Sogge et al. 2010, LBVI: non-protocol	6/19-21/2012
SWFL, LBVI	SWFL #4, LBVI #4	BS	KW, EG, BH	ECORP	FRP: TE-67390A-0, SCP: SCP-10936	Sogge et al. 2010, LBVI: non-protocol	6/26-28/2012
SWFL, LBVI	SWFL #5, LBVI #5	BS	KD, CSt	ECORP, Caltrans	FRP: TE-67390A-0, SCP: SCP-10937	Sogge et al. 2010, LBVI: non-protocol	7/10-12/2012
SWFL, LBVI	SWFL #1, LBVI #1	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10938	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	5/15-17/2013
LBVI	LBVI #2	BS	SS	ECORP	Wildlife Biologists	LBVI: USFWS 2001, Modified	5/27-28/2013
SWFL, LBVI	SWFL #1, LBVI #1	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10940	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	5/31/2013
SWFL, LBVI	SWFL #2, LBVI #3	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10941	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	6/7-8/2013
SWFL, LBVI	SWFL #3, LBVI #4	BS	BH	ECORP	FRP: TE-67390A-0, SCP: SCP-10942	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	6/19-20/2013

Survey Type	Survey Number	Lead Surveyor	Assistant Surveyors	Company	Qualifications/ Permit Numbers	Survey Method/ Survey Protocol	Survey Date
SWFL, LBVI	SWFL #4, LBVI #5	BS	SS, CSt	ECORP, Caltrans	FRP: TE-67390A-0, SCP: SCP-10943	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	6/29-30/2013
SWFL, LBVI	SWFL #5, LBVI #6	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10944	SWFL: Sogge et al. 2010 , LBVI: USFWS 2001, Modified	7/9-10/2013
LBVI	LBVI #7	SS	WT	ECORP	Wildlife Biologists	LBVI: Modified USFWS 2001	7/19-20/2013
LBVI	LBVI #8	BS	BH	ECORP	Wildlife Biologists	LBVI: Modified USFWS 2001	7/29-30/2014
LBVI	LBVI #1	BS	WT	ECORP	Wildlife Biologists	LBVI: USFWS 2001	4/29/2014
LBVI	LBVI #2	BS	PW	ECORP	Wildlife Biologists	LBVI: USFWS 2001	5/9/2014
SWFL, LBVI	SWFL #1, LBVI#3	BS		ECORP	FRP: TE-67390A-0, SCP: SCP-10947	SWFL: Sogge et al. 2010, LBVI: USFWS 2001	5/20-21/2014
SWFL, LBVI	SWFL #2, LBVI#4	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10948	SWFL: Sogge et al. 2010, LBVI: USFWS 2002	6/4-5/2014
SWFL, LBVI	SWFL #3, LBVI#5	BS	SS	ECORP	FRP: TE-67390A-0, SCP: SCP-10949	SWFL: Sogge et al. 2010, LBVI: USFWS 2003	6/16-17/2014
SWFL, LBVI	SWFL #4, LBVI#6	BS	PW	ECORP	FRP: TE-67390A-0, SCP: SCP-10950	SWFL: Sogge et al. 2010, LBVI: USFWS 2004	7/1-2/2014
SWFL, LBVI	SWFL #5, LBVI#7	BS	GH	ECORP	FRP: TE-67390A-0, SCP: SCP-10951	SWFL: Sogge et al. 2010, LBVI: USFWS 2005	7/14-15/2014
LBVI	LBVI#8	BS	BH	ECORP	Wildlife Biologists	LBVI: USFWS 2001	7/25/2014
LBVI	LBVI #1	BS	KC, GH	ECORP	Wildlife Biologists	LBVI: USFWS 2001	4/14-15/2015

Survey Type	Survey Number	Lead Surveyor	Assistant Surveyors	Company	Qualifications/ Permit Numbers	Survey Method/ Survey Protocol	Survey Date
LBVI	LBVI #2	BS	WT	ECORP	Wildlife Biologists	LBVI: USFWS 2002	4/27-28/2015
SWFL, LBVI, YBCU	SWFL #1, LBVI #3, YBCU #1	BS	WT	ECORP	FRP: TE-67390A-0, SCP: SCP-10952	SWFL: Sogge et al. 2010, LBVI: USFWS 2001, YBCU: USFWS interim protocol	5/27-29/2015
SWFL, LBVI, YBCU	SWFL #2, LBVI #4, YBCU #2	BS	WT	ECORP	FRP: TE-67390A-0, SCP: SCP-10953	SWFL: Sogge et al. 2010, LBVI: USFWS 2001, YBCU: USFWS interim protocol	6/10-12/2015
SWFL, LBVI, YBCU	SWFL #3, LBVI #5, YBCU #3	BS	WT	ECORP	FRP: TE-67390A-0, SCP: SCP-10954	SWFL: Sogge et al. 2010, LBVI: USFWS 2001, YBCU: USFWS interim protocol	6/21-23/2015
SWFL, LBVI, YBCU	SWFL #4, LBVI #6, YBCU #4	BS	KC, CL	ECORP	FRP: TE-67390A-0, SCP: SCP-10955	SWFL: Sogge et al. 2010, LBVI: USFWS 2001, YBCU: USFWS interim protocol	7/1-3/2015
SWFL, LBVI, YBCU	SWFL #5, LBVI #7, YBCU #5	BS	KC	ECORP	FRP: TE-67390A-0, SCP: SCP-10956	SWFL: Sogge et al. 2010, LBVI: USFWS 2001, YBCU: USFWS interim protocol	7/13-15/2015
LBVI,YBCU	LBVI #8, YBCU #6	BS	KC	ECORP	FRP: TE-67390A-0, SCP: SCP-10957	LBVI: USFWS 2001, YBCU: USFWS interim protocol	7/27-29/2015
Desert Tortoise	2008 Survey	BSt	KW, BH, DSS	ECORP	Wildlife Biologists	USFWS 1992	6/2-5

Survey Type	Survey Number	Lead Surveyor	Assistant Surveyors	Company	Qualifications/ Permit Numbers	Survey Method/ Survey Protocol	Survey Date
Desert Tortoise	2011 Survey	KW	TC, BZ, AS, TW, CS, WT, PW, ST	ECORP	Wildlife Biologists	USFWS 1992	5/9-13, 5/16-20, 5/23
Desert Tortoise	2011 Survey	MA, TCh, PC, PdP, JG, RJ, NK, DK, CK, EL, NM, SM, JO, TP, TR, MW		AMEC	Wildlife Biologists	USFWS 2010	6/6-10, 6/13-17, 6/21-24. 6/27-30, 7/25-29, 8/1-5, 8/31, 9/1
Desert Tortoise	2012 Survey	NM, TR, TH, MT, HF, SB, TE, PC, GW, MW		AMEC	Wildlife Biologists	USFWS 2010	5/1-4, 5/7-11, 5/14-17, 5/20-25, 5/29-30, 6/1, 6/4, 6/6-8, 6/11-15, 6/18
Desert Tortoise	2013 Survey	BH, KW	CSt, MN, JB, CO, ER, AJ, SF, JBo, EH, SBa, LG, MK, NW, MS	ECORP, Caltrans	Wildlife Biologists	USFWS 1992	7/10-12, 7/15-19, 7/22-26, 7/29- 8/1, 8/5-8, 8/12-16
Vegetation Mapping and Rare Plant	2011 Survey	JC, TCh, NK, DK, NM, TP, TR		AMEC	Botanists/ Wildlife Biologists	CDFG 2009	3/13-14, 3/22-23; 5/10-13, 5/15-20
Rare Plant/ Vegetation Mapping	2012 Survey	BH, AM, KMy, DSS, MWa, BZ		ECORP	Botanists/ Wildlife Biologists	CNPS 2001	4/1-2, 4/8, 4/15
Rare Plant/ Vegetation Mapping	2011 Survey	DR, IC, KK, KS, LW, PR, PS		ICFI	Botanists/ Wildlife Biologists	none listed	4/28-29, 5/2-6, 5/9-12, 6/14-16, 6/20-22
Rare Plant	2015 Survey #1	CS, BH, KC, AS, JCB, TC, BZ, CL, CDL, BS, JA, EG, GH, BL, MM		ECORP	Botanists/ Wildlife Biologists	USFWS 1996, CNPS 2001, CDFW 2009	3/30- 4/3, 4/6-10, 4/13-17
Rare Plant	2015 Survey #2	CS, WT, CL, AS, MM, BZ		ECORP	Botanists/ Wildlife Biologists	USFWS 1996, CNPS 2001, CDFW 2009	6/1-3

Survey Type	Survey Number	Lead Surveyor	Assistant Surveyors	Company	Qualifications/ Permit Numbers	Survey Method/ Survey Protocol	Survey Date
Vegetation Mapping	2014 Survey	PW		ECORP	Wildlife Biologist	NA	5/22
Initial Site Visits	2009 Site Visits	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologists	NA	10/11/2009
Initial Site Visits	2010 Site Visits	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologists	NA	2/28, 11/18
Initial Site Visits	2011 Site Visits	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologists	NA	1/7/2011
Follow-up Site Visits	2012 Follow up	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologists	NA	6/3, 9/23, 9/24
Follow-up Site Visits	2013 Follow up	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologists	NA	3/23, 10/29, 12/7, 12/8, 12/17, 12/22
Follow-up Site Visits	2014 Follow up	JJ, SBa, EH, AJ, MN, CSt		Caltrans	Wildlife Biologist	NA	1/5- 7/2014
Caltrans: AJ= Andrew Johnstone, CO= Celina Oliveri, CSt= Christopher Stevenson, EH= Eric Hanson, ER= Erika Reppun, JJ= Jeff Johnson, JB= Jenny Barbour, JBo= Joel Bonilla, LG= Leryn Gorlitsky, MN= Mary Ngo, MK= Michael Klima, MS=Mohammed Shaikh, NW= Newton Wong, SBa= Sarah Baker, SF= Skylar Feltman							
AMEC: CK= C. Kraft, DK= D. King, EL= E. LaCoste, GW= G. Winton, HF= H. Flores, JC= J.Chestnut, JG= J. Green, JO= J. Ogawa, MA= M. Amalong, MT= M. Tollett, MW= M. Wilcox, NK= N. Kimball, NM= N. Moorhatch, PC= P. Clevinger, PdP=P. del Pizzo, RJ= R. Johnson, SB= S. Blackwell, SM= S. Myers, TCh= T. Chumley, TE= T. Egan, TH= T. Herskovits, TP= T. Price, TR= T. Rado							
ECORP: AS= Adam Schroeder, AA= Alfredo Aguirre, AM= Anthony Mann, BSt= Barbara Stein, BL= Ben Lardiere, BS= Ben Smith, BH= Brad Haley, BZ= Brian Zitt, CS= Cara Snellen, CL= Carley Lancaster, CDL=Clay DeLong, DSS= Danica Schaffer-Smith, EG= Emily Graf, GH= Greg Hampton, JA= Jerry Aguirre, JCB= Josh Corona-Bennett, KMy= Kerry Meyers, KC=Kevin Cornell, KD= Krissy Day, KW= Kristen (Mobraaten) Wasz, MWa= Manna Warburton, MM= Max Murray, PW= Phil Wasz, ST=Scott Taylor, SS= Sonya Steckler, TW= Terrance Wroblewski, TC= Todd Chapman, WT =Wendy Turner							
ICFI: DR= D. Ritenour, IC=I. Cain, KK= K. Klutz, KS= K. Schlech, LW= L. Willrick, PR= P. Richards, PS= P. Schwartz,							

2.4. Agency Coordination and Professional Contacts

Numerous early coordination meetings occurred between Caltrans and resource agencies including USFWS, CDFW, and USACE. In general, the purpose of these meetings was to provide agency personnel with the latest project design information, proposed approaches to survey protocol, impact analysis, and to evaluate potential mitigation measure potential. Input from the agencies was helpful with regard to all of these topics, especially design criteria, survey protocol, and impact analysis.

In March 2013, Caltrans personnel (Paul Caron and Jeff Johnson) met with USFWS (Ray Bransfield) and CDFW (Jamie Jackson) in the USFWS Ventura Office to specifically discuss survey needs, impact analysis and potential mitigation measures for Desert tortoise and SWFL. On July 17, 2015 Caltrans (Mr. Johnson and Andrew

Johnstone), ECORP (Don Mitchell and Brad Haley), and USFWS (Mr. Bransfield) had a conference call. During this call they discussed the expected timing of the BO and BA, effects determination for each of the listed species, determined a 1:1 mitigation ratio for desert tortoise habitat, land acquisition options, results of studies to date (with provided map showing results in relation to Preferred Alternative), the western boundary of desert tortoise habitat requiring mitigation (240th Street East), and the method to determine tortoise density upon which the BO should be based on (Appendix C).

2.5. Focused Survey Limitations

The collection of biological field data is normally subject to environmental and human-influenced factors that cannot be controlled or reliably predicted. Consequently, the interpretation of field data must be conservative and consider uncertainties and limitations necessarily imposed by the environment. However, due to the experience and qualifications of the consultants and Caltrans biologists involved in the surveys, this limitation was not expected to influence the results or substantially alter the findings.

Many of the surveys conducted for the project were limited based on the presence of private property within the BSA. Campsites, homeless encampments, and aggressive dogs were observed during the listed bird surveys (ECORP 2012b, 2013, 2014a, 2015b [in prep]).

Modifications to the various listed bird survey protocols were made several times between 2012 and 2015. The reasons for modifications and agency approvals were discussed in Section 2.2.1.

Chapter 3. Results: Environmental Setting

The following section provides an evaluation of the environment in which the proposed project occurs including climatic conditions, biological and physical conditions, soil types, water features, and existing habitat.

The vegetation communities within the BSA were mapped using aerial photos and verified by field surveys. The vegetation was clipped to the Preferred Alternative footprint. Approximately 21,268 acres (8,606 ha) were included within the BSA, of which approximately 4,718.96 acres (1,909.7 ha) are within the Preferred Alternative.

Areas within the Preferred Alternative were categorized into 35 "habitat/vegetation types." These areas include 29 vegetation communities and a mixture of six habitat types consisting of paved areas associated with existing freeways (SR-14, US-395, SR-18, and I-15), disturbed and developed areas (residential, commercial and industrial structures) agricultural, ornamental, rock outcroppings, and unvegetated washes. Section 3.1.5 provides a detailed discussion of each habitat/vegetation type.

3.1. Description of Existing Biological and Physical Conditions

The BSA includes the Preferred Alternative and the other Alternatives and variations considered but rejected and additional areas (i.e., temporary construction easements and flood control basins) required for construction. The BSA extends for approximately 63 mi (101 km) primarily through open expanses of the southwestern Mojave Desert near the towns of Palmdale, Adelanto, El Mirage, Victorville, and Apple Valley.

3.1.1. Biological Study Area

The results presented in this BA and summarized below are based on literature searches and biological resource surveys conducted from 2008 to 2015. Unless otherwise discussed in this BA, precluded by The Department Policy, or constrained by the plans and specifications through the designation of ESAs, all areas would be available for the contractor's use and may be temporarily affected through construction disturbance or permanently lost due to the construction of the Preferred Alternative.

The land uses within the BSA are predominately open space, with occasional residential, commercial, agricultural, and industrial properties. The majority of the Antelope Valley Segment is owned by the Los Angeles World Airport (LAWA). This land was previously used for agriculture, as evidenced by the buried concrete irrigation pipes, but is now vacant. Adjacent to the LAWA properties are housing developments, industrial complexes, detention basins, or agricultural fields, bisected every one-half mi (0.8 km) by paved roads. The land uses within the High Desert Segment include primarily open, native desert, with occasional houses or small farms. Palmdale Boulevard runs parallel to the north side of the BSA. Southwest of El Mirage, the Preferred Alternative passes through several large agricultural fields and south of El Mirage is an abandoned airport runway (Krey Field). In the Victor Valley Segment, the Preferred Alternative passes over US-395, SR-18, I-15, the Mojave River, several active mines, two sets of railroad tracks, and several transmission lines. Land uses primarily include open, native desert, industrial development, and mining, with some areas undergoing solar development.

3.1.2. Physical Conditions

3.1.2.1. TOPOGRAPHY

Antelope Valley Segment

The Mojave Desert Province, a geologically defined region in which the Antelope Valley is located, is characterized by dry lakes (playas), alluvial fans, and low mountains. The Antelope Valley segment of the project lies between the Tehachapi Mountain range to the north and San Gabriel Mountains to the south, opening up to Victor Valley to the east and the Great Basin to the northeast. The desert ecosystem within this range spans approximately 2,200 square mi (3,540 square km). The project area topography is generally flat and lies between the elevations of 2,760 and 3,000 ft (839 and 912 m) above mean sea level (msl). Soils are typically sandy and gravelly. Commercial and residential developments, agricultural fields, and utility structures are scattered throughout most of the western portion of the project area around Palmdale and Lancaster. The eastern portion of the Antelope Valley segment is relatively undisturbed desert habitat, supporting several different native vegetation communities. Several drainages, washes, and areas of standing water are present in the project area, including Little Rock, Big Rock, and Mescal Creeks, which lie towards the eastern portion of the Antelope Valley segment. The eastern portion of the Preferred Alternative area crosses Littlerock Wash, between 75th and 85th Streets East.

High Desert Segment

The High Desert segment of the HDC approximately lies between 100th Street East to Highway 395 and Adelanto. Topography in this area includes flats, low hills, and small wash drainages. In the western area of the alignment, numerous small washes cross a relatively flat landscape, generally draining from north to south. This project area ranges in elevation from approximately 2,740 ft (833 m) above msl at the western boundary near 100th Street East and north of Pearblossom, and 2,980 ft (906 m) above msl at the eastern boundary near Adelanto. The highest elevation occurs near Black Mountain at approximately 4,020 ft (1,222 m) above msl, near El Mirage Dry Lake. Elevation tends to increase southward towards the San Gabriel Mountains and eastward in San Bernardino County. El Mirage Dry Lake is located towards the center of the Project area, approximately 9 mi (14 km) to the west of Adelanto and 10 mi (16 km) north of the San Bernardino Mountains. Water flow to El Mirage Dry Lake begins in Sheep Creek within the San Bernardino Mountains and drains north into the lake. Hydrology indicators show flow less than six inches deep.

Victor Valley Segment

Topography in the Victor Valley study area includes flats, low hills, and drainages including the Mojave River. In the western area, east of the town of Adelanto the topography transitions to a series of low hills, and drops into the wide valley associated with the Mojave River at Mojave Heights. The river crossing is at a steep, rocky gorge. East of the river, the alignment climbs a boulder slope through Bell Mountain Pass onto a wide, alluvial area associated with Bell Mountain Wash. In this area, numerous north-south running washes cross the corridor, with occasional rocky cairns protruding from the sandy flats. East of the I-15 freeway, the corridor continues over a series of hills modified by an active mining area, and on into the rocky foothills of the Granite Mountains. This project area ranges in elevation from approximately 3,050 ft (927 m) above msl at the eastern project boundary and 2,995 ft (910 m) above msl at the western project boundary. The highest elevation (approximately 3,120 ft [948 m] above msl) occurs near Bell Mountain, east of I-15. The lowest elevations are along the Mojave River at approximately 2,660 ft (809 m) above msl.

3.1.2.2. CLIMATE

The project area is located in Climate Zone 14 within the Arid West Region and Mojave Desert Sub-Region in Southern California (California Energy Commission 2015). Climate Zone 14 includes desert valleys and low mountain areas. This climate zone experiences higher average summer temperatures and lower average winter temperatures than other desert regions at lower elevations. Characteristics of Climate

Zone 14 are many sunny days throughout the year with most of the precipitation falling in the winter (ICF 2012). This creates warm, hot dry summers, and mild, wet winters. In the summer, temperatures can reach over 100° F and winter temperatures drop into the 30s, occasionally freezing (AMEC 2011a).

Average annual temperatures and precipitation in the project area were taken from two different weather stations to account for the different topography throughout the project area. The El Mirage weather station is used to represent the flat level landscape with small washes and the Victorville Pump PT weather station is used to represent the area near the Mojave River. Average annual precipitation over the history of these weather stations ranges from 5.5 to 5.8 inches. Average annual temperature ranges are fairly moderate for these stations, ranging from 43° F to 78° F (WRCC 2015).

3.1.3. Soil Types

Within the BSA, much of the desert floor is composed of alluvial deposits-the material laid down by rivers. These alluvial deposits are made up of faulted bedrock and shape the groundwater flow, leading to the creation of numerous dry lakes. The soils in the BSA consist primarily of coarse-textured soils developed from these alluvial deposits. The following soil series and complexes occur within the BSA.

Adelanto, Arizo, Bousic, Bryman, Cajon Series, Cajon-Arizo Complex, Greenfield, Haplargids-Caliciorthids Complex, Helendale Series, Hesperia, Kimberlina, Lavic, Manet Series, Mirage-Joshua Complex, Mohave Series, Nebona-Cuddeback Complex, Pits, Riverwash, Rock Outcrop-Lithic Torriorthents Complex, Rosamond, Trigger-Sparkhule-Rock Outcrop Association, Victorville, Villa, Wasco Sandy Loam, and Yermo-Kimberlina**.**

Duneland, miscellaneous water, pits, and riverwash landforms also occur within the BSA. These landforms are areas with little-developed soils, however hydric soils can develop within miscellaneous water and riverwash areas [USDA 2009]. Summary characteristics based on official series descriptions for each of the soil series within the Preferred Alternative are provided in the Natural Environment Study (NES). These maps can be found within the Jurisdictional Delineation reports.

3.1.4. Hydrological Resources

Surface hydrology within the BSA primarily consists of ephemeral features typical of dryland fluvial systems, flowing only during storm events and remaining dry most of the year. One riverine and numerous ephemeral hydrological resources within the

BSA were identified during jurisdictional delineations and plant community mapping efforts.

The western portion of the project lies within the Antelope-Fremont Valleys hydrologic unit code (HUC) watershed. The most prominent washes include, from west to east Little Rock Wash, Big Rock Wash, Grandview Canyon Creek, Graham Canyon Creek, and Mescal Creek. All of the drainages within the project area in the Antelope Valley-Fremont Valleys HUC watershed are considered isolated and flow toward the Rosamond dry lake, Buckhorn dry lake, and Rogers dry lake on Edwards Air Force Base. Except during the largest rainfall events of a season, surface water flows quickly percolate into streambeds and recharge the groundwater basin. Surface water flows that reach the dry lakes are generally lost to evaporation. (ECORP 2013)

The eastern portion of the project lies within the Mojave HUC watershed. The most prominent drainages include, from west to east, Sheep Creek, Fremont Washes, Turner Wash, Ossom Wash, the Mojave River, and Bell Mountain Wash.

The Mojave River, the largest stream within the BSA, originates in the San Bernardino Mountains and flows northward through the high desert and provides muted hydrologic influence to Silver Lakes (two manmade navigable lakes in the city of Helendale) before eventually terminating within playas to the east of Baker in the central Mojave Desert. Portions of the river within the BSA are perennial due to local geology through the area known as "the narrows" (ECORP 2013).

3.1.5. Habitat Types

3.1.5.1. VEGETATION MAPPING AND SENSITIVE PLANT SURVEYS

No federally listed plant species were detected during the focused surveys.

There are twenty-nine (29) plant communities identified within the Preferred Alternative. Additionally, there are six (6) habitats/land cover types including agricultural, disturbed, developed, ornamental, rock outcropping, and unvegetated washes that were also observed. A description of each plant community and habitat/land cover type with total acreage observed is below. The following habitat types that occur within the project area are not separated from one another, but blend into one another within indistinct ecotones (edges between habitat types) at multiple locations throughout the project area.

The predominant plant communities observed were creosote-bush scrub, allscale scrub, Joshua tree woodland, and rubber rabbitbrush scrub. Riparian scrub and riparian woodland also occur, primarily in the Mojave River area. Plant communities and other land cover categories in the Preferred Alternative are described in this section and are shown in Appendix I (vegetation maps) and J (photograph compendium). Table 4 below provides a summary of the vegetation types and the size of impacts in acres within the Preferred Alternative.

Table 4. Vegetation Communities in Preferred Alternative

	Impact Area (acres)			
Vegetation Community	**Permanent**	**Temporary**	**No Impacts**	**Total**
Agriculture	166.91	8.84	0.00	175.76
Allscale scrub Alliance	209.53	64.36	0.00	273.88
Allscale scrub Alliance/Creosote bush scrub Alliance	14.17	0.38	0.00	14.55
Allscale series/Rubber rabbitbrush series	48.66	17.09	0.00	65.75
Big sagebrush Alliance	0.00	7.01	0.00	7.01
Cheesebush scrub Alliance	46.83	2.45	0.00	49.29
Creosote bush scrub Alliance	1306.91	373.52	0.00	1680.43
Creosote bush-white bursage scrub series	115.90	7.07	0.00	122.96
Developed	411.53	85.57	0.00	497.10
Disturbed	336.35	37.17	0.00	373.52
Disturbed Allscale scrub Alliance	4.26	3.66	0.00	7.92
Disturbed Creosote bush scrub Alliance	69.82	8.05	0.00	77.87
Disturbed Creosote bush-white bursage scrub series	0.33	0.00	0.00	0.33
Disturbed Joshua tree woodland Alliance	50.51	5.29	0.00	55.81
Disturbed Rubber rabbitbrush scrub Alliance	129.28	28.63	0.00	157.91
Disturbed Salt grass flats Alliance	1.42	0.36	0.00	1.78
Disturbed White bursage scrub Alliance	18.54	2.57	0.00	21.11
Fiddleneck field	35.67	1.41	0.00	37.08
Fourwing saltbush scrub Alliance	100.42	25.16	0.00	125.58

	Impact Area (acres)			
Vegetation Community	**Permanent**	**Temporary**	**No Impacts**	**Total**
Fourwing saltbush series/Rubber rabbitbrush series	16.05	0.24	0.00	16.29
Fremont cottonwood forest Alliance	4.36	9.63	0.27	14.26
Joshua tree woodland Alliance	416.82	40.36	0.00	457.18
Mojave yucca scrub Alliance	60.56	26.20	0.00	86.76
Nevada Joint Fir Scrub	0.00	5.23	0.00	5.23
Non-native grassland	143.64	26.81	0.13	170.57
Ornamental	2.11	0.06	0.00	2.17
Parry's rabbitbrush scrub Alliance	2.97	0.05	0.00	3.01
Red brome grasslands	6.89	0.16	0.00	7.05
Rock outcrop	5.70	5.66	0.00	11.36
Rubber rabbitbrush scrub Alliance	119.95	39.11	0.00	159.06
Salt grass flats Alliance	8.07	1.65	0.00	9.72
Sandbar willow thickets Alliance	0.00	0.05	0.62	0.68
Scale broom scrub Alliance	3.78	20.46	0.00	24.24
Unvegetated wash	0.84	1.86	0.13	2.84
White bursage scrub Alliance	1.44	1.46	0.00	2.89
Grand Total†	**3,860.23**	**857.58**	**1.15**	**4,718.96**
†May not add up correctly due to rounding error.				

Some of the plant communities described below refer to absolute and relative cover. Absolute cover is defined as the total cover of all vascular vegetation in an area that takes into consideration the porosity, or holes, in the vegetation. This estimate is usually in the form of a percentage and disregards overlap of the various tree, shrub, and/or herbaceous layers and species. Relative cover is defined as the total cover of a particular species in proportion to all other species within that layer, and when added together with other shrubs within that layer, always equates to 100 percent.

Agriculture – Of the non-natural habitat types found along both alignments, agricultural fields are defined as farmland. Approximately 175.76 acres (71 ha) of this habitat type was observed within the Preferred Alternative.

Allscale Scrub Alliance – Approximately 273.88 acres (110.65 ha) of this plant community was observed within the Preferred Alignment. Within this community the dominant shrub is allscale (*Atriplex polycarpa*) with sub-dominant species including

white bur-sage (*Ambrosia dumosa),* fourwing saltbush (*Atriplex canescens*), and creosote bush (*Larrea tridentata*). It has a >2% absolute cover and a >50% relative cover in the shrub layer. This alliance occurs only in the Preferred Alternative near both the west and east ends of the Preferred Alternative.

Allscale Scrub Alliance/Creosote Bush Scrub Alliance – This plant community is not recognized by either the Sawyer et al. (2009) or CDFG (2010) references, but under the circumstances, it deserves its own category. Both allscale scrub and creosote scrub were observed as co-dominants and therefore could not be placed into a referenced community. It was evident that these areas of co-dominance acted as a "transition zone" between either allscale scrub or creosote scrub. Approximately 14.55 acres (5.88 ha) of this community occur within the Preferred Alternative.

Allscale Series/Rubber Rabbitbrush Series – This plant community is not recognized by either the Sawyer et al. (2009) or CDFG (2010) references, but under the circumstances, it deserves its own category. Both allscale scrub and rubber rabbitbrush (*Ericameria nauseosa)* scrub were observed as co-dominants and therefore could not be placed into a referenced community. It was evident that these areas of co-dominance acted as a "transition zone" between either allscale series or rubber rabbitbrush series. Approximately 65.75 acres (26.56 ha) of this community occur within the Preferred Alternative.

Big Sagebrush Alliance – Approximately 7.01 acres (2.84 ha) of this plant community was observed within the Preferred Alternative. Big sagebrush series is characterized by mostly soft-woody shrubs with bare ground underneath and between the shrubs. This community is typically dominated by big sagebrush with the co-dominate species being yellow rabbitbrush (*Chrysothamnus viscidiflorus*) and mountain ephedra (*Ephedra viridis*). Associate native species in the project area include: common fiddleneck (*Amsinckia menziesii*), fourwing saltbush, wild tarragon (*Artemisia dracunculus*), white tidy-tips (*Layia glandulosa*), slender-stemmed buckwheat (*Eriogonum gracillimum*), and wild rhubarb (*Rumex hymenosepalus*). Non-native species observed in the understory included foxtail fescue (*Vulpia myuros*) and wild oat (*Avena barbata*). This vegetation community is present both east and west of Sierra Highway in the western portion of the project area.

Cheesebush Scrub Alliance – Approximately 49.29 acres (19.91 ha) of this plant community was observed within the Preferred Alternative. Cheesebush (*Hymencolea salsola)* is the dominant shrub with golden cholla (*Cylindropuntia echinocarpa*),

Nevada joint fir (*Ephedra nevadensis*), creosote bush and bladder sage (*Scutellaria Mexicana*). It has a less than 2% absolute cover in the shrub layer with other shrubs having less relative cover. This alliance occurs at 125th Street and 155th Street in Los Angeles County.

Creosote bush Scrub Alliance – Approximately 1,680.43 acres (680.05 ha) of this plant community was observed within the Preferred Alternative. Within this community the dominant shrub is creosote bush with sub-dominants including cheesebush, Nevada joint fir, and water jacket (*Lycium andersonii*). This community is differentiated from Disturbed Creosote Bush Scrub Alliance by having a level of disturbance less than 25%. It was observed throughout many areas of the Preferred Alternative.

Creosote Bush-White Bursage Scrub Series – Creosote bush and white bur-sage are co-dominants with other species such as cheesebush, Nevada joint fir, and water jacket. All species need to be ≥1% absolute cover and more than twice the cover of other species in the shrub layer to be considered this alliance. Approximately 122.96 acres (49.68 ha) of this plant community was observed within the Preferred Alternative.

Developed – This land cover type includes inhabited buildings, paved and unpaved roads with frequent use. Some disturbed areas are unpaved roads with little usage and no discernable name, abandoned buildings in some state of decomposition, and areas that have been mowed or cleared recently. Approximately 497.10 acres (201.17 ha) of this plant community was observed within the Preferred Alternative.

Disturbed – Approximately 373.52 acres (151.16 ha) of area is categorized as disturbed. This area is essentially bare ground and void of vegetation or what little vegetation exists is non-native.

Disturbed Allscale Scrub Alliance – Approximately 7.92 acres (3.20ha) of this plant community was observed within the Preferred Alternative. This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50%.

Disturbed Creosote Bush Scrub Alliance – This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50% of non-native grasses (*Poa* sp. and *Bromus* sp.). Approximately 77.87

acres (31.51 ha) of this plant community was observed within the Preferred Alternative.

Disturbed Creosote Bush-White Bursage Scrub Series – This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50% of non-native grasses. Approximately 0.33 acre (0.13 ha) of this plant community was observed within the Preferred Alternative.

Disturbed Joshua Tree Woodland Alliance – This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50% of non-native grasses. Approximately 55.81 acres (22.55 ha) of this plant community was observed within the Preferred Alternative.

Disturbed Rubber Rabbitbrush Scrub Alliance – This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50% of non-native grasses. Approximately 157.91 acres (63.80 ha) of this plant community was observed within the Preferred Alternative.

Disturbed Salt Grass Flats Alliance – This alliance is virtually identical to the undisturbed form; however, it differs by having an estimated higher disturbance level of 25-50% of non-native grasses. Approximately 1.78 acres (0.72 ha) of this plant community was observed within the Preferred Alternative.

Disturbed White Bursage Scrub Alliance – This alliance is virtually identical to the undisturbed form, but differs in having a high enough disturbance due to non-native grasses that the 50-75% occurrence of non-native grasses or bare ground is above the standard 25-50% level, likely as a result of recent clearing. Approximately 21.11 acres (8.53 ha) of this plant community was observed within the Preferred Alternative.

Fiddleneck Field – Fiddleneck (*Amsinckia tessellata*) is seasonally co-dominant with other annual herbs such as oat (*Avena* sp.), brome (*Bromus* sp.), filaree (*Erodium* sp.), and common goldfields (*Lasthenia gracilis*). This species must have a ≥10% relative cover in the herb layer. Approximately 37.08 acres (14.98 ha) of this plant community was observed within the Preferred Alternative.

Fourwing Saltbush Scrub Alliance – Fourwing saltbush is the dominant shrub with other species such as white bur-sage, cheesebush, spiny hopsage (*Grayia spinosa*), and creosote bush. It must have a >2% absolute cover and a >50% relative cover in the

shrub layer. Approximately 125.58 acres (50.73 ha) of this plant community was observed within the Preferred Alternative.

Fourwing Saltbush Series/Rubber Rabbitbrush Series – This plant community is not recognized by either the Sawyer et al. (2009) or CDFG (2010) references, but under the circumstances, it deserves its own category. Both fourwing saltbush scrub and rubber rabbitbrush scrub were observed as co-dominants and therefore could not be placed into a referenced community. It was evident that these areas of co-dominance acted as a "transition zone" between either fourwing saltbush scrub or rubber rabbitbrush scrub. Approximately 16.29 acres (6.58 ha) of this community occur within the Preferred Alternative.

Fremont Cottonwood Forest Alliance – Fremont cottonwood (*Populus fremontii*) is the dominant species within the tree layer, primarily mixed with species of willow (*Salix* spp.). It must have a >3% absolute cover and a >50% relative cover in the tree layer. Approximately 14.26 acres (5.77 ha) of this plant community was observed within the Preferred Alternative.

Joshua Tree Woodland Alliance – Joshua tree (*Yucca brevifolia*) is dominant in the tree layer with other species such as white bur-sage, cheesebush, Nevada joint fir, and creosote bush. This plant community has an even distribution, and a ≥1% cover with any juniper or pine species at less than 1% absolute cover in the tree layer. Portions of this plant community include disturbed areas and also includes those areas described in focused studies as Joshua Tree Woodland/Creosote Bush Scrub series. Approximately 457.18 acres (184.70 ha) of this plant community was observed within the Preferred Alternative.

Mojave Yucca Scrub Alliance – This series is often considered part of the creosote bush scrub, which is better thought of as a collection of series. Areas of dominance by Mojave yucca (*Yucca shidigera*) can also occur through its range as small populations in other series. Associated species include creosote bush, white bur-sage, Nevada joint fir, California buckwheat (*Eriogonum fasciculatum*) and golden cholla . This community occurs on alluvial fans, rocky slopes, and upper bajadas. Soils are generally well-drained, sandy loams. Approximately 86.76 acres (35.11 ha) of this plant community was observed within the Preferred Alternative.

Nevada Joint Fir Scrub – Approximately 5.23 acres (2.11 ha) of this plant community was observed within the Preferred Alternative. Nevada joint fir is the dominant shrub cover in this habitat type at less than two percent absolute cover and at

least twice as abundant as any other shrub species in the area. Other co-dominant species in this habitat include big sagebrush (*Artemisia tridentata*), blackbush (*Coleagyne ramosissima*), California buckwheat, spiny hopsage, and Mojave yucca. This community occurs in dry, open slopes, ridges, breaks with southern-exposures, canyons, floodplains, and washes with well-drained, sandy soils.

Non-native Grasslands – Approximately 170.57 acres (69.03 ha) of this plant community occurs in various areas within the Preferred Alternative. It is comprised mainly of non-native grasses.

Ornamental – Approximately 2.17 acres (0.40 ha) of this habitat occurs within the Preferred Alternative. Often times this habitat is designated as developed, but given that ornamental plant species can provide a biological function such as foraging and nesting habitat for animal species, it has been separated into its own habitat category.

Parry's Rabbitbrush Scrub Alliance – Approximately 3.01 acres (1.22 ha) of this plant community occurs within the Preferred Alternative. This alliance has Parry's rabbitbrush (*Ericameria parryi*) as the sole or dominant shrub within the shrub layer with other species such as bitterbrush (*Purshia tridentata*), big sagebrush, ephedras (*Ephedra* sp.), and or/yellow rabbitbrush. Shrubs present are less than 3.3 ft (1.0 m) tall existing in either a continuous canopy, intermittent or open area.

Red Brome Grasslands – This community is monotypic and therefore separated from the non-native grasslands plant community. Approximately 7.05 acres (2.85 ha) of this plant community occurs within the Preferred Alternative.

Rock Outcropping – Approximately 11.36 acres (4.6 ha) of area is considered rock outcropping with no vegetation. This area is located in San Bernardino County east of the Mojave River.

Rubber Rabbitbrush Scrub Alliance – Rubber rabbitbrush is the dominant shrub in the shrub layer with other species such as ephedras, California buckwheat, and California juniper (*Juniperus californica*). It must have a ≥2% absolute cover or >25% relative cover in the shrub layer. Approximately 159.06 acres (64.37 ha) of this plant community was observed within the Preferred Alternative.

Saltgrass Flats Alliance – Approximately 9.72 acres (3.93 ha) of this plant community occurs within San Bernardino County and is located near the intersection

of Central Road and Otoe Road. Dominant species within this plant community is alkali rabbitbrush (*Chrysothamnus albidus*). Portions of this community are disturbed.

Sandbar Willow Thickets – Sandbar willow (*Salix exigua*) is dominant or co-dominant in the shrub canopy with *Baccharis spp.*, brickellbush (*Brickellia californica*), California rose (*Rosa californica*), blackberry (*Rubus armeniacus* and *R. ursinus*), and willow (*Salix lasiolepis* and *S. melanopsis*). The emergent trees of many different species may also be present. Shrubs are generally less than 23 ft (7 m) tall and the canopy is intermittent to continuous. The herbaceous layer is variable. This community typically occurs along temporarily flooded floodplains, depositions along rivers and streams and at springs. Approximately 0.62 acre (0.25 ha) of this plant community was observed within the Preferred Alternative.

Scalebroom Scrub Alliance – Approximately 24.24 acres (9.79 ha) of this plant community was observed within the Preferred Alternative. Scalebroom (*Lepidospartum squamatum)* series is a mixed evergreen deciduous shrub community less than 5 ft (2 m) in height that typically occurs on quickly drained alluvial soils. This community is dominated by scalebroom and is accompanied by the co-dominant plants big sagebrush, cheesebush, fourwing saltbush, and yellow rabbitbrush. Associated species in this community include Argus gilia (*Gilia brecciarum*), California evening primrose (*Oenothera californica*), Mojave sand verbena (*Abronia pogonantha*), Wallace's woolly daisy (*Erophyllum wallacei*), evening primrose (*Camissonia campestris*), and white tidy-tips. This habitat is located near 75th and 85th Streets East.

Unvegetated Wash – Approximately 2.84 acres (1.15 ha) of this habitat occur within the Preferred Alternative. Unvegetated wash are areas including sandy desert ephemeral washes completely void of vegetation.

White Bursage Scrub Alliance – White bur-sage is the dominant shrub in the shrub layer with other species such as rayless goldenhead (*Acamptopappus sphaerocephalus*), fourwing saltbush, and creosote bush. Approximately 2.89 acres (1.17 ha) of this plant community was observed within the Preferred Alternative.

3.1.6. Wildlife Species Within Biological Study Area

A list of 183 wildlife species were observed, or detected by their sign, in the BSA and are included in Appendix K. This is a comprehensive list of all wildlife observed on all site visits, general studies, and focused surveys. Species observed included 13

insect species, three amphibian species, 20 reptile species, 124 bird species, and 23 mammal species.

3.1.7. Migration and Travel Corridors

Wildlife movement corridors are linkages of natural habitat between larger areas that are not contiguous or otherwise connected. These linkages provide for seasonal travel routes or connecting important resources that would prevent the isolation of populations. Isolation of populations can have a negative effect on genetics of the individual population and possibly the species as a whole, and places the isolated population at risk of eventual elimination.

The Preferred Alternative is located within a large contiguous open space area of the Mojave Desert with the east and west ends of the site within developed areas. As such there are no regional corridors linking two or more non-contiguous area of natural habitat within the project site rather the site is located within a larger contiguous open space. A large regional movement corridor located to the east of the Preferred Alternative site was identified between the Mojave River and the Victorville Landfill (AMEC 2011c).

Corridors within a contiguous open space could exist for a particular species if physical barriers specific to that species are present such as mountain ranges, rivers or impenetrable habitats, which could act to funnel or channel wildlife. Several large rivers or creeks occur within the limits of the Preferred Alternative, such as Mojave River, Big Rock Wash, and Littlerock Wash, which could create such a channeling effect with individuals.

Wildlife studied during movement studies include gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), coyote, American badger (*Taxidea taxus*), and bobcat (*Lynx rufus*). Appendix K contains a complete list of all wildlife observed from all of the various studies.

The Mojave River and its associated habitats, Big Rock Wash, Littlerock Wash, and several other larger drainages provide for wildlife movement and connectivity between large open spaces to the north and to the south of the Preferred Alternative. Numerous smaller drainages along the Preferred Alternative also provide for local movement of wildlife within the open space immediately surrounding the Preferred Alternative as noted by sign during various Caltrans field investigations. In addition, large expanses of creosote bush scrub within the region allow relatively unrestricted movement of various species of wildlife.

3.1.8. Aquatic Resources

All of the creeks and drainages throughout the BSA except the Mojave River are ephemeral, and do not provide a constant source of water. As such, these creeks provide limited aquatic resources. The Mojave River provides a constant source of flowing water through the Preferred Alternative. Although no fish studies have been conducted for this project, through literature searches and communication with local fisheries biologists, the federally listed amphibians and fish have been extirpated from this stretch of the Mojave River and are not expected to occur. There are no federal fisheries issues associated with this project, and therefore, no effect on any federally listed fish species. The USFWS concurred with this determination (Appendix C).

3.1.9. Invasive Species

In February 1999, EO 13112 was signed, requiring Federal agencies to work on preventing and controlling the introduction and spread of invasive species. Highway corridors provide opportunities for the movement of invasive species through the landscape. Invasive species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor on equipment during construction and through the use of mulch, imported soil or gravel, and sod. Some invasive plant species might be deliberately planted in erosion control, landscape, or wildflower projects. Highway ROW provide ample opportunity for weeds in adjacent land to spread along corridors that, on a national scale, span millions of miles of highway.

Twenty-one exotic plants occurring on the California Exotic Plant Council's (Cal-IPC) Invasive Plant Inventory were identified in the BSA and throughout the project limits. Each plant in the inventory is given an overall rating of high, moderate, or limited. Plants with a rating of high have severe ecological impacts. Plants with a rating of moderate have a substantial and apparent, but not severe, ecological impact. Plants with a limited rating are invasive but their ecological impacts are minor on a statewide level. The invasive species identified in the BSA with a high rating include: giant reed (*Arundo donax*), Sahara mustard (*Brassica tornefortii*), red brome (*Bromus madritensis ssp. rubens.*), cheatgrass (*Bromus tectorum*), tocalote (*Centaurea melitensis*), yellow star-thistle (*Centaurea solstitialis*), perennial pepperweed (*Lepidium latifolium*) and Mediterranean tamarisk (*Tamarix ramosissima*). Moderate rated invasive species include: common wild oat, ripgut brome (*Bromus diandrus*), black mustard (*Brassica nigra*), foxtail barley (*Hordeum murium*), glaucous foxtail

barley (*Hordeum marinum* var. *glaucum*), shortpod mustard (*Hirschfeldia incana*), Bermuda grass (*Cynodon dactylon*), fescue (*Festuca myuros*), and London rocket (*Sisymbrium irio*). Limited rated invasive species include: redstem stork's bill (*Erodium cicutarium*), horehound (*Marrubium vulgare*), Russian thistle (*Salsola tragus*), and common Mediterranean grass (*Schismus barbatus*). Seventeen non-native species, but not considered to be invasive by Cal-IPC were observed in the BSA include: prickly lettuce (*Lactuca serriola*), pineapple weed (*Matricaria discoidea*), sow thistle (*Sonchus asper*), shepard's purse (*Capsella bursa-pastoris*), tumble mustard (*Sisymbrium altissimum*), Lamb's quarter (*Chenopodium album*), alfalfa (*Medicago sativa*), white sweetclover (*Melilotus alba*), sourclover (*Melilotus indicus*), chinaberry tree (*Melia azedarach*), five-stamen tamarisk (*Tamarix chinensis*), puncturevine (*Tribulus terrestris*), soft chess (*Bromus hordeaceus*), barley (*Hordeum vulgare*), annual beard grass (*Polypogon monspeliensis*), Mediterranean schismus (*Schismus barbatus*), and common wheat (*Triticum aestivum*).

Chapter 4. Results: Biological Resources, Discussion of Impacts and Mitigation

4.1. Federally-Listed or Proposed Animal Species Occurrences

Four federally listed wildlife species and Critical Habitat for SWFL may be affected by Preferred Alternative construction activities. Species profiles, anticipated project effects, and proposed mitigation strategies are outlined in this section with regard to the action area. The "action area" is defined by federal section 7(a)(2) consultation regulations 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). Within each section, the action area will be defined.

4.1.1. Desert Tortoise

The desert tortoise is listed as threatened under the federal Endangered Species Act (USFWS 1990). To maintain document brevity, USFWS requested that detailed species descriptions be excluded from this document (Appendix C). The focused survey reports included in Appendix G contain detailed natural history of this species.

4.1.1.1. SURVEY RESULTS

Focused USFWS protocol surveys were conducted within the BSA to determine presence or absence in 2008, 2011, 2012 and 2013. Focused surveys were conducted by ECORP in 2008 and 2011in the Los Angeles County portion of the proposed project (ECORP 2012a, ECORP 2011). Portions of the project within San Bernardino County were surveyed by AMEC in 2011 and 2012 (AMEC 2011b, AMEC 2012b) and ECORP and Caltrans in 2013 (Caltrans 2013).

No desert tortoises or desert tortoise sign was observed during surveys conducted between SR-14 and 240th Street East in 2008 and 2011. East of 240th Street East, a total of 14 burrows, four carcasses, and eight pieces of scat were documented within the footprint of the Preferred Alternative. Outside of the Preferred Alternative footprint, two live tortoises and an additional 27 burrows, 12 carcasses, and 64 pieces

of scat were observed (Table 5). Figure 5 contains the combined results of these surveys in relation to the Preferred Alternative.

In 2011, AMEC recorded an adult male tortoise approximately 3,000 ft (912 m) east of the SR-18 bridge over the Mojave River and 1,500 ft (456 m) north of the Preferred Alternative. The other tortoise was observed by ECORP in 2013 approximately 1,000 ft (304 m) north of the Preferred Alternative, approximately three mi (5 km) east of Sheep Creek Road near El Mirage. It was around these live tortoises that the majority of the more recent tortoise sign was found.

Table 5. Summary of Desert Tortoise Survey Results in BSA

Survey Company and Year	Number of Sign Observed											
	Live Tortoise		Carcass (Class)	Scat (Class)				Burrow (Class)				
	#	Notes	5	2	3	4	5	1	2	3	4	5
ECORP 2008	0	N/A	0	0	0	0	0	0	0	0	0	0
ECORP 2011	0	N/A	0	0	0	0	0	0	0	0	0	0
AMEC 2011b	1	Adult Male	5	2	4	0	1	1	1	1	5	4
AMEC 2012b	0	N/A	2	3	4	5	10	2	4	1	1	1
ECORP 2013	1	Adult in Burrow	9	16	15	8	4	2	1	9	4	4
Subtotal	2	N/A	16	21	23	13	15	5	6	11	10	9
TOTAL	**2**		**16**	**72**				**41**				

Vegetation communities and land cover types that are suitable for desert tortoise within the Preferred Alternative include allscale scrub alliance, allscale scrub/creosote bush scrub alliance, creosote bush scrub alliance, creosote bush-white bursage scrub alliance, disturbed allscale scrub alliance, disturbed creosote bush scrub alliance, disturbed creosote bush-white bursage scrub series, disturbed Joshua tree woodland alliance, disturbed white bursage scrub alliance, fourwing saltbush scrub alliance, Joshua tree woodland alliance, Mojave yucca scrub alliance, Parry's rabbitbrush scrub alliance, rock outcrop, unvegetated wash (not including the Mojave River), and white bursage scrub alliance. There are also several vegetation communities and land cover types within the Preferred Alternative that are not suitable for desert tortoise: agriculture, developed, disturbed, disturbed salt grass flats alliance, Fremont cottonwood forest alliance, non-native grassland, salt grass flats alliance, sandbar willow thickets alliance, and unvegetated wash (within the Mojave River).

Areas between SR-14 and 240th Street East are located within the historical range of the desert tortoise, but wild individuals have not been documented in the vicinity of the Preferred Alternative since 1990 (CDFW 2015). Although the vegetation communities that are known to support this species occurs west of 240th Street East, neither desert tortoise nor their sign was found during focused surveys. Much of the habitat west of 240th Street East has been degraded due to urbanization, agriculture, grazing, and surface disturbance such as off-road vehicle recreation. These areas are considered unsuitable for desert tortoise and are not addressed in this document. Based on survey results and coordination with USFWS, the areas of the Preferred Alternative that will be considered occupied by tortoise is east of 240th Street East (Appendix C).

Table 6 describes the vegetation communities and habitat types east of 240th Street East and the amount in acres that will be temporarily or permanently affected by the Preferred Alternative.

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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 1 of 10)

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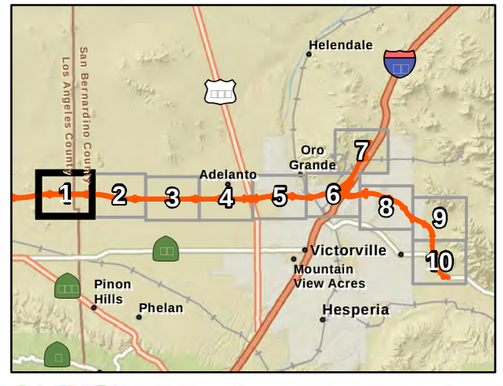

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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2012-061 High Desert Corridor

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Photo Source: NAIP 2014
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Map Date: 8/12/2015

Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 2 of 10)

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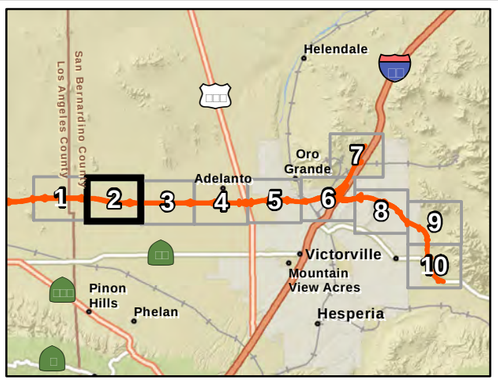

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2012-061 High Desert Corridor

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Photo Source: NAIP 2014
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Map Date: 8/12/2015

Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 3 of 10)

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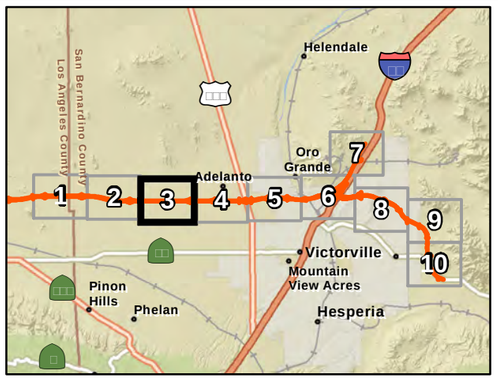

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Rochester Ave
Karst St
Bookasta St
Crippen Ave
Sonora Rd
Bartlett Ave
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Paseo Rd
Lessing Ave
Parkdale Rd
Air Base Rd
Air Expy
Middleton Rd
Yucca Rd
Caughlin Rd
Violet Rd
Apero Rd
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Primrose Rd
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2012-061 High Desert Corridor

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Photo Source: NAIP 2014
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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 4 of 10)

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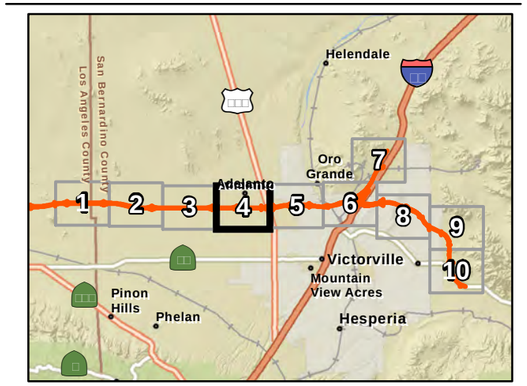

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2012-061 High Desert Corridor

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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 5 of 10)

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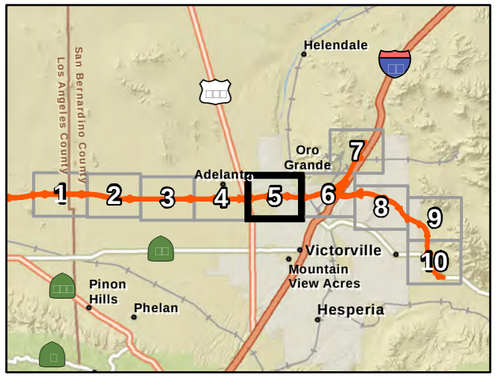

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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 6 of 10)

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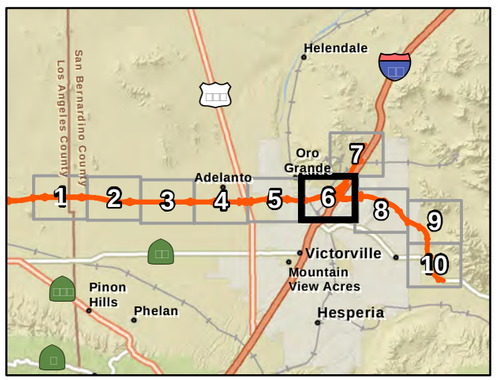

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Photo Source: NAIP 2014
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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 7 of 10)

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Figure 5.
Focused Survey Results for Desert Tortoise
(Sheet 8 of 10)

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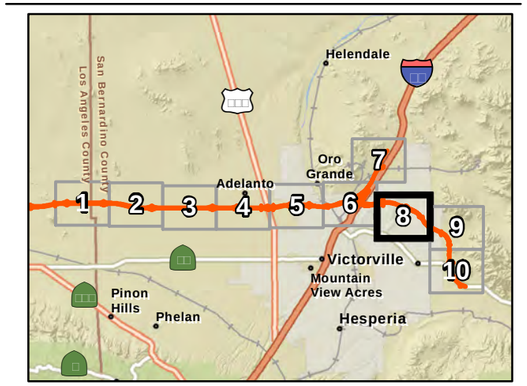

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Figure 5.
Focused Survey Results for Desert Tortoise
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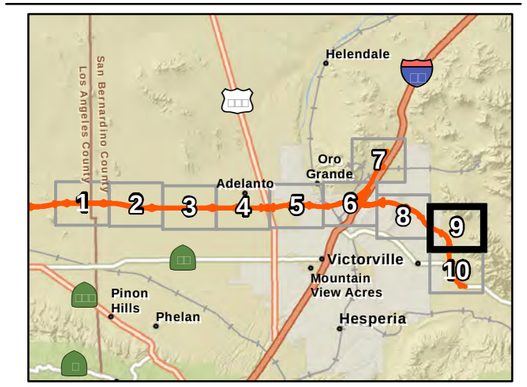

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Figure 5.
Focused Survey Results for Desert Tortoise
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Table 6. Vegetation Communities in Tortoise Habitat

	Impact Area (acres)			
Vegetation Community	**Permanent**	**Temporary**	**No Impacts**	**Total**
East of 240th to I-15	1,569.66	406.35	1.15	1,977.15
Agriculture*	73.35	1.70	0.00	75.05
Allscale scrub Alliance	22.49	4.13	0.00	26.62
Allscale scrub Alliance/Creosote bush scrub Alliance	14.17	0.38	0.00	14.55
Creosote bush scrub Alliance	735.25	264.68	0.00	999.93
Creosote bush-white bursage scrub series	8.95	2.48	0.00	11.43
Developed*	180.04	20.76	0.00	200.80
Disturbed*	59.42	13.78	0.00	73.21
Disturbed Allscale scrub Alliance	0.00	0.08	0.00	0.08
Disturbed Creosote bush scrub Alliance	51.89	3.12	0.00	55.01
Disturbed Creosote bush-white bursage scrub series	0.33	0.00	0.00	0.33
Disturbed Joshua tree woodland Alliance	11.25	2.01	0.00	13.27
Disturbed White bursage scrub Alliance	18.54	2.57	0.00	21.11
Fourwing saltbush scrub Alliance	3.37	6.63	0.00	10.00
Fremont cottonwood forest Alliance*	4.28	0.07	0.27	4.62
Joshua tree woodland Alliance	209.47	28.38	0.00	237.85
Mojave yucca scrub Alliance	35.51	26.20	0.00	61.71
Non-native grassland*	131.57	20.69	0.13	152.39
Parry's rabbitbrush scrub Alliance	2.97	0.05	0.00	3.01
Rock outcrop	5.33	5.25	0.00	10.58
Sandbar willow thickets Alliance*	0.00	0.05	0.62	0.68
Unvegetated wash	0.04	1.86	0.13†	2.04
White bursage scrub Alliance	1.44	1.46	0.00	2.89
East of I-15	558.26	189.59	0.00	747.85
Allscale scrub Alliance	158.57	59.11	0.00	217.67
Creosote bush scrub Alliance	226.58	88.23	0.00	314.81
Developed*	80.15	19.76	0.00	99.90
Disturbed*	23.25	3.95	0.00	27.20

	Impact Area (acres)			
Vegetation Community	**Permanent**	**Temporary**	**No Impacts**	**Total**
Disturbed Allscale scrub Alliance	4.26	3.58	0.00	7.84
Disturbed Creosote bush scrub Alliance	10.31	4.21	0.00	14.53
Disturbed Salt grass flats Alliance*	1.42	0.36	0.00	1.78
Joshua tree woodland Alliance	8.70	2.27	0.00	10.97
Mojave yucca scrub Alliance	25.05	0.00	0.00	25.05
Non-native grassland*	11.54	6.06	0.00	17.59
Rock outcrop	0.37	0.41	0.00	0.78
Salt grass flats Alliance*	8.07	1.65	0.00	9.72
* Not suitable desert tortoise habitat				
† Unvegetated wash is normally considered suitable habitat; however, this acreage is located within the Mojave River, which is not suitable desert tortoise habitat.				

4.1.1.2. ESTIMATED DESERT TORTOISE DENSITY

The Preferred Alternative footprint covers 4,718.96 acres (1,909.7 ha); however, 1,993.95 acres (806.93 ha) occurs between SR-14 and 240th Street East, which is not considered occupied by desert tortoise for the purposes of this project. A total of 2,725.00 acres (1,102.77 ha) occur east of 240th Street East, the western boundary of occupied desert tortoise habitat within the Preferred Alternative as determined by USFWS. The Preferred Alternative between 240th Street East and I-15 covers 1,977.15 acres (800.12 ha) and the Preferred Alternative east of I-15 covers 747.85 acres (302.64 ha) (Table 7). The area west of I-15 contains higher quality habitat for desert tortoise and the area east of I-15 contains lower quality habitat, which is much more fragmented by development and desert tortoises are known to occur at lower densities (R. Bransfield, personal communication, July 17, 2015). Of the acres between 240th Street East and I-15, 505.73 acres (204.66 ha) are highly disturbed, developed, or are habitat types not suitable for desert tortoise. Therefore, a total of 1,470.28 acres (595 ha) of suitable desert tortoise habitat exists within the Preferred Alternative footprint west of I-15. Of the acres east of I-15, 156.20 acres (63.21 ha) are highly disturbed, developed, or are habitat types not suitable for desert tortoise. Therefore, a total of 591.65 acres (239.43 ha) of suitable desert tortoise habitat exists within the Preferred Alternative footprint east of I-15. In total, there are 2,061.93 acres (834.43 ha) of suitable desert tortoise habitat within the entire Preferred Alternative.

Due to the very low numbers of live tortoises and tortoise sign detected in the Preferred Alternative footprint and through coordination with USFWS, tortoise

density estimates from the Desert Tortoise Recovery Office's annual rangewide line distance monitoring surveys were used to calculate the number of tortoises potentially in the Preferred Alternative footprint. The nearest study stratum to the project, and containing similar habitat to the project area, is the Fremont-Kramer Stratum. Therefore, the estimated densities from the three most recent survey years, 2011, 2012, and 2014 (Fremont-Kramer was not surveyed in 2013) were averaged (Table 7) (USFWS 2013a, 2014a, 2015c). For the suitable habitat in the Preferred Alternative between 240th Street East and I-15, the point estimate was used rather than either of the 95 percent confidence intervals due to the lack of any specific factors that would indicate that the density of tortoises in the project area is different from in the Fremont-Kramer stratum. For the suitable habitat east of I-15, the estimate from the lower confidence interval was used because the habitat is of generally lower quality and is much more fragmented by development and disturbance.

Table 7. Fremont-Kramer Stratum Tortoise Density Calculations

Year	Area (km^2)	# of tortoises	#/km^2	95% confidence int.	
				lower limit	#/km^2
2011	2,417	8,261	3.42	4,523.8	1.87
2012	2,417	5,060	2.09	2,014.7	0.83
2014	2,417	11,147	4.61	7,260.4	3.00
Average	2,417	8,156	3.37	4,599.6	1.90

$$\frac{\text{X desert tortoises in footprint}}{\text{3.37 desert tortoises on 1 km}^2} = \frac{\text{1,470.28 acres in footprint}}{\text{247 acres in 1 km}^2} = \text{20.06 desert tortoises}$$

This was rounded to 20 tortoises larger than 180 millimeters (mm) (7 inches [in]).

Turner et al. (1987) determined that desert tortoises smaller than 180 mm comprised approximately 87 percent of a population of desert tortoises. To account for desert tortoises smaller than 180 mm, the following equation was applied:

$$\frac{\text{20 desert tortoise > 180 mm in footprint}}{\text{X total desert tortoises in footprint}} = \frac{\text{13\% of total}}{\text{100\%}} = \text{153.85 desert tortoises}$$

This was rounded to 154 desert tortoises in the Preferred Alternative footprint west of I-15.

$$\frac{\text{X desert tortoises in footprint}}{\text{1.90 desert tortoises on 1 km}^2} = \frac{\text{591.65 acres in footprint}}{\text{247 acres in 1 km}^2} = \text{4.55 desert tortoises}$$

This was rounded to 5 tortoises larger than 180 mm.

$$\frac{\text{5 desert tortoise > 180 mm in footprint}}{\text{X total desert tortoises in footprint}} = \frac{\text{13\% of total}}{\text{100\%}} = \text{38.46 desert tortoises}$$

This was rounded to 39 desert tortoises in the Preferred Alternative footprint east of I-15.

4.1.1.3. COMPENSATORY MITIGATION

The implementation of the Preferred Alternative would permanently affect approximately 1,554.83 acres (629.22 ha) of desert tortoise habitat. Based on preliminary communication with USFWS, the standard mitigation ratio is based on the West Mojave Plan and is 1:1 (Appendix C). Therefore, Caltrans will acquire 1,554.83 acres (629.22 ha) of land within a Desert Wildlife Management Area (DWMA) and/or contribute an equivalent monetary value towards recovery actions in West Mojave. Recovery actions can include restoration, closing roads, fencing installation or repairs. Should changes in project design occur, whether the amount of habitat that is permanently lost increases or decreases, the amount of acres will depend on that calculation. USFWS suggested that Caltrans investigate a new alternative mitigation program that includes the purchase and discontinued use of BLM grazing allotments (Appendix C). The requirements associated with this mitigation option are still being developed.

Based on communication with USFWS the Preferred Alternative will not require contribution to the raven management fee (Appendix C).

4.1.1.4. AVOIDANCE AND MINIMIZATION EFFORTS

Desert tortoise is present within the action area and the following protective measures and BMPs will be implemented to reduce and/or avoid potential effects to this species. Presented below are the same measures as shown in Chapter 1; however, they are broken down by the construction timeframe in which they will occur.

Pre-Construction

- At least 30 days prior to any construction activity, Caltrans will submit the credentials of personnel to be designated as Authorized Biologists to USFWS.
- The Authorized Biologist will be responsible for conducting clearance surveys, ensuring proper implementation of protective measures, making certain that project related impacts are mitigated, reporting all incidents of non-compliance, and halting project activities, if necessary, all in accordance with the BO. Authorized Biologists may be required to handle and temporarily hold desert

tortoises, move desert tortoises from harm's way when they enter project sites, relocate desert tortoises prior to implementation of project, excavate burrows, construct artificial burrows, and unearth and relocate desert tortoise eggs. Authorized Biologists approve and train Monitors. Monitors are responsible for monitoring project activities within desert tortoise habitat, ensuring proper implementation of protective measures, and recording and reporting desert tortoise observations. They report incidents of non-compliance to the Authorized Biologist. If necessary, monitors move desert tortoises from harm's way and place the animal in areas selected by the Authorized Biologist, until the Authorized Biologist assumes care of the animal. Monitors assist with clearance surveys under the direct supervision of the Authorized Biologist. The Monitor will have the authority to stop all activities if avoidance and minimization measures are found to be lacking, or insufficient to protect the species from harm.

- Desert tortoise-proof fences will be installed around all work areas in desert tortoise habitat where the probability of injuring or killing a desert tortoise, without such fencing in place, is considered to be reasonably foreseeable. Biological monitors will conduct daily clearance surveys in the areas where fencing is being installed and monitor the installation. The fencing will be required to be maintained by the contractor, and will be inspected twice per week by a Monitor to ensure its integrity. Desert tortoise fencing will be installed according to USFWS 2009 fencing standards around all areas that will be used for construction, including staging and storage areas, and in all areas of suitable habitat determined by the Authorized Biologist between 240th Street East and the eastern extent of the Project. All areas outside the tortoise fencing will be considered an ESA during construction, as tortoise habitat is adjacent to project boundaries.
- After exclusion fencing is installed and before the start of construction activities, the Authorized Biologist(s) and Monitor(s) will conduct 100% clearance surveys. No desert tortoise will be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 °F (35°C). No desert tortoise will be captured if the ambient air temperature is anticipated to exceed 95°F before handling or processing can be completed. If the ambient air temperature exceeds 95°F during handling or processing, desert tortoises will be kept shaded in an environment that does not exceed 95°F, and not released until ambient air temperature declines to below 95°F.

- If a desert tortoise is found within the Preferred Alternative after the exclusion fencing has been installed or during construction, it will be relocated by the Authorized Biologist to the nearest possible location that is agreeable with USFWS and CDFW. The appropriate permits and permissions will be in place prior to relocation.
- Desert tortoise burrows within the work areas that cannot be avoided will be excavated by hand either by or under the direct supervision of the Authorized Biologist. Burrow excavation will follow the most up-to-date guidelines that are acceptable to USFWS.
- Desert Tortoise Awareness Training will be given by either the Authorized Biologist or Monitor prior to construction for all personnel working in desert tortoise habitat. These briefings will be conducted either in person or via a video presentation of the briefing. At a minimum, the briefings will include discussions of:
  - General provisions of the Endangered Species Act;
  - Necessity for adhering to the provisions of the Act;
  - Potential for civil and criminal penalties associated with violating the provisions of the Act;
  - Specific requirements for complying with the provisions of the Act as they relate to each project;
  - The exact boundaries of the site within which the project activities may be accomplished;
  - Procedures to be accomplished by project personnel should any problem arise with respect to complying with environmental requirements;
  - General behavior and ecology of the desert tortoise and its sensitivity to human activities;
  - All personnel will be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event; and specific procedures to be followed to move a desert tortoise that may be in imminent danger (on a heavily traveled road, on an active project site, or under a vehicle).

Construction

- Caltrans will incorporate the following measure or equivalent into the Contractor Special Provisions section of the bid documents: Contractors are required to comply with the Endangered Species Act for project-related activities (stockpile sites, borrow locations, haul roads, access routes, contractor yards, etc.) that are

outside of the approved footprint of the Preferred Alternative. Contractor must show they contacted the USFWS and have authorization or demonstrate they are not affecting listed species or their habitat.

- An Authorized Biologist and/or Monitor will be present during the removal of desert tortoise habitat east of 240th Street East. As long as the Authorized Biologist is within the vicinity of the habitat removal, a Monitor can be used.
- If a desert tortoise, whether dead, injured, or entrapped, is found in the project area after the 100% clearance survey is completed, all work within the area will halt, and it must be reported to the Authorized Biologist immediately, who will then follow the measures in the BO. Given the tortoise was found after clearance surveys were conducted, a protective measure failed. No work will be conducted until appropriate corrective measures have been completed. The disposition of any carcasses or recovery of dead animals will be coordinated through USFWS.
- If a desert tortoise is found in a construction area where fencing was deemed unnecessary, work will cease until the animal leaves on its own. The area, as determined by the Authorized Biologist, will become an ESA. The Authorized Biologist will then determine extent of additional surveys and fencing as needed.
- Signs will be placed, as needed, to indicate the need to reduce speeds on roadways and that activities are to be strictly confined to the project footprint.
- Project personnel will ensure water used for construction does not create standing water that could attract tortoises or unwanted predators such as common ravens and coyotes to the site. When not in use, all water sources such as hydrants or open water trucks will be caged or netted to prevent use by ravens and other nuisance species.
- Standard BMPs will be implemented by Caltrans and the contractor with regard to dust, erosion, and sediment control.
- No firearms or pets will be allowed at the work area. Firearms carried by authorized security and law enforcement personnel are exempt from this measure.
- Culverts will be designed with soft bottoms and installed in such a way for tortoises to enter and exit safely from each end.
- All construction related vehicles and equipment, including private automobiles parked outside of areas that have tortoise exclusion fencing, must be inspected by drivers prior to moving them to ensure that desert tortoises have not moved underneath the parked vehicle. Inspection flags will be placed on heavy equipment at the end of the day to remind drivers to look under them prior to startup.

- All trash and debris will be promptly disposed of within wildlife-proof containers that common ravens cannot access. Trash and debris within these containers will be regularly removed from the construction area to reduce the attractiveness of the area to common ravens and other desert tortoise predators.
- To minimize perching opportunities for ravens and raptors near habitat supporting desert tortoise, structures incorporating a design to discourage raven and raptor perching should be selected including APLIC guidelines for avoiding unintended injuries to birds.
- In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur to avoid impacts to adjacent tortoise habitat.

Post-Construction

- Permanent desert tortoise fencing, or general wildlife exclusion fencing that meets the standards to exclude tortoise, will be installed parallel to the outside edge of the operational areas of the project, not necessarily the ROW edge, in areas of suitable habitat where bridges and viaducts (which allow passage underneath) are not located. This fencing will be a part of standard highway inspections and maintained in perpetuity.
- Wildlife-proof trash containers will be installed and regularly emptied at all rest stops or train stations associated with the Preferred Alternative.

4.1.1.5. CRITICAL HABITAT

No Critical Habitat for the desert tortoise is present within the Preferred Alternative (USFWS 1990; USFWS 1994). The Fremont-Kramer DWMA is the nearest designated Critical Habitat unit for desert tortoise and is located approximately nine mi (14 km) north of the eastern extent of the Preferred Alternative. No permanent or temporary impacts will occur in any desert tortoise Critical Habitat.

4.1.1.6. PROJECT EFFECTS ON DESERT TORTOISE

For the purposes of the effects analysis, an area of 1,000 ft (304 m) around the Preferred Alternative boundaries is considered the action area for desert tortoise. This buffer was determined based on the ROW and the distance from the Preferred Alternative that effects could occur to desert tortoise. The areas that desert tortoise will be relocated have not been determined, however they will be relocated as close as

possible to their capture site on public land or conserved/mitigation lands that contains similar habitat and is preferably occupied by desert tortoise.

The determination is that the project may affect, but is not likely to adversely affect desert tortoise because of project design and the many measures that will be implemented to protect the species. This determination is explained in more detail below.

Direct Impacts

Permanent Habitat loss

Construction of the Preferred Alternative will result in permanent impacts to desert tortoise habitat. Permanent impacts will include the footprint of the highway, HSR, and bike paths, the furthest extent of which will have permanent tortoise exclusion fencing installed. Table 6 lists the acreage of each suitable vegetation type within the Preferred Alternative that will be permanently affected by the project. Habitat that will be permanently affected were used by desert tortoises for foraging, movement throughout the region, shelter (burrow sites), or reproduction. Approximately 1,554.83 acres (629.22 ha) of currently occupied suitable habitat that desert tortoise will no longer be available to use as a result of the construction of the Preferred Alternative (Figure 5; Table 8). The loss of habitat may affect, but is not likely to adversely affect desert tortoise because Caltrans will mitigate the loss through acquisition of land or contribution of equivalent monetary amount towards recovery actions for the species.

Permanent habitat loss can also occur due to the presence of non-native and invasive plant species introduced into adjacent areas once the Preferred Alternative has been constructed. Seeds can be introduced to desert tortoise habitat by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, and by the improper removal and disposal of invasive species so that seed is spread along the highway. The introduction or spread of invasive plant species may affect, but is not likely to adversely affect desert tortoise because Caltrans will develop and implement a weed management plan and regularly conduct shoulder maintenance activities in areas immediately adjacent to the roadway that will inhibit the growth of non-native and invasive plants introduced via vehicle travel.

Temporary Habitat Loss

Construction of the Preferred Alternative will result in temporary effects to desert tortoise habitat. The temporary impact areas include those areas located immediately

adjacent to the Preferred Alternative that will be outside of the permanent desert tortoise exclusion fencing. These areas may be subject to use for vehicles and equipment staging areas, storage areas, access roads and other construction related activities. Habitat temporarily affected by construction activities may have been used by desert tortoises for forage, travel, shelter (burrow sites), and reproduction. Approximately 507.10 acres (205.22 ha) of occupied suitable tortoise habitat will be temporarily affected as a result of the construction of the Preferred Alternative (Figure 5; Table 8). This temporary loss of habitat may affect, but is not likely to adversely affect desert tortoise because once construction is complete, appropriate native habitat will be replanted in temporarily affected areas that will offset any impacts. Additionally, a Habitat Mitigation Monitoring Plan (HMMP) is being developed that will include restoration/replanting efforts that will further offset any impacts to temporary loss of desert tortoise habitat.

Table 8. Preferred Alternative Impacts to Desert Tortoise Suitable Habitat

Vegetation Community	Impact Area (acres)		
	Permanent	Temporary	Total
Allscale Scrub Alliance	181.06	63.24	244.30
Allscale Scrub Alliance/Creosote Bush Scrub Alliance	14.17	0.38	14.55
Creosote Bush Scrub Alliance	961.83	352.91	1314.74
Creosote Bush-White Bursage Scrub Series	8.95	2.48	11.43
Disturbed Allscale Scrub Alliance	4.26	3.66	7.92
Disturbed Creosote Bush Scrub Alliance	62.20	7.33	69.53
Disturbed Creosote Bush-White Bursage Scrub Series	0.33	0.00	0.33
Disturbed Joshua Tree Woodland Alliance	11.25	2.01	13.27
Disturbed White Bursage Scrub Alliance	18.54	2.57	21.11
Fourwing Saltbush Scrub Alliance	3.37	6.63	10.00
Joshua Tree Woodland Alliance	218.17	30.65	248.82
Mojave Yucca Scrub Alliance	60.56	26.20	86.76
Parry's Rabbitbrush Scrub Alliance	2.97	0.05	3.01

Vegetation Community	Impact Area (acres)		
	Permanent	Temporary	Total
Rock Outcrop	5.70	5.66	11.36
Unvegetated Wash (excluding the Mojave River)	0.04	1.86	1.90
White Bursage Scrub Alliance	1.44	1.46	2.89
TOTAL†	1,554.84	507.10	2,061.93
† May not add up correctly due to rounding error.			

Temporary Habitat Fragmentation

The project has the potential to fragment desert tortoise habitat. During construction, temporary desert tortoise exclusion fencing will be established around the entire work area (including washes and drainages), obstructing travel throughout the region for desert tortoises. This temporary, direct impact will not occur throughout the entire Preferred Alternative at the same time, as the roadway and HSR will be constructed in phases and only portions of the Preferred Alternative will act as barriers within desert tortoise habitat for a discrete period of time. Impacts to desert tortoise habitat and travel throughout the region will be reduced through relocation of desert tortoises found within active work areas. The Preferred Alternative may affect, but is not likely to adversely affect desert tortoise and desert tortoise habitat during the construction phase.

Mortality, Injury, and Disease

Mortality and/or injury of desert tortoises is not expected to occur within active work areas during the construction phase of the project because of project measures implemented to exclude desert tortoises from the work areas (desert tortoise fencing and clearance surveys). Mortality and/or injury of desert tortoises from operation of the roadway/HSR is also not anticipated once the new roadway is open and operational because the entire area within desert tortoise habitat will be fenced to exclude desert tortoises and other wildlife species to prevent vehicle-wildlife collisions and illegal collection of desert tortoises by the public. Directional fencing will be constructed around culverts, viaducts, and bridges to facilitate desert tortoise travel across the roadway and HSR. Introduction of disease to desert tortoises located outside of the Preferred Alternative is also not expected to be an impact with the presence of the desert tortoise/wildlife fence that will be constructed around the roadway.

Mortality, injury and/or disease could occur to desert tortoises during the construction phase of the project by way of relocation efforts. Desert tortoises will be relocated if

found within the active work areas. These impacts will be reduced to the greatest possible extent through development of appropriate relocation methods through coordination with USFWS and CDFW.

Pets (including captive tortoises) will not be allowed in the work areas during construction, so the possibility of introduction of disease, such as upper respiratory tract disease during the construction phase, will not affect the desert tortoise. Excluding pets from the work areas will also decrease the chance of predation on desert tortoises by domestic dogs or cats during construction.

Power poles in association with the electric train will be constructed and may provide perching and nesting sites for potential desert tortoise predators, including common ravens. Because anti-perch structures will be placed on the power poles, this is not anticipated to have an effect to desert tortoise.

Trash may be associated with the new roadway once it is open for public use. Trash can attract desert tortoise predators, including common ravens and coyotes. The desert tortoise/wildlife fence will likely preclude coyotes from being attracted to the trash items, but the fence will not provide a barrier to common ravens. The presence of trash may affect, but is not likely to adversely affect desert tortoise because Caltrans maintenance crews will regularly remove trash from roadsides and wildlife-proof trash receptacles at rest stops.

Indirect Impacts

Noise and Ground Vibrations from Construction Activities

Noise from activities associated with the construction of the Preferred Alternative has the potential to indirectly affect desert tortoise behavior. If desert tortoises are present within the action area, then they may be subject to impacts from construction noise and ground vibrations. The use of large pieces of equipment with running engines, compaction equipment, drilling, etc. has the potential to impact the natural behavior of the desert tortoise. Construction noise may also disrupt the communication and damage the auditory system in desert tortoises or mask the sounds of an approaching predator (USFWS1994). Construction-related vibrations may temporarily displace a tortoise, prompt a desert tortoise to leave its burrow, and may affect courtship/breeding activities of desert tortoises located in the action area. This impact is considered temporary and indirect, associated with the construction phase of the project only, and while it may affect, it is not likely to adversely affect desert tortoise because tortoise densities were found to be very low in this area during surveys.

Furthermore, temporary desert tortoise exclusion fencing will be established around all work areas prior to any noise or ground vibrating activities. It is expected that the majority of these activities will occur in the center of the Preferred Alternative; therefore, the desert tortoise exclusion fencing would automatically create a "buffer zone" that would allow the noise and ground vibrations to dissipate by the time they reach potentially occupied desert tortoise habitat in the action area. The noise and ground vibrations from construction activities may affect, but is not likely to adversely affect desert tortoise because of the "buffer zone" and the low densities of desert tortoises observed during focused surveys.

Once the Preferred Alternative has been constructed, the noise from the highway traffic and ground vibrations of the vehicles and trains traveling over the pavement and rails will cause permanent indirect noise impacts to desert tortoises within the action area. However, desert tortoises appear to be tolerant to permanent noise and ground vibrations. In 2014, ECORP biologists observed an adult male desert tortoise occupying a burrow in the berm of an active railroad track running parallel with SR-14. This suggests that the tortoise was not bothered by the noise and ground vibrations from the train traffic. This behavior has been well documented throughout the range of the desert tortoise. The noise and ground vibrations from operation of the highway and HSR may affect, but is not likely to adversely affect desert tortoise because of the "buffer zone" and the low densities of desert tortoises observed during focused surveys.

Increased Human Activity and Visual Disturbance

Increased human activity and visual disturbances will create permanent impacts to desert tortoise habitat located immediately adjacent to the Preferred Alternative once the roadway has been constructed. This may affect, but is not likely to adversely affect desert tortoise because tortoise densities were found to be very low in the action area during surveys and these disturbances will only occur on the edges of desert tortoise habitat that abut the Preferred Alternative. The entire roadway will be fenced with desert tortoise fencing at a certain distance from the roadway to exclude desert tortoises from the area and this fencing will also create a buffer from the increased human activity and visual disturbances associated with the new roadway. Desert tortoise within areas further away from the roadway and associated desert tortoise fencing are not expected to be affected.

Temporary impacts from increased human activities and visual disturbance will occur during the construction phase of the project; however, these impacts are not expected

to be different from the permanent impacts associated with the new highway and rail (discussed above).

Increased Dust

Fugitive dust is a likely result of construction activities within the Preferred Alternative. This impact is considered a temporary impact because it will not occur once construction is completed. Because the Preferred Alternative is in a region that is subject to frequent windy conditions, the additional dust created by construction will likely be a minimal temporary impact. Additionally, dust control measures required by the Mojave Desert Air Quality Management District will minimize dust during construction. The water used to suppress the dust is not expected to subsidize ravens or other tortoise predators because of the multiple water truck and hydrant measures that will be implemented.

Habitat Fragmentation

The project has the potential to fragment desert tortoise habitat. To reduce the potential for habitat fragmentation after construction of the project, Caltrans has designed seven viaducts, 132 culverts, and one overcrossing designed specifically for tortoise and general wildlife to use. The viaducts and culvert locations were strategically located to allow for continued use of washes that tortoises are known to use for travel after the roadway and HSR are constructed. The length of the viaducts range from 418 ft to nearly three miles, with a total overall length of approximately 5.3 miles. Two of the viaducts will occur west of 240th Street East and the rest will occur between 240th Street and the eastern terminus of the Preferred Alternative.

The highway will be elevated between the Mojave River and the Victorville Landfill; however, the HSR will be constructed inside of a cut channel approximately 30 feet below the surface of the ground (the length of this segment was not included in the overall length of the crossings and viaducts described above). The design of this portion of the project will not allow north-south desert tortoise travel; therefore, a 90-foot wide overcrossing will be constructed at Quarry Road over the HSR to serve as a crossing structure for desert tortoises and other wildlife, as well as vehicles.

The presence of the overcrossing at Quarry Road, the culverts, and the viaducts will reduce impacts to desert tortoise habitat fragmentation and movement throughout suitable habitat after construction is complete. The Preferred Alternative may affect, but is not likely to adversely affect desert tortoise and desert tortoise habitat once the project is in operation.

Growth Inducement

With the construction of a new roadway within the Preferred Alternative, an increase in the number of travelers, accommodations, new roads along this route, and growth through the relocation and/or establishment of businesses is expected along an area that is currently relatively undeveloped. Although growth inducement is expected to occur, future impacts are not known at this point, and the new accommodations, roads, and businesses will be evaluated separately as they are planned.

Increased Recreation

With a high number of travelers expected on the new roadway, there is a potential for increased off-highway vehicle (OHV) activity. There are many dirt (and paved) roads that currently bisect, or run parallel to the Preferred Alternative that are subject to use by OHVs. During the operational phase of the project, the wildlife exclusion fencing is expected to contain all vehicles to within the footprint of the road way. Once the project has been constructed, vehicles are not expected to be able to leave the highway except on designated off-ramps or arterial streets due to design of the roadway and presence of desert tortoise exclusion fencing. Therefore, increased recreation due to OHV use is not expected to affect desert tortoise.

4.1.1.7. CUMULATIVE EFFECTS (FESA)

When considering cumulative effects to federally listed species, Section 7 of the FESA considers cumulative effects to include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the Preferred Alternative are not considered because they require separate consultation.

A list of major actions within the Preferred Alternative action area is provided below.

- Route 395 Expressway (Caltrans). Widening US 395 to four lanes from SR-18/Palmdale Road to SR-18. The project is in the planning phase. A portion of the widening is in the action area; and
- XpressWest. High-speed passenger train between Victorville and Las Vegas. Environmental documentation has been completed. A portion of the project is within the action area.

Both of these major projects would affect desert tortoise or its habitat. Although these projects are state and private projects, respectively, they require Section 7 consultation because of federal funding and/or entitlements. Actions on private lands, such as commercial, residential and institutional development, are most likely to occur in the

urbanized areas on the eastern end of the alignment (Adelanto, Victorville, and Apple Valley), and these areas were among the lowest in tortoise density. The Preferred Alternative, in combination with other state, local, or private projects may affect, but is not likely to adversely affect desert tortoise.

4.1.2. Least Bell's Vireo and Southwestern Willow Flycatcher

Two federally listed bird species have the potential to occur in the Preferred Alternative due to the presence of riparian vegetation; the federally listed (endangered) LBVI and the federally listed (endangered) SWFL. To maintain document brevity, it was requested by USFWS that detailed species descriptions be excluded from this document (Appendix C). The focused survey reports included in Appendix H contain detailed descriptions about suitable breeding habitat for each of the species. LBVI and SWFL are riparian obligate species with overlap in habitat type use and are addressed together in this section for that reason.

Least Bell's Vireo. The LBVI was federally listed as an endangered species in 1986 (USFWS 1986).

Southwestern Willow Flycatcher. The SWFL was federally listed as an endangered species in 1995 (USFWS 1995).

4.1.2.1. SURVEY RESULTS

Survey results for each bird species are discussed below and details on survey results can be found in the respective focused survey reports (ECORP 2012b; ECORP 2013; ECORP 2014a; ECORP 2015b, in prep). Figure 6 contains the combined results of the surveys conducted for LBVI and SWFL by ECORP.

Least Bell's Vireo

ECORP documented several LBVI individuals and nesting territories within the survey area (ECORP 2012b; ECORP 2013; ECORP 2014a; ECORP 2015b, in prep). In 2012, two nesting territories were documented near the Mojave Nor Mining Railroad crossing over the Mojave River, southeast of the Preferred Alternative. Both nests were successful in raising young. No nests or territorial pairs were observed in 2013 or 2014, but several individual observations of the species were documented. One nesting territory was documented in 2015 within the survey area and one territory was documented just outside of the survey area. Both nests were located near the Mojave Nor Mining Railroad crossing and were successful in raising juveniles.

During the ECORP surveys conducted between 2012 and 2015, LBVIs were not documented closer than 2,600 ft (792 m) upstream (south) of the Preferred Alternative. No LBVI were documented downstream (north) of the Preferred Alternative or within the riparian habitat located west of Gas Line Road.

Southwestern Willow Flycatcher

ECORP documented vocalizations from a SWFL and one nest attempt that appeared to be unsuccessful during the third survey period in 2012. No other SWFL or active SWFL nests were identified in the subsequent survey years (ECORP 2012b; ECORP 2013; ECORP 2014a; ECORP 2015b, in prep). Numerous migrant willow flycatcher individuals, which are not included under the federal listing designation, were also documented during the surveys.

During the ECORP surveys conducted between 2012 and 2015, SWFLs were never documented within the Preferred Alternative. The closest SWFL observation documented during surveys was approximately 4,350 ft (1,326 m) south of the Preferred Alternative. Two migratory willow flycatchers were observed approximately 400 ft (123 m) south of the Preferred Alternative but nesting behavior was not identified.

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Figure 6.
Focused Survey Results for Southwestern Willow Flycatcher and Least Bell's Vireo

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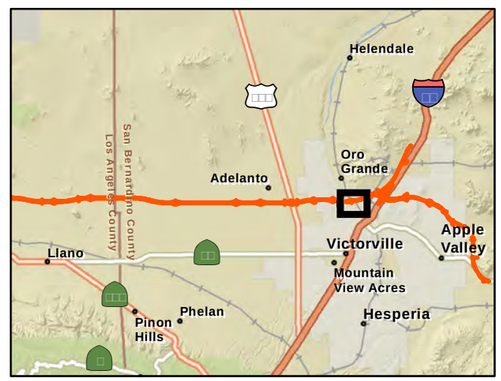

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2012-061 High Desert Corridor

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Photo Source: USGS 2011
[1] Caltrans

Map Date: 8/12/2015

Location: N:\2012\2012-061.014 HDC GIS\MAPS\sss_survey_and_mapping\SWWF_LBV\HDC_SWFF_LBV_BA_Results_20150811.mxd (MAGUDS) JSwager 8/12/2015

4.1.2.2. CRITICAL HABITAT

Least Bell's Vireo

Critical habitat for the species was designated in 1994 (USFWS 1994). However, none occurs within the Preferred Alternative.

Southwestern Willow Flycatcher

Critical Habitat for the SWFL was designated by the USFWS in October 2005 (USFWS 2005) and revised in January 2013 (USFWS 2013b). The Preferred Alternative crosses the Mojave River within the Basin and Mojave Management Unit of designated Critical Habitat for SWFL. This Critical Habitat unit comprises a 22.2-mi (35.7 km) section of the Mojave River, a 6.9-mi (11.1 m) section of the West Fork Mojave River, a 12.2-mi (19.6 km) portion of Holcomb Creek, and a 12.5-mi (20.1 km) section of Deep Creek in San Bernardino County (USFWS 2013b). Not all of these sections of waterways are known to be occupied by SWFLs but were designated as Critical Habitat for the purposes of species recovery. These four segments were identified for SWFL conservation because they have the potential to provide protection against habitat loss, provide areas for population growth with the potential for colonization, habitat for metapopulation stability, and protection of genetic connectivity (USFWS 2013b).

Primary Constituent Elements

Primary Constituent Elements (PCEs) described for SWFL Critical Habitat are based on the biological and ecological needs of the species. They are considered to be essential for the conservation of a species and are described in detail within a species Critical Habitat designation. The USFWS identified two PCEs for SWFL Critical Habitat (USFWS 2013b). These include riparian habitat and insect prey populations; the following descriptions are from the final rule (USFWS 2013b).

Riparian Habitat

Riparian habitat located in "dynamic successional riverine environments" is imperative to the survival of SWFL because the flycatcher uses riparian habitat during all life stages, including foraging, migration, nesting, shelter, and dispersal. Several factors contribute to this PCE for flycatcher Critical Habitat. Trees and shrubs are an important factor and usually include several willow species, tamarisk, and cottonwoods and must be dense and ranging in height from 6 to 98 ft (2 to 30 m). Researchers have found that SWFLs do not appear to have a preference between native and non-native tree and shrub species; however, the density of these stands is a limiting factor. Shorter stands of dense riparian habitat are used at higher elevations,

while taller stands are occupied in lower elevations. Dense areas of vegetation interspersed with smaller openings of sparser vegetation and/or open water or marsh are used by SWFLs from ground level to approximately 13 ft (4 m) above the ground. A dense tree or shrub canopy is imperative for breeding sites (areas with 50 to 100 percent coverage).

Insect Prey Populations

Floodplain-specific invertebrate prey comprises the majority of the SWFL's diet. Therefore, an insect population associated with the aforementioned riparian vegetation features is considered a PCE of SWFL Critical Habitat. An insect generalist, the flycatcher consumes several different types of species, ranging from beetles (Coleoptera), to butterflies and moths (Lepidoptera), wasps and bees (Heteroptera), and dragonflies (Anisoptera). Prey availability can be influenced by quality of vegetation present in the habitat, presence of and proximity to water, and microclimate features such as humidity and temperature.

Critical Habitat in the Preferred Alternative

The Preferred Alternative crosses through SWFL Critical Habitat within the Mojave River and its greater floodplain in two locations: one across the Mojave River at the proposed bridge location and a floodplain area west of Gas Line Road to approximately 0.3 mi (0.5 km) west of Matthews Lane. Each portion of the Critical Habitat that the Preferred Alternative crosses is discussed individually below and is shown in Figure 7.

The first area consists of the Mojave River channel and its associated riparian habitat on either side within a portion of the river referred to as the "Lower Narrows." The area is narrow, approximately 350 ft (106 m) wide, and contains the following vegetation communities and land cover types: Mojave yucca scrub alliance, disturbed creosote bush scrub, non-native grassland, Fremont cottonwood forest alliance, sandbar willow thickets alliance, unvegetated wash, rock outcrops, disturbed, and developed. Seven of the nine vegetation communities/land cover types do not contain the PCEs for SWFL survival (Mojave yucca scrub alliance, disturbed creosote bush scrub, non-native grassland, unvegetated wash, rock outcrops, disturbed, and developed) because no riparian habitat is present. The Fremont cottonwood forest alliance, located on the upper terraces of the Mojave River in this area, contains a sparse canopy with very little vegetative understory. The sandbar willow thickets located below the terraces in the river are also sparsely vegetated and narrow in width. Habitat patches are distributed sparingly within the section, presumably due to the

scouring action of frequent flooding within the narrow stream corridor. Open water is present, but is not associated with a more dense riparian forest as described in the PCE narrative within the Final Rule. Based on the features present, their distribution, and the flooding dynamics of this section of the Mojave River, the PCEs are marginal and prevent this area from fulfilling the function of Critical Habitat.

The second area where the Preferred Alternative crosses SWFL Critical Habitat is approximately one mile (two km) west of the Mojave River. This section is located west of Gas Line Road and includes fourwing saltbush scrub alliance, allscale scrub alliance, non-native grassland, Parry's rabbitbrush scrub alliance, allscale/creosote bush scrub alliance, unvegetated wash, disturbed, developed, Fremont cottonwood forest, and sandbar willow thickets; only the latter two communities potentially provide suitable SWFL habitat. The Fremont cottonwood forest alliance in this area consists of a small stand of Fremont cottonwood trees (approximately three to four trees; 3.25 acres [1.31 ha]) that appear to be unhealthy and possibly dying. The sandbar willow thickets alliance contains dense willows but is very small in size (approximately 0.05 acre [0.02 ha]) and not structurally diverse and would not be suitable for flycatchers. The PCEs of SWFL Critical Habitat are marginal in this area and the sparse riparian component prevents this area from fulfilling the function of Critical Habitat.

An inventory of insect and invertebrate prey species was not conducted within the Preferred Alternative. It is expected that invertebrates would be less abundant in areas that do not support dense riparian habitat. Regardless of the abundance of invertebrates in the area, the lack of the riparian component of the PCEs prevents the area of the Preferred Alternative from fulfilling the conservation function of Critical Habitat.

In summary, the riparian vegetation within areas where the Preferred Alternative crosses Critical Habitat is of poor quality in terms of supporting the large, dense stands of mixed height riparian vegetation that comprises this PCE of SWFL Critical Habitat.

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Figure 7.
Vegetation Communities in Riparian Bird Survey Areas

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Photo Source: USGS 2011
[1] Caltrans

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4.1.2.3. AVOIDANCE AND MINIMIZATION EFFORTS

LBVI, SWFL, and SWFL Critical Habitat will be protected through the implementation of BMPs. The project has been designed to avoid effects to LBVI, SWFL, and SWFL Critical Habitat. The measures that have been included in the project design include:

- Areas outside of the proposed construction zone will be designated as an ESA and no work will be conducted within these areas to avoid the potential impacts to SWFL Critical Habitat. These areas will be fenced off clearly by use of obvious exclusion fencing prior to the onset of ground disturbance. The fencing will remain in place while the project is being constructed. An approved avian biologist will oversee the placement and design of this fencing. This measure applies to work activities in or around riparian vegetation within the Preferred Alternative.
- Standard BMPs will be implemented by Caltrans to protect ecologically important resources in the construction zone. General stormwater BMPs and conservation measures would be implemented during project construction to avoid any potential for downstream sedimentation effects on SWFL Critical Habitat. The BMPs of the SWPPP will be designed to avoid potential indirect effects to SWFL Critical Habitat downstream.
- Noise effects will not exceed 60 dBA Leq from the boundaries of the Preferred Alternative.
- Prior to the initiation of construction activities, all project personnel will be educated regarding the LBVI, SWFL, and SWFL Critical Habitat within and adjacent to the project area. Construction personnel are to remain outside of the Critical Habitat, unless within the approved work area.
- The lighting on the new bridge over the Mojave River, the viaduct west of Gas Line Road, and along constructed roadways will consist of directional lighting that focuses the light on the roadway or the HSR.
- During rock blasting activities for bridge construction over the Mojave River, rockfall protection measures will be implemented to prevent any rock or debris resulting from the blasting to roll into the Mojave River to avoid impacts to water flow downstream. This measure applies to project activities in the Mojave River only.
- In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after

construction to avoid impacts to riparian vegetation downstream. Eradication strategies would be employed should an invasion occur.

4.1.2.4. PROJECT EFFECTS ON LEAST BELL'S VIREO, SOUTHWESTERN WILLOW FLYCATCHER, AND SOUTHWESTERN WILLOW FLYCATCHER CRITICAL HABITAT

For the purposes of the effects analysis, an area of 1,000 ft (305 m) around the Preferred Alternative boundaries within riparian vegetation is considered the action area for LBVI, SWFL, and SWFL Critical Habitat. This buffer was determined based on projected noise measurements from anticipated construction activities within the Preferred Alternative.

The determination is that the project may affect, but is not likely to adversely affect LBVI, SWFL, and SWFL Critical Habitat. The project is not likely to adversely affect these biological resources because of low quality existing habitat within the action area, project design, and the many project measures implemented to protect these resources. This determination is explained in more detail below.

Direct Impacts

Habitat Loss

Permanent and temporary habitat loss for LBVI, SWFL, and SWFL Critical Habitat will occur on a portion of the Preferred Alternative as a result of construction activities; however, it will not occur in all riparian habitat within the Preferred Alternative. In general, riparian habitat within the action area is very poor and does not contain the appropriate nesting requirements (e.g. dense vegetative cover and structural diversity) for LBVI or SWFL. Migratory LBVI may find the low quality habitat within the action area suitable as a migratory stopover, but this species has not been documented within the action area during focused surveys. Although two migratory willow flycatchers were documented approximately 250 ft (76 m) south of the Preferred Alternative, the migrant individuals are not included in the federal listing designation for SWFL. The permanent and temporary habitat loss may affect but is not likely to adversely affect LBVI and SWFL.

Permanent and temporary habitat loss will occur in the stretch of riparian vegetation west of Gas Line Road, approximately one mi (two km) west of the Mojave River. Temporary impacts will occur to 0.07 acre (0.03 ha) of Fremont cottonwood forest alliance and permanent impacts will occur to 3.19 acres (1.29 ha) of Fremont cottonwood forest and 0.05 acre (0.02 ha) of sandbar willow thickets alliances (Table 9). The Fremont cottonwood forest alliance at this location does not provide habitat

for LBVI and SWFL because it is small in size, has a sparsely vegetated understory, and the cottonwood trees are unhealthy (sparse foliage and dead/fallen limbs). The sandbar willow thickets alliance is more densely vegetated but is also small in size and does not support suitable habitat for SWFL. The dense structure of the sandbar willow thickets alliance in this area does provide suitable habitat for LBVI; however, the size of the habitat affected by the project is very small (0.05 acre [0.02 ha]) and LBVI has not been documented in this location during focused surveys in 2013, 2014, or in 2015. Therefore, it is anticipated that permanent or temporary removal of this habitat will not have any direct effects to LBVI or SWFL.

Removal of riparian vegetation in the Mojave River during project construction is not anticipated because the Preferred Alternative includes construction of a bridge that spans the entire width of riparian vegetation within the Mojave River; no riparian vegetation removal is necessary for the Mojave River bridge construction. A total of 0.27 acre (0.11 ha) of Fremont cottonwood forest alliance and 0.62 acre (0.25 ha) of sandbar willow thickets alliance is present in the Mojave River where the Preferred Alternative crosses. Due to the design of the bridge, no temporary or permanent impacts to this riparian vegetation are anticipated in this portion of the Preferred Alternative (Table 9).

Table 9. Preferred Alternative Impacts to Critical Habitat for the Southwestern Willow Flycatcher

Classification	Habitat Acreage within Critical Habitat	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Area of Impact (acres)
*Fremont Cottonwood Forest Alliance (Mojave River)	0.27	0.00	0.00	0.00
*Sandbar Willow Thickets Alliance (Mojave River)	0.62	0.00	0.00	0.00
*Fremont Cottonwood Forest Alliance (West of Gas Line Road)	3.25†	3.19	0.07	3.25†
*Sandbar Willow Thickets Alliance (West of Gas Line Road)	0.05	0.05	0.00	0.05
TOTAL	4.19	3.24	0.07	3.30

**Note: These communities do not provide the PCEs for SWFL Critical Habitat.*
†Does not add up correctly due to rounding error.

None of the riparian habitats within the action area contain the necessary PCEs for SWFL Critical Habitat; therefore, impacts to SWFL through removal of Critical Habitat are not anticipated.

Shading effects from the newly constructed bridge over the Mojave River are not expected to affect riparian vegetation below the bridge. Existing riparian vegetation in this area is sparse, so effects from shade on the vegetation beneath the bridge will be minimal. Furthermore, the bridge is designed to be at least 80 ft (24 m) above the ground and will have three separate bridge decks, one each for eastbound and westbound vehicular traffic and one for rail travel. The height and design of the three narrow bridge decks will allow ample sunlight to the areas below the bridge. Appendix L contains photographs of existing bridges over the Mojave River located upstream and downstream of the Preferred Alternative. The bridges include National Trails Highway, the BNSF Railroad (bridges both east and west of I-15), and the I-15 bridge. Although the bridges are not the same height, construction technique, or orientation of the Preferred Alternative bridge, they do show that riparian vegetation continues to grow underneath and directly adjacent to the bridges despite any shading on the vegetation from the bridge structures.

Mortality

Direct impacts in the form of vehicle-wildlife collisions for LBVI and SWFL are not likely to occur because the height of the bridge spanning the Mojave River will be at least 80 ft (24 m) above the river, which is high enough that birds are more likely to fly under, rather than over, the bridge if traveling north-south along the Mojave River.

LBVI and SWFL were not documented in the stretch of Critical Habitat west of Gas Line Road; therefore, no vehicle-wildlife collisions with LBVI or SWFL are anticipated with the new roadway and viaduct in this area.

Indirect Impacts

Noise

During construction activities, noise levels are not expected to exceed 105 dB at 50 ft (15 m) from the noise source (Jin Lee, Caltrans, personal communication, July 28, 2015). Based on this measurement, projected noise levels at 1,000 ft (305 m) from the source are expected to be 80 dB. This level is a one-time measurement, it is not the averaged noise level over the period of an hour, which is the standard measurement used when determining noise impacts to breeding birds. Noise impacts to bird species

are typically measured at 60 dB averaged over an hour (dBA) at a certain distance from the noise source. With the equipment planned for project use, it is expected that noise levels will not be sustained at 105 dB for longer than a few seconds during construction activities. This activity may be repeated every few seconds or so, but the period of lower noise levels averages with the high noise levels to be substantially lower than 80 dBA at 1,000 ft (305 m) from the source. Furthermore, the Preferred Alternative is located in an area with steep walls and curves, further diminishing construction activity noise and preventing it from reaching the upstream areas where LBVI and SWFL were detected. Noise levels are not expected to exceed 60 dBA at 1,000 ft (305 m) from the boundaries of the Preferred Alternative.

Existing ambient noise levels at Rockview Nature Park, located adjacent to the Preferred Alternative to the north, were measured at 42 dBA (Caltrans 2014). Noise projections conducted for the project's EIR find that this location would be projected to increase to 53 dBA during the worst traffic conditions (e.g., rush hour traffic) after the roadway is constructed.

Increased noise levels during and after construction are not expected to affect nesting activities for LBVI or SWFL because suitable nesting habitat is not present within the action area for either of these species. Higher quality and more suitable LBVI and SWFL habitat is located upstream of the Preferred Alternative that these species is more likely to nest in (and was found in during focused surveys). Furthermore, the closest listed bird nest that has been documented to the Preferred Alternative during focused surveys was a LBVI nest documented approximately 2,600 ft (792 m) away. Successful SWFL nesting has not been documented during focused surveys.

Even if riparian vegetation within the action area were to become higher quality habitat in the future (due to an increase in size and density), creating suitable LBVI nesting habitat, other riparian bird surveys conducted in the Mojave River have documented LBVI nests in close proximity to railroads, highway bridges, and busy roads, suggesting this species' tolerance of disturbances during nesting. 2012 surveys for LBVI and SWFL for the HDC project documented an LBVI nest located approximately 480 ft (146 m) from the Mojave Nor Mining Railroad bridge crossing the Mojave River, with the closest documented LBVI individual observed approximately 40 ft (12 m) from the railroad bridge (ECORP 2012b). Non-HDC related surveys conducted around the same bridge in 2004 by San Bernardino County Museum biologists and in 2013 by Leatherman BioConsulting documented LBVI approximately 500 ft (152 m; an individual sighting) and 395 ft (120 m; a nest),

respectively, from the same railroad bridge (SBCM 2004; Leatherman 2013). Surveys conducted for the I-15 Mojave River Interchange Reconstruction Project (ECORP 2007) documented LBVI observations within 500 ft (152 m) from the existing I-15 bridge. Documented LBVI occurrences in proximity to existing highway and railroad bridges have not appeared to affect the location of LBVI nesting activities. No long-term impacts are expected as a result of this project to nesting LBVI.

Based on the lack of suitable nesting habitat, the distance from the Preferred Alternative that the closest nest was documented (LBVI), the lack of SWFL observations within the action area (nesting and individual), and the fact that LBVI appear to be tolerant of existing railroads and highway bridges, noise impacts are not expected to occur to nesting LBVI or SWFL.

Increased Human Activity and Visual Disturbance

Increased human activity and visual disturbances associated with the project are not expected to create impacts on LBVI or SWFL because homeless encampments, OHV use, and other evidence of human activity (e.g., trash and graffiti) are currently prevalent in the area where LBVI and SWFL were found. Construction of the bridge and new roadway may attract additional human activity to the area, but this increase is not anticipated to be substantially more than what is already present in the area.

Ground-Based Vibration

Ground-based vibration resulting from the use of heavy equipment and large vehicles used during the construction phase of the project is not expected to be an impact to LBVI or SWFL because these species were not found to breed within the action area because of low quality habitat. Ground-based vibration is not expected to create impacts on migratory individuals because the area is currently subjected to a high level of ground vibrations from the nearby BNSF railroad and busy roads throughout the area. The higher quality habitat located upstream (south) of the action area is more likely to attract migrating individuals than the small and sparsely vegetated riparian vegetation within the action area.

Light Disturbance

The lighting on the new bridge over the Mojave River, the viaduct west of Gas Line Road, and along constructed roadways will consist of directional lighting that focuses the light towards the roadway and the HSR. LBVI and SWFL have not been documented within 2,600 ft (792 m) of the Preferred Alternative. At this distance, the

nighttime lighting effects from the roadway will be substantially reduced by the presence of vegetation and the distance away from the light source.

The closest listed bird nest that has been documented to the Preferred Alternative during focused surveys was a LBVI nest documented approximately 2,600 ft (792 m) away. Successful SWFL nesting has not been documented during focused surveys. Even if riparian vegetation within the action area were to become higher quality habitat in the future (due to an increase in size and density), creating suitable LBVI nesting habitat, other riparian bird surveys conducted in the Mojave River have documented LBVI nests in close proximity to lighted highway bridges and busy roads, suggesting this species' tolerance of light disturbances. Specifically, LBVI have been documented within 500 ft (152 m) of the I-15 bridge over the Mojave River, which is a heavily lit bridge (ECORP 2007).

No impacts to LBVI or SWFL species are expected to occur as a result of nighttime light disturbance.

4.1.2.5. CUMULATIVE EFFECTS (FESA)

When considering cumulative effects to federally listed species, Section 7 of the Federal Endangered Species Act considers cumulative effects to include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the Preferred Alternative are not considered because they require separate consultation. Properties in the action area are owned by public agencies for the purposes of open space, recreation and flood control or by the BNSF Railroad as railroad ROW. There are no state, tribal, local, or private actions that are reasonably certain to occur in the action area.

4.1.3. Western Yellow-Billed Cuckoo

To maintain document brevity, it was requested by USFWS that detailed species descriptions be excluded from this document (Appendix C). The focused survey report (ECORP 2015, in prep) contains detailed descriptions about suitable breeding habitat for this species.

The YBCU was federally listed as an endangered species in October 2014 (USFWS 2014b).

4.1.3.1. SURVEY RESULTS

YBCU was not detected during focused surveys. The closest recorded observation of this species was documented 2.5 mi (4 km) upstream in the Mojave River near the SR-

18 bridge, where the riparian vegetation is larger in size, higher quality, and more dense, during surveys conducted for the I-15 Mojave River Interchange Reconstruction project (ECORP 2007).

4.1.3.2. CRITICAL HABITAT

The USFWS has proposed Critical Habitat for this species; no proposed Critical Habitat occurs in the Preferred Alternative.

4.1.3.3. AVOIDANCE AND MINIMIZATION EFFORTS

The project will have no effect to YBCU due to the lack of suitable habitat and negative focused survey results; therefore, no avoidance and minimization efforts are necessary for this species.

4.1.3.4. PROJECT EFFECTS ON WESTERN YELLOW-BILLED CUCKOO

For the purposes of the effects analysis, the action area for YBCU was determined to be the same as for LBVI and SWFL, the Preferred Alternative and a 1,000-ft (305-m) buffer around the boundaries of the Preferred Alternative.

Focused surveys for YBCU were negative and the existing riparian vegetation within the action area is not suitable for YBCU nesting activities.

The existing habitat patches are not large enough for YBCU breeding activities, as YBCU are known to nest in very large, wide areas of riparian habitat, up to 2,000 ft (608 m) in width and have not been documented nesting in isolated patches 1 to 2 acres (0.4 to 0.8 ha) in size or in narrow corridors 30 to 60 ft (9 to 18 m) in width (Halterman, et al. 2015). Breeding habitat ranges from contiguous stands of mixed native/exotic vegetation to mosaics of densely vegetated and open areas. Nesting does not occur in narrow, linear corridors smaller than 33 to 66 ft (10 to 20 m) wide.

Migratory YBCU may use the vegetation as a stopover; however, none have been documented during focused surveys. Furthermore, vegetation present within the action area does not meet the description of suitable migratory habitat for this species. Less is known about the habitat needs for migrating YBCU, but Halterman et al. (2011) define a potentially suitable habitat area as “an area of riparian habitat five hectares or greater in extent that is separated by at least 300 m from an adjacent patch of apparently suitable YBCU habitat.” In California, YBCU rarely use patches of habitat smaller than 49 acres (20 ha), especially when the habitat patches are isolated from other areas of riparian habitat (Halterman 2015). The riparian vegetation within the Preferred Alternative and action area is a very small patch of habitat substantially less

than 40 acres (20 ha) in size. Furthermore, the riparian vegetation is sparsely vegetated and does not contain the structural variation that has been documented in YBCU habitat (e.g., densely vegetated areas interspersed with open areas). Based on the lack of suitable present within the action area and the negative results of focused surveys, the project will have no effect on this species.

4.1.3.5. CUMULATIVE EFFECTS (FESA)

A no effect determination was made for YBCU; therefore, an assessment of cumulative effects is not necessary for this species.

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Chapter 5. Conclusions and Determination

5.1. Conclusion

5.1.1. Desert Tortoise

Construction of the Preferred Alternative will permanently affect 1,554.83acres (629.22 ha) of desert tortoise habitat. An estimated density of 193 desert tortoises was calculated within the Preferred Alternative; however, project construction is not expected to affect this entire population estimate. No desert tortoise Critical Habitat will be affected. The Preferred Alternative may affect, but is not likely to adversely affect desert tortoise. Coordination between Caltrans and USFWS has determined appropriate conservation measures to include: compensatory acquisition and/or monetary contributions to other recovery efforts, temporary tortoise fencing during construction, permanent tortoise fencing along the corridor, and construction strategies for tortoise protection. The protection strategies include pre-construction clearance surveys, monitoring construction activities by a biologist, tortoise education training for workers, litter control, temporary and permanent fencing of work and operational areas.

Effects associated with the Preferred Alternative may include, but are not limited to:

- Loss of habitat due to direct removal of habitat;
- Habitat fragmentation;
- Harassment during construction-related activities;
- Loss foraging habitat from direct removal of habitat; and
- Noise and ground vibrations from construction and post-construction activities.

5.1.2. Least Bell's Vireo and Southwestern Willow Flycatcher

Approximately 12.74 acres (5.16 ha) of SWFL Critical Habitat occurs within the Preferred Alternative, of which approximately 4.19 acres (1.7 ha) is of low quality riparian habitat that does not contain the PCEs that are known to support this species. No LBVI Critical Habitat will be affected. Construction of the Preferred Alternative will permanently affect 3.19 acres (1.29 ha) of Fremont cottonwood forest alliance and 0.05 acre (0.02 ha) of sandbar willow thickets alliance and temporarily affect 0.07 acre (0.03 ha) of Fremont cottonwood forest alliance; however, it is not anticipated to have

any direct effects to listed riparian birds due to the low quality and sparsely vegetated nature of the habitat. A total of 0.27 acre (0.11 ha) of Fremont cottonwood forest alliance and 0.62 acre (0.25 ha) of sandbar willow thickets alliance is present in the Mojave River, but no impacts will be occurring to these vegetation communities because the bridge over this portion of the Mojave River is designed to completely span all riparian vegetation; no vegetation removal is required for construction of the bridge. The Preferred Alternative may affect, but is not likely to adversely affect LBVI, SWFL, and SWFL Critical Habitat. Coordination between Caltrans and USFWS have determined appropriate conservation measures to include: construction strategies for LBVI and SWFL protection. The protection strategies include delineating work boundaries and monitoring construction activities by an avian biologist.

Effects associated with the Preferred Alternative may include, but are not limited to:

- Noise impacts during and after construction
- Increased human activities during and after construction; and
- Light disturbance after construction.

5.1.3. Western Yellow-Billed Cuckoo

YBCU have not been documented within the BSA and Critical Habitat for this species has not yet been established. No project effects are expected to occur to YBCU because this species and its habitat do not occur within the Preferred Alternative.

5.2. Determination

The Preferred Alternative may affect, but is not likely to adversely affect desert tortoise, SWFL, SWFL Critical Habitat, and LBVI. A no effect determination was made for YBCU. The determination for all species discussed in Section 4 are summarized in Table 10. Implementation of the included avoidance and minimization measures would minimize/avoid potential adverse effects to these species.

Table 10. Determination of Project Effects on Federally Listed Species

Scientific Name	Common Name	Listing	Effect Determination
Gopherus agassizii	Desert tortoise	FT	May affect, not likely to adversely affect
Empidonax traillii extimus	Southwestern willow flycatcher	FE	May affect, not likely to adversely affect
		CH	May affect, not likely to adversely affect
Vireo bellii pusillus	Least Bell's	FE	May affect, not likely to adversely affect

Scientific Name	Common Name	Listing	Effect Determination
	vireo		
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FT	No effect

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2015b. Email communication: Yellow-billed Cuckoo Proposed Interim Protocol. March 11.

2015c. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

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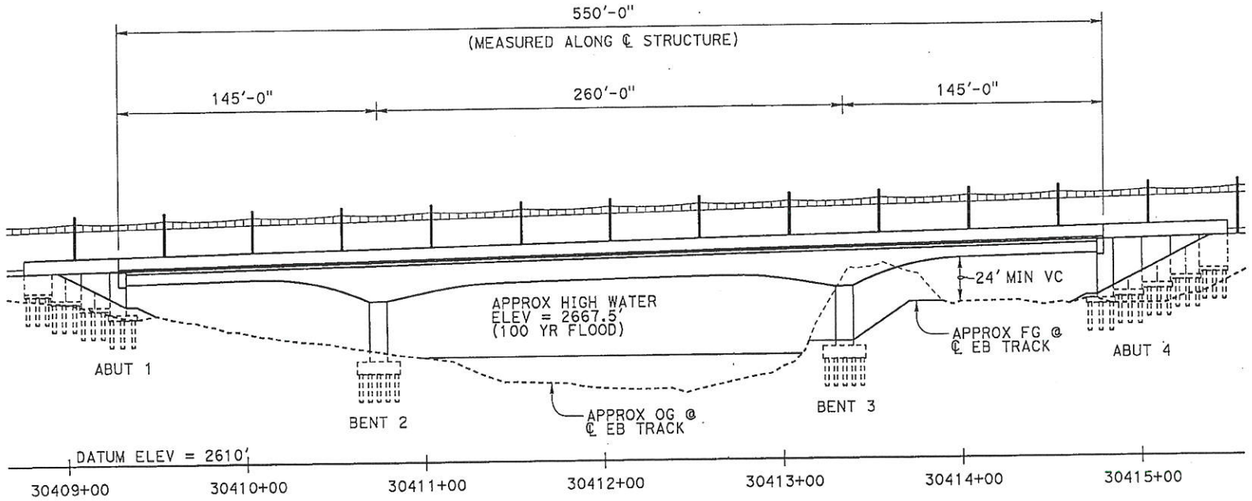
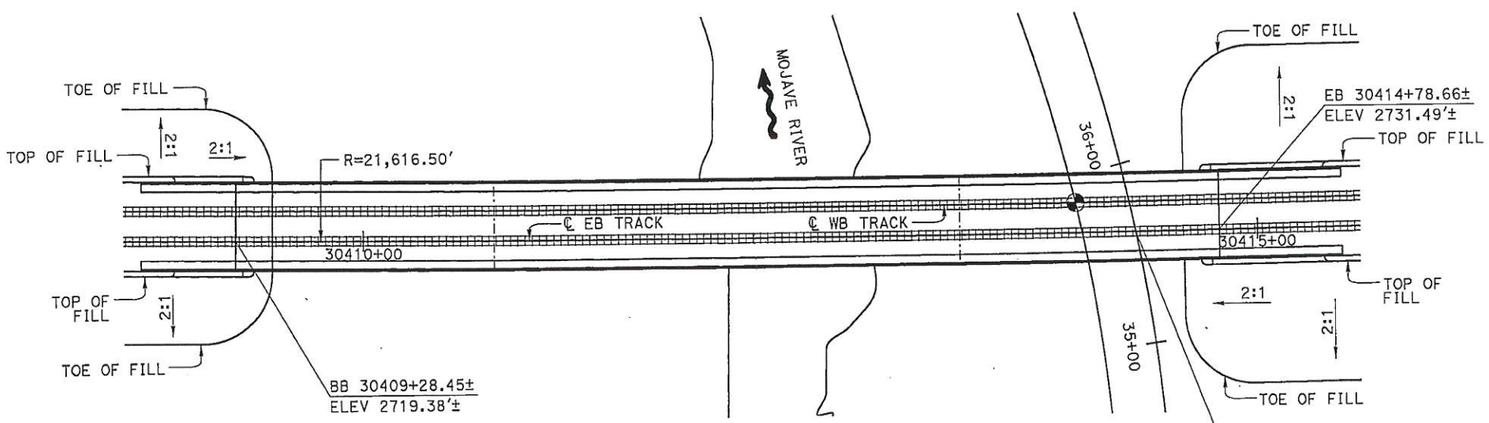
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

DIST	COUNTY	ROUTE	POST MILE
07 08	LA SBD	SR 138 E-220	



ELEVATION
1" = 80'

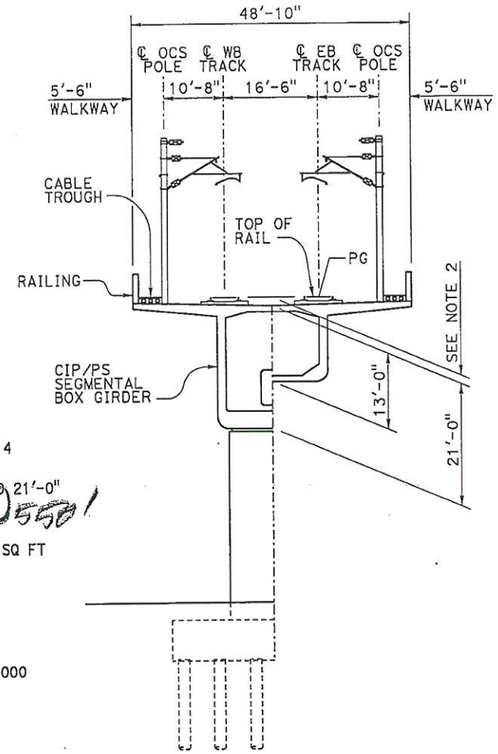
NOTES:
1. ASSUME NON-BALLASTED TRACK WITH DIRECT FIXATION TO STRUCTURE.
2. ASSUME 3 FT FROM TOP OF RAIL TO TOP OF DECK AT ℄ STRUCTURE.
3. 24" CIDH CONCRETE PILING ASSUMED AT ABUTMENTS AND BENTS.



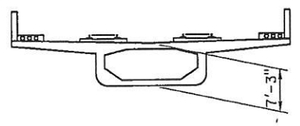
PLAN
1" = 80'

INDICATES POINT OF MINIMUM VERTICAL CLEARANCE

DATE OF ESTIMATE	=	04/30/14
BRIDGE REMOVAL	=	
STRUCTURE DEPTH	=	7'-3" TO 21'-0"
LENGTH	=	~~120'-0"~~ 550'
WIDTH	=	~~48'-10"~~
AREA	=	26,858 SQ FT
COST/SQFT INCLUDING: TIME RELATED OVERHEAD MOBILIZATION AND 25 % CONTINGENCY	=	$365
80% FORECAST VALUE	=	$9,796,000



AT BENTS AND CENTER SPAN



AT END SPANS

TYPICAL SECTION
1" = 25'

INCOMPLETE PLAN FOR DESIGN STUDY PRINTED DATE: 06-MAY-2014 Office of Structure Design STATE OF CALIFORNIA	DESIGNED BY DOUG MENZMER	DATE 09-20-13	STRUCTURE DESIGN BRANCH 12
	DRAWN BY DOUG MENZMER	DATE 10-15-13	
	CHECKED BY X	DATE X	
	APPROVED X	DATE X	

PLANNING STUDY

HIGH-SPEED FEEDER RAIL

MOJAVE RIVER BRIDGE & GRADE SEPARATION-OPTION B

UNIT: 07245	BRIDGE No. 54-XWB6
SCALE: As Noted	PROJECT No. & PHASE: 07120000350

CONTRACT No.: 2600u0

FILE => MOJAVE RIVER APS.dgn

USERNAME => s116538 DATE PLOTTED => 06-MAY-2014 TIME PLOTTED => 11:07

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 08-09-10)

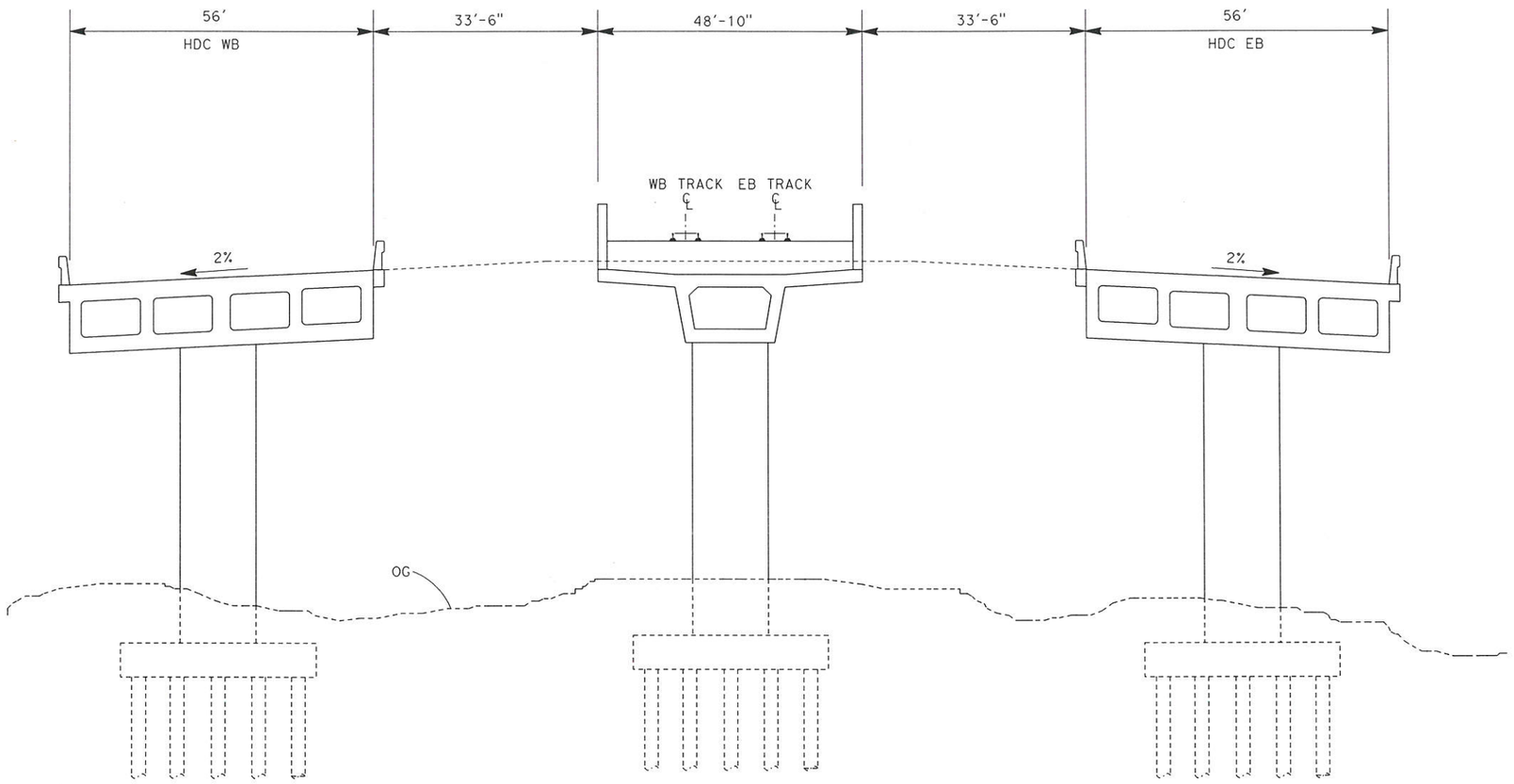
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TYPICAL SECTION
MOJAVE RIVER BRIDGES
HDC HIGHWAY WITH HSR

NO SCALE

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans®

LAST REVISION 00-00-00 | DATE PLOTTED => 17-JUL-2015 | TIME PLOTTED => 14:48

BORDER LAST REVISED 7/2/2010 | USERNAME => s128278 | DGN FILE => Mojave River Bridge Typical Section.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
7/8	LA/SBD	HDC			

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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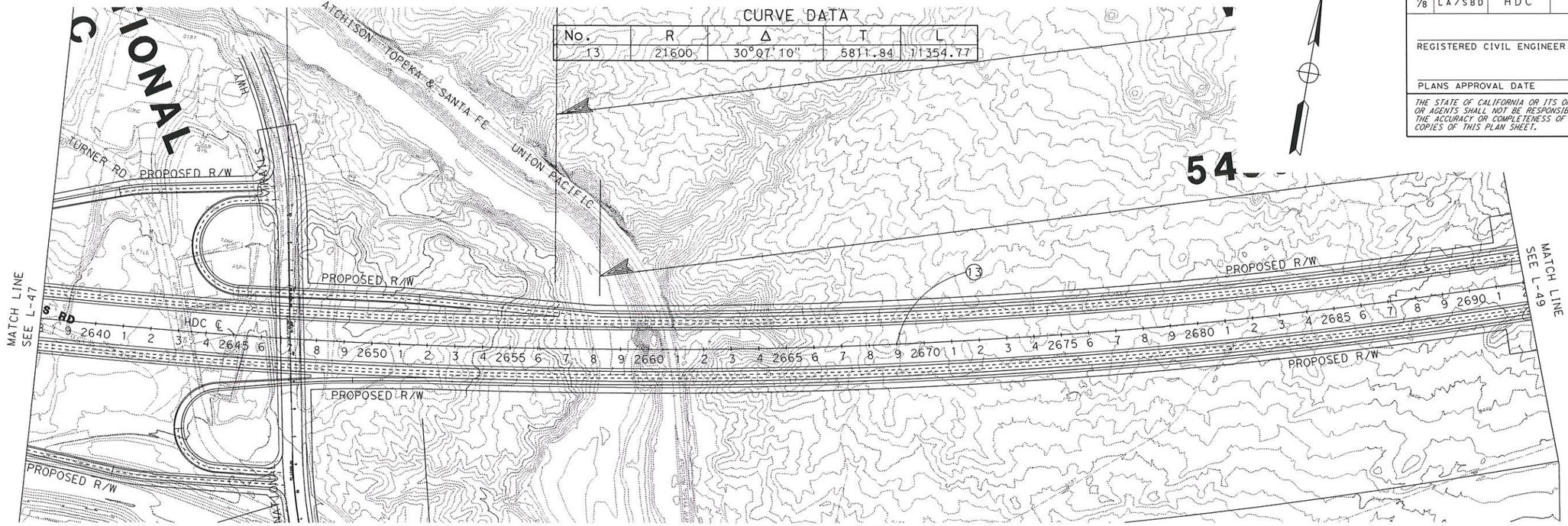
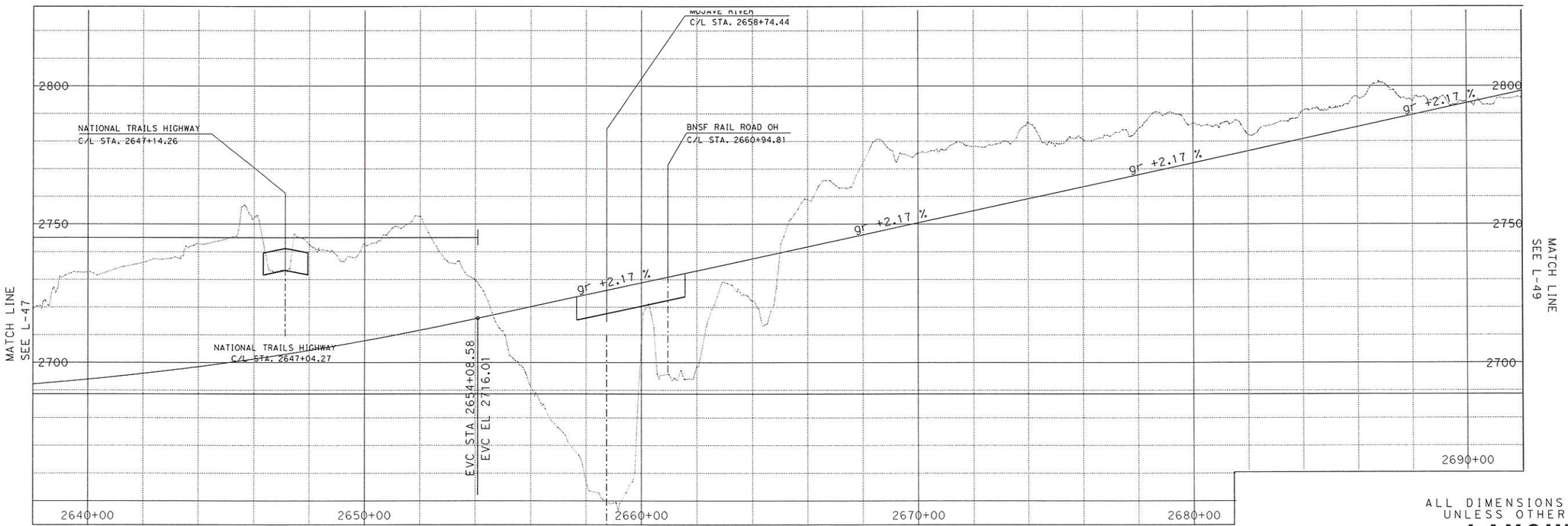


PLAN



PROFILE

HDC HIGHWAY WITH HSR FEEDER

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

LAYOUT

SCALE: HORIZ: 1"=200'
VERT: 1" =20'

L-48

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00

DATE PLOTTED => 17-JUL-2015
TIME PLOTTED => 14:48

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s128278
DGN FILE => 200_A1t2_PP 48_NCR.dgn

CU 1807

EA 0712000035

Preferred Alternative
Project Impact Areas
Sheet: 1 of 32

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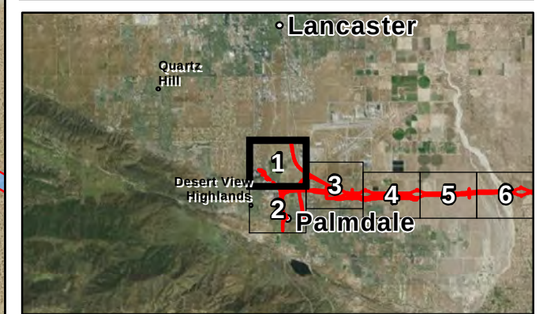

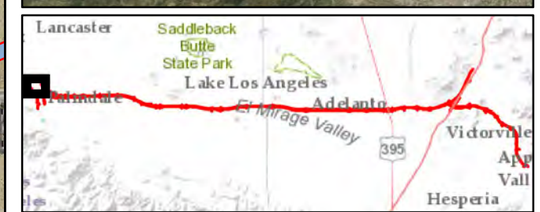

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 2 of 32

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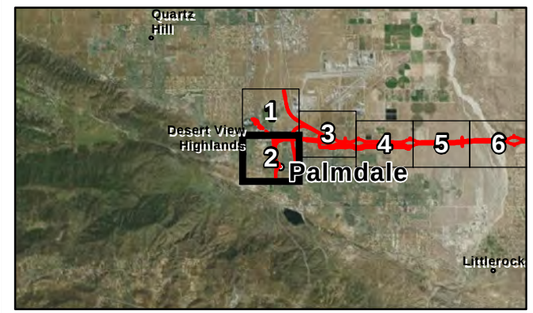

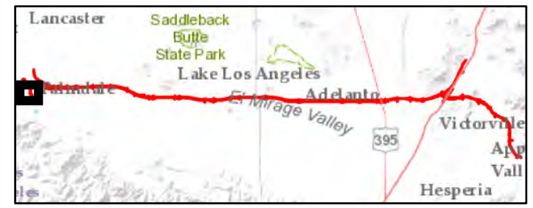

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2012-061 High Desert Corridor

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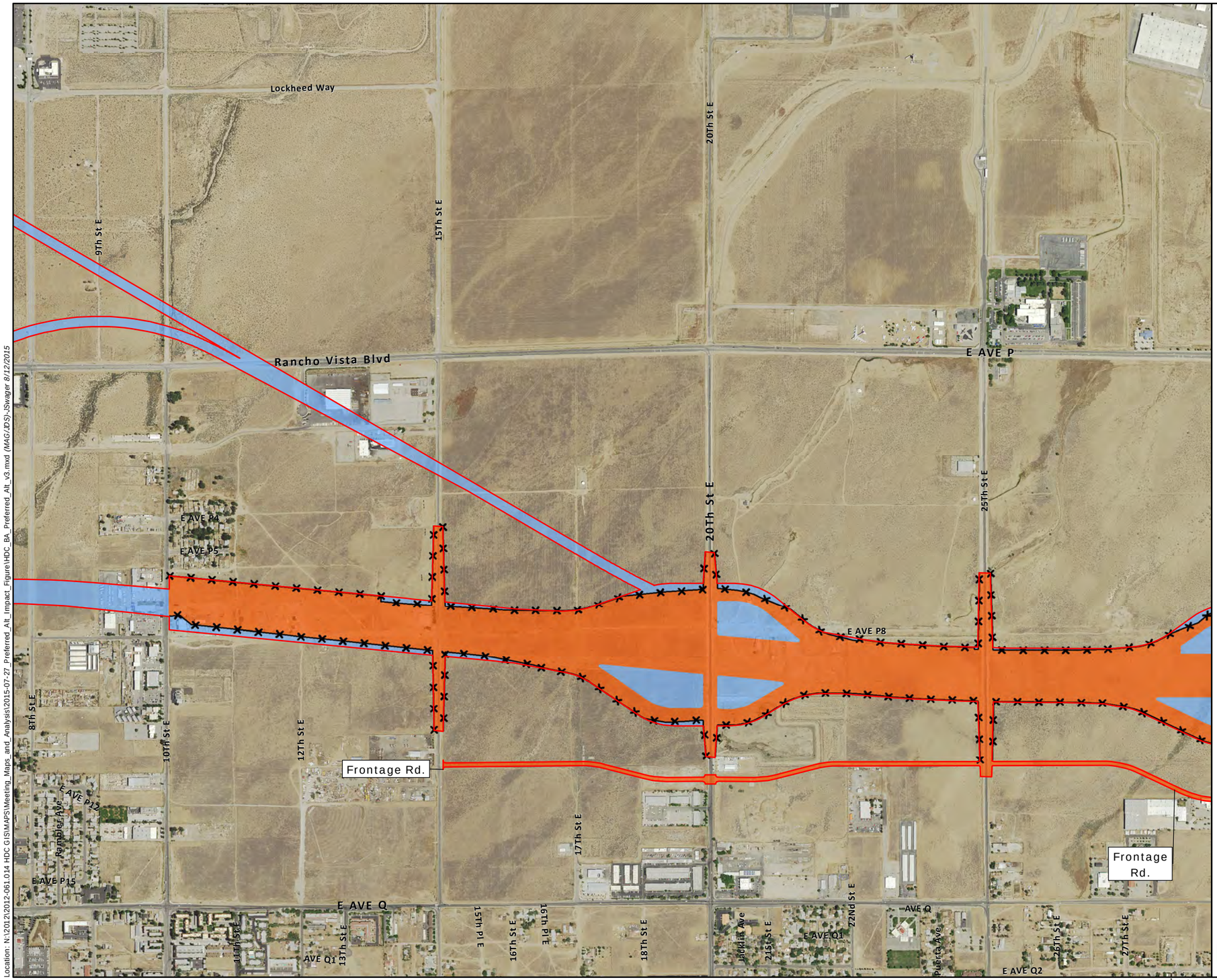
[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015



Preferred Alternative
Project Impact Areas
Sheet: 3 of 32

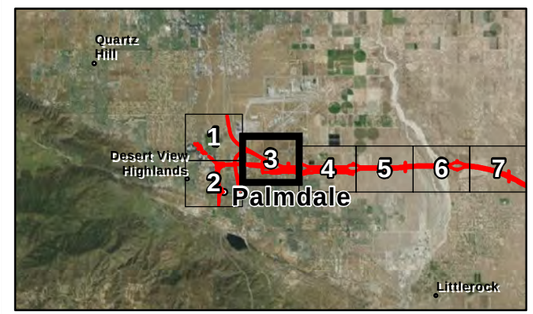
HDC Preferred Alternative Corridors

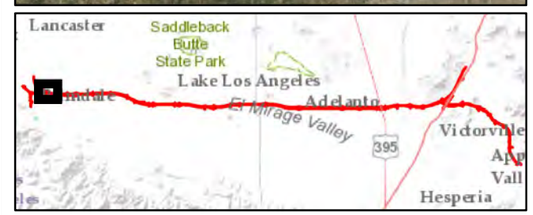
Middle Fork Estimated Location

Project Area

Permanent

Temporary





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2012-061 High Desert Corridor

Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 4 of 32

HDC Preferred Alternative Project Limits

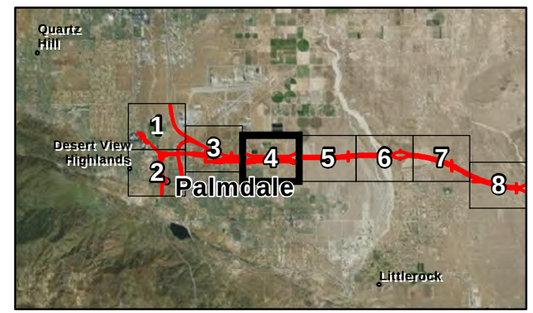
Middle Fork Estimated Location

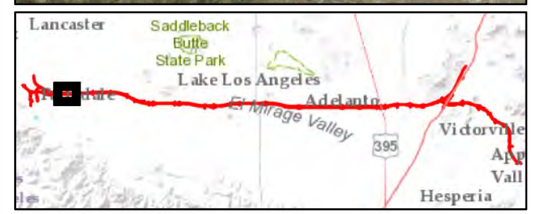
Project Line

Permanent

Temporary

E AVE P
E AVE P8
E AVE P12
E AVE Q
E AVE Q1
E AVE Q2
E AVE Q4
E AVE Q6
E AVE Q7
AVE Q2
Frontage Rd.
Watts Ave
E Palmdale Blvd
Palmdale Blvd
30Th St E
37Th St E
40Th St E
50Th St E
29th St E
31St St E
Frontier Ave
Glendish Ave
Lemford Ave
32Nd St E
Polk Ave
33Rd St E
35Th St E
Lilacview Ave
36th St E
Ladoga Ave
San Michele Ct
Sienna Ct
Ronan Ct
La Mancha Ct
Cortina Way
Las Palmas Ave
Palms Pl
Bolton Ave
Dedham Ct
Easton St
Grafton Ct
42Nd St E
45Th St E
Dunmore Ave





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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

2012-061 High Desert Corridor

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Preferred Alternative
Project Impact Areas
Sheet: 5 of 32

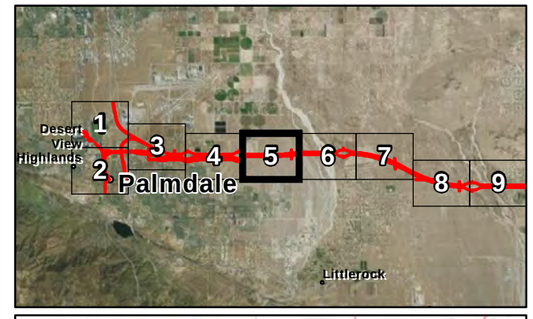
HDC Preferred Alternative Project Limits

Middle Fork Estimated Location

Project Site

Permanent

Temporary



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2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 6 of 32

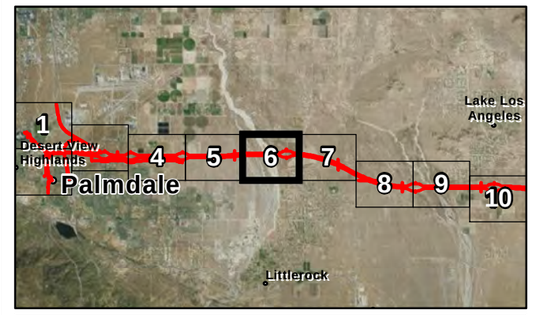
HDC Preferred Alternative Project Impact Limits

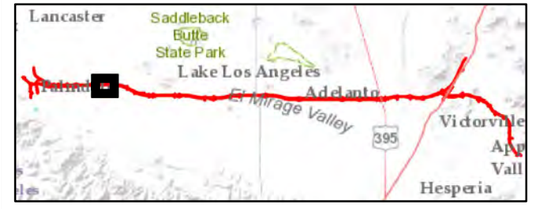
Middle Fork Estimated Location

Project Feature

Permanent

Temporary





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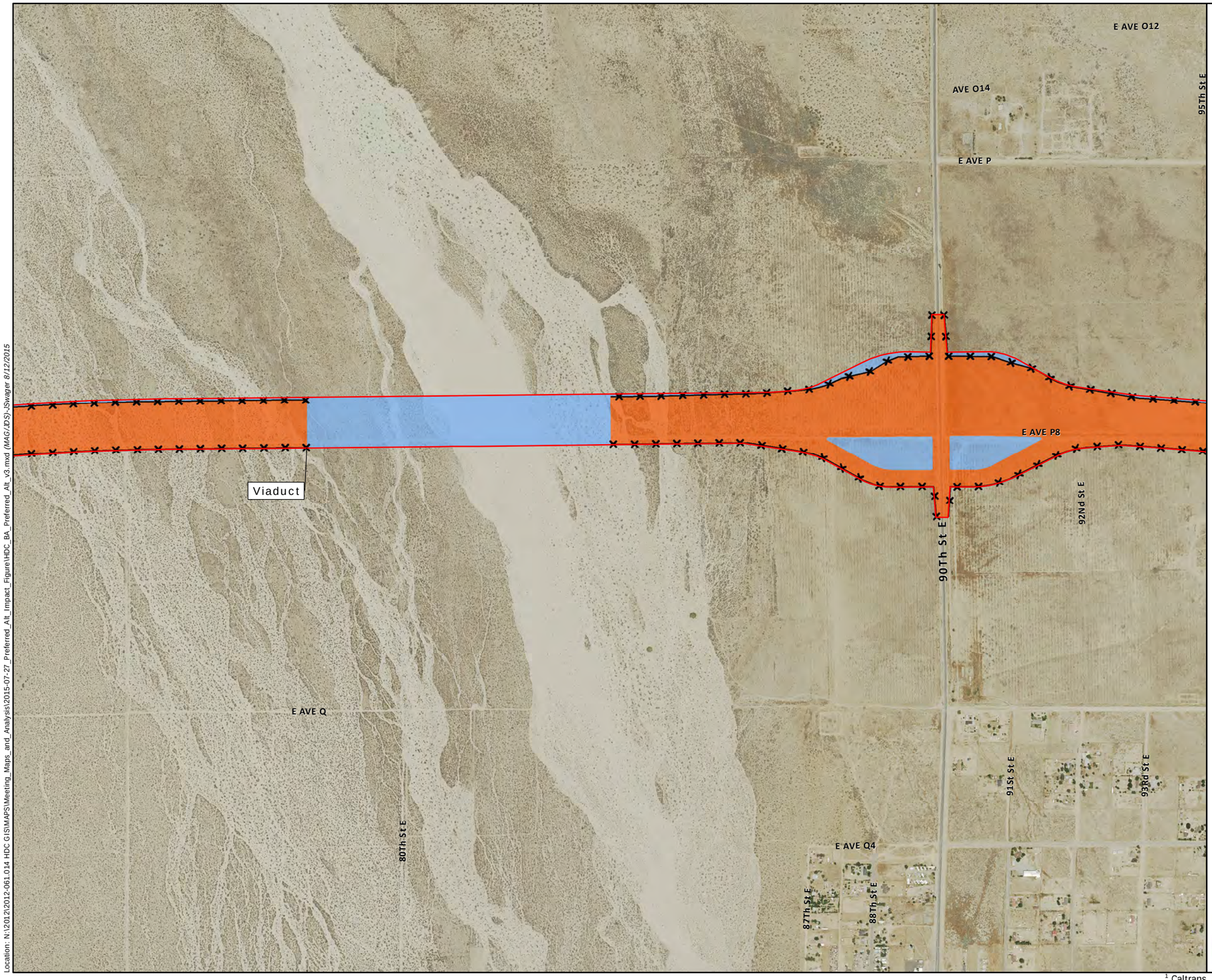
ENVIRONMENTAL CONSULTANTS



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2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 7 of 32

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E AVE P

E AVE P4

E AVE P8

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E AVE Q2

E AVE Q4

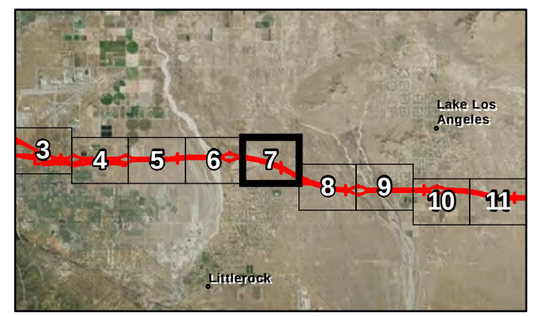
E AVE Q6

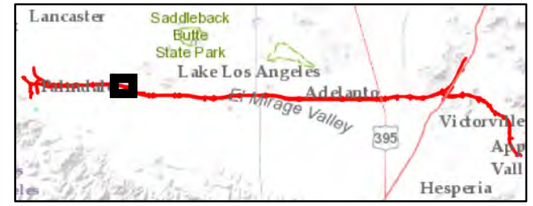
97Th St E

100Th St E

95Th St E

110Th St E





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2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 8 of 32

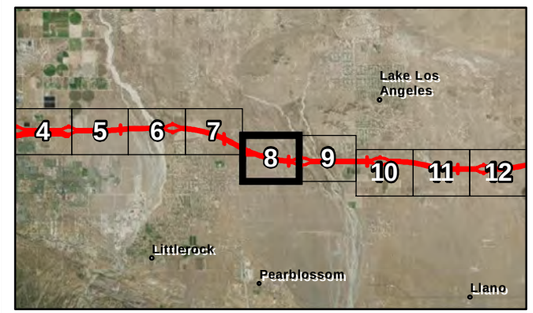
HDC Preferred Alternative Project Limits

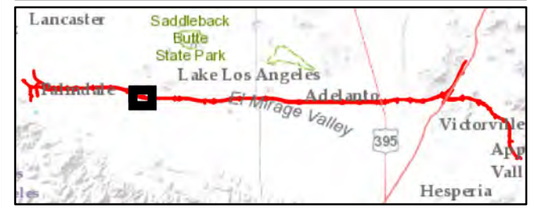
Middle Fork Estimated Location

Impact Zone

Permanent

Temporary





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E AVE Q
125Th St E
Rock Creek
Rock Creek
Palmdale Blvd
Lamoniview Rd
120Th St E
E AVE R
AVE R E
E AVE R2
AVE R2 E
E AVE R4
E Ave
AVE R 4E
122Nd St E
123Rd St E
132Nd St E
117Th St E
118Th St E
130Th St E
E AVE R6
137Th St E
E AVE R8
AVE R 8E

2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 9 of 32

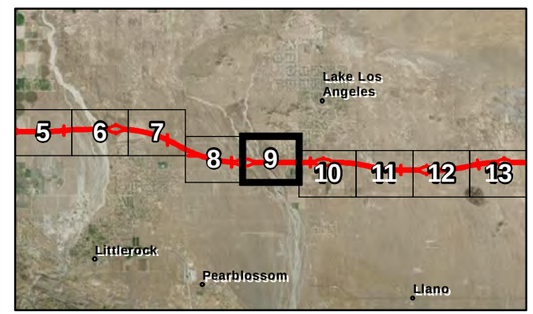
HDC Preferred Alternative Project Limits

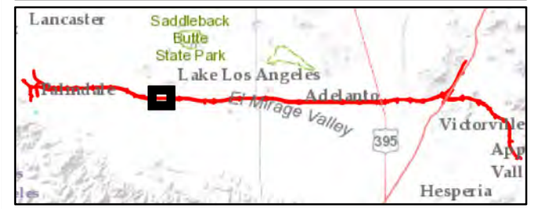
Middle Fork Estimated Location

Project Area

Permanent

Temporary





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ENVIRONMENTAL CONSULTANTS

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2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
Sheet: 10 of 32

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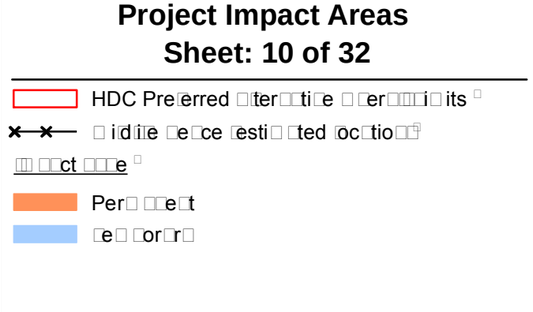

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2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

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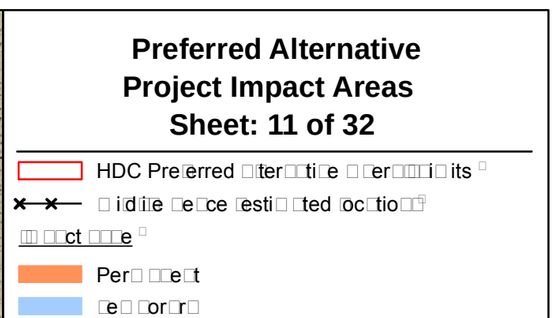

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Palmdale Blvd
E Palmdale Blvd
203Rd St E
202Nd St E
E AVE Q10
E AVE Q12
E AVE R
187Th St E
E AVE R8
200Th St E
190Th St E
195Th St E
E AVE S
185Th St E
186Th St E
197Th St E
Largo Vista Rd

2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

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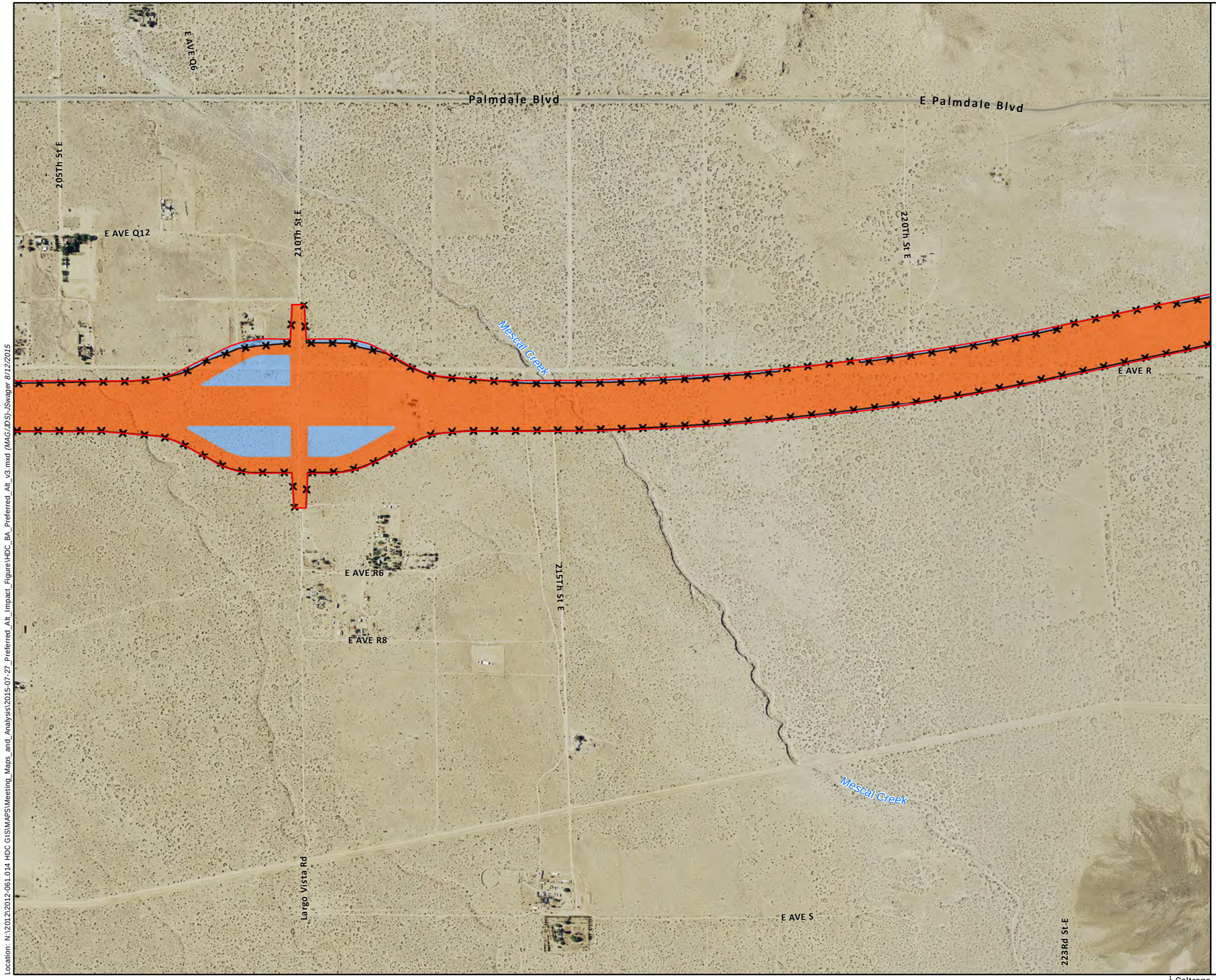

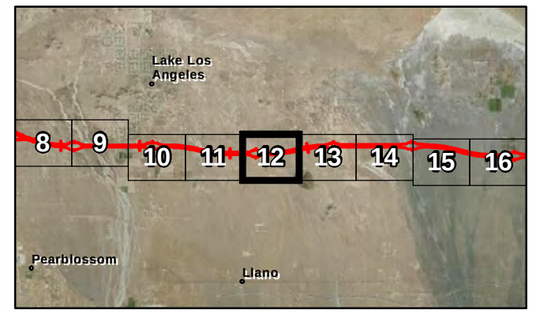

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2012-061 High Desert Corridor

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Photo Source: NAIP 2014

Map Date: 8/12/2015

Location: N:\2012\2012-061.014 HDC GIS\MAPS\Meeting_Maps_and_Analysis\2015-07-27_Preferred_Alt_Impact_Figure\HDC_BA_Preferred_Alt_v3.mxd (MAG/JDS)-JSvrager 8/12/2015

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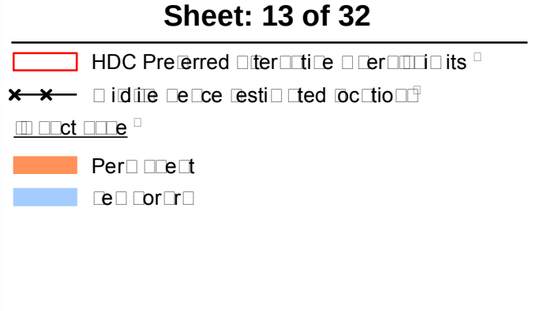

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2012-061 High Desert Corridor

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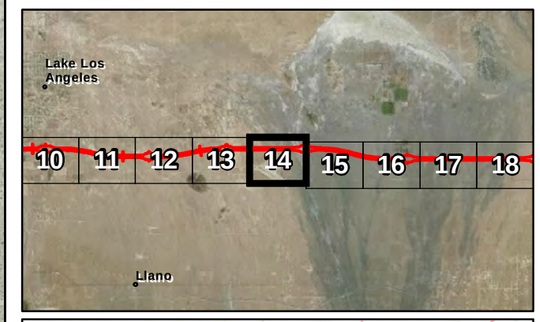

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Paindale Blvd

E AVE R8

E AVE S

Los Angeles County

San Bernardino County

Le Montaine Creek

Le Montaine Creek

Rancho Rd

263Rd St E

Avenue P Rd

Location: N:\2012\2012-061.014 HDC GIS\MAPS\Meeting_Maps_and_Analysis\2015-07-27_Preferred_Alt_Impact_Figure\HDC_BA_Preferred_Alt_v3.mxd (MAG/JDS)-JSvager 8/12/2015

2012-061 High Desert Corridor

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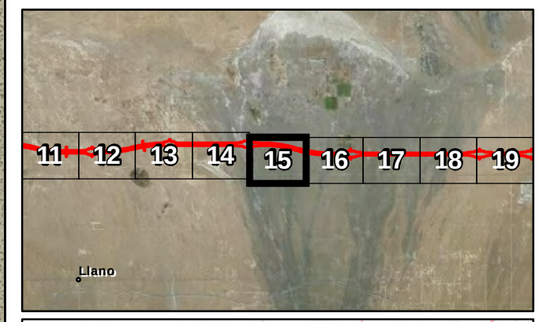
Saint George Ave
Saint Anthony Ave
Boquina St
San Jacinto Rd
Cougar Ave
Primavera Rd
Parkdale Rd
Grey Mountain Rd
Palmer Rd
Silver Rock Rd
Rancho Rd
Oasis Rd
Wintergreen Rd



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2012-061 High Desert Corridor

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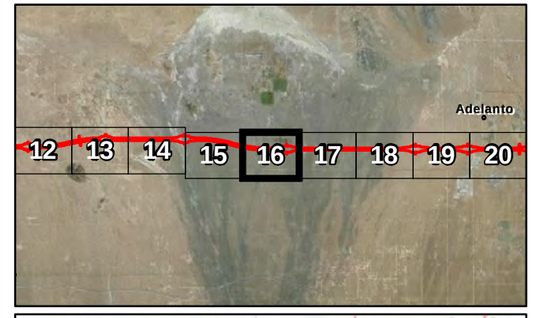

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Airport Rd
Keats Rd
Parkdale Rd
Tanner Rd
Old Phelan Rd
Rancho Rd
Pionero Rd
Corton St
Beekley Rd
Sheep Creek Rd
Sheep Creek Rd
Primrose Rd

2012-061 High Desert Corridor

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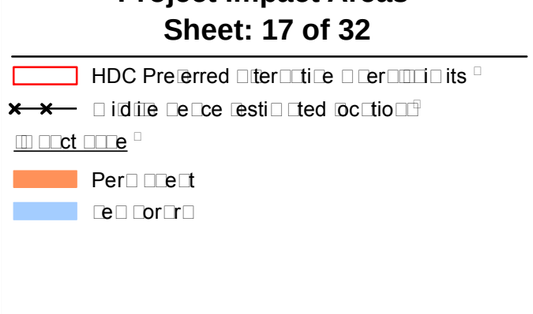

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Medio Rd
Boquina St
Paseo Rd
Parkdale Rd
Rancho Rd
Johnson Rd
Primrose Rd

2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

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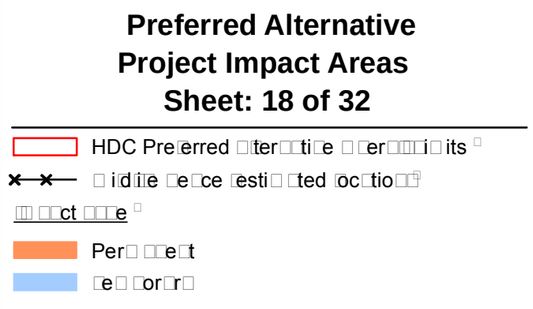

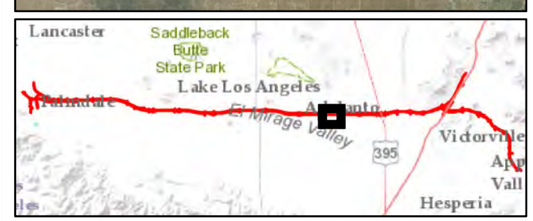

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Map Date: 8/12/2015

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Photo Source: NAIP 2014

2012-061 High Desert Corridor

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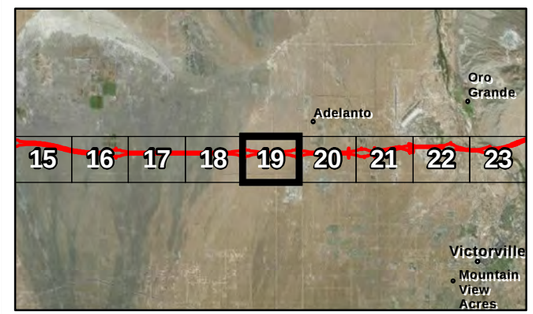

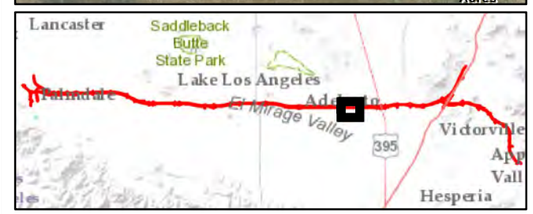

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2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
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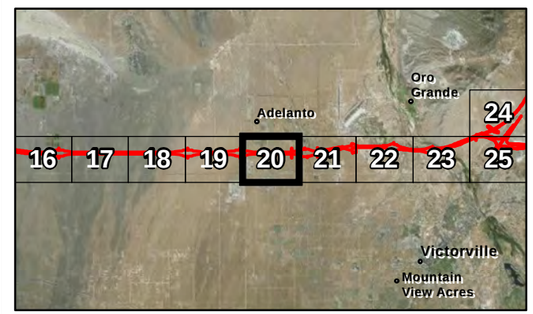
HDC Preferred Alternative Project Limits

Middle Place Estimated Location

Direct Route

Permanent

Temporary



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2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

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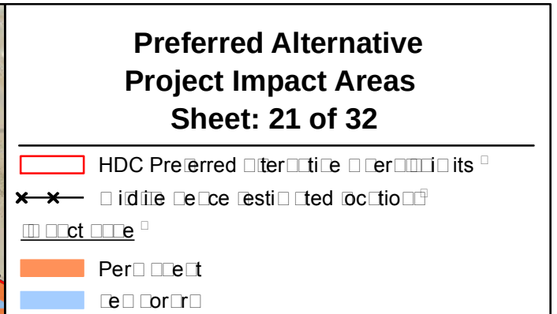

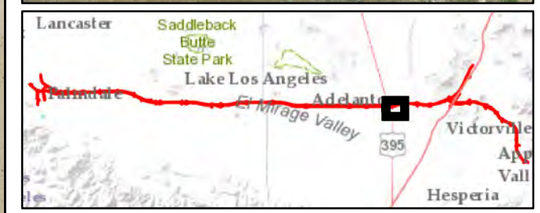

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2012-061 High Desert Corridor

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Viaduct

Air Expressway Blvd

Air Expy

Turner Rd

Powerline Rd

Rancho Rd

Cobalt Rd

Amethyst Rd

Phantom St

Weapons Movement Rd

Pol Access Rd

Williams Dr

Ohio St

Arizona Pl

Mccoy Cir

S Carolina Ave

Cory Blvd

Maryland St

New York St

California Ct

Sheppard St

Hawaii St

Caroline Ave

Irving Pl

Nevada St

Alaska Cir

Shay Rd

Mojave River

Oro Grande Wash

Evado Rd

El Evado Rd

Jurassic Pl

Stone Age Ln

Mastodon Pl

Grand Triassic Ln

Grand Mammoth Pl

Village Dr

Melba Ave

Melba Ct

Manning St

Manning Ln

Deerfield St

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Prenda St

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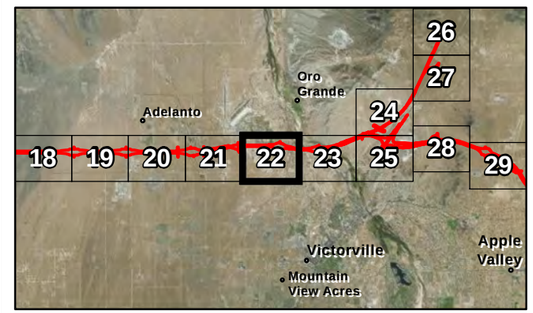
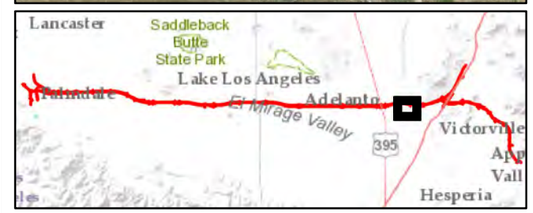
Avon Ct

Odell Ln

Lofton St





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2012-061 High Desert Corridor

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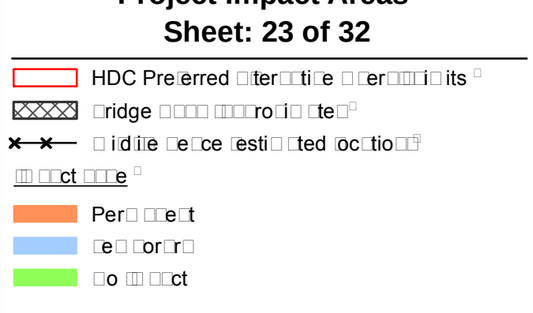

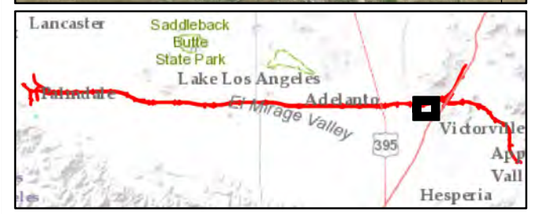

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2012-061 High Desert Corridor

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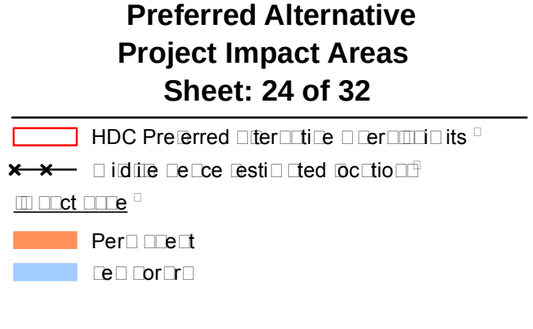

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Map Date: 8/12/2015

Boulder Rd
Quarry Rd
Victorville Quarry Rd
Viaduct
Bell Mountain Wash
Mojave Nor Mining Railroad
Stoddard Wells Rd
Osborne Rd
Saugus Rd
Los Padres Rd
Frontage Rd S
Solano Rd
Grudley St
Lamada St
Marin St
Norco St
Quarry Road Overcrossing
Viaduct

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Photo Source: NAIP 2014

2012-061 High Desert Corridor

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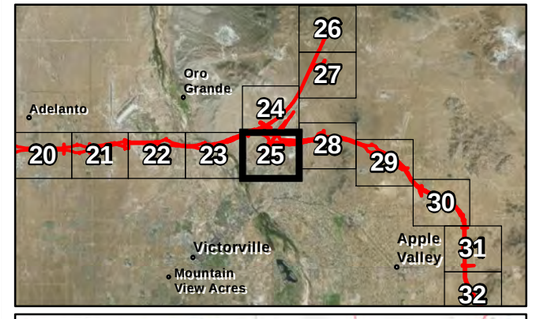

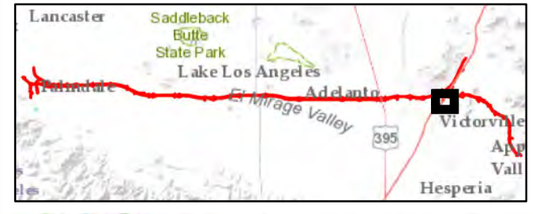

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2012-061 High Desert Corridor

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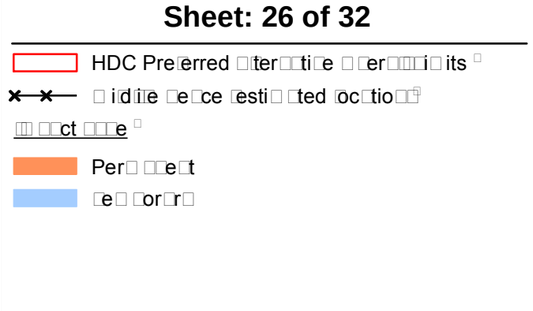

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Fairfield Ave
Bodega St
Coloma Ave
Viaduct

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2012-061 High Desert Corridor

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[1] Caltrans
Photo Source: NAIP 2014

Map Date: 8/12/2015

Preferred Alternative
Project Impact Areas
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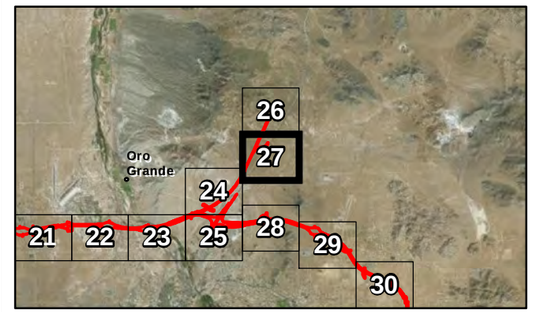
HDC Preferred Alternative Right-of-Way Limits

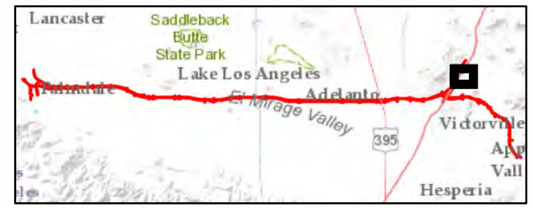
Middle Fork Estimated Location

Impact Zone

Permanent

Temporary





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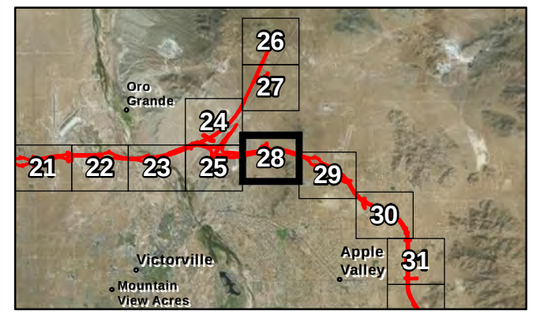
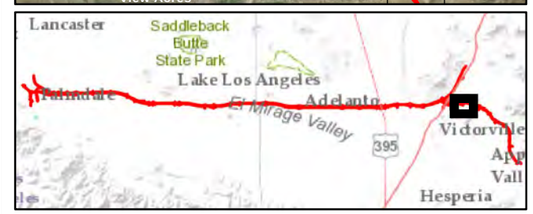
Tawanka Rd

Waalew Rd





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Hogan Rd
Albany Rd
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Comanche Rd
Ramona Rd
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Papago Rd
Dale Evans Pky
Waladi Rd
Corwin Rd
Carmel Ln
Taos Rd
Dakota Rd
Waalew Rd
Goldenrod Ave
Lakespure St
Chicory Ln
Hawthorn Ave
Pointsettia Ave
Bluebonnet Ave
Hollyhock Ln
Aster Ln
Mariposa Ln
Huasna Rd
Aztec Rd
Montauk Rd
Tehaja Rd
Sobaba Rd
Soboba Rd
Cahto Rd
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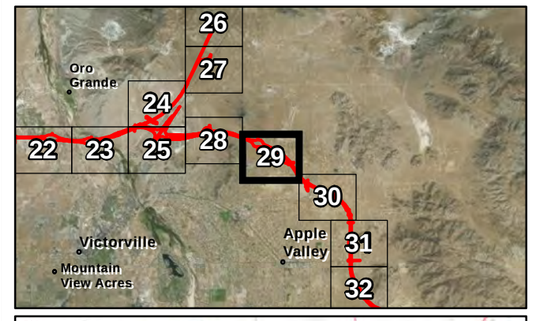

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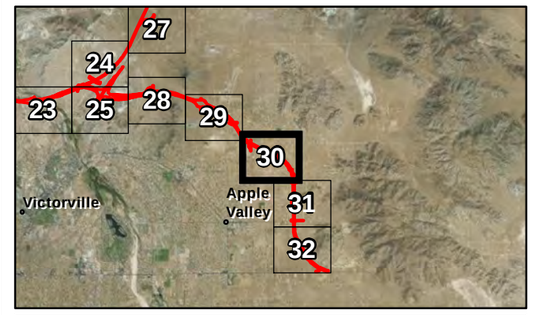

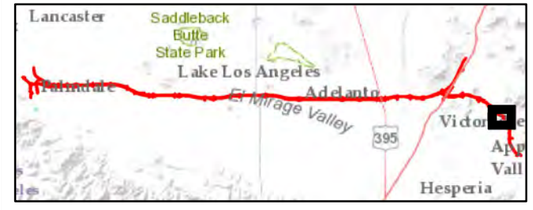

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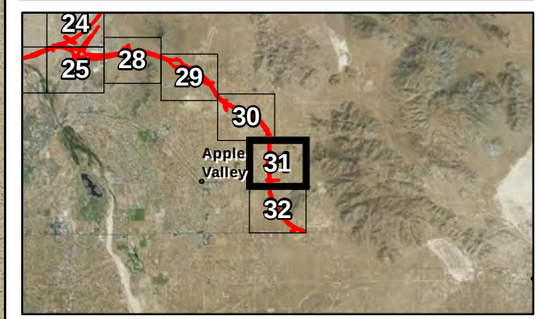

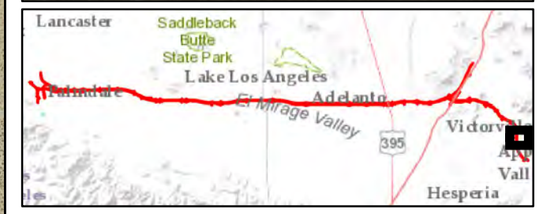

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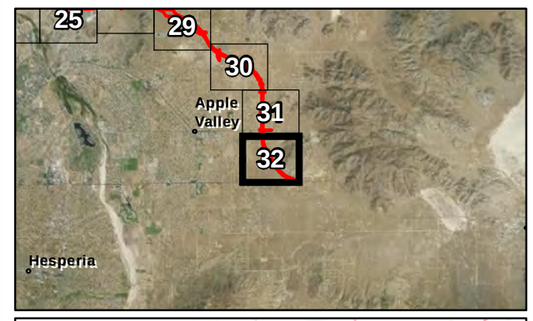

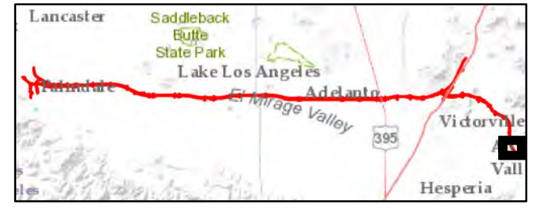

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Deerwood Rd
Eyota Rd
Ottawa Rd
Fairview Valley Rd
Lucilla Rd
Shoshonean Rd
Nisqually Rd
Sitting Bull Rd
Little Beaver Rd
Dover Rd
Japatul Rd
Narragansett Rd
Joshua Rd
Pah Ute Rd
Tehama Rd
Laguna Seca Dr
Patomac Rd
Chipmunk Rd
Valley Vista Rd
Sioux Rd
Chaparosa Dr
Mustang Ave
Ranch Rd
Bear Valley Rd
Deadman Saloon Dr

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Photo Source: NAIP 2014

Map Date: 8/12/2015

Meeting minutes from 7/17/2015 High Desert Corridor Conference Call with USFWS/Caltrans/ECORP

Attendees: Ray Bransfield (USFWS), Jeff Johnson and Andrew Johnstone (Caltrans), Don Mitchell and Brad Haley (ECORP)

Materials provided: ECORP provided Ray and Caltrans with a map showing results from all desert tortoise and riparian bird surveys in relation to the Preferred Alternative.

Ray asked when Jeff needed Biological Opinion. Jeff responded and said 2-3 months after the BA is submitted. Ray said he wouldn't have time to be the one to work on it unless his other tasks are in review, but another staff member would. Ray stated that the offer of reimbursement to USFWS would make it more of a priority.

Species discussed: desert tortoise, Southwestern willow flycatcher and its Critical Habitat, least Bell's vireo, and Western yellow-billed cuckoo. Determination for these species will be "not likely to adversely affect."

Jeff and Ray have met twice previously about HDC. Jeff provided a map of the studies being conducted with preliminary results, the project map, their approach to surveys, and additional surveys that were added because of alignment changes. Caltrans plans to have BA and BO issued before the Final EIR is submitted, while the ITP and 1600 permit won't be issued until after the FEIR is submitted.

CDFW wants culverts at all tortoise sign locations in addition to every 0.5 miles. USFWS does not agree and stated that periodic, general wildlife crossings are fine. The avoidance and minimization measures CDFW and USFWS issue should match (especially with what to do with DT relocations). Ray very concerned that FWS will issue BO and CDFW will conflict, and then BO consultation will need to be reinitiated.

Jeff stated that Caltrans will take USFWS recommendations as commitments.

Description of Proposed Action (DOPA):

- Focus on things that will affect species and their habitat (don't describe how asphalt is made or list all the different types of equipment).
- State: "inside these lines - here is what we will do. Nothing will be done outside the lines."
- Outside boundary limits effects could include erosion
- Access routes need to be evaluated.
    - Do they pass through habitat?
    - Don't include 395 or 15 or major paved roads
    - Will they be fenced?
- Caltrans shall include in bid specifications/Contractor requirements for stockpiles, borrow, and yards that they must comply with ESA. "Contractor must show they contacted the Service and have authorization or demonstrate they are not killing listed species."

General Notes

Ray does not want to read detailed species descriptions in the BA. Maybe just include the legal status of each species, then state that the focused survey reports contain a detailed life history and habitat requirement s for each species and refer to Appendix.

Desert Tortoise

- Three surveys were conducted using 1992 protocol, two surveys were conducted using 2010 protocol. Overall, two DT were found in entire HDC alignment. It should be assumed that some desert tortoises were missed.
- Use Line Distance Sampling from Fremont-Kramer Unit. Look on DTRO website, monitoring tab and average the past three years. Ray stated that 99.9% of BAs do not include this density calculation and USFWS ends up having to do it.
    - Point estimate average density over 180mm. Multiply 95% confidence by acreage of habitat. 13% of population is over 180mm. definitely do not use upper confidence. Use the number calculated as it will stand up better than an arbitrary number for consultation.
    - Ray to send calculation methods via email from a new mining BO (which he did send during meeting).
    - Don't include the development around 395 and in Apple Valley when determining impacted areas and estimating DT individuals).
    - Go to lower 95% confidence interval south/east of I-15.
- Mitigation area: Based on results map provided, Ray determined that 240th Street East, just southwest of El Mirage, should be the western boundary of tortoise habitat as that is the western-most location that tortoise sign was found. No mitigation will be needed for tortoise "habitat" west of 240th Street.
- Compensation ratio: USFWS generally falls back to West Mojave Plan for mitigation which in this case is 1:1.
- Ray suggested land acquisition within DWMA or equivalent monetary value of recovery actions in West Mojave. Equivalent actions can include restoration, closing roads, fencing installation or repairs, or a combination of the two. Ray mentioned a new form of land acquisition.
    - Cinco Solar (500 acre solar near Jawbone Canyon). Instead of land acquisition with suitable habitat (~2,000 acres) client retired a large grazing allotment (8,900 acres) as mitigation. This was half the cost of buying and endowing the 2,000 acres. Feinstein working on bill "if a rancher is willing to give up lease, BLM shall accept it and retire the land."
    - Ray to write-up and make phone call to see if Caltrans can proceed with land acquisition process used in the Cinco Solar project.
- No need to contribute to the "Raven Fee." FWS does not require this.
- DT Fencing:
    - Construction temporary fencing at edge of ROW.
    - Permanent fencing at toe of slope. This will likely be EFencing or equivalent to keep all wildlife off highway (Caltrans requirement/commitment in FEIR to reduce roadkill).

    - No map needed for BA to show where fencing will be installed. Just describe.
- DT Relocation: Ray spoke about the District 8 SR-58 Project in Hinkley. There have been issues with relocating DT because mostly private land surrounds project and CDFW is requiring the DT be moved to BLM land, sometimes 5-10 miles away. Ray vehemently opposes moving DT miles and miles just so they can be put on BLM land. Need to sit down with CDFW/BLM/USFWS – Jeff to call District 8 biologist Scott Quinnell to discuss.
    - Jeff suggested if private property adjacent to ROW, and DT are found in ROW, then the fence should be modified so that DT will remain outside project limits yet still within Caltrans ROW. This method would avoid the issue of moving DT to private property.
    - Need to have provisions for DT movement when temperatures are above 95F. Include temporary provisions for DT relocations. A more detailed example of how to avoid it included in the FEIR, or the BA. For example, if fencing is installed in the spring ahead of time then no need to relocate during summer. If project starts in the summer then DT fencing first then start grubbing when cooler. Proper planning is essential.)
- Monitoring: Install temporary fencing, conduct 100% clearance survey for DT, clear vegetation, then occasional inspections. No need for full time DT handler monitoring in areas that have been fenced and grubbed.
- Post-construction: Have better trash cans at rest stops

SWFL, LBV, WYBC, SWFL CH

- Bridge is high enough wherein indirect shading effects will not be an issue. Shading would not be a long-term effect. Sparse vegetation in the area of existing bridges over Mojave River.
- Define the Primary Constituent Elements (PCEs) – state they are not present in this section of the Mojave River, as indicated by previously conducted surveys.
- Describe bridge crossing (minimum 80 ft above river, with picture and vegetation description. Compared to Preferred Alt, here is what we expect to happen with the construction of the bridge)
- When asked for what kinds of details does Ray want to see regarding the bridge – Ray said he does not need cross-section for river—Although now ECORP has it from Design team in PDF. He said to just describe what is proposed.
- No cooling effect on water because this section of river is in an area of active flow. This is not an issue for birds anyway.
- Official protocol for WYBC surveys was not available at the time surveys were conducted, so a modified protocol was adopted for Caltrans use issued by USFWS.
- Include survey results for WYBC.
- Send preliminary justification to Ray for review
- Ray asked if Big Rock Creek would be channelized – Jeff said no.
- Ray was curious if Caltrans intended to do any bat or swallow habitat enhancement over the river. Jeff thought maybe, and that Caltrans is open to modifications to provide nesting structure.

Fisheries

- Jeff Johnson stated that no fish studies had been conducted because the listed fish species have been extirpated from this section of the Mojave River. No surveys or impacts are expected. Ray concurred with this determination.

U.S. Fish & Wildlife Service

High Desert Corridor

IPaC Trust Resource Report

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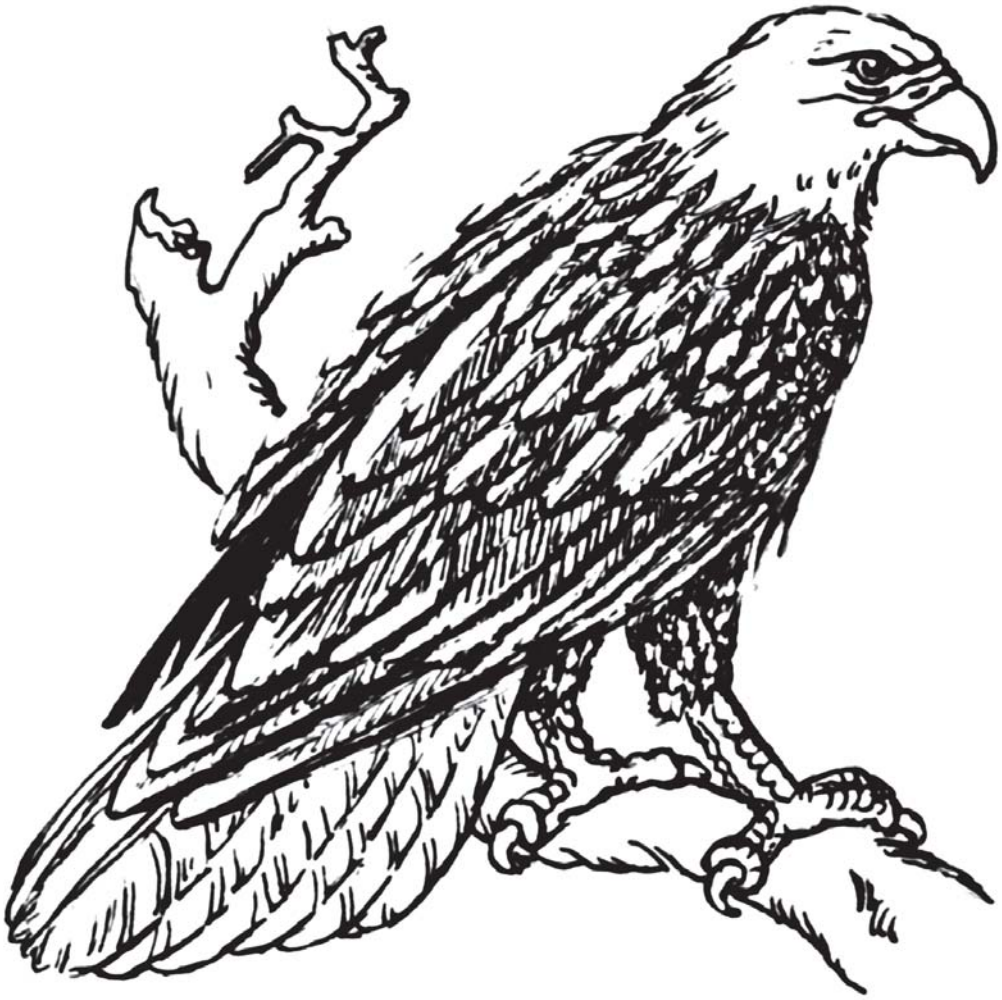

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
2008-SL-0264

February 29, 2008

Paul Caron
Division of Environmental Planning
California Department of Transportation, District 7
100 South Main Street
Los Angeles, California 90012

Subject: Species List for the Realignment and Construction of State Route 138 between State Route 14 and 100th Street East, Los Angeles County, California.

Dear Mr. Caron:

This letter is in response to your request, dated January 3, 2008, and received in our office on February 20, 2008, for information on listed threatened or endangered species which may be present in the vicinity of the realignment of State Route (SR) 138 in the city of Palmdale. The California Department of Transportation (Caltrans) proposes to construct a new alignment of SR 138 to the north of its current location. The new structure will be approximately eight lanes wide from SR14 to 15th Street, and will then taper down to four lanes from 15th Street to 100th Street East. In addition, Caltrans proposes to construct viaduct structures over Little Rock Wash on the east end of the project. Your request and our response are made pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act).

Based upon review of our records and the proposed project location, we do not believe that the site could support any listed, proposed, or candidate species for which the U.S. Fish and Wildlife Service is responsible. As a result, no further consultation pursuant to the Act is required.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions regarding this matter, please contact Ashleigh Blackford at (805) 644-1766, Extension 234.

Sincerely,

Raymond Bransfield
Senior Biologist

Benjamin Smith

From: Esther Burkett [EBurkett@dfg.ca.gov] **Sent:** Tue 6/5/2012 6:41 PM
To: Benjamin Smith
Cc: Don Mitchell
Subject: RE: Authorization for southwestern willow flycatcher surveys; RE: Urgent: Ben Smith's MOU
Attachments:

Thank you for letting me know you rec'd the email.

Good luck on the surveys!

Esther

>>> Benjamin Smith <bsmith@ecorpconsulting.com> 6/5/2012 6:14 PM >>>
Dear Esther,

Thank you for the authorization. I will be sure to have copies of the documents referenced below in my posession while conducting the surveys and will follow up as required with the survey results.

Sincerely,

Benjamin Smith
Biologist

ECORP Consulting, Inc.
1801 East Park Court Place
Building B, Suite 103
Santa Ana, CA 92701
Phone: 714-648-0630
Cell: 714-651-3021
Fax: 714-648-0935

From: Esther Burkett [mailto:EBurkett@dfg.ca.gov]
Sent: Tue 6/5/2012 6:16 PM
To: Benjamin Smith; Don Mitchell
Subject: Authorization for southwestern willow flycatcher surveys; RE: Urgent: Ben Smith's MOU

Dear Benjamin,

This email serves as state authorization for you to conduct surveys for the SW willow flycatcher, as described below in your email, and in accordance with the federal recovery permit you reference, below.

Print out this email and carry it with you when conducting the work, along with your Scientific Collecting Permit and federal recovery permit. There is the requirement for annual reports of your work to be sent to DFG, and for CNDDB forms/data to be provided to DFG in the event you detect the species.

This authorization will be followed up with a state MOU as soon as possible.

Please contact me if you have any questions, and thank you for your work.

Sincerely,

Esther Burkett

Esther Burkett
California Department of Fish and Game
Wildlife Branch
Nongame Wildlife Program
1812 Ninth Street
Sacramento, CA. 95811
(916) 445-3764 (phone #)
(916) 445-4048 (fax #)
EBurkett@dfg.ca.gov

>>> Don Mitchell <DMitchell@ecorpconsulting.com> 6/4/2012 1:08 PM >>>
Hi Esther,

Actually, to finish by the 9th, he needs to start by Weds the 6th. His SCP ID is 10933.

Thanks,

Don

-----Original Message-----
From: Esther Burkett [mailto:EBurkett@dfg.ca.gov]
Sent: Monday, June 04, 2012 1:06 PM
To: Benjamin Smith
Cc: Don Mitchell
Subject: RE: Urgent: Ben Smith's MOU

Hi Benjamin,

I'll see what I can do for you, stand by a bit, and if you don't hear back before June 9th, please send me another urgent email.

Do you have a current Scientific Collecting Permit?

Esther

>>> Benjamin Smith <bsmith@ecorpconsulting.com> 6/4/2012 10:07 AM >>>
Dear Ms. Burkett,

ECORP Consulting, Inc. has been contacted by Caltrans to conduct protocol surveys for southwestern willow flycatcher this year for the High Desert Corridor Project near Victorville. USFWS has approved extending the deadline for period 1 surveys for the project until June 9, however, I do not yet have the MOU from CDFG that would allow me to proceed with the surveys. I anticipate each survey will take three days and would like to start on Wednesday, June 6 if at all possible. Any help you can provide would be very much appreciated. I have attached a

You forwarded this message on 5/31/2012 1:32 PM.

Benjamin Smith

From: Carl_Benz@fws.gov [Carl_Benz@fws.gov] **Sent:** Thu 5/31/2012 1:06 PM
To: Benjamin Smith
Cc: Chris_Kofron@fws.gov; Kim_Craig@fws.gov; Robert_McMorran@fws.gov
Subject: Re: southwestern willow flycatcher surveys for Caltrans High Desert Corridor
Attachments:

Dear Mr. Smith:

Thank you for your email clarifying your request. We understand that your permit request , assigned number TE-67390A, is awaiting signature approval in the Pacific Southwest Regional Office, and has been delayed because of unforeseen circumstances. Furthermore, the survey protocol for the southwestern willow flycatcher establishes three survey periods, and the first period expires today.

Our response to your request to modify the survey protocol for the southwestern willow flycatcher, is contingent upon you having in your possession a signed approved recovery permit, #TA-67390A. With that permit , we approve your request to perform the period 1 protocol survey by June 9, 2012, rather than May 31, 2012. As a result of this modification, we understand survey period two will have three total surveys performed. Please retain this email approval with your records and document this modification in your annual report.

If you have any questions, please contact me at the number below.

Sincerely,

Carl T. Benz

= = = = = = = = = = = = = = = = = =
Assistant Field Supervisor
Ventura Fish and Wildlife Office
2493 Portola Rd., Suite B
Ventura, CA 93003

805-644-1766 Ext. 311

"Benjamin Smith" <bsmith@ecorpconsulting.com>

"Benjamin Smith" <bsmith@ecorpconsulting.com>

05/30/2012 05:04 PM

To<carl_benz@fws.gov>
cc
Subjectsouthwestern willow flycatcher surveys for Caltrans Hight Desert Corridor

Dear Mr. Benz,

As we discussed on the phone, I would like to request that the USFWS approve a modified survey protocol for southwestern willow flycatcher for the Caltrans High Desert Corridor Project along the Mojave River near Victorville, CA. Specifically, I am requesting to complete the period 1 survey by June 9 rather than May 31. The reason for the request is that the request for the surveys came in too late to allow hiring a subcontractor through the Caltrans process and due to personal issues, Daniel Marquez, the Region 8 recovery permit coordinator, was out for several weeks, which resulted in a delay in processing my permit to survey for southwestern willow flycatcher. I have been in touch with Daniel and he has processed and approved the permit and sent it to Sacramento for signatures and I should have a copy in my posession some time next week.

Protocol surveys for southwestern willow flycatcher consist of five surveys spaced a minimum of five days apart within three separate survey periods: May 15-31 (one survey), June 1-24 (two surveys), and June 25-July 17 (two surveys). The survey within the first period is the least critical of the five. It gives the biologist an idea of where territories are being established and is also the period during which migratory willow flycatchers that are not the endangered southwestern subspecies are most likely to be encountered. Pushing back the first survey 1-1.5 week should not affect the overall outcome of the surveys.

Attached is a Google Earth file as well as an image file showing the location of the survey area just north of the City of Victorville.

Please let me know if any additional information would be helpful.

Sincerely,

Benjamin Smith
Biologist

ECORP Consulting, Inc.
1801 East Park Court Place
Building B, Suite 103
Santa Ana, CA 92701
Phone: 714-648-0630
Cell: 714-651-3021
*Fax: 714-648-0935**[attachment "Caltrans HDC swifl.kmz" deleted by Carl Benz/VFWO/R1/FWS/DOI] [attachment "Caltrans HDC swifl.jpg" deleted by Carl Benz/VFWO/R1/FWS/DOI]*

Approval for SWWF survey modification, Caltrans High Desert Corridor nr Victorville: TE-67390A Benjamin Smith

Carl Benz <carl_benz@fws.gov>

Thu 6/6/2013 12:10 PM

To:Benjamin Smith <bsmith@ecorpconsulting.com>;

Cc:Chris Kofron <chris_kofron@fws.gov>; Aoese Oto <aoese_oto@fws.gov>;

1 attachment

RevisedHDCsurveyArea_2013.pdf;

2012-B-0124

Hi Benjamin,

Please consider this email correspondence our approval for you to commence surveys at the subject site according to the protocol (Sogge 2010) for the southwestern willow flycatcher and according to the conditions of your recovery permit. Furthermore, we find your proposed modification (as described below) to the survey protocol for the least Bell's vireo acceptable and will therefore accept your survey results. We are looking forward to your survey reports.

Sincerely,

Carl T. Benz
Assistant Field Supervisor

From: Benjamin Smith [mailto:bsmith@ecorpconsulting.com]
Sent: Tuesday, June 04, 2013 3:33 PM
To: Chris_Kofron@fws.gov
Subject: High Desert Corridor Southwestern Willow Flycatcher survey area modification

Dear Mr. Kofron,

A Map and photographs have been attached as a PDF document

The purpose of this e-mail is to inform you that the Caltrans High Desert Corridor alignment alternatives have been revised, resulting in a modification of the southwestern willow flycatcher/least Bell's survey area, and to request a minor change to the least Bell's vireo survey protocol for two added areas.

The southeastern approximately one-third of the survey area has been removed from the survey effort. The area that has been eliminated contains the previously documented occupied least Bell's vireo habitat and is the portion that had a slight overlap with surveys being conducted by San Bernardino Flood Control.

Additionally, a 25-acre parcel west of the previously identified survey area and southwest of the intersection of Turner Road and Gas Line Road has been added due to its inclusion in the recently revised critical habitat for the southwestern willow flycatcher. Habitat within the 25-acre parcel consists of desert saltbush scrub with scattered mature Fremont's cottonwoods (*Populus fremontii*) and black willows (*Salix gooddingii*) as well as two small, isolated stands of sandbar willow (*Salix exigua*), one approximately 0.3 acre in size and the other approximately 0.2 acre in size.

An approximately 10-acre open woodland consisting of mature Fremont's cottonwoods and black willows south of the previously identified survey area and northeast of National Trails Highway was also added due to its inclusion in the recently revised critical habitat for the southwestern willow flycatcher. The woodland is unlikely to support least Bell's vireo due to the absence of a dense understory that provides suitable nesting sites.

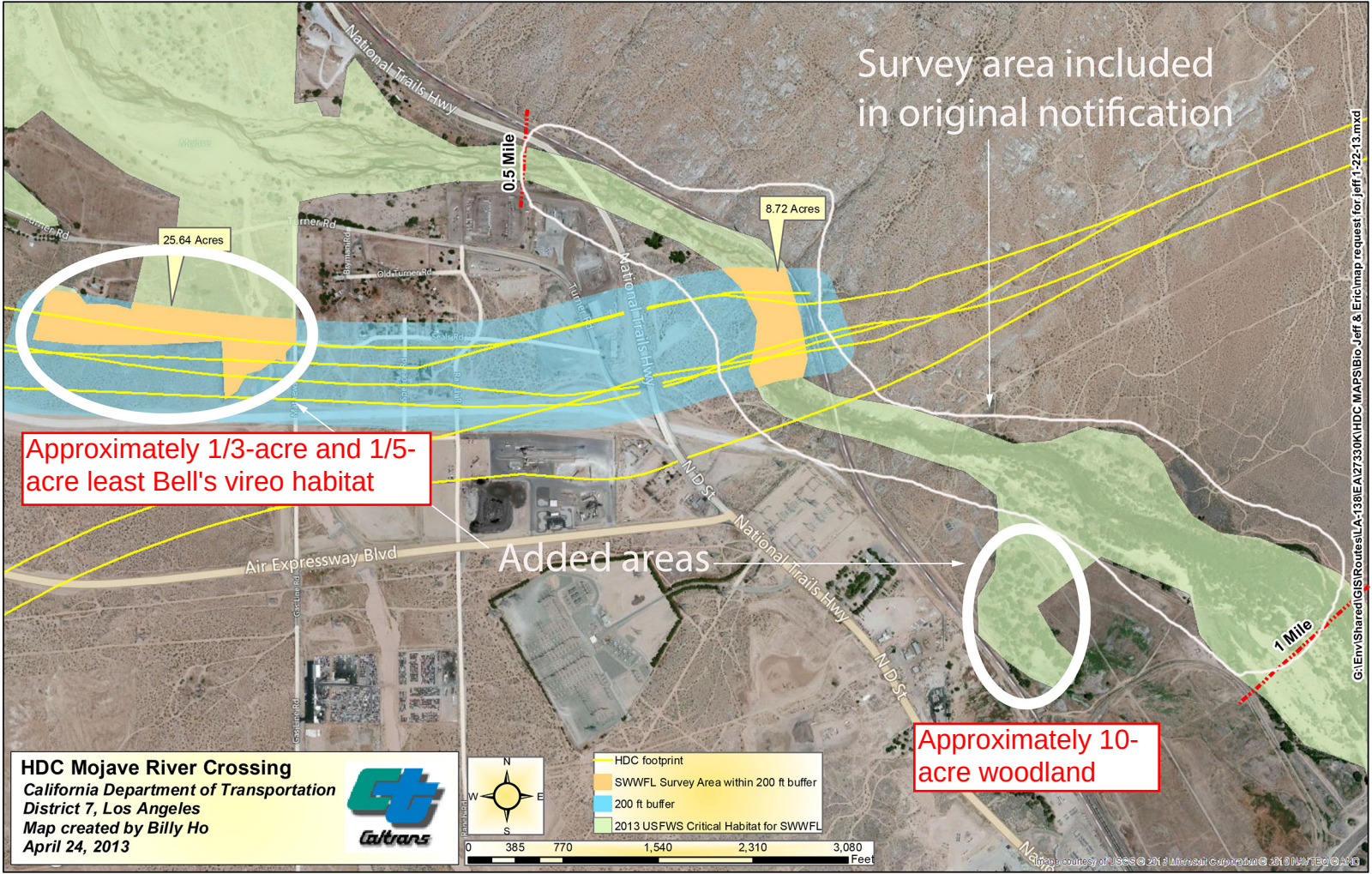
Current protocol for least Bell's vireo surveys requires a minimum of eight visits to a site spaced at least ten days apart between April 10 and July 31. However, the protocol instructions state that "...intensive surveys of small, marginal or extralimital habitats by experienced personnel may well result in defensible conclusions that eight (or more) individual surveys are unnecessary."

The 25-acre parcel containing 0.3-acre and 0.2-acre stands of sandbar willow and the 10-acre woodland were surveyed for least Bell's vireo on May 31. I am proposing that these areas be intensively surveyed for least Bell's vireo on the additional dates of 6/8, 6/20, 6/30, 7/10, 7/20, and 7/30, for a total of seven visits. The modification is requested only for the two added areas descibed above. Eight visits spaced a minimum of 10 days apart will be completed for the majority of the revised survey area and the protocol for southwestern willow flycatcher will be met for the entire revised survey area. Please let me know if this is acceptable.

Benjamin Smith
Biologist

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

1801 Park Court Place, Building B, Santa Ana, CA 92701
Ph: 714.648.0630 ♦Cell: 714.651.3021 ♦ Fax: 714.648.0935
bsmith@ecorpconsulting.com♦ www.ecorpconsulting.com


Survey area included in original notification
National Trails Hwy
0.5 Mile
25.64 Acres
8.72 Acres
Turner Rd
Old Turner Rd
Seals Rd
Approximately 1/3-acre and 1/5-acre least Bell's vireo habitat
Added areas
Air Expressway Blvd
N D St
1 Mile
Approximately 10-acre woodland
G:\Env\Shared\GIS\Routes\LA-138\EA\27330K\HDC MAPS\Bio Jeff & Ericmap request for jeff 1-22-13.mxd
HDC Mojave River Crossing
California Department of Transportation
District 7, Los Angeles
Map created by Billy Ho
April 24, 2013
Caltrans
N
W
E
S
HDC footprint
SWWFL Survey Area within 200 ft buffer
200 ft buffer
2013 USFWS Critical Habitat for SWWFL
0 385 770 1,540 2,310 3,080
Feet

Approximately 10-acre *Populus fremontii/*
Salix gooddingii woodland
© 2013 Google
Google earth

1/5 acre *Salix exigua, Populus fremontii*
1/3 acre *Salix exigua, Salix gooddingii, Populus fremontii*
Turner Rd
Mathews Ln
Gas Line Rd
Seals Rd
© 2013 Google
Google earth

From: "Johnson, Jeff W@DOT" <jeff.johnson@dot.ca.gov>
Date: March 11, 2015 at 11:10:53 AM PDT
To: Don Mitchell <DMitchell@ecorpconsulting.com>
Subject: FW: Yellow-billed Cuckoo Proposed Interim Protocol

Don:

Lets proceed with proposed protocol.

Jeff

From: Ray Bransfield [ray_bransfield@fws.gov]
Sent: Wednesday, March 11, 2015 10:57 AM
To: Johnson, Jeff W@DOT
Subject: RE: Yellow-billed Cuckoo Proposed Interim Protocol

Jeff,
Looks good to me.
Ray

From: Johnson, Jeff W@DOT [mailto:jeff.johnson@dot.ca.gov]
Sent: Wednesday, March 11, 2015 9:46 AM
To: ray_bransfield@fws.gov
Subject: Yellow-billed Cuckoo Proposed Interim Protocol

Ray:

Attached is a proposed interim survey protocol for Yellow-billed cuckoo. Caltrans has an immediate need to proceed with presence/absence surveys for the project known as the High Desert Corridor this spring. With your agreement we will proceed with the method described. We will include any of your changes.

Jeff Johnson

Modified Western Yellow-Billed Cuckoo Survey Method.
Surveys for the western population of the Yellow-billed Cuckoo (*Coccyzus americanus*) will be performed according the following methods. All potentially suitable cuckoo habitat patches within the study area will be surveyed six times during the breeding season, between May 15 and July 31, with a minimum of ten days between each survey. A potentially suitable habitat patch will consist of "an area of riparian habitat five ha or greater in extent that is separated by at least 300m from an adjacent patch of apparently suitable cuckoo habitat", as defined by Halterman et al. (2011), *A Natural History Summary and Survey Protocol for the Western Yellow-billed Cuckoo Population.* Potentially suitable habitat patches will be traversed on foot along transects spaced approximately 30 meters apart, with frequent stops to look and listen for cuckoos. Surveys will begin at daylight and will end by 11 am. Surveys will not be conducted during abnormal or excessive cold, heat, wind, rain, or other inclement weather. The locations of all cuckoo detections will be recorded and reported to the Carlsbad Fish and Wildlife Office.

Spring 2011 Rare Plant Species Survey

San Bernardino County, California

High Desert Corridor Project

LA and SB New Highway

EA: 2600U0

September 2011

STATE OF CALIFORNIA
Department of Transportation

Prepared By: AMEC Environment & Infrastructure, Inc. Date: 09/14/11
(858) 300-4332
9210 Sky Park Court, Suite 200
San Diego, CA 92123

Recommended
for Approval By: _____ Date: 09/27/11
Jeff Johnson, Associate Environmental Planner, Natural Sciences
213-897-0404
Division of Environmental Planning
California Department of Transportation, District 7

Approved By: _____ Date: 09/27/11
Paul Caron, Senior District Biologist
213-897-0610
Division of Environmental Planning
California Department of Transportation, District 7

SPRING 2011 RARE PLANT SPECIES SURVEY AND PLANT COMMUNITY MAPPING REPORT HIGH DESERT CORRIDOR PROJECT SAN BERNARDINO, CALIFORNIA

Submitted to:
California Department of Transportation, District 8
Program/Project Management (MA-645)
464 W. 4th Street, 6th Floor MS-1162
San Bernardino, California 92401-1400
Contact: Aaron P. Burton
Senior Environmental Planner, Environmental Studies "B" Branch Chief

Submitted by:
AMEC Earth & Environmental, Inc.
3120 Chicago Avenue, Suite 110
Riverside, California 92507

September 2011

Caltrans Project No. 0700000080/0, Task Order 15
AMEC Project No. 1055402015

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APPENDIX D SURVEY PHOTOGRAPHS
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ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Earth & Environmental, Inc.
amsl	above mean sea level
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNPS	California Native Plant Society
ESA	Endangered Species Act
GIS	Geographical Information System
GPS	Global Positioning System
Project	High Desert Corridor Project
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRCC	Western Regional Climate Center

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1.0 INTRODUCTION

On behalf of the California Department of Transportation, District 8 (Caltrans), AMEC Earth & Environmental, Inc. (AMEC) conducted spring rare plant species surveys and vegetation mapping in support of the proposed *High Desert Corridor (HDC) Project* (Project). The purpose of this report is to present the results of rare plant survey findings and vegetation community mapping.

1.1 Project Location and Description

Caltrans and the Los Angeles County Metropolitan Transportation Authority (Metro) are proposing to construct a new eight-lane freeway/expressway, and possible toll way, in the High Desert area of Los Angeles and San Bernardino Counties that will extend between SR-14 in Palmdale and SR-18 in Apple Valley. In Los Angeles County, the High Desert Corridor (HDC) roughly follows the Avenue P-8 corridor. In San Bernardino County, the HDC runs slightly south of El Mirage Road and then follows Air Expressway Road near I-15 (Figure 1). East of I-15, the proposed route curves south until it ends at State Route 18 in the Town of Apple Valley at Bear Valley Road.

As currently designed, the proposed Project will accommodate an expected three to six fold increase in traffic between the Antelope and Victor valleys. It will provide a new level of intra-valley accessibility and carry truck and other through traffic safely around existing communities.

This report and the associated field surveys focus on the segment of the HDC within San Bernardino County, which includes the Caltrans District 8 sections of the alignment (biological study area or BSA). The BSA is located in the following U.S. Geological Survey (USGS), 7.5-minute series topographic quadrangles: *El Mirage, Shadow Mountains SE, Adelanto, Victorville, Apple Valley North, Apple Valley South, and Fifteenmile Valley*.

The BSA corridor covers a distance of approximately 34.5 miles with a 4.5-mile alternative to the south of the central area of the main alignment. Also included in the BSA is an area along both shoulders of Interstate 15 freeway extending approximately three miles to the north and 1.5 miles to the south of the corridor, as well as two frontage roads east of the freeway totaling approximately 2.6 miles. A total of 16 planned interchange areas were also surveyed. As directed by Caltrans, a buffer extending 250 feet from either side of the road/interchange centerline was surveyed west of Interstate 15, and a 150-foot buffer east of Interstate 15 and along the frontage roads. Freeway shoulders were surveys 36 feet out from the existing edge of pavement. The BSA includes approximately 2,915 acres (Figure 2). All areas of the BSA were surveys with the exception of parcels that were clearly fenced or posted as no trespassing areas, and parcels where landowners had requested that surveyors not enter.

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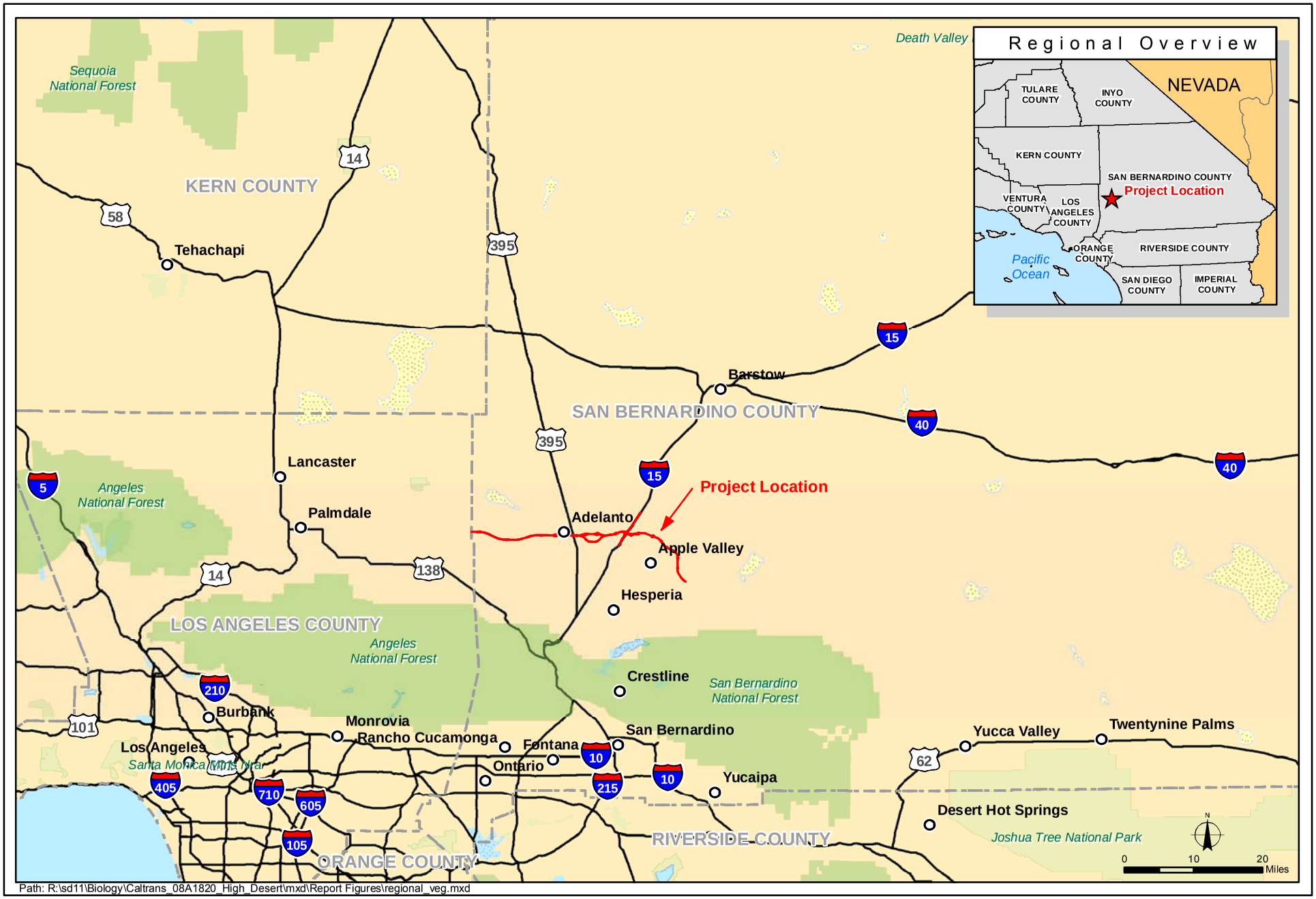

Regional Location
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
1

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Study Area
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
2

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2.0 SITE CHARACTERISTICS

This section provides a description of the environmental setting in which the proposed Project occurs, including a discussion of, existing botanical resources present or potentially present within the study area.

2.1 Climate

The proposed Project is located within a Mediterranean climate region consisting of warm, hot dry summers and mild, wet winters. In summer, temperatures often reach above 100º F and winter temperatures fall into the 30s, with an occasional freeze. Average annual temperature ranges are fairly moderate for the area, ranging from 43.8 degrees Fahrenheit (ºF) to 77.5º F (Western Regional Climate Center [WRCC] 2011).

Annual precipitation for the general Project vicinity (Victorville weather station) over the 92 year period from 1917 to 2009 averaged 5.56 inches (WRCC 2011). The 2011 spring special-status plant surveys were conducted following the 2010-2011 winter season that received higher than normal rainfall within the Project area, as well as throughout the state. In light of this data, hydrologic conditions necessary to support special status plant species during this spring survey period should have been more favorable than during most years for potential.

2.2 Topography and Soils

Topography in the BSA includes flats, low hills, and drainages including the Mojave River. In the western area of the alignment numerous small washes cross a relatively flat landscape, generally draining from north to south. East of town of Adelanto, the topography transitions to a series of low hills, and west of town drops into the wide valley associated with the Mojave River at Mojave Heights. The river crossing is at a steep, rocky gorge. East of the river, the alignment climbs a bouldery slope through Bell Mountain Pass onto a wide, alluvial area associated with Bell Mountain Wash. In this area, numerous north-south running washes cross the corridor, with occasional rocky cairns protruding from the sandy flats. East of the Interstate 15 freeway, the corridor continues over a series of hills modified by and active mining area, through then into the flats of the eastern portion of the alignment. Near the eastern terminus, the northern edge of the BSA extends onto the rocky foothills of the Granite Mountains. Elevations within this area range from approximately 2,600 to 3,600 feet above mean sea level (amsl).

Soils within the majority of the BSA are underlain by sandy soil types. The dominant soils types in the study area include Bryman Loamy Fine Sand, Manet Coarse Sand, and Helendale-Bryman Loamy Sand (Table 1). Table 1 provides the soil types present within the BSA and their respective acreages. Appendix A presents the location of each soil type within the BSA.

Table 1.
Project Area Soils

Soil Type	Acreage
Bousic Clay	9.46
Bryman Loamy Fine Sand, 0-2% Slopes	573.09
Bryman Loamy Fine Sand, 2-5% Slopes	61.28
Bryman Loamy Fine Sand, 5-9% Slopes	25.28
Cajon Sand, 0-2% Slopes	183.35
Cajon Sand, 2-9% Slopes	248.89
Cajon Sand, 9-15% Slopes	30.91
Cajon Gravelly Sand, 2-15% Slopes	2.22
Cajon Loamy Sand, Loamy Substratum, 0-2% Slop*	2.37
Cajon-Arizo Complex, 2-15% Slopes	175.95
ajon-Wasco, Cool Complex, 2-9% Slopes	15.13
Haplargids-Calciorthids Complex, 15-50% Slopes	28.68
Helendale Loamy Sand, 0-2% Slopes	3.50
Helendale Loamy Sand, 2-5% Slopes	132.98
Helendale-Bryman Loamy Sands, 2-5% Slopes	310.06
Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes	27.63
Lavic Loamy Fine Sand	0.04
Manet Coarse Sand, 2-5% Slopes	495.70
Manet Loamy Sand, Loamy Substratum, 0-2% Slop*	56.98
Manet Fine Sandy Loam, 0-2% Slopes	47.97
Mirage-Joshua Complex, 2-5% Slopes	251.55
Mohave Variant Loamy Sand, 0-2% Slopes	5.48
Nebona-Cuddeback Complex, 2-9% Slopes	32.44
Pits	18.00
Riverwash	3.27
Rock Outcrop-Lithic Torriorthents Complex, 15*	64.17
Rosamond Loam, Saline-Alkali	46.61
Trigger-Sparkhule-Rock Outcrop Association	14.04
Victorville Sandy Loam	2.20
Villa Loamy Sand	0.90
Wasco Sandy Loam, Cool, 2-5% Slopes	40.89

3.0 SURVEY METHODOLOGY

This section provides an overview of methods used to evaluate special-status botanical resources and vegetation communities associated with the BSA.

3.1 Pre-Field Survey Methods

Prior to field surveys, a review of available electronic databases, reports, and other sources was conducted. As part of the review, a comprehensive search was conducted to identify sensitive species data relevant to the study area and surrounding region. The following resources were used in background research and during field surveys:

- Topographic maps
- Recent aerial photos (2011)
- California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (CDFG 2011)
- CDFG Biogeographic Information and Observation System (BIOS 11)
- U.S. Fish and Wildlife Service (USFWS) sensitive species occurrence database (USFWS 2011)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2011)
- San Bernardino County, Mojave River Area Soil Survey (USDA 1971)

Based upon the literature and database review, a list of potentially occurring special-status plant species was prepared for the region surrounding the BSA (Appendix B). Special-status plant species are those which are considered rare, threatened, or endangered within the state or region by local, state, or federal resource conservation agencies. Sensitive species are limited in distribution, restricted in habitat requirements, are particularly susceptible to human disturbance, subject to degradation due to development or invasion by nonnative species, or a combination of all of these factors. Figure 4 presents the locations of species that are known to occur within the Project vicinity based on database review.

3.2 Rare Plant Field Survey Methods

Spring plant surveys to determine presence or absence of all special status plant species with potential to occur within the BSA (Figure 2) were conducted on 10 May through 13 May and 15 May through 20 May 2011 by AMEC biologists John Chestnut, Tim Chumley, Nicole Kimball, David King, Nathan Moorhatch, Theresa Price, and Ted Rado following CDFG *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009).

Surveys were conducted by walking meandering transects that were generally spaced approximately 10 to 15 meters apart in order to maximize the likelihood of locating special-status plant species and to ensure thorough coverage of the survey area. All areas of the BSA were observed, and special attention was given to areas supporting specialized habitat for special interest species of the region, e.g., rocky outcrops, alkali marshes, etc. The survey was floristic in nature (e.g. every plant taxon that occurred on site was identified to the taxonomic level necessary to determine rarity and listing status) and conducted at the time of year when most target species were both evident and identifiable. Species that could not be identified immediately were brought into the laboratory for further investigation. Scientific and common names of plants followed *The Jepson Manual: Higher Plants of California* (Hickman 1993) or more recent published taxonomical revisions of genera. A comprehensive list of plant species identified within the survey area is presented in Appendix C.

Trimble Juno SB handheld data collectors with WAAS corrected Global Positioning System (GPS) were used to run ESRI's ArcPad data collection software for navigation and spatial data collection. Data layers uploaded onto the Juno SB included the study area boundaries, recent aerial photography, topographic contours, roads, and historical localities of special status species from the CNDDB and other occurrence databases.

For each special-status plant species that has potential to occur within the Project vicinity, the probability of occurrence was derived from field surveys and/or from literature as compared to the habitat conditions encountered within the survey area (Appendix B). Each species was assessed for its potential to occur within the survey area based on the following criteria:

- Observed: Species observed on the site during surveys described here, or recorded onsite by other qualified biologists.
- High: Observed in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.
- Moderate: Reported sightings in surrounding region, or site is within the known range of the species and habitat on the site is a type occasionally used by the species.
- Low: Site is within the known range of the species but habitat on the site is rarely used by the species.

Special status plants located in the field were identified, the identity confirmed by at least one other qualified botanist, and the location recorded using WAAS corrected GPS for transfer to the project database back at the office. Forms including detailed abundance, habitat, phenology, and other information were recorded for each locality.

3.3 Vegetation Community Mapping Methods

Vegetation community mapping was conducted in concurrence with rare plant surveys. Field maps were created prior to field visits (approximately 1 inch = 400 feet) using 2009 high resolution aerial images and included the boundaries of BSA, any existing sensitive species data, and recent aerial imagery. Potentially occurring habitats were identified through aerial photo-interpretation prior to field efforts and readily identifiable vegetation boundaries and hard features (such are roads and development) were included on field maps prior to field activities. Aerial-interpreted habitats within the project area were ground-truthed and vegetation communities were identified and delineated onto field maps during rare plant survey field efforts. Vegetation communities were classified per *A Manual of California Vegetation* (Sawyer et. al 2009). Vegetation communities were generally mapped to a 0.25 minimum mapping unit (i.e., features smaller than the minimum mapping unit will be merged into adjacent vegetation types), with the exception of high interest features such as riparian or other sensitive communities, which were mapped as appropriate. This mapping did not include the detailed delineation of wetland, streambed, or riparian features, which were generally mapped, but will require a more detailed assessment as part of wetland delineations associated with this Task Order.

Following ground-truthing efforts, field maps were screen digitized into a global information system (GIS) database. Vegetation communities were mapped in-situ utilizing a set of field maps with a 2009 high resolution aerial image background. The data was then processed in ArcGIS with heads up digitizing and crosschecked with various aerial images including Google Earth, BING Maps and Aerials Express imagery. The resulting maps were reviewed by project botanist for final approval.

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4.0 SURVEY RESULTS AND RECOMMENDATIONS

4.1 Rare Plant Surveys

Focused surveys to determine presence or absence of all special status plant species with potential to occur within the Project vicinity (Appendix B) were conducted on 10 May through 13 May and 15 May through 20 May 2011 by AMEC biologists John Chestnut, Tim Chumley, Nicole Kimball, David King, Nathan Moorhatch, Theresa Price, and Ted Rado following CDFG *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009).

Results of these surveys concluded that two rare plant species occur within the project area: Mojave fish-hook cactus (*Sclerocactus polyancistrus*) (Map 22, Appendix A) and alkali mariposa lily (*Calochortus striatus*) (Map 17 and 21 Appendix A).

Alkali mariposa lily is perennial bulbiferous herb in the lily family (Liliaceae). It is a CNPS list 1B.2 species that occurs in alkaline and mesic areas of chaparral, chenopod scrub, Mojavean desert scrub, and meadows and seeps at elevations ranging from 230 to 5233 feet. Alkali mariposa lily bloom from April to June (CNPS 2011). Approximately 13 individuals of alkali mariposa lily were identified within the BSA, west of Mojave River in alkali habitats located at foot of mesa (Map 17 and 21, Appendix A). Photographs of alkali mariposa lily encountered within the BSA are presented in Appendix D.

Mojave fish-hook cactus is a stem succulent of the cactus family (Cactaceae). It is a CNPS list 4.2 (watch list) species that occurs in great basin scrub, Joshua tree woodland, and Mojavean desert scrub, usually within carbonate substrates. Mojave fish-hook cactus occurs within elevation ranging from 2,100 to 7,612 feet (CNPS 2011). Individuals of Mojave fish-hook cactus were identified within rock outcrops near the I-15 interchange (Map 22, Appendix A). Photographs of short-joint beavertail identified within the Project area are presented in Appendix D.

As currently designed, the Project would result in impacts to alkali mariposa lily and Mojave fish-hook cactus as a result of road development activities. It is ultimately recommended that these species be avoided from Project impacts. However, if avoidance is not feasible, it is recommended that minimization/mitigation measures are implemented if direct and/or indirect impacts to these species are to occur.

4.2 Vegetation Mapping

Vegetation community mapping was conducted in concurrence with rare plant surveys. Twenty-five distinct vegetation community types were identified within the BSA. Table 2 presents the list of these communities and their respective acreage that was calculated within the BSA. Creosote bush scrub is the dominant vegetation community with the project area (1382.03 acres) (Table 2). Appendix E presents a description of each vegetation community encountered within the BSA.

Table 2.
Vegetation Communities Mapped within the BSA

Code	Vegetation Community	Acres
AS	Allscale Scrub	368.67
DAS	Disturbed Allscale Scrub	11.87
AS/CBS	Allscale Scrub/Creosote Bush Scrub	15.83
CBS	Creosote Bush Scrub	1382.03
CBS/WBS	Creosote Bush Scrub/White Bursage Scrub	18.85
DCBS	Disturbed Creosote Bush Scrub	60.32
CHAN	Channel	3.20
DEV	Developed	357.45
DIST	Disturbed	114.68
DJTW	Disturbed Joshua Tree Woodland	13.31
FCF	Freemont Cottonwood Forest*	6.29
FSS	Fourwing Saltbush Scrub	10.00
JTW	Joshua Tree Woodland*	86.71
JTW/CBS	Joshua Tree Woodland/Creosote Bush Scrub	140.58
MYS	Mojave Yucca Scrub	131.56
NNG	Nonnative Grassland	140.08
PRS	Parry's Rabbitbrush Scrub	2.91
ROCK	Rock Outcropping	18.94
SF	Saltgrass Flats Alliance	15.50
DSF	Disturbed Saltgrass Flats	3.68
SWT	Sandbar Willow Thickets*	1.29
WBS	White Bursage Scrub	9.78
WBS/NNG	White Bursage Scrub/Nonnative Grassland	22.62
WFS	Winterfat Scrubland*	23.20

Vegetation communities considered as "high priority" by the CDFG that occur within the Project area include Joshua tree woodland, Freemont cottonwood forest, sandbar willow thickets, winterfat scrubland, and white bursage scrub. Impacts to these vegetation communities should be avoided or minimized during final project design.

Furthermore, the County of San Bernardino and local cities have adopted desert plant protection ordinances per Chapter 88.01, *Plant Protection and Management* of the County of San Bernardino Code (County of San Bernardino 207). A Tree or Plant Removal Permit is required for compliance with Section 88.01.050 (Tree or Plant Removal Requirements) and shall be required for the removal of regulated trees and plants. The following desert native plants or any part of them, except the fruit, shall not be removed except under a Tree or Plant Removal Permit in compliance with Section 88.01.050 (Tree or Plant Removal Permits):

1. The following desert native plants with stems two inches or greater in diameter or six feet or greater in height:
    a) *Dalea spinosa* (smoketree).
    b) All species of the genus Prosopis (mesquites).
2. All species of the family Agavaceae (century plants, nolinas, yuccas).
3. Creosote Rings, 10 feet or greater in diameter.
4. All Joshua trees.
5. Any part of any of the following species, whether living or dead:
    a) *Olneya tesota* (desert ironwood).
    b) All species of the genus *Prosopis* (mesquites).
    c) All species of the genus *Cercidium* (palos verdes).

It is recommended that an assessment of impacts to these species is conducted within the BSA. Construction activities should be conducted in accordance with Chapter 88.01, *Plant Protection and Management* of the County of San Bernardino Code.

5.0 REFERENCES

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Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
AS - Allscale Scrub
AS/CBS - Allscale Scrub/Creosote Bush Scrub
CBS - Creosote Bush Scrub
CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
CHAN - Channel
DAS - Disturbed Allscale Scrub
DCBS - Disturbed Creosote Bush Scrub
DEV - Developed
DIST - Disturbed
DJTW - Disturbed Joshua Tree Woodland
DSF - Disturbed Saltgrass Flats Alliance
FCF - Freemont Cottonwood Forest
FSS - Fourwing Saltbush Scrub
JTW - Joshua Tree Woodland
JTW/CBS - Joshua Tree Woodland/Creosote Bush Scrub
MYS - Mojave Yucca Scrub
NNG - Nonnative Grassland
PRS - Parry's Rabbitbrush Scrub
ROCK - Rock Outcropping
SF - Saltgrass Flats Alliance
SWT - Sandbar Willow Thickets
WBS - White Bursage Scrub
WBS/NNG - White Bursage Scrub/Nonnative Grassland
WFS - Winterfat Scrubland

NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
112-Cajon Sand, 0-2% Slopes
113-Cajon Sand, 2-9% Slopes
114-Cajon Sand, 9-15% Slopes
115-Cajon Gravelly Sand, 2-15% Slopes
117-Cajon Loamy Sand, Loamy Substratum, 0-2% Slopes
118-Cajon-Arizo Complex, 2-15% Slopes
119-Cajon-Wasco, Cool Complex, 2-9% Slopes
130-Haplargids-Calciorthids Complex, 15-50% Slopes
131-Helendale Loamy Sand, 0-2% Slopes
132-Helendale Loamy Sand, 2-5% Slopes
133-Helendale-Bryman Loamy Sands, 2-5% Slopes
137-Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes
140-Lavic Loamy Fine Sand
144-Manet Coarse Sand, 2-5% Slopes
146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
151-Nebona-Cuddeback Complex, 2-9% Slopes
155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N
1 inch = 400 feet
0 200 400 Feet

CBS
DIST
137
NNG
112
CBS
144
CBS
147
CBS

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
1

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
AS - Allscale Scrub
AS/CBS - Allscale Scrub/Creosote Bush Scrub
CBS - Creosote Bush Scrub
CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
CHAN - Channel
DAS - Disturbed Allscale Scrub
DCBS - Disturbed Creosote Bush Scrub
DEV - Developed
DIST - Disturbed
DJTW - Disturbed Joshua Tree Woodland
DSF - Disturbed Saltgrass Flats Alliance
FCF - Freemont Cottonwood Forest
FSS - Fourwing Saltbush Scrub
JTW - Joshua Tree Woodland
JTW/CBS - Joshua Tree Woodland/Creosote Bush Scrub
MYS - Mojave Yucca Scrub
NNG - Nonnative Grassland
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ROCK - Rock Outcropping
SF - Saltgrass Flats Alliance
SWT - Sandbar Willow Thickets
WBS - White Bursage Scrub
WBS/NNG - White Bursage Scrub/Nonnative Grassland
WFS - Winterfat Scrubland

NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
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113-Cajon Sand, 2-9% Slopes
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115-Cajon Gravelly Sand, 2-15% Slopes
117-Cajon Loamy Sand, Loamy Substratum, 0-2% Slopes
118-Cajon-Arizo Complex, 2-15% Slopes
119-Cajon-Wasco, Cool Complex, 2-9% Slopes
130-Haplargids-Calciorthids Complex, 15-50% Slopes
131-Helendale Loamy Sand, 0-2% Slopes
132-Helendale Loamy Sand, 2-5% Slopes
133-Helendale-Bryman Loamy Sands, 2-5% Slopes
137-Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes
140-Lavic Loamy Fine Sand
144-Manet Coarse Sand, 2-5% Slopes
146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
151-Nebona-Cuddeback Complex, 2-9% Slopes
155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N
1 inch = 400 feet
0 200 400 Feet

St George Ave
St Anthony Ave
Primavera Rd
Parkdale Rd
147
144
CBS
DEV
DIST
DCBS
CBS
CBS
CBS
DEV
CBS
CBS

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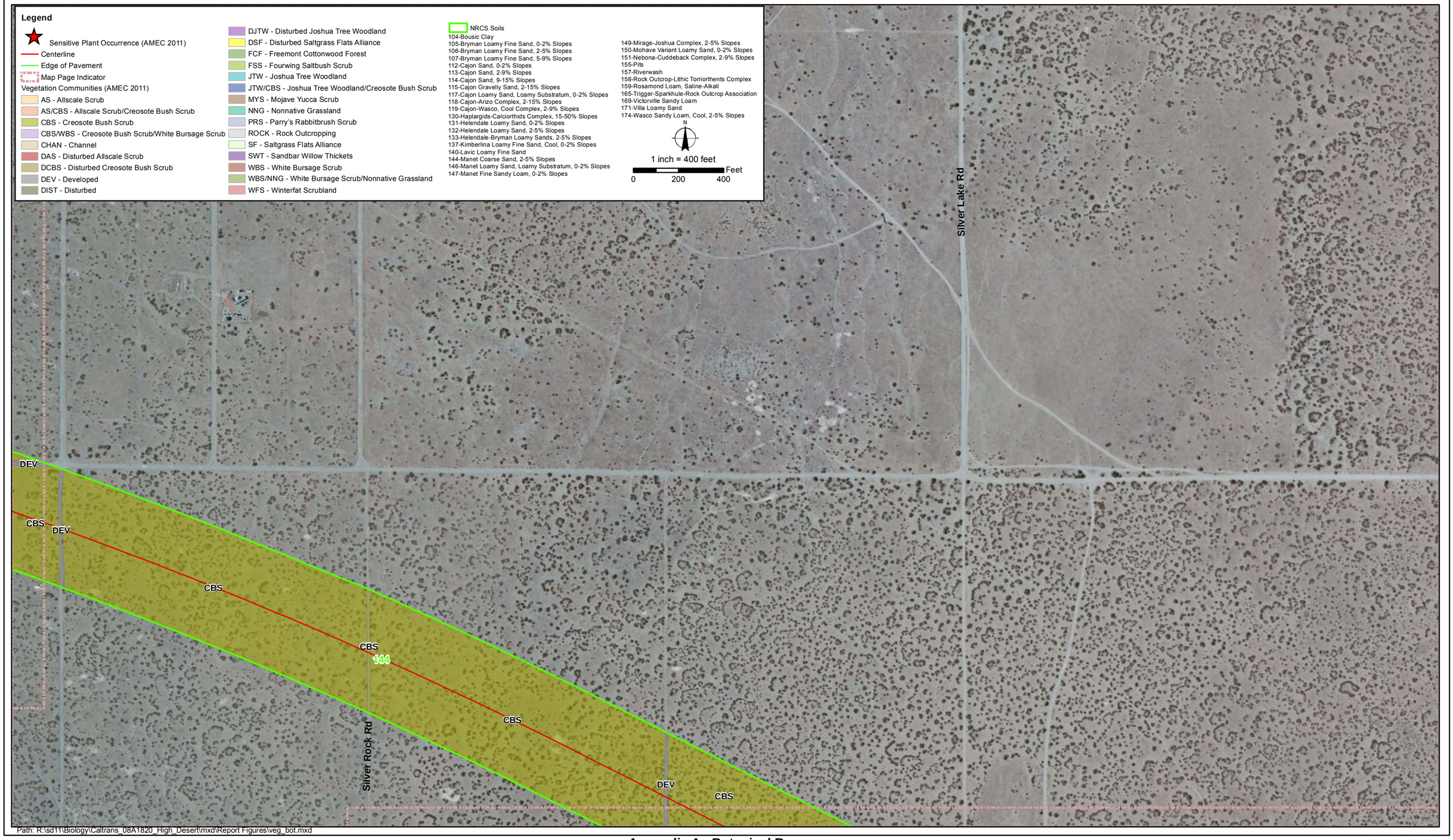
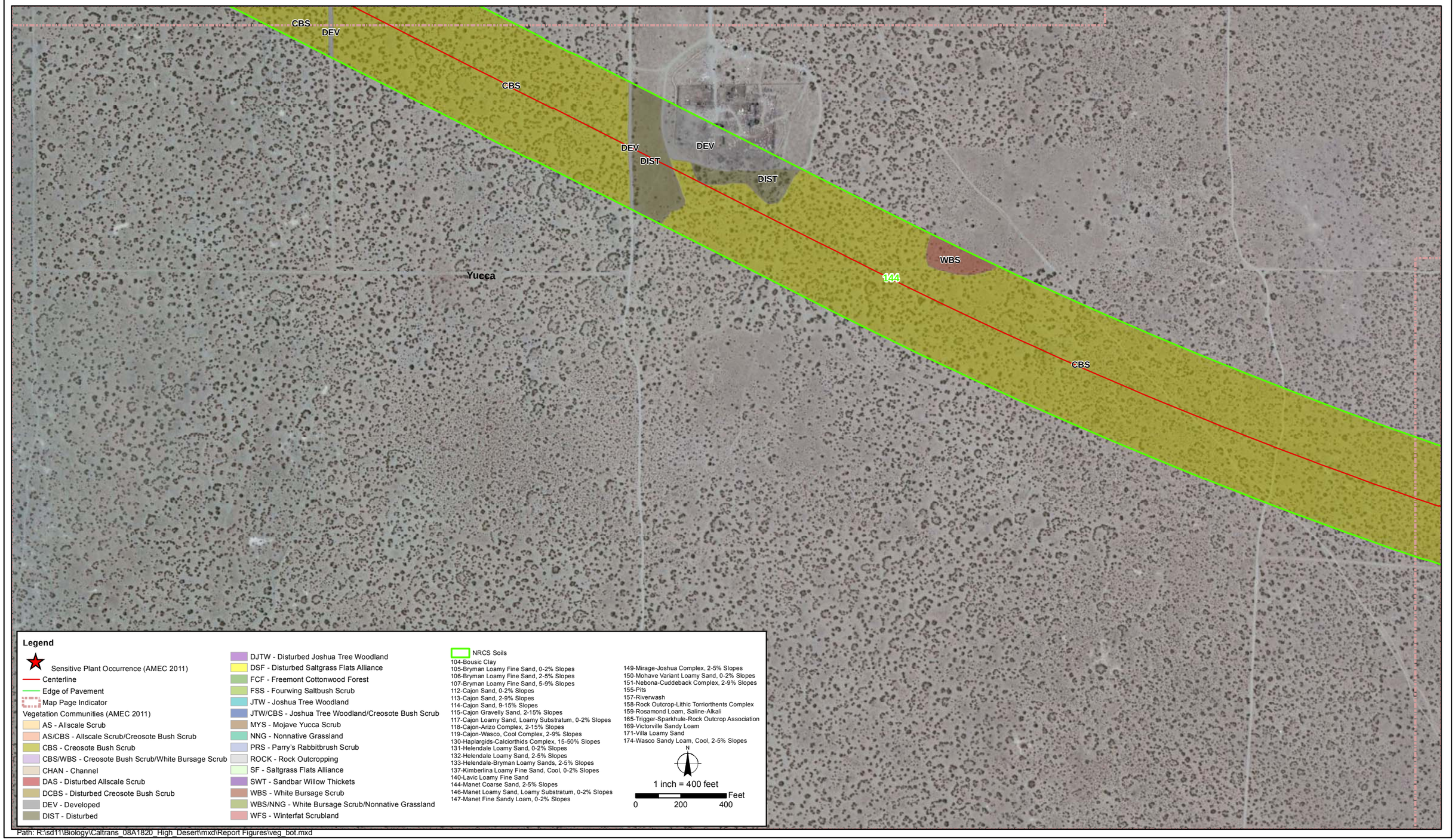
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 2



Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
3



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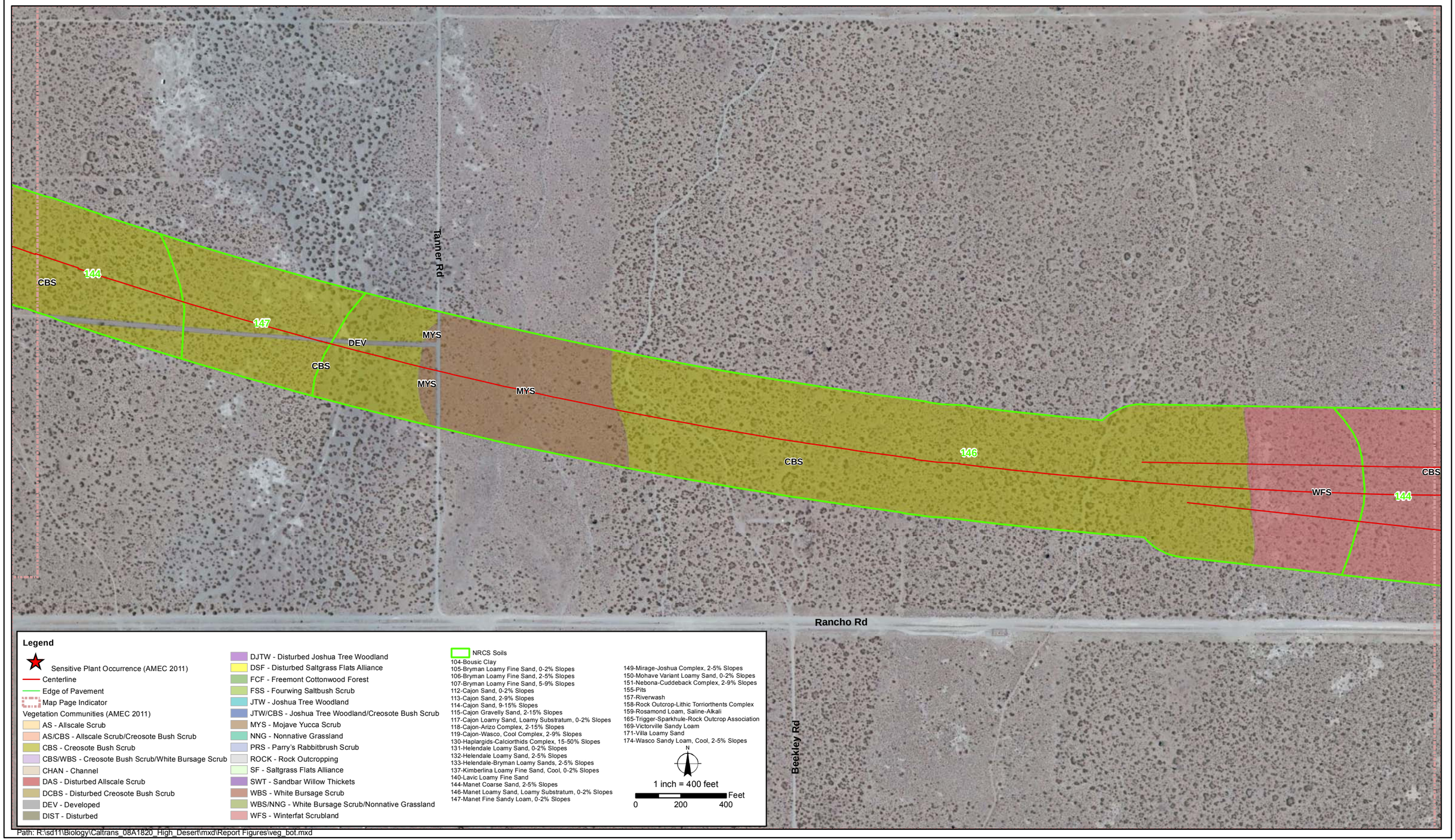
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
4



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
5

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

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AS/CBS - Allscale Scrub/Creosote Bush Scrub
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DAS - Disturbed Allscale Scrub
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NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
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157-Riverwash
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159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N

1 inch = 400 feet

0 200 400 Feet

Old Phelan Rd
Rancho Rd
Rancho Rd
DEV
CBS
CBS
DEV
CBS
DEV
CBS
144
JTW/CBS
WFS

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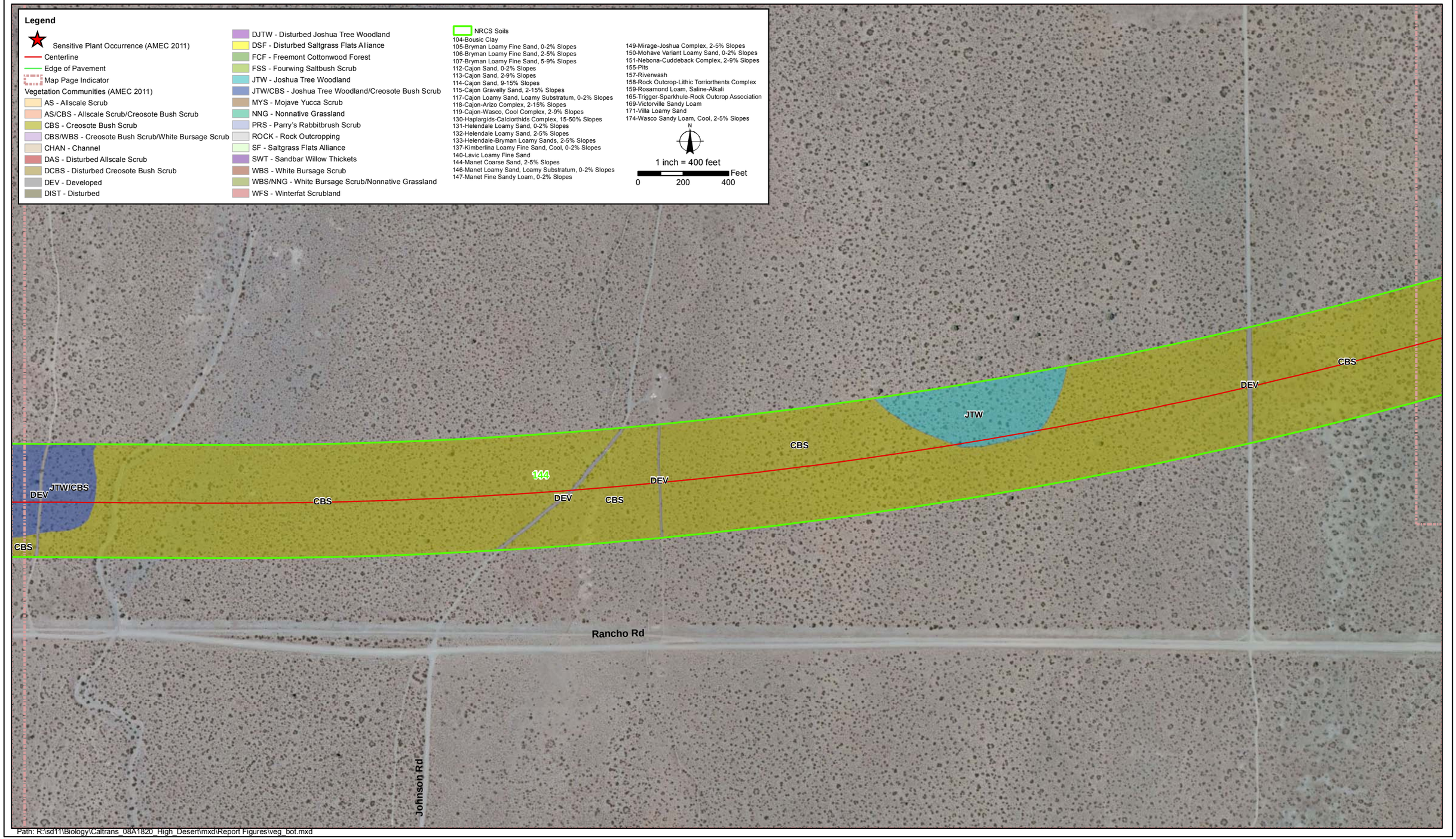
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
6



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
7

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
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AS/CBS - Allscale Scrub/Creosote Bush Scrub
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NRCS Soils
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105-Bryman Loamy Fine Sand, 0-2% Slopes
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165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N
1 inch = 400 feet
0 200 400 Feet

CBS
CBS
CBS/WBS
DEV
CBS/WBS
CBS
144
DEV
CBS
DEV
CBS

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
8

Legend

- Sensitive Plant Occurrence (AMEC 2011)
- Centerline
- Edge of Pavement
- Map Page Indicator

Vegetation Communities (AMEC 2011)

- AS - Allscale Scrub
- AS/CBS - Allscale Scrub/Creosote Bush Scrub
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- DAS - Disturbed Allscale Scrub
- DCBS - Disturbed Creosote Bush Scrub
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- DIST - Disturbed
- DJTW - Disturbed Joshua Tree Woodland
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- SWT - Sandbar Willow Thickets
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- WBS/NNG - White Bursage Scrub/Nonnative Grassland
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NRCS Soils

104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
112-Cajon Sand, 0-2% Slopes
113-Cajon Sand, 2-9% Slopes
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133-Helendale-Bryman Loamy Sands, 2-5% Slopes
137-Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes
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146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
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155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N

1 inch = 400 feet

0 200 400 Feet

Air Expy

WBS/NNG 112 DEV WBS/NNG JTW/CBS

CBS 144 CBS WFS DEV CBS CBS

Yucca Rd

Tumbleweed Rd

Middleton Rd

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 9

Legend

- Sensitive Plant Occurrence (AMEC 2011)
- Centerline
- Edge of Pavement
- Map Page Indicator

Vegetation Communities (AMEC 2011)

- AS - Allscale Scrub
- AS/CBS - Allscale Scrub/Creosote Bush Scrub
- CBS - Creosote Bush Scrub
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NRCS Soils

104-Bousic Clay
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106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
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113-Cajon Sand, 2-9% Slopes
114-Cajon Sand, 9-15% Slopes
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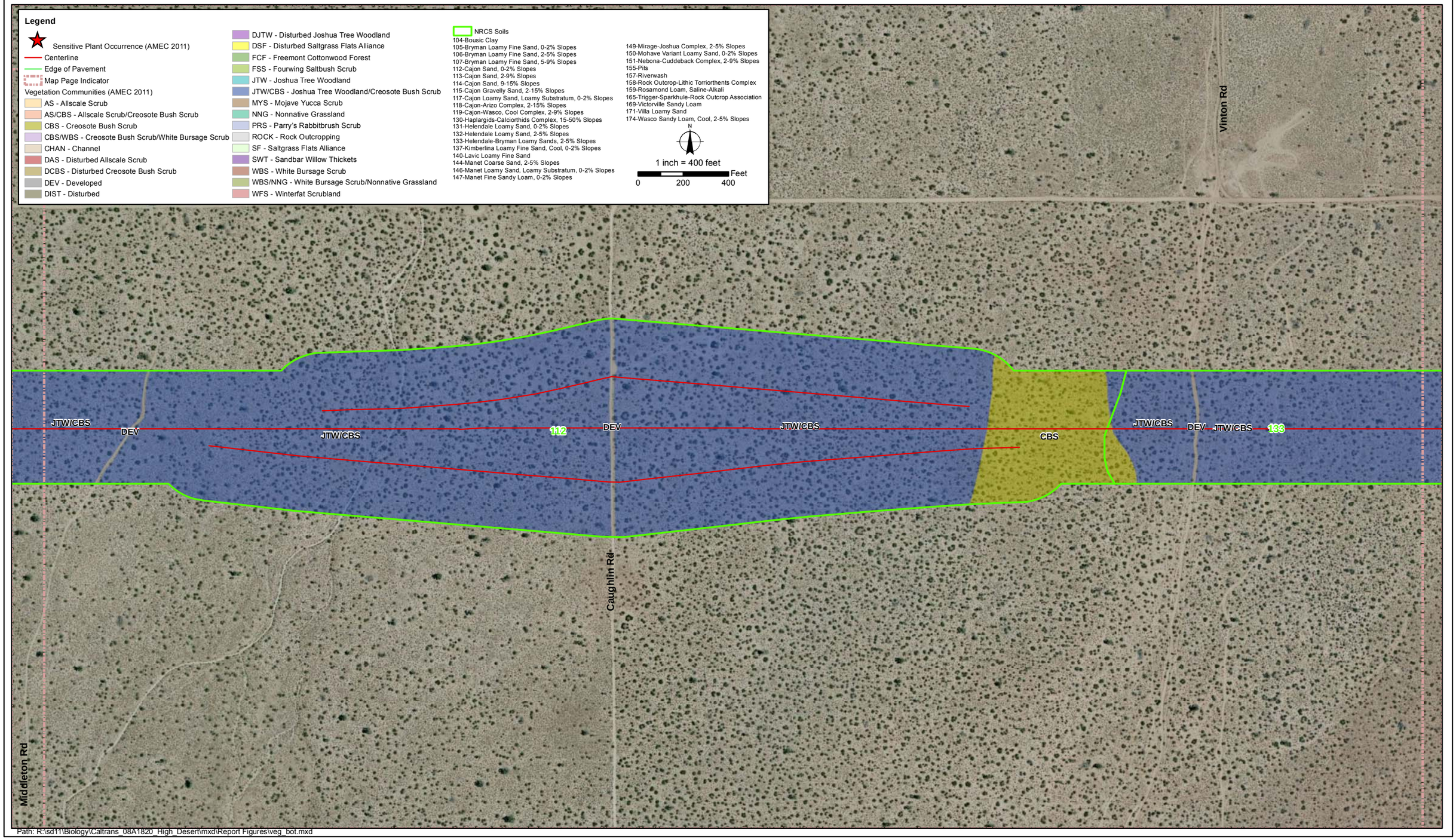
119-Cajon-Wasco, Cool Complex, 2-9% Slopes
130-Haplargids-Calciorthids Complex, 15-50% Slopes
131-Helendale Loamy Sand, 0-2% Slopes
132-Helendale Loamy Sand, 2-5% Slopes
133-Helendale-Bryman Loamy Sands, 2-5% Slopes
137-Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes
140-Lavic Loamy Fine Sand
144-Manet Coarse Sand, 2-5% Slopes
146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
151-Nebona-Cuddeback Complex, 2-9% Slopes
155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N

1 inch = 400 feet

0 200 400 Feet



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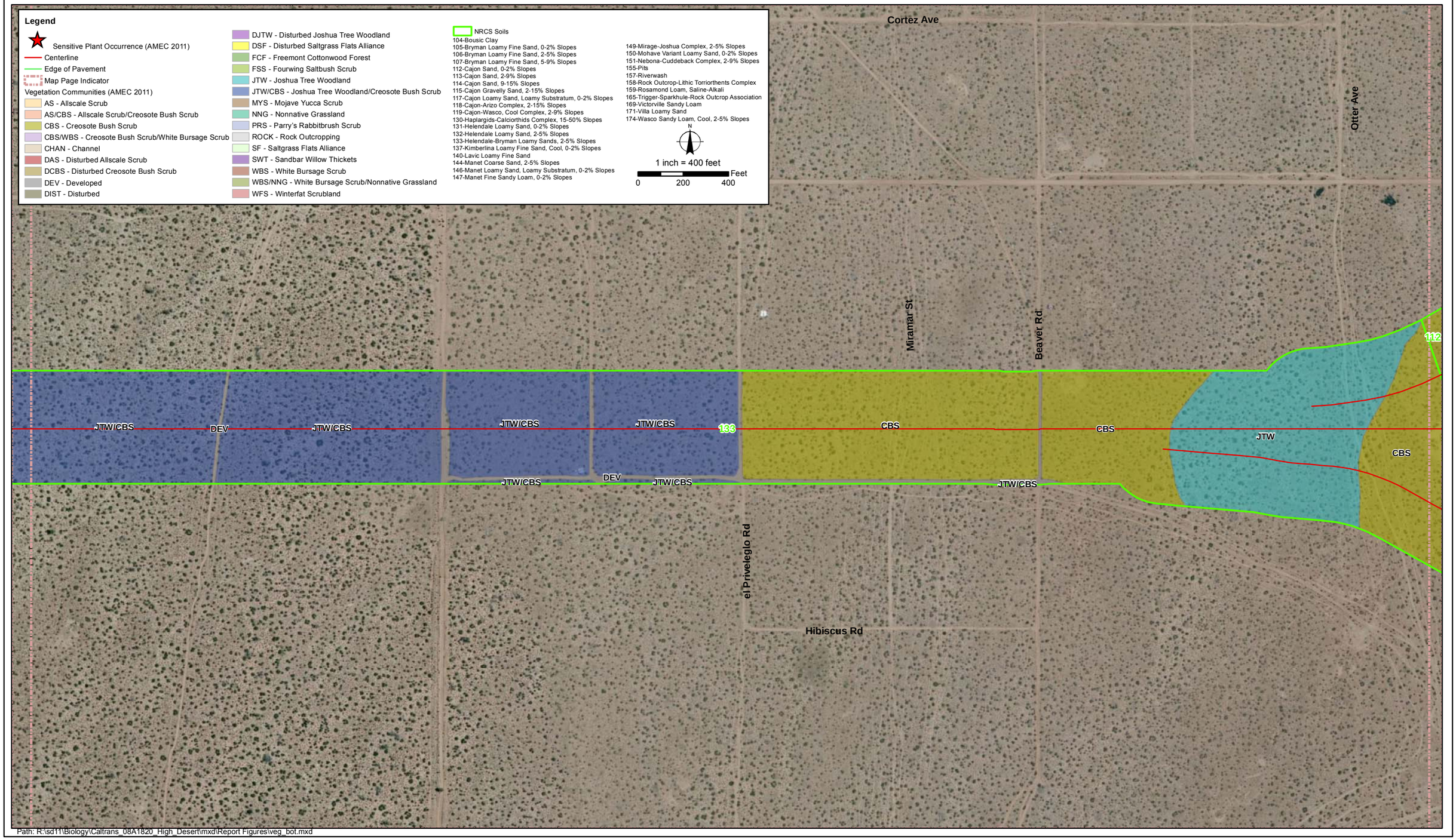
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 10



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 11

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
AS - Allscale Scrub
AS/CBS - Allscale Scrub/Creosote Bush Scrub
CBS - Creosote Bush Scrub
CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
CHAN - Channel
DAS - Disturbed Allscale Scrub
DCBS - Disturbed Creosote Bush Scrub
DEV - Developed
DIST - Disturbed
DJTW - Disturbed Joshua Tree Woodland
DSF - Disturbed Saltgrass Flats Alliance
FCF - Freemont Cottonwood Forest
FSS - Fourwing Saltbush Scrub
JTW - Joshua Tree Woodland
JTW/CBS - Joshua Tree Woodland/Creosote Bush Scrub
MYS - Mojave Yucca Scrub
NNG - Nonnative Grassland
PRS - Parry's Rabbitbrush Scrub
ROCK - Rock Outcropping
SF - Saltgrass Flats Alliance
SWT - Sandbar Willow Thickets
WBS - White Bursage Scrub
WBS/NNG - White Bursage Scrub/Nonnative Grassland
WFS - Winterfat Scrubland

NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
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169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N
1 inch = 400 feet
0 200 400 Feet

Air Expressway
Stevens Rd
Cassin Cir
Badger Ave
Panther Ave
Koala Rd
Muskrat Ave
Raccoon Ave
CBS
JTW
JTW/CBS
WBS
DEV
MYS
DIST
112
133

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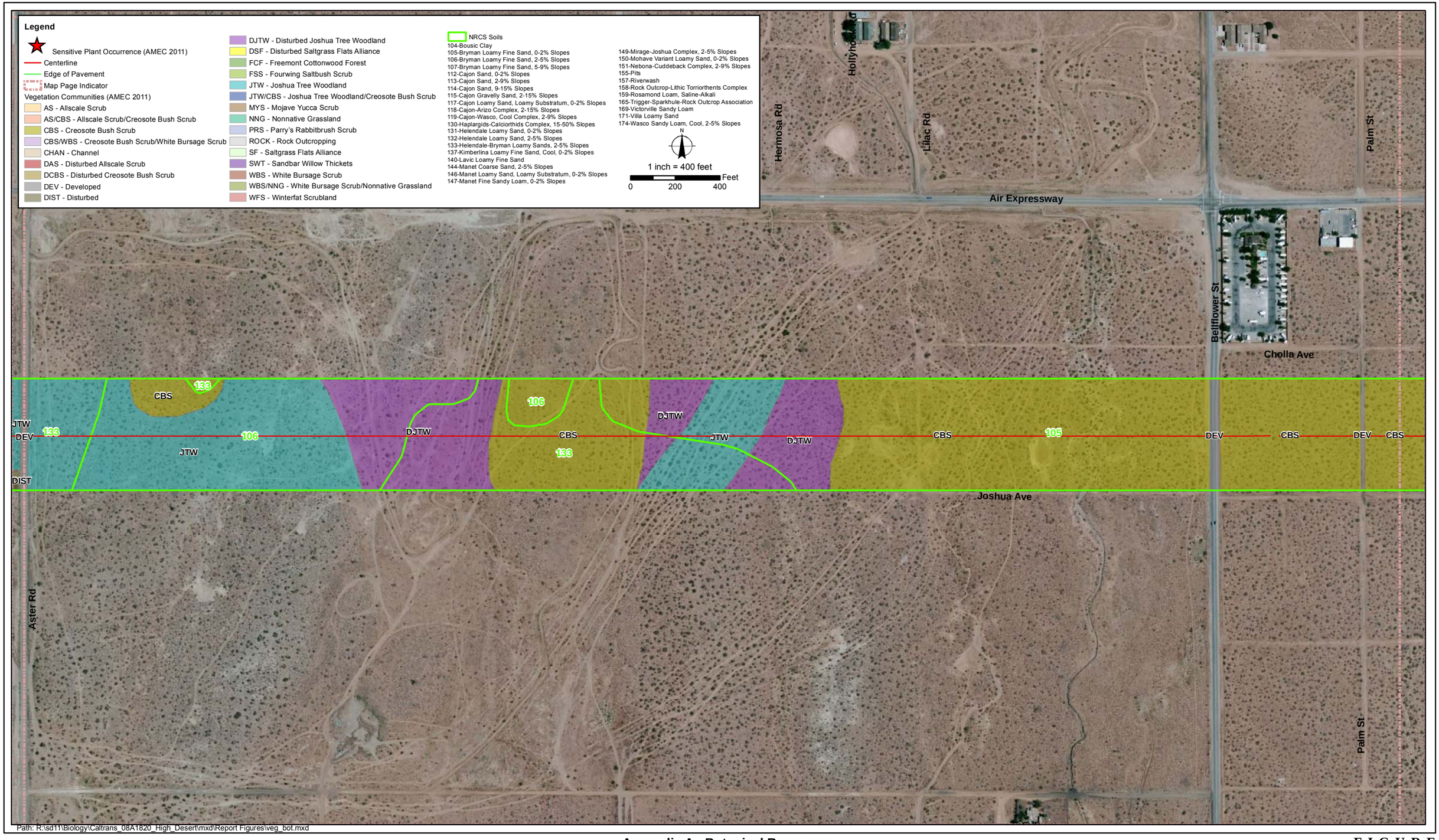
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 12



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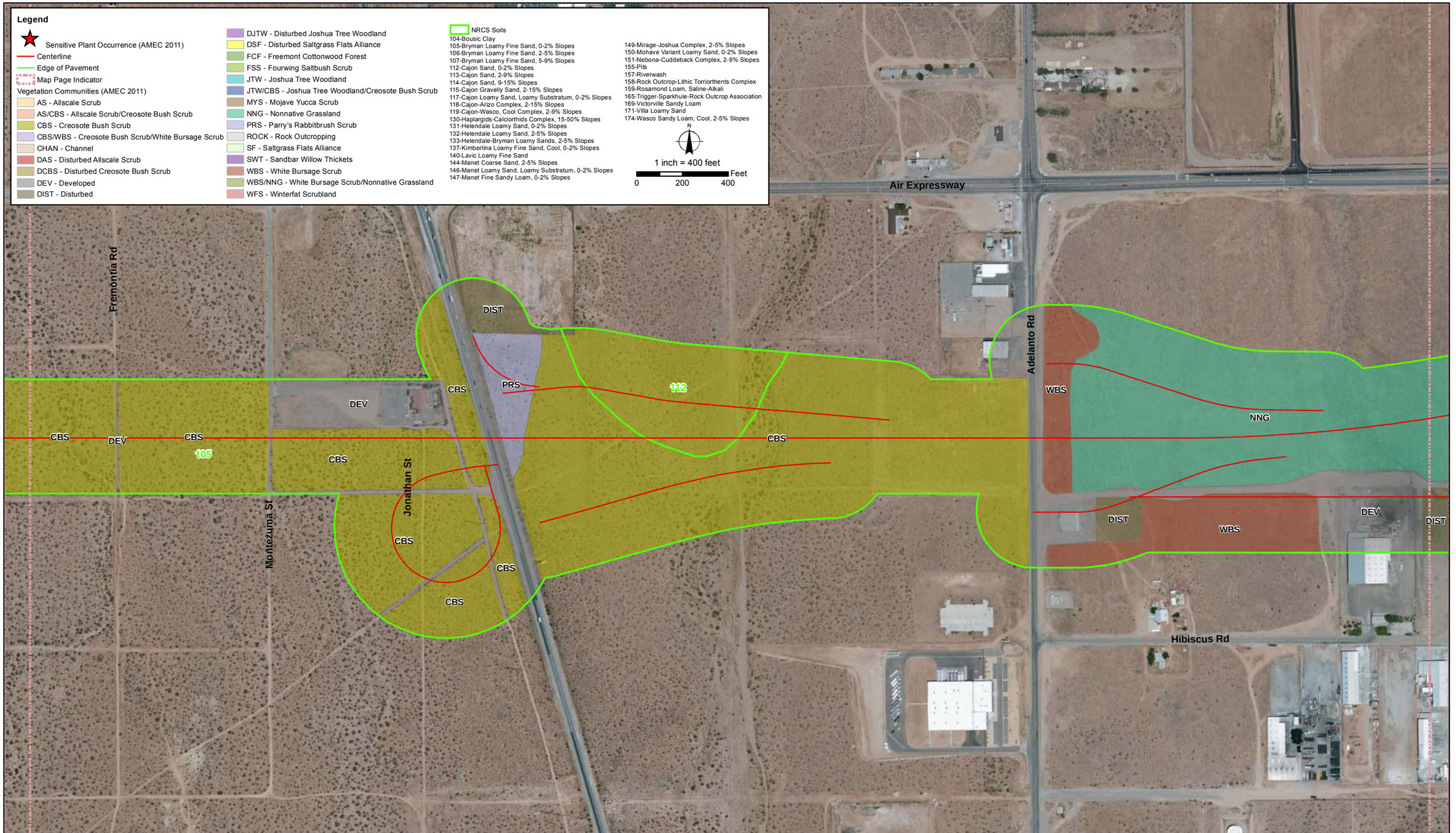
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
13



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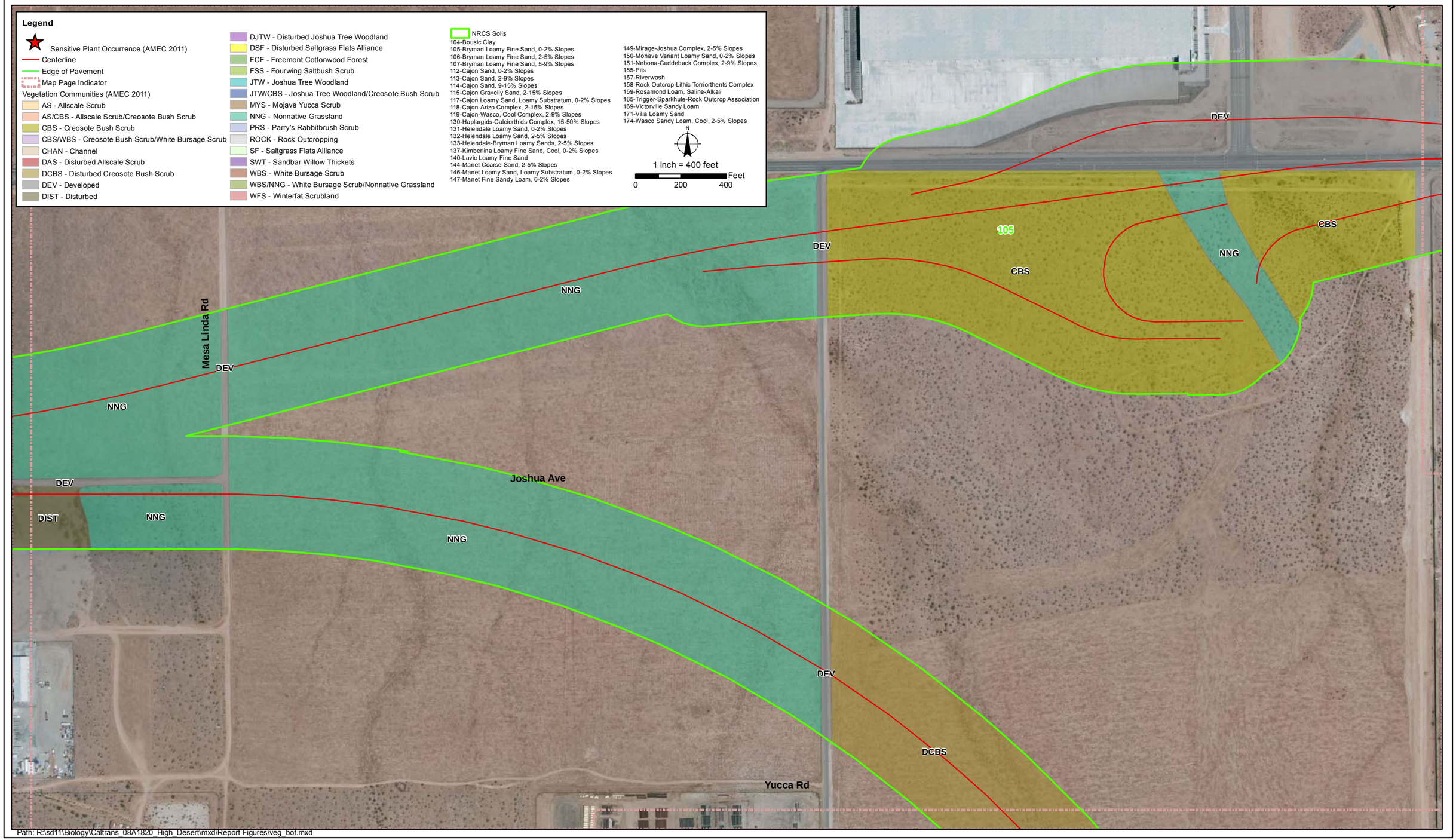
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
14



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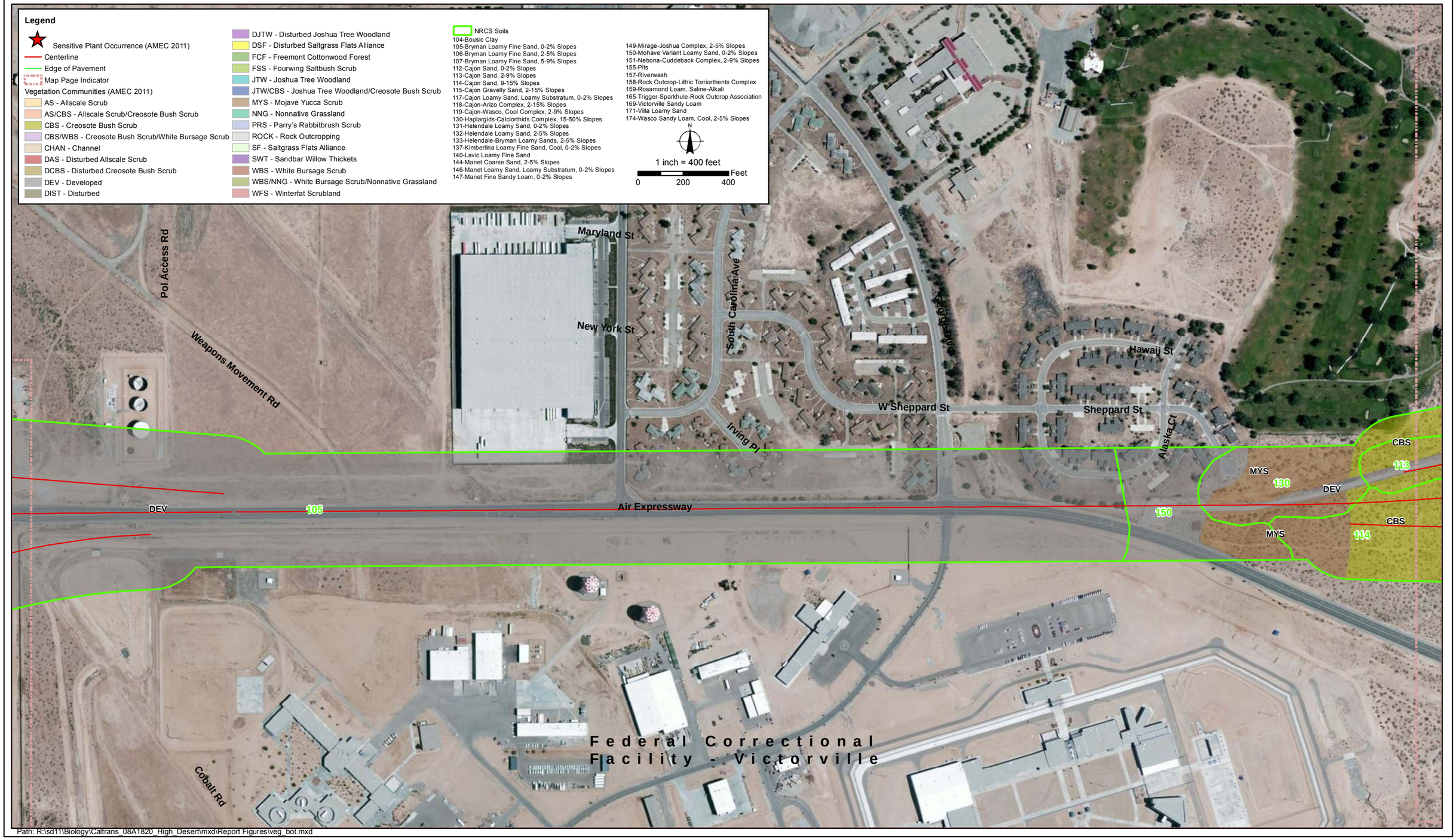
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
15



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
16

Legend

- Sensitive Plant Occurrence (AMEC 2011)
- Centerline
- Edge of Pavement
- Map Page Indicator

Vegetation Communities (AMEC 2011)

- AS - Allscale Scrub
- AS/CBS - Allscale Scrub/Creosote Bush Scrub
- CBS - Creosote Bush Scrub
- CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
- CHAN - Channel
- DAS - Disturbed Allscale Scrub
- DCBS - Disturbed Creosote Bush Scrub
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- DIST - Disturbed
- DJTW - Disturbed Joshua Tree Woodland
- DSF - Disturbed Saltgrass Flats Alliance
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- FSS - Fourwing Saltbush Scrub
- JTW - Joshua Tree Woodland
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- SF - Saltgrass Flats Alliance
- SWT - Sandbar Willow Thickets
- WBS - White Bursage Scrub
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- WFS - Winterfat Scrubland

NRCS Soils

104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
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113-Cajon Sand, 2-9% Slopes
114-Cajon Sand, 9-15% Slopes
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155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N

1 inch = 400 feet

0 200 400 Feet

Phantom E
Turner Rd
el Evado Rd
Alkali Mariposa Lily (1)
Alkali Mariposa Lily (1)
CBS
AS
DIST
DEV
FCF
NNG
FSS
130
113
114
137
132

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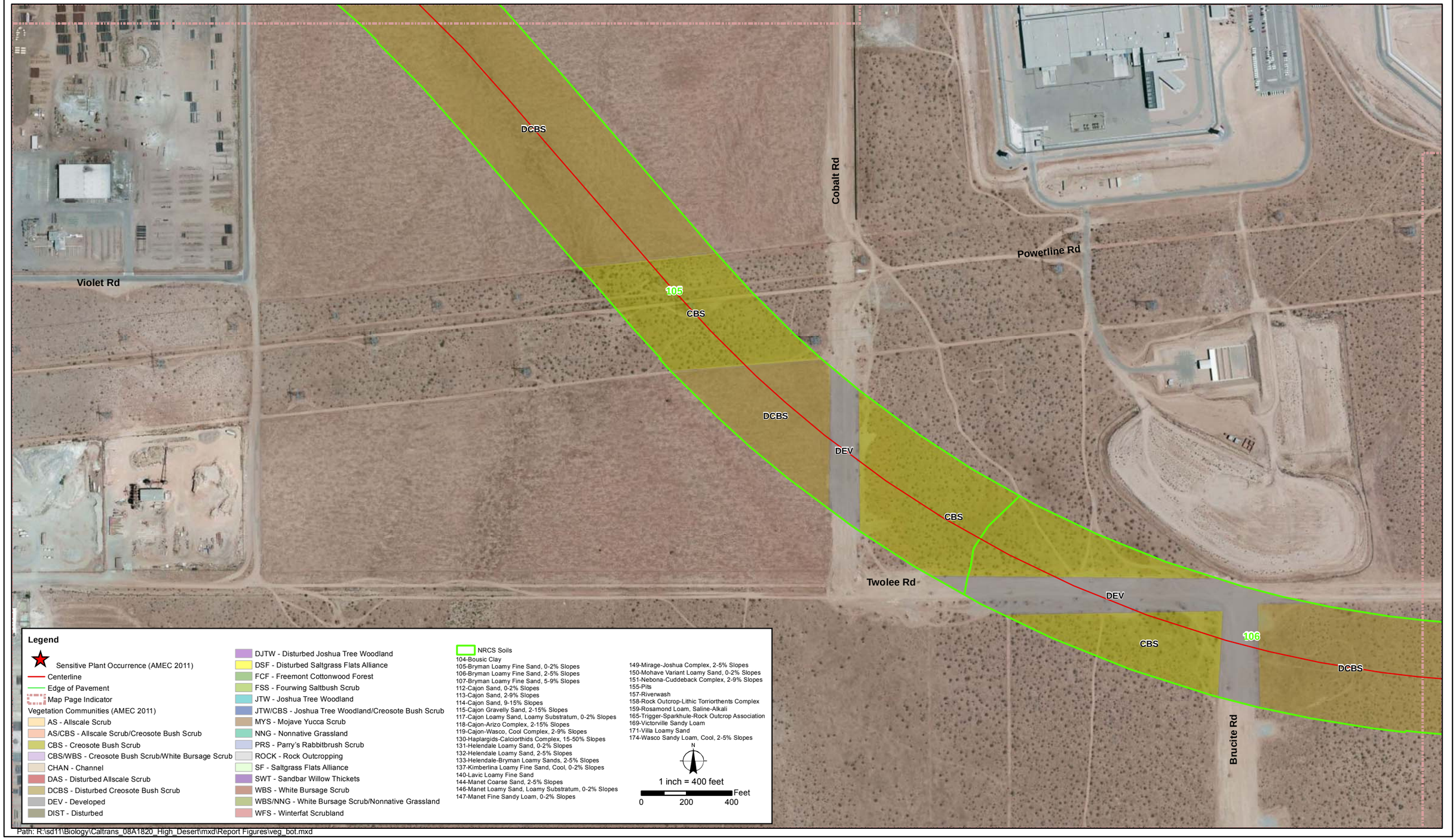
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 17



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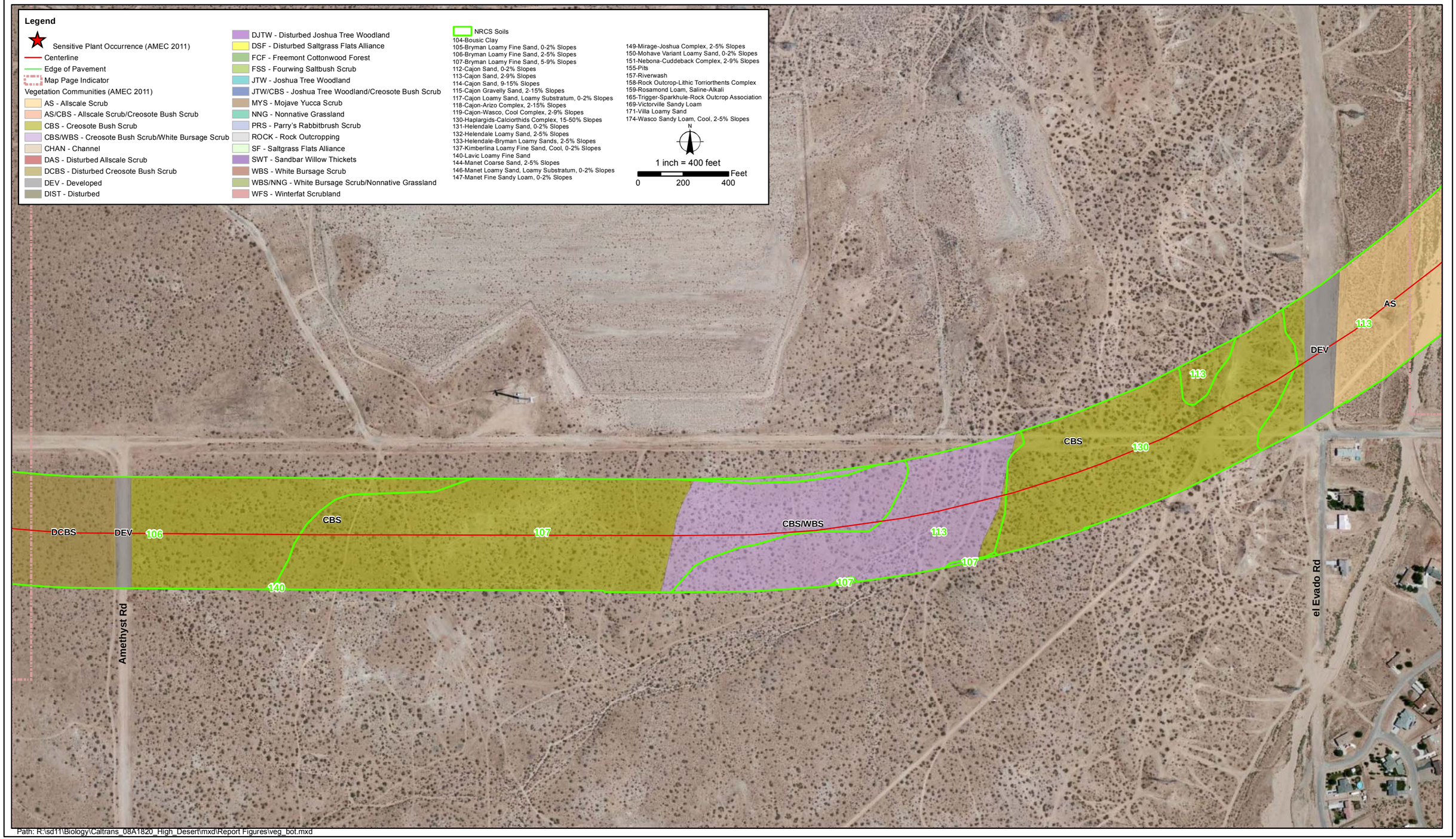
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 18



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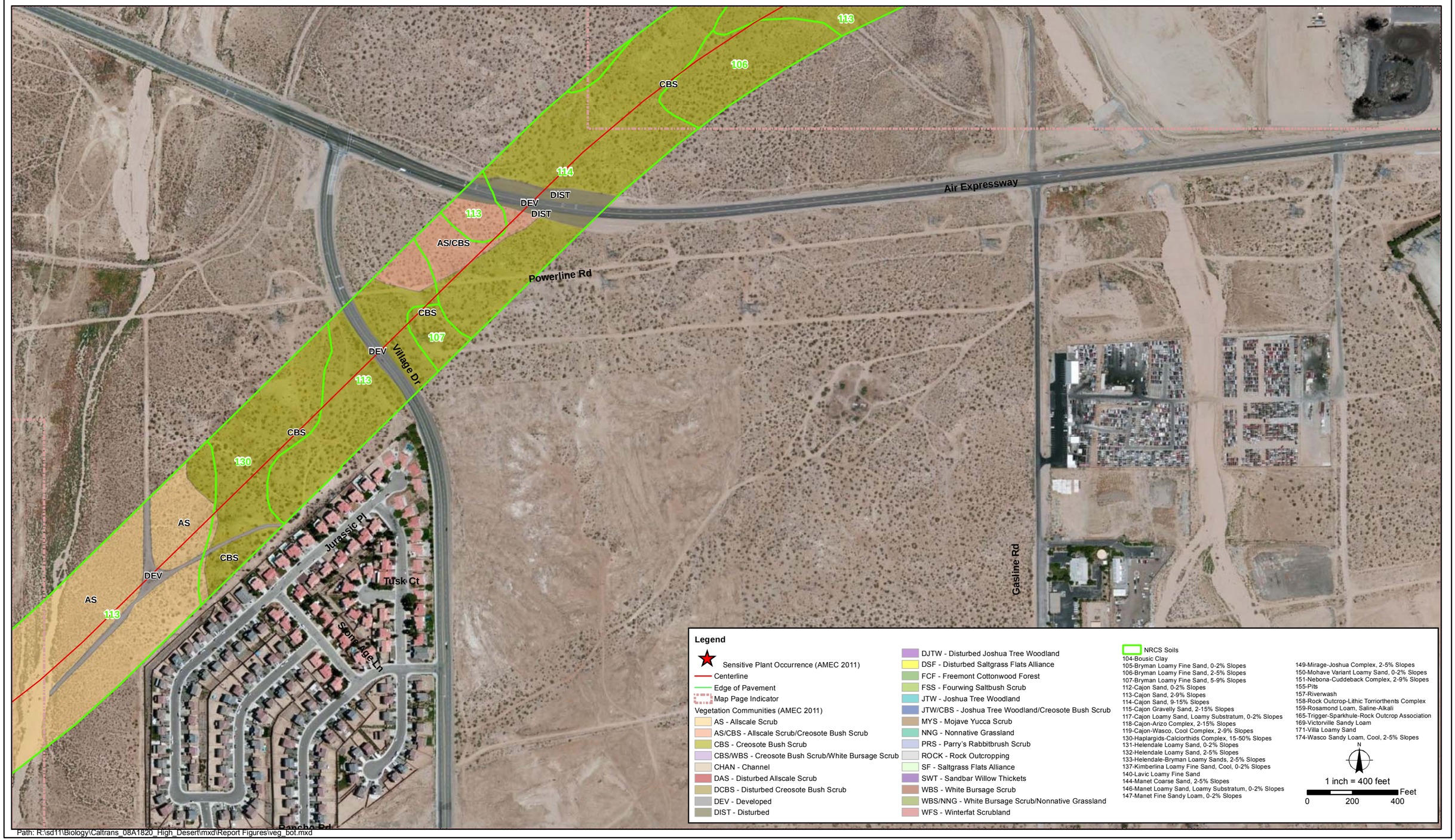
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
19



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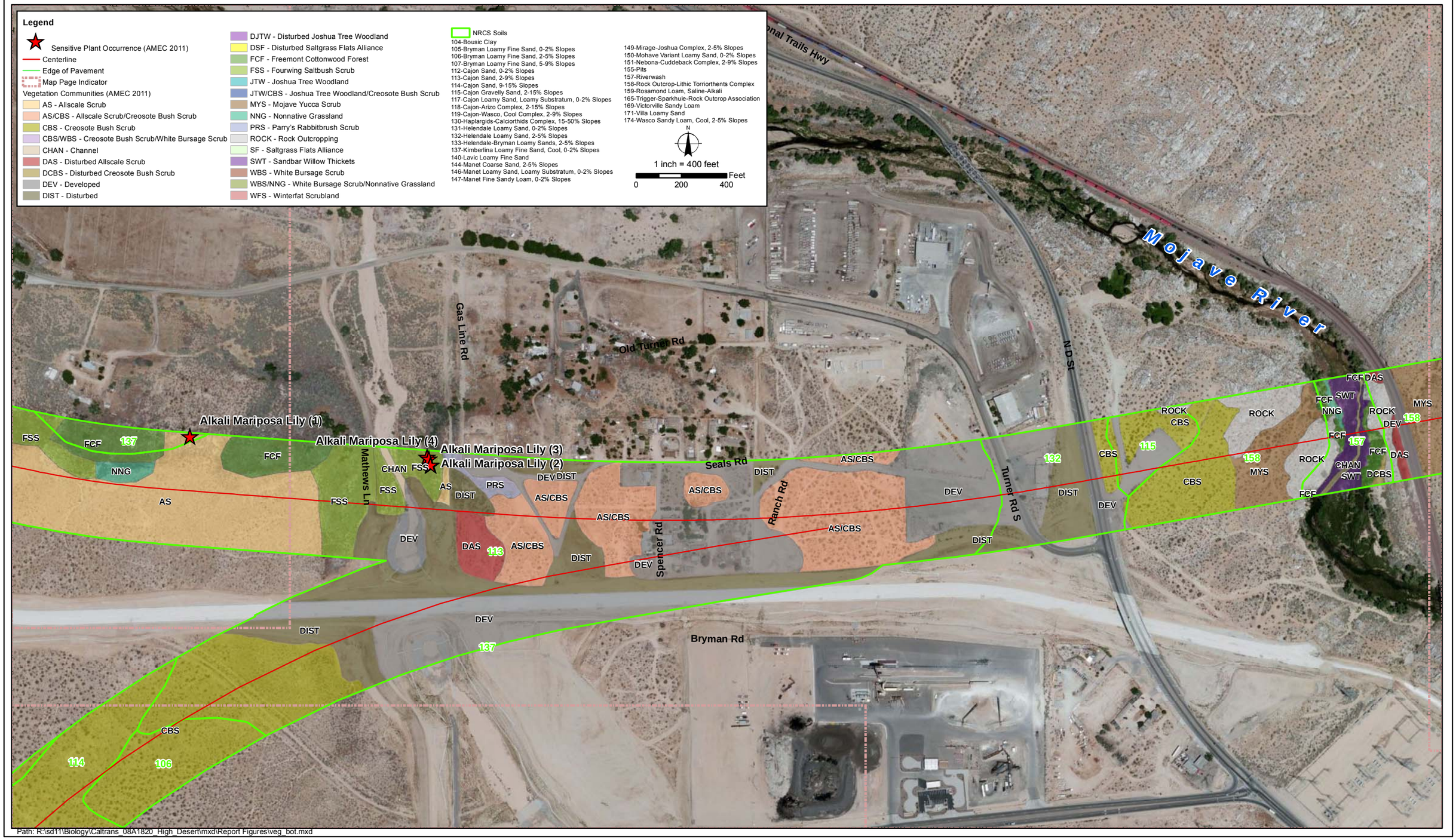
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
20



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
21

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
- AS - Allscale Scrub
- AS/CBS - Allscale Scrub/Creosote Bush Scrub
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- CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
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- SF - Saltgrass Flats Alliance
- SWT - Sandbar Willow Thickets
- WBS - White Bursage Scrub
- WBS/NNG - White Bursage Scrub/Nonnative Grassland
- WFS - Winterfat Scrubland

NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
112-Cajon Sand, 0-2% Slopes
113-Cajon Sand, 2-9% Slopes
114-Cajon Sand, 9-15% Slopes
115-Cajon Gravelly Sand, 2-15% Slopes
117-Cajon Loamy Sand, Loamy Substratum, 0-2% Slopes
118-Cajon-Arizo Complex, 2-15% Slopes
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147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
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157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N

1 inch = 400 feet

0 200 400 Feet

Mojave Fish-hook Cactus (1)

Mojave River

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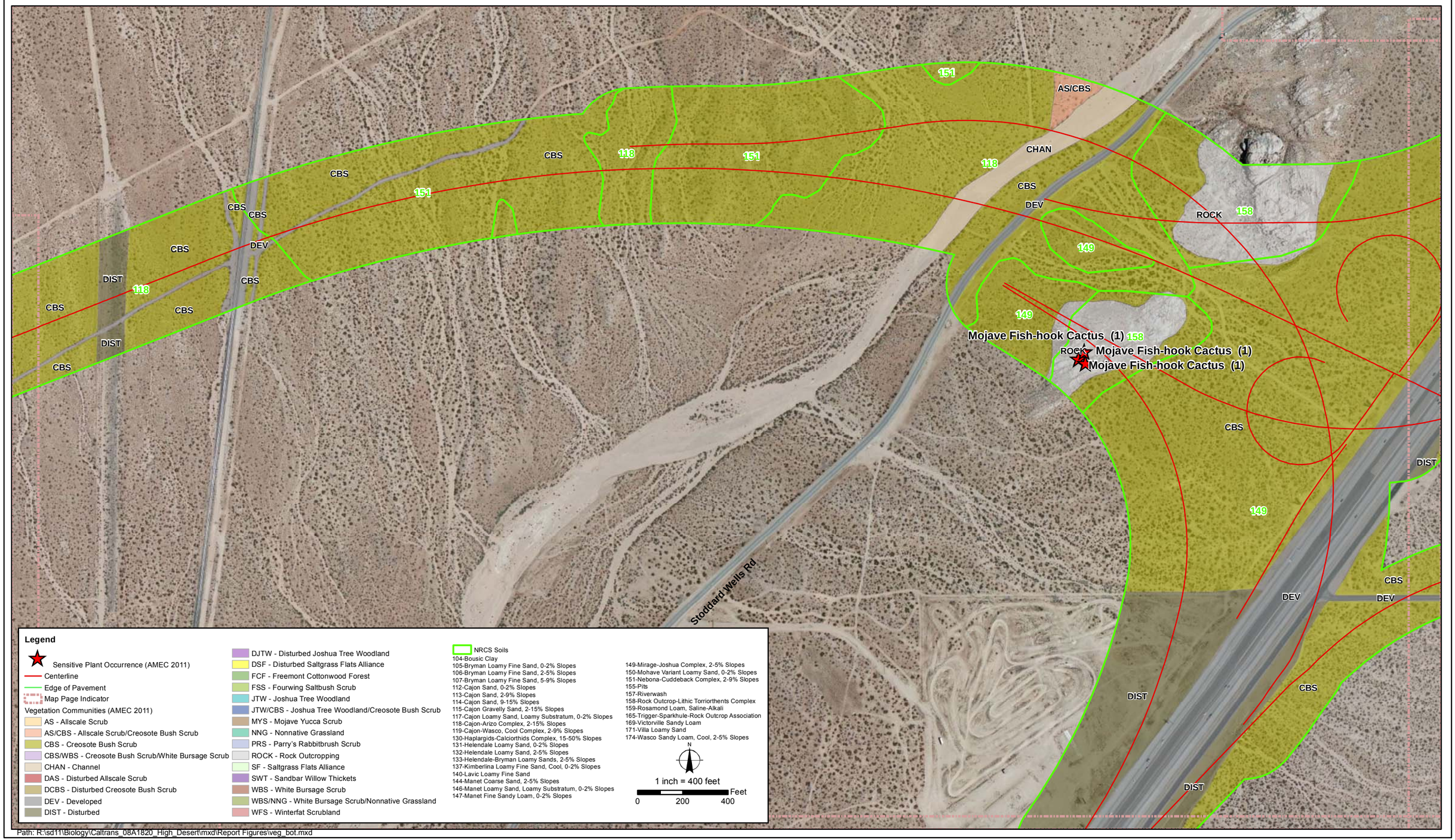
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE 22



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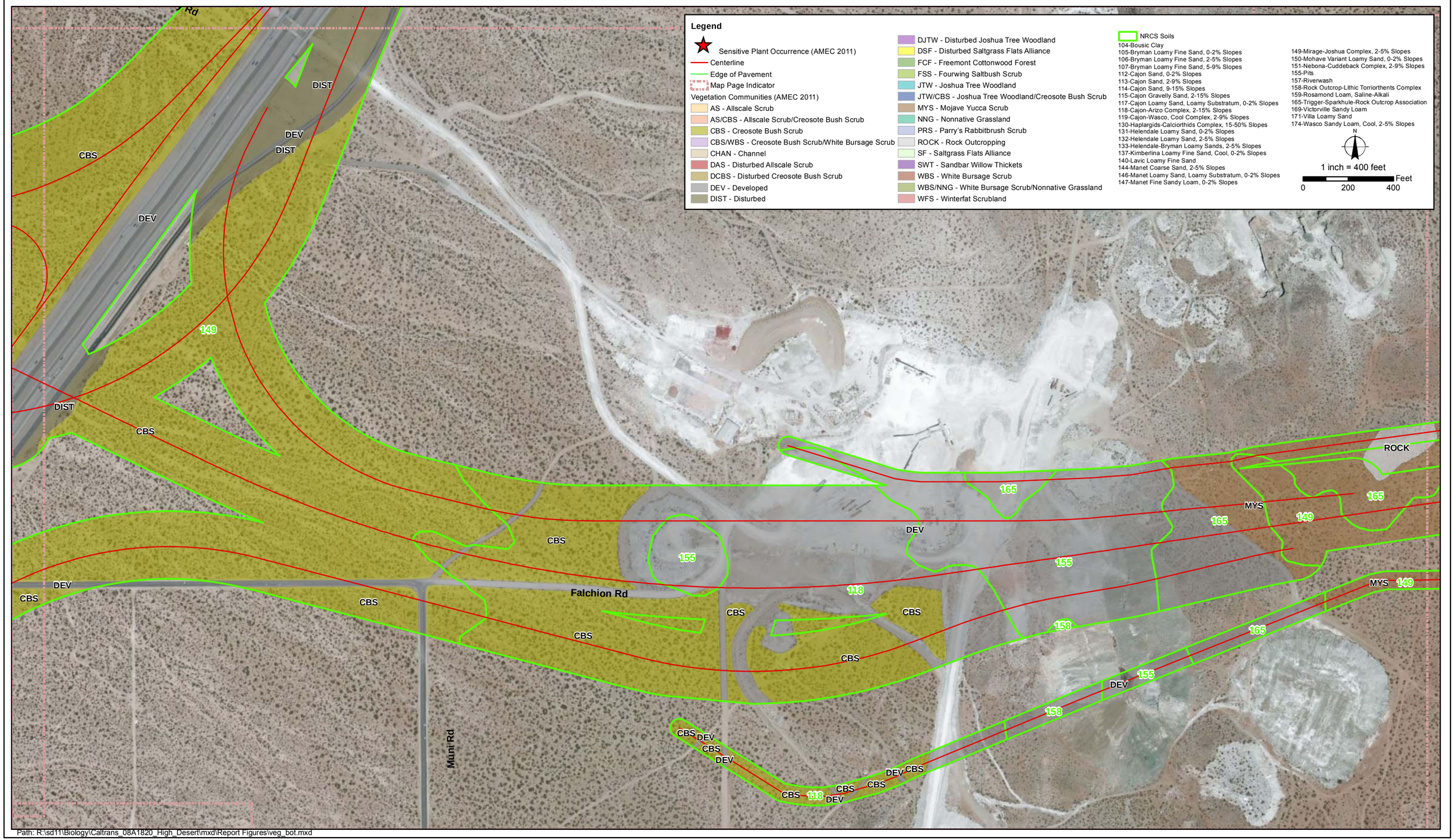
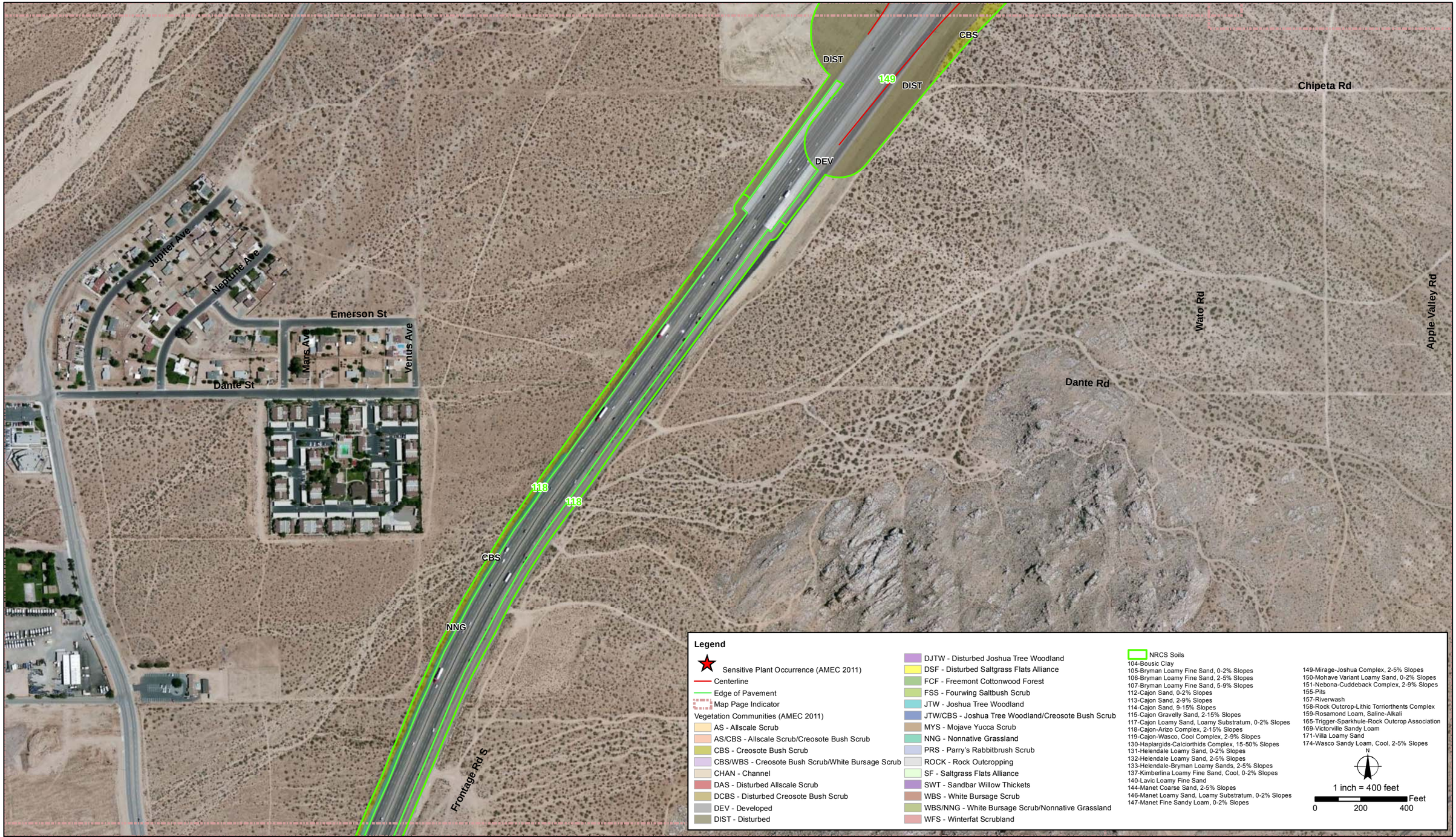
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
23



Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
24



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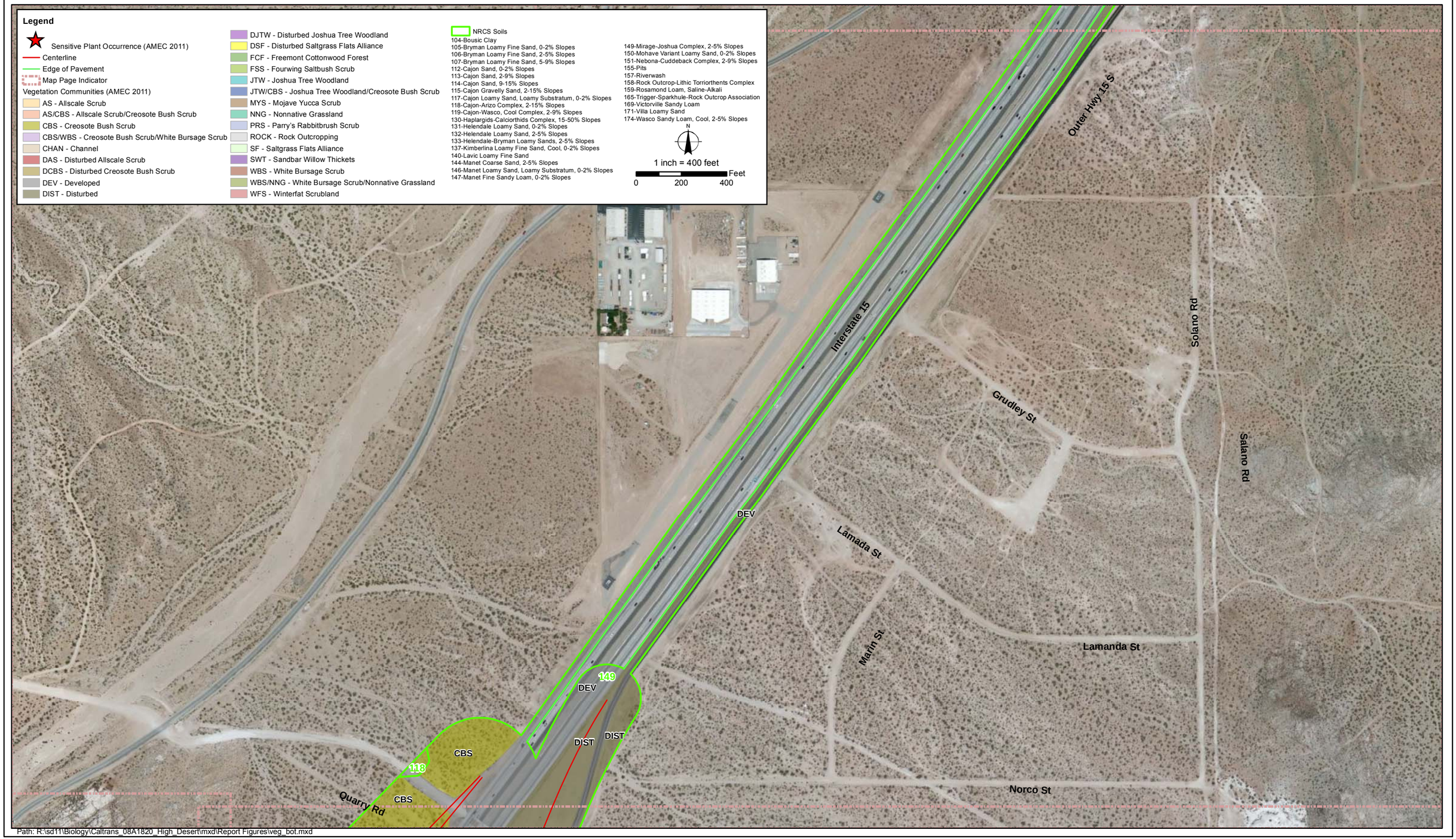
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
25

Path: R:\sd11\Biology\Caltrans_08A1820_High_Desert\mxd\Report Figures\veg_bot.mxd

Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
26



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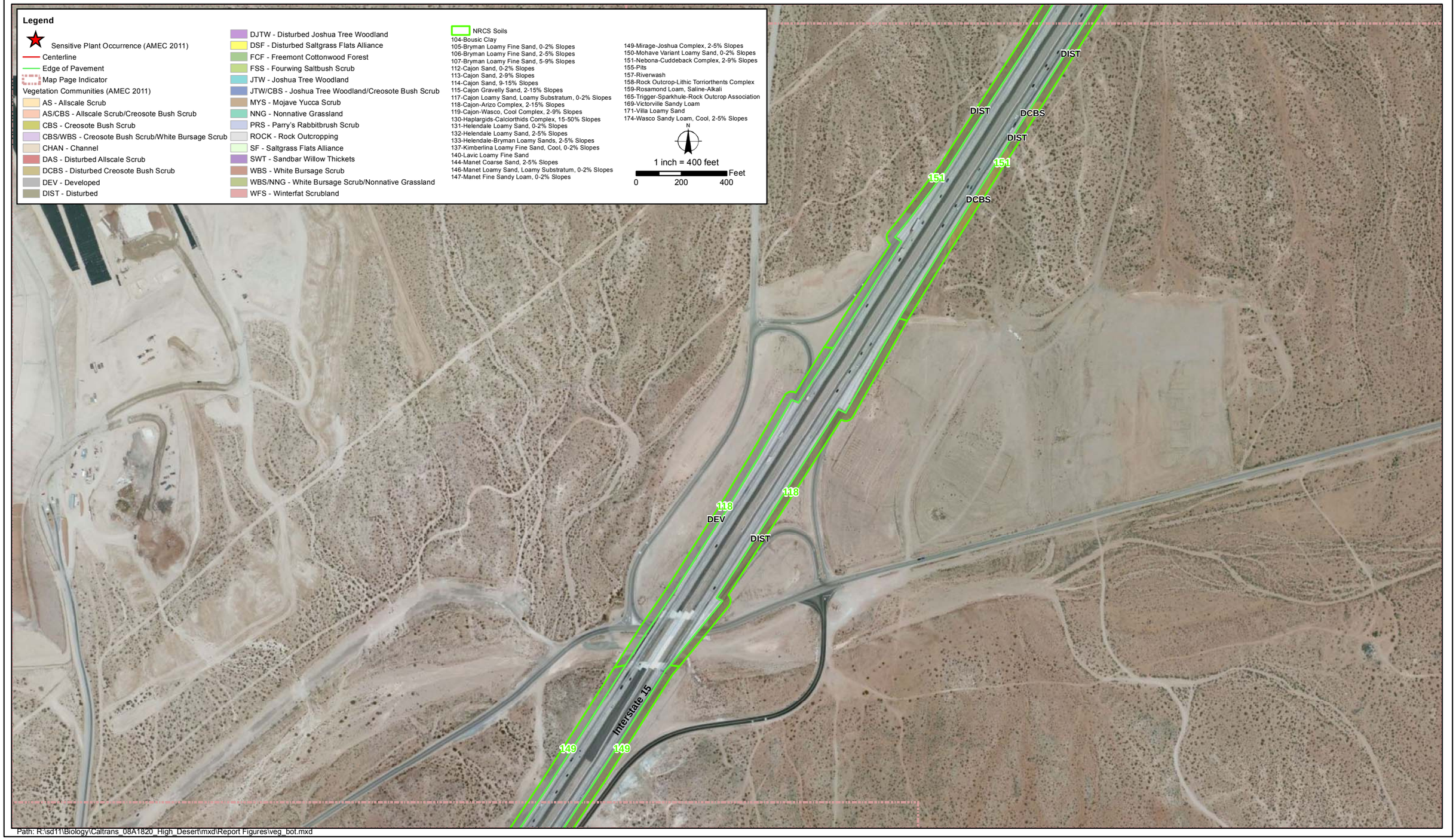
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
27



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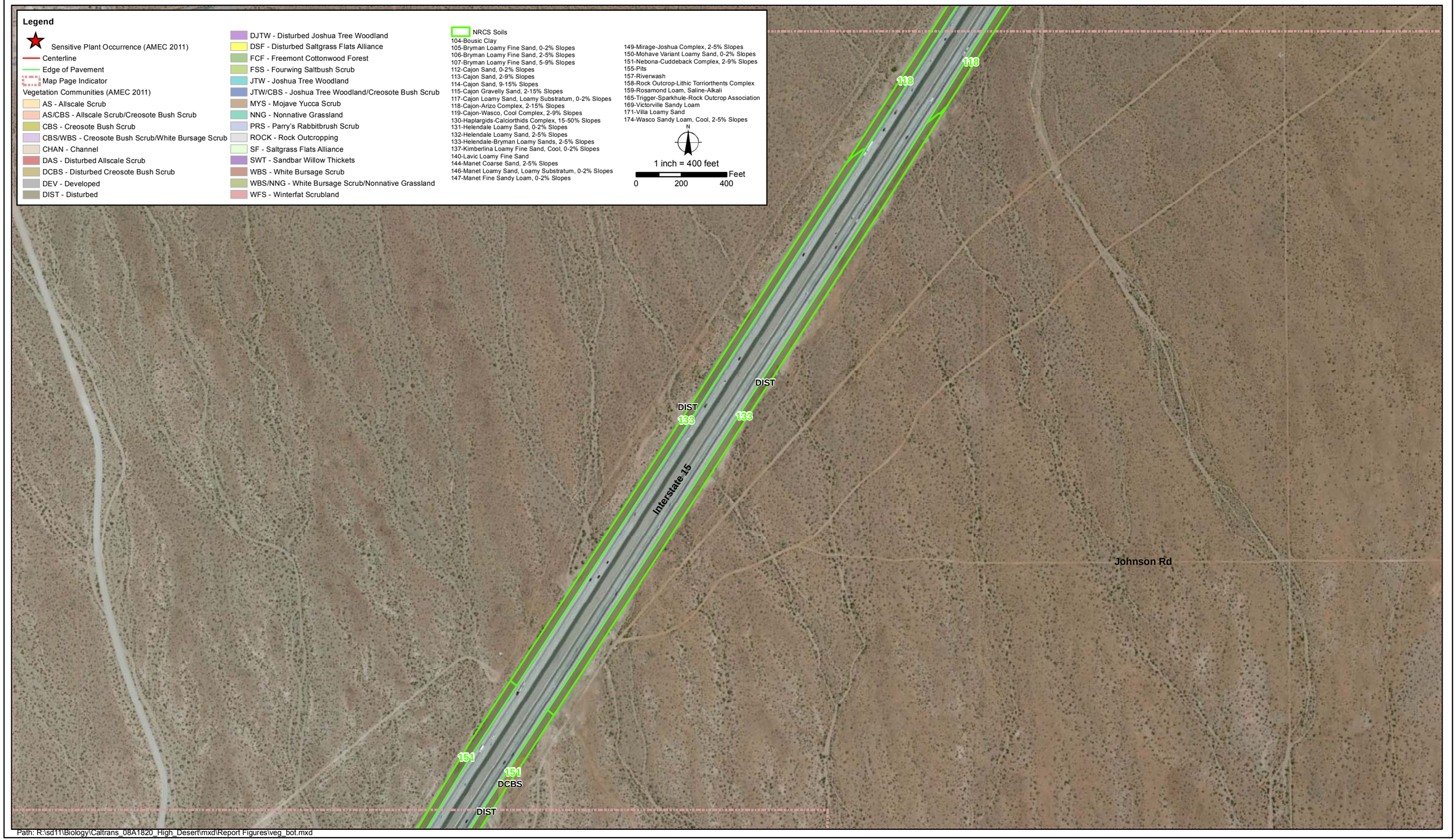
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
28



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
29

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

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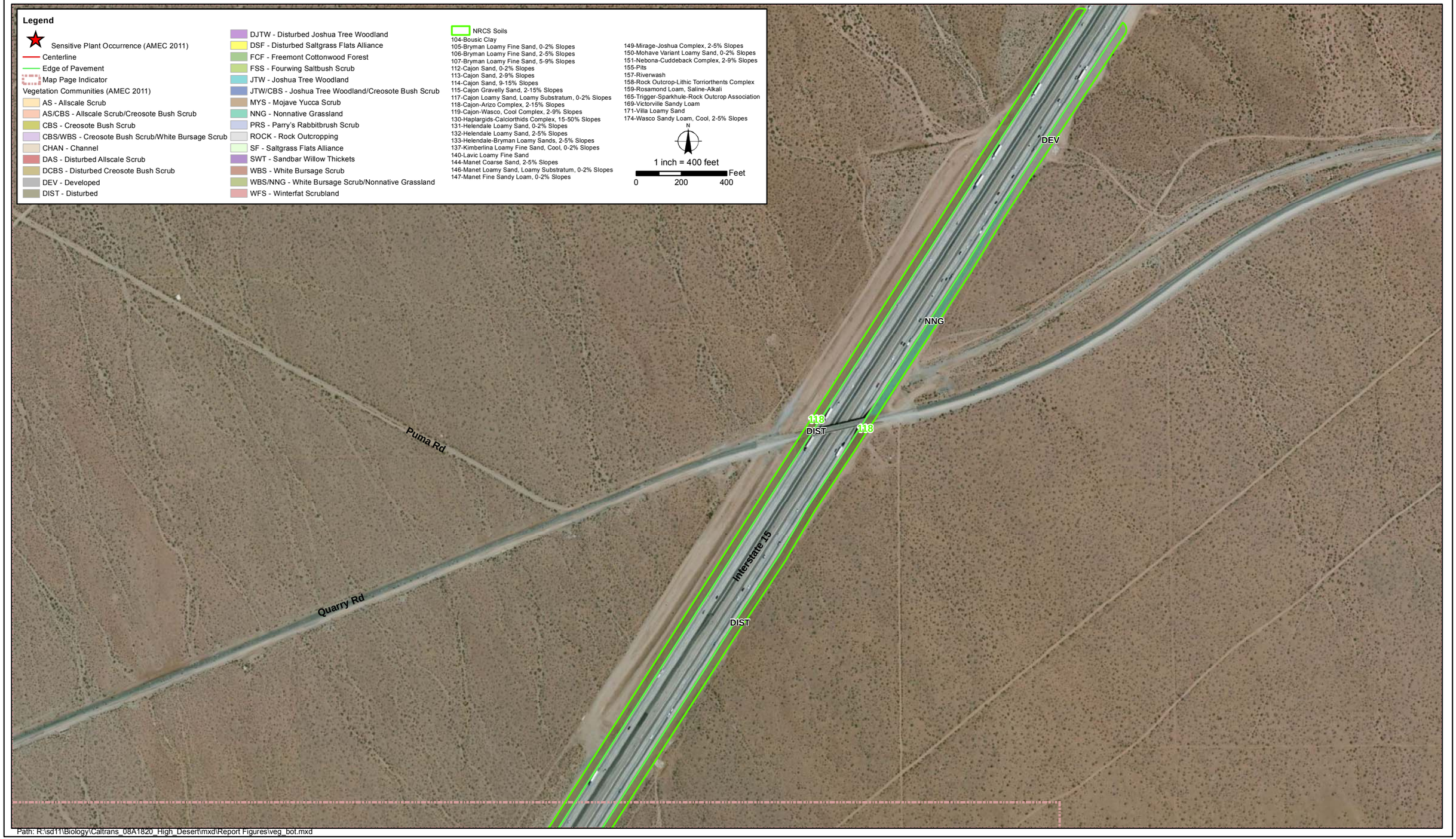

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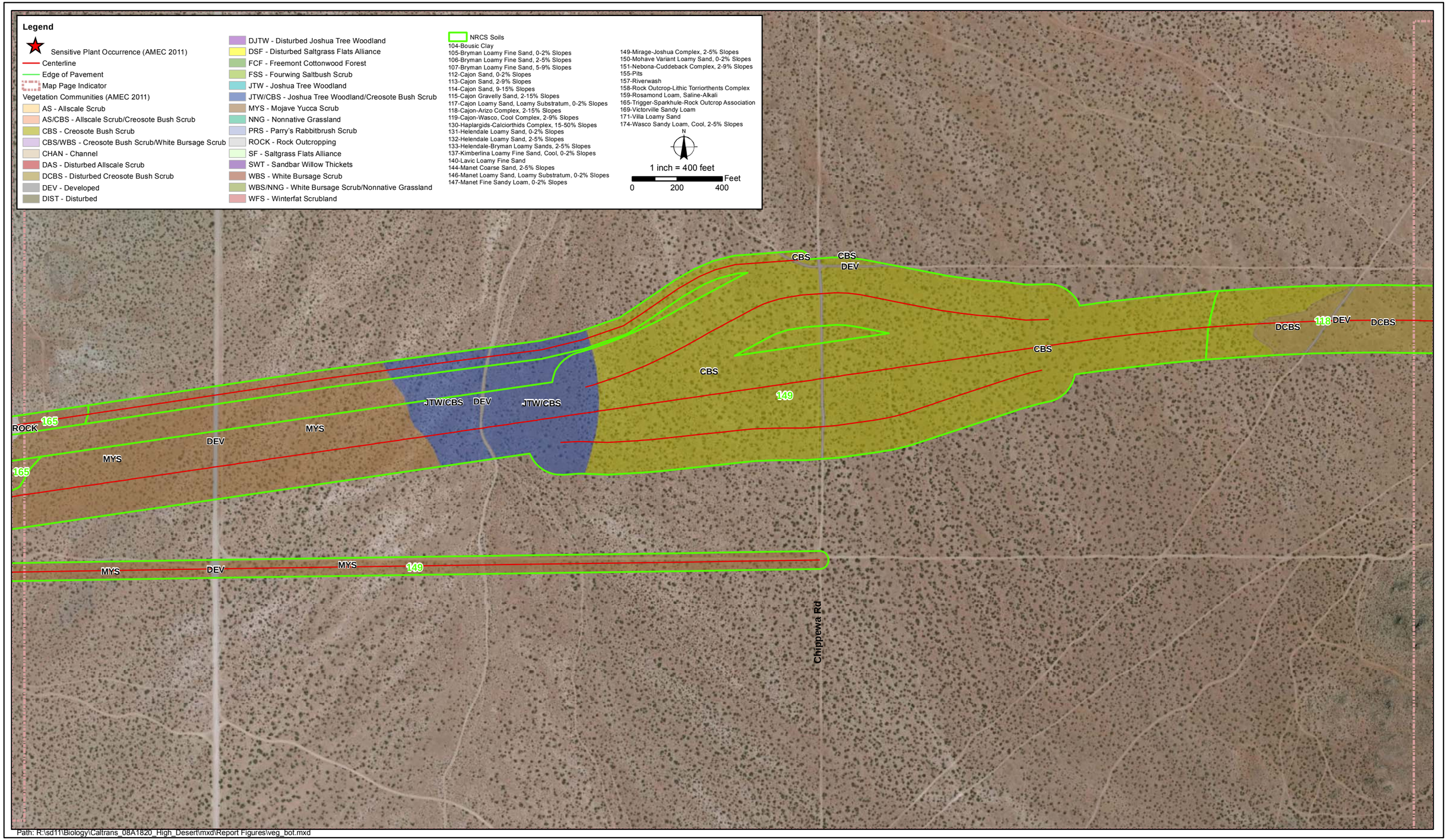
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
30



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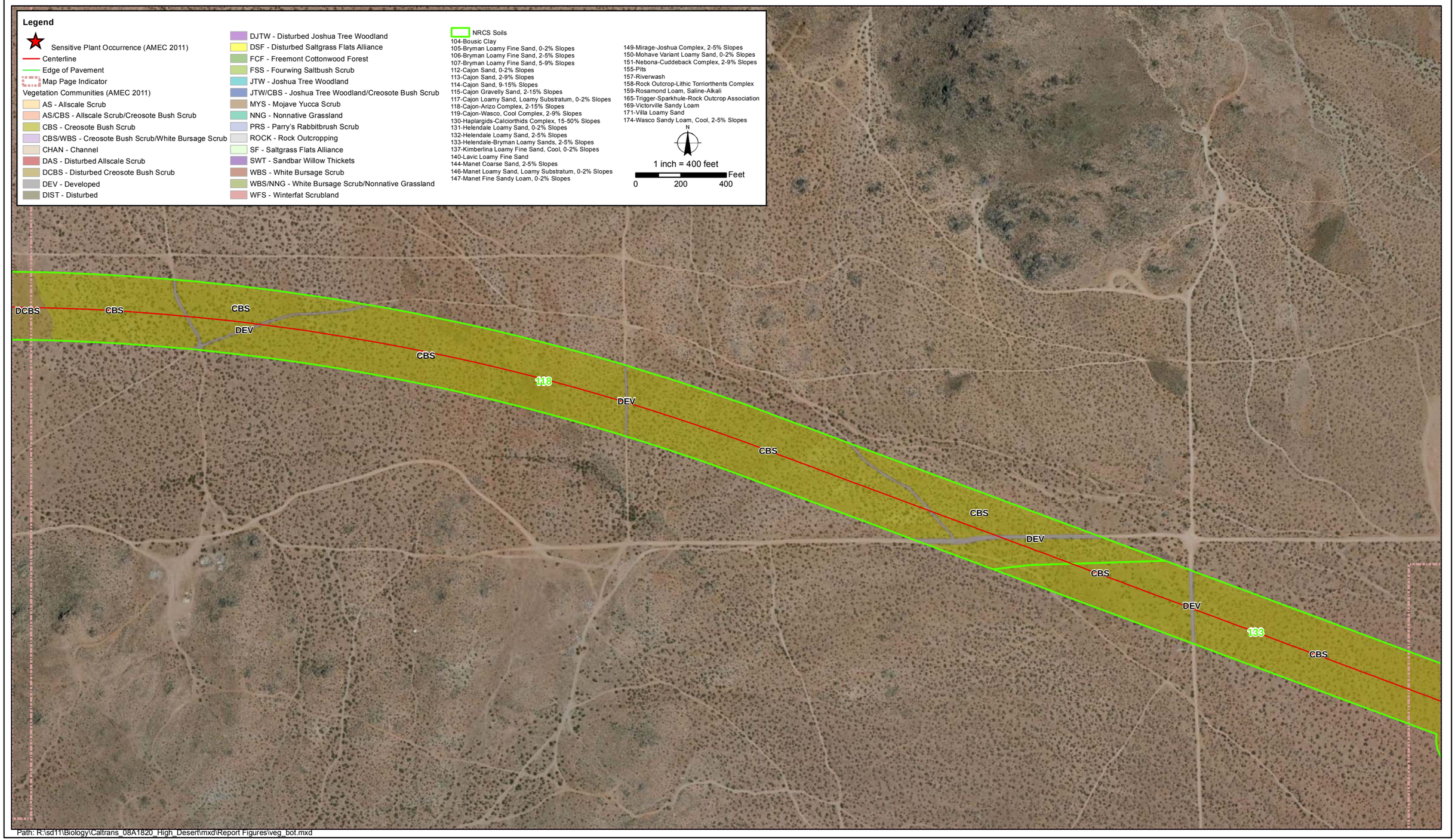
Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
31



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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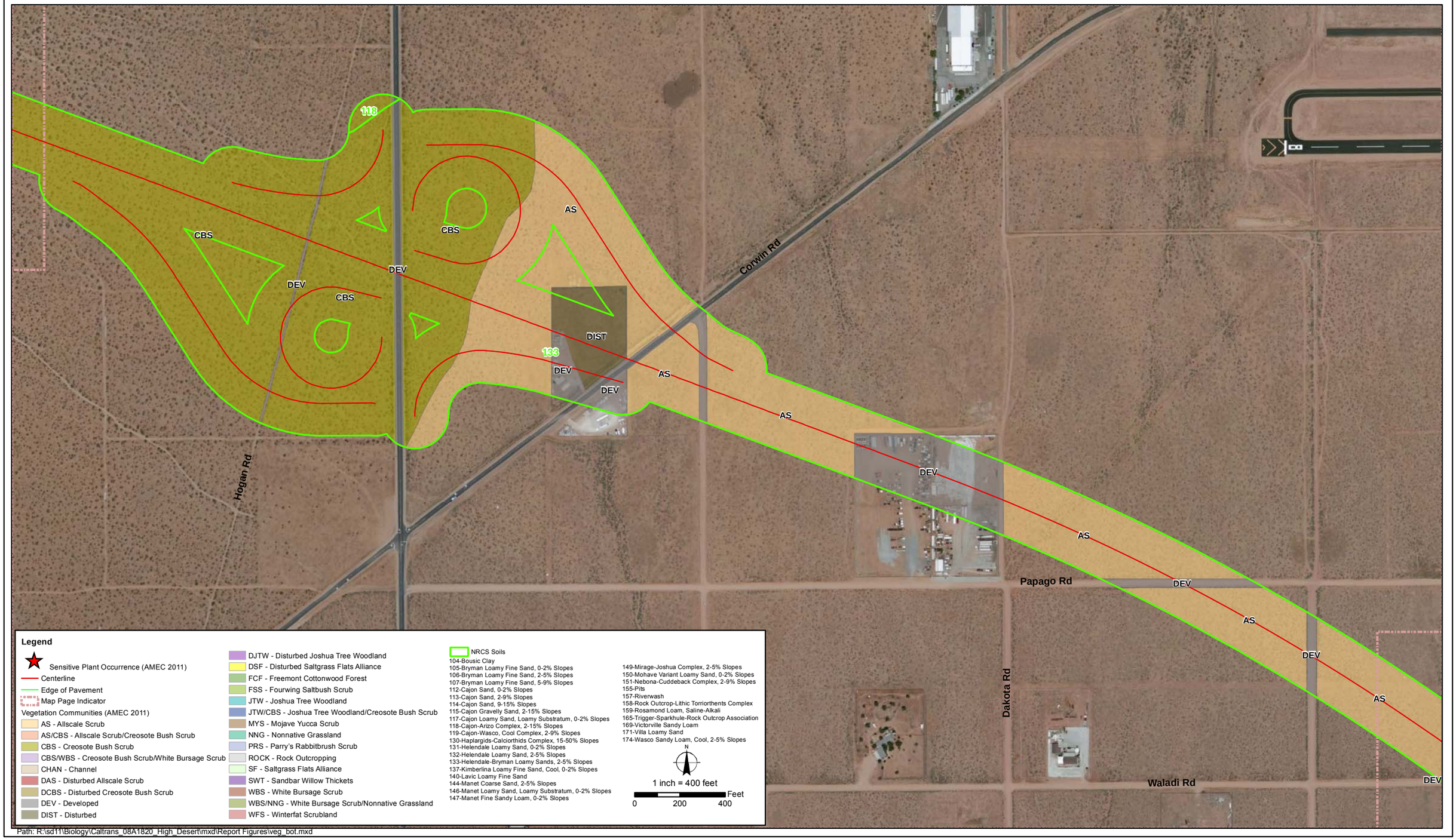

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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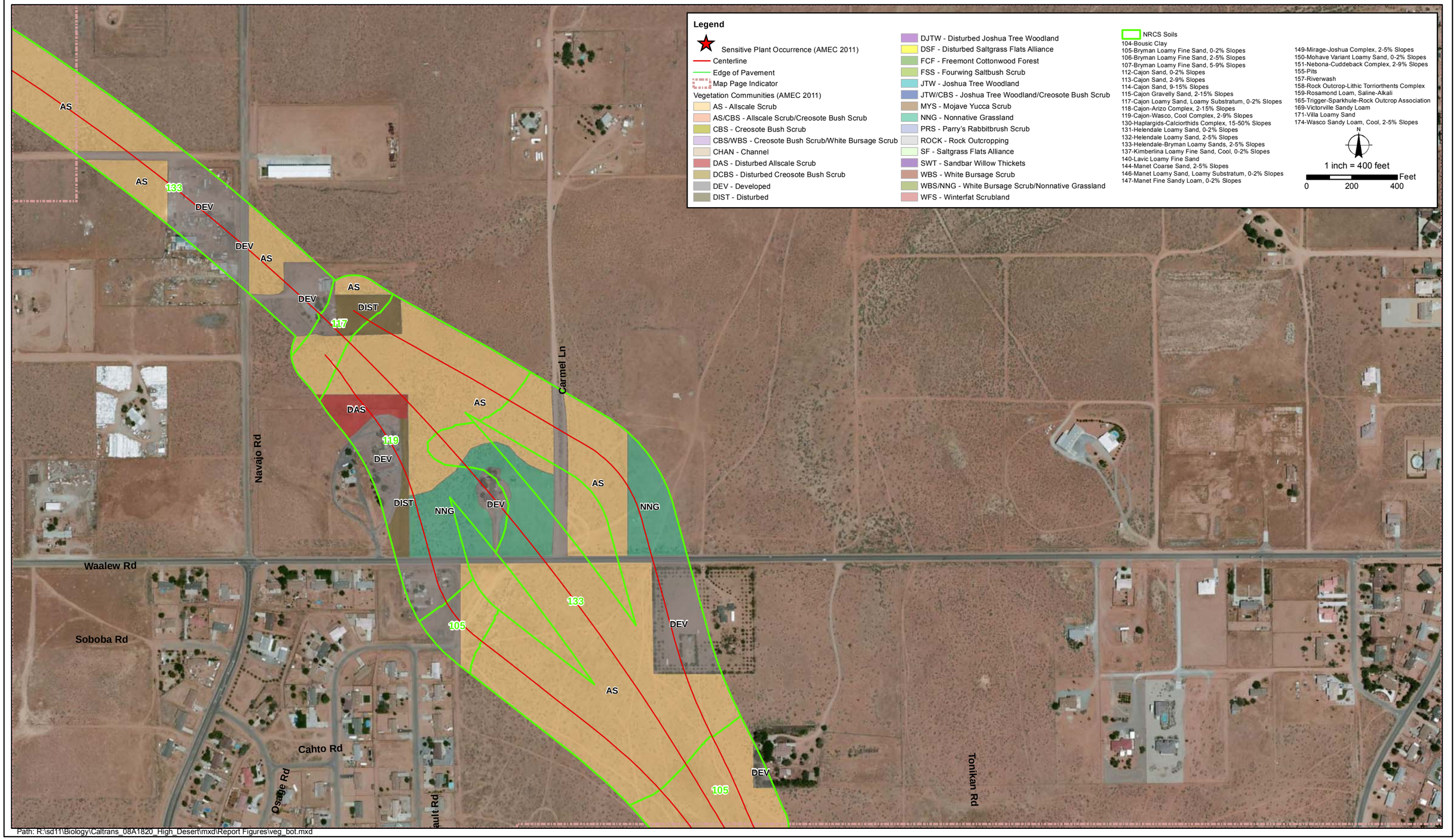

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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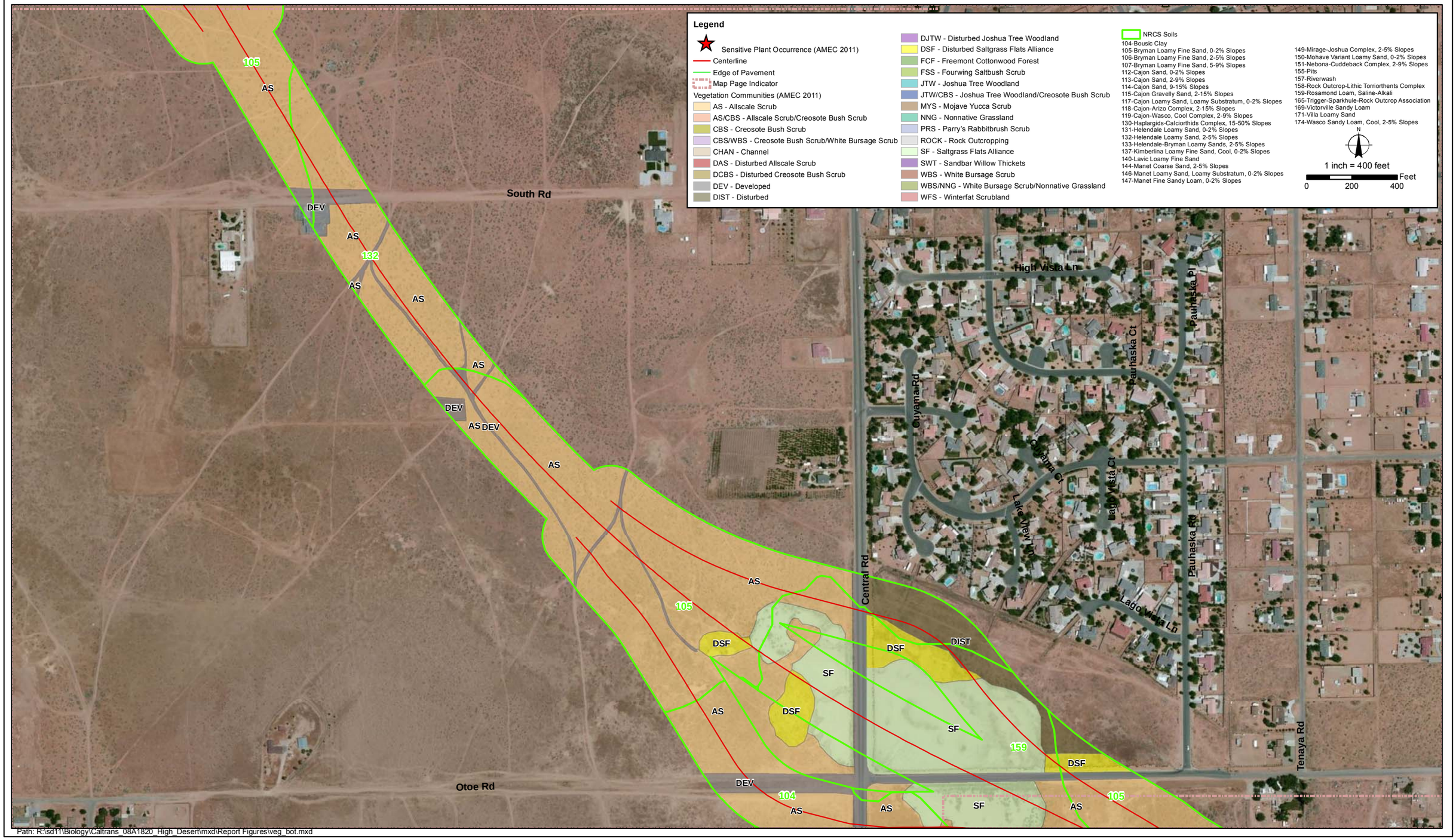

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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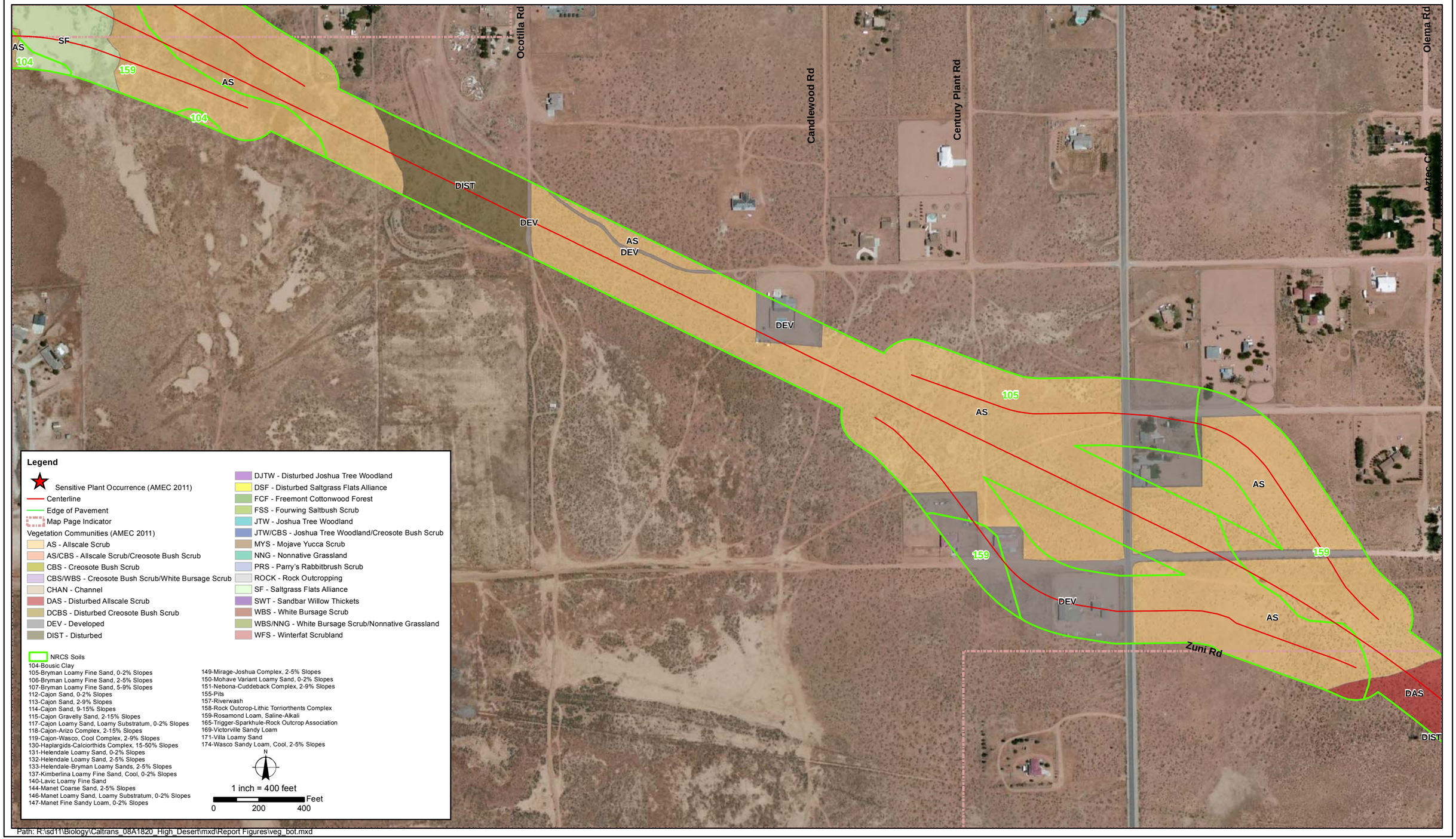

Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)

- AS - Allscale Scrub
- AS/CBS - Allscale Scrub/Creosote Bush Scrub
- CBS - Creosote Bush Scrub
- CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
- CHAN - Channel
- DAS - Disturbed Allscale Scrub
- DCBS - Disturbed Creosote Bush Scrub
- DEV - Developed
- DIST - Disturbed

NRCS Soils

104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
112-Cajon Sand, 0-2% Slopes
113-Cajon Sand, 2-9% Slopes
114-Cajon Sand, 9-15% Slopes
115-Cajon Gravelly Sand, 2-15% Slopes
117-Cajon Loamy Sand, Loamy Substratum, 0-2% Slopes
118-Cajon-Arizo Complex, 2-15% Slopes
119-Cajon-Wasco, Cool Complex, 2-9% Slopes
130-Haplargids-Calciorthids Complex, 15-50% Slopes
131-Helendale Loamy Sand, 0-2% Slopes
132-Helendale Loamy Sand, 2-5% Slopes
133-Helendale-Bryman Loamy Sands, 2-5% Slopes
137-Kimberlina Loamy Fine Sand, Cool, 0-2% Slopes
140-Lavic Loamy Fine Sand
144-Manet Coarse Sand, 2-5% Slopes
146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
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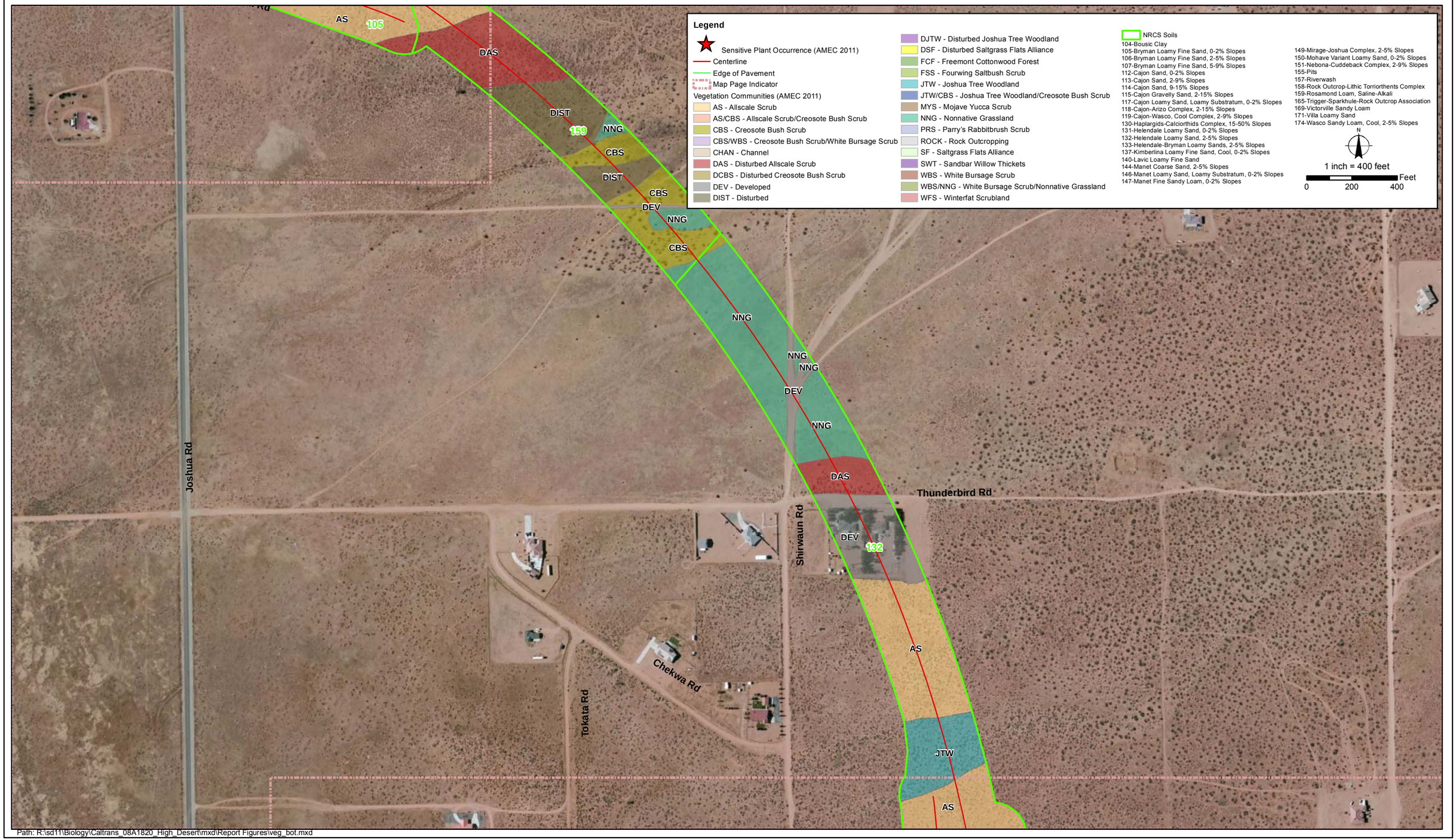
FIGURE
36



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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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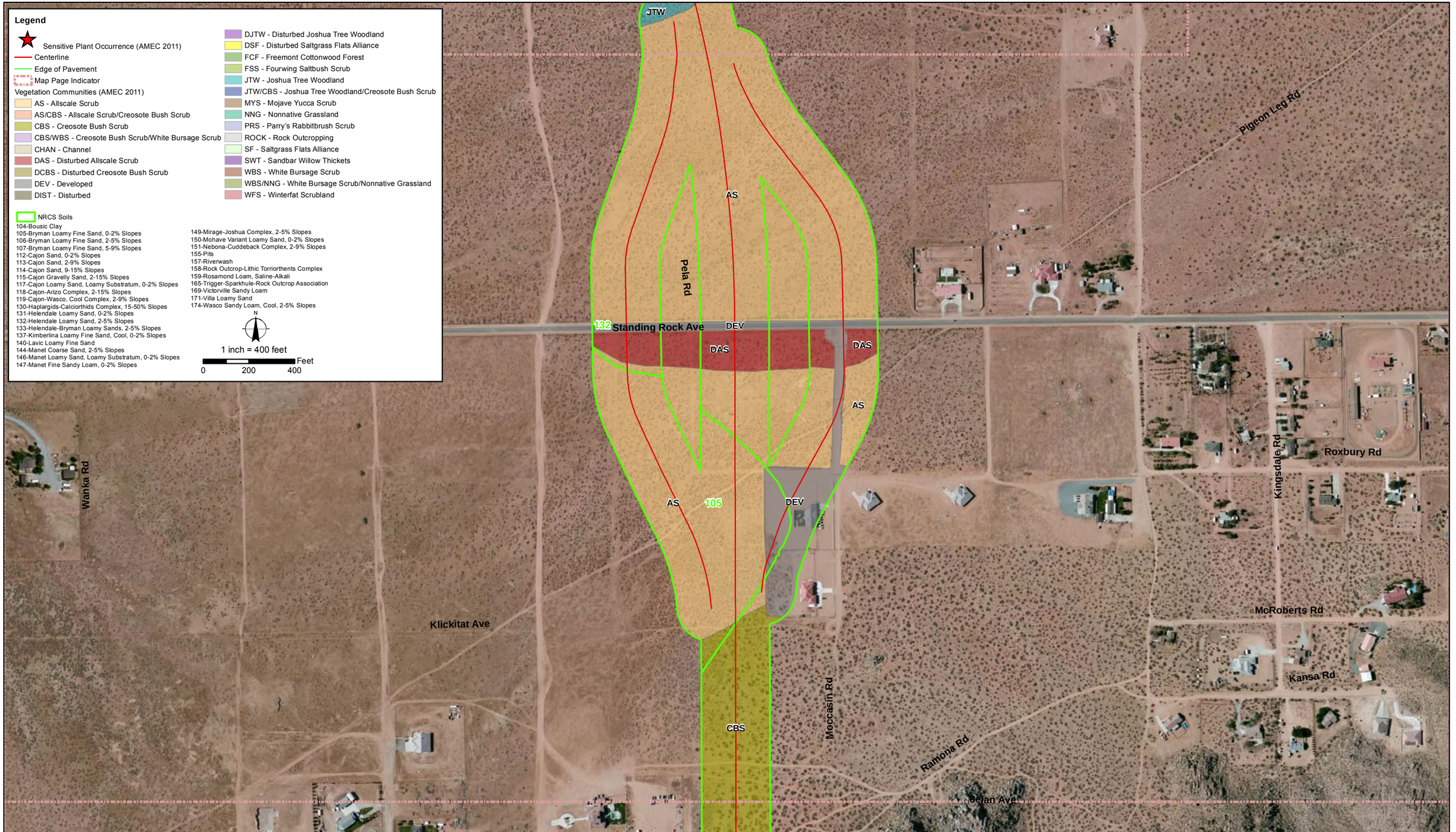

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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Legend

Sensitive Plant Occurrence (AMEC 2011)
Centerline
Edge of Pavement
Map Page Indicator

Vegetation Communities (AMEC 2011)
AS - Allscale Scrub
AS/CBS - Allscale Scrub/Creosote Bush Scrub
CBS - Creosote Bush Scrub
CBS/WBS - Creosote Bush Scrub/White Bursage Scrub
CHAN - Channel
DAS - Disturbed Allscale Scrub
DCBS - Disturbed Creosote Bush Scrub
DEV - Developed
DIST - Disturbed
DJTW - Disturbed Joshua Tree Woodland
DSF - Disturbed Saltgrass Flats Alliance
FCF - Freemont Cottonwood Forest
FSS - Fourwing Saltbush Scrub
JTW - Joshua Tree Woodland
JTW/CBS - Joshua Tree Woodland/Creosote Bush Scrub
MYS - Mojave Yucca Scrub
NNG - Nonnative Grassland
PRS - Parry's Rabbitbrush Scrub
ROCK - Rock Outcropping
SF - Saltgrass Flats Alliance
SWT - Sandbar Willow Thickets
WBS - White Bursage Scrub
WBS/NNG - White Bursage Scrub/Nonnative Grassland
WFS - Winterfat Scrubland

NRCS Soils
104-Bousic Clay
105-Bryman Loamy Fine Sand, 0-2% Slopes
106-Bryman Loamy Fine Sand, 2-5% Slopes
107-Bryman Loamy Fine Sand, 5-9% Slopes
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140-Lavic Loamy Fine Sand
144-Manet Coarse Sand, 2-5% Slopes
146-Manet Loamy Sand, Loamy Substratum, 0-2% Slopes
147-Manet Fine Sandy Loam, 0-2% Slopes
149-Mirage-Joshua Complex, 2-5% Slopes
150-Mohave Variant Loamy Sand, 0-2% Slopes
151-Nebona-Cuddeback Complex, 2-9% Slopes
155-Pits
157-Riverwash
158-Rock Outcrop-Lithic Torriorthents Complex
159-Rosamond Loam, Saline-Alkali
165-Trigger-Sparkhule-Rock Outcrop Association
169-Victorville Sandy Loam
171-Villa Loamy Sand
174-Wasco Sandy Loam, Cool, 2-5% Slopes

N
1 inch = 400 feet
0 200 400 Feet

Ramona Ave
Goshute Ave
Natoma Rd
Lynn Rd
Coghl Ln
Esaws Ave
Chuckawalla Rd
CBS
DEV
CBS
132
AS
DEV
AS

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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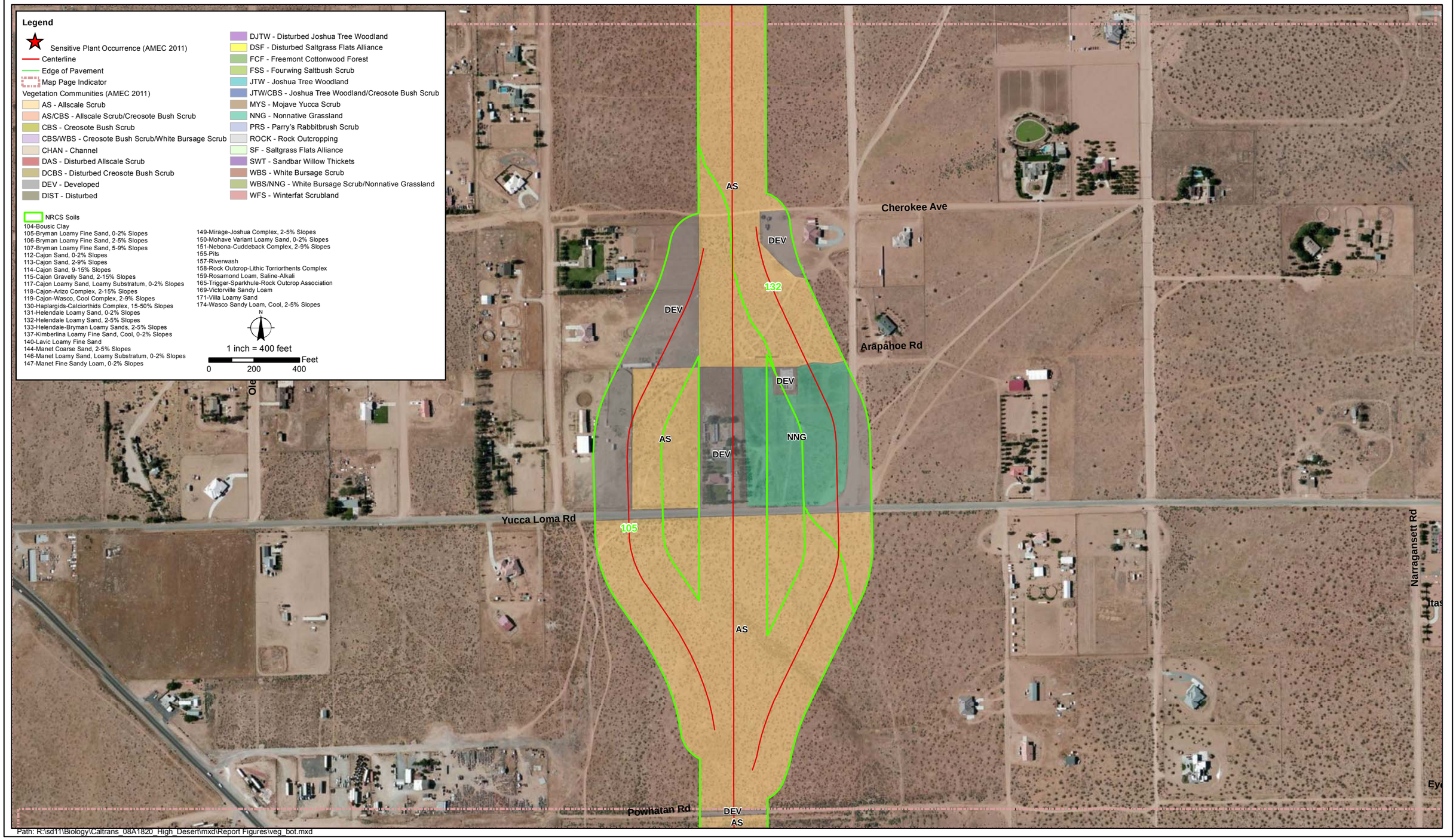

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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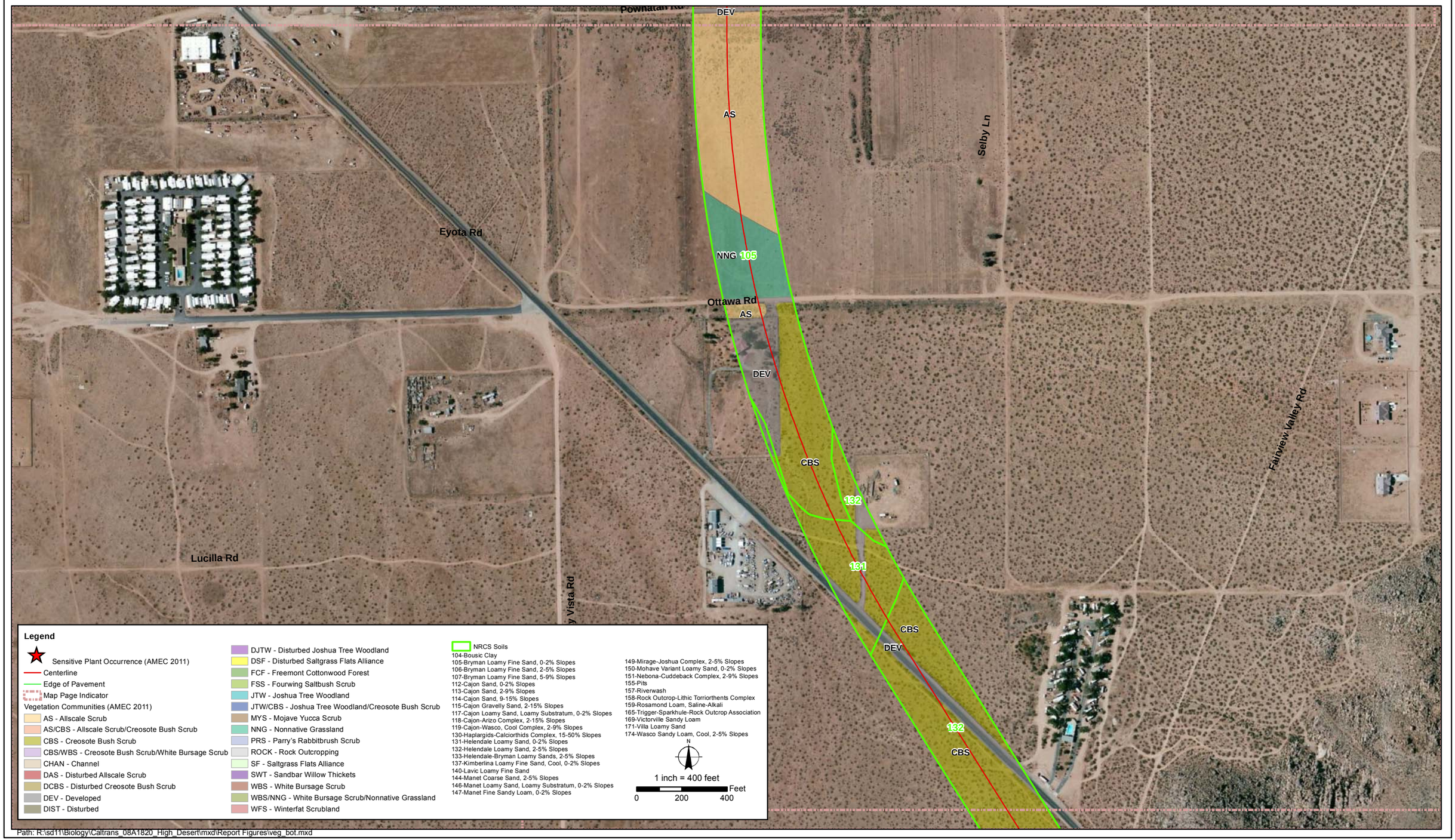

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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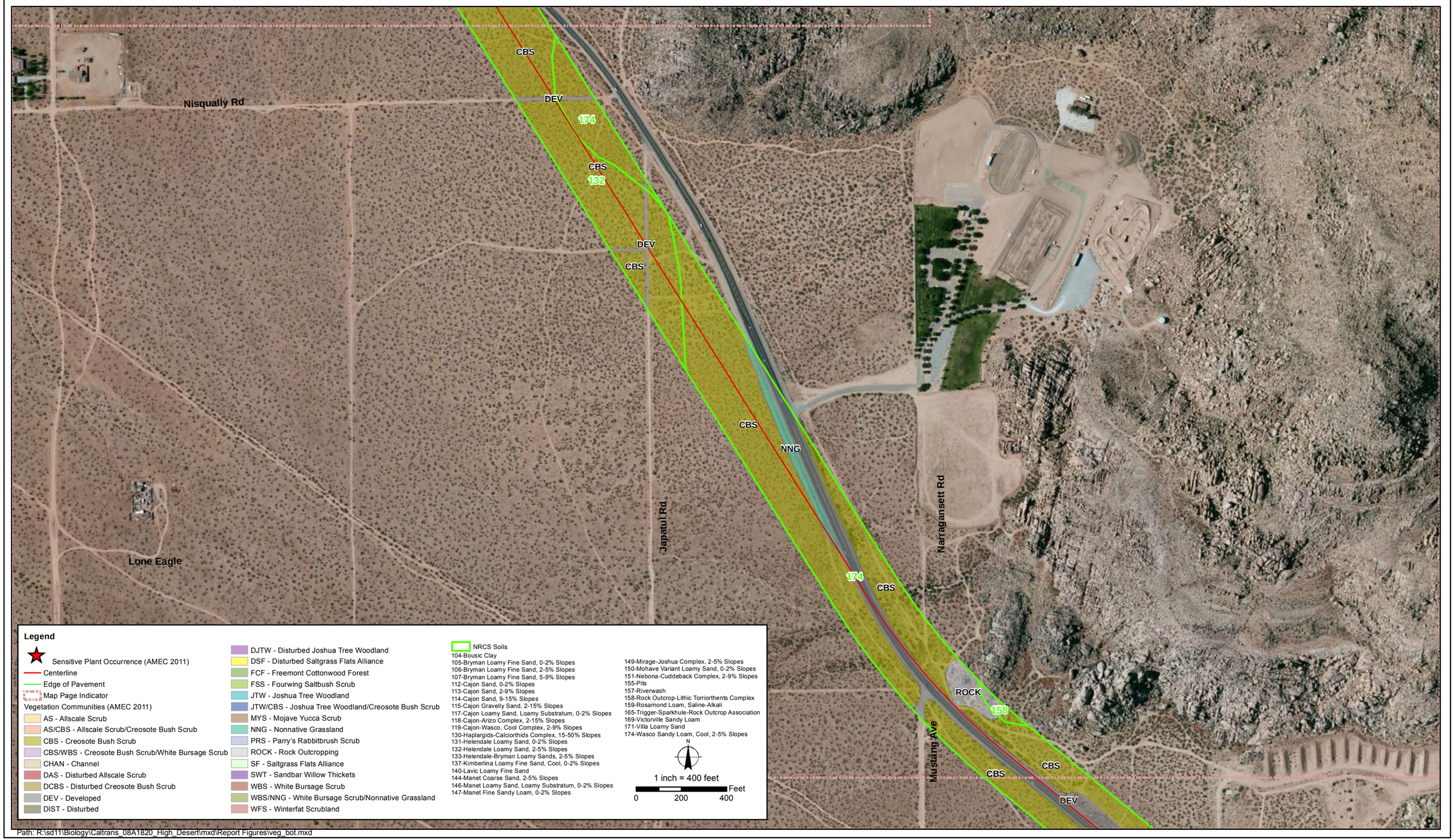

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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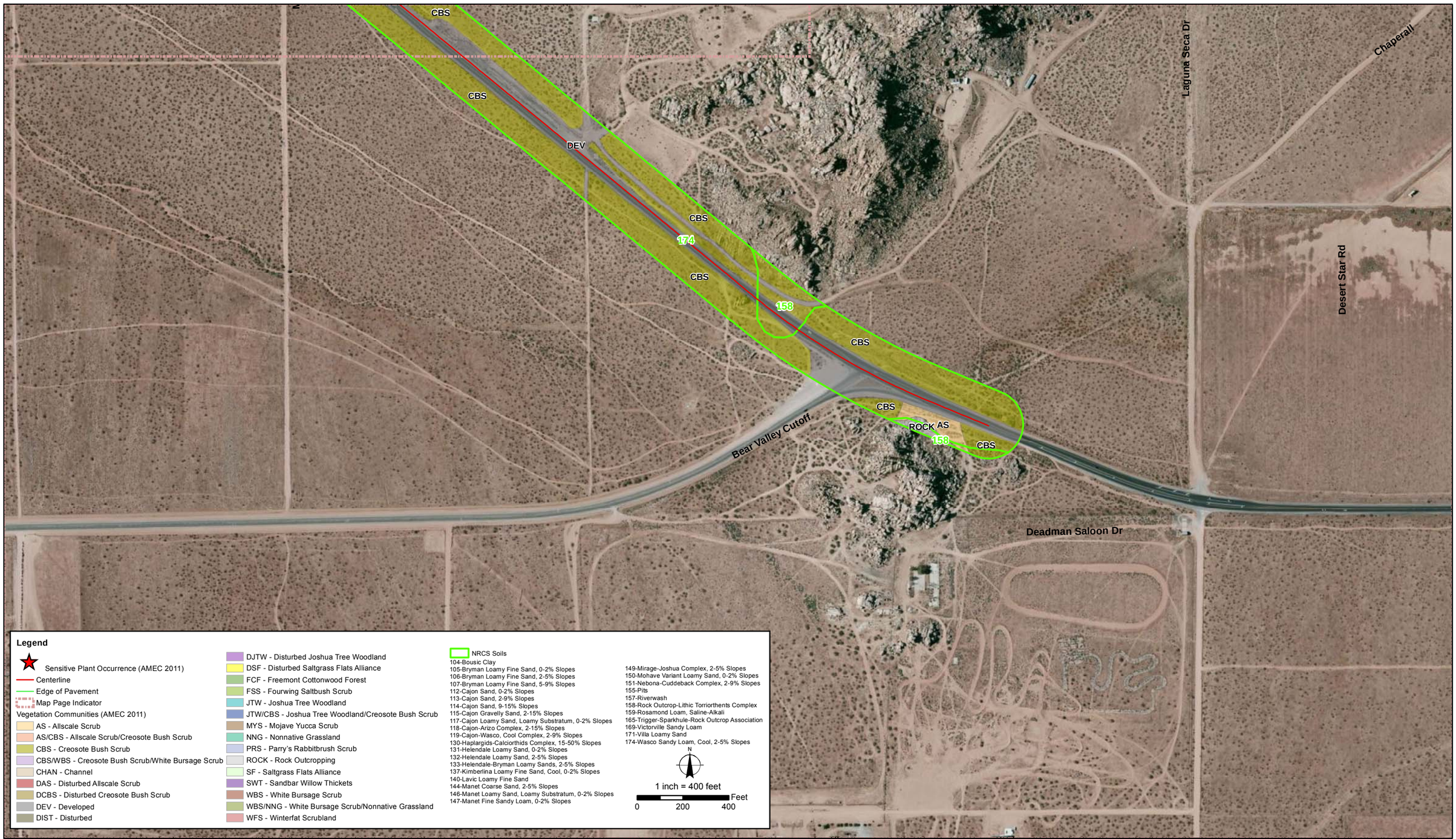

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Appendix A - Botanical Resources
High Desert Corridor Project
Plant Community Mapping and Focused Rare Plant Survey
San Bernardino County, California

FIGURE
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APPENDIX B

SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT VICINITY

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Abutilon parvulum	dwarf abutilon	*Malvaceae*	perennial herb	2.30	2,952.76	4,265.09	• Chenopod scrub (rocky)	April - May	Absent, collections from Providence Mtns
Agave utahensis var. nevadensis	Clark Mountain agave	*Agavaceae*	perennial leaf succulent	4.20	2,952.76	5,200.13	carbonate or volcanic. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	May - August	Absent, all collections from eastern Mojave mtns
Aliciella ripleyi	Ripley's aliciella	*Polemoniaceae*	perennial herb	2.30	1,000.66	6,397.64	• Mojavean desert scrub (carbonate)	May-July	Absent, collections from Panamint range
Aliciella triodon	coyote gilia	*Polemoniaceae*	annual herb	2.20	2,001.31	5,577.43	sometimes sandy. • Great Basin scrub • Pinyon and juniper woodland	April-June	Absent, all collections from eastern Mojave mtns
Allium parishii	Parish's onion	*Alliaceae*	perennial bulbiferous herb	4.30	2,952.76	4,806.43	rocky. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	April-May	Low, restricted to carbonate alluvial fans and springs
Aloysia wrightii	Wright's beebrush	*Verbenaceae*	perennial evergreen shrub	4.30	2,952.76	5,249.34	rocky, often carbonate. • Joshua tree woodland • Pinyon and juniper woodland	April-October	Moderate, Oro Grande area marginally suitable, but outside known range
Amaranthus watsonii	Watson's amaranth	*Amaranthaceae*	annual herb	4.30	65.62	5,577.43	• Mojavean desert scrub • Sonoran desert scrub	April-September	Moderate, single collection from north of Adelanto

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Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Androsace elongata ssp. acuta	California androsace	*Primulaceae*	annual herb	4.20	492.13	3,937.01	• Chaparral • Cismontane woodland • Coastal scrub • Meadows and seeps • Pinyon and juniper woodland • Valley and foothill grassland	March-June	Low, documented occurrences are on alluvial fan below San Bernardino Mtns.
Arctomecon merriamii	white bear poppy	*Papaveraceae*	perennial herb	2.20	1,607.61	5,905.51	rocky. • Chenopod scrub • Mojavean desert scrub	April-May	Absent, all collections are from Eastern and Northern Mojave
Asclepias asperula ssp. asperula	antelope-horns	*Asclepiadaceae*	perennial herb	4.30	3,001.97	7,201.44	rocky. • Mojavean desert scrub • Pinyon and juniper woodland	May-September	Absent, all collections from eastern Mojave mtns
Asclepias nyctaginifolia	Mojave milkweed	*Asclepiadaceae*	perennial herb	2.10	3,280.84	5,577.43	rocky. • Mojavean desert scrub • Pinyon and juniper woodland	May-September	Absent, recent collections from eastern Mojave mtns, historic collection from Cajon summit
Astragalus allochrous var. playanus	playa milk-vetch	*Fabaceae*	perennial herb	2.20	2,624.67	2,624.67	• Mojavean desert scrub (sandy)	April	Absent, collections from NY Mtns and Cima area.
Astragalus bernardinus	San Bernardino milk-vetch	*Fabaceae*	perennial herb	1B.2	2,952.76	6,561.68	Often granitic or carbonate. • Joshua tree woodland • Pinyon and juniper woodland	April-June	low, San Bernardino desert slopes east of the project area

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Astragalus cimae var. cimae	Cima milk-vetch	*Fabaceae*	perennial herb	1B.2	2,919.95	6,069.55	clay. • Great Basin scrub • Joshua tree woodland • Pinyon and juniper woodland	April-May	Absent, local to the Ivanpah and New York Mtns.
Astragalus insularis var. harwoodii	Harwood's milk-vetch	*Fabaceae*	annual herb	2.20	-	2,329.40	(sandy or gravelly). • Desert dunes • Mojavean desert scrub	January-May	Absent, from eastern and southern Mojave
Astragalus jaegerianus	Lane Mountain milk-vetch	*Fabaceae*	perennial herb	1B.1;FE	2,952.76	3,937.01	granitic, sandy or gravelly. • Joshua tree woodland • Mojavean desert scrub	April - June	Absent, Collections are from north of Barstow
Astragalus nutans	Providence Mountains milk-vetch	*Fabaceae*	annual herb	4.30	1,476.38	6,397.64	sandy or gravelly. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland • Sonoran desert scrub	March - October	Absent, all collections from eastern Mojave mtns
Astragalus preussii var. preussii	Preuss' milk-vetch	*Fabaceae*	perennial herb	2.30	2,460.63	2,559.06	• Chenopod scrub	March-May	Absent, taxa found on eastern Mojave playa
Astragalus tidestromii	Tidestrom's milk-vetch	*Fabaceae*	perennial herb	2.20	1,968.50	5,200.13	sometimes sandy. • Great Basin scrub • Pinyon and juniper woodland	April - June	Low, single collection on lower San Bernardino mtn slope.
Astragalus tricarinatus	triple-ribbed milk-vetch	*Fabaceae*	perennial herb	1B.2;FE	1,476.38	3,904.20	sandy or gravelly. • Joshua tree woodland • Sonoran desert scrub	February - May	Absent, collections from Morongo Valley
Astrolepis cochisensis ssp. cochisensis	scaly cloak fern	*Pteridaceae*	perennial rhizomatous herb	2.30	2,952.76	5,905.51	carbonate. • Joshua tree woodland • Pinyon and juniper woodland	April-October	Absent, Clark and New York Mtns.

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Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Atriplex parishii	Parish's brittlescale	*Chenopodiaceae*	annual herb	1B.1	82.02	6,233.60	alkaline. • Chenopod scrub • Playas • Vernal pools	June - October	Absent, old record from Big Bear quad in San Bernardino mtn.
Ayenia compacta	California ayenia	*Sterculiaceae*	perennial herb	2.30	492.13	3,592.52	rocky. • Mojavean desert scrub • Sonoran desert scrub	March-April	Absent, San Bernardino record is from southern Providence mtns.
Berberis fremontii	Fremont barberry	*Berberidaceae*	perennial evergreen shrub	3.00	2,755.91	6,069.55	rocky. • Chaparral • Joshua tree woodland • Pinyon and juniper woodland	April - June	Absent, collections from New York and Granite Mtn.
Berberis harrisoniana	Kofa Mountain barberry	*Berberidaceae*	perennial evergreen shrub	1B.2	2,559.06	2,755.91	usually north-facing talus slopes, sometimes volcanic (breccia). • Chaparral • Mojavean desert scrub	January-March	Absent, from Whipple Mtn Region
Boechera shockleyi	Shockley's rock cress	*Brassicaceae*	perennial herb	2.20	2,870.73	7,578.74	• Pinyon and juniper woodland (carbonate or quartzite, rocky or gravelly)	May-June	Absent, Cushenberry Springs limestone and similar carbonates
Bouteloua eriopoda	black grama	*Poaceae*	perennial stoloniferous herb	4.20	2,952.76	6,233.60	• Joshua tree woodland • Pinyon and juniper woodland	May-August	Absent, New York Mtns.
Bouteloua trifida	three-awned grama	*Poaceae*	perennial herb	2.30	2,296.59	6,561.68	• Mojavean desert scrub (carbonate, rocky)	May-September	Absent, Clark and Whipple Mtns

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Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Calochortus striatus	alkali mariposa lily	*Liliaceae*	perennial bulbiferous herb	1B.2	229.66	5,232.94	alkaline, mesic. • Chaparral • Chenopod scrub • Mojavean desert scrub • Meadows and seeps	April - June	Present- 13 individuals documented within Project area west of Mojave River in alkali seeps at foot of mesa
Camissonia boothii ssp. boothii	Booth's evening-primrose	*Onagraceae*	annual herb	2.30	2,952.76	7,874.02	• Joshua tree woodland • Pinyon and juniper woodland	April-September	High, reported from Mojave River crossings upstream of Oro Grande
Canbya candida	white pygmy-poppy	*Papaveraceae*	annual herb	4.20	1,968.50	4,790.03	gravelly, sandy, granitic. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	March - June	High or Moderate, coarse sandy wash preferred by species observed at several locations within HDC corridor
Castilleja plagiotoma	Mojave paintbrush	*Orobanchaceae*	perennial herb (hemiparasitic)	4.30	984.25	8,202.10	• Great Basin scrub (alluvial) • Joshua tree woodland • Lower montane coniferous forest • Pinyon and juniper woodland	April-June	Moderate, alluvial fans below San Bernardino Mtns.
Chamaesyce abramsiana	Abrams' spurge	*Euphorbiaceae*	annual herb	2.20	(16.40)	3,001.97	sandy. • Mojavean desert scrub • Sonoran desert scrub	September - November	Absent , Providence Mtn region
Chamaesyce parryi	Parry's spurge	*Euphorbiaceae*	annual herb	2.30	1,295.93	2,395.01	• Desert dunes • Mojavean desert scrub (sandy)	May-November	Absent, Kelso Dunes region

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Chamaesyce vallis-mortae	Death Valley sandmat	*Euphorbiaceae*	perennial herb	4.20	754.59	4,790.03	• Mojavean desert scrub (sandy or gravelly)	May-October	Absent, Coyote Lake/Ft Irwin region
Chloropyron tecopense	Tecopa bird's-beak	*Orobanchaceae*	annual herb (hemiparasitic)	1B.2	196.85	2,952.76	Mesic, alkaline. • Mojavean desert scrub • Meadows and seeps	July-October	Absent, Amargosa River region
Chorizanthe spinosa	Mojave spineflower	*Polygonaceae*	annual herb	4.20	19.69	4,265.09	sandy or gravelly. • Mojavean desert scrub • Pinyon and juniper woodland	April-June	High, collected recently in Creosote Bush Scrub in Adelanto quad.
Chorizanthe xanti var. leucotheca	white-bracted spineflower	*Polygonaceae*	annual herb	1B.2	984.25	3,937.01	sandy or gravelly. • Mojavean desert scrub • Pinyon and juniper woodland	April-June	Low, mostly San Bernardino desert slopes
Cordylanthus eremicus ssp. eremicus	desert bird's-beak	*Orobanchaceae*	annual herb (hemiparasitic)	4.30	3,280.84	9,842.52	• Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	July - October	Low, uncertain collection on seep below Cushenberry Spring, similar habitat not observed
Cordylanthus parviflorus	small-flowered bird's-beak	*Orobanchaceae*	annual herb (hemiparasitic)	2.30	2,296.59	7,217.85	• Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	August - October	Absent, Collections are from Eastern Mojave mtns
Coryphantha alversonii	foxtail cactus	*Cactaceae*	perennial stem succulent	4.30	246.06	5,003.28	sandy or rocky, usually granitic. • Mojavean desert scrub • Sonoran desert scrub	April-June	Absent, collections are from S.E. of project area
Coryphantha chlorantha	desert pincushion	*Cactaceae*	perennial stem succulent	2.10	147.64	5,003.28	carbonate, gravelly, rocky. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	April - September	Absent, collections are from Clark Mtns.

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Cryptantha clokeyi	Clokey's cryptantha	*Boraginaceae*	annual herb	1B.2	2,624.67	4,199.48	• Mojavean desert scrub	April	Low, single collection from Lucerne Valley, others from Ft. Irwin region
Cryptantha holoptera	winged cryptantha	*Boraginaceae*	annual herb	4.30	328.08	5,544.62	• Mojavean desert scrub • Sonoran desert scrub	March - April	Very Low, scattered in Central and Eastern Mojave, no nearby collections.
Cryptantha tumulosa	New York Mountains cryptantha	*Boraginaceae*	perennial herb	4.30	3,001.97	6,988.19	gravelly or clay, granitic or carbonate. • Mojavean desert scrub • Pinyon and juniper woodland	April - June	Absent, Clark and New York Mtns.
Cymopterus deserticola	desert cymopterus	*Apiaceae*	perennial herb	1B.2	2,066.93	4,921.26	sandy. • Joshua tree woodland • Mojavean desert scrub	March - May	Moderate, limited preferred deep blow sand habitat, and no recent collections from Apple Valley.
Cymopterus gilmanii	Gilman's cymopterus	*Apiaceae*	perennial herb	2.30	3,001.97	6,561.68	• Mojavean desert scrub (often carbonate)	April-May	Absent, Clark Mtns
Cymopterus multinervatus	purple-nerve cymopterus	*Apiaceae*	perennial herb	2.20	2,591.86	5,905.51	• Mojavean desert scrub (volcanic tuff)	March-May	Low, preferred habitat (Coleogyne scrub) not observed
Digitaria californica	Arizona cottontop	*Poaceae*	perennial herb	2.30	951.44	4,888.45	rocky. • Mojavean desert scrub • Sonoran desert scrub	July - November	Absent, New York mtns.

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Echinocereus engelmannii var. howei	Howe's hedgehog cactus	*Cactaceae*	perennial stem succulent	1B.1	1,410.76	2,542.65	• Mojavean desert scrub	April - May	Absent, Goffs in eastern Mojave
Enceliopsis nudicaulis var. nudicaulis	naked-stemmed daisy	*Asteraceae*	perennial herb	4.30	3,116.80	6,561.68	volcanic or carbonate. • Great Basin scrub • Mojavean desert scrub	April-May	Absent, occurrences are in the Panamint Range
Erigeron parishii	Parish's daisy	*Asteraceae*	perennial herb	1B.1;FT	2,624.67	6,561.68	usually carbonate, sometimes granitic. • Mojavean desert scrub • Pinyon and juniper woodland	May-August	Absent, alluvial fan of the San Bernardino Mtns.
Eriogonum bifurcatum	forked buckwheat	*Polygonaceae*	annual herb	1B.2	2,296.59	2,657.48	• Chenopod scrub (sandy)	April-June	Absent, collections are from Kingston Range and Pahrump
Eriogonum contiguum	Reveal's buckwheat	*Polygonaceae*	annual herb	2.30	98.43	4,330.71	• Mojavean desert scrub (sandy)	February-June	Absent, occurrences in Kingston, Amargosa and Cima Dome region of north eastern Mojave
Eriogonum heermannii var. floccosum	Clark Mountain buckwheat	*Polygonaceae*	perennial deciduous shrub	4.30	2,952.76	7,874.02	• Pinyon and juniper woodland (carbonate)	August-October	Absent, Clark and New York Mtns.
Eriophyllum mohavense	Barstow woolly sunflower	*Asteraceae*	annual herb	1B.2	1,640.42	3,149.61	• Chenopod scrub • Mojavean desert scrub • Playas	March-May	Moderate, found in somewhat similar habitat in vicinity of Kramer Junction and Barstow.

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Eschscholzia minutiflora ssp. twisselmannii	Red Rock poppy	*Papaveraceae*	annual herb	1B.2	2,230.97	4,035.43	• Mojavean desert scrub (volcanic tuff)	March - May	Absent, local to Red Rock Canyon region (one report from Edwards AFB0
Funastrum utahense	Utah vine milkweed	*Asclepiadaceae*	perennial herb	4.20	492.13	4,708.01	sandy or gravelly. • Mojavean desert scrub • Sonoran desert scrub	April-June	Absent, closest occurrences are east of Lucerne Valley
Galium angustifolium ssp. gracillimum	slender bedstraw	*Rubiaceae*	perennial herb	4.20	426.51	5,085.30	granitic, rocky. • Joshua tree woodland • Sonoran desert scrub	April-June	Absent or Low, in Coleogyne Shrub in central and eastern Mojave, nearest occurrence in Lucerne Valley.
Grusonia parishii	Parish's club-cholla	*Cactaceae*	perennial stem succulent	2.20	984.25	5,000.00	sandy, rocky. • Joshua tree woodland • Mojavean desert scrub • Sonoran desert scrub	May-July	Absent, Clark and New York Mtns
Hedeoma nana ssp. californica	California mock pennyroyal	*Lamiaceae*	perennial herb	4.30	2,805.12	6,889.76	rocky, often carbonate. • Joshua tree woodland • Pinyon and juniper woodland	April-June	Absent, Clark and New York Mtns
Linanthus maculatus	Little San Bernardino Mtns. linanthus	*Polemoniaceae*	annual herb	1B.2	639.76	6,807.74	sandy. • Desert dunes • Joshua tree woodland • Mojavean desert scrub • Sonoran desert scrub	March-May	Very low, closest collection is SE of Lucerne Valley at Rattlesnake Canyon

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Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Linanthus orcuttii	Orcutt's linanthus	*Polemoniaceae*	annual herb	1B.3	3,001.97	7,037.40	openings. • Chaparral • Lower montane coniferous forest • Pinyon and juniper woodland	May-June	Absent, Yucca Valley and San Bernardino mtns.
Linum puberulum	plains flax	*Linaceae*	perennial herb	2.30	3,280.84	8,202.10	• Great Basin scrub • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	May-July	Absent, Clark and New York Mtns.
Matelea parvifolia	spearleaf	*Asclepiadaceae*	perennial herb	2.30	1,443.57	3,592.52	rocky. • Mojavean desert scrub • Sonoran desert scrub	March - May	Absent, Central Mojave at Sheep Hole Mtns.
Maurandella antirrhiniflora	violet twining snapdragon	*Plantaginaceae*	perennial herb	2.30	2,493.44	5,003.28	carbonate. • Joshua tree woodland • Mojavean desert scrub	April-May	Absent, Providence and Kelso region
Mentzelia eremophila	solitary blazing star	*Loasaceae*	annual herb	4.20	2,296.59	4,002.62	• Mojavean desert scrub	March-May	Absent, from Trona Searle's Lake region
Mentzelia puberula	Darlington's blazing star	*Loasaceae*	perennial herb	2.20	295.28	4,199.48	sandy or rocky. • Mojavean desert scrub • Sonoran desert scrub	March - May	Absent, North Central Mojave (Avawatz mtns) type from Ord Mtn south of Barstow
Mentzelia tricuspis	spiny-hair blazing star	*Loasaceae*	annual herb	2.10	492.13	4,199.48	sandy, gravelly, slopes, and washes. • Mojavean desert scrub	March - May	Absent/Low - old collections made near Barstow.
Mentzelia tridentata	creamy blazing star	*Loasaceae*	annual herb	1B.3	2,296.59	3,805.77	rocky, gravelly, sandy. • Mojavean desert scrub	March-May	Low, collections in Lucerne Valley and West Ord Mountain

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Mimulus mohavensis	Mojave monkeyflower	*Phrymaceae*	annual herb	1B.2	1,968.50	3,937.01	sandy or gravelly, often in washes. • Joshua tree woodland • Mojavean desert scrub	April-June	High, scattered locations in the Oro Grande carbonate area
Monardella robisonii	Robison's monardella	*Lamiaceae*	perennial rhizomatous herb	1B.3	2,001.31	4,921.26	• Pinyon and juniper woodland	February - October	Absent, Yucca Valley and Joshua Tree NM.
Mortonia utahensis	Utah mortonia	*Celastraceae*	perennial evergreen shrub	4.30	2,493.44	6,889.76	carbonate. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	March-May	Absent, Collections from Clark Mtns.
Muhlenbergia appressa	appressed muhly	*Poaceae*	annual herb	2.20	65.62	5,249.34	rocky. • Coastal scrub • Mojavean desert scrub • Valley and foothill grassland	April - May	Absent, Providence Mtns, and Ord Mountain Spring
Muilla coronata	crowned muilla	*Themidaceae*	perennial bulbiferous herb	4.20	2,509.84	6,430.45	• Chenopod scrub • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	March - May	High, collected from suitable habitat in Adelanto
Oenothera cavernae	cave evening-primrose	*Onagraceae*	annual herb	2.10	2,493.44	4,199.48	gravelly, often calcareous. • Great Basin scrub • Joshua tree woodland • Mojavean desert scrub	March - November	Absent, Ivanpah Valley in Eastern Mojave
Oenothera longissima	long-stem evening-primrose	*Onagraceae*	annual / perennial herb	2.20	3,280.84	5,577.43	seasonally mesic. • Mojavean desert scrub • Pinyon and juniper woodland	July - September	Absent, Providence Mtns.

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Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Opuntia basilaris var. brachyclada	short-joint beavertail	*Cactaceae*	perennial stem succulent	1B.2	1,394.36	5,905.51	• Chaparral • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	April - June	Moderate-Low, limited suitable habitat in Oro Grande outcrops, below taxa's preferred elevation on desert slope of the San Bernardino mtns.
Opuntia curvispina	curved-spine beavertail	*Cactaceae*	perennial stem succulent	2.20	3,280.84	4,593.18	• Chaparral • Mojavean desert scrub • Pinyon and juniper woodland	April - June	Absent, Ivanpah Valley, Eastern Mojave
Parkinsonia microphylla	little-leaved palo verde	*Fabaceae*	perennial deciduous shrub	4.30	147.64	3,510.50	• Mojavean desert scrub (rocky or gravelly)	April - May	Absent, Whipple Mtns
Pediomelum castoreum	Beaver Dam breadroot	*Fabaceae*	perennial herb	4.30	2,001.31	5,000.00	sandy, washes and roadcuts. • Joshua tree woodland • Mojavean desert scrub	April - May	High, collected near (former) George AFB
Penstemon albomarginatus	white-margined beardtongue	*Plantaginaceae*	perennial herb	1B.1	2,099.74	3,494.09	• Desert dunes (stabilized) • Mojavean desert scrub (sandy)	March-May	Absent, closest occurrence near Pisgah Crater, central Mojave, habitat (loose stabilized dunes) not present.
Penstemon bicolor ssp. roseus	rosy two-toned beardtongue	*Plantaginaceae*	perennial herb	1B.1	2,296.59	4,921.26	rocky or gravelly, sometimes disturbed areas. • Joshua tree woodland • Mojavean desert scrub	May	Absent, Clark mtns and eastern Mojave

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Penstemon calcareus	limestone beardtongue	*Plantaginaceae*	perennial herb	1B.3	3,494.09	6,692.91	carbonate, rocky. • Joshua tree woodland • Mojavean desert scrub • Pinyon and juniper woodland	April-May	Absent, local to the Providence Mtn region
Penstemon fruticiformis var. amargosae	Amargosa beardtongue	*Plantaginaceae*	perennial herb	1B.3	2,788.71	4,593.18	• Mojavean desert scrub	April-June	Absent, Kingston and Avawatz Mtns
Penstemon thurberi	Thurber's beardtongue	*Plantaginaceae*	perennial herb	4.20	1,640.42	4,002.62	• Chaparral • Joshua tree woodland • Pinyon and juniper woodland • Sonoran desert scrub	May-July	Absent, Kelso Dunes and similar. No habitat observed.
Penstemon utahensis	Utah beardtongue	*Plantaginaceae*	perennial herb	2.30	3,494.09	8,202.10	rocky. • Chenopod scrub • Great Basin scrub • Mojavean desert scrub • Pinyon and juniper woodland	April-May	Absent, collections from Eastern Mojave Mountains
Petalonyx thurberi ssp. gilmanii	Death Valley sandpaper-plant	*Loasaceae*	perennial evergreen shrub	1B.3	853.02	4,740.81	• Desert dunes • Mojavean desert scrub	May - September	Absent. Occurrences in Panamint and lower Armagosa region
Phacelia mustelina	Death Valley round-leaved phacelia	*Hydrophyllaceae*	annual herb	1B.3	2,395.01	8,595.80	carbonate or volcanic, gravelly or rocky. • Mojavean desert scrub • Pinyon and juniper woodland	May-July	Absent, collections from Pilot Knob on NAWS.
Phacelia parishii	Parish's phacelia	*Hydrophyllaceae*	annual herb	1B.1	1,771.65	3,937.01	alkaline, mesic. • Great Basin scrub • Joshua tree woodland	March - November	Low, preferred habitat on alkaline playa is infrequent
Phacelia pulchella var. gooddingii	Goodding's phacelia	*Hydrophyllaceae*	annual herb	2.30	2,624.67	3,280.84	• Mojavean desert scrub (clay, often alkaline)	April-June	Absent, collections from Clark Mountains

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Pholistoma auritum var. arizonicum	Arizona pholistoma	*Hydrophyllaceae*	annual herb	2.30	902.23	2,739.50	• Mojavean desert scrub	March	Absent, collections from Whipple Mountains
Physalis lobata	lobed ground-cherry	*Solanaceae*	perennial herb	2.30	1,640.42	2,624.67	• Mojavean desert scrub (decomposed granitic) • Playas	May-January	Absent, collections from east of 29 Palms and Ivanpah playas
Plagiobothrys parishii	Parish's popcorn-flower	*Boraginaceae*	annual herb	1B.1	2,460.63	4,593.18	alkaline, mesic. • Great Basin scrub • Joshua tree woodland	March-November	Low, all collections are from Rabbit Springs in Lucerne Valley
Polygala acanthoclada	thorny milkwort	*Polygalaceae*	perennial shrub	2.30	2,493.44	7,496.72	• Chenopod scrub • Joshua tree woodland • Pinyon and juniper woodland	May-August	Low, collection from eastern Lucerne Valley
Portulaca halimoides	desert portulaca	*Portulacaceae*	annual herb	4.20	3,280.84	3,937.01	• Joshua tree woodland (sandy)	September	Absent, eastern Mojave Mtns and pinyon zone in Joshua Tree
Prunus eremophila	Mojave Desert plum	*Rosaceae*	perennial deciduous shrub	1B.2	3,198.82	3,854.99	granitic or rhyolitic, usually washes. • Mojavean desert scrub	March - April	Absent, Local to Hackberry mtn / Lanfair valley in Eastern Mojave
Psorothamnus arborescens var. arborescens	Mojave indigo-bush	*Fabaceae*	perennial deciduous shrub	4.30	1,312.34	3,887.80	• Mojavean desert scrub • Riparian scrub	April-May	High, Collected in the Oro Grande carbonate area

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Saltugilia latimeri	Latimer's woodland-gilia	*Polemoniaceae*	annual herb	1B.2	1,312.34	6,233.60	rocky or sandy, often granitic, sometimes washes. • Chaparral • Mojavean desert scrub • Pinyon and juniper woodland	March-June	Low, habitat is found on desert slopes of San Bernardino Mtns.
Salvia greatae	Orocopia sage	*Lamiaceae*	perennial evergreen shrub	1B.3	(131.23)	2,706.69	• Mojavean desert scrub • Sonoran desert scrub	March-April	Absent, Sonoran species with single questionable report from Cadiz Lake.
Sclerocactus johnsonii	Johnson's bee-hive cactus	*Cactaceae*	perennial stem succulent	2.20	1,640.42	3,937.01	• Mojavean desert scrub (granitic)	April-May	Absent, from Clark, Kingston and Amargosa range of Eastern Mojave
Sclerocactus polyancistrus	Mojave fish-hook cactus	*Cactaceae*	perennial stem succulent	4.20	2,099.74	7,611.55	usually carbonate. • Great Basin scrub • Joshua tree woodland • Mojavean desert scrub	April-July	Present within survey corridor on rock outcrops near I-15 interchange
Selaginella leucobryoides	Mojave spike-moss	*Selaginellaceae*	perennial rhizomatous herb	4.30	1,968.50	10,334.65	rocky, usually carbonate. • Great Basin scrub • Lower montane coniferous forest • Mojavean desert scrub • Pinyon and juniper woodland	June	Moderate, Oro Grande carbonates are only marginally suitable, no nearby collections

Appendix B
Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Sidalcea neomexicana	salt spring checkerbloom	*Malvaceae*	perennial herb	2.20	49.21	5,019.69	alkaline, mesic. • Chaparral • Coastal scrub • Lower montane coniferous forest • Mojavean desert scrub • Playas	March - June	Moderate, Spring west of Mojave River is marginally suitable, reported from Lucerne/Rabbit Springs
Sphaeralcea rusbyi var. eremicola	Rusby's desert-mallow	*Malvaceae*	perennial herb	1B.2	3,198.82	4,921.26	• Joshua tree woodland • Mojavean desert scrub	March-June	Absent, collected in Ivanpah and Clark Mtns.
Stipa arida	Mormon needle grass	*Poaceae*	perennial herb	2.30	1,640.42	8,431.76	carbonate. • Joshua tree woodland • Pinyon and juniper woodland	May-July	Absent, collected in Clark and Kingston mtns.
Stipa divaricata	small-flowered rice grass	*Poaceae*	perennial herb	2.30	2,296.59	9,678.48	• Pinyon and juniper woodland (gravelly, carbonate)	June-September	Absent, Clark and Kingston reports are southern limit of range.
Streptanthus campestris	southern jewel-flower	*Brassicaceae*	perennial herb	1B.3	2,952.76	7,545.93	rocky. • Chaparral • Lower montane coniferous forest • Pinyon and juniper woodland	April-July	Absent, upper slopes of the San Bernardino mtns. No suitable habitat observed.
Syntrichopappus lemmonii	Lemmon's syntrichopappus	*Asteraceae*	annual herb	4.30	1,640.42	6,003.94	sandy or gravelly. • Chaparral • Joshua tree woodland • Pinyon and juniper woodland	April-May	Moderate, desert slopes of the San Bernardino mtns.

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Special-Status Species with Potential to Occur within the Project Area

Scientific Name	Common Name	Family	Lifeform	Status	Elevation		Habitat	Blooming Period	Potential High, Med, Low, Absent
					low (ft)	high (ft)			
Tetracoccus hallii	Hall's tetracoccus	*Euphorbiaceae*	perennial deciduous shrub	4.30	98.43	3,937.01	• Mojavean desert scrub • Sonoran desert scrub	January-May	Absent, South Eastern Mojave mountains (Whipple and similar)
Thysanocarpus rigidus	rigid fringepod	*Brassicaceae*	annual herb	1B.2	1,968.50	7,217.85	Dry rocky slopes. • Pinyon and juniper woodland	February - May	Absent, widely scattered reports from Pinyon Juniper association, habitat not present.
Tragia ramosa	desert tragia	*Euphorbiaceae*	perennial herb	4.30	2,952.76	6,102.36	rocky. • Chenopod scrub • Pinyon and juniper woodland	April-May	Absent, Clark and New York Mountains
Tripterocalyx micranthus	small-flowered sand-verbena	*Nyctaginaceae*	perennial herb	2.30	1,804.46	2,805.12	• Desert dunes • Mojavean desert scrub (sandy)	April - May	Absent, local to Kelso dune region
Viola purpurea ssp. aurea	golden violet	*Violaceae*	perennial herb	2.20	3,280.84	6,692.91	sandy. • Great Basin scrub • Pinyon and juniper woodland	April-June	Absent, unvouchered report from Pinyon Juniper zone in Cajon pass region
Wislizenia refracta ssp. refracta	jackass-clover	*Capparaceae*	annual herb	2.20	1,968.50	2,624.67	• Desert dunes • Mojavean desert scrub • Playas • Sonoran desert scrub	April-November	Absent, widely scattered locations in central Mojave, no similar habitat observed.

APPENDIX C

PLANT SPECIES OBSERVED WITHIN THE SURVEY AREA

Appendix C
Plant Species Observed within the Survey Area

GNETAE	**JOINT FIRS**
Ephedraceae	**Ephedra Family**
Ephedra nevadensis	Nevada Jointfir
ANGIOSPERMAE DICOTYLEDONEAE	**DICOT FLOWERING PLANTS**
Apiaceae	**Carrot Family**
Tauschia parishii	Parish's umbrellawort
Lomatium mohavense	Mojave Desertparsley
Asclepiadaceae	**Milkweed Family**
Asclepias erosa	Desert Milkweed
Asteraceae	**Sunflower Family**
Acamptopappus sphaerocephalus	rayless goldenhead
Adenophyllum cooperi	Cooper dyssodia
Agoseris retrorsa	Spearleaf Mountain Dandelion
Ambrosia acanthicarpa	Annual Bursage
Ambrosia dumosa	burrobush
Artemisia douglasiana	Mugwort
Artemisia dracunculus	Tarragon
Baccharis salicifolia	Mulefat
Calycoseris parryi	yellow tackstem
Chaenactis carphoclina	Desert Pincushion
Chaenactis glabriscula var. glabriscula	Yellow Pincushion
Chrysthothamnus nauseosus	Rubber Rabbitbrush
Cirsium occidentale	Cobwebby Thistle
Conyza canadensis	Horseweed
Coreopsis bigelovii	Bigelow Coreopsis
Coreopsis californica	California tickseed
Erigeron foliosus	Leafy Daisy
Eriophyllum pringeli	Pringle's woolly sunflower
Eriophyllum wallacei	Woolly Daisy
Eriophyllum confertifolium	Golden Yarrow
Gnaphalium stramineum	Everlasting Cudweed
Gutierrezia californica	Matchweed
Hymenoclea salsola	Cheesebush
Lactuca serriola	Prickly lettuce
Lasthenia californica	California goldfields
Lessingia lemmonii	Lemmon's lessingia
Malacothrix coulteri	Snake's Head
Malacothrix glabrata	desert dandelion
Matricaria discoidea	disc mayweed
Pluchea sericea	Arrowweed
Senecio flaccidus	Threadleaf Ragwort
Stephanomeria pauciflora	Desert Straw
Stephanomeria virgata	Wand Wirelettuce
Stylocline sp. (micropoides)	Woollyhead Neststraw
Tetradymia stenolepis	Mojave Cottonthorn
Uropappus lindleyi	Silver Puffs

Appendix C
Plant Species Observed within the Survey Area

Boraginaceae	**Borage Family**
Amsinckia menziesii	Menzie's Fiddleneck
Amsinckia tesselata	Checker Fiddleneck
Cryptantha maritima	Guadalupe cryptantha
Cryptantha micrantha	Redroot Cryptantha
Cryptantha muricata	Pointed Cryptantha
Cryptantha oxygona	Sharp-nut Cryptantha
Pectocarya recurvata	Combbur
Pectocarya setosa	Moth Combseed
Phacelia fremontii	Fremont's Phacelia
Phacelia tanacetifolia	Lacy Phacelia
Tiquilia plicata	fanleaf crinklemat
Brassicaceae	**Mustard Family**
Caulanthus cooperi	Cooper Caulanthus
Descurainia pinnata	Western Tansymustard
Descurainia sophia	Herb Sophia
Hirschfeldia incana	Shortpod Mustard
Lepidium flavum var. felipense	yellow pepperweed
Lepidium lasiocarpum	shaggyfruit pepperweed
Sisymbrium altissimum	Tumble Mustard
Sismbrium irio	London rocket
Tropidocarpum gracile	Slender keel fruit
Cactaceae	**Cactus Family**
Cylindropuntia parryi	Valley Cholla
Echinocactus polycephalus	Cottontop
Opuntia basillaris ssp. basilaris	beavertail cactus
Opuntia echinocarpa	Silver Cholla
Opuntia ramossissima	Diamond Cholla
Sclerocactus polyancistrus	Mojave fish-hook cactus
Chenopodiaceae	**Goosefoot Family**
Atriplex canescens	Fourwing Saltbush
Atriplex polycarpa	Cattle Saltbush
Grayia spinosa	Spiny Hopsage
Krascheninnikovia lanata	winterfat
Salsola tragus	prickly Russian Thistle
Euphorbiaceae	**Spurge Family**
Chamaesyce albomarginata	Whitemargin Sandmat
Stillingia paucidentata	Mojave toothleaf
Geraniaceae	**Geranium Family**
Erodium cicutarium	
Fabaceae	**Pea Family**
Astragalus lentiginosus	freckled milkvetch
Lupinus microcarpus var. horizontalis	Chick Lupine
Lupinus odoratus	Mojave lupine

Appendix C
Plant Species Observed within the Survey Area

Lamiaceae	Mint Family
Salazaria mexicana	Bladdersage
Trichostema lanceolatum	Vinegarweed
Mentzelia albicaulis	whitestem blazingstar
Malvaceae	**Mallow Family**
Sphaeralcea ambigua	desert mallow
Nyctaginaceae	**Tobacco Family**
Mirabilis bigelovii	Bigelow's desert four o'clock,
Onagraceae	**Primrose Family**
Camissonia boothii	Booth's evening primrose
Camissonia campestris	Mojave sun cup
Oenothera tanacetifolia	tansey-leaf evening primrose
Papaveraceae	**Poppy Family**
Argemone munita	Chicalote
Polemoniaceae	Phlox Familiy
Eriastrum wilcoxii	**Wilcox's woollystar**
Gilia spp.	Gilia
Linanthus parryae	Sandblossoms
Loeseliastrum schottii	Schott Gilia
Polygonaceae	**Buckwheat Family**
Chorizanthe rigida	rigid spineflower
Eriogonum deflexum	flatcrown buckwheat
Eriogonum fasiculatum	California buckwheat
Eriogonum gracillimum	Rose and white buckwheat
Oxytheca perfoliata	roundleaf oxytheca
Polygonum aviculare	Common Knotgrass
Ranunculaceae	**Buttercup Family**
Delphinium parishii	Sky blue larkspurt
Rosaceae	**Rose Family**
Adenostoma fasciculatum	Chamise
Prunus fasciculata	desert peach
Solanaceae	**Nighshade Family**
Datura wrightii	Sacred Datura
Lycium andersonii	Anderson thornbush
Lycium cooperi	peach thorn
Scrophulariaceae	**Figwort Family**
Antirrhinum coulterianum	Coulter Snapdragon
Zygophyllaceae	**Caltrop Family**
Larrea tridentata	creosote bush
Tamaricaceae	**Tamarisk Family**
Tamarix chinensis	five-stamen tamarisk

Appendix C
Plant Species Observed within the Survey Area

MONOCOTYLEDONEAE	**MONOCOT FLOWERING PLANTS**
Agavaceae	**Agave Family**
Yucca brevifolia	Joshua Tree
Liliaceae	**Lily Family**
Allium fimbriatum	Fringed onion
Calochortus kennedyi	Desert Mariposa Lily
Calochortus striatus	Alkali Mariposa Lily
Dichelostemma capitatum var. pauciflora	Blue Dicks
Zigadenus brevibracteatus	desert deathcamas
Poaceae	**Grass Family**
Avena fatua	Common Wild Oats
Bromus diandrus	ripgut brome
Bromus hordeaceus	Soft Brome
Bromus madritensis ssp. rubens	Red Brome
Bromus tectorum	Cheat Grass
Bromus trenii	Chilean chess
Hordeum murinum ssp. leporinum	Hare Barley
Melica imperfecta	small flower melic grass
Polypogon monspeliensis	rabbit-foot grass
Schismus barbatus	Common Mediterranean Grass
Stipa speciosa	Desert Needlegrass

APPENDIX D

SURVEY PHOTOGRAPHS

Photo 1. Alkali mariposa lily *(Calochortus striatus)*

Photo 2. Alkali Maraposa lily habitat

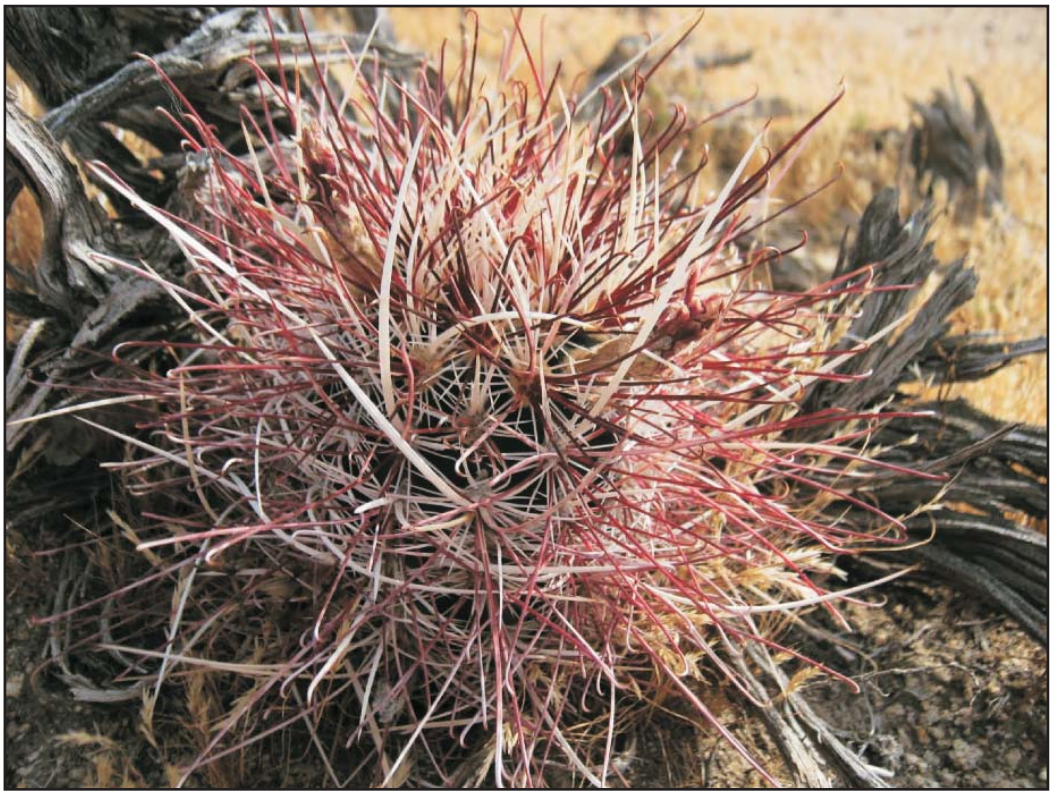

Photo 3. Mojave fishhook cactus *(Sclerocactus polyancistrus)*

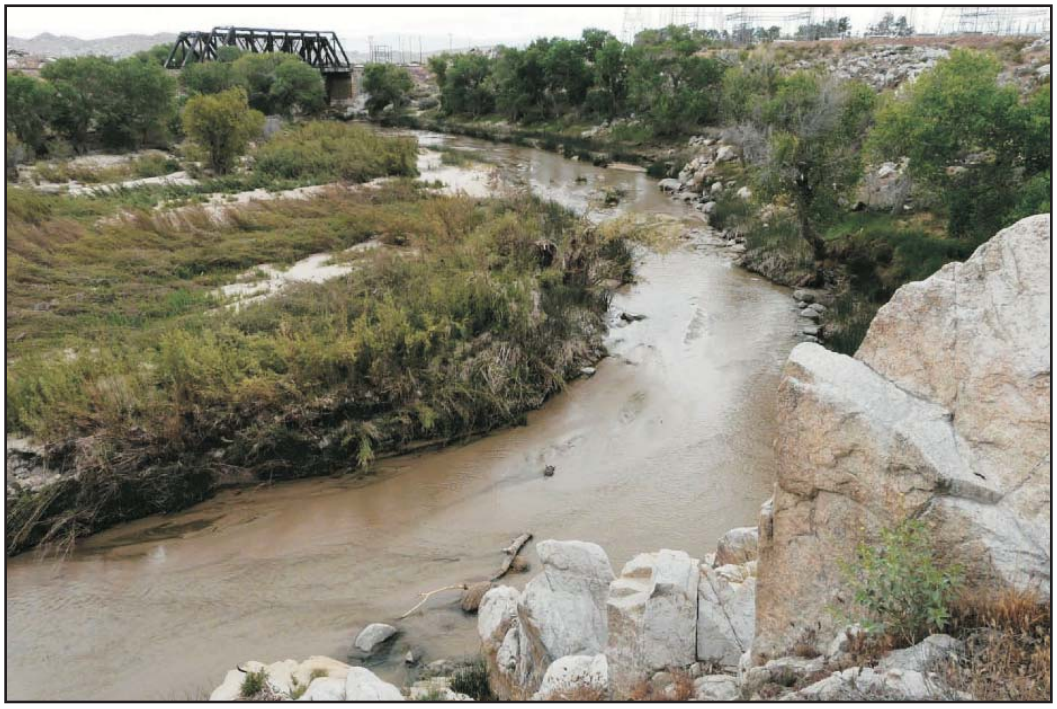

Photo 4. Mojave River crossing – Cottonwood woodland and sandbar willow thickets

amec

Hign Desert Corridor
Project Photographs

Photo 5. Joshua tree woodland, open phase

Photo 6. Nonnative grassland

Photo 7. Salt grass flats in alkali playas, Apple Valley

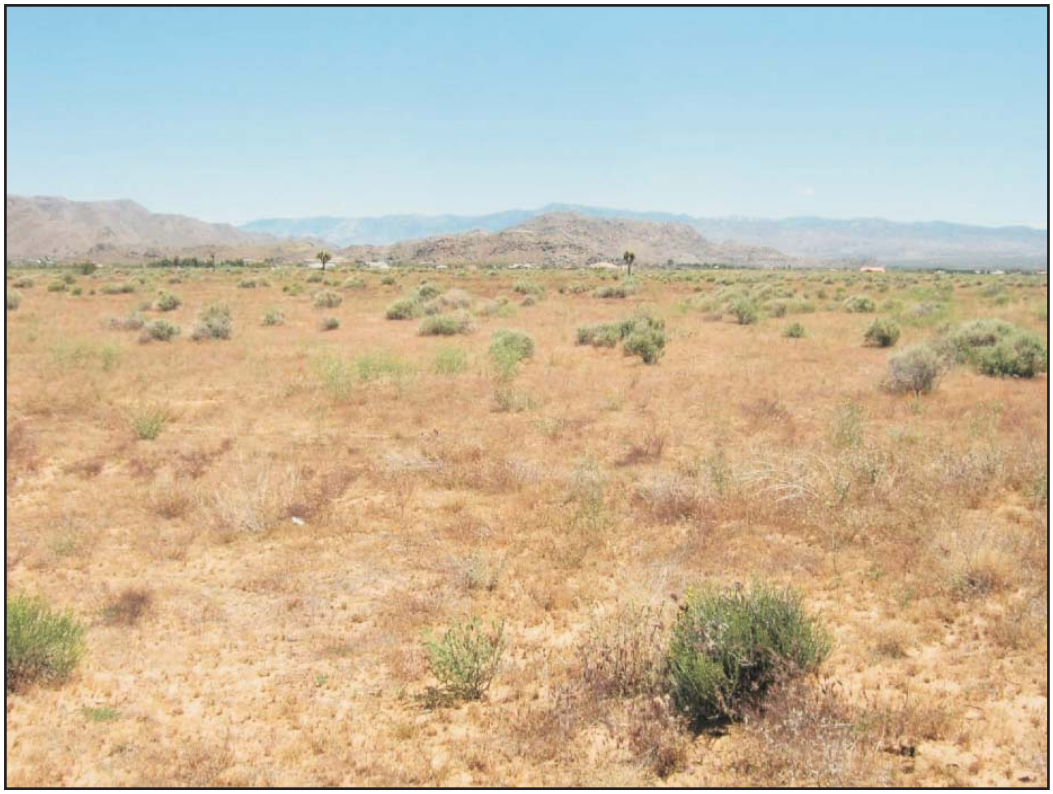

Photo 8. Allscale scrub typical of the eastern study area

APPENDIX E

VEGETATION COMMUNITY DESCRIPTIONS

Appendix E
Vegetation Community Descriptions

Allscale Scrub

Allscale scrub is often considered part of the saltbush scrub collection of series with allscale (*Atriplex polycarpa)* as a dominant species. Saltbush scrub is an assemblage of low, grayish shrubs, one to four feet tall, with some succulent species. Allscale series occurs with different associates regionally as suggested by MCV2 categories. Total ground cover is often low, with bare ground between perennial plants.

Allscale occurs in sterile sandy soils especially near washes, on rhyolitic (fine grained pink rock) rock outcrops, and in disturbed areas on clay playas. Allscale often transitions with shadscale and creosote bush on bajadas where the layer of sand is the right thickness. Allscale is commonly found around volcanic plugs, where blow sand builds up around the base. Allscale can also be common near alkaline seeps and the dissected upland and badlands formed when faulting causes areas to rise.

Creosote Bush Scrub

Creosote bush usually occurs in open, species-poor communities, sometimes in pure stands. It also occurs as a transitional species in desert grasslands, mesquite woodlands, Joshua tree (*Yucca brevifolia*) communities, and dry desert wash areas.

Creosote bush is relatively tall and broad compared with other Mojave Desert shrubs. For this reason, it visually dominates the bajadas, even when it is not very dense. Creosote bush may be found alone or with a series of common and widespread co-dominants. Other shrub species occurring most commonly with creosote bush are spiny hopsage, winterfat, wolfberry, golden cholla, beavertail (*Opuntia basilaris*), Mormon tea (*Ephedra nevadensis* and *E. californica*) and Acton daisy (*Encelia actonii*).

Perennial shrubs are generally widely spaced in creosote bush scrub, usually with bare ground between. Plant growth occurs during spring and is prevented by winter cold and seasonal drought. Many species of ephemeral herbs may flower in late March and April if the winter rains are sufficient. Other, less numerous species of annuals appear following summer thundershowers

Creosote-White Bursage Scrub

Creosote-white bursage scrub is a series within Mojave creosote bush scrub, which is often considered as a collection of series. In creosote-white bursage scrub, creosote bush and white bursage are equally important, and brittlebush can be a third common species. Species associated with creosote-white bursage communities in the Mojave Desert include Shockley's goldenhead (*Acamptopappus shockleyi*), Anderson's wolfberry (*Lycium andersonii*), range ratany (*Krameria parvifolia*), Mojave yucca (*Yucca schidigera*), California jointfir (*Ephedra funerea*), spiny hopsage (*Grayia spinosa*), and winterfat (*Krascheninnikovia lanata*). Creosote bush also occurs in the Mojave Desert scrub association with desertholly (*Atriplex hymenelytra*), shadscale (*A. confertifolia*), white burrobrush (*Hymenoclea salsola*), blackbrush (*Coleogyne ramosissima*), Joshua tree, desertsenna (*Cassia armata*), and Nevada ephedra (*Ephedra nevadensis*).

Joshua Tree Woodland
Joshua tree woodland is an emergent small tree over a shrub or grassy canopy typically composed of Cresote bush scrub species. The shrub layer is open to intermittent. Herbaceous layer is open to intermittent with perennial grasses and seasonal annuals. This community occurs on gentle alluvial fans ridges, gentle to moderate slopes. Soils are coarse sands, very fine silts, gravel, or sandy loams. Many sites have bimodal soils with both coarse and fine silts. Joshua trees are often dwarfed in the rocky soil of the central Mojave but become fairly large in deep sandy soils.

Saltgrass Flats Alliance
Saltgrass (*Distichlis spicata*) is dominant or co-dominant in the herbaceous layer with beardless rabbit foot grass (*Agrostis virdis*), silver bur ragweed *(Ambrosia chamissonis), Anemopsis californica,* triangle roache (*Atriplex prostrata),* turtleweed *(Batis maritima),* rip-gut grass (*Bromus diandrus),* brass- buttons *(Cotula coronopifolia),* and others. Emergent shrubs may also be present; the herbaceous layer is generally less than one meter tall. This community generally occurs on coastal salt marshes, inland habitats including playas, swales, and terraces along washes that are typically intermittently flooded. Soils are often deep, alkaline or saline, and often have an impermeable layer making them poorly drained. When the soil is dry, the surface is usually has salt accumulations.

Freemont Cottonwood Forest
Fremont cottonwood (*Populus fremontii)* is a dominant or co-dominant in the tree canopy with box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), walnut (*Juglans hindsii*), sycamore (*Platanus racemosa*), and willows (*Salix spp*.). Trees are typically less than 25 meters tall and canopy is continuous to open. The shrub layer is intermittent to pen and the herbaceous layer is variable. This community occurs on floodplains, along low-gradient rivers, along perennial or seasonally intermittent streams, springs, in lower canyons in desert mountains, in alluvial fans, and in valleys with a dependable sub-surface water supply that varies considerably during the year.

Fourwing Saltbush Scrub
Four-wing saltbush is an indicator of deep sand, either fluvial or Aeolian. Four-wing saltbush occurs in sand fields with burro-weed (*Ambrosia dumosa*), galleta grass (*Pleuraphi sp)*, Joshua trees, cheesebush (*Hymenoclea salsola*), goldenheads, creosote bush (*Tetradymia stenolepis*), and boxthorn (*Lycium cooperi*). This community usually transitions with creosote bush scrub.

Mojave Yucca Scrub
This series is often considered part of the creosote bush scrub, which is better thought of as a collection of series. Areas of dominance by Mojave yucca (*Yucca schidigera*) can also occur through its range as small populations in other series. Associated species include creosote bush, burro-weed, galleta grass, Nevada ephedra, buckwheat (*Eriogonum fasciculatum*) and cholla (*Cylindropuntia acanthocarpa*). This community occurs on alluvial fans, rocky slopes, and upper bajadas. Soils are generally well-drained, sandy loams.

Parry's Rabbitbrush Scrub
Parry's rabbitbrush (*Ericameria parryi*) scrub is in the dominant shrub canopy of this community. Associated species include big sagebrush (*Ambrosia dumosa*, yellow rabbitbrush *(Chrysothamnus viscidiflorus),* winterfat *(Krascheninnikovia lanata)* and creosote bush.

Emergent juniper or pine trees may also be present. Shrubs are generally less than 1 meter tall and the herbaceous layer is sparse to grassy. This community generally occurs within alluvial fans, pumice flats, and bajadas. Soils are well drained and gravelly or rocky.

Sandbar Willow Thickets
Sanbar willow (*Salix exigua*) is dominant or co-dominant in the shrub canopy with *Baccharis spp.*, b brickellbush (*Brickellia californica*), California rose (*Rosa californica*), blackberry (*Rubus armeniacus* and *R. ursinus*), and willow (*Salix lasiolepis*, and *S. melanopsis*. The emergent trees of many different species may also be present. Shrubs are generally less than 7 meters tall and the canopy is intermittent to continuous. The herbaceous layer is variable. This community typically occurs along temporarily flooded floodplains, depositions along rivers and streams and at springs.

White Bursage Scrub
White bursage scrub is dominated by big sagebrush or co-dominated in the shrub canopy with four-wing saltbush, creosote bush, ephedra, shadscale or ocotillo (*Fouquieria splendens*). The canopy is open to intermittent and the herbaceous layer is open to intermittent with seasonal annuals. This community typically occurs on older washes and river terraces, alluvial fans, bajadas, rocky hills, partially stabilized and stabilized sand fields, and upland slopes. Soils are typically sandy, clay rich or calcareous and may have pavement surfaces.

Winterfat Scrubland
Winterfat scrubland is dominant or co-dominant in the shrub canopy of yellow rabbitbush, blackbrush (*Coleogyne ramosissima*), shadscale, and black sagebrush (*Artemisia nova*). Shrubs of this community are generally less than 1.5 meters tall and the canopy is typically open to continuous. The herbaceous layer is open or grassy. This community occurs in alkaline flats around playas and along drainages. Soils are thin to moderately deep to rocky to silty clay loams that are calcareous, moderately alkaline and sometimes saline.

2011 Special Status Plant Survey Report for the High Desert Corridor (HDC) District 7

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August 2012

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ICF International. 2012. *2011 Special Status Plant Survey Report for the High Desert Corridor (HDC) District 7*. December. (ICF 338.11.) San Diego, CA. Prepared for California Department of Transportation, Environmental Division, District 7, Los Angeles, CA.

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Attachments

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2 Special Status Plants Potentially Occurring in the Regional Vicinity of the Proposed High Desert Corridor Project Site

3 Soils

4 Rare Plant Focused Survey Area Vegetation Map and Results

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Acronyms

amsl	above mean sea level
BSA	Biological Study Area
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society Inventory
ft	feet
GPS	Global Positioning System
HAs	Hydrologic Areas
HDC	High Desert Corridor
HU	Hydrologic Unit
ICF	ICF International
SWRCB	State Water Resources Control Board
USGS	United States Geologic Service

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Chapter 1
Summary of Findings

The High Desert Corridor (HDC) project proposes to construct a freeway between Palmdale and Apple Valley within the western Mojave Desert in Los Angeles and San Bernardino Counties, California. The freeway design would include segments of both a six- and eight-lane highway, as well as improvements to portions of SR-14 and I-15 that occur north and south of the proposed alignment. This report documents the results of the 2011 rare plant and vegetation mapping surveys that were conducted along the proposed and alternate alignments within the Caltrans District 7 boundaries.

The Biological Study Area (BSA) for the 2011 rare plant surveys was defined as from SR-14 in the City of Palmdale to the Los Angles/San Bernardino County line along Avenue P-8 and also includes the State Route (SR) 138/SR 18 alternative southern route. Surveys included a 500-foot buffer from the proposed centerline of each alternative. Surveys during the months of April and May were conducted within the BSA where suitable habitat for special status plants occurred.

Surveys for vegetation mapping were performed east of 100th street within the limits of the primary and alternate project corridors and associated buffers, the limits of which were provided by Caltrans. The primary alignment survey area is generally 500-feet wide, with four locations at which the survey area expands to 1,250-foot wide (to accommodate interchanges). The survey area is 500-feet wide for the entire length except for areas at the interchanges that required extending the boundaries.

Based on the California Natural Diversity Database (CNDDB) and a previous survey conducted in 2009 (ECORP 2009), 18 sensitive plant species were identified as having potential to occur within the BSA. Among the 18 species with potential, 11 species were confirmed absent and have no potential to occur based on the lack of suitable habitat, host plant, appropriate soils, and/or water supply. Of the remaining seven species, two were found during the previous survey in 2009, and five of the species have some potential to occur in the BSA, ranging from low to high. However, no special status plant species were detected within the BSA during the 2011 surveys.

Chapter 2
Introduction

This document provides the results of rare plant surveys and vegetation mapping conducted in 2011 for the CalTrans District 7 HDC Project. The HDC is a CalTrans project that proposes construction of new segments of a six and eight-lane freeway between Victorville and Apple Valley in Los Angeles and San Bernardino Counties, California (Figure 1). The current project design includes two alignments, the proposed footprint and an alternate alignment.

2.1 Project Location

The proposed alignment encompasses a route between SR-14 and the Los Angeles/San Bernardino County border (Figure 2). An alternate route has also been designed that originates at 125th Street, continues south to East Avenue T, and then curves to the east, joining and continuing with SR-18 to the Los Angeles/San Bernardino County border. Both alignments are situated within the western end of the Mojave Desert, as depicted on the Valyermo U.S.G.S 7.5 minute Quadrangle. Surrounding land uses include primarily open space but also residential, government, transportation, agriculture, and commercial developments. Focused surveys were completed in 2011 for both proposed routes.

2.2 Project Description

Caltrans is proposing to construct a new freeway/expressway, and possible toll way, in the high desert area of Los Angeles and San Bernardino Counties that will extend for a distance of approximately 63 miles between SR-14 in Palmdale and SR-18 in Apple Valley. The project includes an eight-lane freeway from SR-14 to 50th Street East along an alignment paralleling Avenue P-8 in Palmdale. The alignment transitions to a six-lane facility from 50th Street East to 240th East and then continues to I-15.

East of I-15, the proposed alignment curves south until it terminates at Bear Valley Road and SR-18 in the town of Apple Valley. In addition, SR-14 and I-15 will be improved for approximately 3 miles north and south of the intersection with the proposed east-west alignment. The specific design elements of the transportation corridor will be determined by traffic analysis.

Chapter 3
Survey Methodology

ICF International (ICF) botanists conducted a series of botanical surveys for the project in 2011 (Table 1). The project manager submitted the survey methodology and personnel resumes to Kelly Schmocker of CDFG for approval before beginning field work. Prior to surveying, a special status target plant list was generated by performing a records search of the CNDDB and the California Native Plant Society Inventory (CNPS). The CNDDB and CNPS searches were conducted for the United States Geologic Service (USGS) 7.5-minute Valyermo Quadrangle, as well as the eight surrounding Quadrangles: Lovejoy Buttes, El Mirage, Adobe Mountain, Hi Vista, Alpine Butte, Littlerock, Juniper Hills, and Mescal Creek (CDFG 2011 & CNPS 2010).

The database searches identified 17 special status plant species as historically occurring in the vicinity of the project survey areas (Attachment 2). In addition, *Muilla maritima,* a CRPR 4.2 sensitive species detected by ECORP Consulting during a 2009 survey, was included in the rare-plant target table (Attachment 2). This report also presents the vegetation mapping, and additional plant data that were documented in June 2011 by ICF biologists during the subsequent wetland delineation (ICF 2011b) and vegetation mapping surveys for the project.

Surveys were scheduled between April and May in order to optimize detection of target special status species, and the plant survey areas (BSA) were generally defined from SR-14 in the City of Palmdale to the Los Angles/San Bernardino County line along Avenue P-8 and also included the State Route (SR) 138/SR 18 alternative southern route. Surveys for the primary alignment were 500 feet wide, with four locations at which the survey area expands to 1250-feet wide (to accommodate interchanges). The alternate alignment survey area was 500 feet wide for the entire length. The survey areas excluded developed habitats and any privately owned parcels to which the surveyors were not granted access. Some localized checking for late season flowering species, based on soil suitability and potential water resources, occurred in July; however, the local conditions were not suitable for continued survey work in those areas. The synoptic species list that was developed for the area was based on the Jepson Manual 2nd Edition (Baldwin et al. 2012), a vegetation map based on Manual of California Vegetation 2nd Edition (Sawyer et al 2009) and data about the rare species that were gathered during the survey.

The focus for the rare plant surveys was to complete a floristic inventory, map the special status plant populations observed, and determine the potential for special status plant species within the survey areas. Survey methods included walking meandering transects within the BSA and focusing on areas that had potential to support special status plant species. During these surveys all plant species observed were documented and special status plant species were mapped using a sub-meter accurate Global Positioning System (GPS).

The subsequent vegetation mapping survey conducted in June focused on a BSA that was defined as all the areas within the two alignments that occur east of 100th street to the Los Angeles/San Bernardino County line. The survey BSA for the primary alignment was generally 500 feet wide, except as noted above. The alternate alignment survey area was 500 feet wide for the entire length.

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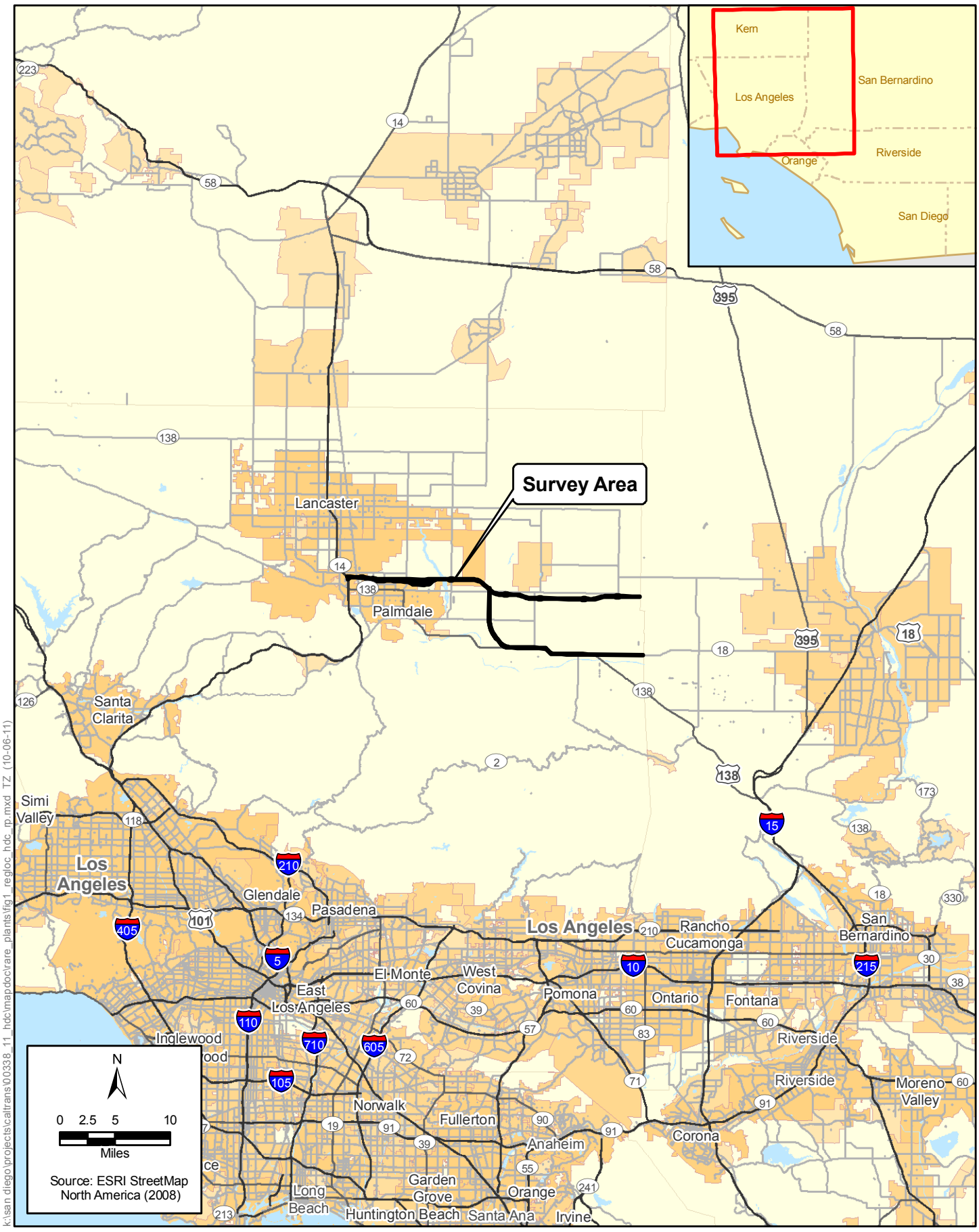

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Figure 1
Regional Location
Caltrans High Desert Corridor Rare Plant Surveys

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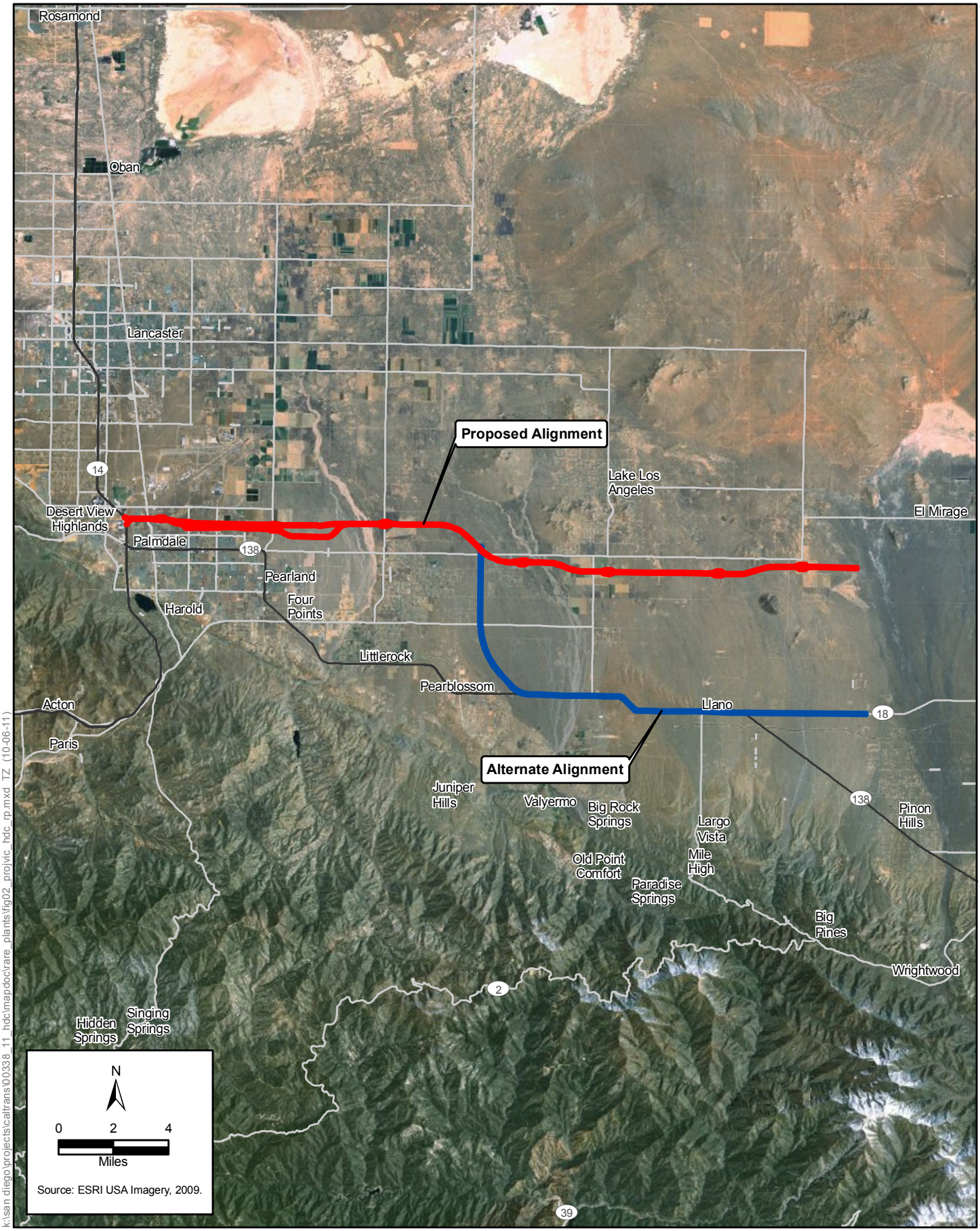

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Figure 2
Project Vicinity
Caltrans High Desert Corridor Rare Plant Surveys

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Table 1. HDC Special Status Plant Focused Survey and Vegetation Mapping Survey Dates and Conditions

Alignment	Date	Weather	Personnel
Rare Plant Surveys			
Mapsheets 46- 48	April 28, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, I. Cain
Check of Reference Populations	April 29, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, I. Cain
Mapsheets 34-40	May 2, 2011	Clear skies, 70-80 degrees F	K. Klutz, L. Willrick, I. Cain, K. Schlech, P. Schwartz, D. Ritenour
Mapsheets 41-46	May 3, 2011	Clear skies, 70-80 degrees F	K. Klutz, L. Willrick, I. Cain, K. Schlech, P. Schwartz, D. Ritenour
Mapsheets 29-33, 45, 46	May 4, 2011	Clear skies, 70-80 degrees F	K. Klutz, L. Willrick, I. Cain, K. Schlech, P. Schwartz, D. Ritenour
Mapsheets 11-14, 27, 28, 39, 40	May 5, 2011	Clear skies, 70-80 degrees F	K. Klutz, L. Willrick, I. Cain, K. Schlech, P. Schwartz, D. Ritenour
Mapsheets 40-43	May 6, 2011	Clear skies, 70-80 degrees F	I. Cain, L. Willrick, D. Ritenour, P. Schwartz
Mapsheets 23-27	May 9, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, L. Willrick, I. Cain, P. Richards, P. Schwartz
Mapsheets 18-23	May 10, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, L. Willrick, I. Cain, P. Richards, P. Schwartz
Mapsheets 18-21	May 11, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, L. Willrick, I. Cain, P. Richards, P. Schwartz
Mapsheets 15-17	May 12, 2011	Clear skies, 70-80 degrees F	K. Klutz, K. Schlech, L. Willrick, I. Cain, P. Richards, P. Schwartz
Vegetation Mapping Surveys			
Mapsheets 44-46	June 14, 2011	Clear skies, 80-90 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain
Mapsheets 39-43, 47-48	June 15, 2011	Clear skies, 80-90 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain
Mapsheets 38-39	June 16, 2011	Clear skies, 80-90 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain
Mapsheets 11 -15,37	June 20, 2011	Clear skies, 85-100 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain
Mapsheet 16-23, 31-35	June 21, 2011	Clear skies, 90-105 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain
Mapsheets 24-27, 28-30,36	June 22, 2011	Clear skies, 90-105 degrees F	D. Ritenour, P. Schwartz, L. Willrick, I. Cain

Chapter 4
Environmental Setting

This section describes the existing environmental conditions that occur within the survey area including the topography, soils, hydrology, climate, and vegetation.

4.1 Topography

Topography within the footprints is largely flat, and elevations vary from 2,660 feet (ft) to 3,400 ft above mean sea level (amsl). Elevation tends to increase southward toward the San Gabriel Mountains, and eastward toward San Bernardino County. The survey areas are comprised of these relatively flat expanses, including three named stream systems, Little Rock Wash, Rock Creek, and Mescal Creek, and their associated channels. These drainage features are discussed in more detail in Section 4.3 of this report.

4.2 Soils

Twenty-eight soil types are found within the survey areas, as defined by the U.S. Department of Agriculture (USDA; Attachment 3). Soil series identified within the BSA include: Adelanto, Arizo, Cajon, Dune Land, Greenfield, Hanford, Hesperia, Mohave, Ramona, Riverwash, Rosamond, and Sunrise. The dominant soil types within these soil series include sand, fine sand, and sandy loam.

4.3 Climate and Hydrology

Both alignments are located in Climate Zone 14 within the Arid West Region and Mojave Desert Sub-Region in Southern California. Climate Zone 14 includes desert valleys and low mountain areas that generally have gentle sloping topography. This climate zone experiences higher average summer temperatures and lower average winter temperatures than desert regions at lower elevations. Zone 14 receives very little ocean influence, and has characteristic sunny days throughout the year, with most of the precipitation falling in the winter (Climate Zones of California 2011).

The proposed and alternate alignments occur in northeast Los Angeles County within the California State Water Resources Control Board (SWRCB) South Lahontan Hydrologic Region (Region 6), the Antelope Hydrologic Unit (HU), and in the Buttes, Lancaster, and Rock Creek Hydrologic Areas (HAs). The survey areas include three, named blue-line streams, Little Rock Wash, Rock Creek and Mescal Creek, as shown on the USGS 7.5-minute Valyermo Quadrangle. These drainage features are primarily supported by snow melt from the San Gabriel Mountains that are located south of the project area. The Rock Creek watershed flows north to a closed system at Rosamond Lake located to the north of the survey area. In addition, there are numerous unnamed ephemeral drainages that intersect the alignment; some of these may also flow to Buckthorn and/or Rogers Lake, north of the

BSA in Kern County, depending on seasonal snow melt flows. The above named drainages cross both the proposed and alternative alignment (Lahontan Region Water Quality Control Plan 1995).

Average precipitation within the BSA (based on records from the town of Llano, California) is approximately 10 inches per year. Based on a comparison with the average monthly values for rainfall data, this survey effort took place during a year with average rainfall (Historic Rainfall for Llano 2011).

4.4 Vegetation

Vegetation mapping was conducted in subsequent surveys as described in the Manual of California Vegetation 2nd Edition (Sawyer et al. 2009) and the mapping addressed all habitats within the alignments that occurred east of 100th Street. The BSA for mapping was defined as the alignment footprints plus a 500 –foot buffer for all areas that occur east of 100th Street.

The following communities were identified within the BSA that was defined for the vegetation mapping:

- Allscale scrub
- California buckwheat scrub
- Cheesebush scrub (some with an *Ephedra nevadensis* association)
- Creosote bush scrub (some with associations of *Atriplex polycarpa*, *Ephedra nevadensis*, or *Ambrosia salsola*)
- Creosote bush-white burr sage scrub (some with associations of *Eriogonum fasciculatum* or E*ricameria cooperi*)
- Fiddleneck field with an *Erodium* association
- Four-wing saltbush scrub
- Fremont cottonwood forest (some with a *Baccharis salicifolia* association)
- Joshua tree woodland (some with associations of *Ephedra nevadensis* or *Larrea tridentata-Ambrosia dumosa-Eriogonum fasciculatum*)
- Red brome grass grassland
- Rubber rabbitbrush scrub
- Scale broom scrub
- White bursage scrub

In addition to the habitats defined within the Sawyer, Keeler-Wolf system the following habitat types also occur; agricultural fields, developed and disturbed, and vegetated and unvegetated

channel. These habitats occur variously through-out the entire alignment. A description of the vegetation communities is provided below.

Allscale scrub (*Atriplex polycarpa* Shrubland Alliance) Allscale is the dominant shrub along with other species such as white bur-sage, four-wing saltbush (*Atriplex canescens*), and creosote bush. It has a >2% absolute cover and a >50% relative cover in the shrub layer. This alliance occurs only in the proposed alignment near both the west and east ends of the BSA. No associations were found with this vegetation alliance.

California buckwheat scrub (*Eriogonum fasciculatum* Shrubland Alliance) California buckwheat is the dominant shrub along with other species such as white bur-sage (*Ambrosia dumosa*), cheesebush, creosote bush and bladder sage (*Salazaria mexicana*). It has a >2% absolute cover or a >50% relative cover in the shrub layer. This alliance occurs only between 172nd Street and 175th Street on the north side of SR-138. No associations were found with this vegetation alliance.

Cheesebush scrub (*Ambrosia salsola* Shrubland Alliance) Cheesebush is the dominant shrub with other species such as silver cholla (*Cylindropuntia echinocarpa*), Nevada ephedra, creosote bush, and bladder sage. It has a >2% absolute cover in the shrub layer with other shrubs having less relative cover. This alliance occurs where the proposed and alternate alignments join at 125th Street, and throughout the alternate alignment. One association was found within this alliance, *Ephedra nevadensis,* which is typified by having a co-occurring percent cover of Nevada ephedra and cheesebush, roughly 5%, and occurs just west of SR-138 and 155th Street East.

Creosote bush scrub (*Larrea tridentata* Shrubland Alliance) Creosote bush is the dominant shrub with other species such as; cheesebush, Nevada ephedra, and waterjacket (*Lycium andersonii*). It exceeds all other shrubs except for cheesebush which cannot have more than twice the cover of creosote bush. This alliance occurs throughout the proposed alignment and within the alternate alignment west of the SR-18/SR-138 split. Three associations were found within this alliance; *Ambrosia salsola, Atriplex polycarpa,* and *Ephedra nevadensis*. The *Ambrosia salsola* association is typified by having higher percent cover, 1-5%, within the alliance and occurs between SR-18 and SR-138 where the split begins. The *Atriplex polycarpa* association is typified by having a co-occurring percent cover, roughly 5%, and occurs between 235th Street and the agricultural field at the east end of the proposed alignment. The *Ephedra nevadensis* association is typified by having a co-occurring percent cover of approximately 5%, and occurs in the western, curving segment of the alternate alignment.

Disturbed creosote bush scrub (*Larrea tridentata* Shrubland Alliance) This alliance is virtually identical to the undisturbed form, but differs in having a higher disturbance level of 25-50% as opposed to 5-25%. This habitat occurs along the north side of a dirt road which ends at 110th Street north of East Avenue Q.

Creosote bush-white burr sage scrub (*Larrea tridentata-Ambrosia dumosa* Shrubland Alliance) Creosote bush and white bur-sage are co-dominants with other species such as cheesebush, Nevada ephedra, and waterjacket. All species need to be $\geq$ 1% absolute cover and more than twice the cover of other species in the shrub layer to be considered this alliance. This alliance occurs throughout both alignments east of 136th Street. Two associations occur in this alliance;

Ericameria cooperi and *Eriogonum fasciculatum*. The *Ericameria cooperi* association is typified by having co-occurring percent cover of approximately 5%, and occurs in the vicinity if SR-18 and Largo Vista Road. The *Eriogonum fasciculatum* association is typified by also having a 5% co-occurring percent cover, and occurs between 141st Street and 185th Street within the alternate alignment.

Fiddleneck field (*Amsinckia tessellata* Herbaceous Alliance) Fiddleneck is seasonally co-dominant with other annual herbs such as oat (*Avena sp.*), brome (*Bromus sp.*), filaree (*Erodium sp.*), and common goldfields (*Lasthenia gracilis*). This species must have a ≥ 10% relative cover in the herb layer. This alliance was observed to always have an association with *Erodium* with which it is co-dominant. This alliance occurs in two locations along the proposed alignment; at the intersection of East Avenue R and Largo Vista Road, and north of the intersection of 110th Street and East Avenue Q.

Fourwing saltbush scrub (*Atriplex canescens* Shrubland Alliance) Fourwing saltbush is the dominant shrub with other species such as white bur-sage, cheesebush, spiny hopsage (*Grayia* spinosa), and creosote bush. It must have a >2% absolute cover and a >50% relative cover in the shrub layer. This alliance occurs in areas adjacent to the intersection of the two alignments and toward the east end of the proposed alignment. No associations were found with this alliance.

Fremont cottonwood forest (*Populus fremontii* Forest Alliance) Fremont cottonwood is the dominant species within the tree layer, primarily mixed with species of willow *(Salix spp.*). It must have a >3% absolute cover and a >50% relative cover in the tree layer. This alliance occurs primarily in Rock Wash between 140th Street and 150th Street, but also in isolated locations in agricultural drainages and holding ponds just east of 150th Street, and surrounding the intersection of 175th Street and East Avenue R. The habitat within Rock Wash was found to have an association with mule fat (*Baccharis salicifolia*) which is typified by having a relatively high percent cover of 1-5% along the eastern margin of the bank.

Joshua tree woodland (*Yucca brevifolia* Forest Alliance) Joshua tree is dominant in the tree layer with other species such as white bur-sage, cheesebush, Nevada ephedra, and creosote bush. It must have an even distribution, and a ≥ 1% cover with any juniper or pine species at less than 1% absolute cover in the tree layer. This alliance occurs adjacent to the intersection of the two alignments, as well as throughout the alternate alignment. Two associations were found with this alliance; *Ephedra nevadensis* and *Larrea tridentata-Ambrosia dumosa-Eriogonum fasciculatum*. The *Ephedra nevadensis* alliance is typified by having a high, nearly 25%, cover with Joshua trees, and occurs between East Avenue R and East Avenue S within the alternate alignment. The *Larrea tridentata-Ambrosia dumosa-Eriogonum fasciculatum* association is typified by exhibiting co-dominance between creosote bush, white bur-sage, and California buckwheat, which each have a percent cover of 5%. This association occurs throughout the Joshua tree woodland within the BSA, but is more heavily favored within the eastern half of the alternate alignment.

Red brome grass grassland (*Bromus rubens* Semi-Natural Herbaceous Stand) Red brome is the dominant in an herb layer that may include some emergent shrubs. It must have a >80% relative cover in the shrub layer. This alliance occurs throughout the proposed alignment and no associations were noted. It should be noted that while The Manual of California Vegetation (Sawyer

et al. 2009) accepts the name *Bromus rubens*; in the Jepson On-line Interchange, the accepted name is listed as *Bromus madritensis* ssp. *rubens*.

Rubber rabbitbrush scrub (*Ericameria nauseosa* Shrubland Alliance) Rubber rabbitbrush is the dominant shrub in the shrub layer with other species such as *Ephedra* sp., *Eriogonum fasciculatum* (California buckwheat), and *Juniperus californica* (California juniper). It must have a ≥2% absolute cover or >25% relative cover in the shrub layer. This alliance occurs throughout the proposed alignment west of 190th Street and no associations were found.

Scale broom scrub (*Lepidospartum squamatum* Shrubland Alliance) Scale broom is the dominant shrub in the shrub layer with other species such as cheesebush and California buckwheat. It must have a >1% cover in alluvial environments. This alliance occurs just west of Rock Creek within the alternate alignment and no associations were found.

White bursage scrub (*Ambrosia dumosa* Shrubland Alliance) white bur-sage is the dominant shrub in the shrub layer with other species such as rayless goldenhead (*Acamptopappus* sphaerocephalus), four-wing saltbush, and creosote bush. This alliance occurs between 165th Street and 175th Street in the alternate alignment and no associations were found.

Disturbed white bursage scrub (*Ambrosia dumosa* Shrubland Alliance) This alliance is virtually identical to the undisturbed form, but differs in having a high enough disturbance that the 50-75% occurrence of bare ground is above the standard 25-50% level, likely as a result of recent clearing. This habitat occurs in between 180th Street and 190th Street within the proposed alignment.

The following are habitats not recognized by the Sawyer, Keeler-Wolf system. The definitions provided were those used while surveying to mark the boundary of other land use types within the BSA.

Agricultural fields Of the non-natural habitat types found along both alignments, agricultural fields are defined as farmland. This habitat occurs at both the east end of the proposed alignment, and just west of Rock Creek in the proposed alignment.

Developed habitat This habitat includes inhabited buildings, paved and unpaved roads with frequent use, such as Avenue R, and occurs throughout both alignments. Some disturbed areas are unpaved roads with little usage and no discernable name, abandoned buildings in some state of decomposition, and areas that have been mowed or cleared recently, all of which occur throughout both alignments.

Vegetated channel A marginally vegetated channel occurs at the west end of Rock Creek within the alternate alignment. While scattered herbaceous vegetation is present, the overall coverage is low in total area, less than 0.1%, and the system appears to have a relatively low function and service.

Unvegetated channel The unvegetated channel occurs in the remainder of Rock Creek as discussed above in the alternate alignment and contains no vegetation.

Chapter 5
Survey Results

No special status plant species were detected within the rare plant survey BSA. Of the 18 species identified during the CNDDB search and the ECORP 2009 report, 11 species were determined to be absent and have no potential to occur based on soil type, hydrology, and/or lack of suitable habitat.

Of the remaining seven species with some potential to occur, one species, Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora*; CRPR 4.2), occurs in cismontane woodland, which is not found within the alignments and the species, therefore, has a very low potential to occur as a result of the lack of habitat, and based on its primary range north of Tehachapi. However, this species cannot be automatically discounted because one record from 1995 exists for a locale near the Valyermo post office (CCH 2011).

The two species with low to moderate potential to occur are discussed below.

Short-Joint Beavertail Cactus. Short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*) is a perennial sub-shrub in the cactus family (Cactaceae), blooming from April to June, and its CRPR is 1B.2. This species occurs in chaparral, joshua tree woodland, mojavean desert scrub, and pinyon and juniper woodland habitats. It ranges in two populations in the Mojave National Preserve in San Bernardino County and around the north side of the San Bernardino Mountains, San Gabriel Mountains, and the north east side of the Santa Monica Mountains and occurs from 425 to 1800 meters amsl (CNPS 2011).

While the more common taxon, *Opuntia basilaris* var. *basilaris*, and Opuntia habitat in general, do occur within the BSA, this rare taxon is most commonly found within and near the three above-named mountain ranges. Although the alternate alignment provides more likely potential for occurrence, the distance of the BSA from the mountains, and its snow melt, make this taxon somewhat unlikely to occur.

Peirson's Lupine. Peirson's lupine (*Lupinus peirsonii*) is a perennial herb in the legume family (Fabaceae), blooming from April to June, and its CRPR is 1B.3. This species occurs in gravelly or rocky soils in joshua tree woodland, lower and upper montane coniferous forest, and pinyon and juniper woodland habitats. Its range is restricted to the the San Gabriel Mountains and occurs from 1,000 to 2,500 amsl (CNPS 2011).

While the BSA supports the soil and habitat requirements for this species, it has not been found outside of its known range within the San Gabriel Mountains since its initial description in 1928 (CNPS 2011) and, therefore, is likely not to occur within the BSA.

The remaining four species were either found on the previous survey in 2009, or have a high potential to occur in the BSA and are discussed below.

Alkali Mariposa Lily. Alkali mariposa lily (*Calochortus striatus*) is a perennial bulbiferous herb in the lily family (Liliaceae), blooming from April to June, and its CRPR is 1B.2. This species occurs in alkaline and mesic soils in shadscale scrub, chaparral, wetland-riparian, and meadow habitats. It

ranges from near Palm Springs in Riverside County to Delano in Kern County and occurs from 70-1,595 meters amsl (CNPS 2011).

Based on this species' unique soil requirements, potential habitat exists within the proposed alignment, in the east end of the BSA, approximately 0.33 mile northeast of the intersection of East Avenue R and 230th Street (Attachment 3). However, surveys in the area where alkali soils occur were negative in detecting alkali mariposa lily. Reference population surveys conducted in 2011 detected blooming alkali lily flowers during the same survey timeline as was conducted within the BSA. Based on this information it is likely that alkali mariposa lily does not occur within the current BSA.

White Pygmy Poppy. White pygmy poppy (*Canbya candida*) is an annual herb in the poppy family (Papaveraceae), blooming from March to June, and its CRPR is 4.2. This species occurs in gravelly, sandy and granitic soils in joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats. It ranges from Sequoia National Park in Inyo County to the San Gabriel Mountains in Los Angeles and San Bernardino Counties and occurs from 600 to 1,460 amsl (CNPS 2011).

Based on this species' soil and habitat requirements, high potential for this species to occur exists throughout the BSA in areas outside of developed or agricultural habitats. This species was previously identified (ECORP 2009) with in the BSA south of East Avenue P-8 and 0.25 mile east of East 70th Street (Attachment 3, Sheet 9). Surveys for this area of the BSA began at the end of April, and it is possible that areas where this species occurs were not surveyed until after the plant was fully senesced. Reference populations were also assessed during the same survey timeline as the proposed BSA and no plants were detected at multiple reference population locations. It is our recommendation that future surveys be conducted to further determine presence/absence for this species.

Crowned Muilla. Crowned muilla (*Muilla coronata*) is a perennial bulbiferous herb in the brodiaea family (Themidaceae), blooming from March to May, and its CRPR is 4.2. This species occurs in most soils found in chenopod scrub, joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats. It ranges from Bishop in Inyo County to Yucaipa in San Bernardino County and occurs from 765 to 1,960 meters amsl (CNPS 2011).

Based on the soil and habitat requirements for this species, high potential for crowned muilla to occur exists throughout the BSA, outside of developed or agricultural areas. This species was previously found at three sites within the BSA (ECORP 2009). These sites are situated within a 0.25 mile radius of the intersection of East Avenue P-8 and East 70th Street, and immediately south of Avenue P-8, approximately half way between East 40th and 50th street (Attachment 3, Sheet 9). The current survey effort did not detect crowned muilla within the BSA. It is our recommendation that future surveys be conducted to further determine the population area for this species.

Parish's Popcornflower. Parish's popcornflower (*Plagiobothrys parishii*) is an annual herb in the borage family (Boraginaceae), blooms from March to November, and its CRPR is 1B.1. This species occurs in alkaline and mesic soils in Great Basin scrub and joshua tree woodland habitats. It ranges from the White Mountain range in Mono County to the Lucerne Valley in San Bernardino County and occurs from 750 to 1,400 amsl (CNPS 2011).

Based on this species' unique soil requirements, high potential to occur exists within the proposed alignment at the east end of the BSA , roughly 0.33 mile northeast of the intersection of East Avenue R and 230th Street (Attachment 3). It is our recommendation that future surveys be conducted to further determine presence/absence for this species.

A list of all vascular plant species identified during the surveys can be found in Attachment 1. The naming convention for non-listed species follows the soon to be published Jepson Manual 2nd Edition which is currently on-line (Jepson 2) 2011. The convention for listed species is to follow the CNPS on-line inventory (CNPS 2011).

Chapter 6
Personnel

The following people contributed in the preparation of this report.

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Chapter 7
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Attachment 1

Plant Species Detected

Attachment 1. Plant Species Detected

Scientific Name	Common Name	Special Status
GYMNOSPERMS		
Cupressaceae - Cypress family		
Juniperus californica	California juniper	
Ephedraceae - Ephedra family		
Ephedra nevadensis	Nevada ephedra	
Ephedra viridis	Green ephedra	
EUDICOTS		
Apiaceae - Carrot family		
Lomatium mohavense	Mojave desertparsley	
Apocynaceae - Dogbane family		
Asclepias erosa	Desert milkweed	
Asteraceae - Sunflower family		
Acamptopappus sphaerocephalus var. sphaeroce	Rayless goldenhead	
Amblyopappus pusillus	Dwarf coastweed	
Ambrosia acanthicarpa	Annual bur-sage	
Ambrosia dumosa	White bur-sage	
Ambrosia psilostachya	Western ragweed	
Ambrosia salsola	Common burrobrush, cheesebush	
Anisocoma acaulis	Scalebud	
Artemisia dracunculus	Tarragon	
Artemisia ludoviciana	Silver wormwood	
Artemisia tridentata	Big sagebrush	
Baccharis salicifolia ssp. salicifolia	Mule fat	
* *Centaurea melitensis*	Tocalote	
* *Centaurea solstitialis*	Yellow star-thistle	
Chaenactis fremontii	Fremont pincushion	
Chaenactis xantiana	Fleshy pincushion	
Corethrogyne filaginifolia	Common sand aster	
Encelia actoni	Acton encelia	
Encelia virginensis	Virgin River brittlebush	
Ericameria cooperi var. cooperi	Cooper's goldenbush	
Ericameria nauseosa	Rubber rabbitbrush	
Ericameria pinifolia	Pine-bush	
Erigeron canadensis	Horseweed	
Eriophyllum pringlei	Pringle's woolly sunflower	
Eriophyllum wallacei	Wallace's woolly daisy	

	Scientific Name	Common Name	Special Status
	Glyptopleura marginata	Carveseed	
	Gutierrezia californica	California matchweed	
	Gutierrezia microcephala	Sticky snakeweed	
	Heterotheca grandiflora	Telegraph weed	
*	*Lactuca serriola*	Prickly lettuce	
	Lasthenia gracilis	Common goldfields	
	Lepidospartum squamatum	California broomsage	
	Leptosyne bigelovii	Bigelow's tickseed	
	Lessingia glandulifera var. glandulifera	Valley lessingia	
	Logfia filaginoides	California cottonrose	
	Malacothrix glabrata	Desert dandelion	
	Nicolletia occidentalis	Hole-in-the-sand plant	
	Palafoxia arida var. arida	Desert palafox	
	Psathyrotes ramosissima	Turtleback	
	Senecio flaccidus var. douglasii	Douglas' threadleaf ragwort	
*	*Sonchus asper ssp. asper*	Prickly sow thistle	
	Stephanomeria exigua ssp. exigua	Small wire-lettuce	
	Stephanomeria pauciflora	Wire-lettuce	
	Tetradymia axillaris var. longispina	Longspine horsebrush	
	Tetradymia spinosa	Shortspine horsebrush	
	Uropappus lindleyi	Silverpuffs	
	Xylorhiza tortifolia var. tortifolia	Mojave-aster	
	Boraginaceae - Borage family		
	Amsinckia tessellata	Bristly fiddleneck	
	Cryptantha circumscissa	Cushion cryptantha	
	Cryptantha decipiens	Gravel cryptantha	
	Cryptantha micrantha var. micrantha	Red-Root cryptantha	
	Cryptantha pterocarya var. pterocarya	Winged-nut cryptantha	
	Cryptantha recurvata	Curved-nut cryptantha	
	Eriodictyon trichocalyx	Hairy yerba santa	
	Heliotropium curassavicum var. oculatum	Seaside heliotrope, alkali heliotrope	
	Nama demissum var. demissum	Purplemat	
	Pectocarya penicillata	Northern pectocarya	
	Pectocarya platycarpa	Wide-toothed pectocarya	
	Pectocarya setosa	Round-nut pectocarya	
	Phacelia distans	Distant phacelia	
	Phacelia tanacetifolia	Lacy phacelia	
	Plagiobothrys acanthocarpus	Adobe popcornflower	

Scientific Name	Common Name	Special Status
Tiquilia nuttallii	Annual tiquilia	
Tiquilia plicata	Fan-leaved tiquilia	
Brassicaceae - Mustard family		
* *Brassica tournefortii*	Asian mustard	
* *Capsella bursa-pastoris*	Shepherd's purse	
Lepidium flavum	Yellow pepperweed	
Lepidium fremontii	Desert pepperweed	
* *Lepidium latifolium*	Perennial pepperweed	
* *Sisymbrium altissimum*	Tumble mustard	
Stanleya pinnata var. pinnata	Desert princesplume	
Tropidocarpum gracile	Dobie pod	
Cactaceae - Cactus family		
Cylindropuntia echinocarpa	Silver or golden cholla	
Opuntia basilaris var. basilaris	Beavertail	
Chenopodiaceae - Goosefoot family		
Atriplex canescens var. linearis	Slenderleaf saltbush	
Atriplex polycarpa	Allscale saltbush	
* *Chenopodium album*	Lamb's quarters	
Grayia spinosa	Spiny hopsage	
Krascheninnikovia lanata	Winter fat	
* *Salsola tragus*	Russian thistle, tumbleweed	
Convolvulaceae - Morning-glory family		
Cuscuta sp.	Dodder	
Cucurbitaceae - Gourd family		
Cucurbita palmata	Coyote melon	
Marah fabacea	California man-root	
Euphorbiaceae - Spurge family		
Chamaesyce albomarginata	Rattlesnake weed	
Chamaesyce polycarpa	Smallseed sandmat	
Croton californicus	California croton	
Croton setigerus	Turkey-Mullein	
Fabaceae - Legume family		
Astragalus coccineus	Scarlet milkvetch	
Astragalus didymocarpus var. didymocarpus	Dwarf white milkvetch	
Astragalus lentiginosus var. fremontii	Fremont's milkvetch	
Lupinus bicolor	Miniature lupine	
Lupinus odoratus	Mojave lupine	
Lupinus sp.	Lupine	

Scientific Name	Common Name	Special Status
* *Melilotus indicus*	Sourclover	
Trifolium sp.	Clover	
Geraniaceae - Geranium family		
* *Erodium cicutarium*	Redstem filaree	
Lamiaceae - Mint family		
Monardella exilis	Desert monardella	
Salvia dorrii var. dorrii	Blue sage	
Scutellaria mexicana	Bladder-sage	
Trichostema lanceolatum	Vinegar weed	
Loasaceae - Loasa family		
Mentzelia albicaulis	Whitestem blazing star	
Petalonyx thurberi ssp. thurberi	Thurber's sandpaper plant	
Malvaceae - Mallow family		
Eremalche exilis	White mallow	
Montiaceae - Miner's Lettuce family		
Calyptridium monandrum	Common pussypaws	
Nyctaginaceae - Four O'clock family		
Abronia villosa var. villosa	Desert sand verbena	
Mirabilis laevis var. villosa	Wishbone-bush	
Onagraceae - Evening Primrose family		
Camissonia campestris ssp. campestris	Mojave suncup	
Chylismia claviformis	Browneyes	
Eremothera boothii ssp. desertorum	Desert suncup	
Oenothera deltoides	Devil's lantern, lion-in-a-cage, basket eveni	
Oenothera primiveris ssp. bufonis	Desert evening primrose	
Orobanchaceae - Broom-rape family		
Castilleja exserta	Purple owl's-clover	
Orobanche sp.	Broomrape	
Papaveraceae - Poppy family		
Eschscholzia minutiflora	Pygmy poppy	
Phrymaceae - Lopseed family		
Mimulus fremontii var. fremontii	Onesided monkeyflower	
Polemoniaceae - Phlox family		
Gilia sp.	Gilia	
Leptosiphon aureus ssp. aureus	Golden linanthus	
Linanthus parryae	Sandblossoms	
Loeseliastrum matthewsii	Desert calico	
Polygonaceae - Buckwheat family		

Scientific Name	Common Name	Special Status
Centrostegia thurberi	Red triangles	
Chorizanthe brevicornu var. brevicornu	Brittle spineflower	
Chorizanthe watsonii	Watson's spineflower	
Eriogonum brachyanthum	Short-flower wild buckwheat	
Eriogonum davidsonii	Davidson's wild buckwheat	
Eriogonum deflexum var. deflexum	Flat-topped skeleton weed	
Eriogonum fasciculatum var. polifolium	Mojave desert California buckwheat	
Eriogonum gracillimum	Rose-and-white wild buckwheat	
Eriogonum maculatum	Spotted wild buckwheat	
Eriogonum mohavense	Western Mojave wild buckwheat	
Eriogonum nudum var. pauciflorum	Little-flower wild buckwheat	
Eriogonum plumatella	Yucca wild buckwheat	
Eriogonum pusillum	Yellow turbans	
Eriogonum sp.	Buckwheat	
Rumex hymenosepalus	Canaigre, wild-rhubarb	
Ranunculaceae - Buttercup family		
Delphinium parishii	Desert larkspur	
Rosaceae - Rose family		
Purshia tridentata var. glandulosa	Antelope bush	
Salicaceae - Willow family		
Populus fremontii ssp. fremontii	Fremont cottonwood	
Salix exigua	Narrowleaf willow	
Salix laevigata	Red willow	
Salix lasiolepis	Arroyo willow	
Solanaceae - Nightshade family		
Datura wrightii	Sacred thorn-apple	
Lycium andersonii	Water jacket	
Lycium cooperi	Peach thorn	
Tamaricaceae - Tamarisk family		
* *Tamarix ramosissima*	Saltcedar	
Ulmaceae - Elm family		
* *Ulmus parvifolia*	Chinese elm, lacebark elm	
Zygophyllaceae - Caltrop family		
Larrea tridentata	Creosote bush	
* *Tribulus terrestris*	Puncturevine	
MONOCOTS		
Agavaceae - Century Plant family		
Hesperoyucca whipplei	Chaparral yucca	

Scientific Name	Common Name	Special Status
Yucca brevifolia	Joshua tree	
Alliaceae - Onion or Garlic family		
Allium fimbriatum	Fringed onion	
Cyperaceae - Sedge family		
Carex sp.	Sedge	
Eleocharis sp.	Spikerush	
Liliaceae - Lily family		
Calochortus kennedyi var. kennedyi	Desert mariposa lily	
Melanthiaceae - False-Hellebore family		
Toxicoscordion brevibracteatum	Desert deathcamas	
Poaceae - Grass family		
Bromus berteroanus	Chilean chess	
* *Bromus diandrus*	Ripgut grass	
* *Bromus hordeaceus*	Soft chess	
* *Bromus madritensis ssp. rubens*	Red brome	
Bromus sp.	Brome	
* *Bromus tectorum*	Cheat grass, downy chess	
* *Cynodon dactylon*	Bermuda grass	
Elymus elymoides var. elymoides	Squirreltail	
* *Festuca myuros*	Rattail sixweeks grass	
Festuca octoflora	Sixweeks grass	
* *Festuca perennis*	Rye grass	
* *Hordeum murinum ssp. glaucum*	Smooth barley	
Melica imperfecta	Little California melica	
* *Schismus barbatus*	Common mediterranean grass	
Stipa hymenoides	Sand rice grass	
Stipa speciosa	Desert needle grass	
* *Triticum aestivum*	Common wheat	
Themidaceae - Brodiaea family		
Dichelostemma capitatum ssp. capitatum	Blue dicks	
Typhaceae - Cattail family		
Typha domingensis	Southern cattail	

Scientific Name	Common Name	Special Status

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California

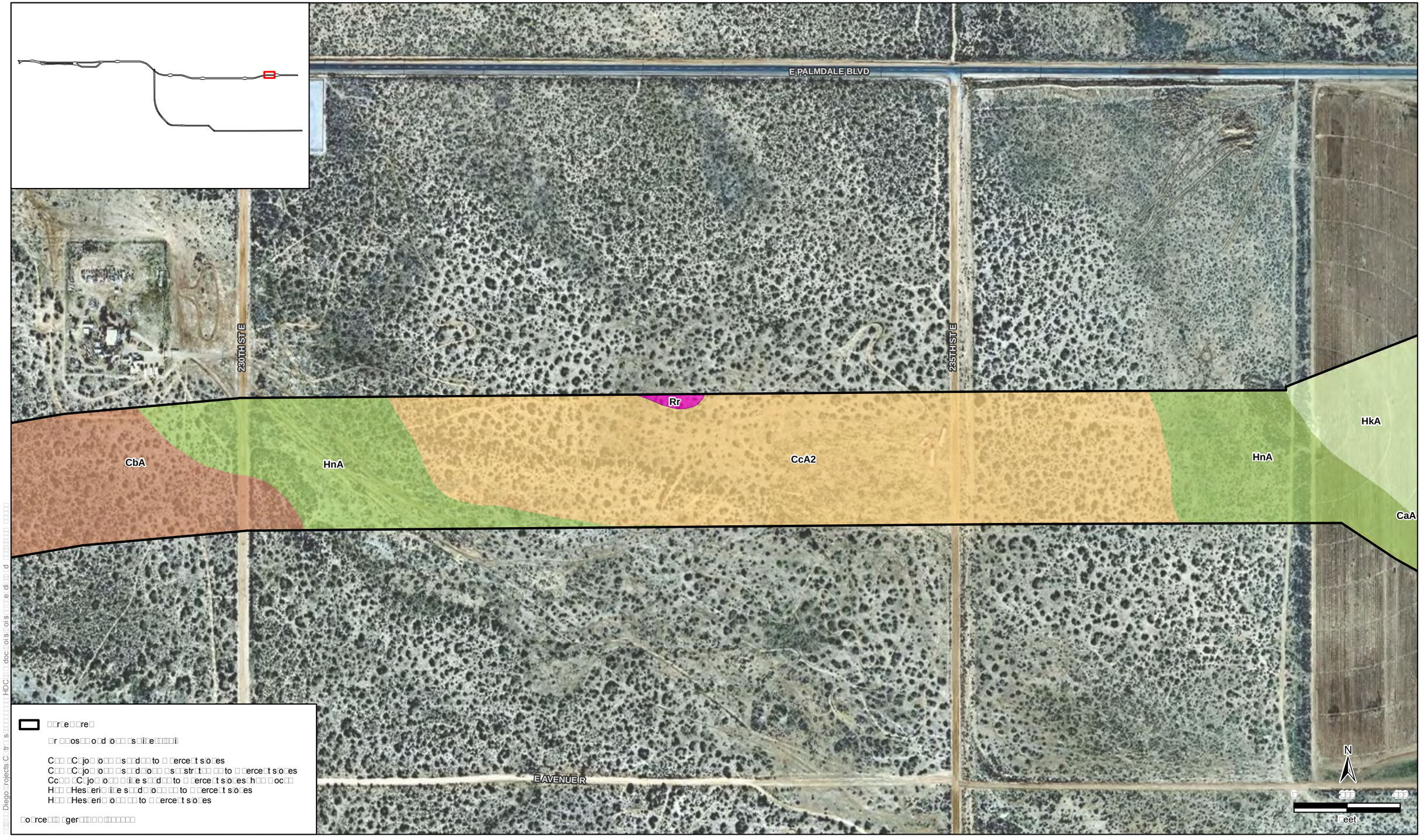
Attachment 2

Special Status Species with Potential to Occur

Scientific and Common Name	Status	Habitat	Elevation (meters)	Potential to Occur in Survey Area	Occurrence within Survey Area
Astragalus lentiginosus var. *antonius* San Antonio Milk-Vetch	1B.3	Lower montane coniferous forest | Upper montane coniferous forest	1400-2600	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Astragalus leucolobus Big Bear Valley Woollypod	1B.2	Lower montane coniferous forest | Pavement plain | Pinon and juniper woodlands | Upper montane coniferous forest	1450-2900	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Calochortus palmeri var. *palmeri* Palmer's Mariposa Lily	1B.2	Chaparral | Lower montane coniferous forest | Meadow and seep	1200-2200	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Calochortus striatus Alkali Mariposa Lily	1B.2	Chaparral | Chenopod scrub | Desert wash | Meadow and seep | Mojavean desert scrub | Wetland	800-1400	High: Habitat highly suitable in some areas based on alkali-soils	not found
Calystegia peirsonii Peirson's Morning-Glory	4.2	Chaparral | Chenopod scrub | Cismontane woodland | Coastal scrub | Lower montane coniferous forest	1000-1500	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Canbya candida White Pygmy Poppy	4.2	Joshua tree woodland | Mojavean desert scrub	600-1350	Present: Found in 2009 ECORP survey	Found Previously
Clarkia xantiana ssp. *parviflora* Kern Canyon Clarkia	4.2	Cismontane woodland	1000-1500	Low: Habitat seemingly unsuitable based on lack of Cismontane woodland, but isolated location known near Valyermo	not found
Linanthus concinnus San Gabriel Linanthus	1B.2	Lower montane coniferous forest | Upper montane coniferous forest	1700-2800	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Lupinus peirsonii Peirson's Lupine	1B.3	Joshua tree woodland | Pinon and juniper woodlands | Upper montane coniferous forest	1000-2000	Moderate: Habitat suitable at alternate alignment, however distance from known locations in San Gabriel Mts. makes this species not likely to occur	not found
Malacothamnus davidsonii Davidson's Bush-Mallow	1B.2	Chaparral | Coastal scrub | Riparian woodland	500-700	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Muhlenbergia californica California Muhly	4.3	Chaparral | Coastal scrub | Lower montane coniferous forest | Meadow and seep	100-2000	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Muilla coronata Crowned Muilla	4.2	Chenopod scrub | Joshua tree woodland | Mojavean desert scrub | Pinon and juniper woodlands	1000-1600	Present: Found in 2009 ECORP survey	Found Previously
Nemacladus secundiflorus var. *robbinsii* Robbins' Nemacladus	1B.2	Chaparral | Valley and foothill grassland	350-1700	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Opuntia basilaris var. *brachyclada* Short-Joint Beavertail Cactus	1B.2	Chaparral | Joshua tree woodland | Mojavean desert scrub | Pinon and juniper woodlands | Riparian woodland	1200-1800	Moderate: Habitat suitable however distance from known locations in San Gabriel Mts. makes this species not likely to occur.	not found
Orobanche valida ssp. *valida* Rock Creek Broomrape	1B.2	Chaparral | Pinon and juniper woodlands	1250-2000	None: Habitat technically occurs in periphery of survey area with Juniper. However, the species only host plant Fremont's silk tassel (Garrya fremontii) does not occur in or near the BSA (Jepson 2)	not found
Plagiobothrys parishii Parish's Popcornflower	1B.1	Great Basin scrub | Joshua tree woodland	750-2210	High: Habitat highly suitable and species has been found in Lake Los Angeles and Apple Valley	not found
Symphyotrichum greatae Greata's Aster	1B.3	Chaparral | Cismontane woodland	300-2000	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found
Viola pinetorum ssp. *grisea* Grey-Leaved Violet	1B.3	Subalpine coniferous forest | Upper montane coniferous forest	1980-3700	None: Habitat unsuitable based on soil composition and lack of moisture. Species primarily known from San Gabriel Mountains	not found

Attachment 3

Soils Maps



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Soils Map
Caltrans District 7 Rare Plants Survey

Attachment 4

Vegetation Maps

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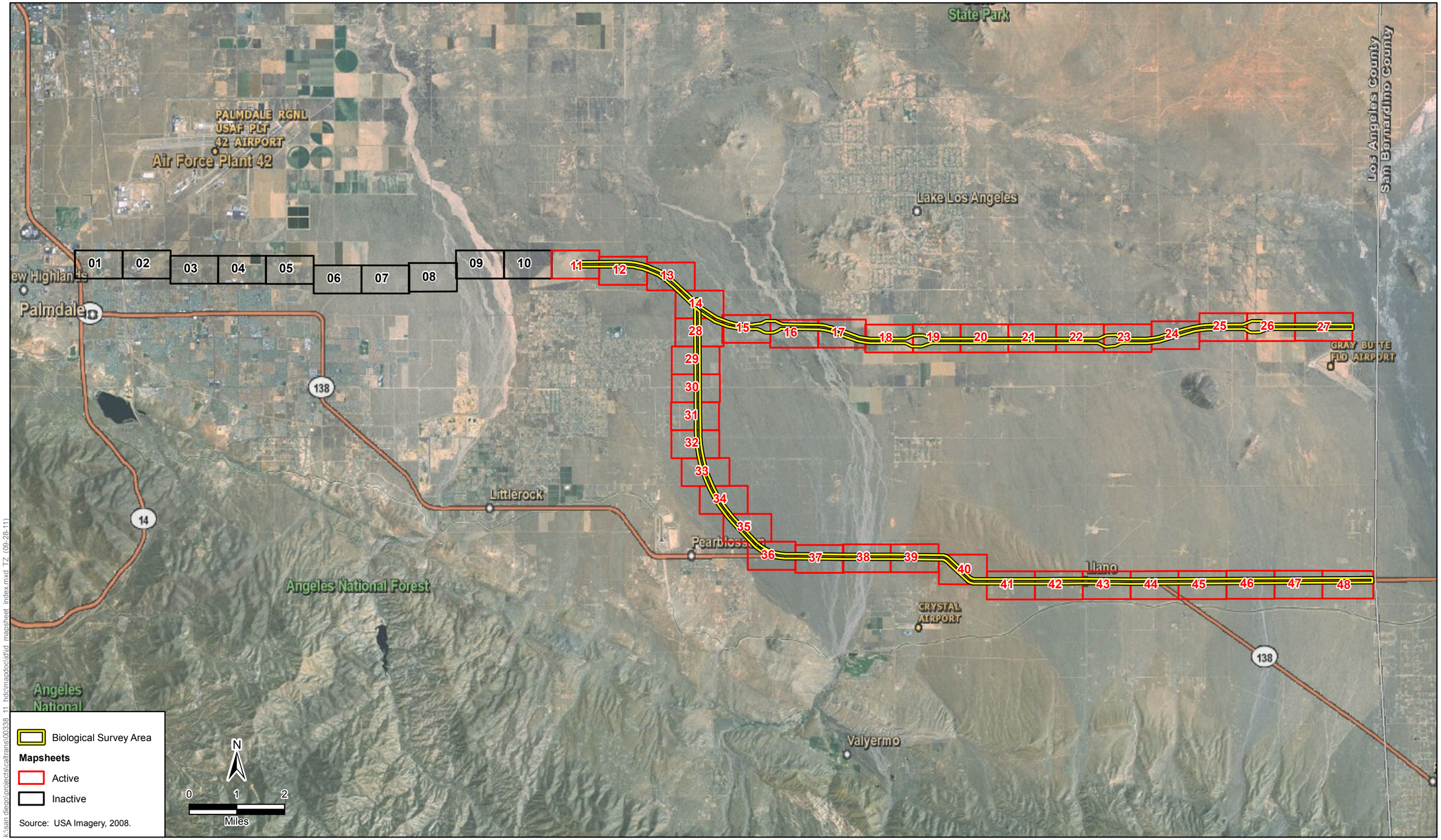
Mapsheet Legend
Vegetation Communities
Caltrans District 7 High Desert Corridor



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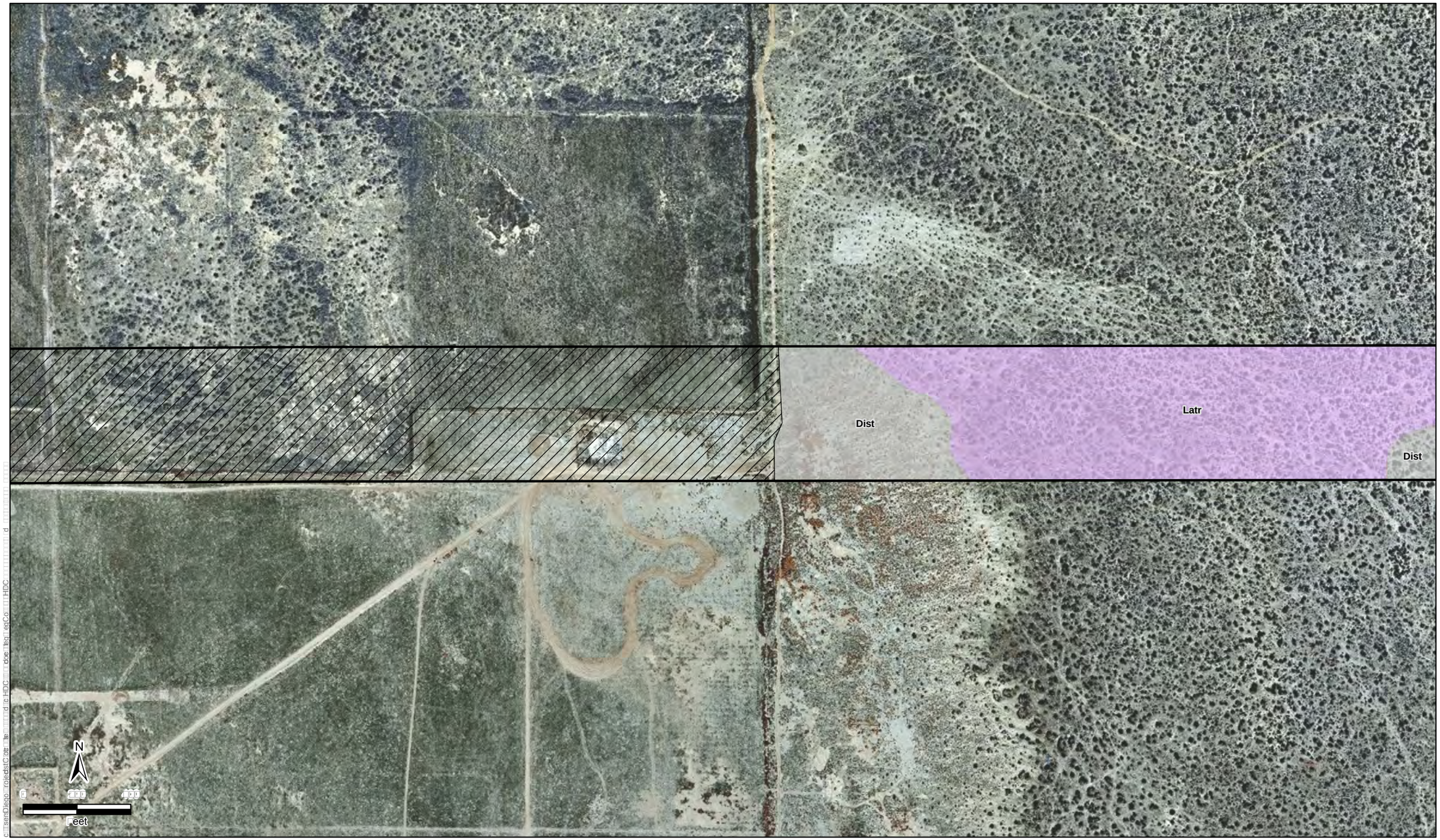

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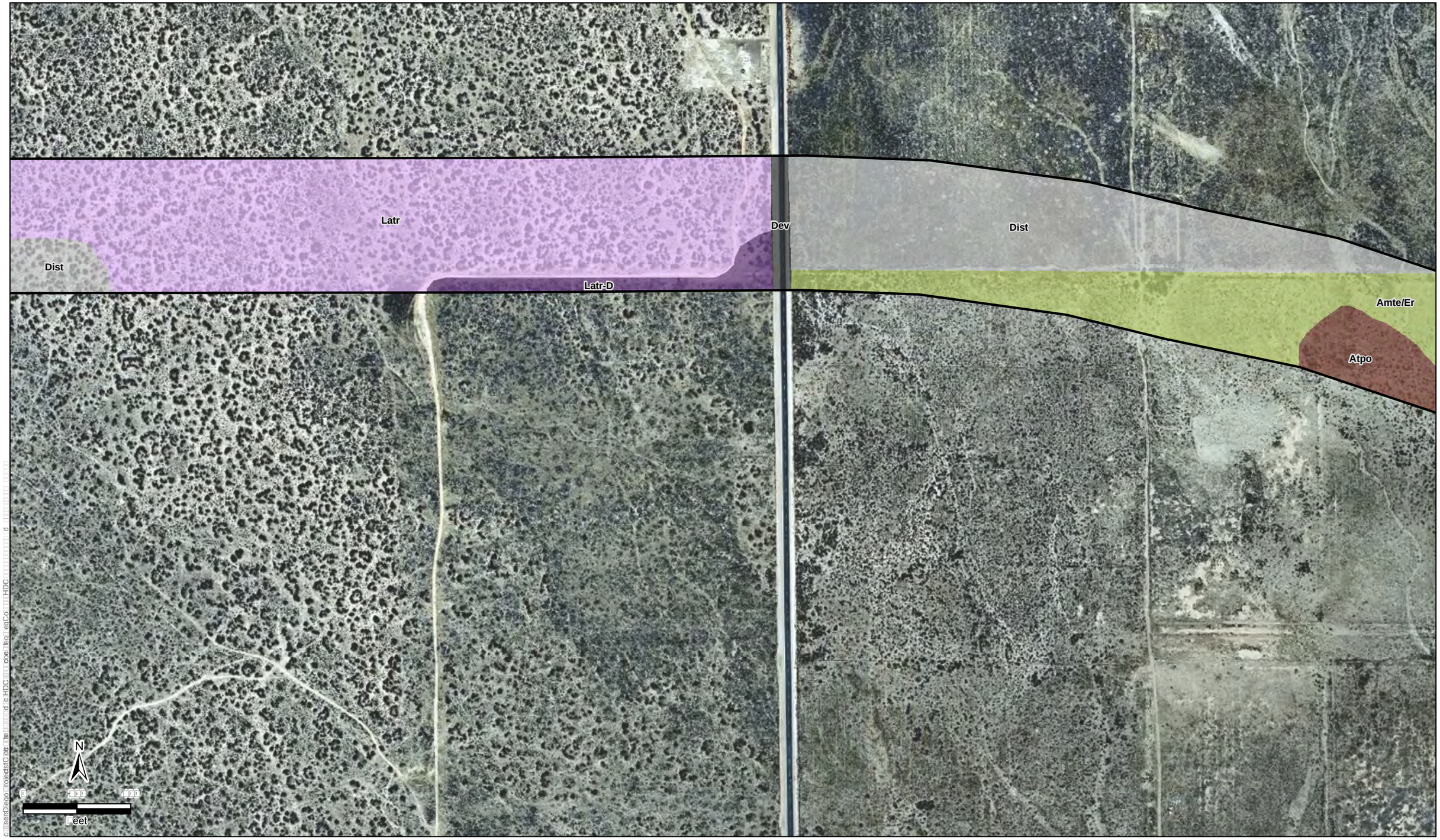
Caltrans High Desert Corridor Preliminary Jurisdictional Delineation



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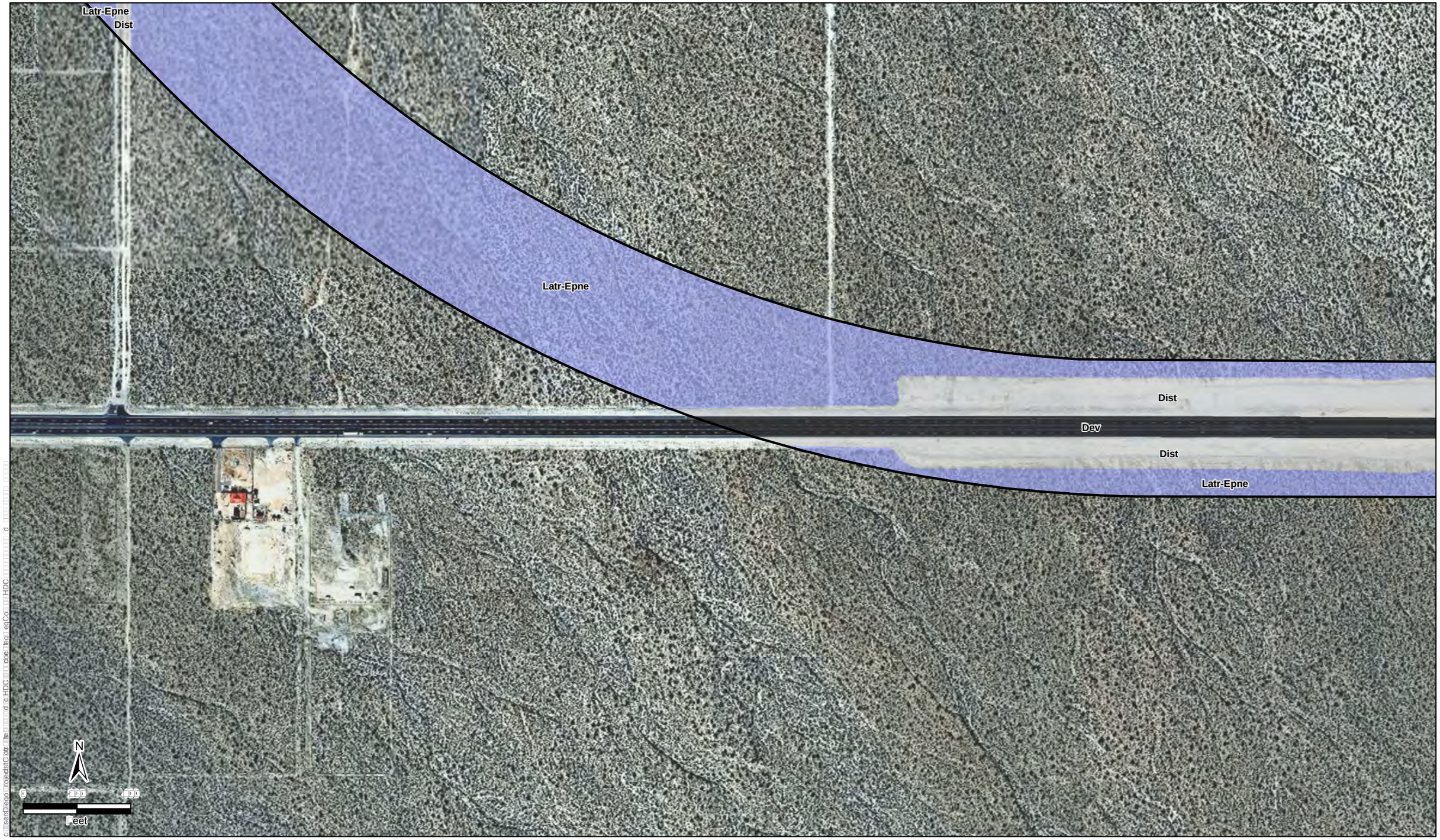

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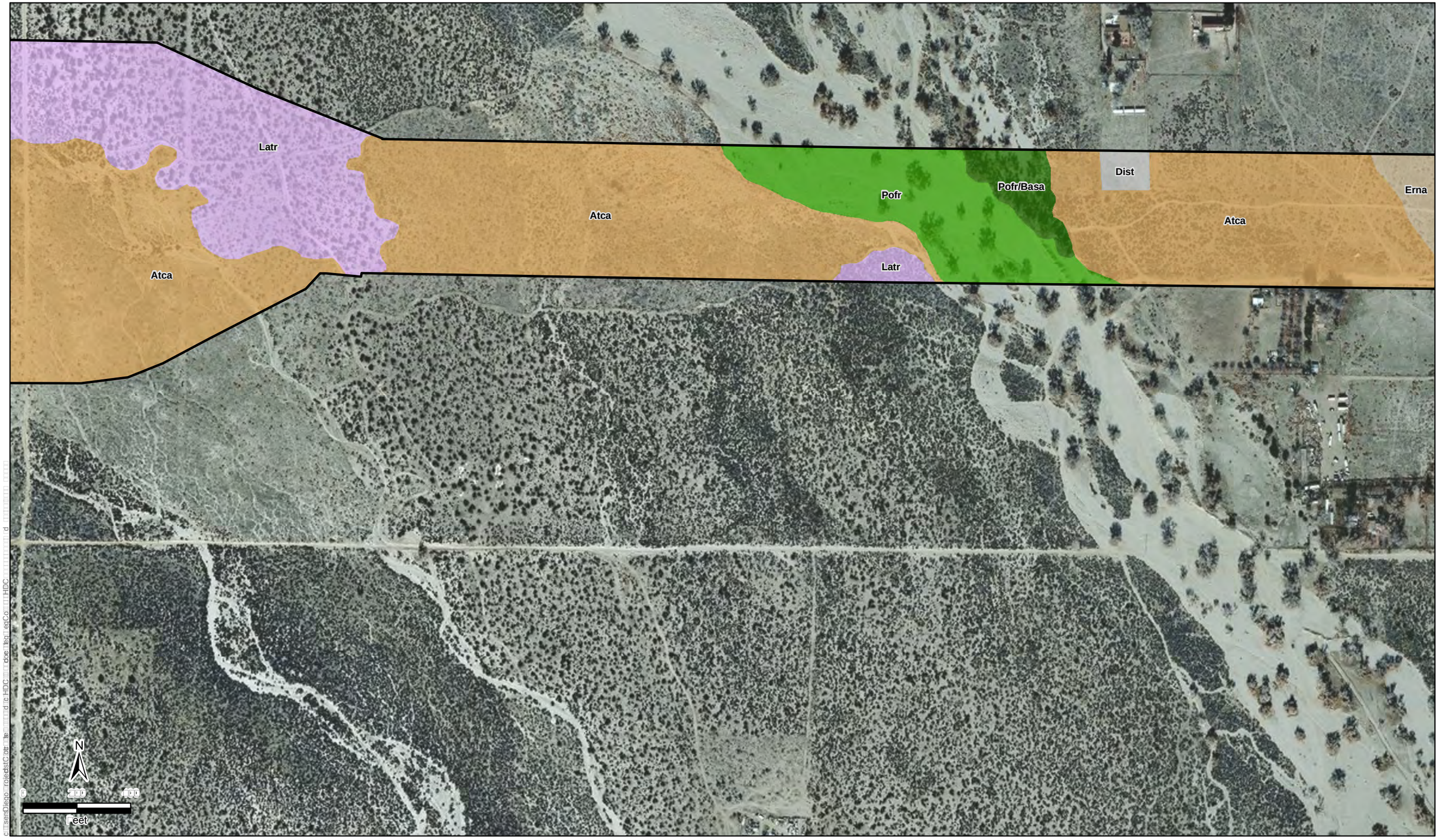

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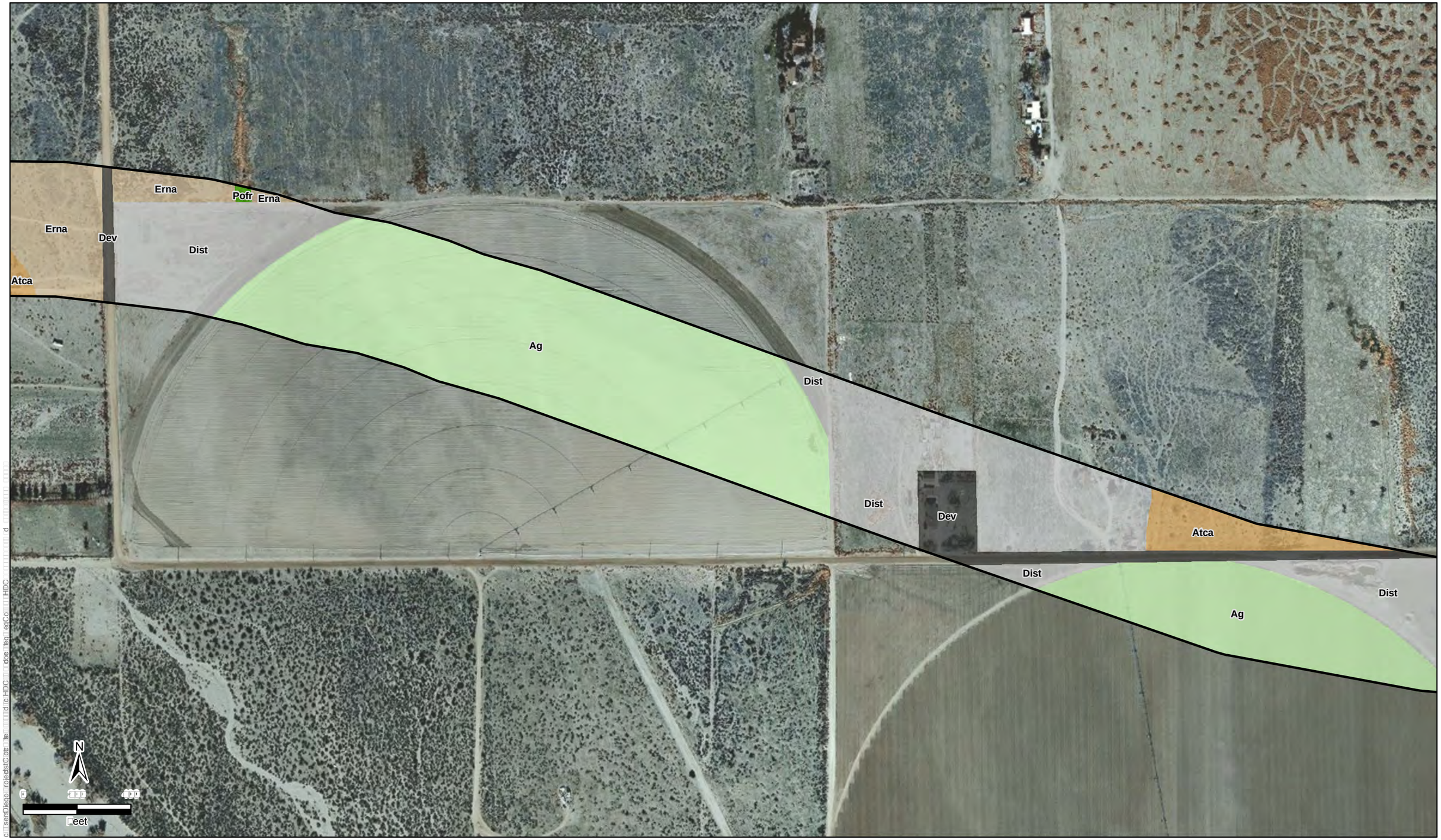

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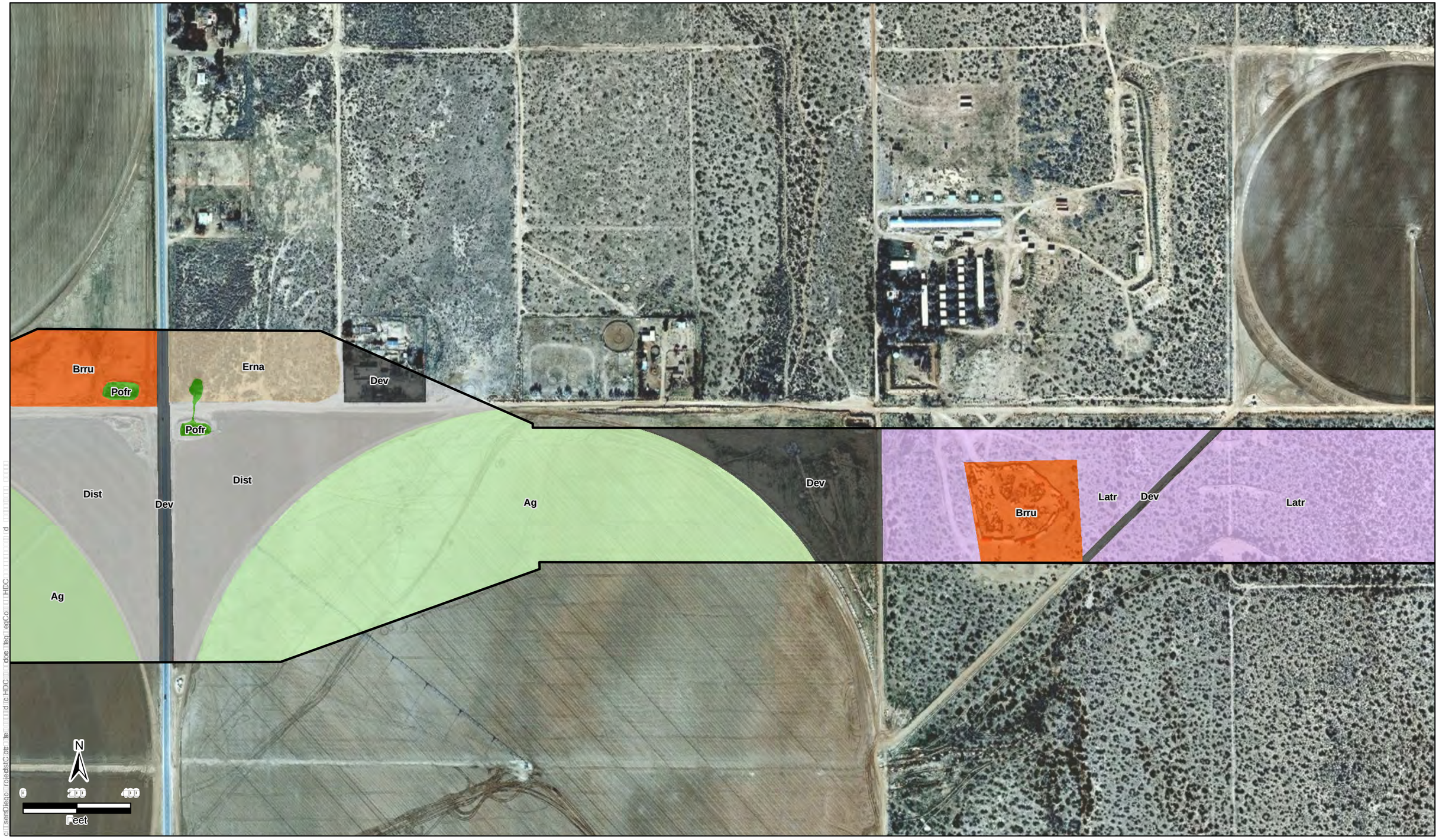

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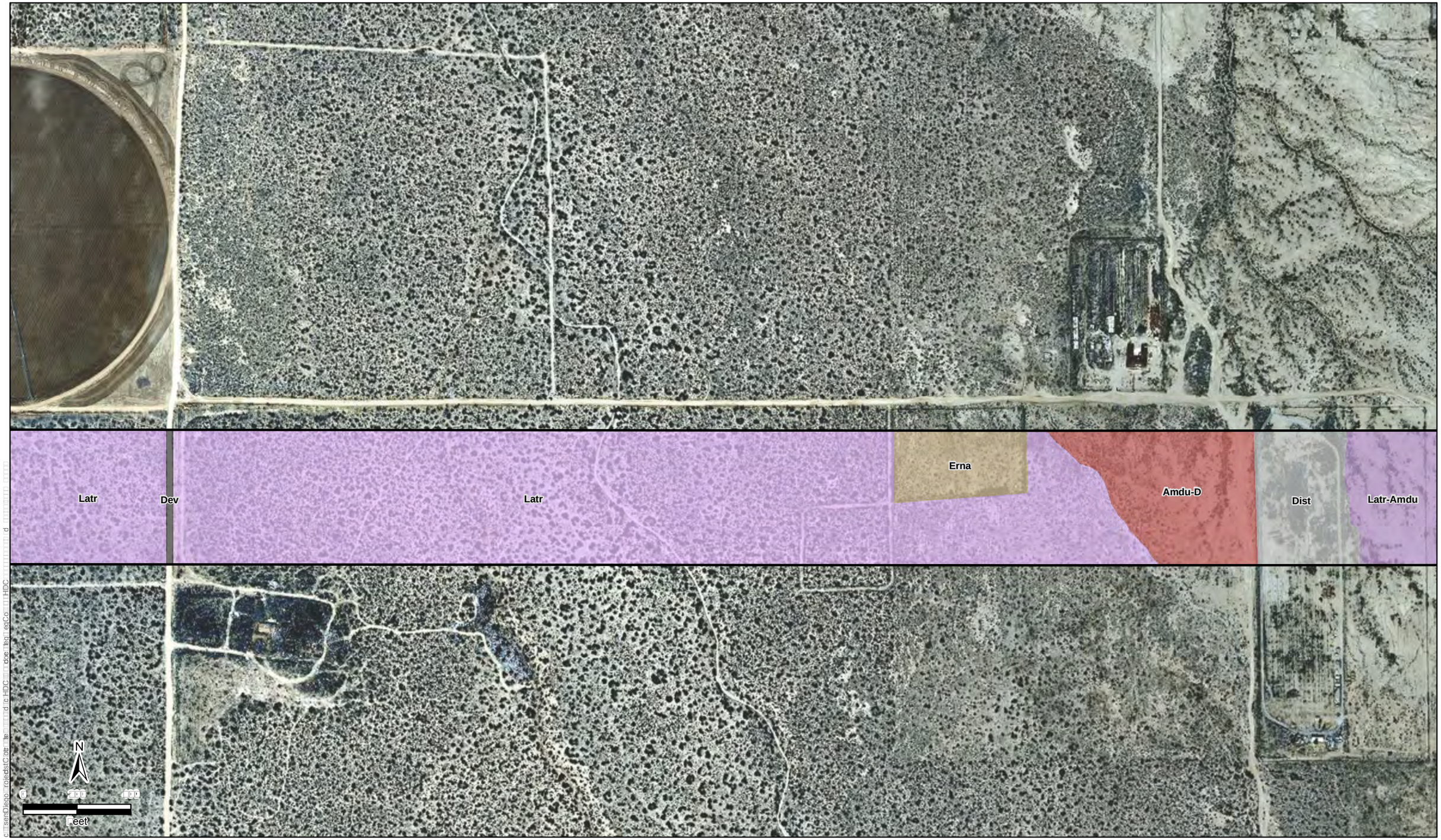

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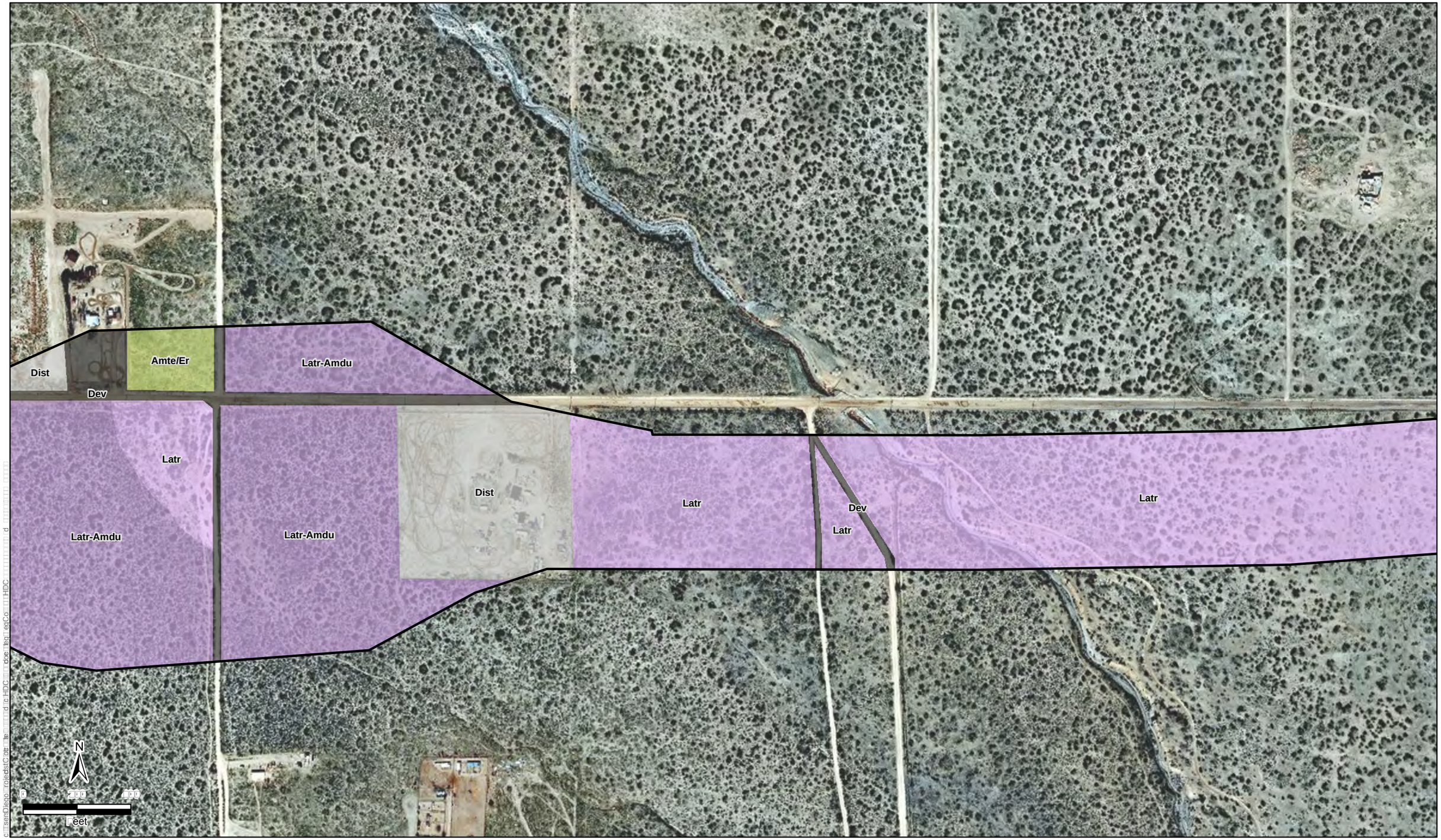

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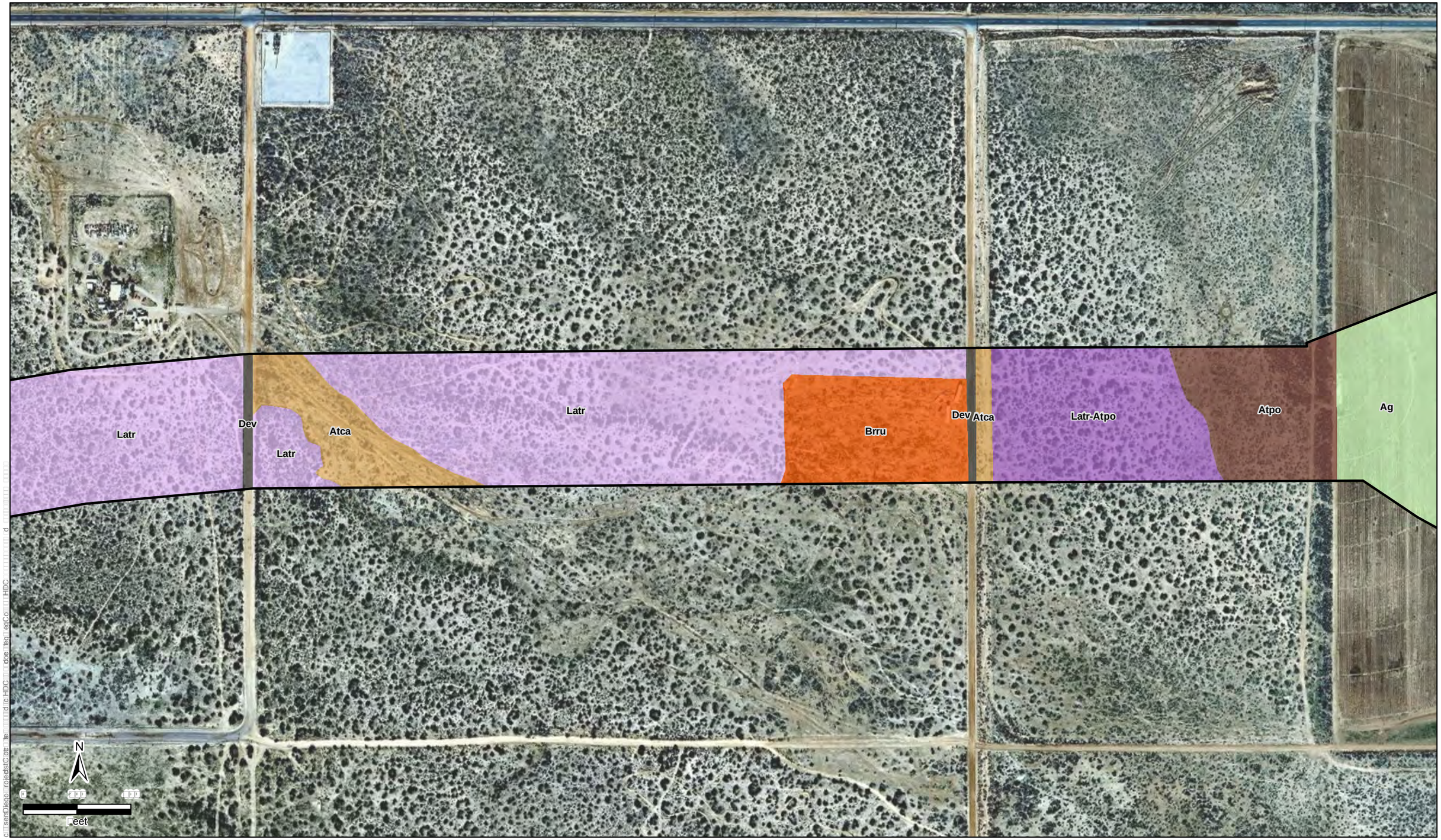

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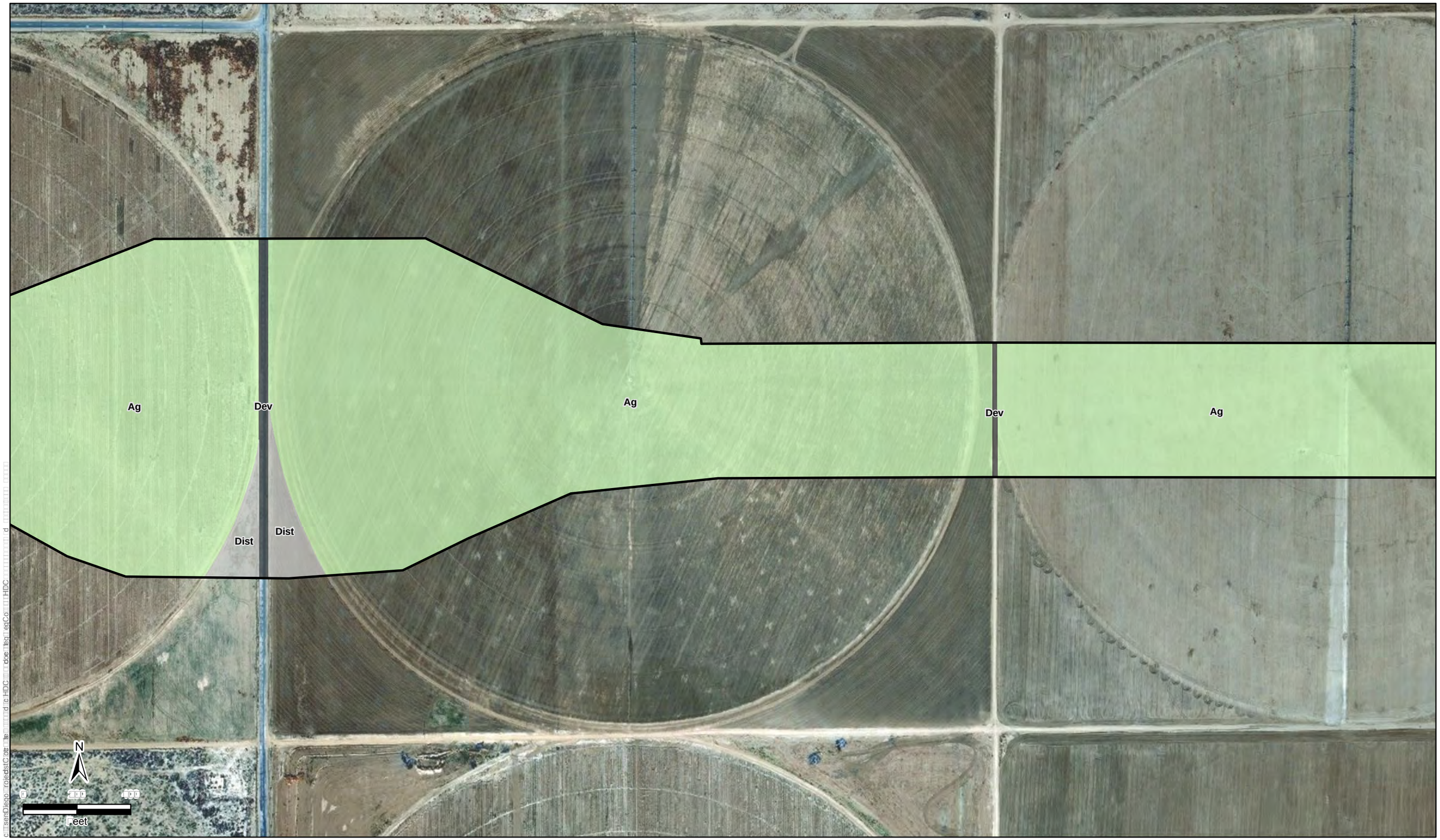

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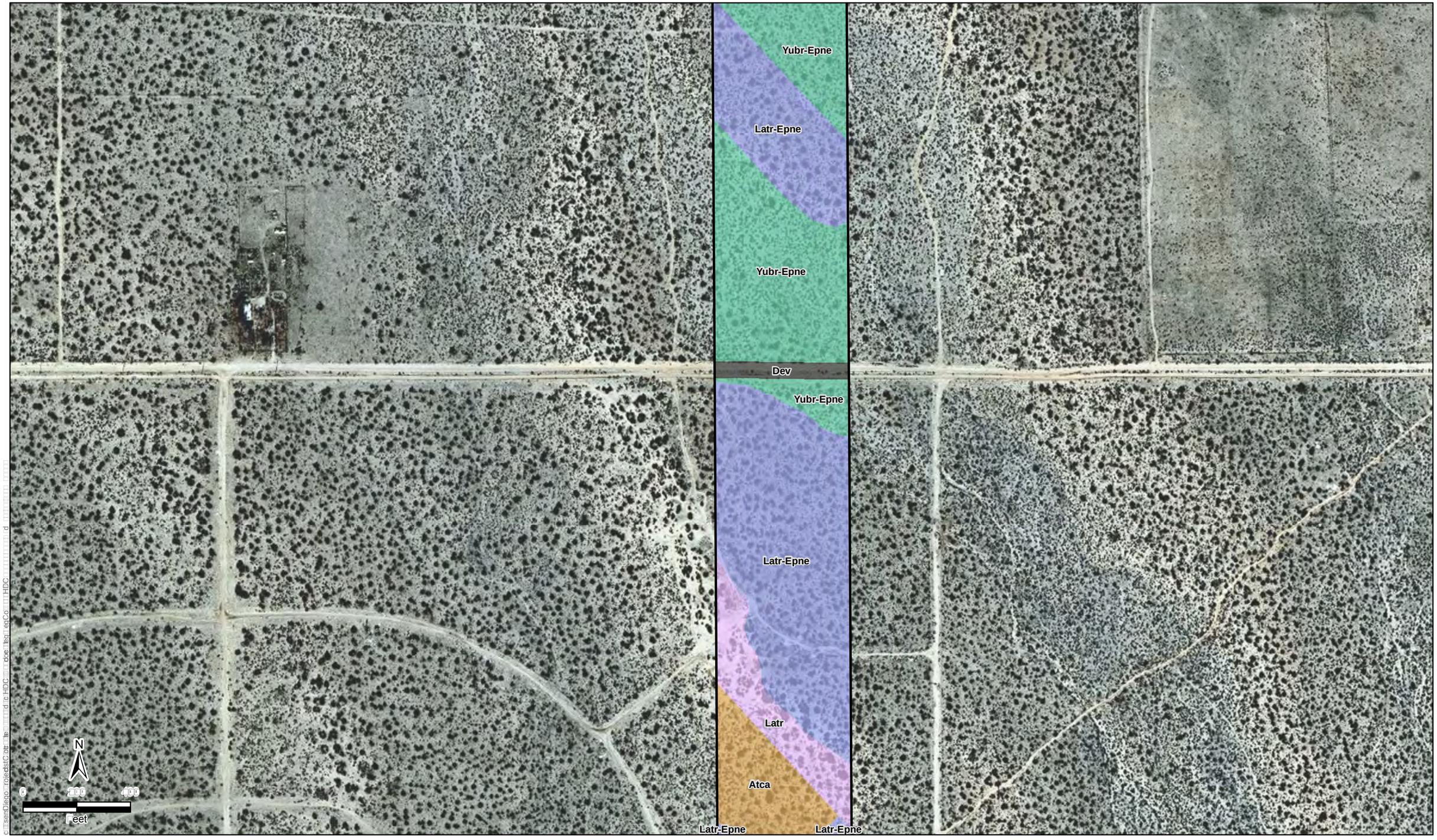

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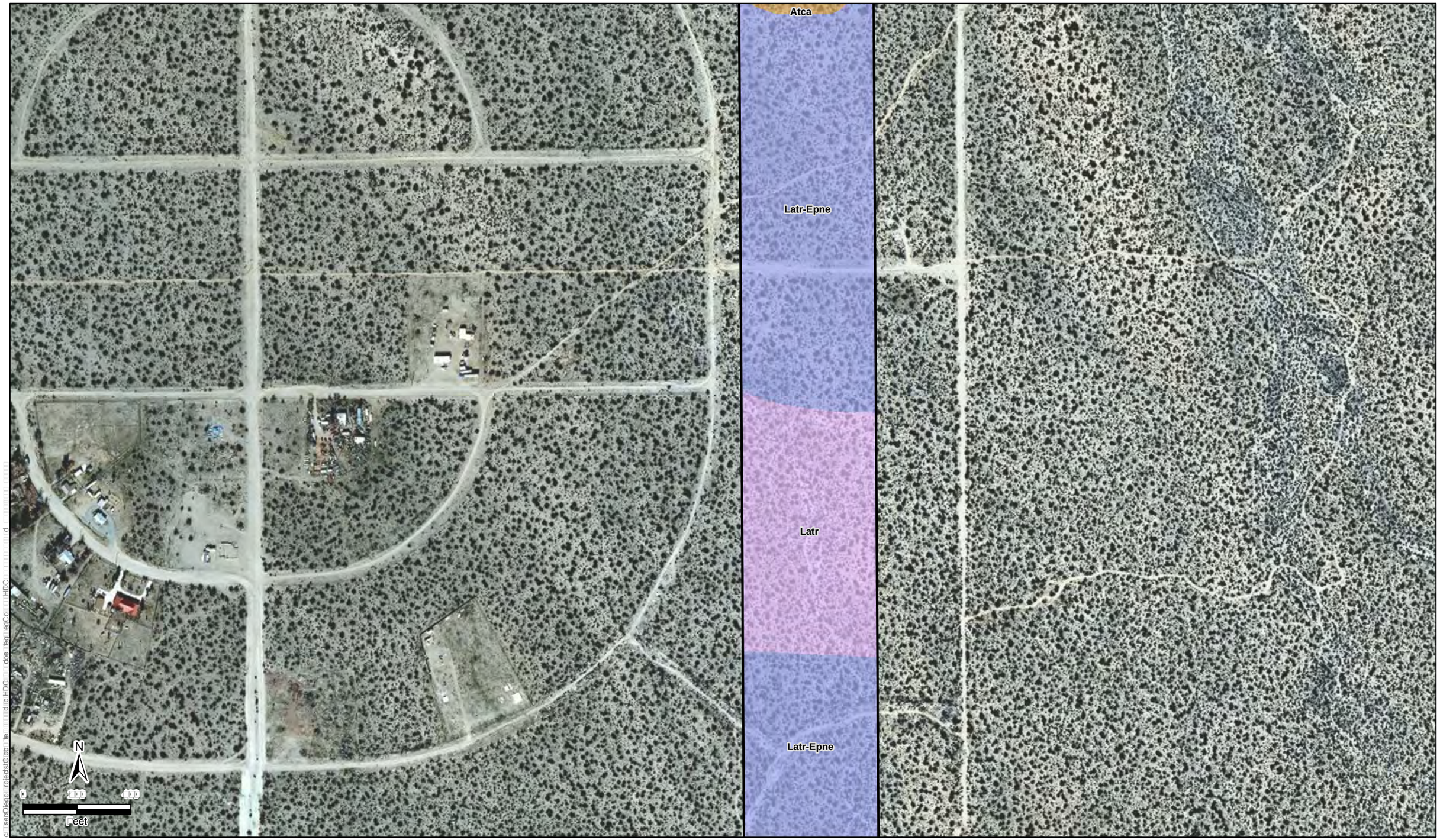

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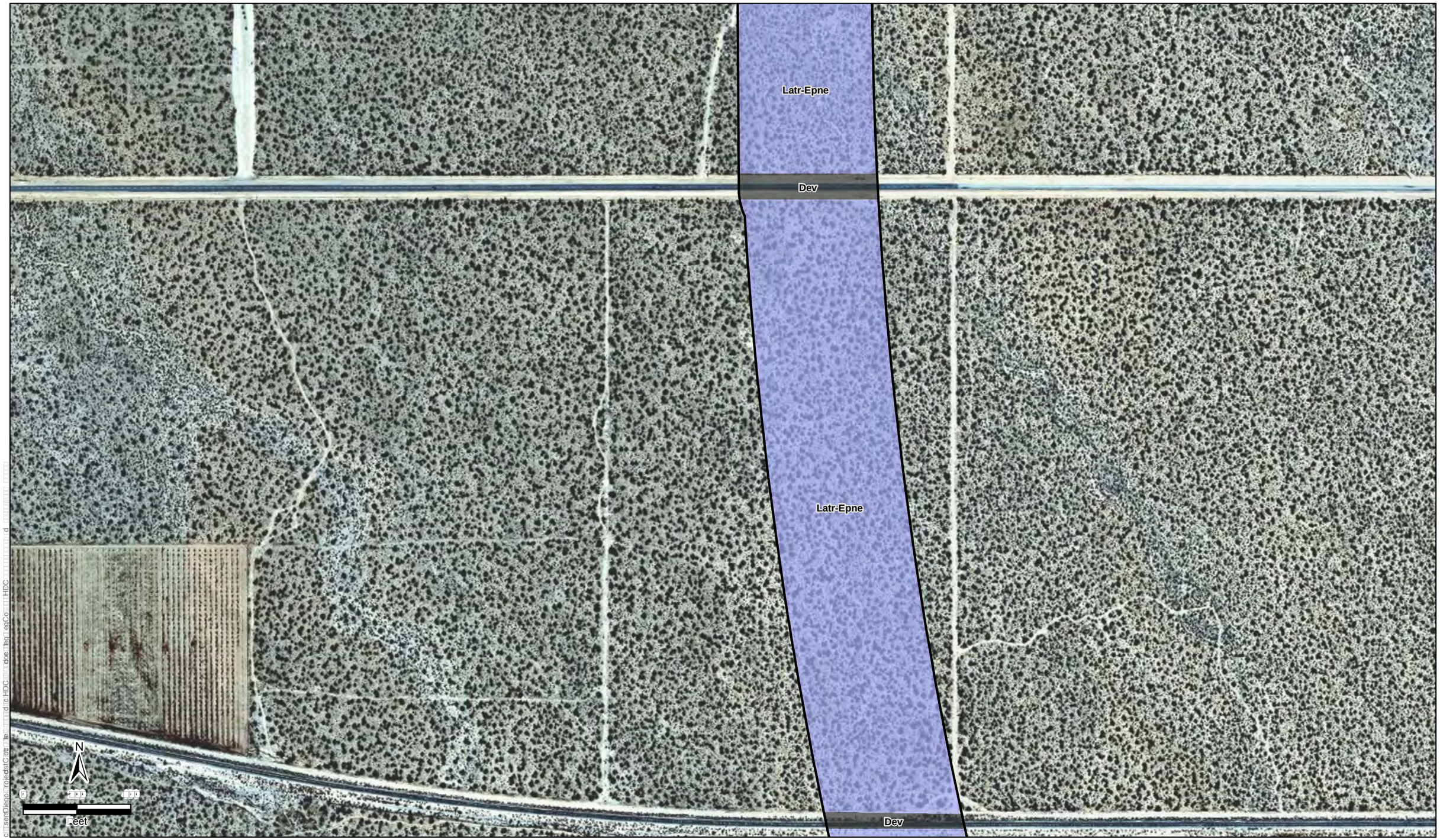

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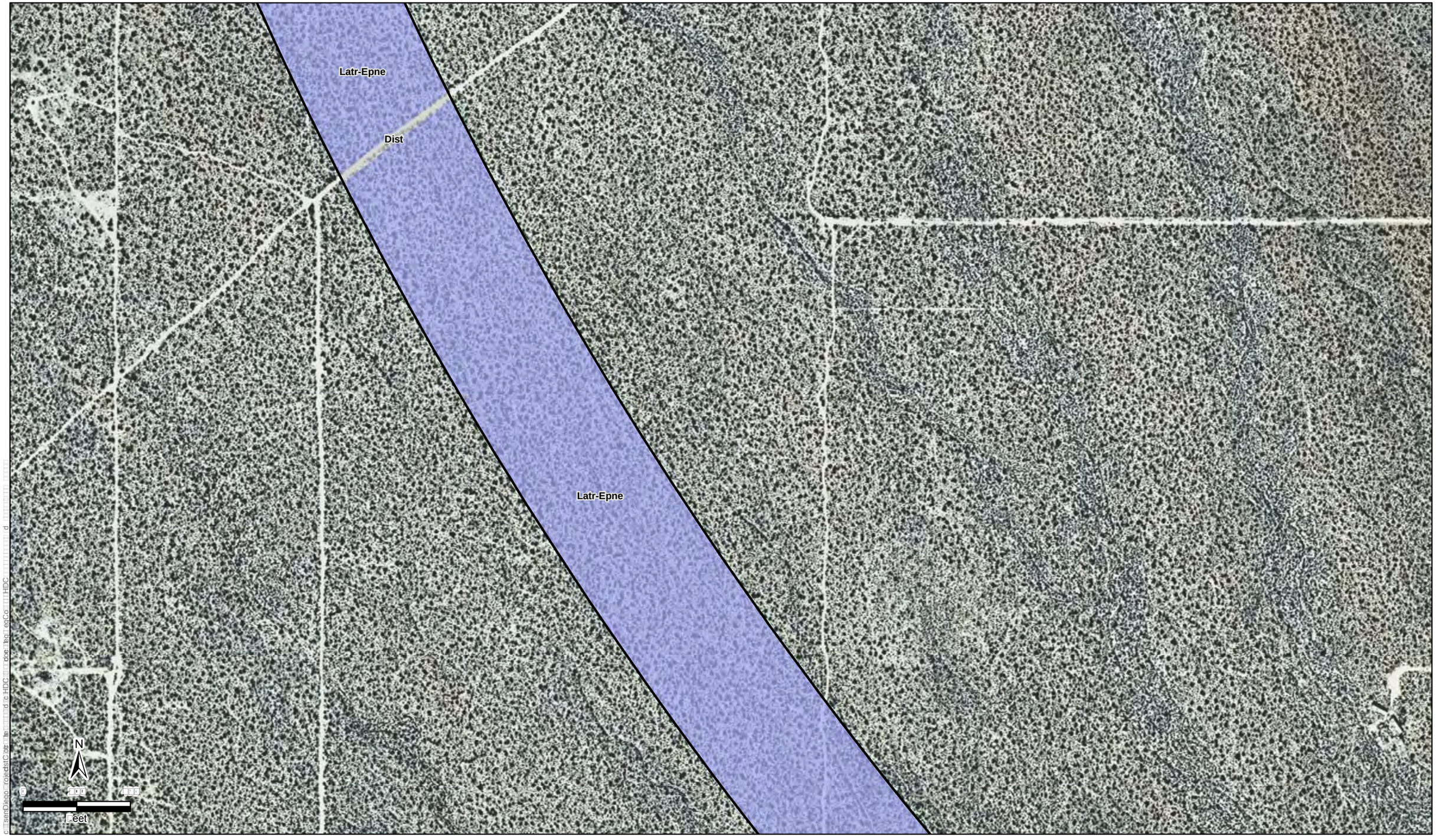

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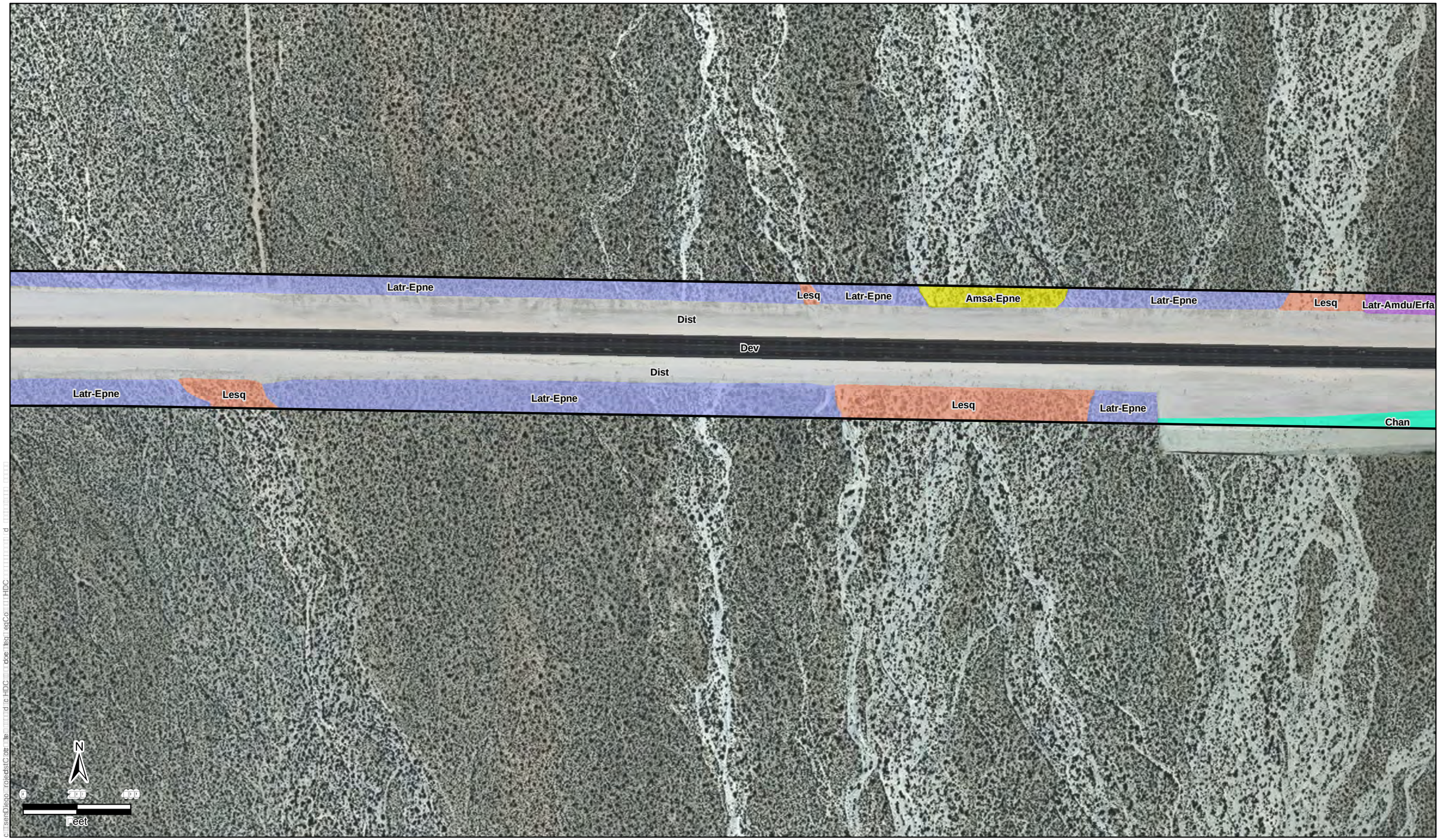

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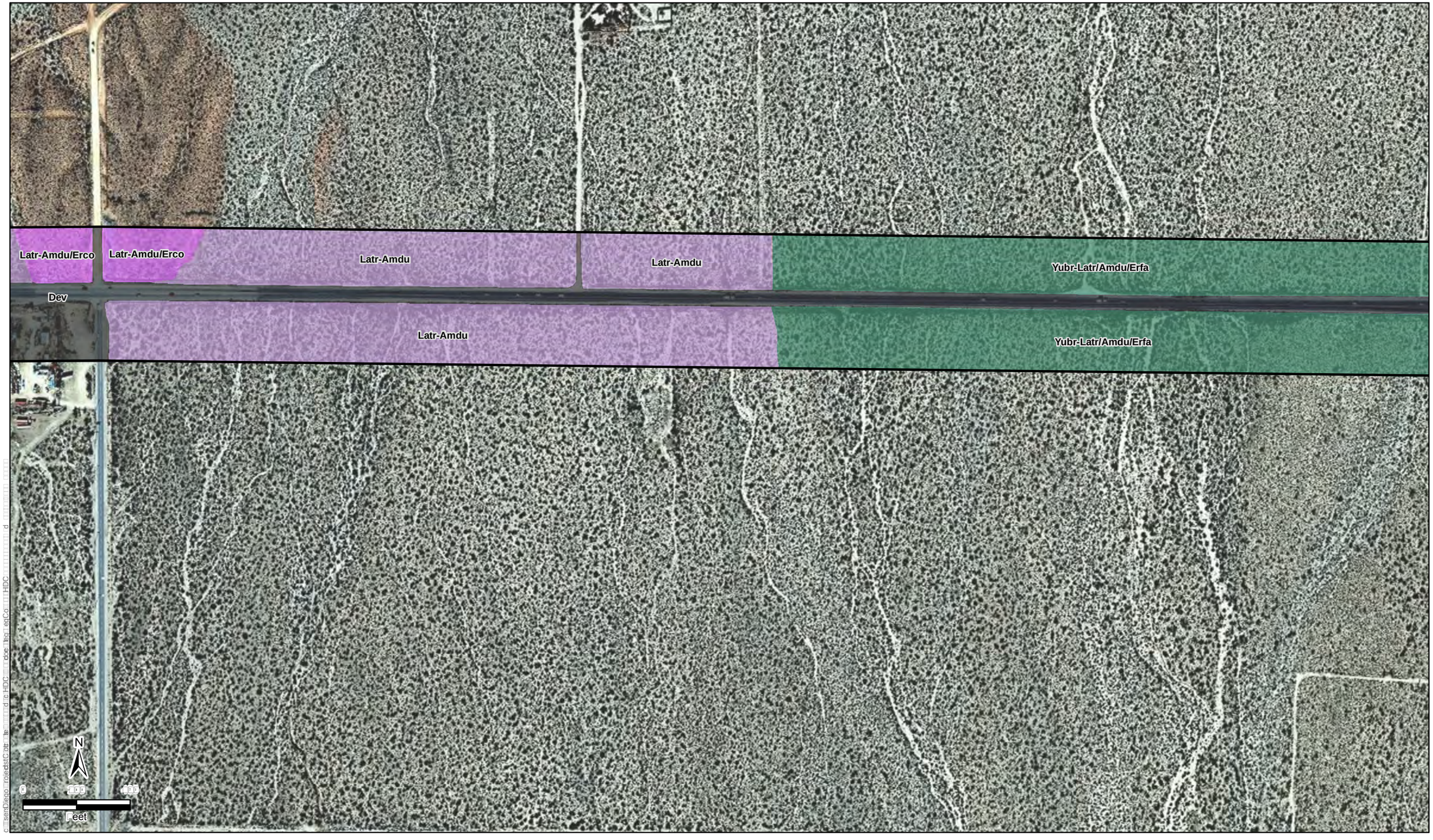

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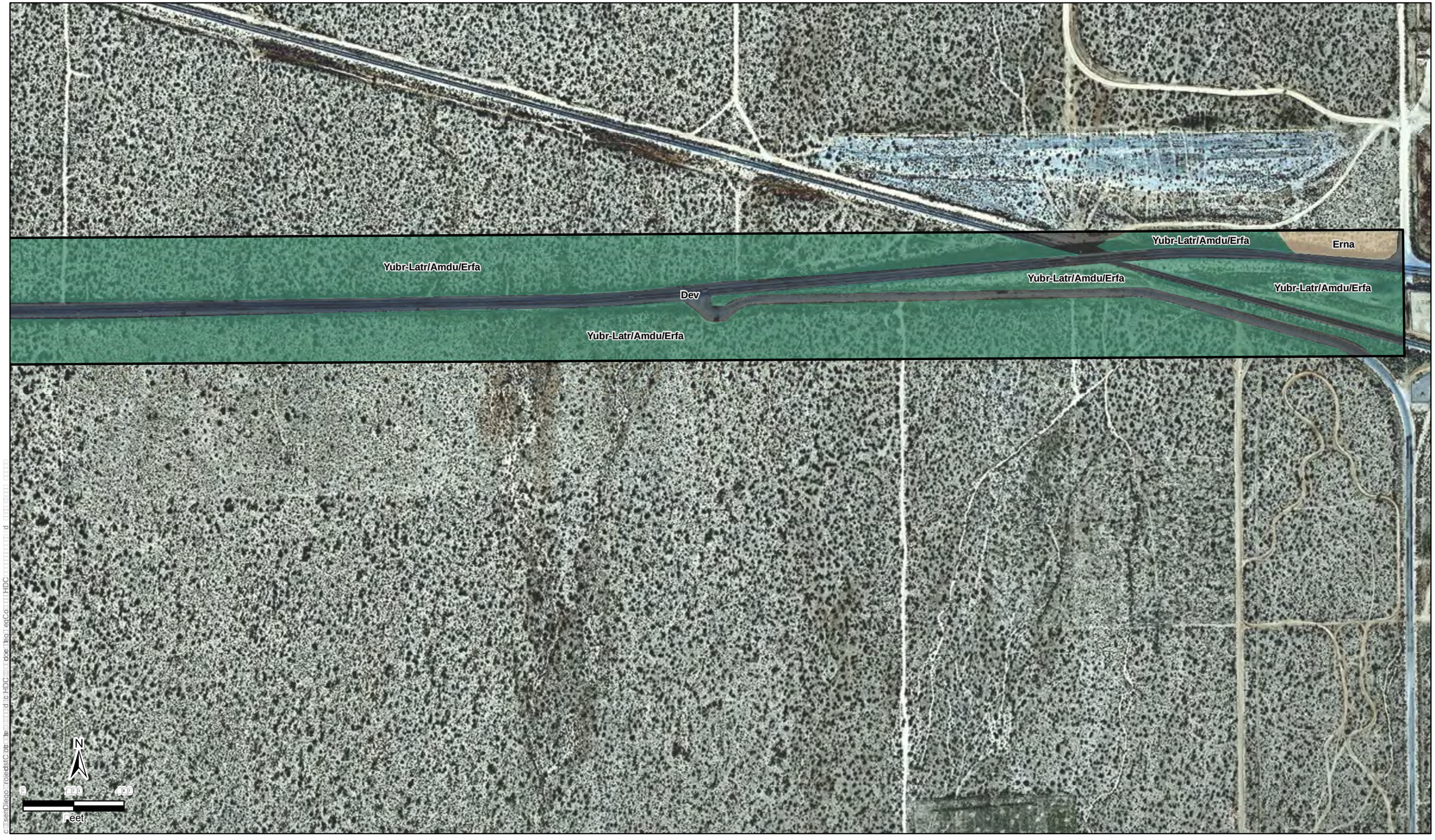

Mapsheet 48
Vegetation Communities
Caltrans High Desert Corridor Preliminary Jurisdictional Delineation

Biological Survey Results Report for the State Route 138 New Freeway Construction Project Los Angeles County, California EA 116720

April 2012

Prepared for:
California Department of Transportation, District 7,
Los Angeles, California

Prepared by:
ECORP Consulting, Inc.
Santa Ana, California

This report is not to be distributed publicly. It is intended solely for the use of the California Department of Transportation in its consultation with the regulatory agencies.

Biological Survey Results Report for the State Route 138 New Freeway Construction Project Los Angeles County, California EA 116720

April 2012

Prepared for:
California Department of Transportation, District 7
100 South Main Street
Los Angeles, California 90012
(213) 897-3656

Prepared by:
ECORP Consulting, Inc.
1801 Park Court Place
Building B, Suite 103
Santa Ana, California 92701
(714) 648-0630

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

DATE: _____ SIGNED: _____

Ms. Kristen Mobraaten

Executive Summary

The California Department of Transportation (Caltrans) is proposing the realignment and construction of the new State Route (SR) 138 in the Antelope Valley, Los Angeles County, called the SR 138 New Freeway Construction Project (project). Focused surveys for sensitive plant species, Agassiz's desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus* [*Spermophilus*] *mohavensis*), and burrowing owl (*Athene cunicularia*) were conducted to characterize the biological resources present within the proposed footprint. Vegetation mapping, an estimate of Joshua tree (*Yucca brevifolia*) density, and a wildlife crossing study were also conducted within the project footprint to identify additional potential biological constraints. These surveys were conducted in order to fulfill the requirements of the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), and to aid in the documentation processes required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The proposed project, comprised of two alternative alignments (Alternatives 2 and 3), is located in and adjacent to the City of Palmdale and generally follows the Technology Drive/Avenue P-8 corridor between SR 14 (Antelope Valley Freeway) and 100th Street East (E).

Several populations of two sensitive plant species were identified within the project area, white pygmy poppy (*Canbya candida*) and crowned muilla (*Muilla coronata*). Survey results were negative for desert tortoise and Mohave ground squirrel. Three burrowing owls and several burrowing owl complexes were identified throughout the project area. Eleven vegetation communities were mapped throughout the project area, two of which were not native to desert ecosystems. The estimate of Joshua tree densities revealed that Alternative 3 appeared to have a higher density of Joshua trees than Alternative 2. The wildlife crossing study identified some areas used frequently for local wildlife travel, from which the data will be used to design a wildlife-crossing friendly freeway. Lastly, three sensitive bird species were observed or detected throughout the project area: tricolored blackbird (*Agelaius tricolor*), short-eared owl (*Asio flammeus*), and loggerhead shrike (*Lanius ludovicianus*). Results, discussion, and analyses of each of these biological studies are presented in detail in this document. An analysis of each proposed project alternative and recommended mitigation measures are also included in this document to aid in future project planning.

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List of Abbreviated Terms

°	degree
ACOE	United States Army Corps of Engineers
AGS	white-tailed antelope ground squirrel
C	Celsius
Caltrans	California Department of Transportation
CBOC	California Burrowing Owl Consortium
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cm	centimeter(s)
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
desert tortoise	Agassiz's desert tortoise
E	East
ECORP	ECORP Consulting, Inc.
F	Fahrenheit
FESA	Federal endangered Species Act
ft	foot/feet
GIS	Geographic Information Systems
GPS	Geographic Positioning System
HDC	High Desert Corridor
in	inch(es)
km	kilometer(s)
LAWA	Los Angeles World Airport
m	meter(s)
MBTA	Migratory Bird Treaty Act
mi	mile(s)
MOU	Memorandum of Understanding
msl	mean sea level
NAD 83	North American Datum 1983

NEPA	National Environmental Policy Act
OHV	off-highway vehicle
PM	post mile
project	State Route 138 New Freeway Construction Project
SBBM	San Bernardino Baseline and Meridian
SR	State Route
SSC	California Species of Special Concern
ROW	Right of Way
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
ZOI	Zone of Influence

Chapter 1. Introduction

The California Department of Transportation (Caltrans) is proposing the realignment and construction of the new State Route (SR) 138 in the Antelope Valley, Los Angeles County. This project is referred to as the SR 138 New Freeway Construction Project (project). Biological surveys were conducted for the project throughout 2008 and 2009 to characterize the biological resources present within the proposed footprint and to identify any potential biological constraints for the project. Focused, protocol-level surveys were conducted for sensitive plant species, the federally and state-listed (threatened) Agassiz's desert tortoise (*Gopherus agassizii*, desert tortoise), the state-listed (threatened) Mohave ground squirrel (*Xerospermophilus* [*Spermophilus*] *mohavensis*), and the California Department of Fish and Game (CDFG) Species of Special Concern (SSC) burrowing owl (*Athene cunicularia*). Vegetation mapping, an estimate of Joshua tree (*Yucca brevifolia*) density, and a wildlife crossing study were also conducted within the project footprint to identify additional potential biological constraints. This biological survey results report discusses each of these studies, the results, and how the results pertain to the project. A jurisdictional delineation to identify features within the project area that are potentially jurisdictional under CDFG and/or the United States Army Corps of Engineers (ACOE) was also conducted; however, results of that study are presented under a separate cover (ECORP 2010). These surveys were conducted in order to fulfill the requirements of the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), and to aid in the documentation processes required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.1 Project Location

The proposed project is located in the Antelope Valley, approximately 40 miles (mi) (64 kilometers [km]) northeast of the City of Los Angeles, Los Angeles County (Figure 1). The proposed project footprint is approximately 10 mi (16 km) long and generally follows the Technology Drive/Avenue P-8 corridor between SR 14 (Antelope Valley Freeway) and 100th Street East (E). The proposed right-of-way (ROW) for the project is not within an existing transportation corridor; therefore, post mile (PM) markers are not available.

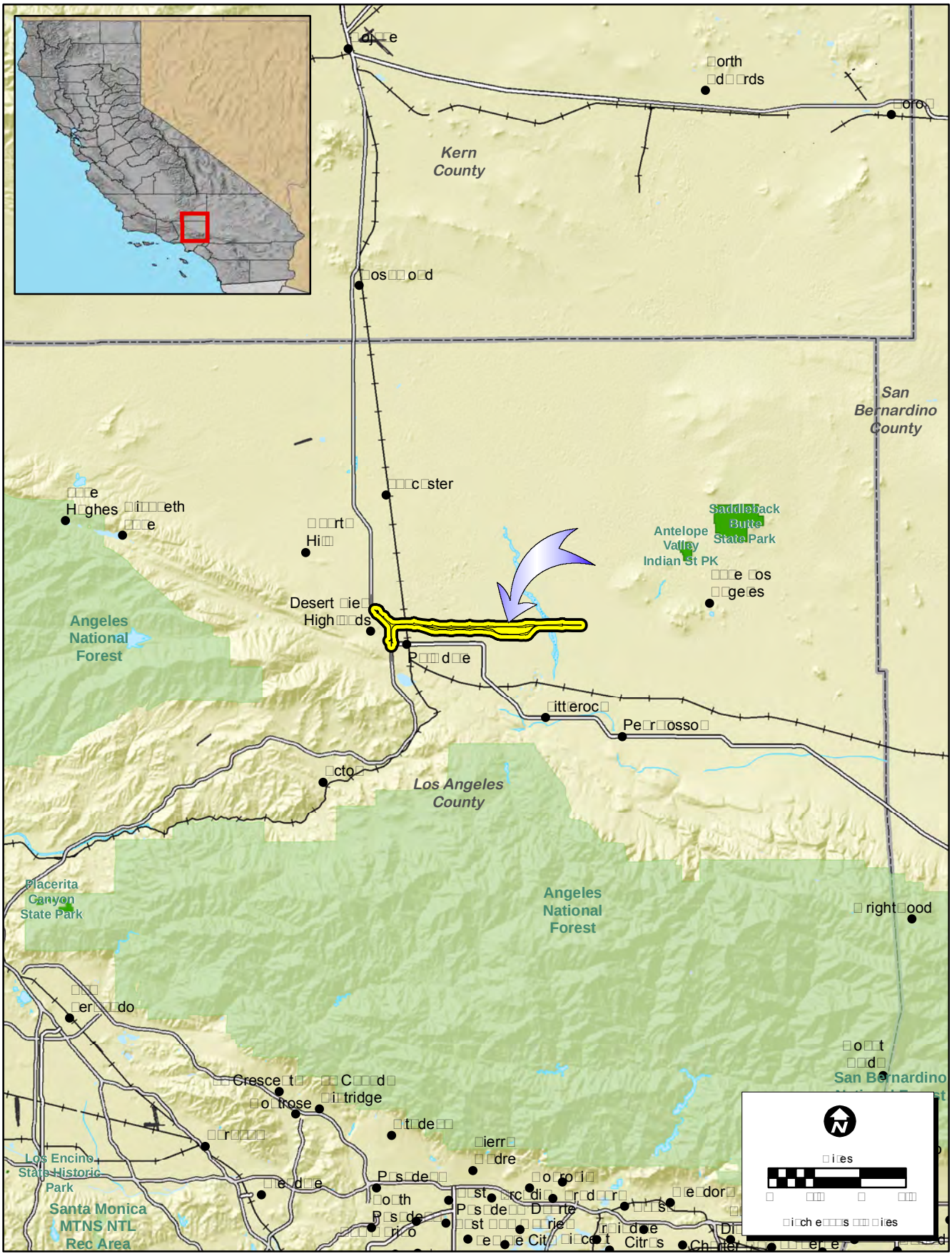

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Figure 1. Vicinity Map

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The proposed project is located within the Littlerock, Palmdale, and Ritter Ridge United States Geological Survey (USGS) 7.5-minute topographical quadrangles and is located in Sections 15, 16, 22, 23, 24, and 27 of Township 6 North, Range 12 West; Sections 19 through 24 of Township 6 North, Range 11 West; and Sections 19 and 20 of Township 6 North, Range 10 West, San Bernardino Baseline and Meridian (SBBM). Elevation in the project area is approximately 2,760 to 3,000 feet (ft) (841 to 914 meters [m]) above mean sea level (msl).

1.2 Project Description

The location of where Caltrans is proposing the construction and realignment of the SR 138 freeway is approximately 2 mi (3 km) north of the existing SR 138 ROW. This proposed realignment of SR 138 is consistent with the High Desert Corridor (HDC) plan to provide a larger overall transportation system for the high desert region (Victorville, Apple Valley, Palmdale, Lancaster, and surrounding areas). This approximately 10 mi (16 km) long section is the first phase of the multiple phase HDC plan.

The proposed project consists of construction of a new freeway/expressway following the existing Technology Drive/Avenue P-8 corridor, beginning at the intersection with SR 14 and running east to 100th Street E (Figure 2). At least two lanes in each direction are proposed throughout the realigned freeway, with local interchanges at the intersections of 10th, 30th, and 50th Streets E.

Three alternatives are proposed for the project and are described briefly below; one No Build alternative, and two Build alternatives. Both of the Build alternatives (Alternatives 2 and 3) would include adding 8 lanes of freeway from SR 14 to 15th Street E and 4 lanes of freeway from 15th Street E to 100th Street E.

Alternative 1 – No Build

Alternative 1 is a No Build alternative that would not affect the location of the existing SR 138. A new freeway alignment would not be built and transportation infrastructure would remain as it currently exists. Alternative 1 acts as Caltrans' baseline for Alternatives 2 and 3.

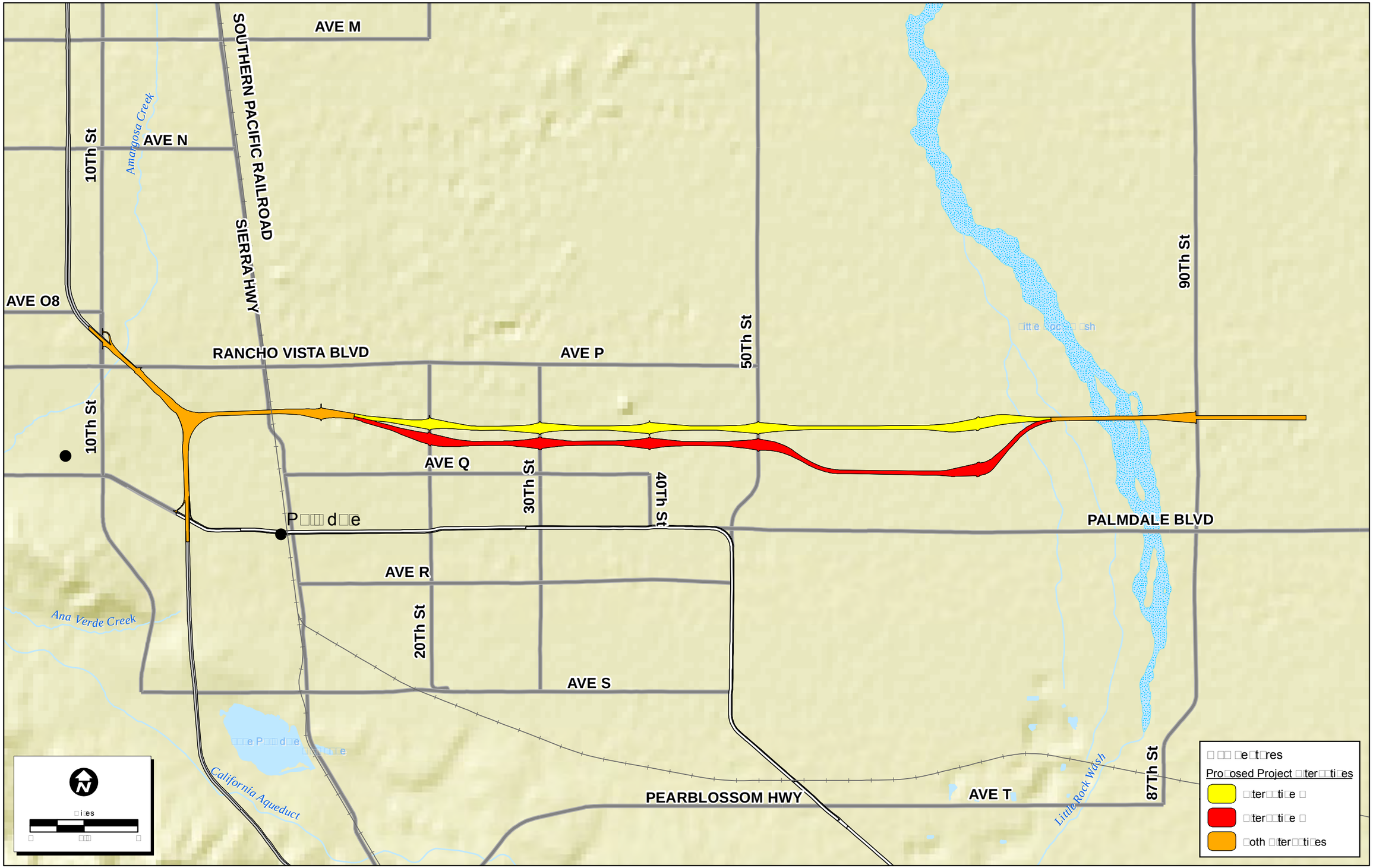

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Figure 2. Locality Map

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Alternative 2 – Northern Alignment

Alternative 2 is the northern-most alignment proposed for this project (Figure 2). It would consist of constructing the new SR 138 parallel to and in the vicinity of the existing Technology Drive/Avenue P-8 corridor. Two infrastructure alternatives for Alternative 2 are proposed, however these do not affect the overall footprint of the alternative.

Alternative 3 – Southern Alignment

Alternative 3 is the southern-most alignment proposed for this project and is located within the easement that Los Angeles World Airport (LAWA) agreed to donate for the purposes of the SR 138 realignment. This alternative follows the same proposed footprint as Alternative 2 along Technology Drive/Avenue P-8 eastward from SR 14 until 15th Street E. At 15th Street E, Alternative 3 begins to run south of the Avenue P-8 corridor (Figure 2). Alternative 3 runs approximately 1,000 ft (305 m) south of the Alternative 2 alignment between 15th and 50th Streets E. Alternative 3 then drops farther south between 50th and 75th Streets E to approximately 2,190 ft (668 m) south of the Alternative 2 alignment. At 75th Street E, the alignment heads north until just before Littlerock Wash, where it then joins and follows the same footprint as Alternative 2 until its termination at 100th Street E. Two infrastructure alternatives within Alternative 3 are proposed, Alternatives 3A and 3B, but these do not affect the overall footprint of the alternative.

Prior to April 2009, the proposed footprint of Alternative 3 ran parallel and slightly south of Alternative 2 for the entire proposed alignment. In April 2009, Caltrans provided an amendment to the proposed footprint of Alternative 3 that included a more southerly shift to the alignment between 50th and 75th Streets E, as described above and shown on Figure 2 and is the version of Alternative 3 referred to throughout this report.

1.3 Purpose and Objectives

The purpose of the proposed project is to increase transportation efficiency and travel safety along SR 138. The enhanced mobility and efficient transport of goods and services is a focus of this project, as the existing SR 138 is experiencing high traffic volumes of trucks and recreational vehicles. Reduction of accident rates involving truck traffic is also a high priority, in addition to other safety issues and concerns.

The proposed freeway alignment will help alleviate traffic congestion in the area, as large scale growth is expected for the region within the next 10 years.

This document was prepared to assist the Environmental Division of Caltrans and responsible federal and state agencies to make appropriate land use decisions regarding the management of the biological resources present in the project area, as well as to aid in CEQA and/or NEPA documentation required for the project.

Chapter 2. Methodology

2.1 Literature Review

A review of CDFG's California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) Electronic Inventory was performed before surveys were conducted to determine whether special-status species have been previously reported in the area. The Ritter Ridge, Palmdale, and Littlerock USGS 7.5-minute topographic quadrangles, as well as the surrounding quadrangles including Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Lovejoy Buttes, Pacifico Mountain, Sleepy Valley, and Valyermo (CDFG 2008; CNPS 2009) were searched for the purposes of this study.

2.2 Site Characterization and Vegetation Mapping

An initial field visit was conducted on March 20, 2008 by ECORP biologists to characterize the project area and to create a map of the vegetation communities within the project area. Biologists drove along existing roads and surveyed areas on foot that were not accessible by vehicles to adequately characterize and map the existing vegetation communities present in and around the proposed project area. The site characterization and vegetation community mapping was conducted to determine the extent of focused biological surveys that would be conducted throughout the proposed project footprint. Vegetation community type descriptions followed the designations in Sawyer and Keeler-Wolf (1995) and all plant and wildlife species observed during the initial site characterization were documented on data sheets.

2.3 Biological Studies

Surveys for sensitive and listed plant and wildlife species and a wildlife crossing study were conducted in the project area. The specific survey methodology for each study is described below.

During the focused studies conducted in the proposed alignments, biologists and botanists recorded all plant and wildlife observations. Plant and wildlife species were identified using a variety of sources, including:

- *The Jepson Manual* (Hickman 1993);
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003);
- *The American Ornithologists' Union (AOU) Checklist of North American Birds*, 7th edition with 50th Supplement (AOU 1998, 2009); and
- *Mammal Species of the World* (Wilson and Reeder 2005).

Locations of sensitive species (including those incidentally observed) were recorded using a handheld Geographic Positioning System (GPS) unit in Universal Transverse Mercator (UTM) coordinates, North American Datum 1983 (NAD 83), Zone 11 S.

2.3.1 Sensitive Plants

Sensitive plant surveys were conducted by qualified biologists with experience conducting botanical surveys and knowledge of plant taxonomy, plant species in the region, and sensitive plant species. Focused plant surveys were scheduled to coincide with the blooming periods of target species and were conducted on April 1, 2, 8, and 15, 2008 within suitable habitat in the project area. The focused sensitive plant survey was conducted by ECORP biologists Brad Haley, Anthony Mann, Kerry Myers, Danica Schaffer-Smith, Manna Warburton, and Brian Zitt in accordance with the CNPS Botanical Survey Guidelines published by CNPS (2001).

The winter months in the 2007-2008 year had an average amount of rainfall, with the last major winter rain event occurring in February 2008 (www.NOAA.org). The rain event was immediately followed by unseasonably high temperatures. Most plant species in the Mojave Desert bloomed early in the spring of 2008, as much as a full month before the typical peak of their bloom periods. Therefore, the sensitive plant survey conducted in 2008 was scheduled according to the accelerated blooming period. Areas with high levels of disturbance were not surveyed because very disturbed habitats were not suitable for the sensitive plants that were identified during the literature search.

In April 2009 Caltrans provided the amendment to Alternative 3 (as discussed in Section 1.2). A sensitive plant survey was conducted in late April 2009 in the amended portion of Alternative 3 to detect presence of additional sensitive plant species and/or populations. Prior to conducting the additional sensitive plant survey, ECORP biologists Brad Haley and Kristen Mobraaten conducted a site visit on April

21, 2009 to assess the blooming status of plant species within the project area. The additional plant survey was conducted on April 26 and 27, 2009 by ECORP biologists Margaret Bornyasz, Ryan Gilmore, Brad Haley, Blaine Schoolfield, and Christine Tischer in accordance with the CNPS Botanical Survey Guidelines (CNPS 2001). Because the 2009 survey was conducted towards end of the blooming period for the sensitive plants, biologists surveyed at a slower pace and were more careful in identification of plant species observed during the survey in order to more accurately identify and/or detect sensitive plant presence in Alternative 3.

2.3.1.1 ESTIMATE OF JOSHUA TREE DENSITY

A Joshua tree survey was not conducted within the proposed project footprint; however, an estimate was made of the quantities of Joshua trees within each alternative. The estimation exercise was performed using Geographic Information Systems (GIS) mapping software and high resolution aerial maps of the project area. Using biologists' extensive knowledge of the vegetation communities within the project area, Joshua tree densities were estimated within each alternative by an ECORP biologist familiar with the project area and a mapping technician.

2.3.2 Desert Tortoise

2.3.2.1 NATURAL HISTORY

The desert tortoise was listed as threatened under the CESA in 1989 by CDFG and listed as threatened under FESA by the United States Fish and Wildlife Service (USFWS) in 1990 due to decline of population and the threat of habitat destruction (USFWS 1990). The recovery plan for the desert tortoise was published in the *Federal Register* in 1994 (USFWS 1994) and was revised in 2011. A final revision of the recovery plan was submitted on May 6, 2011 (USFWS 2011).

Prior to 2011, the desert tortoise was considered one species throughout its known range within the Mojave, Colorado, and Sonoran Deserts in the southwestern United States and northwestern Mexico. Based on genetic, taxonomic, and behavioral differences between tortoises found north and west of the Colorado River and those found south and east of the Colorado River, the desert tortoise has been split into two separate genera, Agassiz's desert tortoise (*Gopherus agassizii*) and Morafka's desert tortoise (*Gopherus morafkai*) (Murphy et al. 2011). Agassiz's desert tortoise is found in desert habitats north and west of the Colorado River (formerly referred to as the Mojave population), while Morafka's desert tortoise is found in desert habitats south and east of the Colorado River (formerly referred to as the Sonoran population). The

desert tortoise species surveyed for and discussed in this document is Agassiz's desert tortoise (more simply referred to as 'desert tortoise' for the purposes of this report)

The range of the desert tortoise has declined because of several factors including habitat loss due to human-related activities, disease caused by reintroduction efforts and other contamination by humans, illegal collection, road kills, habitat degradation by invasive plants, and predation on adult tortoises by canids and juvenile tortoises by ravens (Berry and Medica 1995).

The desert tortoise, federally and state-listed as threatened (USFWS 1990; CDFG 2009a), occurs west and north of the Colorado River in southwestern Utah, northwestern Arizona, southern Nevada, and southern California. In California, desert tortoise occurs from Inyo County to Imperial County, including eastern Kern, Los Angeles, San Bernardino, Riverside, and San Diego counties east of the Sierra Nevada and Transverse Ranges (Berry et al. 2002).

Desert tortoises are associated primarily with Mojave creosote bush scrub, but have also been found in succulent scrub, cheesebush scrub, blackbush scrub, hopsage scrub, shadscale scrub, microphyll woodland, and Mojave atriplex-allscale vegetation communities (Boarman 2002). In the Mojave Desert, this species inhabits flats, valleys and bajadas, washes, rocky hillsides, and open flat desert areas with sandy to sandy-gravel soils that offer suitable substrates for burrowing and nesting (Boarman 2002; USFWS 1994). Desert tortoises are typically found at an elevation range of approximately 1,968 to 3,280 ft (600 to 1,000 m) above msl, but have been found up to 7,808 ft (2,380 m) above msl (Aslan et al. 2003). Desert tortoises can occupy a home range of 0.75 to 1.5 square mi (1.9 to 3.9 square km) and may travel long distances (USFWS 1994; Edwards et al. 2004). The desert tortoise may be considered an indicator species (Desert Tortoise Council, Inc. 1985), which is a species that serves as a unique indicator of the overall health of that species' ecosystem and its suitability for other species that co-occur with it.

Desert tortoise activity patterns are controlled primarily by ambient temperature and precipitation regimes. In the western Mojave Desert, desert tortoises are generally most active between April and June, and September and October, when herbaceous vegetation (grasses and annual plants) is most abundant. In periods of harsh or unusually dry conditions, desert tortoises can retreat to burrows where they lower their metabolism to prevent loss of water and consume very little food. During periods of activity, tortoises usually spend nights and the hotter parts of a day in a burrow or resting under shrubs (Boarman 2002).

Desert tortoises experience delayed sexual maturity and long life. They reach sexual maturity at approximately 12 to 20 years of age. In the Mojave, tortoise eggs are laid in spring (April to June) and occasionally into fall (September to October). Female tortoises lay one to eight eggs in sandy or friable soil, usually at the apron of a burrow. The eggs incubate unattended for 90 to 120 days, during which the sex of the young is determined by soil temperature. In the Mojave Desert, the number of clutches a female produces ranges from zero to three clutches per year, and clutch size increases with increasing body size (Boarman 2002).

2.3.2.2 SURVEY METHODOLOGY

Protocol desert tortoise surveys were conducted in high quality, suitable habitat in the project area by qualified biologists with extensive experience in identifying tortoises, scat, shelter sites, carcasses, and other tortoise sign. ECORP biologists Brad Haley, Kristen Mobraaten, Danica Schaffer-Smith, and Barbara Stein conducted the protocol-level survey from June 2 through June 5, 2008. The survey was conducted according to the standard accepted protocol at the date of the survey, Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992). The USFWS protocol calls for two types of survey techniques be employed during a protocol desert tortoise survey; 100-percent coverage of the proposed project footprint and zone of influence (ZOI) transects around the proposed project boundaries. The 100-percent coverage survey consisted of walking 30-ft (10-m) transects through undisturbed, native habitat within the project area. Following the 100-percent coverage survey, ZOI transects, comprised of concentric transects around the perimeter of the 100-percent survey area at approximately 100, 300, 600, 1,200, and 2,400 ft (30, 91, 183, 366, and 732 m), were surveyed. Posted private property and disturbed or developed areas (residential, commercial, agriculture, etc.) were excluded from the tortoise surveys.

Prior to conducting biological surveys in the project area, Caltrans received a letter from the USFWS in response to a scoping request that made a determination regarding federally listed species presence in and around the project area. In the letter, USFWS informed Caltrans that USFWS believes the project area does not support any species listed under the FESA (Appendix A). This determination included the desert tortoise, which is a federally listed species.

Caltrans also consulted with CDFG regarding desert tortoise presence in the proposed project area because of the species' state-listed designation. It was determined during this consultation that desert tortoise surveys would be conducted only in areas of the proposed project footprint where highest quality desert tortoise habitat was present

(undisturbed, native vegetation communities). This survey area was determined to be between 45th and 90th Streets E and also included a small area between 95th and 100th Streets E (Figures 3A and 3B).

Survey data, including weather data, incidentally observed sensitive species, and other survey information, were recorded onto data sheets for each survey day. The locations of sensitive species observed were documented using a GPS unit in UTM coordinates in NAD 83, Zone 11 S.

2.3.3 Mohave Ground Squirrel

2.3.3.1 NATURAL HISTORY

The Mohave ground squirrel is listed as threatened by the State of California (CDFG 2009a). In 2009 the Mohave ground squirrel underwent a generic revision. Squirrels classified under the genus *Spermophilus* (under which the Mohave ground squirrel has been classified since the mid-20th century) were split into two groups based on genetic and morphological features: *Spermophilus* and *Xerospermophilus* (Helgen et al. 2009). The Mohave ground squirrel is now classified under the genus *Xerospermophilus*.

The populations of this endemic rodent species have become limited in size due mainly to agricultural development, grazing, off-road vehicle use, and other human disturbances (BLM 2005). Overall, large portions of the habitat for Mohave ground squirrel has deteriorated due to development (agricultural, residential, industrial, and commercial), with more of that habitat being lost as development spreads rapidly in the southern part of their range (Laabs 1998).

The Mohave ground squirrel is endemic to California where it is limited to a geographic range in the western Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo Counties. The historic range of the Mohave ground squirrel is from Palmdale in the southwest, north to Olancha, and northwest to the Coso and Argus Mountain Ranges. Its northeastern range extends from the Avawatz and Soda Mountain Ranges to the Mojave River on the southeastern border of its range. The southern edge is delineated by the northern flanks of the San Bernardino and San Gabriel Mountain Ranges.

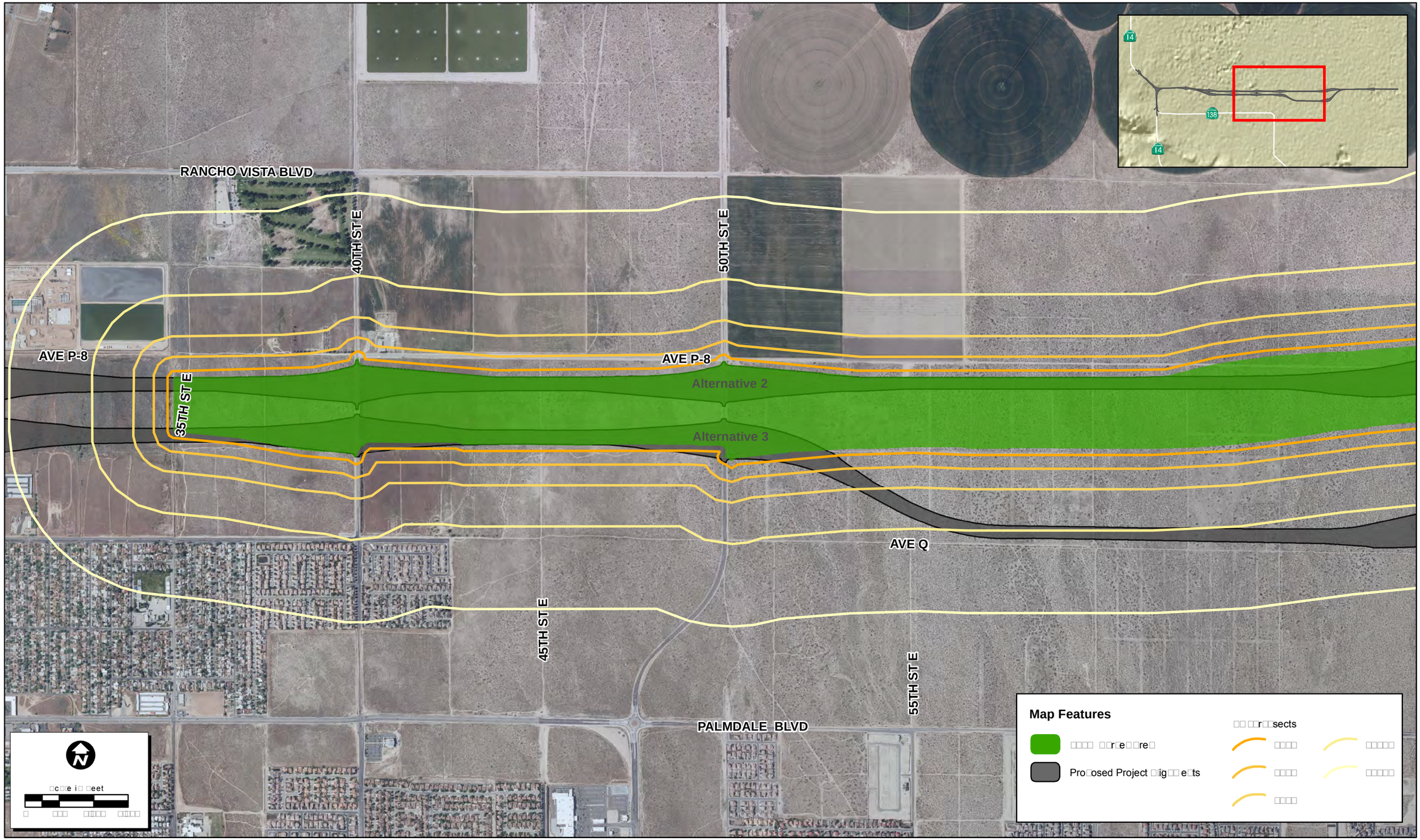

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Figure 3A. Desert Tortoise ZOI Survey - Map 1 of 2

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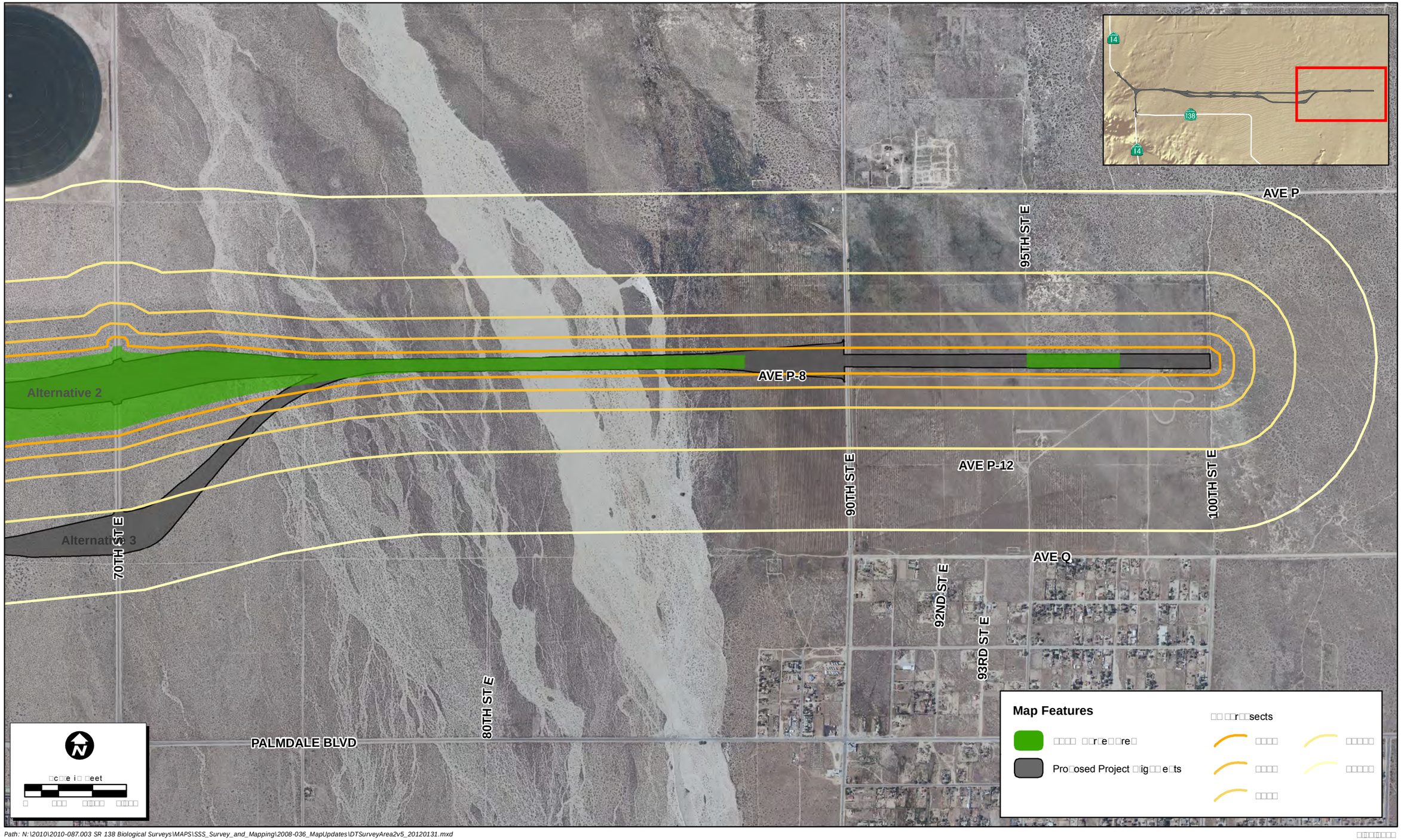

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Figure 3B. Desert Tortoise ZOI Survey - Map 2 of 2

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Studies have shown that the optimal habitat types typically include plant communities that harbor spiny hopsage (*Grayia spinosa*) and winterfat (*Kraschenninikovia lanata*), including creosote bush scrub, xerophytic saltbush, and Joshua tree woodland communities (Scarry et al. 1996; Leitner and Leitner 1998). However, recent data suggest that Mohave ground squirrels also occur in communities where neither spiny hopsage nor winterfat are present, but rather where kochia (*Kochia* sp.) is the only dominant forage plant available (Dr. Philip Leitner, California State University Stanislaus, personal communication). Mohave ground squirrels have been found at elevations ranging from 1,800 to 5,000 ft (549 to 1524 m) above msl (Brooks and Matchett 2002; BLM 2005).

The natural history and habitat requirements for the Mohave ground squirrel are very dependent on elevation, climate, topography and weather. This diurnal squirrel is only active in the early spring through summer (approximately mid-February through July) when they feed on native shrubs and annual plants. Adults emerge from their burrows in February to begin reproduction, with males emerging approximately two weeks before females. By the end of March, litters of four to ten young (average of six) are born to each female and by late May the young begin to disperse (BLM 2005). As summer approaches and vegetation begins to dry out, Mohave ground squirrels prepare for a long period of dormancy by consuming as many nutrients and fats as they can in their diet. By mid-summer (July to mid-August), the squirrels return to the underground nests and by this time body temperature, heart rate, and metabolism have fallen drastically to prepare for aestivation during the remaining summer months and hibernation during the fall and winter months. This species is able to survive in this physiological state on their stored body fats until the winter rains come and restore the vegetation. If sufficient rains (less than 3 inches [in] [7 centimeters (cm)]) do not occur during the winter, Mohave ground squirrels will likely not reproduce due to lack of sufficient vegetation to support the young (Harris and Leitner 2004). When a drought year occurs, the squirrels will convert all available forage to body fat and enter aestivation as early as April. These biological and physiological adaptations allow them to survive the harsh conditions which occur in the Mojave Desert.

2.3.3.2 TRAPPING SURVEY METHODOLOGY

Mohave ground squirrel trapping was performed in the project area in accordance with the CDFG Mohave Ground Squirrel Survey Guidelines (2003). Mohave ground squirrel biologists utilized the map of Caltrans' proposed locations of the alignments to determine the most appropriate areas to place trapping grids. Trapping grids were placed in several habitat types throughout the project area. Based on CDFG project requests, surveys were conducted only in the areas of highest quality habitat within the proposed alignments.

Trapping was conducted in 2008 under a Memorandum of Understanding (MOU) between CDFG and ECORP, with Donald Mitchell listed as the Principal Investigator. Trapping for the project was conducted by Mr. Mitchell and Field Investigator Brad Haley. Field Assistants Kristen Mobraaten and Barbara Stein assisted Field Investigators in establishing grid locations in the project area, setting up and taking down grids, opening and baiting the traps, processing the animals captured in the traps, closing the traps, and recording data during the trapping survey.

The timeframe for conducting live-trapping inventories for Mohave ground squirrel is divided into three sessions: Session 1 is held between March 15 and April 30; Session 2 is held between May 1 to May 31; and Session 3 is held between June 15 and July 15 (CDFG 2003). Table 1 lists the dates of each trapping session and the Investigator responsible for each grid.

Table 1. Mohave Ground Squirrel Trapping Survey Dates

Grid	Investigator (Assistant)*	Survey Dates		
		Session 1	Session 2	Session 3
1	BJH (KLM, BS)	03/23/08 – 03/27/08	05/13/08 – 05/17/08	06/27/08 – 07/01/08
2	DRM (KLM, BS)	03/23/08 – 03/27/08	05/13/08 – 05/17/08	06/27/08 – 07/01/08
3	BJH (KLM)	03/18/08 – 03/22/08	05/03/08 – 05/07/08	06/16/08 – 06/20/08
4	DRM (KLM)	03/18/08 – 03/22/08	05/03/08 – 05/07/08	06/16/08 – 06/20/08

* BJH – Brad Haley, BS – Barbara Stein, DRM – Donald Mitchell, KLM – Kristen Mobraaten

Grids of 100 traps were arranged in four lines of 25 traps each and spaced 115 ft (35 m) apart, covering a rectangular area of approximately 2.5 acres (1 hectare). Each traditional (four lines of 25 traps each) Mohave ground squirrel grid was 2,756 ft (840 m) long, by 344 ft (105 m) wide. Trap lines were labeled A through D,

and traps numbered 1 through 25. In one case where there was not enough contiguous habitat to place a traditional 4-trap by 25-trap grid, the grid was split up so that trapping in suitable potential habitat in the project area was maximized (Grid 1). The western half of Grid 1 was labeled Grid 1A and the eastern half was labeled Grid 1B (Figure 4).

A total of four grids were trapped during the 2008 inventory, labeled 1 through 4 from west to east. Each grid was trapped for five consecutive days during each of the three sessions, for a total of 1,500 trap-days per grid. The MOU holder, Mr. Mitchell, consulted with CDFG for concurrence with the study design throughout the trapping study.

Due to the time constraints outlined in the Mohave ground squirrel survey protocol, trapping grids were set up prior to Caltrans providing mapping data of the final project footprint. At the start of the trapping survey, Grid 4 was placed in an east-west manner along the north side of Avenue P-8 and east of 70th Street E. After completion of the first trapping session, Caltrans provided an amended project footprint to ECORP. Mr. Mitchell (ECORP) contacted Scott Harris of CDFG on April 25, 2008 to discuss changing the orientation of Grid 4A to an orientation that better sampled the proposed alignments. As a result, Grid 4A was realigned in a north-south orientation prior to the start of the second session of trapping and was renamed Grid 4B (Figure 4).

Each trap was shaded with a cardboard A-frame oriented north-south to keep temperatures moderate inside the shade and trap. Traps were opened within 1 hour of sunrise in the morning and checked at least every 4 hours. Traps were closed within one hour of sunset or when the air temperature at 6 in (15 cm) above the ground exceeded 90 degrees (°) Fahrenheit (F) [32° Celsius (C)].

Data including species, age class (adult, subadult, or juvenile), sex, reproductive condition, and any notes of unusual or abnormal circumstances (including a general health assessment) were recorded on each squirrel captured. Additional data collected at each trapping grid included vegetation (dominant perennial and annual species, and other species), land forms, soil description, invasive or exotic species presence, and disturbances. Weather data were recorded throughout the day during trapping. Digital photographs were taken from the center of both ends of each grid.

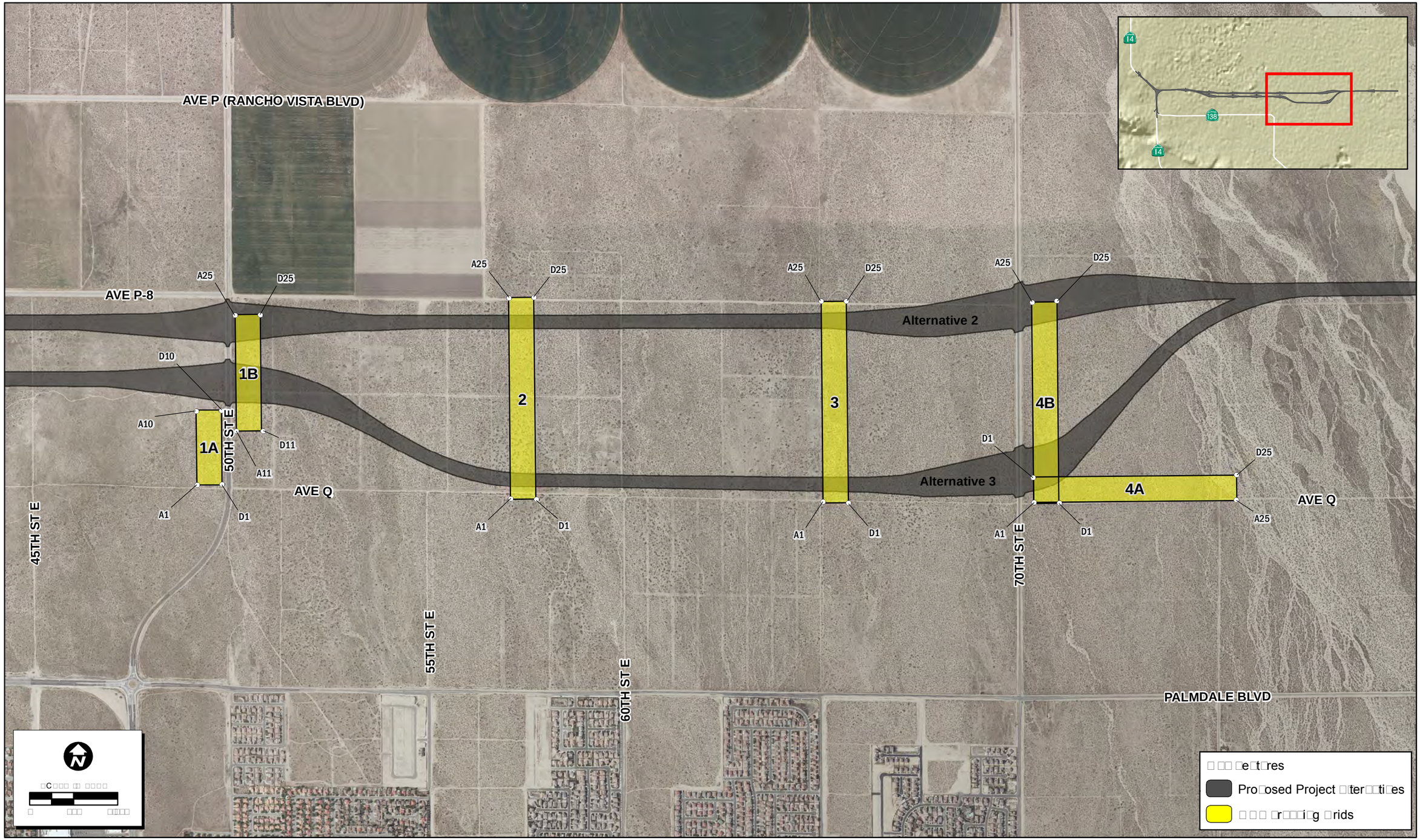

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Figure 4. Mohave Ground Squirrel Trapping Grid Locations

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2.3.3.3 NOCTURNAL TRAPPING

In addition to conducting diurnal Mohave ground squirrel trapping, one night of nocturnal trapping was conducted at each trapping grid to inventory the common nocturnal small mammal species present within the project area. Two lines of 25 traps were left open on one night during the second session of trapping when nighttime temperatures exceeded 50°F (10°C). Traps were checked at sunrise the following morning. Animals were identified to species, sexed, reproductive condition was noted, and any other overall health observations or unusual circumstances were recorded.

2.3.4 Burrowing Owl

2.3.4.1 NATURAL HISTORY

The burrowing owl is a CDFG SSC. Burrow sites in breeding locations throughout California and wintering sites in several counties in northern California are included under the SSC designation (CDFG 2009b).

The primary reasons for burrowing owl population decline are habitat loss, degradation, and fragmentation due to agricultural and urban development. Predation by natural predators (hawks, larger owls, mammals) and introduced predators (domestic cats and dogs) is also responsible for large declines of this species.

The burrowing owl is a small, migratory owl found in various habitats throughout North America. With a mottled brown and white appearance, burrowing owls are usually very cryptic with their surroundings when not flying or foraging. Most of their time is spent on the ground in front of burrow entrances or sitting on low perches near their burrows. These owls are unusual in that they either rely on California ground squirrels (*Spermophilus beecheyi*) and other burrowing mammals for burrow construction or they either excavate their own burrows for shelter and breeding purposes (Gervaris et al. 2008).

Burrowing owls are not permanent residents in all parts of the Mojave Desert where they are found. Some desert areas provide wintering habitat, some areas provide breeding habitat, and some areas provide both wintering and breeding habitat. Because of this, one location in the desert could contain both wintering individuals and permanent residents in proximity to one another.

Habitat requirements for burrowing owls consist of arid, open areas with sparse vegetation cover such as deserts, abandoned agricultural areas, grasslands, and

disturbed open habitats. Friable soils are also important habitat requirements for this species. Though habitat loss due to urbanization is a contributing factor to population declines, burrowing owls seem to be highly tolerant of nearby human impacts when suitable habitat is present and maintained, and when owls are not breeding (Gervaris et al. 2008).

Burrowing owls breed in the spring and are generally monogamous throughout the breeding season. Typically, only one clutch is laid per breeding season and average clutch sizes are 6 to 7 eggs, although usually only 3 to 5 hatchlings survive to fledging stage. The female will incubate the eggs for 27 to 30 days while the male provides food for the female during incubation and to the female and hatchlings just after hatching (NatureServe 2009). The young fledge the nest around 6 weeks and have been known to remain in the natal area and forage with the adults for a period of time thereafter. Although active throughout the day, burrowing owls mainly forage nocturnally for small vertebrate and invertebrate prey items such as small mammals, lizards, birds, and beetles.

2.3.4.2 SURVEY METHODOLOGY

Burrowing owl surveys were conducted by qualified ECORP biologists familiar with burrowing owl habitat, behavior, sign, and vocalizations. ECORP biologists Todd Chapman, Brad Haley, Erik Keethe, Anthony Mann, Holly McClure, Kristen Mobraaten, Kevin Ortega, Danica Schaffer-Smith, Debra Sykes, Jeff Swager, Scott Taylor, and Christine Tischer conducted four protocol-level burrowing owl surveys (two breeding season and two wintering) between May 2008 and January 2009 in accordance with the California Burrowing Owl Consortium's (CBOC) *1993 Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993). Following Caltrans' consultation with CDFG, additional 2008 breeding season surveys were not conducted. A table of the surveyors and survey dates is found below (Table 2).

On May 13, 2008, ECORP biologist Mari Quillman contacted Scott Harris (CDFG) regarding a modified survey protocol for the project. The 1993 CBOC protocol states that surveys shall be conducted from one hour before to two hours after sunrise and two hours before to one hour after sunset. CDFG agreed to allow surveyors to survey up to three hours after sunrise and up to three hours before sunset, with the most suitable habitat being surveyed during regular protocol hours.

Table 2. Burrowing Owl Surveyors and Survey Dates

Survey Number	Surveyors	Survey Dates	Type of Survey (Breeding/Wintering)
1	B. Haley, H. McClure, K. Mobraaten, D. Schaffer-Smith, D. Sykes	May 19 – 22; May 27 – 28, 2008	Breeding
2	B. Haley, H. McClure, K. Mobraaten, D. Schaffer-Smith, J. Swager	August 18 – 22, 2008	Breeding
3	T. Chapman, B. Haley, E. Keethe, H. McClure, K. Mobraaten, K. Ortega	January 6 – 9, 2009	Wintering
4	T. Chapman, B. Haley, A. Mann, H. McClure, K. Mobraaten, S. Taylor, C. Tischer	January 26 – 29, 2009	Wintering

2.3.5 Wildlife Crossing Study

A wildlife crossing study was conducted throughout the project area to identify the areas that large mammals most likely use as travel routes, especially areas where wildlife would potentially be crossing the new freeway. Data from the wildlife crossing study will be used in the project design process so that the new freeway can be designed and constructed in such a way that it will be conducive to local wildlife moving throughout the area. A wildlife-friendly freeway design will not only result in safer travel for motorists on the freeway, but it will also result in safer travel for wildlife crossing the freeway.

Wildlife travel throughout their home ranges for several different reasons: to forage or find food resources, to search for shelter, to find a mate (reproduction purposes), or to disperse from natal areas (young animals only). The wildlife crossing study focused on detecting areas used for travel by native, large mammals because these species are more likely to utilize larger areas for local travel and home ranges than smaller wildlife species. The native, large mammal species that inhabit in the Antelope Valley do not generally migrate over long distances, therefore this study was focused on local wildlife travel. Birds were not targeted during this study because of their ability to fly over roadways and other obstacles, and other animals occurring in the region (small mammals, reptiles, and amphibians) were not targeted during this study because of their tendency to reside in and move throughout smaller areas.

Thirty-five temporary tracking stations were placed in areas throughout the proposed alignments that would likely be used by large mammal species for local movement, or as potential crossing areas for the new freeway. Areas which would obviously require bridges, major road overcrossings (or under-crossings), and/or large drainage culverts (e.g., Littlerock Wash) during freeway design and construction were not a primary focus of the study because it was assumed these areas would remain open to wildlife movement.

The tracking stations were studied on a seasonal basis throughout a one-year period, between spring of 2008 and winter of 2009. Stations varied in size and shape depending on the location, and were classified as either a "point" station (small, circular or square-shaped) or a "linear" station (long, rectangular-shaped). Point stations were generally established at intersections of dirt roads and/or drainage features (such as washes and drainage culverts) or at areas where wildlife travel would be constrained due to topography, vegetation, or structural features (e.g., culverts or buildings). Linear stations were generally established within or parallel to existing roads or drainage features that contained no apparent bottleneck features or other barriers to wildlife movement. Biologists recorded the exact location of each of the stations using a GPS unit. Surveyors and survey dates for the wildlife crossing study are listed in Table 3.

Each of the four survey events, conducted during the new moon phase of the moon cycle, consisted of five consecutive days and each station was visited twice daily (morning and evening). In the evenings, approximately three to four hours prior to sunset, the native soils at each station were cleared using a large broom or carpet drag (rolled-up carpet mounted to steel pipes attached to a vehicle bumper by metal chains) that smoothed out the soils to create a 'blank' station. The stations were subsequently checked early the following morning for tracks, scat, or additional sign of wildlife activity. Biologists identified each set of tracks present at every station and recorded the species, track location (using GPS), direction of travel, and any other pertinent notes for all large mammal species detected. Track and stride measurements were recorded for some track sets to aid in identification of the species that created the tracks. Data were also recorded for small wildlife species that were detected (i.e., birds, lizards, small mammals); however, detailed location information and direction of travel were not documented because they were not species targeted for the study.

Table 3. Wildlife Crossing Study Survey Dates

Survey Name	Surveyors	Study Dates
Spring 2008	A. Mann, D. Mitchell, K. Mobraaten, D. Schaffer-Smith	April 28 – May 2, 2008
Summer 2008	B. Haley, A. Mann, D. Mitchell, D. Schaffer-Smith, B. Zitt	August 4 – 8, 2008
Fall 2008	B. Haley, A. Mann, D. Mitchell, K. Mobraaten, B. Zitt	November 3 – 7, 2008
Winter 2009	B. Haley, A. Mann, M.B. Schoolfield, S. Taylor, B. Zitt	February 23 – 27, 2009

Chapter 3. Results

3.1 Literature Review

The CNDDB and CNPS included records of several special-status species in the vicinity of the project area (CDFG 2008; CNPS 2009). The special-status species that were documented within the Littlerock, Palmdale, Ritter Ridge and surrounding USGS 7.5-minute topographic quadrangles (Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Lovejoy Buttes, Pacifico Mountain, Sleepy Valley, and Valyermo) are listed in Tables 4 and 5.

All sensitive species identified during the database searches were assessed for their potential to occur on site based on the following criteria:

Present: Species was observed in or immediately adjacent to the project area during a site visit or focused survey.

High: Habitat (including soils and elevation factors) and known historical range for the species occurs in the project area and a known occurrence has been recorded within 5 mi (8 km) of the site.

Moderate: Habitat (including soils and elevation factors) for the species occurs in the project area and a known occurrence occurs within the database search, but not within 5 mi (8 km) of the site; or a known occurrence is located within 5 mi (8 km) of the site and marginal or limited amounts of habitat occurs in the project area.

Low: Limited habitat for the species occurs in the project area and a known occurrence was found during the database search, but not within 5 mi (8 km) of the site; or suitable habitat strongly associated with the species occurs on site, but no records were found within the database search.

Presumed Absent: Species was not observed during focused surveys conducted in accordance with protocol guidelines at the appropriate time for identification; habitat (including soils and elevation factors) does not

exist on site; or the known geographic range of the species does not include the project area.

Note: Location information on some sensitive species may be of questionable accuracy or unavailable; therefore, for survey purposes, environmental factors associated with species occurrence requirements may be considered sufficient reason to give a species a positive potential for occurrence.

The literature search documented 23 sensitive plant species (one state-listed as rare) in the vicinity of the project area. Six of these plant species were determined to have a potential to occur (Table 4). The remaining 17 species were presumed to be absent from the project area because the known range, elevation, soils, or habitats present in the project area are not suitable for presence. Two species, white pygmy poppy (*Canbya candida*) and crowned muilla (*Muilla coronata*), were found in the project area during focused sensitive plant surveys; results of these surveys are described in depth in Section 3.3.1. All plant species considered sensitive or special-status by governing agencies (USFWS, CDFG) with potential to occur in and around the project area have been included in this table. Federal, state, and CNPS designations are explained at the end of the table. More detailed information regarding these species is found in Section 3.4.

Table 4. Sensitive Plant Species with Potential to Occur within the Project Area

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Abronia villosa* var. *aurita Chaparral sand-verbena	Fed: CA: CNPS:	none none 1B.1	January-September 75-1,600	Chaparral, coastal scrub, desert dunes.	**Presumed Absent:** No suitable habitat is present in the project area.
Arctostaphylos glandulosa* ssp. *gabrielensis San Gabriel manzanita	Fed: CA: CNPS:	none none 1B.2	March 595-1,500	Chaparral; rocky sites.	**Presumed Absent:** No suitable habitat is present in the project area.
Astragalus lentiginosus* var. *antonius San Antonio milk-vetch	Fed: CA: CNPS:	none none 1B.3	April-July 1,500-2,600	Lower and upper montane coniferous forest.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Astragalus preussii* var. *laxiflorus Lancaster milk-vetch	Fed: CA: CNPS:	none none 1B.1	March-May 700	Chenopod scrub.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Calochortus striatus Alkali mariposa lily	Fed: CA: CNPS:	none none 1B.2	April-June 70-1,595	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps.	**Moderate:** Suitable habitat is present in the project area and a population is documented 6 mi (9 km) northwest of the project area. Species was not observed during focused surveys.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Calystegia peirsonii Peirson's morning glory	Fed: CA: CNPS:	none none 4.2	April-June 30-1,500	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland.	**Presumed Absent:** No suitable habitat is present in the project area.
Canbya candida White pygmy poppy	Fed: CA: CNPS:	none none 4.2	March-June 600-1,460	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; gravelly, sandy, granitic sites.	**Present:** Suitable habitat is present in the project area and multiple populations of this species were observed during focused surveys.
Carex vulpinoidea Fox sedge	Fed: CA: CNPS:	none none 2.2	May-June 30-1,200	Marshes and freshwater swamps, riparian woodland.	**Presumed Absent;** The project area does not support suitable habitat for this species.
Castilleja gleasonii Mount Gleason Indian paintbrush	Fed: CA: CNPS:	none RARE 1B.2	May-September 1,160-2,170	Chaparral, lower montane coniferous forest, pinyon and juniper woodland; granitic sites.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Chorizanthe parryi* var. *parryi Parry's spineflower	Fed: CA: CNPS:	none none 1B.1	April-June 275-1220	Chaparral, cismontane woodland, coastal scrub, valley and foothill grasslands; sandy or rocky openings.	**Presumed Absent:** No suitable habitat is present in the project area.
Clarkia xantiana* ssp. *parviflora Kern Canyon clarkia	Fed: CA: CNPS:	none none 4.2	May-June 700-3,620	Chaparral, cismontane woodland, Great Basin scrub, valley and foothill grasslands; sandy or rocky slopes, sometimes roadsides..	**Presumed Absent:** No suitable habitat is present in the project area.
Layia heterotricha Pale-yellow layia	Fed: CA: CNPS:	none none 1B.1	March-June 300-1,705	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; alkaline or clay.	**Presumed Absent:** No suitable habitat is present in the project area.
Lilium parryi Lemon lily	Fed: CA: CNPS:	none none 1B.2	July-August 1,220-2,745	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Linanthus concinnus San Gabriel linanthus	Fed: CA: CNPS:	none none 1B.2	April-June 1,520-2,800	Chaparral, lower and upper montane coniferous forests; rocky openings.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Loeflingia squarrosa* var. *artemisiarum Sagebrush loeflingia	Fed: CA: CNPS:	none none 2.2	April-May 700-1,615	Desert dunes, Great Basin scrub, Sonoran desert scrub; sandy soils.	**Low:** Limited suitable habitat is present in the project area and a population is documented 5 mi (8 km) north of the project area. Species was not observed during focused surveys.
Lupinus peirsonii Peirson's lupine	Fed: CA: CNPS:	none none 1B.3	April-June 1,000-2,500	Joshua tree woodland, lower montane coniferous forest, pinyon-juniper woodland, upper montane coniferous forest; gravelly or rocky soils.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Muhlenbergia californica California muhly	Fed: CA: CNPS:	none none 4.3	June-September 100-2,000	Chaparral, coastal scrub, lower montane coniferous forest, meadows and seeps; mesic, seeps and streambanks.	**Presumed Absent:** No suitable habitat is present in the project area.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Muilla coronata Crowned muilla	Fed: CA: CNPS:	none none 4.2	March-May 765-1,960	Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	**Present:** Suitable habitat is present in the project area and multiple locations of this species were observed during focused surveys.
Opuntia basilaris* var. *brachyclada Short-joint beavertail	Fed: CA: CNPS:	none none 1B.2	April-August 425-1,800	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon-juniper woodland, riparian woodland.	**High:** Suitable habitat is present in the project area and a population is documented 2 mi (3 km) southwest of the project area. Species was not observed during focused surveys.
Orobanche valida* ssp. *valida Rock Creek broomrape	Fed: CA: CNPS:	none none 1B.2	May-September 1,250-2,000	Chaparral, pinyon-juniper woodland on slopes of loose decomposed granite. Parasitic on various chaparral shrubs.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Plagiobothrys parishii Parish's popcorn-flower	Fed: CA: CNPS:	none none 1B.1	March-November 750-1,400	Great Basin scrub, Joshua tree woodland; alkaline soils, mesic sites.	**Moderate:** Suitable habitat is present in the project area and a population is documented 8 mi (12 km) east of the project area. Species was not observed during focused surveys.

Scientific Name Common Name	Status		Typical Flowering Period Elevation (meters)	Habitat	Potential for Occurrence
Stylocline masonii Mason's neststraw	Fed: CA: CNPS:	none none 1B.1	March-May 100-1,200	Chenopod scrub, pinyon and juniper woodland; sandy sites.	**Presumed Absent:** No suitable habitat is present in the project area.
Symphyotrichum greatae Greata's aster	Fed: CA: CNPS:	none none 1B.3	June-October 300-2,010	Broadleaf upland forest, chaparral, cismontane woodland, lower coniferous forest, riparian woodland; mesic sites.	**Presumed Absent:** No suitable habitat is present in the project area.

Federal Designations
(FESA, USFWS)
END: Federally listed, endangered
THR: Federally listed, threatened

State Designations
(CESA, CDFG)
END: State-listed, endangered
THR: State-listed, threatened
RARE: State-listed as rare

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 (CDFG 2009c). This interpretation is inconsistent with other definitions.)
1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2: Plants rare, threatened or endangered in California, but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.
List 1B, 2, and 4 extension meanings:
.1 Seriously endangered in California (over 80% of occurrences threatened or have high degree and immediacy of threat).
.2 Fairly endangered in California (20-80% occurrences threatened).
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known).

Source: California Natural Diversity Database (CDFG 2008), California Native Plant Society Electronic Inventory (CNPS 2009) Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Littlerock, Lovejoy Buttes, Pacifico Mountain, Palmdale, Ritter Ridge, Sleepy Valley, and Valyermo USGS 7.5-minute topographic quadrangles.

Twenty-three sensitive wildlife species were found to have a potential to occur in the vicinity of the project area during the literature search (Table 5). Of those, four species were found in the project area: tricolored blackbird (*Agelaius tricolor*), burrowing owl, short-eared owl (*Asio flammeus*), and loggerhead shrike (*Lanius ludovicianus*). Detailed information on these species can be found in Section 3; federal and state status designations are explained in the last cell of the table.

Table 5. Sensitive Wildlife with Potential to Occur within the Project Area

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
FISH			
Catostomus santaanae Santa Ana sucker	Fed: **THR** CA: SSC	Found in small to medium-sized freshwater streams with cobble bottoms in the Los Angeles Basin.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
Gasterosteus aculeatus williamsoni Unarmored threespine stickleback	Fed: **END** CA: **END**	Inhabits slow-moving, clear streams with mud or sand bottoms. Presence of aquatic vegetation is required for nest building.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
AMPHIBIANS			
Anaxyrus* [*Bufo*] *Californicus Arroyo toad	Fed: **END** CA: SSC	Occurs within California and Baja Mexico stream systems. Found in shallow water and pools and upland habitat immediately adjacent.	**Presumed Absent;** Habitat not present in the project area – no suitable water sources present.
Rana draytonii California red-legged frog	Fed: **THR** CA: SSC	Found in lowlands and foothills in or near deep permanent water sources with dense or shrubby riparian vegetation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Rana muscosa Sierra Madre yellow-legged frog	Fed: **END** CA: SSC	Referring to the populations in the San Gabriel, San Jacinto and the San Bernardino Mountain Ranges only. Rarely found away from water; requires permanent water sources between 1,200 and 7,500 ft (365 and 2,286 m) in elevation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
REPTILES			
Actinemys marmorata pallida Southwestern pond turtle	Fed: none CA: SSC	Inhabits deep pools in permanent or nearly permanent bodies of water below 6,000 ft (1829 m) in elevation with basking sites.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
Anniella pulchra pulchra Silvery legless lizard	Fed: none CA: SSC	Inhabits a variety of habitats containing sandy or loose soils.	**High;** Several recent records occur within 5 mi (8 km) of the project area and suitable habitat is present throughout the proposed alignments.
Gopherus agasizzii Agassiz's desert tortoise	Fed: **THR** CA: **THR**	Prefers desert scrub habitats, arid sandy washes, and canyon bottoms.	**Presumed Absent;** Habitat is present; however tortoises and sign were not observed during focused 2008 surveys, and observations have not been made within the project area in the last 20 years.
Phrynosoma blainvillii Coast horned lizard	Fed: none CA: SSC	Occurs in open scrub and other open areas with ample native ant prey base.	**High;** Habitat is present and recent and historical records exist within 5 mi (8 km) of the project area.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Thamnophis hammondii Two-striped garter snake	Fed: none CA: SSC	Often found near permanent fresh water sources in habitats ranging from mountaintops to desert oases at elevations ranging from sea level to 8,000 ft (2,438 m) in elevation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
BIRDS			
Agelaius tricolor Tricolored blackbird	Fed: none CA: SSC	Highly colonial species, often found near cattail marshes, grasslands, and agricultural areas.	**Present;** Species observed during various surveys in the agricultural field at the intersection of Avenue P-8 and 50th Street E.
Athene cunicularia Burrowing owl	Fed: none CA: SSC	Numerous records exist for this species nearby. Prefers open, sparsely vegetated scrublands and grasslands.	**Present;** One breeding pair and one wintering individual and several burrow complexes were observed within the project area during focused surveys. Habitat is present throughout the project area.
Asio flammeus Short-eared owl	Fed: none CA: SSC	Inhabits cropland, old field, hedgerow, grassland, and savannah habitats.	**Present;** One wintering individual was observed east of 70th Street E, adjacent to the Littlerock Wash.
Buteo swainsoni Swainson's hawk	Fed: none CA: **THR**	This species inhabits open habitat such as shrublands, deserts, croplands, and herbaceous grasslands. Often found in habitats within close proximity to riparian areas.	**Moderate;** Several recent observations of this species occur between 5 and 10 mi (8 and 16 km) north of the project area and suitable habitat is present.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Charadrius montanus Mountain plover	Fed: none CA: SSC	A wintering resident in southern California, often associated with short grasslands, deserts, and freshly plowed agricultural areas.	**High;** Suitable habitat is present throughout the project area and one recent record is located approximately 3 mi (5 km) north of the project area.
Lanius ludovicianus Loggerhead shrike	Fed: none CA: SSC	Prefers open, arid habitats with many perching sites.	**Present;** This species was observed in several areas throughout the project area, habitat present in all desert scrub habitats.
Toxostoma lecontei Le Conte's thrasher	Fed: none CA: SSC	Prefers creosote bush scrub and barren desert plains.	**Moderate;** Suitable habitat is present throughout the project area, but all records of the species are more than 20 years old (historic).
MAMMALS			
Antrozus pallidus Pallid bat	Fed: none CA: SSC	Usually found near open water with nearby rocky cliffs for roosting,	**Low;** Suitable habitat is not present in the project area.
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	Fed: none CA: SSC	This species occurs in sandy, herbaceous areas occurring in desert wash, desert scrub and desert succulent shrub habitats.	**Moderate;** Suitable habitat is present in the areas surrounding the wash in the eastern portion of the project area; however, no records are located with 5 mi (8 km) of the project area.
Eumops perotis californicus Western mastiff bat	Fed: none CA: SSC	Inhabits habitats that are open and semi-arid, including grasslands, chaparral, woodlands, and coastal scrub.	**Moderate;** Suitable habitat is present throughout the project area; however, no records are located within 5 mi (8 km) of the project area.
Onychomys torridus ramona Southern grasshopper mouse	Fed: none CA: SSC	Inhabits desert scrub habitats consisting of low to moderate shrub cover with friable soils.	**Moderate;** Suitable habitat is present in the project area; however, no records are located with 5 mi (8 km) of the project area.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Xerospermophilus* [*Spermophilus*] *mohavensis Mohave ground squirrel	Fed: none CA: **THR**	Occurs in desert scrub, alkali scrub and Joshua tree woodland habitats in the Mojave Desert.	**Presumed Absent:** Historical known occurrences (more than 20 years old) exist within 5 mi (8 km) of the project area; however, this species was not captured during focused trapping surveys conducted in suitable habitat.
Taxidea taxus American badger	Fed: none CA: SSC	Inhabits arid, open areas with friable soils for digging. This species is found in desert, shrub, forest, and herbaceous habitats.	**Moderate;** Suitable habitat occurs throughout most of the project area; however, no recent records occur within 5 mi (8 km) of the project area.

Federal Designations	**State Designations**
(FESA, USFWS)	(CESA, CDFG)
END: Federally listed, endangered	**END:** State-listed, endangered
THR: Federally listed, threatened	**THR:** State-listed, threatened
	SSC: California Species of Special Concern

Source: California Natural Diversity Database (CDFG 2008) Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Littlerock, Lovejoy Buttes, Pacifico Mountain, Palmdale, Ritter Ridge, Sleepy Valley, and Valyermo 7.5-minute USGS quads.

3.2 Site Characteristics and Vegetation Mapping

The Mojave Desert Province, a geologically defined region in which the Antelope Valley is located, is characterized by dry lakes (playas), alluvial fans, and low mountains. The project area lies between the elevations of 2,760 and 3,000 ft (841 and 914 m) above msl. Topography throughout the entire project site is flat, with sandy and gravelly soils. Commercial and residential developments, agricultural fields, and utility structures are scattered throughout most of the western portion of the project area. The eastern portion of the project area is relatively undisturbed desert habitat. Several drainages, washes, and areas of standing water are present in the project area. Most notably, the eastern portion of the proposed project area runs perpendicular to Littlerock Wash, between 75th and 85th Streets E.

The project area supports several different vegetation communities with varying levels of disturbance. The dominant communities include creosote bush scrub series, Joshua tree series, and rabbitbrush series, which intergrade frequently with several other vegetation communities throughout the proposed project footprint. Table 6 lists the acreage of each vegetation community found within the proposed project footprint. Substantial portions of the project area are disturbed from previous agricultural use, fire, unauthorized off-highway

vehicle (OHV) use, and trash dumping. Figures 5A through 5C illustrate the vegetation communities that were observed within the project area. Survey data sheets from the vegetation community mapping survey are included in Appendix B. Each vegetation community and the associated plants observed in the project area are discussed individually below.

Table 6. Vegetation Communities Acreages

Vegetation Community	Acreage		Total Acreage in Proposed Project Footprint
	Alternative 2	Alternative 3	
Big Sagebrush Series	5.56	5.56	5.56
Creosote Bush Series	6.24	6.24	6.24
Creosote Bush Series/Joshua Tree Series	36.90	38.44	75.34
Fourwing Saltbush Series/Rubber Rabbitbrush Series	0.00	5.94	5.94
Joshua Tree Series	69.59	71.09	140.68
Mixed Willow Series/Cattail Series	0.00	2.40	2.40
Rubber Rabbitbrush Series	126.18	126.44	203.67
Rubber Rabbitbrush Series/Atriplex Series	28.99	23.13	37.39
Scalebroom Series	9.58	9.58	9.58
Disturbed/Developed	145.66	146.94	178.52
Ornamental	0.84	0.37	1.21
Total	429.54	436.13	666.52

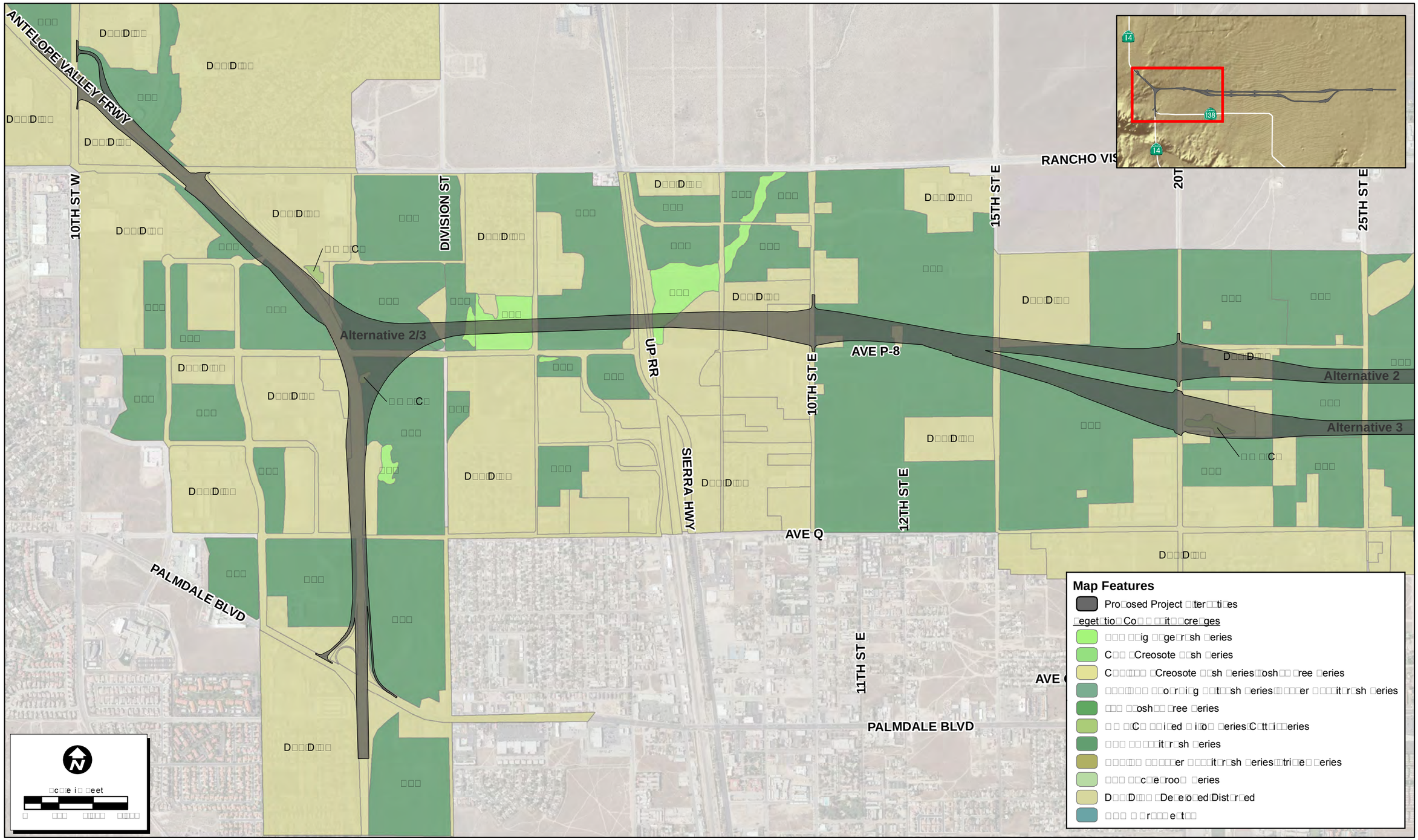

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Figure 5A. Vegetation Communities - Map 1 of 3

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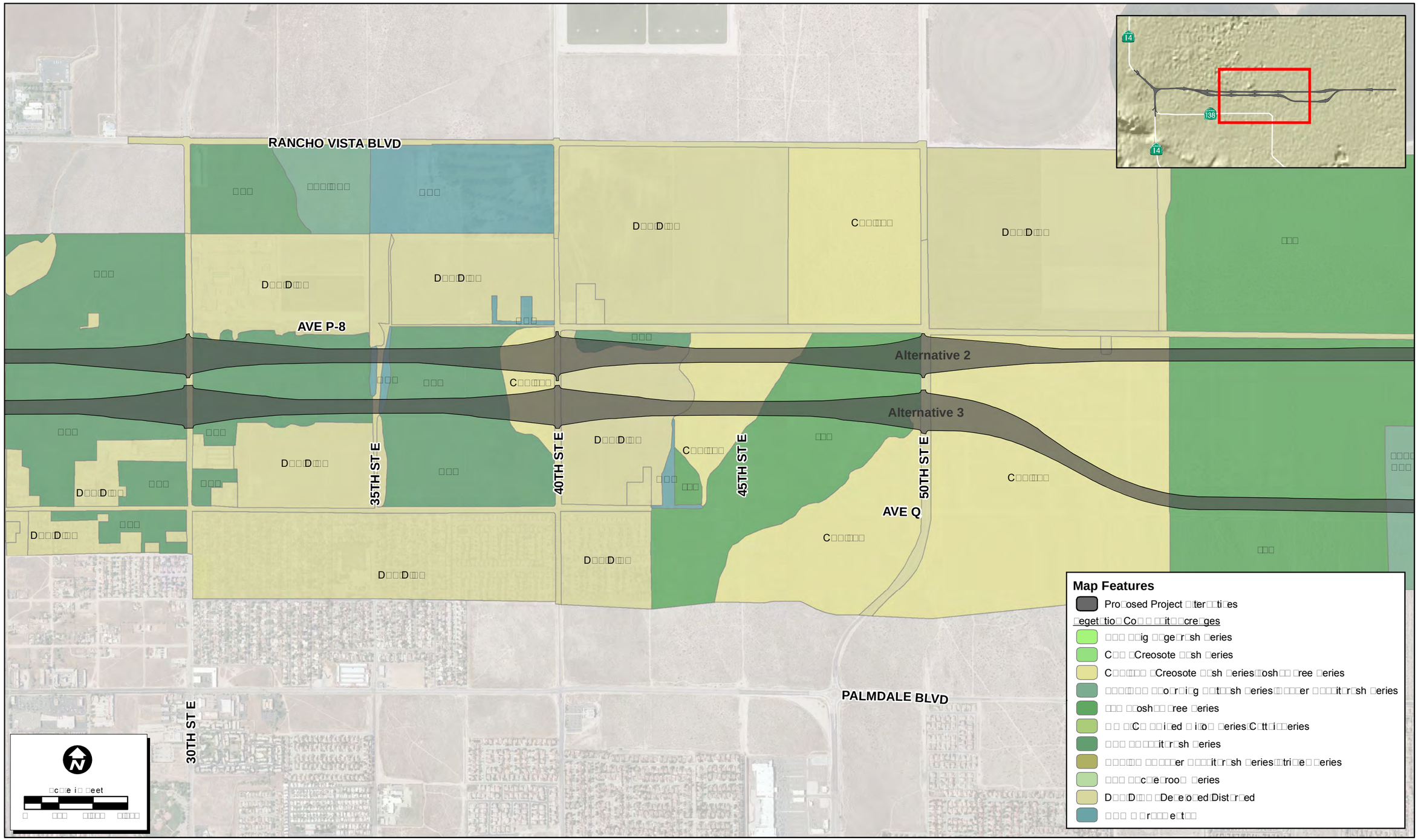

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Figure 5B. Vegetation Communities - Map 2 of 3

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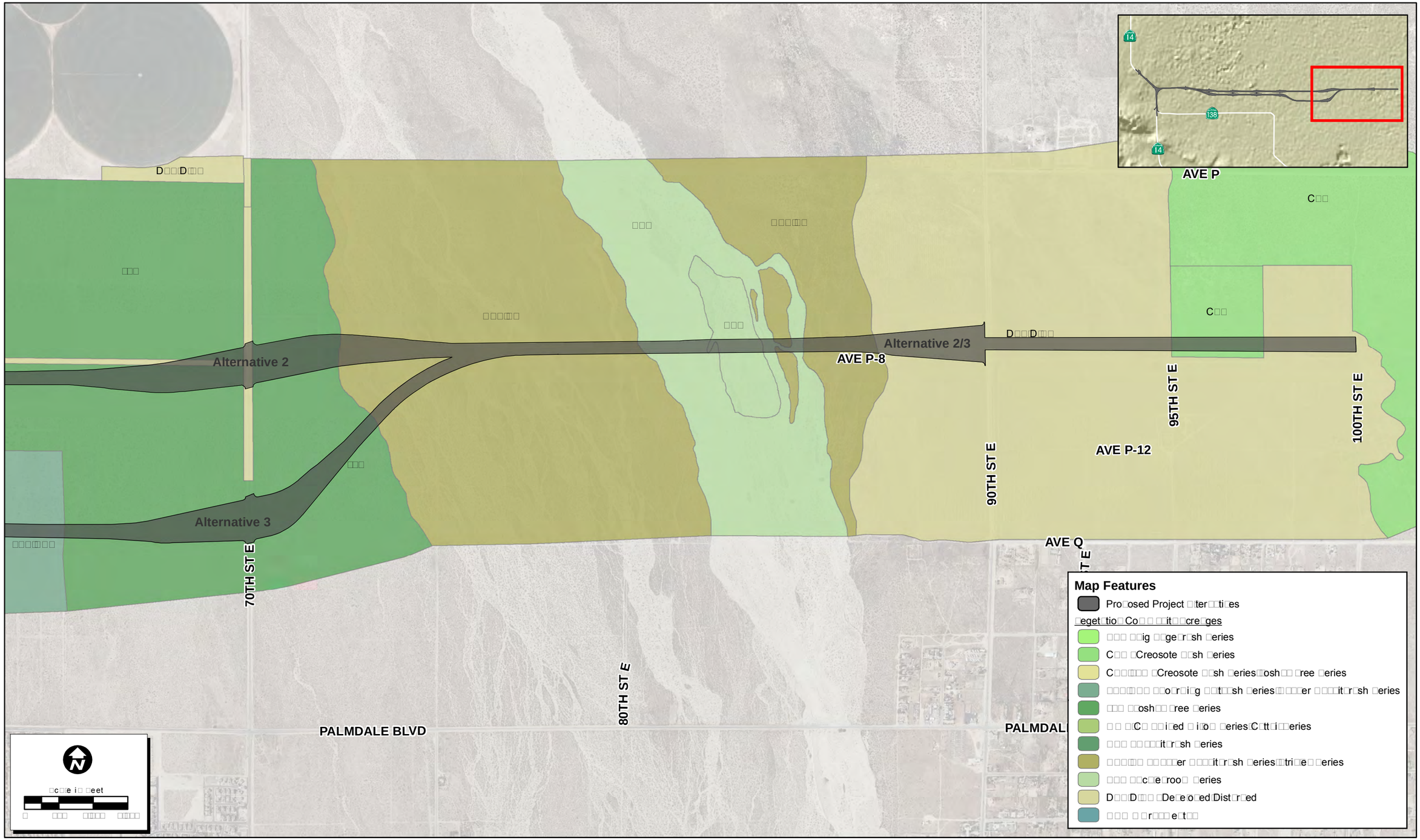

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Figure 5C. Vegetation Communities - Map 3 of 3

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Big Sagebrush Series

Big sagebrush series is characterized by mostly soft-woody shrubs with bare ground underneath and between the shrubs. This community is typically dominated by big sagebrush with the co-dominate species being yellow rabbitbrush (*Chrysothamnus viscidiflorus*) and mountain ephedra (*Ephedra viridis*). Associate native species in the project area include: common fiddleneck (*Amsinckia menziesii*), fourwing saltbush (*Atriplex canescens*), wild tarragon (*Artemisia dracunculus*), white tidy-tips (*Layia glandulosa*), slender-stemmed buckwheat (*Eriogonum gracillimum*), and wild rhubarb (*Rumex hymenosepalus*). Non-native species observed in the understory included foxtail fescue (*Vulpia myuros*) and wild oat (*Avena barbata*). This vegetation community is present both east and west of Sierra Highway in the western portion of the project area.

Creosote Bush Series

Creosote bush series is characterized by fairly open stands of the dominant shrub creosote bush (*Larrea tridentata*). Typically, this community occurs on well-drained sandy soils below 4,000 ft (1,219 m) above msl. Associated species include white bursage (*Ambrosia dumosa*), cheesebush (*Hymenoclea salsola*), allscale (*Atriplex polycarpa*), mountain ephedra, and linear-leaved goldenbush (*Ericameria linearifola*). Understory plant species include Wallace's woolly daisy (*Eriophyllum wallacei*), sandblossoms (*Linanthus parryae*), desert dandelion (*Malacothrix glabrata*), and purple mat (*Nama demissum*). This community mostly intergrades with Joshua tree series in the project area, but a relatively pure stand of creosote bush series is found in the extreme eastern portion of the project footprint between 95th and 100th Streets E. A representative photo of the creosote bush series community in the project area is found in Figure 6.

Figure 6. Creosote Bush Scrub Series

Fourwing Saltbush Series

This community is dominated by a single species of saltbush, the fourwing saltbush (Sawyer and Keeler-Wolf 1995). Fourwing saltbush series is commonly less than 3 ft (1 m) in height and typically occurs on fine-textured, poorly drained soils with high alkalinity and/or salinity. It usually surrounds playas on slightly higher open ground. The other co-dominant plant species are creosote bush, cheesebush, allscale, and yellow rabbitbrush. Associated species in this community include broad-flowered gilia (*Gilia latiflora*), California evening primrose (*Oenothera californica*), Joshua tree, Wallace's woolly daisy, browneyes (*Camissonia clavifomis* var. *claviformis*), white bursage, and mountain ephedra. This plant community intergrades with rubber rabbitbrush series in portions of the project area and is found between 20th and 40th Streets E, and between 50th and 70th Streets E.

Joshua Tree Series

The Joshua tree series typically occurs on gently sloped alluvial fan areas. It is characterized by a dense overstory of Joshua trees up to 39 ft (12 m) in height, which may be associated with many different understory shrub communities. Dominant shrub species observed in the Joshua tree series in the project area include: mountain ephedra, big sagebrush (*Artemisia tridentata*), and yellow rabbitbrush. Diverse herbaceous species were observed in the

understory of this community, such as yellow cups (*Camissonia brevipes*), desert calico (*Loeseliastrum matthewsi*), coldenia (*Tiquilia plicata*), and Mojave sand verbena (*Abronia pogonantha*). Disturbances are present in some portions of this habitat type, including trash dumping and a burned area west of 50th Street E. This community intergrades with creosote bush series in some areas and is dominant throughout the central portion of the project area, between 50th and 75th Streets E. Figure 7 illustrates representative Joshua tree series vegetation found within the project area.

Figure 7. Joshua Tree Series

Mixed Willow Series/Cattail Series

Mixed willow series is a riparian community characterized by dense, broad-leafed, winter-deciduous thickets typically dominated by several species of willows (*Salix* spp.) and mule fat (*Baccharis salicifolia*). The dominant willow is this particular habitat is narrow leaf willow (*Salix exigua*) with a small amount of arroyo willow (*S. lasiolepis*) also present. In the project area, the mixed willow series intergrades with cattail series and it occurs in three small areas within the western portion of project area. Cattail series is an herbaceous community consisting of emergent vegetation less than 13 ft (4m) in height that occurs in freshwater marsh areas that flood on an irregular basis. The associated plant species in these

communities include narrowleaf cattail (*Typha domingensis*), Coulter's lupine (*Lupinus sparsiflorus*), saltgrass (*Distichlis spicata*), and California goldfields (*Lasthenia californica*). Associated non-native species in this plant community include ripgut grass (*Bromus diandrus*), red-stemmed filaree (*Erodium cicutarium*), London rocket (*Sisybrium irio*), Siberian elms (*Ulmus pulima*), and alfalfa (*Medicago sativa*). Figure 8 illustrates the mixed willow/cattail series vegetation with Siberian elms present.

Figure 8. Mixed Willow/Cattail Series with Siberian Elms

Rubber Rabbitbrush Series

This is a disturbance-maintained native shrub community dominated by yellow rabbitbrush. This community intergrades with other communities, such as scalebroom series, around Littlerock Wash in the eastern portion of the project area. Disturbed areas are present in some portions of this vegetation community, mostly in the western portion, and between Littlerock Wash and 90th Street E in the east. Associated species observed in the rubber rabbitbrush series include big sagebrush, annual bursage (*Ambrosia acanthicarpa*), allscale, and Nevada jointfir (*Ephedra nevadensis*). Other plant species in the understory include white mallow (*Eremalche exilis*), hairy-leaved comb-bur (*Pectocarya penicillata*), and common fiddleneck.

Rubber rabbitbrush series intergrades with Atriplex series in a few areas in the project area. Atriplex series typically occurs on fine-textured, poorly drained soils with high alkalinity and/or salinity. It usually surrounds playas on slightly higher ground. This community is usually dominated by a single species of saltbush (*Atriplex* spp.). Associated species in this community include white bursage and desert tomato (*Lycium andersonii*).

Scalebroom Series

Scalebroom series is a mixed evergreen deciduous shrub community less than 5 ft (2 m) in height that typically occurs on quickly drained alluvial soils. This community is dominated by scalebroom (*Lepidospartum squamatum*) and is accompanied by the co-dominant plants big sagebrush, cheesebush, fourwing saltbush, and yellow rabbitbrush. Associated species in this community include Argus gilia (*Gilia brecciarum*), California evening primrose, Mojave sand verbena, Wallace's woolly daisy, evening primrose (*Camissonia campestris*), and white tidy-tips. This habitat is located in the east end of the project area where the alternatives converge between 75th and 85th Streets E. Two life stages of this community are present in the project area: pioneer and intermediate. Pioneer scalebroom series is found in the main channel of Littlerock Wash and is characterized by younger, smaller scalebroom plants resulting from a higher rate of disturbance in the wash. Intermediate scalebroom series consists of more mature plants than the pioneer stage, and this stage is found as a large 'island' located in the main channel of Littlerock Wash.

Developed/Disturbed

Portions of the project area subjected to roadside maintenance or long-term compaction, such as road shoulders, existing dirt access roads, unauthorized OHV use areas, and areas near residential and commercial development support little to no vegetation. This community, when vegetated, is dominated by non-native plants including black mustard, red-stemmed filaree, and cheeseweed (*Malva parviflora*). Associated native species are cocklebur (*Xanthium strumarium*) and yellow rabbitbrush. Associated non-native species are cheatgrass (*Bromus tectorum*), London rocket, ripgut grass, giant reed (*Arundo donax*), and Asian mustard (*Brassica tournefortii*). The western portion of the project area is more developed and disturbed than the eastern portion. Several paved roads and residential and commercial developments are present between SR 14 and 50th Street E. There is little to no native vegetation in the developed areas (Figure 9).

Some portions of the project area are under active cultivation or grazing, such as north of Avenue P-8 between 40th and 50th Streets E, and other areas exhibit obvious disturbances from similar agricultural or grazing activities occurring in the past. Inactive or historical agricultural areas consist of mostly non-native plant species, including wild oat, black

mustard (*Brassica nigra*), and red-stemmed filaree and were also classified as developed/disturbed throughout the project area.

Figure 9. Disturbed Area in Western Portion of the Project Area

Ornamental

Ornamental plant species occur in areas where they were specifically planted to provide aesthetic or border plantings. Ornamental trees and shrubs are present both east and west of 40th Street E, as well as in association with the Desert Aire Golf Course located just south of Avenue P. Siberian elm and an unidentified species of orchard tree are present in the project area, in addition to the plantings associated with the golf course.

3.3 Biological Studies

Focused, protocol-level surveys were conducted within all or portions of the project area for sensitive plant species, desert tortoise, Mohave ground squirrel, and burrowing owl. An estimate of Joshua tree density and a wildlife crossing study were also conducted to identify additional biological resources present in the project area. The results of each survey are presented below under their respective headings. A compendium of all plant species

observed during the surveys is found in Appendix C and a compendium of all wildlife species observed or detected during the surveys is included as Appendix D.

3.3.1 Sensitive Plant Surveys

Two sensitive plant species were observed within the project area during the initial focused sensitive plant surveys conducted in March and April 2008: white pygmy poppy and crowned muilla. Many special-status plant species identified in the literature searches and/or documented in the vicinity of the project area were presumed absent because suitable habitat (including soils and elevation) was not present in or around the project area or the project area was outside the known range of the species.

A site visit was conducted five days prior to the secondary survey conducted in April 2009 to assess the blooming status of known populations of white pygmy poppy and crowned muilla in the project area. At the time of the site visit, the poppies were nearing the end of their blooming period and were relatively difficult to identify. Known populations of crowned muilla had already gone to seed and were past their blooming period. The additional survey of the amended portion of Alternative 3 between 50th and 75th Streets E conducted in 2009 yielded no additional observations of sensitive plant species within the alternative footprint; however, this survey was conducted towards the end of the blooming period for some sensitive plant species with potential to occur.

The natural history and survey results for white pygmy poppy and crowned muilla are found in the following sections. Locations of these species observations are shown on Figure 10 and survey data sheets are found in Appendix E.

White Pygmy Poppy

White pygmy poppy is a CNPS List 4.2 (defined as being on a watch list of plants presumed to be endangered in California) annual herb endemic to California (CNPS 2009). This species typically occurs in sandy soils in the western Mojave Desert. Specific vegetation communities where this dicot is found include Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland at elevations ranging from 1,969 to 4,790 ft (600 to 1,460 m) above msl. The blooming period for white pygmy poppy is typically between March and June. Threats to this species include development, OHV use, grazing, and non-native invasive plants.

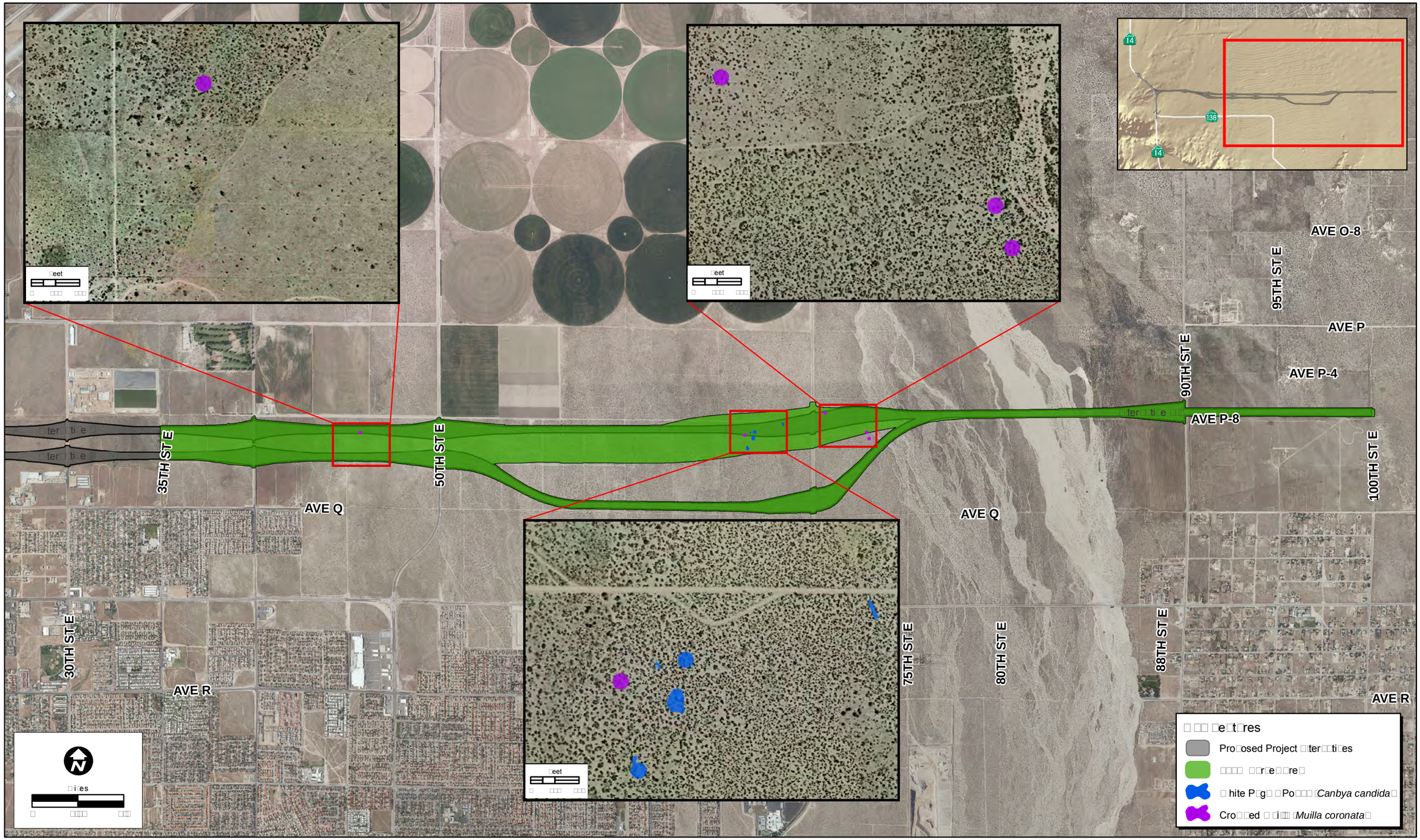

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Figure 10. Sensitive Plant Survey Results

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The literature searches documented the pygmy poppy in two locations within 10 mi (16 km) of the project area (CDFG 2008; CNPS 2009). The first record was approximately 7 mi (11 km) north of the project area at the intersection of Lancaster Boulevard and Sierra Highway in the City of Lancaster. There is no date for this record, however this location was documented in *Jepson Flora*, a reference book published in 1922 (CDFG 2008). The second record of this plant species was documented in 1926 and is located south of Littlerock Reservoir, approximately 10 mi (16 km) south of the project area (CDFG 2008).

Five populations of white pygmy poppy were identified in the project area during the focused sensitive plant survey conducted in 2008 (the blooming period for this species in 2008 was late March to early April). All five populations were found within approximately 2,600 ft (792 m) west of 70th Street E and south of Avenue P-8 (Figure 10). White pygmy poppy was not identified during the additional sensitive plant survey conducted along the south alignment between 50th and 75th Streets E in 2009 (the blooming period for this species in 2009 was early to mid-April). A photograph of a specimen observed during the 2008 survey is shown in Figure 11.

Figure 11. White Pygmy Poppy

Crowned Muilla

Crowned muilla is a CNPS List 4.2 (also on the watch list of plants presumed to be endangered in California) bulbiferous herb found only in California and Nevada (CNPS 2009). This perennial species typically occurs in heavy soils of chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland vegetation communities at elevations ranging from 2,510 to 6,430 ft (765 to 1,960 m) above msl. The blooming period is typically between March and April. Urban and commercial development are both considered threats to this species. Crowned muilla was not documented in the literature searches in the vicinity of the project area (CDFG 2008; CNPS 2009).

Five populations of crowned muilla were observed within the project area during the focused sensitive plant survey conducted in 2008 (the blooming period for this species in 2008 was late March to early April). Four of the five populations were documented approximately 2,600 ft (792 m) east and west of 70th Street E and south of Avenue P-8. The fifth population was recorded approximately halfway between 40th and 50th Streets E and south of Avenue P-8 (Figure 10). The focused sensitive plant survey conducted along the southern alignment in 2009 yielded no additional observations of crowned muilla (the blooming period for this species in 2009 was early to mid-April). A photograph of a specimen observed during the 2008 survey is presented in Figure 12.

Figure 12. Crowned Muilla

3.3.1.1 ESTIMATE OF JOSHUA TREE DENSITY

Joshua trees are a unique and characteristic plant species in the Mojave Desert. This species is a member of the lily family and is found at elevations between 1,640 and 6,561 ft (500 and 2,000 m) above msl (Calflora 2009). The Joshua tree is the largest yucca found in the United States and, like other yuccas, is pollinated by the yucca moth (*Tegeticula* sp.). This species does not flower every year; instead, flowering is dependent on a combination of precipitation and temperature (Schoenherr 1992). Several species of wildlife are associated with and depend on the Joshua tree for survival in the desert and, because of this Joshua trees are often considered an indicator plant for the health of desert ecosystems.

A formal Joshua tree survey was not conducted within the proposed project footprint; however, based on density estimates of Alternatives 2 and 3, it appeared that Alternative 3 had a higher density of Joshua trees than Alternative 2.

3.3.2 Desert Tortoise Survey Results

Only undisturbed, native habitat was surveyed for desert tortoise, per an agreement between Caltrans and CDFG during initial project coordination (see Section 2.3.2 for details). The western portion of the project area between SR 14 and 40th Street E, which is highly disturbed habitat from the residential and commercial development, was not surveyed for presence of desert tortoise. Desert tortoise and desert tortoise sign were not detected within either the 100-percent coverage survey area or the ZOI transects. Survey data sheets and weather conditions during the survey are found in Appendix F.

3.3.3 Mohave Ground Squirrel Trapping Results

Mohave ground squirrels were neither captured nor detected during the trapping survey conducted in the project area. One species of squirrel was captured during trapping efforts, the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*, AGS). A total of 165 AGS were captured during this inventory (Table 7); 85 females, 77 males, and 3 unknown (escapees). Of the identified individuals, slightly more AGS females (52%) were trapped than males (48%). Approximately 30 percent of males and 31 percent of females exhibited signs of reproductive readiness (i.e., enlarged external reproductive organs; pregnancy in females).

AGS were captured throughout all grids, with some grids having better success than others. Grids 1 (A and B) and 4 (A and B) resulted in the most AGS captures (54 and 50, respectively), whereas Grid 2 resulted in the lowest number of AGS captures (19).

Trapping results yielded a variety of other species including: western whiptail (*Aspidoscelis tigris*), coachwhip (*Masticophis flagellum*), desert spiny lizard (*Sceloporus magister*), cactus wren (*Campylorhynchus brunneicapillus*), deer mouse (*Peromyscus maniculatus*), and desert woodrat (*Neotoma lepida*) (Table 7).

The four trapping grids were established in the following vegetation communities: Joshua tree series, creosote bush series, and creosote bush series/Joshua tree series. Weather during the study was typical of the Mojave Desert ecosystem; high temperatures and wind events. The average temperature recorded while traps were open on each grid during the first session was 77°F (25°C), 87°F (30°C) in the second session, and 93°F (34°C) during the third session. The first day that traps were closed due to excessive heat (at or greater than 90°F [32°C]) was on May 14, 2008 for Grids 1 and 2. During most of the second session and all of the third session of trapping, the temperatures reached or exceeded 90°F (32°C) by late morning. Appendix G provides trapping data, grid characteristics, and weather during the trapping study.

3.3.3.1 NOCTURNAL TRAPPING

One night of nocturnal trapping was conducted at each Mohave ground squirrel grid during the second trapping session when nighttime temperatures did not fall below 50°F (10°C). Nocturnal trapping data are found in Appendix H.

Three nocturnal species of small mammals were captured during nocturnal trapping, Merriam's kangaroo rat (*Dipodomys merriami*), Panamint kangaroo rat (*D. panamintinus*), and desert pocket mouse (*Chaetodipus penicillatus*). The animal that was captured most frequently was Panamint kangaroo rat. All of the 21 male Panamint kangaroo rats captured and 11 of the 21 females captured (52%) exhibited signs of reproductive readiness. Ten Merriam's kangaroo rats were captured; 8 females and 4 males. All of the males and 6 of the 8 females (75%) exhibited signs of reproductive readiness. One female desert pocket mouse was captured and showed sign of reproductive activity (Table 8).

Table 7 . Mohave Ground Squirrel Trapping Results Summary

Grid #	AGS									ASTI	CAWR	MAFL	NELE	PEMA	SCMA
	Female				Male				Unknown						
	Adult	SA	Juv	*Total # Repro*	Adult	SA	Juv	*Total # Repro*							
1	14	15	4	*5*	16	4	1	*9*	*0*	1				1	2
2	5	5	0	*3*	7	2	0	*4*	*0*	14	1				
3	7	6	5	*7*	5	12	4	*3*	*3*	10		1			
4 (A & B)	14	7	3	*11*	11	11	4	*7*		3			1		2
Age Class Subtotal	**40**	**33**	**12**		**39**	**29**	**9**								
Gender Subtotal	**85**			***26***	**77**			***23***	***3***						
TOTAL	**165**									**28**	**1**	**1**	**1**	**1**	**4**
Amount Reproductive from **TOTAL**	*49*														

Legend

AGS = white-tailed antelope ground squirrel (*Ammospermophilus leucurus*)
ASTI = western whiptail (*Aspidoscelis tigris)*
CAWR = cactus wren (*Campylorhynchus brunneicapillus*)
MAFL = coachwhip (*Masticophis flagellum*)
NELE = desert woodrat (*Neotoma lepida*)
PEMA = deer mouse (*Peromyscus maniculatus*)
SCMA = desert spiny lizard (*Sceloporus magister*)

SA = subadult age class
Juv = juvenile age class

Table 8. Nocturnal Trapping Summary

Grid #	CHPE				DIME					DIPA					
	Female*		Male*		Female*			Male*		Female				Male*	
	Adult	*Total # Repro*	Adult	*Total # Repro*	Adult	Juv	*Total # Repro*	Adult	*Total # Repro*	Adult	SA	Juv	*Total # Repro*	Adult	*Total # Repro*
1 (A & B)	1	*1*	-	-	1	-	*1*	1	*1*	4	1	4	-	11	*11*
2	-	-	-	-	1	-	-	-	-	6	-	-	*5*	5	*5*
3	-	-	-	-	2	1	*2*	2	*2*	3	-	-	*3*	3	*3*
4 (A & B)	-	-	-	-	3	-	*3*	1	*1*	3	-	-	*3*	2	*2*
Age Class Subtotal	**1**		**0**		**7**	**1**		**4**		**16**	**1**	**4**		**21**	
Gender Subtotal	**1**	***1***	**0**	***0***	**8**		***6***	**4**	***4***	**21**			***11***	**21**	***21***
TOTAL	**1**				**12**					**42**					
Amount Reproductive from **TOTAL**	*1*				*10*					*32*					

CHPE = desert pocket mouse (*Chaetodipus penicillatus*)

DIME = Merriam's kangaroo rat (*Dipodomys merriami*)

DIPA = Panamint kangaroo rat (*Dipodomys panamintinus*)

Juv = juvenile age class

SA = subadult age class

* Age classes 'SA' and/or 'Juv' not shown because no animals in this age class were captured

3.3.4 Burrowing Owl Survey Results

Three owls and several burrow complexes were identified during the focused, protocol surveys. Each observation is discussed individually below and is shown on Figures 13A and 13B. Survey data sheets are found in Appendix I.

A pair of burrowing owls was observed prior to the start of the protocol-level burrowing owl surveys between 15th and 20th Streets E. During three of the four burrowing owl surveys conducted, either one or both owls of the pair were observed at this burrow complex. Burrowing owls were not observed at this location during the second (and last) winter survey. Although live juvenile burrowing owls were not observed by the surveyors, a carcass of a young burrowing owl was observed within 100 ft (30 m) of one of the burrow complexes during the second breeding season survey (in August 2008). Two burrow complexes were found to be associated with this pair, both of which were located between 15th and 20th Streets E. The first was located near 17th Street E and the second was located just east of 15th Street E, approximately 650 ft (200 m) west of the first complex (Figure 13). The owls were observed using both burrow locations during the surveys; both complexes exhibited sign of active use: presence of whitewash, pellets, feathers, and bones of prey items. Habitat surrounding the burrow complexes consists of disturbed rabbitbrush series. A photo of one of the adult owls of the pair is shown in Figure 14, and one of the two burrow complexes utilized by the burrowing owl pair is shown in Figure 15.

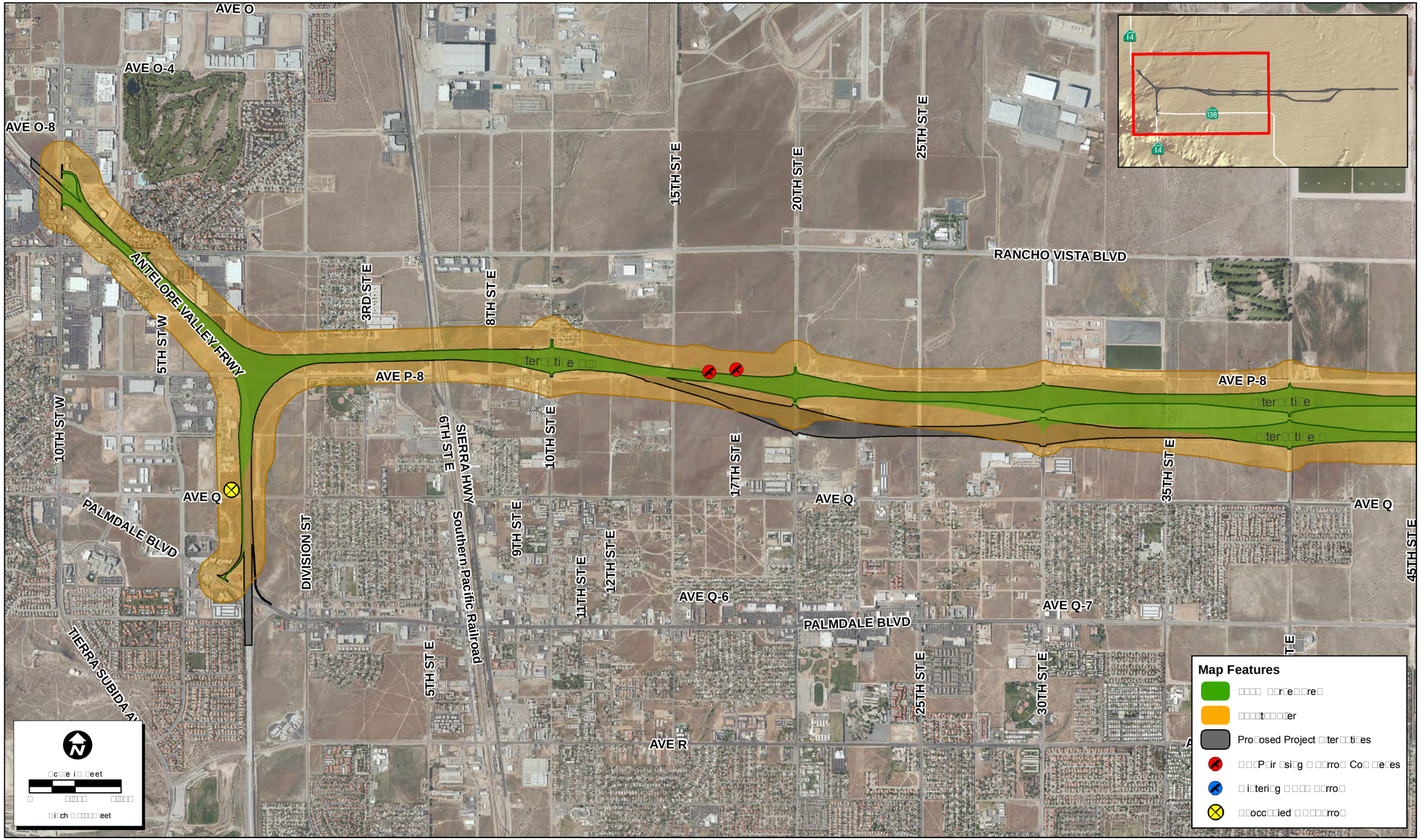

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Figure 13A. Burrowing Owl Survey Results - Map 1 of 2

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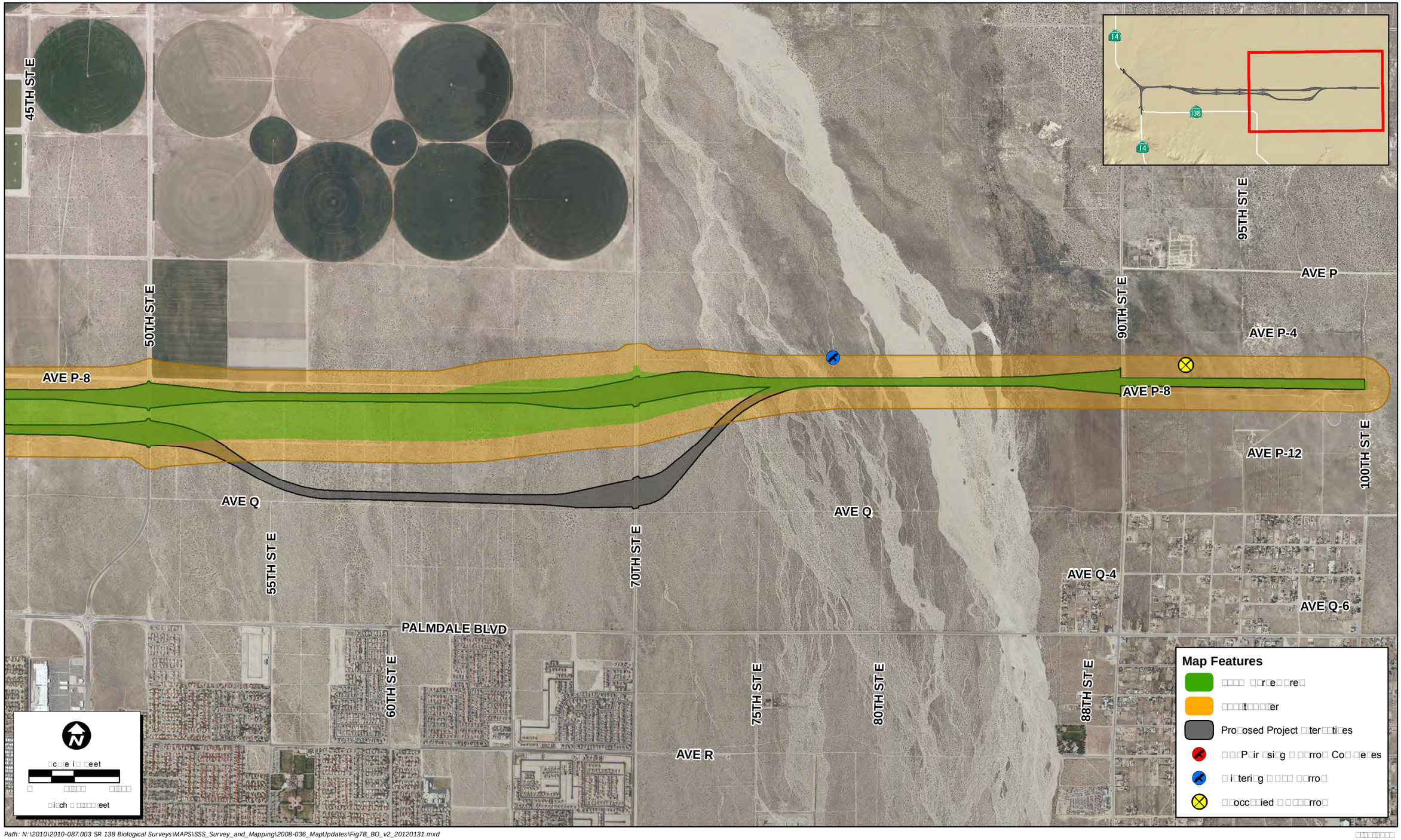

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Figure 13B. Burrowing Owl Survey Results - Map 2 of 2

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Figure 14. Adult Burrowing Owl (one of a pair located at 17th Street E)

Figure 15. Active Burrowing Owl Burrow Complex at 17th Street E

A single burrowing owl was observed in the eastern portion of the project between 75th Street E and Littlerock Wash in the Joshua tree/Atriplex scrub series vegetation. This owl was observed during both wintering season surveys, but not during the two breeding season surveys, indicating a winter resident. This owl appeared to be utilizing several burrows located in the vicinity; however one burrow appeared to be more heavily used than the others (Figure 16).

Figure 16. Primary Burrow Utilized by Wintering Owl East of 75th Street E

One burrowing owl complex was observed in the old agricultural field located between 90th and 100th Streets E. This complex had evidence of prior burrowing owl use (whitewash, pellets, bones of pre items, etc.); however, none of the sign observed was recent. The pellets disintegrated when handled due to their weathered state and the whitewash was not fresh. Burrowing owls were not observed at this location during any of the four protocol-level surveys.

One unoccupied burrow complex was observed at the extreme western portion of the project area, just west of SR 14 and south of Avenue P-8. Old burrowing owl sign was present; however, it appeared at the time of the survey that the complex was currently inhabited by California ground squirrels (Figure 17). Burrowing owls were not observed at this location during any of the four protocol-level surveys.

Figure 17. Unoccupied Burrow Complex Located West of SR 14

3.4 Wildlife Crossing Study

Thirty-five temporary tracking stations were placed throughout the project area (Figures 18A and 18B) to detect movements and direction of travel of native, large mammals moving throughout the project. At the start of the study, 38 stations were established; however, three stations were either eliminated due to high levels of human disturbance or, in one instance, the station's proximity to a pair of burrowing owls. Eliminating the three stations resulted in a non-sequential numbering system for the tracking stations.

Movements of three native large mammal species were detected during the study; coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), and bobcat (*Lynx rufus*). Coyotes were the most common species detected during this study, with their tracks appearing in stations throughout the entire project area despite presence of human disturbances (Figure 19). Kit foxes were the second most common large mammal track and bobcats were the least common. Additional mammal species detected at the tracking stations included desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit, domestic dog (*Canis familiaris*), raccoon (*Procyon lotor*), and domestic horse (*Equus caballus*).

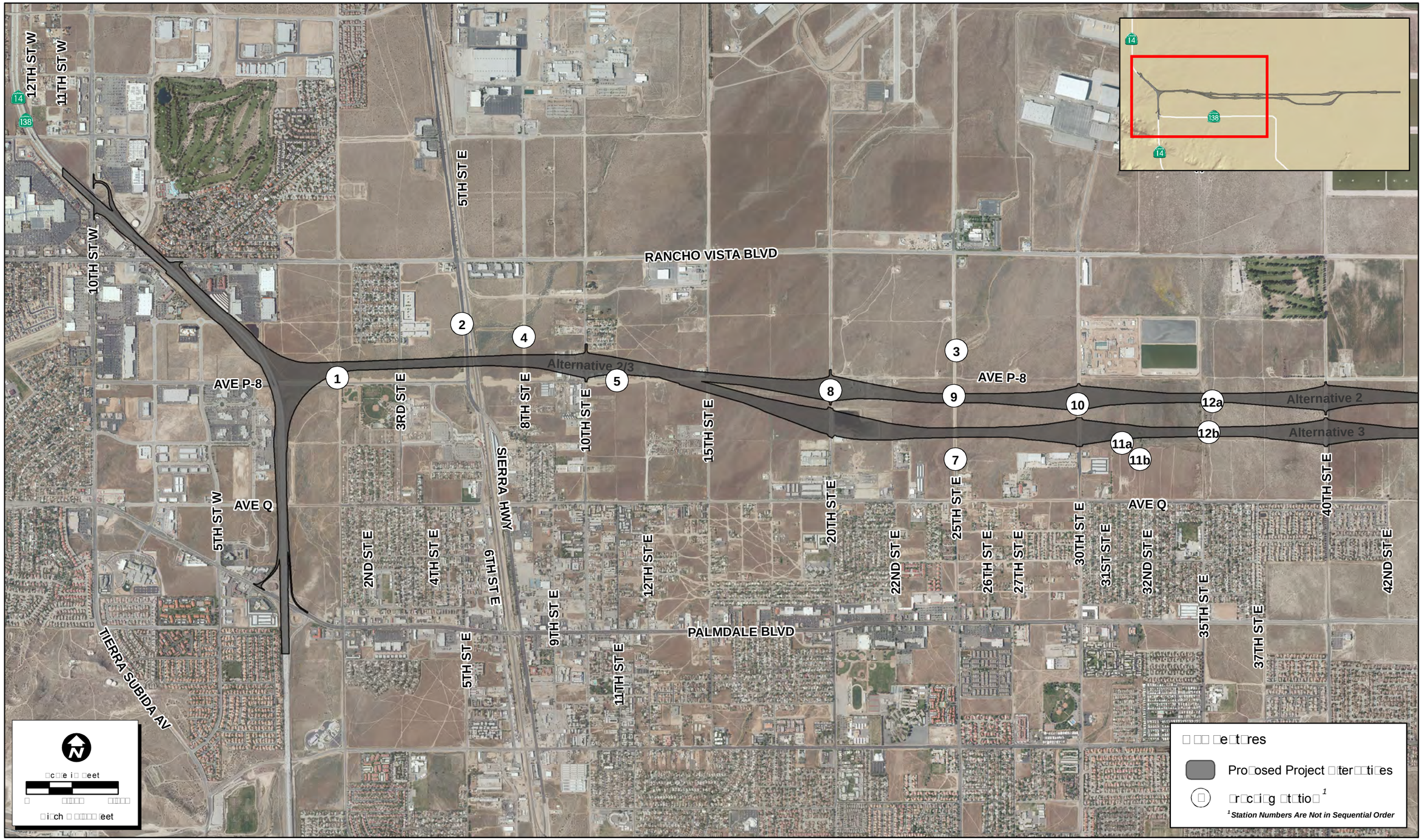

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Figure 18A. Wildlife Crossing Study Tracking Stations - Map 1 of 2

2010-087.003 SR 138 Biological Surveys

RANCHO VISTA BLVD

50TH ST E

16 18 19 22 23 26 27 28 30 31 Alternative 2 32 33 34 35 36 Alternative 2/3 38

17 20 21 25 29 Alternative 3

45TH ST E
51ST ST E
70TH ST E
90TH ST E
95TH ST E
100TH ST E
AVE Q
91ST ST E
92ND ST E
93RD ST E
87TH ST E
88TH ST E
97TH ST E
PALMDALE BLVD
75TH ST E
80TH ST E
55TH ST E
60TH ST E
65TH ST E
52ND ST E
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[1] Station Numbers Are Not in Sequential Order

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Figure 18B. Wildlife Crossing Study Tracking Stations - Map 2 of 2

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Figure 19. Adult coyote crossing Sierra Highway just south of the intersection with Avenue P (Rancho Vista Boulevard)

During the field surveys large mammal track sets were documented at each tracking station; each track set was classified as an "occurrence". Table 9 provides a summary of occurrence results for each tracking station. Detailed survey results maps that show a spatial representation of the species and directional travel data are included in Appendix J.

Table 9. Tracking Station Data Summary

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
1 (Point)	Coyote (10)	West (parallel with Avenue P-8)	Disturbed/Developed and Rabbitbrush Series	• High traffic volumes on dirt roads; • Avenue P-8 to south is highly traveled paved road; and • Residential areas nearby (high level of human disturbances).	• Nearby drainage ditch usually contained water; • Residential areas nearby could provide subsidized resources such as food or water; • Retention basin collected seasonal runoff from residential area to the north; and • Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads).	Station located between residential area and sports park. Station appears to have a high level of travel activity despite its urban location and high vehicle traffic volumes. With low densities of surrounding shrubs and vegetation, wildlife movement may not be concentrated in one area; wildlife could be traveling throughout the area.
2 (Linear)	Coyote (30)	East (across Sierra Highway)	Disturbed/Developed and Rabbitbrush Series	• Railroad and Sierra Highway east of the station are highly utilized for transportation; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel usually contained water; • Sparsely vegetated surrounding areas could create several routes of wildlife travel (travel not limited to existing roads); and • Residential areas nearby could provide subsidized resources such as food or water.	Station appears to have a high level of wildlife activity despite its urban location and high vehicle traffic volumes. Sierra Highway and the railroad do not appear to impede wildlife movements, as most occurrences were documented heading east.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
3 (Point)	Coyote (3)	South (parallel with 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• High vehicle activity on 25th Street E.	• Northeast-southwest drainage channel on east side of station usually contained water; and • Sparsely vegetated surrounding areas could create several routes of wildlife travel (travel not limited to existing roads)	Wildlife movement did not appear to be associated with drainage. With low densities of surrounding shrubs and vegetation, wildlife movement may not be limited to one area; wildlife could be traveling throughout area.
4 (Linear)	Coyote (43) Kit Fox (2)	All directions (across and parallel to 8th Street E).	Big Sagebrush series, Rabbitbrush Series, and Disturbed/Developed	• Railroad and Sierra Highway west of the station are highly utilized for transportation; and • Residential and commercial development nearby (human disturbances).	• Nearby drainage channel seasonally contained water; • Native vegetation surrounding the station could provide resources such as shelter and forage; and • Low vehicle activity on 8th Street E.	Wildlife movement did not appear to be associated with drainage or existing paved roadway; occurrences were documented in all directions. Majority of animals appeared to be traveling east and west across 8th Street E.
5 (Point)	Coyote (6)	North and south (parallel with the dirt road).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development nearby (human disturbances); • Unrestrained domestic dogs from nearby residence; • Avenue P-8 (dirt road) is highly used for local vehicle travel; and • Surrounding areas highly disturbed.	• Residential areas nearby could provide subsidized resources such as food or water.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
7 (Point)	Coyote (1)	East (across 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development nearby (human disturbances); • Surrounding areas highly disturbed; and • High vehicle activity on 25th Street E.	• Residential areas nearby could provide subsidized resources such as food or water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas away from disturbed areas.
8 (Linear)	Coyote (27)	East (across 20th Street E).	Disturbed/Developed and Rabbitbrush Series	• Surrounding areas highly disturbed.	• Detention basin southeast of station that may attract prey items due to seasonal inundation; and • Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads).	Wildlife movement did not appear to be associated with existing paved roadway. Majority of animals appeared to be traveling east and west across 20h Street E.
9 (Linear)	Coyote (29)	East and west (across 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development south of station (human disturbances); and • High vehicle activity on 25th Street E.	• Drainage channel on west side of 25th Street E usually contained water; and • Residential areas nearby could provide subsidized resources such as food or water.	Majority of animals appear to be traveling east and west (from one block of habitat to another) across 25th Street E.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
10 (Linear)	Coyote (28)	East and west (across 30th Street E).	Disturbed/Developed and Rabbitbrush Series	• Commercial development north and south of station (human disturbances).	• Riparian area with drainage channel to the east near 35th Street E; and • Dense vegetation to the east of station may provide shelter and forage.	Mostly east/west movement in between commercial development from one open block of habitat to another. Riparian area with the drainage channel could attract wildlife as a water source.
11a (Point)	Coyote (1)	North	Disturbed/Developed and Rabbitbrush Series	• Surrounding areas are highly disturbed and adjacent to commercial development; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel to the east usually contained water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
11b (Point)	Coyote (1)	West	Disturbed/Developed	• Surrounding areas highly disturbed and adjacent to commercial development; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel to the northeast usually contained water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
12a (Linear)	Coyote (6)	South (parallel to 35th Street E).	Disturbed/Developed, Rabbitbrush Series, and Ornamental	• Commercial development north of station; and • Numerous trash dump piles located within station.	• Riparian area with drainage channel adjacent to west side of station; and • Golf course located northeast of the station could attract prey items such as rodents.	Based on the low numbers of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
12b (Point)	Coyote (1)	West	Disturbed/Developed, Rabbitbrush Series, and Ornamental	• Commercial development north of station; and • Numerous trash dump piles located within station.	• Riparian area with drainage channel adjacent to the northwest side of station; and • Golf course located northeast of the station could attract prey items such as rodents.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
16 (Point)	Kit Fox (1)	West	Disturbed/Developed and Joshua Tree Series	• High vehicle activity on Avenue P-8.	• Agricultural field to the north of station.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
17 (Point)	Coyote (7) Kit Fox (1)	West	Creosote Bush Series and Joshua Tree Series	• Surrounding areas highly disturbed; and • Residential area to southwest (high level of human disturbances).	• Low vehicle activity on 45th Street E; • Residential areas nearby could provide subsidized resources such as food or water; and • Sparsely vegetated (previously burned) surrounding areas could create several routes of travel (travel not limited to existing roads);	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
18 (Linear)	Coyote (22)	North and south (across Avenue P-8).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E and Avenue P-8.	• Agricultural field to the east and west; and • Native vegetation surrounding the station could provide resources such as shelter and forage.	Barbed wire along Avenue P-8 did not appear to impede wildlife movement. Most wildlife travel appeared to move between the two native vegetation communities across Avenue P-8.
19 (Point)	Coyote (4)	North and south (parallel with 50th Street E).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E and Avenue P-8; and • Locked gate at the intersection of Avenue P-8 and 50th Street E and barbed wire along 50th Street E may inhibit wildlife crossing areas.	• Station adjacent to agricultural field.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
20 (Point)	Coyote (10)	North and south (parallel with 50th Street E).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E; and • Surrounding areas to the west are highly disturbed due to proximity to road, trash dumping, and being previously burned.	• Agricultural field to the north and residential and commercial areas to south (could provide subsidized resources); and • Open, relatively undisturbed habitat to the west.	Wildlife appeared to use road shoulder on east side of 50th Street E, while the east-west dirt road did not appear as highly utilized for travel.
21 (Linear)	Coyote (20) Kit Fox (2)	West	Creosote Bush Series and Joshua Tree Series	No apparent limitations.	• Agricultural field to the north (could provide subsidized resources such as food or water); • East/west and north/south dirt roads not traveled often by vehicles; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation and there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
22 (Linear)	Coyote (13) Bobcat (1)	West and northeast (parallel to Avenue P-8 and into agricultural field)	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field immediately adjacent to north side of station could provide subsidized resources such as food or water; • Avenue P-8 is a wide, dirt road relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat to the south.	Soils at this station were very conducive to detecting animal tracks. Gates present at 50th and 70th Street E reduced vehicular traffic on Avenue P-8 to only the farmers. Wire fencing present on boundaries of the agricultural field did not appear to impede animal movement.
23 (Linear)	Coyote (50) Bobcat (4)	All directions	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field immediately adjacent to north side of station (could provide subsidized resources such as food or water); • Avenue P-8 wide, dirt road relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding three sides of the station.	Most active station in the study, despite the relatively small station size. Great soils for detecting animal tracks. Gates present at 50th and 70th Street E, reducing vehicular traffic on Avenue P-8 to only the farmers. Wire fencing present on boundaries of field did not appear to impede animal movement.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
25 (Point)	Coyote (7) Kit Fox (3)	East (along dirt road)	Joshua Tree Series	• No apparent limitations.	• East/west and north/south dirt roads not traveled often by vehicles; and • Open, relatively undisturbed habitat surrounding the entire station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
26 (Linear)	Coyote (9)	North and west (parallel with and across Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station could provide subsidized resources such as food or water; • Avenue P-8 and the wide dirt road heading south are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
27 (Linear)	Coyote (20) Kit Fox (3)	North and east (parallel with and across Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 and the wide dirt road heading south are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
28 (Linear)	Coyote (19) Kit Fox (1)	East and west (parallel to Avenue P-8)	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 and wide dirt road are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.
29 (Linear)	Coyote (7)	East and southwest (across 63rd Street E)	Fourwing Saltbush Series/Rubber Rabbitbrush Series	• No apparent limitations.	• Low vehicle activity on 63rd Street E; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
30 (Linear)	Coyote (49) Bobcat (2) Kit Fox (7)	East and West (parallel with Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 is relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Very active station for wildlife travel. Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
31 (Linear)	Coyote (33)	East and west (across 70th Street E).	Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 70th Street E.	• Agricultural field to west and large wash to east of station (both offering resources such as food or water); • Avenue P-8 is relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gate along Avenue P-8 at 70th Street E restricts use of P-8 to farmers only. Mostly east/west wildlife movement, although this station was a north/south station, so it is difficult to determine whether wildlife were using Ave P-8 for movement, or just crossing 70th Street E at various locations. Gate at Avenue P-8 and 70th Street E and barbed wire fencing parallel with 70th Street East did not appear to impede animal movement
32 (Point)	Coyote (3)	North and west	Rubber Rabbitbrush Series/Atriplex Series	• No apparent limitations.	• Low vehicle activity on 75th Street E (dirt road); • Littlerock Wash present in vicinity; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas. Barbed wire present along west side of 75th Street E did not appear to impede animal movement.
33 (Linear)	Coyote (9) Kit Fox (2)	North (across Avenue P-8).	Rubber Rabbitbrush Series/Atriplex Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Animal movement appeared to be more associated with the Littlerock Wash than Avenue P-8.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
34 (Point)	Coyote (4)	East and west (parallel with Avenue P-8).	Rubber Rabbitbrush Series/Atriplex Series and Scalebroom Series	• No apparent limitations.	• Station within upland area of seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
35 (Linear)	Coyote (3)	North, south, and east (parallel with Avenue P-8 and Littlerock Wash).	Scalebroom Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
36 (Linear)	Coyote (21) Kit Fox (2)	All directions (parallel with Avenue P-8 and Littlerock Wash).	Rubber Rabbitbrush Series/Atriplex Series and Scalebroom Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Animal movement appeared to be more associated with the Littlerock Wash than with Avenue P-8.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
37 (Point)	Coyote (7)	Northeast and south (along existing dirt roads).	Disturbed/Developed	• Residential area to south (high level of human disturbances); • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.); and • Domestic animals and livestock observed within vicinity of station.	• Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads); • Residential areas nearby (could provide subsidized resources such as food or water); and • During rain events, a small depression within station collected water.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas. High levels of human disturbances from nearby residences could negatively affect wildlife movement through this area.
38 (Linear)	Coyote (14) Kit Fox (2)	All directions (parallel with Avenue P-8 and 100th Street E).	Disturbed/Developed and Creosote Bush Series	• Residential area to south (high level of human disturbances); • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.); and • Domestic animals and livestock observed within vicinity of station.	• Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads); • Residential areas nearby (could provide subsidized resources such as food or water); and • Native, undisturbed vegetation northeast of station.	Wildlife travel in this area did not appear to follow one linear feature; many routes of travel were evident. High levels of human disturbances from nearby residences could negatively affect wildlife movement through this area.
*Tracking stations were not numbered sequentially across the project area. Two types of stations were part of this project; point and linear. Stations that were generally established at the intersection of two roads are point stations. Stations that were generally established parallel to a section of one or two roads are linear stations.						

Seasonal variation in animal movement trends was also analyzed to determine whether a temporal effect was influencing large mammal travel and movement throughout the project area. The results of this analysis indicated that during the study highest wildlife travel activity occurred during the winter and spring months (26 of the 35 stations had high numbers of occurrences in either or both of these seasons). Many stations appeared to have the lowest activity levels in the summer. However, seasonal results varied between station locations, as some stations had higher activity levels during the same season that other similar stations had lower activity levels. Table 10 lists the seasonal variation data for each tracking station.

Table 10. Wildlife Crossing Study Seasonal Variation Data

Station ID*	Station Type	Species Occurrence by Season**				Total Occurrences per Station
		Spring 2008	Summer 2008	Fall 2008	Winter 2009	
1	Point	-	C: 1	C: 5	C: 4	**C: 10**
2	Linear	C: 6	C: 2	C: 12	C: 10	**C: 30**
3	Point	C: 2	-	C: 1	-	**C: 3**
4	Linear	C: 6	C: 16	C: 17 KF: 2	C: 4	**C: 43** **KF: 2**
5	Point	C: 2	C: 4	-	-	**C: 6**
7	Point	-	-	-	C: 1	**C: 1**
8	Linear	C: 13	C: 4	C: 1	C: 9	**C: 27**
9	Linear	C: 10	C: 12	-	C: 7	**C: 29**
10	Linear	C: 6	C: 3	C: 4	C: 15	**C: 28**
11a	Point	-	-	-	C: 1	**C: 1**
11b	Point	-	-	-	C: 1	**C: 1**
12a	Linear	C: 2	-	-	C: 4	**C: 6**
12b	Point	-	-	-	C: 1	**C: 1**
16	Point	-	-	-	KF: 1	**KF: 1**
17	Point	-	C: 2	C: 2	C: 3 KF: 1	**C: 7** **KF: 1**
18	Linear	C: 2	C: 7	C: 6	C: 7	**C: 22**
19	Point	-	-	C: 1	C: 3	**C: 4**
20	Point	-	-	C: 3	C: 7	**C: 10**
21	Linear	C: 14	-	C: 2	C: 4 KF: 2	**C: 20** **KF: 2**
22	Linear	C: 4	C: 4	B: 1 C: 3	C: 2	**B: 1** **C: 13**
23	Linear	B: 2 C: 26	C: 4	B: 2 C: 12	C: 8	**B: 4** **C: 50**
25	Point	C: 4	KF: 1	-	C: 3 KF: 2	**C: 7** **KF: 3**
26	Linear	C: 2	C: 3	C: 2	C: 2	**C: 9**
27	Linear	C: 6 KF: 2	C: 3	C: 4 KF: 1	C: 7	**C: 20** **KF: 3**

Station ID*	Station Type	Species Occurrence by Season**				Total Occurrences per Station
		Spring 2008	Summer 2008	Fall 2008	Winter 2009	
28	Linear	C: 6	C: 5	C: 3	C: 5 KF: 1	**C: 19** **KF: 1**
29	Linear	C: 4	-	-	C: 3	**C: 7**
30	Linear	B: 2 C: 22 KF: 6	C: 3	C: 16 KF: 1	C: 8	**B: 2** **C: 49** **KF: 7**
31	Linear	C: 14	C: 3	C: 8	C: 8	**C: 33**
32	Point	-	-	C: 1	C: 2	**C: 3**
33	Linear	C: 6	C: 1	C: 1	C: 1 KF: 2	**C: 9** **KF: 2**
34	Point	C: 2	-	C: 1	C: 1	**C: 4**
35	Linear	-	-	C: 2	C: 1	**C: 3**
36	Linear	C: 10	C: 5	C: 3	C: 3 KF: 2	**C: 21** **KF: 2**
37	Point	C: 4	-	C: 2	C: 1	**C: 7**
38	Linear	C: 8	C: 2	C: 2	C: 2 KF: 2	**C: 14** **KF: 2**
Total	**15 Point 20 Linear**	**B: 4 C: 181 KF: 8**	**B: 0 C: 84 KF: 1**	**B: 3 C: 114 KF: 4**	**B: 0 C: 138 KF: 13**	**B: 7 C: 517 KF: 26**

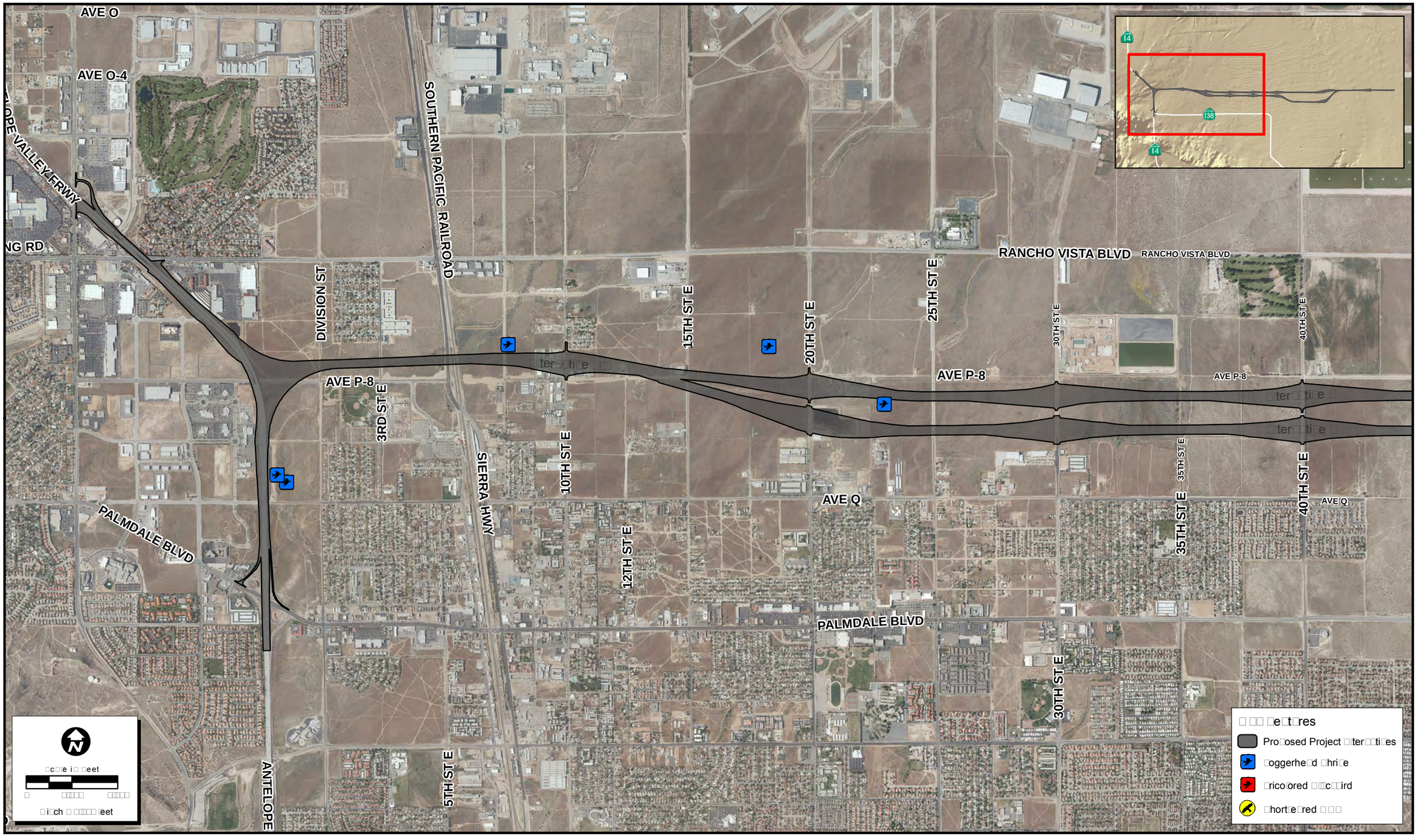
*Tracking stations were not numbered sequentially within the project area.
**B = Bobcat; C = Coyote; KF = Kit Fox

3.5 Incidental Wildlife Observations

Three sensitive bird species were incidentally observed during the surveys conducted in the project area: short-eared owl, loggerhead shrike, and tricolored blackbird. All three of these species are briefly described below. The locations of all incidental sensitive species observed in the project area are shown on Figures 20A and 20B.

Short-eared owl

The short-eared owl is designated as a SSC by CDFG. This crow-sized owl often inhabits open areas with large populations of rodents as a primary prey base and substantial amounts of herbaceous plants for concealing their ground nests during the breeding season (Roberson 2008). Populations appear to be directly related to microtine rodent populations; owls have been found to produce more young and extend their range in years that microtine rodents are most prolific (Roberson 2008). During the winter, short-eared owls often congregate in large groups in open areas with a large prey base. Threats to the short-eared owl include habitat loss and degradation due to human-induced disturbances, grazing, and invasive weed growth.



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\SSS_Survey_and_Mapping\2008-036_MapUpdates\IncidentalSensitiveSpecies_A_20120131.mxd

ECORP Consulting, Inc.
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Figure 20A. Incidental Sensitive Species Observations - Map 1 of 2

2010-087.003 SR 138 Biological Surveys

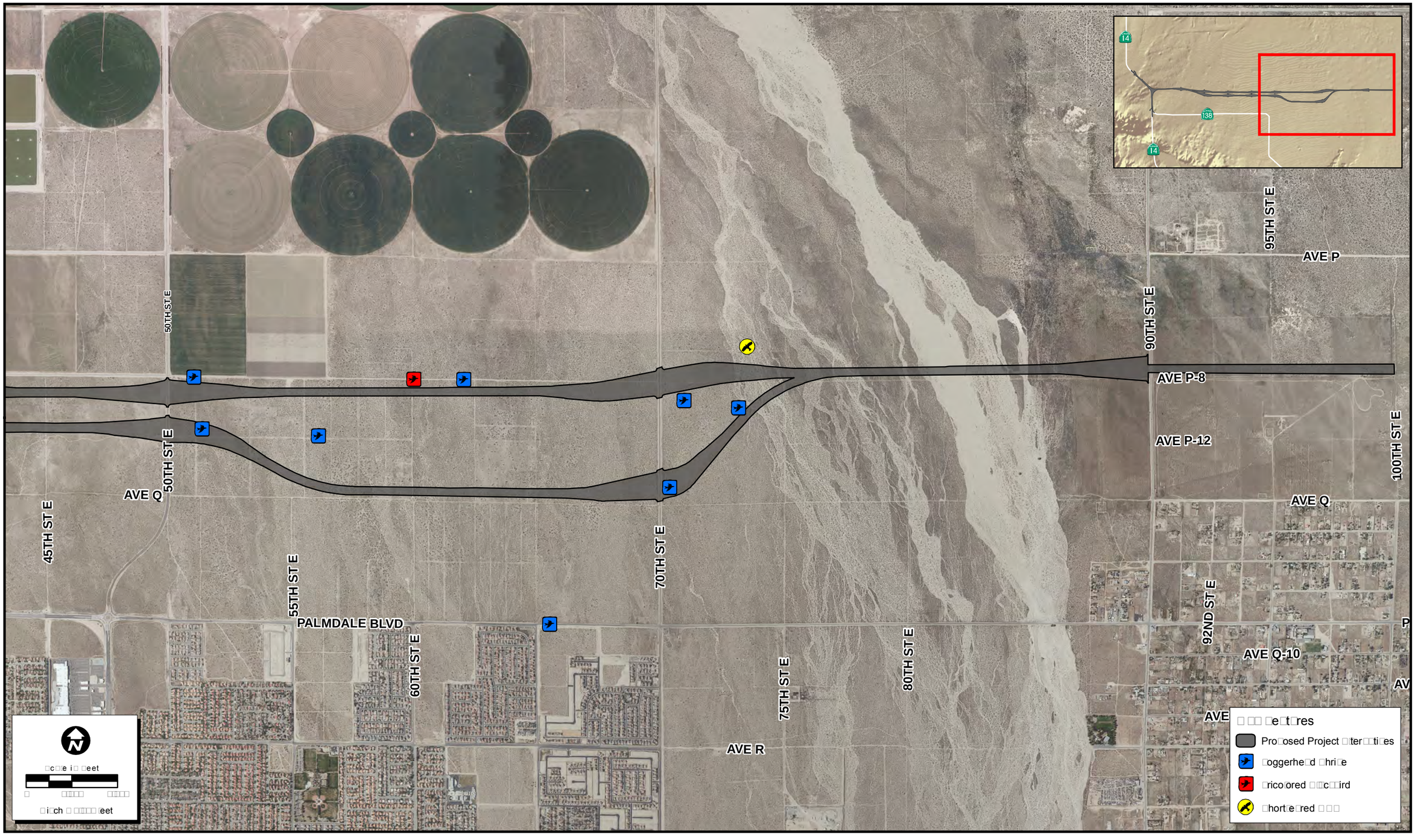

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Figure 20B. Incidental Sensitive Species Observations - Map 2 of 2

2010-087.003 SR 138 Biological Surveys

During the first wintering burrowing owl survey conducted in early January 2009, one short-eared owl was observed approximately 1,970 ft (600 m) east of 70th Street E in rabbitbrush series/Atriplex series vegetation community. It is very likely this was a migratory wintering individual due to the time of observation. It is unlikely that a short-eared would nest in the vicinity of the project area, as they typically nest in the northern-most parts of North America (Roberson 2008).

Loggerhead shrike

The loggerhead shrike is designated as a SSC by CDFG. It is a predatory songbird found in open, arid habitats such as deserts, shrublands, chaparral, and grassland throughout most of the United States and portions of Canada and Central America (Humple 2008). Populations are common in the Mojave Desert, where loggerhead shrikes are year-round residents. The loggerhead shrike feeds on invertebrates, lizards, small birds, frogs, and rodents. A characteristic habit of this species is that it will impale its food items on fences, particularly barbed wire. Threats to loggerhead shrikes include habitat loss, nest predation, and pesticide use.

This species was commonly observed throughout the desert scrub habitats in and around the project area during the various surveys.

Tricolored blackbird

The tricolored blackbird is designated as a SSC by CDFG. This species is a permanent resident throughout California, with more than 90 percent of the population in California residing in the Central Valley (Beedy 2008). Largely a colonial breeder, this species occupies breeding sites in close proximity to water sources that contain protected nesting substrates, such as cattails and willows. Tricolored blackbirds will winter in large, mixed-species flocks with other blackbirds where they inhabit open grassland and agricultural areas (Beedy 2008). Diet for this species includes a variety of insects and arachnids. Threats to tricolored blackbirds include habitat degradation from urban development and human disturbances and direct loss from agricultural harvesting and plowing.

This species was observed in a small flock in an agricultural field at the intersection of Avenue P-8 and 50th Street E during several of the surveys.

Chapter 4. Discussion

4.1 Site Characteristics and Vegetation Mapping

The western portions of the project area are heavily disturbed due to trash dumping and residential, commercial, agricultural (including livestock), and recreational uses (OHV use). Dirt and paved roads are prevalent throughout the entire project area. The western end of the project area has more developed areas (primarily commercial and residential) than the eastern end. Domestic dogs and cats, ravens, and non-native vegetation are abundant throughout the project area due to human presence and associated disturbances. These factors limit the potential distribution of sensitive plant and wildlife species in portions of the project area.

A total of 11 vegetation communities were mapped in the project area; all of which exhibited varying levels of disturbance. The vegetation communities were characteristic of those found in high elevation desert habitats. Several drainages and washes were scattered throughout the project area, the largest being Littlerock Wash, which bisects the project area in the east. Very few of these drainages had water present year-round; the drainages that did contain water usually contained year-round runoff from residential or commercial development areas.

4.2 Biological Studies

Several surveys were conducted throughout all or portions of the proposed alignments to identify biological resources present within the project area. A discussion of each survey is presented below.

4.2.1 Sensitive Plant Species

Federally and/or state-listed (threatened or endangered) plant species were not observed during focused sensitive plant surveys in the project area conducted in 2008 and 2009. Two sensitive (CNPS List 4.2) plant species, white pygmy poppy and crowned muilla, were detected in the project area. Both species are identified on the CNPS watch list (List 4) and are believed to be fairly endangered in California (0.2 extension meaning of 'List 4.2') (CDFG 2008; CNPS 2009). Because CDFG works in conjunction with CNPS in assessing the rarity and sensitivity of plants occurring in California, CNPS plant rankings are considered by CDFG to be valid

special-status rankings. Plants identified under CNPS designations (as well as other agency designations) are also required to be addressed by CEQA (and sometimes NEPA) project documentation.

The initial sensitive plant survey was conducted in the spring of 2008 during a year with average precipitation levels in mid-winter and below-average levels in late-winter/early-spring paired with unseasonably warm temperatures (www.NOAA.org). As a result, many plant species in the desert bloomed as much as a month earlier than their typical bloom periods during the spring of 2008. The plant survey conducted in 2008 was scheduled in early April to coincide with the early bloom periods for the sensitive plant species with a potential to occur in the project area. All sensitive plant species with a potential to occur within the project area that were targeted during the sensitive plant survey would have been detectable at the time of the 2008 survey.

In April 2009, Caltrans provided an amendment to Alternative 3 and this amendment required an additional rare plant survey. The additional survey was conducted in late April 2009, but no additional observations of sensitive plant species were documented during this survey. However, the additional sensitive plant survey was conducted near the end of the blooming period for both species. A site visit was conducted five days prior to the 2009 survey to assess the blooming status of known populations of white pygmy poppy and crowned muilla in the project area. At that time, the poppies were nearing the end of their blooming period and relatively difficult to identify and almost all crowned muilla plants had gone to seed and were past their blooming period. The microhabitats in which these plants were observed in during the 2008 survey were surveyed intensely in the Alternative 3 alignment and, although no additional plants were found, there is still a potential for sensitive plant species to occur along this alignment.

4.2.1.1 ESTIMATE OF JOSHUA TREE DENSITY

A formal Joshua tree survey was not conducted within the proposed project footprint, however, densities of Joshua trees in Alternatives 2 and 3 were estimated to aid in future project planning and permitting. Based on this exercise, it appeared that Alternative 3 had a higher density of Joshua trees.

Many cities and counties in the Mojave Desert have codes or regulations that prevent or mitigate for loss of Joshua trees from proposed projects occurring in native desert vegetation communities. The City of Palmdale requires special protection of this species in Chapter 14.04 of the Municipal Code (City of Palmdale 2009).

Requirements outlined in the City of Palmdale Municipal Code regarding Joshua trees are discussed further in Section 4.4.2.1.

4.2.2 Desert Tortoise

During the focused protocol survey for desert tortoise, no live desert tortoises or tortoise sign (scat, tracks, burrows) were observed or detected in the project area or surrounding areas. Though the project area is located in the extreme western portion of the known historic range of the desert tortoise, no individuals have been observed in the project vicinity for over 20 years (CDFG 2008). In addition, USFWS stated in a letter to Caltrans dated February 29, 2008 that USFWS does not expect the site to support any federally listed wildlife or plant species (Appendix A), which would include desert tortoise.

Suitable desert tortoise habitat was only present in the eastern portion of the project area, and no critical habitat units for desert tortoise recovery are located within the vicinity of the project area (USFWS 2011). In addition, the western portion of the project area was heavily disturbed by residential and commercial development, agricultural use, OHV activity and trash dumping. All of these factors limit the potential for desert tortoise to occur in the project area.

Based on the lack of critical habitat and recent desert tortoise observations in the project area and vicinity, the negative survey results, and the communication from the USFWS, desert tortoise is not expected to occur in the project area.

4.2.3 Mohave Ground Squirrel

Four protocol Mohave ground squirrel trapping grids were placed in the highest quality suitable habitat in the project area and trapped for a total of 15 days each during three trapping sessions between March 15 and July 15, 2008. Mohave ground squirrels were neither detected by observation or vocalization, nor captured during the trapping study. A total of 165 AGS and a handful of non-target, incidental species (desert spiny lizard, western whiptail, coachwhip, cactus wren, desert woodrat, and cactus mouse) were captured during the trapping study.

In the project area, suitable habitat for Mohave ground squirrel was only present in approximately 4 mi (6 km) of the project area located west of 50th Street E to east of 70th Street E. Habitat in the western and extreme eastern portions of the project area was too disturbed to be considered suitable habitat for Mohave ground squirrel.

The project area is located within the extreme western portion of the historic range of the Mohave ground squirrel, however, this species has not been documented within the vicinity of the project area since the 1930s (CDFG 2008). Although suitable desert scrub habitat is present in the western portion of the project area, Mohave ground squirrels are not expected to occur.

4.2.3.1 NOCTURNAL TRAPPING

One night of nocturnal trapping was conducted at each Mohave ground squirrel grid to identify common small mammal species that occur in the project area. Three nocturnal rodent species were captured; Merriam's kangaroo rat, Panamint kangaroo rat, and desert pocket mouse. These species commonly occur in desert scrub habitats throughout the Mojave Desert and do not have any special-status rankings.

4.2.4 Burrowing Owl

Burrowing owls and burrow complexes were observed in several locations throughout the project area. One pair of burrowing owls was observed in the western portion of the project occupying two burrow complexes between 17th and 15th Streets E. These owls were assumed to be successfully producing offspring due to the presence of a juvenile burrowing owl carcass observed in the vicinity of one of the pair's active burrow complex during the second breeding season survey (conducted in August 2008). A single wintering burrowing owl was observed east of 70th Street E, just north of Avenue P-8 within the 500-ft (150-m) buffer area. This owl was only observed during the two winter burrowing owl surveys and was not observed during the two breeding season surveys and is probably a winter resident only.

One unoccupied burrow complex was observed just west of SR 14, south of Avenue P-8. Although old burrowing owl sign (whitewash and bones of prey items) was present, it appeared to be inhabited by California ground squirrels at the time of the survey. Another burrowing owl complex was observed in the abandoned agricultural areas between 90th and 100th Streets E but did not appear recently used due to the presence of old burrowing owl sign. Both of these burrow complexes were located outside the project footprint in the 500-ft (150-m) surveyed buffer area.

Suitable habitat for burrowing owl is present throughout the entire project area, as burrowing owls inhabit various types of disturbed and undisturbed habitats. It is likely for owls to move into the project area at various times of year due to the migratory behavior of some individuals. Multiple burrows considered suitable for

burrowing owl use were found between 70th Street E and Littlerock Wash, and it is possible for burrowing owls to move into portions of the project area where they were not previously identified.

4.2.5 Wildlife Crossing Study

Thirty-five temporary tracking stations were placed in various locations throughout the project area to identify the areas that large mammals utilize most for local movement. Because there are potential impacts to wildlife movement patterns associated with the construction of a new freeway, identifying the areas of high wildlife use is important to the planning stages of the proposed project.

Overall, it appeared that the presence of water sources (seasonal and permanent) and large, contiguous blocks of native habitat both appeared to attract wildlife travel in both the urbanized and non-urbanized areas of the project footprint. However, because the location and size of the stations varied throughout the project area, it was determined that each station had its own list of factors that would influence wildlife movement in that location. For that reason, each station was analyzed individually to identify the potential limitations and attractants to wildlife travel in the immediate area of that respective station (Table 9).

There were some features in the project area that appeared to influence wildlife travel, such as the active agricultural fields. High numbers of wildlife occurrences were documented at the stations surrounding the active agricultural field located east of 50th Street E and north of Avenue P-8 (Appendix J, Figures J-4 through J-6). It is very likely that large mammals were attracted to this field because the field supports a consistent source of subsidized resources, such as prey items and water. The large amount of water that is used to support crop growth is also probably a reliable source of water for local wildlife. Additionally, the seeds or grains of the crops would likely attract small animals such as rodents and rabbits, thus creating a locally high population of prey items. Large mammals likely take advantage of this opportunity for a consistent and abundant source of food.

Other features that likely attracted large mammals included seasonal and permanent water sources (such as retention basins, drainages, and seasonal washes) and undisturbed, native habitat blocks (such as those in the eastern portion of the project area that exhibited low levels of human activity). Residential areas could also provide subsidized food and water resources to animals less affected by human

presence. Trash, rodents living near residences, and pets could all be considered food resources for opportunistic species such as coyotes.

While residential (and commercial) areas may attract some wildlife to travel through a particular location, these developed areas could also be a limitation to some wildlife species present in the project area. Developed areas usually have higher levels of disturbances surrounding them (such as vehicle use, trash dumping, high noise levels, domestic animals, and overall higher human activity) which may discourage shy wildlife species (such as bobcats) from utilizing that location for travel or resources. Additionally, these disturbances also usually result in degraded habitats which may provide fewer natural sources of prey and shelter for native wildlife. It is important to note that any location of concentrated wildlife travel activity within urbanized areas may, in fact, be more valuable to wildlife traveling through that particular location. This is because that location may be one of the few "crossing areas" native wildlife use to move in and throughout the urbanized western portion of the project.

Many of the tracking stations with high occurrence numbers possibly recorded animals traveling the same area on a daily or weekly basis. These animals may have also crossed many tracking stations during these regular travel events. While it was nearly impossible to document this phenomenon based solely on track identification at the stations, a family group of coyotes was observed traveling together and crossing many stations during a single travel event on November 3, 2008. One adult coyote and two older juveniles traveling together were observed crossing four different tracking stations in the extreme western portion of the project area (one of the coyotes observed crossing is shown in Figure 19). Though it was not studied during the wildlife crossing study, it is possible that this travel route is regularly used by this family group.

Seasonal trends for wildlife travel and activity in the project area were studied to determine whether or not there was a temporal effect on the data collected. Twenty-six of the 35 stations exhibited highest wildlife travel activity in either the winter or spring (one station had equally high occurrence levels in the winter and spring). Based on this finding, it appeared that large mammals in the project area were more likely to travel more frequently during the winter and spring months than during the other seasons. Biologically, the winter and spring months are an ideal time for large mammals to be highly mobile, as they are searching for mates, defending territories, or dispersing from natal areas to establish their own territories. Many of the stations

had lowest occurrence numbers in the summer, however, low occurrence numbers appeared to be station-specific (i.e., there was no season that all or most stations had lowest occurrence numbers).

Three native species of large mammals were detected during the wildlife crossing study: coyote, kit fox, and bobcat. Coyotes were the most commonly documented tracks in the study, with tracks found at stations located in both the disturbed, urbanized areas (western portion of the project) as well as in the undisturbed areas (eastern portion). Bobcats and kit foxes detected during the study tended to occur in more undeveloped areas of the project area where large, undisturbed blocks of native desert habitat were present.

Several limitations were present in the study design. The first and most obvious limitation to the study design is that two types of tracking stations were established for the study, point stations and linear stations. Because the linear stations sampled a larger area than the point stations, the linear stations collected more data and superficially represented higher activity levels through a given area than the point stations.

The size of each tracking station varied as well, making it difficult to compare one station's activity level to another, even when comparing the results of two similarly-classified stations (e.g., comparing one linear station to another). Station sizes varied for several different reasons, but station size was mostly driven by the location of each station and the prevalence of outside disturbances. For example, longer tracking stations were established in areas where human or vehicle disturbance levels were expected to be low so that the track data would not be degraded before it could be collected in the mornings, and smaller tracking stations were placed in areas where higher disturbance levels were expected. Despite the best efforts of the surveyors, disturbances at almost every tracking station were evident throughout the entire study. Additional factors that contributed to station degradation included high winds, rain events, presence of domestic animals or livestock, and OHV use. Disturbances were so prevalent and consistent at some tracking stations that the stations were dropped from the study completely because of their inability to collect accurate data.

One external factor that was difficult to maintain consistent between all stations was the variation in native soils throughout the project area. Soils at all tracking stations were different; some had finer soils (consisting of high clay content) than others,

which were more conducive to reading tracks than the coarser or more firmly packed soils (such as sandy or rocky areas). Stations with finer soils may have resulted in higher wildlife occurrence numbers simply because the characteristic features in the registered tracks were more easily identified in the finer soils than in the rockier or sandier stations.

Despite the fact that all tracking stations were established on or adjacent to linear features such as roads and drainages, the majority of the data showed wildlife traveling perpendicular to the dirt roads and linear features (i.e., traveling across, not with, the linear features). In most cases, it was difficult to identify one main route of travel utilized by wildlife in that area. This illustrates another constraint of the study, that the results and data analysis are biased toward the linear features present in and around the project area. The results do not necessarily accurately represent wildlife travel activity throughout areas lacking linear features. As the data from many of the individual stations suggest (Table 9), there could be many routes of travel for wildlife to use in any given area that do not follow existing linear features. This study did not focus on wildlife using non-linear features for local travel.

These discussion points and data analyses only represent a sample of wildlife travel activities in the project area and are not representative of long distance movement corridors, nor are they representative of local large mammal populations. The study was not designed to identify individual animals crossing through an area, nor was it designed to capture distance measurements of wildlife travel.

4.2.6 Incidental Sensitive Species

Three SSC bird species were incidentally observed in the project area: short-eared owl, loggerhead shrike, and tricolored blackbird. These bird species are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (USFWS 1918), which is governed by USFWS. Most native bird species in California, both migrant and resident species, are protected under the MBTA. The MBTA (16 USC sections 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds (USFWS 1918). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (CFR) Part 10.

CDFG also enforces the protection of non-game native birds. Fish and Game Code sections Section 3503, and 3503.5 mandate the protection of California non-game

native birds' nests, and Fish and Game Code Section 3800 makes it unlawful to take California-native non-game birds (CDFG 2009c).

4.3 Alternatives Analysis

Biological surveys conducted in early 2008 were based on a preliminary project alignment design provided by Caltrans in April 2008. Caltrans provided an amendment to Alternative 3 in April 2009 that included a southerly shift of the Alternative 3 alignment between 50th and 75th Streets E. An additional sensitive plant survey was conducted in the amended area, but the remaining surveys that were conducted in the original project footprint (desert tortoise, Mohave ground squirrel, burrowing owl, and wildlife crossing study) were not repeated in the amended portion of Alternative 3. These surveys were not repeated because either the original survey effort provided sufficient coverage of Alternative 3 (such as Mohave ground squirrel trapping), or there were time and seasonal constraints that prevented additional surveys from being conducted. Each biological survey performed in the project area is presented below with a discussion on how it relates to each proposed alternative.

4.3.1 Site Characterics and Vegetation Mapping

Site characteristics and vegetation communities in Alternatives 2 and 3 are almost exactly the same, with the exception of a small block of fourwing saltbush series/rubber rabbitbrush series that occurs in Alternative 3 but not Alternative 2. Soils, disturbances, and the presence of desert washes are all comparable between the two proposed alternatives.

4.3.2. Sensitive Plants

Two sensitive plants, white pygmy poppy and crowned muilla, were observed in multiple locations throughout the Alternative 2 alignment only. However, due to the late timing of the Alternative 3 plant survey, populations of these two species (and other sensitive plant species with potential to occur) may not have been detectable at the time of the survey. Therefore, it is difficult to presume presence or absence of sensitive plant species in the amended portion of Alternative 3. Additional surveys may need to be conducted to determine presence or absence of sensitive plant species in Alternative 3.

4.3.2.1 ESTIMATE OF JOSHUA TREE DENSITY

Based on aerial photos of the project area, it appeared that Alternative 3 had a higher density of Joshua trees than Alternative 2. However, this finding would need to be confirmed with a focused Joshua tree survey.

4.3.3 Desert Tortoise

The focused desert tortoise protocol surveys yielded negative results for desert tortoise and desert tortoise sign in suitable habitat throughout the areas surveyed in Alternative 2. Although desert tortoise surveys were only conducted within and surrounding the Alternative 2 footprint, many of the ZOI transects surveyed portions of the Alternative 3 alignment.

Based on the lack of critical habitat and recent desert tortoise observations in the project area and vicinity, the negative survey results, and the communication from the USFWS (Appendix A), desert tortoise is not expected to occur within either of the proposed Alternatives.

4.3.4 Mohave Ground Squirrel

The north-south alignment of all four Mohave ground squirrel grids allowed for accurate sampling of portions of suitable habitat between Avenue P-8 and Avenue Q. The new portion of the Alternative 3 alignment was sufficiently surveyed for Mohave ground squirrel during the 2008 trapping season. Mohave ground squirrels were not captured during the trapping study and are not expected to occur in either of the Alternative 2 or Alternative 3 alignments.

4.3.4.1 NOCTURNAL TRAPPING

Nocturnal trapping was conducted at each of the four Mohave ground squirrel grids, and three common nocturnal small mammal species were captured. Neither of the alternatives that comprise the project area lies within the known home ranges of any sensitive nocturnal small mammals.

4.3.5 Burrowing Owl

The four protocol burrowing owl surveys were conducted along the Alternative 2 footprint only. One pair of burrowing owls with two associated burrow complexes, and a lone wintering owl with its associated burrow were observed in the immediately areas surrounding Alternative 2. Two unoccupied burrows were also

observed in the extreme western and eastern portions in the areas surrounding Alternative 2.

The amended portion of Alternative 3 was not surveyed for burrowing owls due to project time constraints; however, portions of the 500-ft (150-m) survey buffer area covered much of Alternative 3. Suitable habitat for burrowing owl is present throughout the Alternative 3 alignment and there is a high potential for burrowing owl to occur. An additional burrowing owl survey may need to be conducted to identify burrowing owls and/or potential burrowing owl burrows within Alternative 3.

4.3.6 Wildlife Crossing Study

The wildlife crossing study surveyed for wildlife movement and travel routes across the entire proposed project area (Alignments 2 and 3). Although tracking stations were not placed directly within the new portion of the Alternative 3 alignment, the design of the study was such that it sampled wildlife potentially traveling through the proposed Alternative 3 alignment. Wildlife crossing study results for the new portion of Alternative 3 are expected to be the same as for Alternative 2.

4.3.7 Incidental Sensitive Species

The majority of the surveys were focused within the Alternative 2 alignment during the surveys conducted in 2008 and early 2009, therefore, incidentally observed sensitive wildlife species data collection was biased on the Alternative 2 alignment. Although the majority of the incidental sensitive species observations occur within the Alternative 2 alignment, it does not necessarily indicate a higher occurrence of sensitive species within that alternative. Sensitive wildlife species observed or detected in Alternative 2 are expected to occur at similar densities and in similar habitats within Alternative 3.

4.3.8 Alternatives Analysis Conclusion

Based on the relatively homogenous and ecologically similar nature of the habitat in the amended portion of Alternative 3 and proximity of the amended portion of Alternative 3 to the project area, it is assumed that biological resources present in the amended portion of Alternative 3 are similar and comparable to those present in Alternative 2. However, additional focused surveys may need to be conducted in the future to fulfill USFWS, CDFG, NEPA, and/or CEQA requirements for the project.

4.4 Mitigation Analysis

The following mitigation measures are proposed solely based on the findings of the focused biological surveys conducted in the project area. The mitigation measures have not been approved by CDFG, USFWS, or other resource agency. Consultation with the agencies will need to take place prior to the start of construction to determine what mitigation measures will be require, Additional mitigation measures not discussed in this section may be required for the project.

4.4.1 Vegetation Communities

Sensitive vegetation communities were not mapped within the project site; however, water features and associated riparian habitats potentially falling under the jurisdiction of CDFG, ACOE, and other resource agencies are present throughout the project area. A jurisdictional delineation was conducted in 2008 and 2009, results of which are presented under a separate cover (ECORP 2010). It is recommended that mitigation measures follow the results and discussion points outlined in the jurisdictional delineation report.

4.4.2 Sensitive Plants

Several populations of two sensitive plant species, white pygmy poppy and crowned muilla, were observed within the project area and proposed project footprint. Both of these plant species are identified as CNPS List 4.2 species, a watch list of plants presumed to be endangered in California (CNPS 2009). Because CDFG works in conjunction with CNPS in assessing the rarity and sensitivity of plants occurring in California, CNPS plant rankings are considered by CDFG to be valid special-status rankings. Plants identified under CNPS designations (as well as other agency designations) are also required to be addressed by CEQA (and sometimes NEPA) project documentation.

There is a potential for these populations (and other populations of sensitive plant species potentially present in the project area) to be eliminated during construction, which may result in significant impacts to these species. If these impacts are considered significant, compensatory mitigation measures (such as preserving acreage of sensitive plant habitat at a certain ratio of the acreage that will be affected by construction) may be required. If possible, the populations of these sensitive plants should be avoided during construction.

4.4.2.1 JOSHUA TREES

The City of Palmdale Municipal Code requires preservation of Joshua trees affected by projects occurring within the City limits. Although a formal Joshua tree survey was not conducted within the project area, an estimate of Joshua tree density in both alternative footprints was conducted. Chapter 14.04 of the City of Palmdale Municipal Code requires that a vegetation removal permit application be submitted prior to disturbing native desert habitat (City of Palmdale 2009). A report of all Joshua trees present in the project area (including the size, condition, and location of each plant) is to be included in the permit application packet. It is recommended that mitigation measures for Joshua trees affected by the project follow Chapter 14.04 of the City of Palmdale Municipal Code. When possible, Joshua trees should be avoided during construction activities.

4.4.3 Desert Tortoise

Mitigation for impacts to desert tortoise will likely not be required because of the negative survey results and the lack of recent observations of tortoise in the area (CDFG 2008). A pre-construction tortoise survey will likely be required prior to the start of construction in order to determine if any tortoises have moved into the project area. If a tortoise or tortoise sign is found on the project site or within the immediate vicinity during the pre-construction survey, then USFWS and CDFG will need to be immediately notified and avoidance and minimization efforts, in addition to a mitigation plan, will need to be created and implemented to offset potential impacts to the desert tortoise.

4.4.4 Mohave Ground Squirrel

Mitigation for Mohave ground squirrel will likely not be required due to the negative trapping results for Mohave ground squirrel and the lack of recent records of this species in the area since the 1930s (CDFG 2008). Consultation with CDFG will be required to determine whether the project will need mitigation for Mohave ground squirrel.

4.4.4.1 NOCTURNAL TRAPPING

Mitigation measures will be not required for impacts to nocturnal small mammals because the project area does not support any sensitive species of nocturnal small mammal species.

4.4.5 Burrowing Owl

Three burrowing owls and several burrow complexes were identified throughout the project area. A pre-construction burrowing owl survey will likely be required prior to the start of ground disturbing activities to determine if the owls are still present or if other owls have migrated in the project area. Burrowing owls are protected by CDFG and by the MBTA. In addition to protecting native, non-game bird species, the MBTA also requires that disturbances in and around active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 to August 31, annually) to avoid nest abandonment and/or loss of eggs or young (USFWS 1918). The loss of habitat upon which the birds depend during the nesting season could constitute a violation of the MBTA.

It is recommended that construction take place outside of the breeding season (typically September 1 to January 31) to avoid impacts to nesting raptors and songbirds. If construction is to occur during the breeding season, additional avoidance and minimization measures would need to be implemented to protect breeding birds and their nests within the project area. Examples of these avoidance and minimization measures would include pre-construction breeding bird surveys, presence of a biological monitor during vegetation clearing activities, no-disturbance buffers established around active nests, and monitoring of active nests by a qualified biologist.

If occupied burrowing owl burrows will be affected by the project, CDFG may require additional compensatory mitigation measures in the form of habitat preservation and artificial burrow construction in nearby areas. Consultation with CDFG regarding impacts to burrowing owl will be required prior to the start of the project.

4.4.6 Wildlife Crossing Study

Mitigation for project impacts to wildlife travel routes should be manifested in the form of freeway design. The design of a new freeway should include wildlife crossing mechanisms that are as natural and easy for wildlife to cross as possible to promote use by local wildlife. The following measures are recommended in the new freeway design (specific designs should be prepared in consultation with the regulatory agencies):

- When possible, use large, at-grade culverts under the new freeway where drainages bisect the ROW. Wildlife species are more likely to utilize at-grade culverts when they can see across to the other side. In addition, where the road may include medians requiring long culverts, the culverts should be daylighted in the median, where feasible.
- Bridges constructed over the drainage features should be constructed high enough to allow large wildlife to travel underneath.
- Focus wildlife crossing mechanisms on drainages, washes, and established dirt roads that cross the new freeway. These are natural movement corridors that are automatically attractive to large mammals when moving throughout the area. It may be more cost-effective for the project and valuable to wildlife to focus the placement of wildlife crossings on or around the existing features utilized as travel routes (washes, drainages, and roads).
- Except in areas where wildlife crossings are to be installed, maintain vegetation clearing adjacent to the freeway so it does not attract additional wildlife to roadways or road shoulders. Large trees and shrubs should not be included in revegetation plans immediately adjacent to the roadway. Additionally, artificial depressions that collect water should not be created or constructed adjacent to roadways. These measures will help reduce road-kill incidents on the new freeway by not attracting wildlife to the road shoulders.
- Install wildlife drift fencing (in sections) along busy roadways with natural under- or over-crossings for wildlife. Fences should be constructed with wings leading into each culvert or crossing to channel wildlife safely through the designated crossing areas.

4.4.7 Incidental Wildife Species

Three SSC bird species were incidentally observed within the project area (loggerhead shrike, short-eared owl, and tricolored blackbird). These birds are protected under the MBTA and would be adequately covered under the mitigation measures discussed for burrowing owl (refer to section 4.6.3). Additionally, impacts to these species will need to be addressed in the CEQA and/or NEPA documentation required for the project. If additional sensitive species are detected during pre-construction surveys, the appropriate agencies will need to be contacted to determine what mitigation, if any, will be required.

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7.5-minute topographic quadrangles. Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Littlerock, Lovejoy Buttes, Pacifico Mountain, Palmdale, Ritter Ridge, Sleepy Valley, and Valyermo.

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APPENDIX A **USFWS Letter**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
2008-SL-0264

February 29, 2008

Paul Caron
Division of Environmental Planning
California Department of Transportation, District 7
100 South Main Street
Los Angeles, California 90012

Subject: Species List for the Realignment and Construction of State Route 138 between State Route 14 and 100th Street East, Los Angeles County, California.

Dear Mr. Caron:

This letter is in response to your request, dated January 3, 2008, and received in our office on February 20, 2008, for information on listed threatened or endangered species which may be present in the vicinity of the realignment of State Route (SR) 138 in the city of Palmdale. The California Department of Transportation (Caltrans) proposes to construct a new alignment of SR 138 to the north of its current location. The new structure will be approximately eight lanes wide from SR14 to 15th Street, and will then taper down to four lanes from 15th Street to 100th Street East. In addition, Caltrans proposes to construct viaduct structures over Little Rock Wash on the east end of the project. Your request and our response are made pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act).

Based upon review of our records and the proposed project location, we do not believe that the site could support any listed, proposed, or candidate species for which the U.S. Fish and Wildlife Service is responsible. As a result, no further consultation pursuant to the Act is required.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions regarding this matter, please contact Ashleigh Blackford at (805) 644-1766, Extension 234.

Sincerely,

Raymond Bransfield
Senior Biologist

APPENDIX B Vegetation Community Survey Data Sheets

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Vegetation Community Field Survey Form

3/20, 4/1, 4/2, 4/8

Survey Date 2008 Project # 2008.036.001 Phase # 005 Veg. Mapping/Plant Surveys

Project Name HWY 138 New Freeway Construction (Ave. P8) Biological Surveys EA 116720

Surveyor(s): K. Myers, D.S. Smith, B. Haley, A. Mann

Location: SR 14 to 100th St. near prop. Palmdale airport along Ave. P-8 in Palmdale County: Los Angeles

Evidence of disturbance/threats:

dirt roads, trash piles, shotgun shells, some agricultural plots, grazing plots, weedy areas

Current land uses: LADA (Los Angeles Dept. of Airports land), private, commercial

General Observations: coarse sandy openings in JT series had suitable habitat for pygmy poppy & muilla coronata (both spp. were observed in this hab. type)

Community ID: W. end / Antelope Fwy to Division St. (see veg. map for others) (RBS)

Dominants:	Associates:	Notes:
CHR VIS ART TRI EPH NEV ATR POL	YUBR HYSA AMAC Layia glandulosa AMS MEN PEC PEN PHA DIS ERO CIC Eremalche exilis GIL BRE OEN CAL RUM	Rubber rabbitbrush Series * E. end where alternatives converge near wash w/ Scalehoom series.

Community ID: (SBS) Scalehoom series

Dominants:	Associates:	Notes:
LEPSQU ART TRI HYMSAL ATR CAN CHR VIS	GIL BRE OEN CAL ABR POG ERI WAL CAM CAM LAY GLA	* E. end where alternatives converge. Dry wash w/ low veg. cover sparse annual sp. scattered.

Vegetation Community Field Survey Form

Community ID: (MWS) Mixed Willow Series w/ (CS) cattail series patch		
Dominants:	Associates:	Notes:
Ulmus pumila (4) BACSAL (many) SAL EXI (many) SAL LAS (few)	CHR (ERIC) VISC BRODIA EROCIC LUP q. sparsiflorus LAS CAL BRA NIG SON OLE TYP DOM DIS SPI LOT HEE SIS IRI MED SAT ERI FASC	Base of slope off Antelope FWY to N. - - - - appears to have been seeded NE of PS, S of Antelope FWY

Community ID: (BSS) Bige sagebrush series		
Dominants:	Associates:	Notes:
CHR VIS EPH VIR ART TRI 隹	ATR CAN ART ORA LAY GLA MIC LIN ERI GRA RUM HYM AVE BAR AMS MEN VUL MYU	Impenetrable patches if not for dirt trails N of /adj. to FWY/ intergrades w/ rabbitbrush series.

Community ID: (FSS) Fourwing saltbush Series		
Dominants:	Associates:	Notes:
ATR POL ATR CAN HYM SAL LAR TRI CHR VIS	EPH VIR YUBR AMS MEN AMB DUM MAL GLA ERI WAL ERE EXI CAM CLA S. CLA STEP SPIN OEN CAL CAM BRE CAM CAM GIL LAT Brandegia bigelovii COR CAL v. CAL LIN PAR MEN ALB	

Vegetation Community Field Survey Form

Community ID: (JTS) Joshua tree series		
Dominants:	Associates:	Notes:
YUC BRE EPH VIR ART TRI CHR VIS	LYCAND LYC COOP LAR TRI TET COM ACH HYM ACH SPE BRO MAD SCH BAR VUL MYU ANI ACA AMS MEN ERI WALL ERI PRIN MEN ALB ABR POGO LAY GLA CHA FRE CAL MON MUL COR LOES MAT Tiquplic CAM CAM MON EXI PHOLMEN CAN CAN CAM BRE ERI sp.	CRY CIR (spiny lus.) CRY PEC (hairy) *this series intergraded w/ CBS in many locations (Refer to veg map)

Community ID: (CBS) Creosote bush series		
Dominants:	Associates:	Notes:
LAR TRI	OPU ECH ATR POL EPH VIR GRA SPI KRA LAN HYM SAL ERI COOP ATR CAN EPH NEV SAL MEX ERI LIN MAL GLA ERI WALL ERI PRI PHA DIS LEP FLA v. FLA CRO CAL DES PIN LIN PAR LIN AUR NAM DEM	*this series intergraded w/ CBS in many locations (Refer to veg. map)

Community ID: (Dist.) Disturbed / (Ag) Agricultural plot		
Dominants:	Associates:	Notes:
ERO CIC AVE BAR BRA NIG MAL PAR	AMS MEN SIS IRI CHR VIS Arundo donax — — — XAN STR BRA TOU BRO DIA	* Ag : Devoid of shrubs, only weedy herbs, some areas were recently disced others Grazed. — only noted in one patch (see map)

APPENDIX C Plant Compendium

Scientific Name	**Common Name**
VASCULAR PLANTS	
ANGIOSPERMS (DICOTYLEDONS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Ambrosia acanthicarpa	annual bur-sage
Ambrosia dumosa	white bursage
Anisicoma acaulis	scale-bud
Artemisia californica	California sagebrush
Artemisia dracunculus	wild tarragon
Artemisia tridentata	Great basin sagebrush
Baccharis salicifolia	mulefat
Chaenactis fremontii	Fremont pincushion
Chrysothamnus viscidiflorus	stickyleaf rabbitbrush
Coreopsis californica var. *californica*	tickseed
Dicoria canescens	Dune dicoria
Encelia farinosa	brittlebush
Ericameria cooperi	Cooper's goldenbush
Ericameria linearifolia	interior goldenbush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly daisy
Hymenoclea salsola	cheesebush
Lasthenia californica	goldfields
Layia glandulosa	white tidytips
Lepidospartum squamatum	scale broom
Malacothrix glabrata	desert dandelion
Microseris lindleyi	Silver puffs
Stephanomeria spinosa	thorn skeletonweed
Tetradymia comosa	cottonthorn
Xanthium strumarium	cocklebur
BORAGINACEAE	**BORAGE fAMILY**
Amsinckia menziesii var. *intermedia*	common fiddleneck
Cryptantha circumscissa	Western forget-me-not
Cryptantha muricata	prickly popcorn flower
Cryptantha cf. *nevadensis*	popcorn flower
Cryptantha pterocarya	wingnut cryptantha
Heliotropium curassavicum	heliotrope
Nama demissum	purple mat
Pectocarya penicillata	winged comb seed
Phacelia crenulata	notch-leaved phacelia
Phacelia distans	common phacelia
Phacelia fremontii	Fremont's phacelia
Pholistoma membranaceum	white fiesta flower
Tiquilia plicata	coldenia

Scientific Name	**Common Name**
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Brassica tournefortii**	Sahara mustard
Descurainia pinnata	Western tansy mustard
*Hirschfeldia incana**	shortpod mustard
Lepidium flavuum var. *flavum*	yellow peppergrass
Sysimbrium irio[1]	London rocket
CACTACEAE	**CACTUS FAMILY**
Opuntia echinocarpa	silver cholla
CARYOPHYLLACEAE	**PINK FAMILY**
Loeflingia squarrosa var. *squarrosa*	Spreading loeflingia
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	fourwing saltbush
Atriplex polycarpa	saltbush
Grayia spinosa	spiny hopsage
Krascheninnikovia lanata	winterfat
*Salsola tragus**	Russian thistle
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Cuscuta denticulate	desert dodder
CUCURBITACEAE	**GOURD FAMILY**
Brandegea bigelovii	desert starvine
Marah fabaceus	California man-root
CUSCUTACEAE	**DODDER FAMILY**
Cuscuta denticulata	desert dodder
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Mormon tea
Ephedra viridis	green ephedra
EUPHORBIACEAE	**SPURGE FAMILY**
Chamaesyce albomarginata	rattlesnake weed
Croton californicus	California croton
Eremocarpus setigerus	doveweed
FABACEAE	**PEA FAMILY**
Astragalus cf. *lentiginosus*	freckled milkvetch
Collinsia sp.	Chinese houses
Lotus strigosus	hairy lotus
Lupinus concinnus	elegant lupine
*Medicago sativa**	alfalfa
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	filaree

Scientific Name	**Common Name**
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	common horehound
Salazaria mexicana	bladdersage
Salvia carduacea	thistle sage
Salvia columbariae	chia
LOASACEAE	**LOASA FAMILY**
Mentzelia affinis	blazing star
Mentzelia albicaulis	white-stemmed stickleaf
MALVACEAE	**MALLOW FAMILY**
Eremalche exilis	small-flowered eremalche
Sphaeralcea ambigua	apricot mallow
MELIACEAE	**MAHOGONY FAMILY**
*Melia azedarach**	China berry
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Abronia pogonantha	Mojave sand verbena
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia brevipes	yellow cups
Camissonia campestris	Mojave suncup
Camissonia claviformis var. *claviformis*	brown-eyed primrose
Oenothera californica	California evening primrose
Oenothera deltoides	birdcage evening primrose
PAPAVERACEAE	**POPPY FAMILY**
Canbya candida[1]	pygmy poppy
Eschscholzia minutiflora	Coville's poppy
POLEMONIACEAE	**PHLOX FAMILY**
Gilia brecciarum	small gilia
Gilia latiflora	broad-flowered gilia
Gilia transmontana	Transmontane gilia
Linanthus aureus	golden linanthus
Linanthus parryae	sand blossoms
Loeseliastrum matthewsii	desert calico
POLYGONACEAE	**BUCKWHEAT FAMILY**
Centrostegia thurberi	red triangles
Eriogonum davidsonii	Davidson's buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracillimum	slender stemmed buckwheat
Rumex hymenosepalus	wild rhubarb

Scientific Name	**Common Name**
PORTULACEAE	**PURSLANE FAMILY**
Calyptridium monandrum	pussy paws
ROSACEAE	**ROSE FAMILY**
Purshia tridentata	bitterbush
SALICACEAE	**WILLOW FAMILY**
Populus fremontii ssp. *fremontii*	Fremont's cottonwood
Salix exigua	sandbar willow
Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	**FIGWORT FAMILY**
Castilleja exserta	Purple owl's clover
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
Lycium andersonii	desert tomato
Lycium cooperi	peach thorn
Tiquilia plicata	coldenia
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix ramosissima**	saltcedar
ULMACEAE	**ELM FAMILY**
*Ulmus pumila**	Siberian elm
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
GYMNOSPERMS	
CUPRESSACEAE	**CYPRESS FAMILY**
Juniperus californica	California juniper
ANGIOSPERMS (MONOCOTYLEDONS)	
LILIACEAE	**LILY FAMILY**
Delphinium parishii	Desert larkspur
Dichelostemma capitatum	school bells
Muilla coronata[1]	crowned muilla
Yucca brevifolia	Joshua tree
POACEAE	**GRASS FAMILY**
Achnatherum hymenoides	rice grass
Achnatherum speciosum	desert needlegrass
*Arundo donax**	giant reed
*Avena barbata**	slender wild oats
*Bromus diandrus**	ripgut grass
Bromus madritensis ssp. *rubens**	foxtail chess
Bromus tectorum	cheat grass
Distichlis spicata	saltgrass

Scientific Name	Common Name
Hordeum marinum	barley
*Hordeum vulgare**	common barley
Polypogon monspeliensis	rabbitsfoot grass
*Schismus barbatus**	Medterranean grass
*Vulpia myuros**	vulpia
TYPHACEAE	**CATTAIL FAMILY**
Typha domingensis	narrowleaf cattail

[1] CNPS List 4.2 sensitive species
*: non-native species

APPENDIX D **Wildlife Compendium**

Scientific Name	Common Name	Status[1]
	INVERTEBRATES	
Araneae	**Spiders**	
Latrodectus hesperus	black widow	
Coleoptera	**Beetles**	
Coccinella californica	ladybird beetle	
Eleodes sp.	stink beetle	
Tenebrio sp.	darkling beetle	
Homoptera	**Homopterans**	
Tibicen sp.	cicada	
Orthoptera	**Grasshoppers and Katydids**	
Trimerotropis pallidipennis	pallid-winged grasshopper	
Stenopelmatus fuscus	Jerusalem cricket	
Lepidoptera	**Butterflies and Moths**	
Hyles lineata	white-lined sphinx moth	
Tegeticula maculata	yucca moth	
Vanessa cardui	painted lady	
	REPTILES	
Iguanidae	**Iguanid Lizards**	
Callisaurus draconoides	zebra-tailed lizard	
Dipsosaurus dorsalis	desert iguana	
Gambelia wislizenii	leopard lizard	
Phrynosomatidae	**Spiny Lizards**	
Sceloporus magister	desert spiny lizard	
Uta stansburiana	side-blotched lizard	
Teiidae	**Whiptails and Racerunners**	
Aspidoscelis tigris	western whiptail	
Colubridae	**Colubrid Snakes**	
Chionactis occipitalis	Mojave shovel-nosed snake	
Masticophis flagellum	coachwhip	
Pituophis melanoleucus	gopher snake	
Viperidae	**Pit Vipers**	
Crotalus scutulatus	Mojave green	

Scientific Name	**Common Name**	**Status[1]**
	BIRDS	
Anatidae	**Swans, Geese, and Ducks**	
Anas clypeata	northern shoveler	
Anas cyanoptera	cinnamon teal	
Anas platyrhynchos	mallard	
Oxyurua jamaicensis	ruddy duck	
Ardeidae	**Bitterns and Herons**	
Ardea alba	great egret	
Cathartidae	**Vultures**	
Cathartes aura	turkey vulture	
Accipitridae	**Hawks, Kites, Harriers, and Eagles**	
Accipiter cooperii	Cooper's hawk	
Buteo jamaicensis	red-tailed hawk	
Circus cyaneus	Northern harrier	
Falconidae	**True Falcons**	
Falco mexicanus	prairie falcon	
Falco sparverius	American kestrel	
Odontophoridae	**Quails**	
Callipepla californica	California quail	
Charadriidae	**Plovers**	
Charadrius vociferus	killdeer	
Recurvirostridae	**Stilts and Avocets**	
Himantopus mexicanus	black-necked stilt	
Laridae	**Jaegers, Gulls, and Terns**	
Larus sp.	unidentified gull	
Columbidae	**Pigeons and Doves**	
*Columba livia**	rock pigeon	
*Streptopelia decaocto**	Eurasian collared-dove	
Zenaida macroura	mourning dove	
Strigidae	**Owls**	
Athene cunicularia	burrowing owl	SSC
Asio flammeus	short-eared owl	SSC
Bubo virginianus	great horned owl	
Tyto alba	barn owl	
Caprimulgidae	**Goatsuckers**	
Chordeiles acutipennis	lesser nighthawk	
Picidae	**Woodpeckers**	
Picoides scalaris	ladder-backed woodpecker	

Scientific Name	**Common Name**	**Status[1]**
Trochilidae	**Hummingbirds**	
Archilochus alexandri	black-chinned hummingbird	
Calypte anna	Anna's hummingbird	
Tyrannidae	**Tyrant Flycatchers**	
Myiarchius cinerascens	ash-throated flycatcher	
Sayornis nigricans	black phoebe	
Sayornis saya	Say's phoebe	
Tyrannus verticalis	western kingbird	
Tyrannus vociferans	Cassin's kingbird	
Laniidae	**Shrikes**	
Lanius ludovicianus	loggerhead shrike	SSC
Corvidae	**Crows and Allies**	
Aphelocoma californica	western scrub jay	
Corvus corax	common raven	
Troglodytidae	**Wrens**	
Campylorhynchus brunneicapillus	cactus wren	
Thryomanes bewickii	Bewick's wren	
Sylviidae	**Gnatcatchers**	
Polioptila melanura	black-tailed gnatcatcher	
Turdidae	**Thrushes**	
Siala mexicana	western bluebird	
Allaudidae	**Larks**	
Eremophila alpestris	horned lark	
Hirundinidae	**Swallows**	
Hirundo rustica	barn swallow	
Tachycineta thalissina	violet-green swallow	
Remizidae	**Chickadees and Allies**	
Auriparus flaviceps	verdin	
Mimidae	**Mimids**	
Mimus polyglottos	northern mockingbird	
Toxostoma redivivum	California thrasher	
Ptilogonatidae	**Silky Flycatchers**	
Phainopepla nitens	phainopepla	
Sturnidae	**Starlings**	
*Sturnus vulgaris**	European starling	
Parulidae	**Wood Warblers**	
Dendroica coronata	yellow-rumped warbler	
Wilsonia pusilla	Wilson's warbler	

Scientific Name	**Common Name**	**Status[1]**
Emberizidae	**New World Sparrows and Allies**	
Amphispiza bilineata	black-throated sparrow	
Amphispiza belli	sage sparrow	
Chondestes grammacus	lark sparrow	
Melospiza melodia	song sparrow	
Pipilo crissalis	California towhee	
Zonotrichia leucophrys	white-crowned sparrow	
Icteridae	**Icterids**	
Agelaius tricolor	tri-colored blackbird	SSC
Agelaius phoeniceus	red-winged blackbird	
Euphagus cyanocephalus	Brewer's blackbird	
Quiscalus mexicanus	great-tailed grackle	
Sturnella neglecta	western meadowlark	
Fringillidae	**Finches**	
Carpodacus mexicanus	house finch	
Passeridae	**Old World Sparrows**	
*Passer domesticus**	house sparrow	
	MAMMALS	
Canidae	**Foxes, Wolves, and Coyotes**	
*Canis domesticus**	domestic dog	
Canis latrans	coyote	
Vulpes macrotis	desert kitfox	
Equidae	**Horses**	
Equus caballus	domestic horse	
Felidae	**Cats**	
*Felis catus**	domestic cat	
Felis rufus	bobcat	
Bovidae	**Cattle, Sheep, and Goats**	
*Ovis aries**	domestic sheep	
Sciuridae	**Squirrels, Chipmunks, and Marmots**	
Ammospermophilus leucurus	white-tailed antelope ground squirrel	
Spermophilus beecheyi	California ground squirrel	
Heteromyidae	**Pocket Mice and Kangaroo Rats**	
Chaetodipus penicillatus	desert pocket mouse	
Dipodomys merriami	Merriam's kangaroo rat	

Scientific Name	**Common Name**	**Status[1]**
Dipodomys panamintinus	Panamint kangaroo rat	
Muridae	**Mice, Rats, and Voles**	
Neotoma lepida	desert woodrat	
Peromyscus maniculatus	deer mouse	
Leporidae	**Rabbits and Hares**	
Lepus californicus	black-tailed jackrabbit	
Sylvilagus audubonii	desert cottontail	
Procyonidae	**Raccoons and Allies**	
Procyon lotor	common raccoon	

[1]SSC: California Species of Concern

*: non-native species

APPENDIX E Sensitive Plant Survey Data Sheets

Date: 3/20/08 4/1/08, 4/2/08, 4/8/08, 4/9/08, 4/15/08.	**Botanical Survey** ECORP Consulting, Inc.	Project Name: Hwy 138 District 7 Project Number: 2008-036.001 Phase: .005
Survey #: _____ Survey Season: Spring 2008	Land Ownership: LADA (Los Angeles Dept. of Airports Land), private, commercial multiple	Client: Caltrans
General Information		
Surveyors: Kerry Myers, Brad Haley, Danica Schaffner-Smith, Brian Zitt, Manna Warburton, Tony Mann	(circle) (Point) (Polygon) Line GPS Unit: Trimble XT & Etrex garmin Unique ID: (Name of pt. /poly.)	
Entire extent of rare plants mapped? yes	Comments: CNPS 4.2 spp. were mapped in various locations w/in project area	: ① Canbya candida ② Muilla coronata
Site Information		
Directions to Site: SR 14 to 100th St. near Palmdale airport along Ave. P-8 in City of Palmdale.		Exotics: See list
Quad: _____ T____,R_____,S_____	County: Los Angeles	**UTM Coordinates** (NAD 83)
Parcel # _____		NW: [PHOTOS? ___]
Habitat/ Site Description: (Refer to Veg. Community Forms)		NE: [PHOTOS? ___]
		SE: [PHOTOS? ___]
		SW: [PHOTOS? ___]
Physical Characteristics		
Elevation: 2500' - 2800' (ft m) roughly	**Aspect:**	**Soil text:** clay, clay loam, loam, sand, silt, silt loam, sandy loam
Substrate: Cliff Duff Gravel Log Moss Other (Roadside) Rock (Soil) Water Other	Comments:	**%Slope:**
Soil moisture: (mesic) (xeric) (hydric)	Comments: varied, but sens. pls. were all in xeric	
Light Exposure: (full sun)	part shade full shade	
Current Land Use: LADA		
Disturbance: Trash dumping, dirt trails & rds. / OHV evidence	**Current/potential threats:** Trampling/compaction	
Plant Species Observed: ↓	{dominance rating for each plant} ----→ (omitted)	1-indiv 2-rare 3-frequent 4-common 5-abundant

	Date Observed						
Trees:	3/20	4/1	4/2	4/8	4/9	4/15	
Juniperus californica		✓					
Ulmus pumila	✓	✓		✓		✓	
Baccharis salicifolia	✓			✓			
Salix exigua	✓			✓		✓	
Salix lasiolepis	✓					✓	
Yucca brevifolia	✓	✓	✓			✓	
Populus fremontii						✓	
Melia azedarach						✓	
Tamarix ramosissima						✓	
Shrubs:							
Artemisia tridentata	✓			✓		✓	
Ericameria cooperi	✓			✓		✓	
Ericameria (Chrys.) viscid.	✓	✓		✓	✓	✓	
Hymenoclea salsola	✓	✓		✓	✓		
Stephanomeria spinosa	✓	✓		✓		✓	
Xanthium strumarium	✓					✓	
Atriplex canescens	✓	✓	✓	✓	✓		
Atriplex polycarpa	✓	✓		✓			
Krascheninnikovia lanata	✓	✓	✓	✓			
Salsola tragus	✓	✓		✓		✓	
Ephedra nevadensis	✓	✓	✓			✓	
Ephedra viridis	✓	✓		✓		✓	
Salazaria mexicana	✓	✓					
Larrea tridentata		✓	✓	✓			
Ericameria linearifolia				✓			
Lepidospartum squamatum							
Forbs/Herbs: Lasth. calif.	✓	✓		✓	✓	✓	
Ambrosia acanthicarpa	✓	✓		✓		✓	
Ambrosia dumosa	✓					✓	
Coreopsis calif. v. calif.	✓	✓					
~~Lasthenia californica~~							
Malacothrix glabrata	✓	✓		✓	✓	✓	
Amsinckia menziesii v. intermedia	✓	✓	✓	✓	✓	✓	
Cryptantha cf. muricata		✓	✓			✓	
Pectocarya penicillata	✓	✓	✓	✓	✓	✓	
Phacelia distans	✓	✓	✓	✓			
Brassica nigra	✓	✓				✓	
Brassica tournefortii	✓			✓			
Lepidium flavum v. flavum	✓	✓					
Sysimbrium irio	✓	✓		✓		✓	
Descurainia pinnata		✓		✓		✓	

Dak Observed

Trees:	3/20	4/1	4/2	4/8	4/9	4/15
Shrubs:						
Artemisia dracunculus				✓		
Lycium andersonii	✓	✓	✓	✓	✓	✓
Lycium cooperi	✓	✓	✓	✓		✓
Tetradymia comosa	✓	✓				✓
Grayia spinosa		✓		✓		✓
sphaeralcea ambigua						✓
Artemisia californica						✓
Forbs/Herbs:						
Opuntia echinocarpa	✓	✓	✓	✓		✓
Croton californicus	✓	✓	✓			
Astragalus lentiginosus	✓	✓	✓	✓		
Erodium cicutarium	✓	✓	✓	✓	✓	✓
Marrubium vulgare	✓	✓				
Mentzelia affinis	✓	✓	✓	✓	✓	✓
Eremalche exilis	✓	✓	✓	✓	✓	
Eschscholzia minutiflora	✓	✓	✓			✓
Gilia brecchiarum	✓	✓	✓	✓	✓	✓
Gilia latiflora			✓	✓		✓
Linanthus parryae	✓		✓	✓		✓
Oenothera californica			✓	✓		
Oenothera deltoides	✓		✓	✓		
Camissonia clavif. v. clav.		✓	✓	✓	✓	
Linanthus aureus			✓	✓		
Centrostegia thurberi	✓	✓	✓	✓		
Eriogonum gracillimum	✓	✓	✓	✓	✓	✓
Abronia pogonantha			✓	✓		
Rumex hymenosepalus	✓	✓	✓			✓
Layia glandulosa		✓	✓	✓		
Microseris lindleyi			✓	✓		✓
Datura wrightii	✓	✓				
Emmelia fasciculata		✓				
Achnatherum hymenoides	✓	✓		✓		
Achnatherum speciosum		✓				
Hordeum vulgare		✓				
Hordeum murinum	✓	✓		✓		✓
Vulpia myuros	✓	✓		✓		
Anisocoma acaulis	✓	✓	✓	✓		
Eriophyllum wallacei		✓	✓	✓		✓
Eriophyllum pringlei		✓	✓	✓		✓
Nama demissum		✓		✓		
Lupinus concinnus (hairy)	✓	✓	✓	✓		✓
Calyptridium monandrum		✓	✓	✓		

FINAL
Focused Desert Tortoise Survey and Burrowing Owl Habitat Assessment Results Report for the High Desert Corridor Project Los Angeles County, California

Contract No. 07A2717, Task Order No. 013, EA No. 2600U0

December 2011

Pre□□red □or□
California Department of Transportation, District 7
Los Angeles, California

Pre□□red □□□
ECORP Consulting, Inc.
Santa Ana, California

□his re□ort is □ot to □e distri□□ted □□□ic□□ □t is i□te□ded so□e□□ □or the □se o□the C□i□or□i□ De□□rt□ e□t o□□r□□s□ort□tio□ i□ its co□s□t□tio□ □ith the reg□□tor□ □ge□cies□

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ECORP Consulting, Inc.
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(714) 648-0630

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

D□□□□ Dece□ □er □□□□□□□ □□ □□D□ Kristen Mosbacher

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Executive Summary

The California Department of Transportation (Caltrans) and the Los Angeles County Metropolitan Transportation Authority (Metro) are proposing the construction of a new transportation corridor between State Route 14 in the City of Palmdale and Los Angeles County near Pearblossom. This project is referred to as the High Desert Corridor (HDC) Project. Focused protocol surveys for the federally and state-listed threatened desert tortoise (*Gopherus agassizii*) and habitat assessments for the California burrowing owl (CDFG species of special concern) (*Athene cunicularia*) were conducted in the spring and summer of 2011 within and adjacent to the proposed alignments for the new corridor within the eastern portion of Los Angeles County.

No live desert tortoises or desert tortoise sign (scat, tracks, burrows, or carcasses) were observed during focused desert tortoise surveys despite presence of suitable habitat throughout the proposed alignments. Based on the negative results and the conclusion that habitat in the immediate vicinity of the proposed alignments desert tortoise is not expected to occur within or adjacent to the proposed alignments.

Suitable habitat for burrowing owls was identified throughout the majority of the proposed alignments during the burrowing owl habitat assessment. Burrowing owls were detected and/or observed in three locations during the 2011 wildlife studies conducted along the proposed alignments. Due to the fact that suitable burrowing owl habitat is found throughout most of the proposed alignments studied in 2011, it is likely that burrowing owls can migrate into or out of the project area throughout the year according to resource suitability. Areas with suitable habitat where the have not been recently observed.

Five sensitive wildlife species were found or detected in various locations throughout the proposed alignments during focused surveys in the spring and summer of 2011, two of which are classified as CSC or CDFG species of special concern or protected by the Fish and Game Code or California Endangered Species Act, including loggerhead shrike (*Lanius ludovicianus*), the Costa's thrasher (*Toxostoma lecontei*), and American badger (*Taxidea taxus*).

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Figures

□ig□re □□ High Desert Corridor Project □ite □□d □ici□it□□□

List of Abbreviated Terms

C□tr□□s	C□i□or□i□ De□□rt□e□t o□□r□□s□ort□tio□
C□□C	C□i□or□i□ □□rro□i□g □ □□Co□sorti□□
CD□□	C□i□or□i□ De□□rt□e□t o□□ish □□d □ □□e
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HDC	High Desert Corridor
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1.0 INTRODUCTION

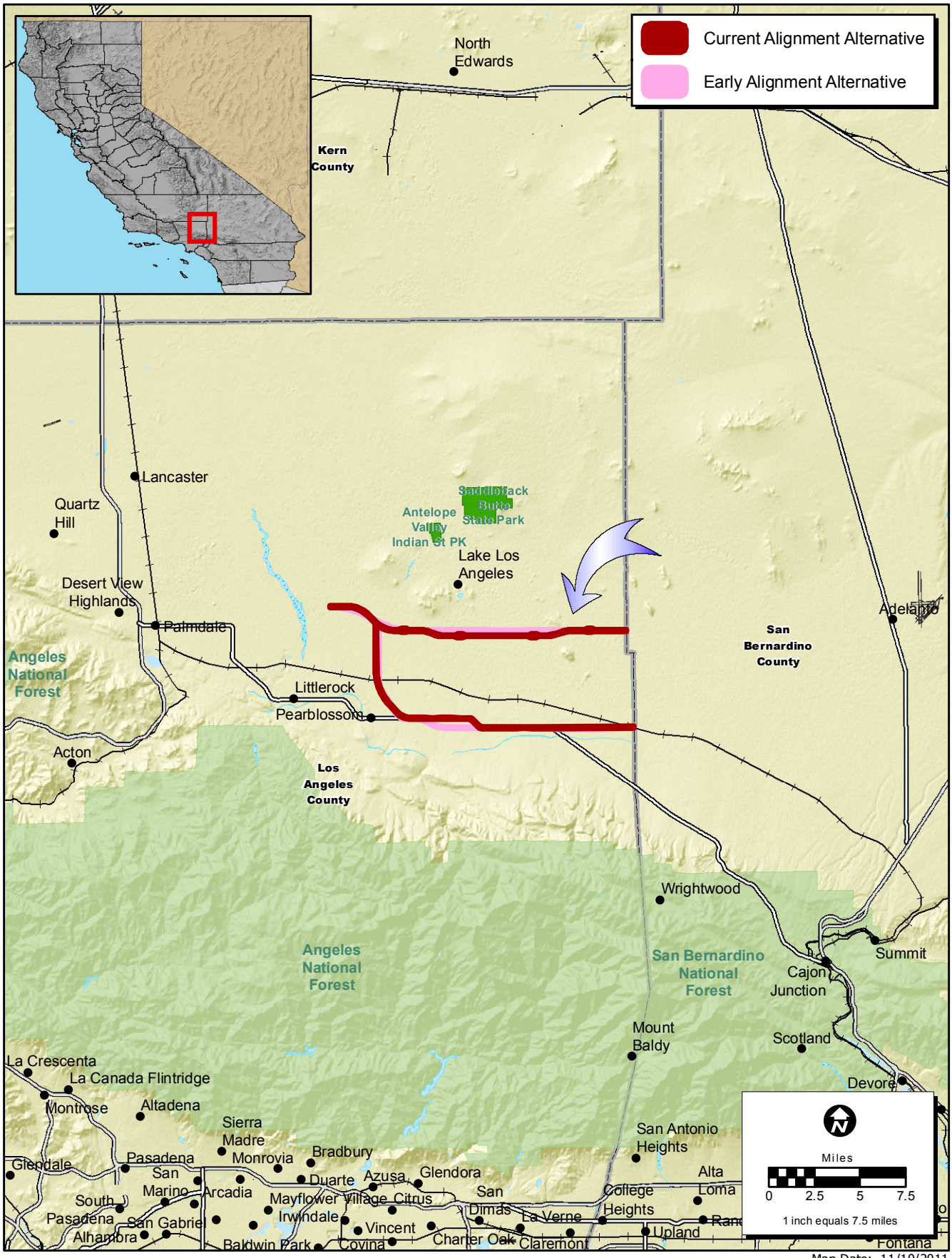
he C ifor i De rt e t o r s ort tio C tr s d the os ge es Co t etro o it r s ort tio thorit etro re ro osi g the co str ctio o ro i te ie io eter o g e ree corridor et ee t te o te i the Cit o P d e os ge es Co t d terst te i the o o e e er rdi o Co t his roject is re erred to s the High Desert Corridor HDC Project oc sed rotoco s r e or the eder d st te isted thre te ed desert tortoise *Gopherus agassizii)* d h it t ssess e t or the C ifor i De rt e t o ish d e CD ecies o eci Co cer C rro i g o *Athene cunicularia* ere co d cted i the s ri g d s er o ithi t o ro osed ter ti e ig e ts or the e ree corridor ithi the e ster ortio o os ge es Co t he res ts o these t o i estig tio s re the s ject o this re ort oc sed rotoco e e tr i g s r e or oh e gro d s irre *Xerospermophilus mohavensis* C P d iidie crossi g std std d re ort i rogress ere so co d cted i this ortio o the ro osed roject ho e er the res ts o these st dies c e o d der se r te co ers he desert tortoise s r e d rro i g o h it t ssess e t ere co d cted i order to i the re ire e ts o the C ifor i d gered ecies ct C d eder d gered ecies ct

he ester ortio o the HDC Project i os ge es Co t to th treet st s st died i d or C tr s District es ts o those oc sed s r e s c e o d der se r te co ers C P he e ster ortio o the HDC Project ithi os ge es Co t s s r e ed i the s ri g d s er o his ortio o the ro osed roject e te ds ro th treet st to the os ge es Co t er rdi o Co t o d r ro i te th treet st d s s ject to the i estig tio s rese ted i this re ort he ortio s o the roject oc ted ithi er rdi o Co t re der the j risdictio o C tr s District d re ot ddressed i this re ort

1.1 Project Location

he ro osed HDC Project is oc ted et ee i the Cit o P d e os ge es Co t d i the o o e e er rdi o Co t he ro osed roject s s to co ties d is s se e t der the j risdictio o t o se r te districts ithi C tr s District os ge es Co t d District er rdi o Co t

he ortio o the ro osed HDC Project st died or desert tortoise d rro i g o i s ri g d s er o s oc ted i the e ster ortio o os ge es Co t et ee th treet st d the os ge es er rdi o Co t o d r th treet st ig re r e s ere oc sed o t o ro osed ig e ts ithi this ortio o the HDC Project here ter re erred to s ig e ts orther ig e t th t ge er r s est to e st et ee th d th treets st ro gh r ei g P d e o e rd d so ther ig e t th t o o s the orther ig e t ti th treet st here it dro s so th to Pe r osso High ig re he so ther ig e t the r s e st o g Pe r osso High i tersects ith d the o o s ti it ter i tes t the os ge es er rdi o Co t o d r



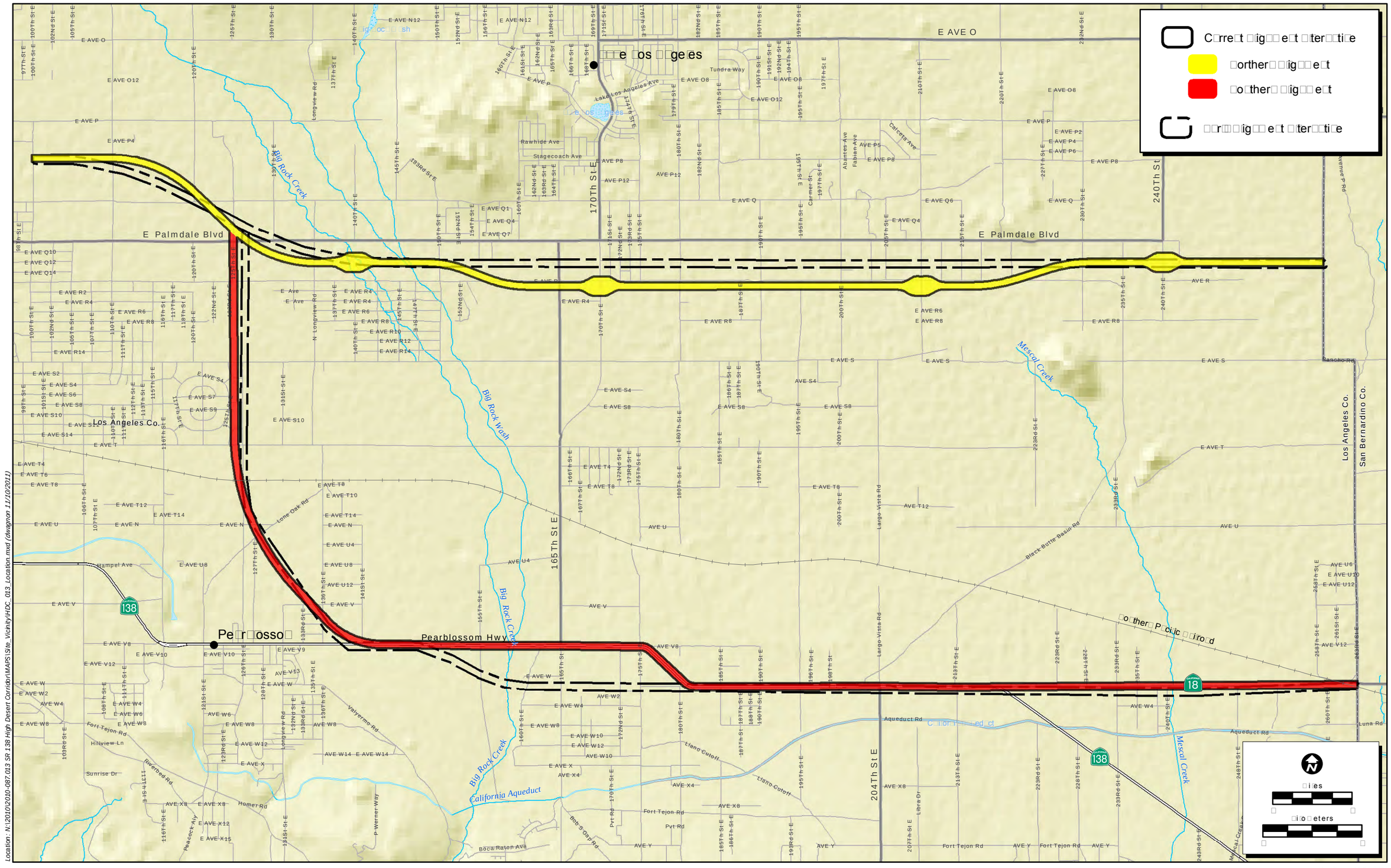
Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\Site_Vicinity\HDC_013_Vicinity.mxd *(dkrolick, dwagnon 11/10/2011)*

Map Date: 11/10/2011

Figure 1. High Desert Corridor Project Site and Vicinity

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS



Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\Ste. Vichity\HDC_013_Location.mxd (dwagnon 11/10/2011)

Map Date: 11/10/2011

Figure 2. High Desert Corridor Project Location

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

The northern alignment is approximately 50 miles long and is located on the Mojave Desert and Mountains Ecoregion and the Antelope Valley subregion. The proposed alignment includes approximately 2,000 feet of elevated structure, 2,000 feet of retained fill, 2,000 feet of at-grade crossing, and 2,000 feet of retained fill. The southern alignment is approximately 50 miles long and is located on the Mojave Desert and Mountains Ecoregion and the Antelope Valley subregion. The proposed alignment includes approximately 2,000 feet of elevated structure, 2,000 feet of retained fill, 2,000 feet of at-grade crossing, and 2,000 feet of retained fill. The northern alignment is approximately 50 miles long and is located on the Mojave Desert and Mountains Ecoregion and the Antelope Valley subregion. The proposed alignment includes approximately 2,000 feet of elevated structure, 2,000 feet of retained fill, 2,000 feet of at-grade crossing, and 2,000 feet of retained fill. The southern alignment is approximately 50 miles long and is located on the Mojave Desert and Mountains Ecoregion and the Antelope Valley subregion. The proposed alignment includes approximately 2,000 feet of elevated structure, 2,000 feet of retained fill, 2,000 feet of at-grade crossing, and 2,000 feet of retained fill.

The portion of the proposed HDC Project studied in this report is not located within any critical habitat for or any listed species or is it located within any designated conservation area. This proposed highway right of way is not within an existing transportation corridor therefore most if any Project impacts are not anticipated for either alignment.

1.1.1 Changes to Project Design

Changes to the proposed alignments occurred after the focused desert tortoise survey had been conducted based on the original alignment alternative design. The alignment changes are illustrated on figure 2. The current alignment alternative footprint is the general direction of the original alignment alternative but is offset varying distances from the original design throughout each of the proposed corridors. Despite these differences between the alternative alignments the desert tortoise survey not repeated due to minor modifications of the design changes. The design of the proposed alignments in this portion of the HDC Project is still in the planning stages and additional changes in Project design may occur in the future.

1.2 Project Description and Purpose

The proposed HDC Project is planned to provide a larger overall transportation system for the high desert region. Cities of Victorville, Palmdale and the Lancaster-Palmdale urbanized area are expecting substantial growth.

These Project alternatives are proposed for the HDC Project and include improvements to existing corridors, freeway expressways, freeways, toll roads, and combinations of these alternatives that would include mixed flow or alternative high speed rail facilities. The proposed Project consists of an eight-lane freeway from I-5 to 47th Street East along a corridor generally near the Palmdale Airport in the City of Palmdale from 47th Street East to the Project consists of six-lane freeway

The purpose of the proposed project is to increase the capacity of east-west transportation efficiency and travel throughout the high desert. The enhanced mobility and efficient transport of goods and services is a focus of this project as the existing freeways and adjacent are experiencing high traffic volumes of trucks and recreational vehicles. Reduction of accident rates in mixing traffic is also a high priority in addition to other street issues and concerns. The proposed freeway will improve access to regional airports and connectivity between desert communities as well as provide an alternative emergency corridor in the event of earthquake or other disaster. The proposed freeway might alleviate future traffic congestion in the high desert region and in the greater Los Angeles or goods movement as large scale growth is expected for the region within the next years.

This document is required to assist the Caltrans Division of Environmental Planning and responsible federal and state agencies to make informed decisions regarding the management of the species present in the project area.

1.3 Sensitive Species Natural Histories

A focused protocol desert tortoise survey and monitoring effort was conducted within the proposed project area. The natural histories of these species are discussed separately below.

1.3.1 Desert Tortoise

Current Status

The desert tortoise was listed as threatened under CESA in 1989 and listed as threatened under the United States Fish and Wildlife Service in 1990 due to declines and the threat of habitat destruction. The recovery plan for the desert tortoise was published in the *Federal Register* in 1994. A revision of the recovery plan was initiated on .

Desert tortoise range has declined due to several factors including habitat loss due to human related activities, disease, cattle grazing, reintroduction efforts and other contributing factors. Human impacts include illegal collection, road kills, habitat degradation, increase events, reduction of adult tortoises, and reduction of juvenile tortoises. Current and predicted

Life History

The desert tortoise inhabits the Mojave, Colorado and Sonoran Deserts in the southwestern United States and the northwestern region of Mexico. Two species exist the western population that inhabits primarily southern most of the Colorado Desert and northern Mexico and the Mojave desert tortoise which occurs west of the Colorado River in southwestern to northwestern portions of the state. The Mojave desert tortoise is the listed species under both CESA and ESA. In California the desert tortoise occurs in the southwestern portion of the state from Inyo County to the Mexican border including Kern, San Bernardino, Riverside and San Diego Counties.

Desert tortoises □r□gre□t□i□si□e de□e□di□g o□ □ge□□ith □id□e c□r□□□ce □e□gths □□C□□ □r□i□g □ro□ □□□ro□i□te□ □ i□ch □□ ce□ti□eters□□s □ h□tchli□g to o□er □□i□ches □□□ce□ti□eters□□s □d□ts □□ood□□r□□□d H□rd□ □□□□□□ □he□□re □de□t □□rro□i□g□□ith c□□□s o□ □□□o□r □eet□i□ □dditio□ to ro□gh sc□es o□ their □orei□□s □or diggi□g□ □he□ □so □ossess □ do□ed c□r□□□ce □□□□er h□□□o□she□□□□d □ □□t to co□c□□e □□stro□ □otto□ h□□□o□the she□□□oth o□□hich □re □er□s□ooth□□ □e□e□it to their □□rro□i□g □cti□ities□

Desert tortoises □re □ssoci□ted □ith □oj□□e creosote □□sh scr□□ □□□t series□ s□cc□□e□t scr□□□cheese□□sh scr□□□ □□c□□□sh scr□□□ho□s□ge scr□□□sh□dsc□□e scr□□□ □icro□h□□ □ood□□□d□ □□d □oj□□e s□t□□sh□□□sc□□e scr□□ □eget□tio□ co□□□□ities □□o□r□□□ □□□□□□□ Desert tortoises □re□er o□□□s□□str□te□so□th□est e□□os□res□□□d □re□s □ith re□□ti□e□ high □□□□t co□er□ge □□derso□ et □□□□□□□□ □he□t□□ic□□□i□h□□it □□ts□ge□t□□s□o□i□g terr□i□□□□□e□s □□d □□j□d□s□□□shes□roc□□ hi□sides□ □□d o□e□ □□t desert □re□s □ith s□□d□ to s□□d□gr□□e□soi□s th□t o□er s□it□□e s□□str□tes □or □□rro□i□g □□d □esti□g□ □his s□ecies is t□ic□□□ o□□d □t e□e□tio□s r□□gi□g □ro□ □□□ro□i□ □te□ □□□□□ to □□□□□ □eet □□□□ to □□□□□ □eters□ □□o□e □s□ □□t h□□e □so h□□e □ee□ occ□sio□□□□ o□□d □□o□e □□□ro□i□ □te□ □□□□□ □eet □□□□□□ □eters□□□o□e □s□ Desert tortoise □□rro□s □ □□t□ic□□□ □e o□□d i□ □□sh □re□s □□ood□□r□ □□d H□rd□ □□□□□□□□t the ris□ o□□□sh □oodi□g □oses □ thre□t to tortoises d□ri□g the r□i□□se□so□ □□□c□e□□□ch □□□□□□

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1.3.2 Burrowing Owl

Current Status

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□he □ri□ □r□ re□so□s □or □□rro□i□g o□□ □o□□□tio□ dec□i□e □re h□□it□t □oss□ degr□d□tio□□ □□d r□g□e□t□tio□ d□e to □gric□t□r□□ □□d r□□□ de□e□o□□e□t□ Pred□tio□ □□ □□t□r□□ □red□tors □h□□□s□ □□rger o□□s□ □ □□ □ □s□ □□d i□trod□ced □red□tors □do□estic c□ts □□d dogs□□so co□tri□□te to □□rge □o□□□tio□ dec□i□es o□ this s□ecies□

Life History

□he □□rro□i□g o□□is □ s□ □□□□ □igr□tor□ o□□□o□□d i□ □□rio□s h□□it□ts thro□gho□t □orth □□eric□□ □ ith □ □ott□ed □ro□□ □□d □hite □□□e□r□□ce□□□rro□i□g o□□s □re □s□□□□ □er□cr□□tic □ith their s□rro□□di□gs □he□ □ot □□i□g or □or□gi□g□ □ost o□their ti□e is s□e□t o□ the gro□□d i□ ro□t o□□□rro□ e□tr□□ces or sitti□g o□ □o□ □erches □e□r their □□rro□s□ □hese o□□s □re □□□s□□□i□ th□t the□ either e□c□□□te their o□□ □□rro□s □or she□ter □□d □reedi□g □□r□oses□or the□re□□o□ C□i□or□i□ gro□□d s□□irre□s □*Spermophilus beecheyi*□ □□d other □ossori□□ □□□rro□i□g□ □ □□ □ □□s □or □□rro□ co□str□ctio□ □□er□□ris et □□□□□□□□□

□□rro□i□g o□□s □re □ot □er□ □□e□t reside□ts i□ □□□□□rts o□the □oj□□e Desert □here the□ □re □o□□d□ □o□e desert □re□s □ro□ide □i□teri□g h□□it□t□so□e □re□s □ro□ide □reedi□g h□□it□t□□□d so□e □re□s □ro□ide □oth □i□teri□g □□d □reedi□g h□□it□t□ D□e to this □□r□i□g □igr□tor□ □eh□□ior□o□e □oc□tio□ i□ the desert co□d co□t□i□ □i□teri□g or □reedi□g i□di□id□□s □□d □er□ □□e□t reside□ts i□ □ro□i□it□to o□e □□other□

H□□it□t re□□ire□e□ts □or □□rro□i□g o□□s co□sist o□ □rid□o□e□ □re□s □ith s□□rse □eget□tio□ co□er s□ch □s deserts□ □□□□□do□ed □gric□t□r□□ □re□s□gr□ss□□□ds□ □□d dist□r□ed o□e□ h□□it□ts □□er□□ris et □□□ □□□□□□□ □ri□□e soi□s □re □so i□ □ort□□t h□□it□t re□□ire□e□ts □or this s□ecies□ □ho□gh h□□it□t □oss d□e to □r□□□i□□tio□ is □ co□tri□□ti□g □□ctor to □o□□□tio□ dec□i□es□□□rro□i□g o□□s see□ to □e high□□to□er□□t o□□e□r□□h□□ □□i□ □□cts □he□s□it□□□e h□□it□t is □rese□t □□d □ i□t□i□ed□□□d □he□ o□□s □re □ot □reedi□g□

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2.0 METHODOLOGY

2.1 Literature Review

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 dditio to the C DD re ie the dr t io ogic s r e res ts re ort re red or the ester ortio o the ro osed HDC Project so o s the e ree Co str ctio Project d e e P Corridor Project C P s so re ie ed rior to co d cti g the desert tortoise s r e d rro i g o h it t ssess e t oc sed rotoco desert tortoise d rro i g o s r e s ere co d cted i s ort o this ortio o the HDC Project i d th thro ghо t s it e h it t et ee th d th treet st

2.2 Site Characterization

 s o the e r ro osed HDC Project ig e t ter ti e ere s itted to C P Co s ti g c C P rior to the co e ce e t o io ogic s r e s i the ro osed roject oot ri t ig re he c rre t ig e t ter ti e s itted to C P t ter d te io ogists ti i ed the s d s se e t eogr hic or tio ste   d t to ge er ch r cteri e d se d h it ts thro ghо t the ro osed ig e ts i iti site ch r cteri tio o the ro osed ig e ts s co d cted i rch to ssess s it e h it t or se er se siti e s ecies ote ti occ rri g i the regio or eget tio co it ssess e t s ot co d cted or the desert tortoise d rro i g o st dies ho e er eget tio co ities ere ge er ch r cteri ed thro ghо t oth ro osed ig e ts to id i ide ti i g s it e h it ts dditio id i e s ecies o ser ed the io ogists ere doc e ted d ri g the i iti site ch r cteri tio

2.3 Studies Conducted

 oc sed rotoco e e s r e or desert tortoise d h it t ssess e t or rro i g o ere co d cted thro ghо t the t o ro osed ig e ts he s r e ethodo ogies or e ch st d re descri ed der e ch res ecti e he di g e o

hro ghо t the oc sed st dies co d cted i the roject re io ogists recorded id i e o ser tio s id i e s ecies ere ide ti ied si g riet o so rces i c di g

- *A Field Guide to Western Reptiles and Amphibians* te i s
- *The American Ornithologists' Union (AOU) Checklist of North American Birds,* th editio ith th e e t d
- *Mammal Species of the World* iso d eeder

2.3.1 Desert Tortoise

□ oc□sed □rotoco□desert tortoise □o□e o□ i□□□e□ce □□□□ s□r□e□ □□s co□d□cted thro□gho□t the e□ster□ □ortio□ o□the HDC Project □et□ee□ □□□□th □treet □□st □□d □□□th □treet □□st□□□sed o□ the e□r□ □ig□□e□t □ter□□ti□e desig□ □or this □ortio□ o□ the HDC Project □ig□re □□□ t □□s□t □□ti□□ter the s□r□e□ h□d □ee□ co□□□eted th□t □C□□P h□d □ee□ □otified th□t the □ig□□e□t □ter□□ti□e desig□ h□d ch□□ged□ □he c□rre□t □ig□□e□t □ter□□ti□e □□s □ot re□s□r□e□ed□

□he desert tortoise s□r□e□ i□ the e□r□ □ig□□e□t □ter□□ti□e □□s co□d□cted i□ □ccord□□ce □ith the □ie□ □□r□e□ Protoco□□or □□□ □eder□□□ctio□ th□t □ □□ □cc□r □ithi□ the □□□ge o□the Desert □ortoise □□□□□ □ □□□□□□□□ □□□□ied □io□ogists □ho h□□e □tte□ded the Desert □ortoise □□r□e□g□□ o□itori□g□□□d H□□di□g □ech□i□□es □ or□sho□ □rese□ted □□ the Desert □ortoise Co□□ci□ □□d th□t h□□e e□te□si□e e□□erie□ce i□ ide□ti□□i□g tortoises□sc□t□she□ter sites□c□rc□sses□□□d other tortoise sig□□□he □□□s□r□e□ □ethod co□sisted o□s□r□e□ors □□□i□g □edestri□□ tr□□sects s□□ced □t □□ □eet □□□ □eters□□□□rt thro□gho□t the i□ □edi□te □ro□osed □ig□□e□ts □□□□ □erce□t co□er□ge □re□□ □i□e co□ce□tric tr□□sects s□rro□□di□g the □roject □oot□ri□t □o□□d□ries □ere □so s□r□e□ed □ithi□ the □o□e o□ i□□□e□ce□ o□ the □ro□osed □roject □t □□□ro□i□ □te□□ □□□□□□□□□□□□□□□□□□□□□□d □□□□□ □eet □□□□□□□□□□□□ □□□□□□d □□□ □eters□□□igure □□□

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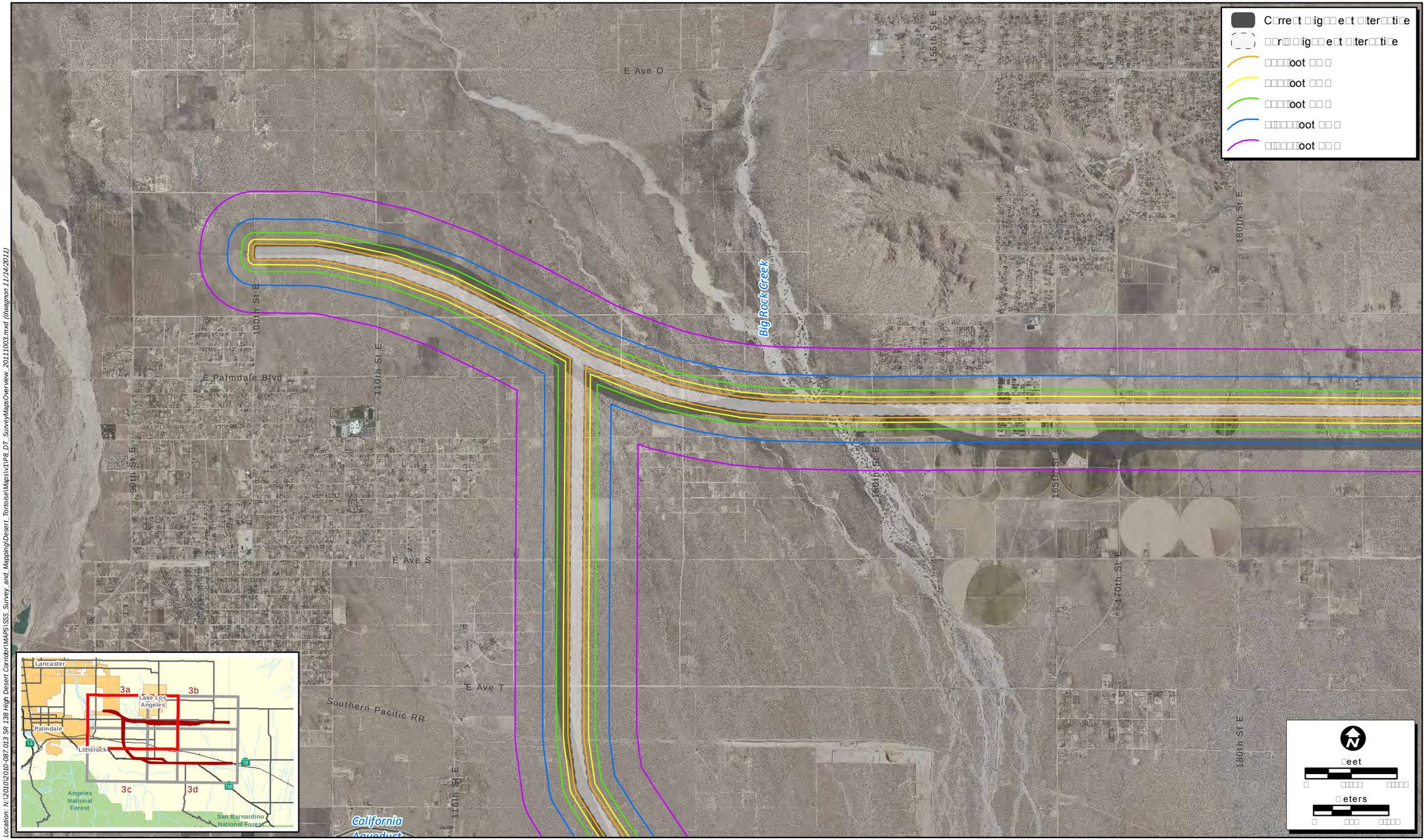
Aerial Photo: NAIP (2010)



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Map Date: 11/14/2011

Figure 3a. Desert Tortoise Survey Area

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)

Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\ISSS_Survey_and_Mapping\Desert_TortoiseMaps\v1\P8_DT_SurveyMapsOverview_20111003.mxd (dwagnon 11/14/2011)

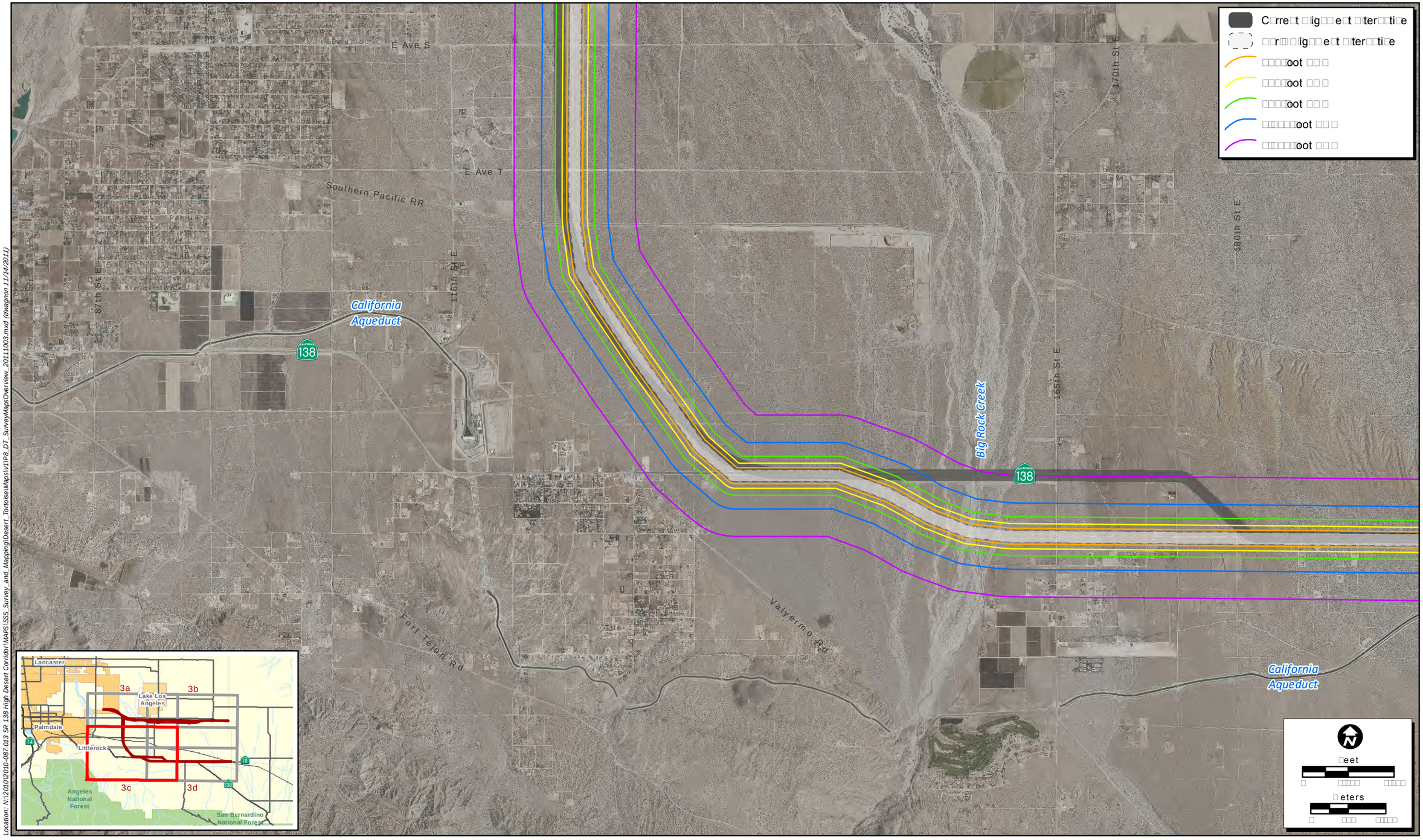
Map Date: 11/14/2011

Figure 3b. Desert Tortoise Survey Area

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



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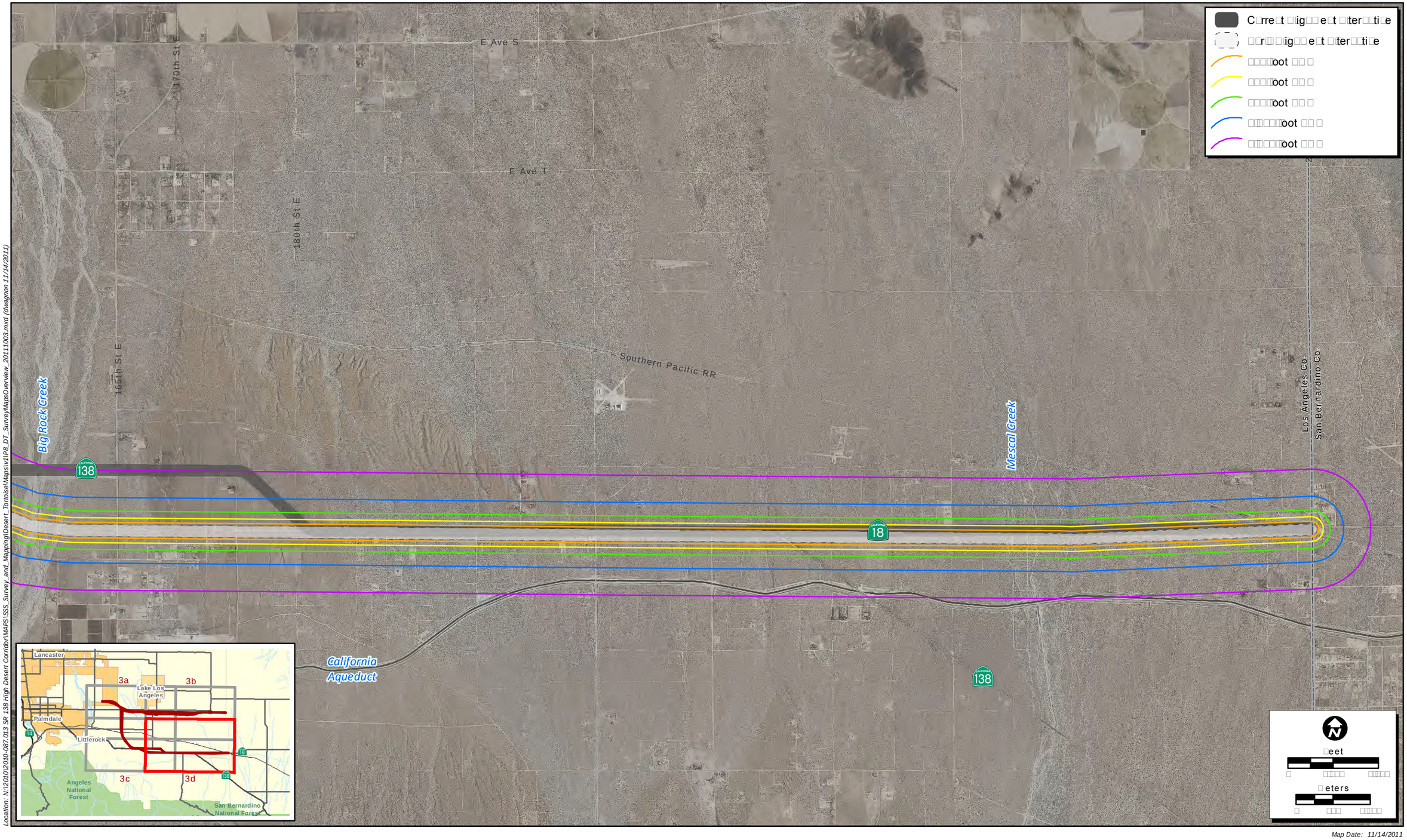
Map Date: 11/14/2011

Figure 3c. Desert Tortoise Survey Area

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\GIS_Survey_and_Mapping\Desert_TortoiseMaps\v1\P8_DT_SurveyMapsOverview_20111003.mxd (dwagnon 11/14/2011)

Map Date: 11/14/2011

Figure 3d. Desert Tortoise Survey Area

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2.3.2 Burrowing Owl

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2.3.3 Other Wildlife Species

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3.0 RESULTS

3.1 Literature Review

□□sed o□ the res□ts o□ the □iter□t□re se□rch□ □□ se□siti□e □idli□e s□ecies □ere doc□□e□ted i□ the □ici□it□ o□ the □ro□osed □ig□□e□ts □CD□□ □□□□□□□ □□those□ □□ □idli□e s□ecies h□□e □ote□ti□□to occ□r i□ or □dj□ce□t to the □ro□osed □ig□□e□ts □□sed o□ □rese□ce o□s□it□□□e h□□it□t□□□o□□ r□□ge□□□d□or rece□t□ doc□□e□ted o□ser□□tio□s o□these s□ecies □ithi□ the C□DD□□

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- so□ther□ gr□ssho□□er □o□se □*Onychomys torridus ramona*□□CD□□ □□C□
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3.2 Physical Conditions

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3.3 Biological Conditions

3.3.1 Vegetation Communities

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3.3.2 Common Plant Species

P□□□t s□ecies o□ser□ed i□ the st□d□ □re□ □ere ch□r□cteristic o□desert scr□□ □□d dist□r□ed co□ □ □□ities i□ the regio□□Co□ □o□ s□ecies i□c□□ded □osh□□ tree *Yucca brevifolia*□□creosote □□sh *Larrea tridentata*□□□c□□he□t *Eriogonum* s□□□ □e□ies □idde□ec□ *Amsinkia menziesii*□□ C□i□or□i□ e□e□i□g □ri□rose *Oenothera californica*□□□□dders□ge *Salazaria mexicana*□□□□d C□i□or□i□ go□d□e□ds *Lasthenia californica*□□□□o□g others□□□□□□□t s□ecies o□ser□ed □ithi□ □ro□osed □ig□□e□ts d□ri□g the □□□□ st□dies □re □isted i□ □□□e□di□ □□

3.3.3 Common Animal Species

□ i□d□i□e s□ecies o□ser□ed or detected □ithi□ the st□d□ □re□ □ere ch□r□cteristic o□ desert scr□□ □□d dist□r□ed co□ □ □□ities i□ the regio□□ □ tot□□o□□□ re□ti□□□□ □ird□ □□d □□ □ □□ □ □□s□ecies □ere o□ser□ed or detected d□ri□g the □□rio□s st□dies co□d□cted □ithi□ the □ro□osed □roject □oot□ri□t□ □□□i□d□i□e s□ecies o□ser□ed or detected d□ri□g the s□r□e□s □re □isted i□ □□□e□di□C□

Co□ □o□ re□ti□e s□ecies o□ser□ed thro□gho□t the □ro□osed □ig□□e□ts i□c□□ded □e□r□□ti□ed i□□rd *Callisaurus draconoides*□□side□□otched i□□rd *Uta stansburiana*□□ □este□ □hi□t□i□*Aspidoscelis tigris*□□□□d go□her s□□□e *Pituophis melanoleucus*□□ □ird s□ecies th□t □ere co□ □o□□□ o□ser□ed i□c□□de red□t□ied h□□□ *Buteo jamaicensis*□□C□i□or□i□ □□□i□*Callipepla californica*□□□□□s □hoe□e *Sayornis saya*□□ co□ □o□ r□□e□ *Corvus corax*□□hor□ed □r□ *Eremophila alpestris*□□□hite□cro□□ed s□□rro□ *Zonotrichia leucophrys*□□ □□d □re□er□ □□c□ird *Euphagus cyanocephalus*□□ Co□ □o□ □ □□ □ □□s□ecies i□c□□ded □hite□t□ied □□te□o□e gro□□d

s□□irre□*Ammospermophilus leucurus*□□□□□g□roo r□t s□ecies □*Dipodomys* s□□□□□□□d □□c□t□ied j□c□r□□□it □*Lepus californicus*□□

Desert □it □o□ □*Vulpes macrotis*□ □□s □so detected d□ri□g the st□dies□ □□rro□ co□ □e□es □ith o□d desert □it □o□sc□t □ere o□ser□ed i□ □h□□d□□□o□oc□tio□s □o□g the □orther□ □ig□□e□t□ □e□er□□desert □it □o□tr□c□s □ere detected thro□gho□t the □ro□osed □ig□□e□ts d□ri□g the □id□□e crossi□g st□d□re□ort □□d st□d□i□ □rogress□ co□d□cted i□ the s□ri□g □□d s□□ □er □□□□□□□□ □dditio□□o□e re□ote c□□er□c□□t□red □ □hotogr□□h o□□ desert □it □o□ i□ the e□ster□ □ortio□ o□the □orther□ □ig□□e□t d□ri□g the □id□□e crossi□g st□d□ i□ □e□te□ □er □□□□□□ □he desert □it □o□ is □ot co□sidered □ se□siti□e s□ecies □□ CD□□ or □□□□ □□□or is it □or□ □□□□ listed □□der C□□□ or □□□□□

3.4 Focused Studies

3.4.1 Desert Tortoise Survey Results

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Table 1. Weather Conditions During Desert Tortoise Surveys

Date	Surveyors*	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
		Start	End	Start	End	Start	End	Start	End
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Date	Surveyors*	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
		Start	End	Start	End	Start	End	Start	End
□□□□□□□□□□	□□□ □□□□□□ □□□□□□ □□□ P□□ □□□□	□□□□□	□□□□□	□□	□□	□	□	□□□	□□□
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3.4.2 Burrowing Owl Habitat Assessment

□he □ □jorit□ o□the □ro□osed HDC Project □ro□ides s□it□□□e h□□it□t □or □□rro□i□g o□□s □□□□□e □□□ □□□ro□i□□te□□ □□□□ □erce□t o□ the □ro□osed □ig□□e□ts □ere c□□ssi□ied □s s□it□□□e h□□it□t □or □□rro□i□g o□□s□ □re□s s□it□□□e □or □□rro□i□g o□□s thro□gho□t the □ro□osed □ig□□e□ts i□c□de □□desert scr□□ co□ □ □□ities□dist□r□ed □re□s □ith □□ti□e soi□s□□□d □re□s i□ □edi□te□□ □dj□ce□t to □cti□e □gric□t□r□□□ie□ds □□d i□cised□□□□eget□ted □□shes □□ig□re □□□

Table 2. Burrowing Owl Habitat Assessment Acreage

Habitat Category	Current Proposed Alignments Acreage (Northern and Southern)	Percentage of Proposed Alignments	500-foot Buffer Acreage	Percentage of 500-foot Buffer	Total Acreage
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□ □rgi□□□□□ □□it□□□e H□□it□t	□□□□	□□□□	□□□□□	□□□□	□□□□□
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Total Acreage	**2,259.1**	**100.0%**	**4,252.2**	**100.0%**	**6,511.3**

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Aerial Photo: NAIP (2010)

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Burrowing Owl Habitat Catagories

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Palmdale Blvd

E Palmdale Blvd

100Th St E

110Th St E

130Th St E

116Th St E

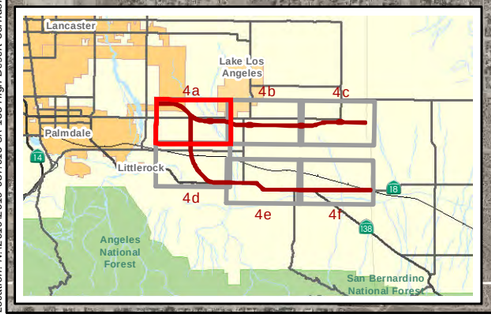
145th St E

E AVE S

Big Rock Creek

Figure 4b

Figure 4d



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Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\BUOW\v1\HDC_BUOW_Habitat_v1.mxd (dwagnon 11/10/2011)

Map Date: 11/10/2011

Figure 4a. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)

Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\BUOW\v1\HDC_BUOW_Habitat_v1.mxd (dwagnon 11/10/2011)

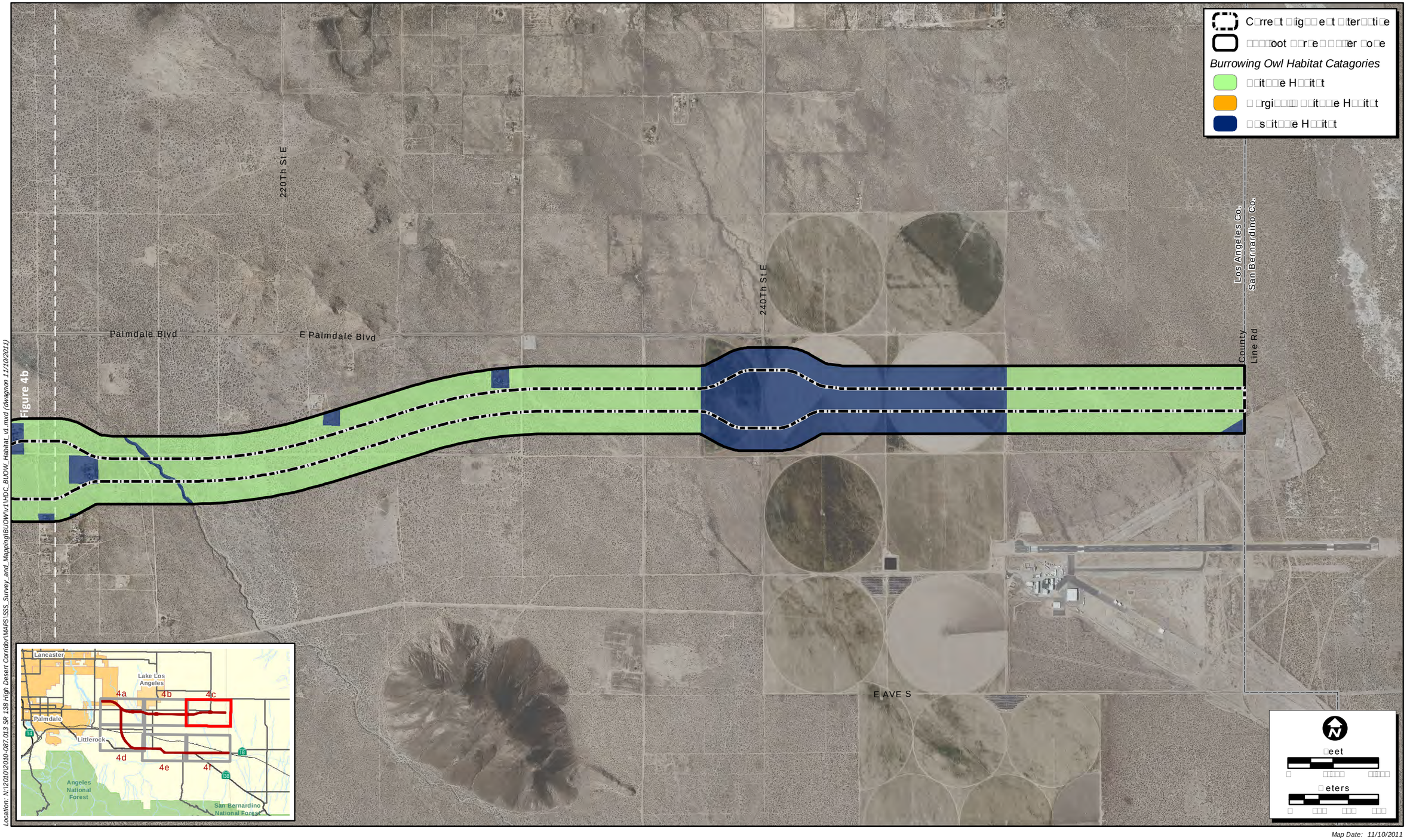
Map Date: 11/10/2011

Figure 4b. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



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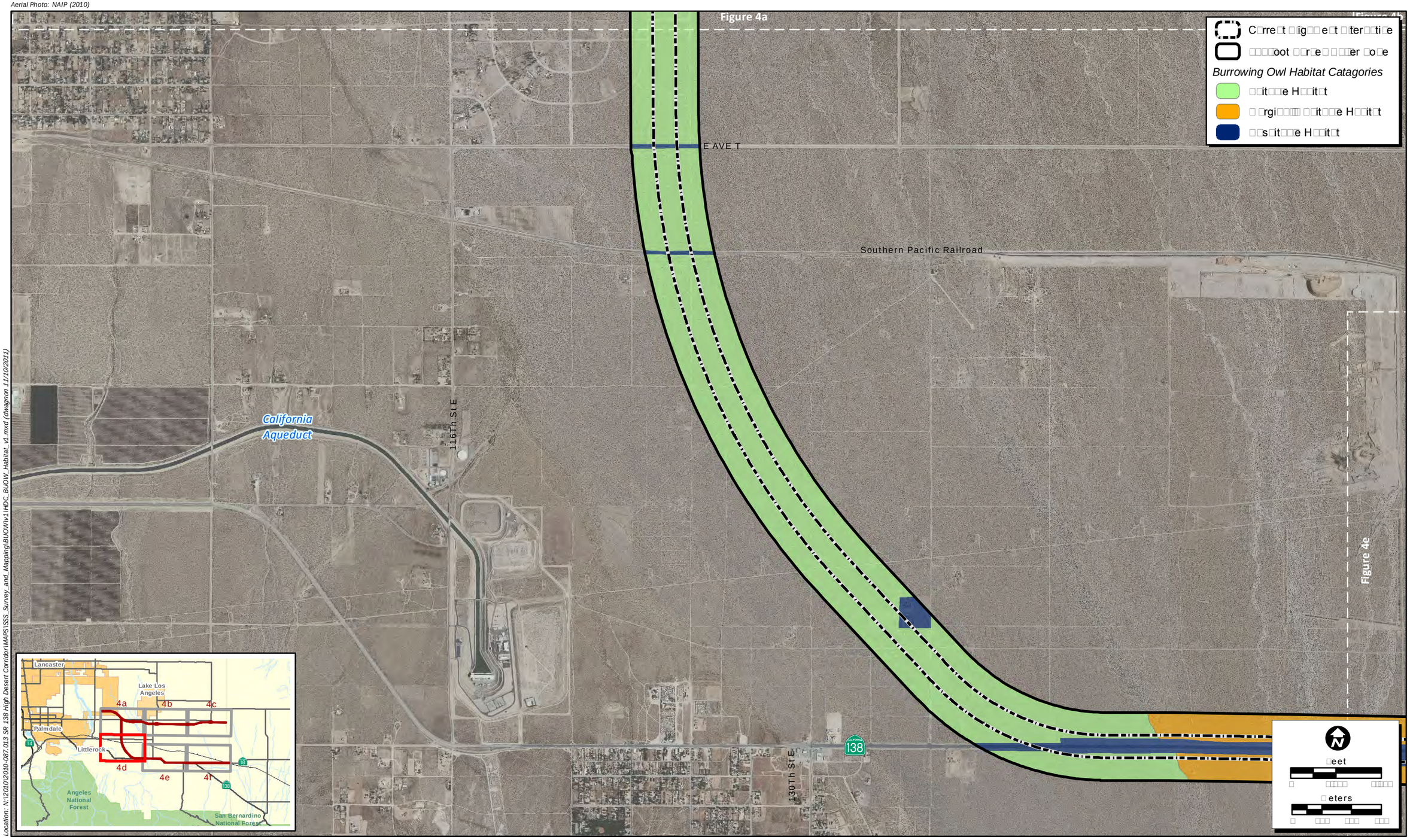
Map Date: 11/10/2011

Figure 4c. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SS_Survey_and_Mapping\BUOW\v1\HDC_BUOW_Habitat_v1.mxd (dwagnon 11/10/2011)

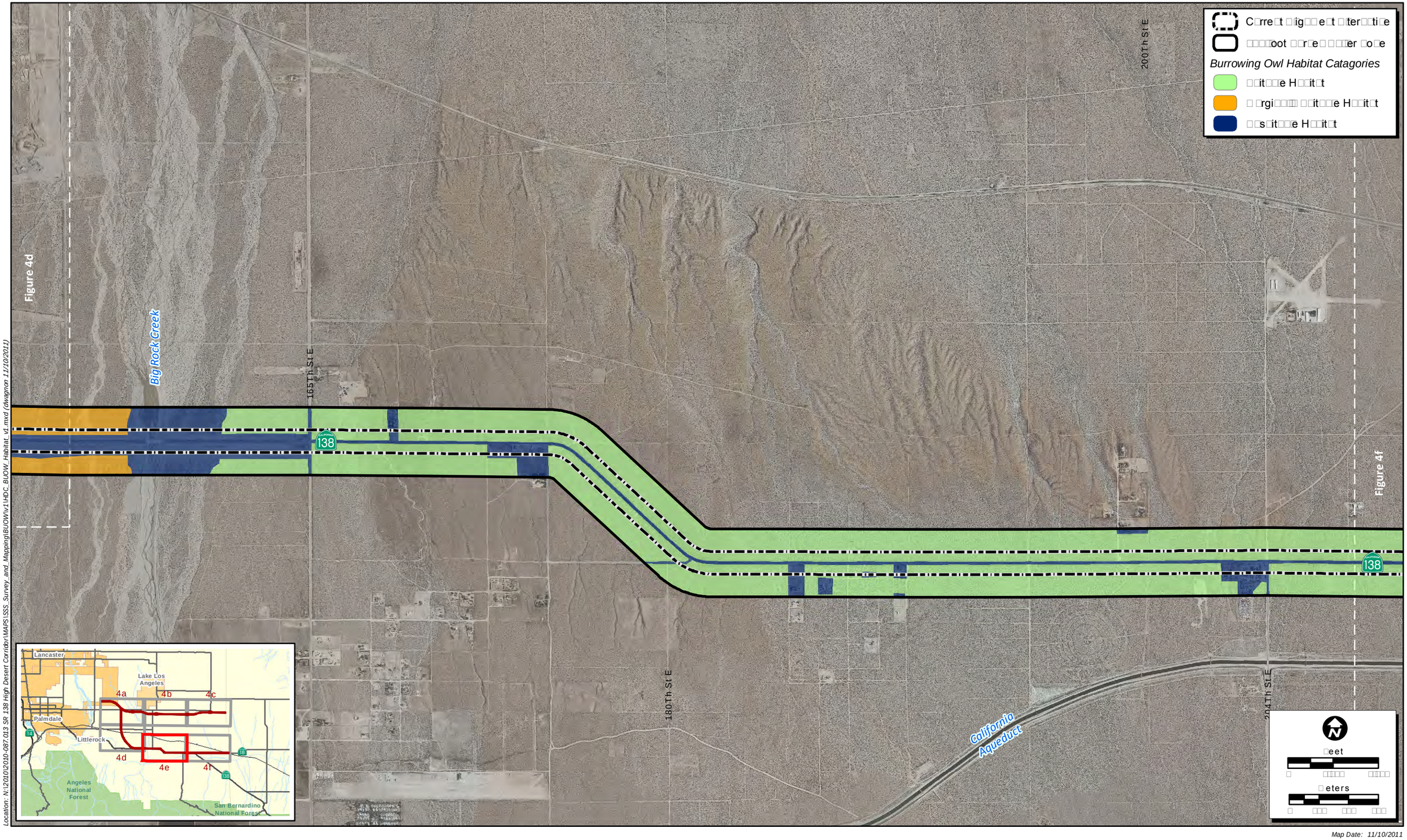
Map Date: 11/10/2011

Figure 4d. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\BUOW\v1\HDC_BUOW_Habitat_v1.mxd (dwagnon 11/10/2011)

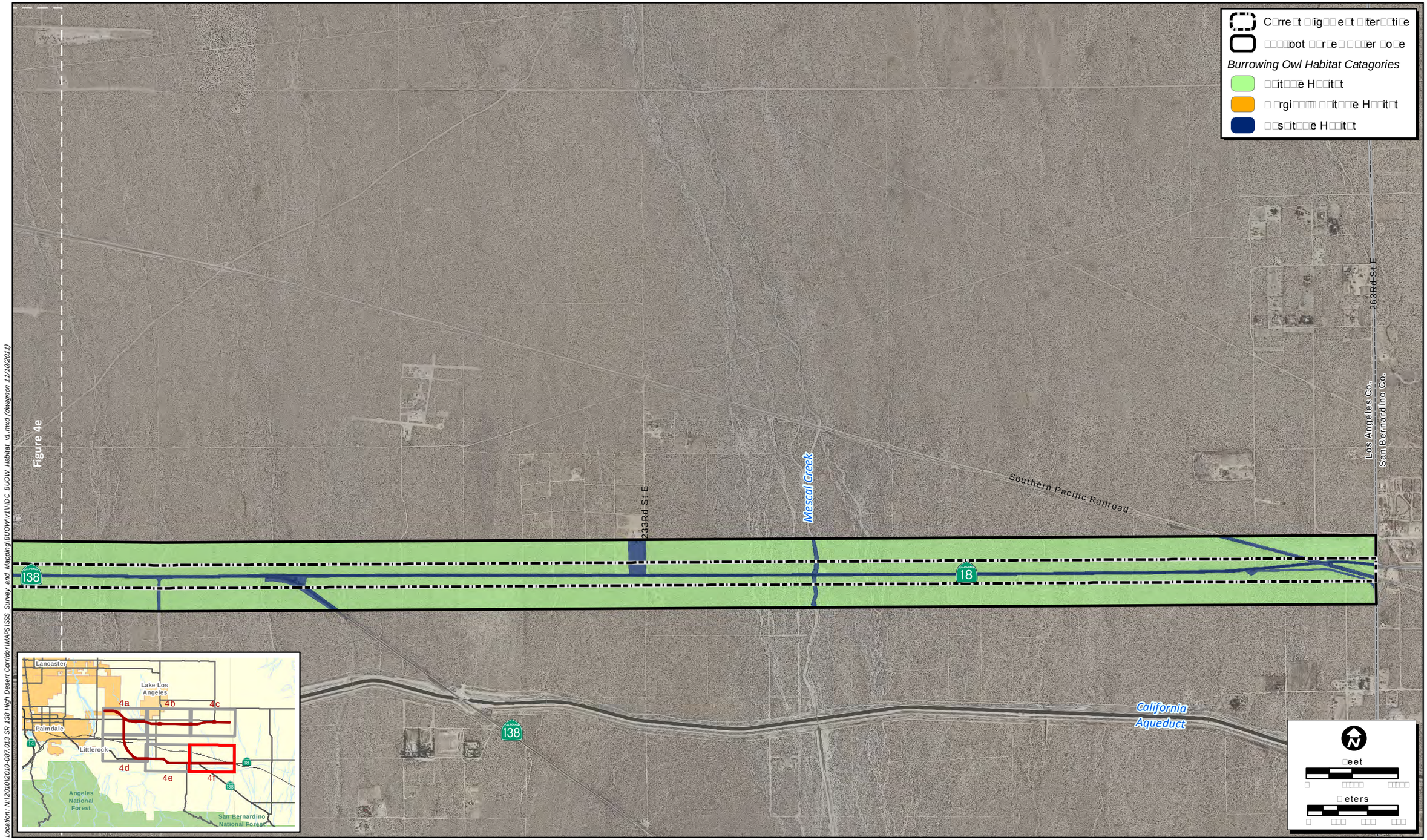
Map Date: 11/10/2011

Figure 4e. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)



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Map Date: 11/10/2011

Figure 4f. Burrowing Owl Habitat Assessment

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

3.4.3 Incidental Sensitive Species Observations

The sensitive wildlife species were observed or detected throughout the proposed project footprint and shortened to burrowing owl, loggerhead shrike, Coastal California gnatcatcher, and Cooper's hawk. These five species are discussed in more detail below. The locations of incidentally observed sensitive species within the project footprint are presented in Figure 3.

Short-Eared Owl

The short-eared owl is designated as a CDFG SSC. This crosier-colored owl with its crown, head, and hedgerow grass-colored streaked breast with large yellow irises and facial discs roosts and nests in the ground, usually in depressions or concealing vegetation. Their wings are relatively short and rounded, and their flight is characterized by irregular, moth-like wingbeats. Short-eared owls are year-round residents in the Mojave Desert region, but their numbers increase substantially during the winter months when migrants from the north arrive. Short-eared owls are known to congregate in large groups in open areas with large prey populations, such as rodents. The short-eared owl is vulnerable to habitat loss and degradation due to habitat fragmentation, grazing, and intensive weed control efforts and disease.

A pair of short-eared owls were observed approximately 100 meters south of the northern project footprint and east of 110th Street East in a cotton-wood (*Populus* sp.) tree. A recently killed rodent was observed during the mid-winter crossing study conducted in late December because these owls were observed in late winter it is not known that this pair was breeding at the time of observation.

Burrowing Owl

Natural history for the burrowing owl can be found in Section 3.4.2. Burrowing owls were observed or detected in three locations along or within the vicinity of the proposed project.

A single burrowing owl was flushed from its burrow during the pre-construction survey of the proposed northern project footprint during the desert tortoise surveys on the 160-acre parcel in creosote bush scrub between 110th Street East and 120th Streets East with numerous white-wash pellets and prey remains, but it was not known whether this owl was breeding at the time of the observation. This same owl was observed again at the same burrow location during the construction of the tortoise fence on the 160-acre parcel.

An additional single burrowing owl was observed on the 160-acre parcel located just north of the proposed northern project footprint and east of 110th Street East. This owl was observed during the construction of the desert tortoise fence. The fence could not locate a burrow associated with the owl and the owl was breeding at the time of the observation.

Aerial Photo: NAIP (2010)

Current Alignment Alternative

Species

- American Badger
- Burrowing Owl
- Burrowing Owl (Burrow)
- LeConte's Thrasher
- Loggerhead Shrike
- Loggerhead Shrike (Nest)
- Short-eared Owl

E Palmdale Blvd
E Ave S
E Ave T
Southern Pacific RR
California Aqueduct
Pearblossom Hwy
Big Rock Creek
Big Rock Creek
100th St E
110th St E
75th St E
90th St E
87th St E
116th St E
150th St E
165th St E
170th St E
180th St E
180th St E
165th St E
138
138

Figure 5b

Figure 5c

Lancaster
Palmdale
Lake Los Angeles
Littlerock
5a
5b
5c
14
18
138
Angeles National Forest
San Bernardino National Forest

Feet
0 2,000 4,000
Meters
0 500 1,000

Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\SSS_Locations\SpecialStatusSpeciesLocations_20111103.mxd (dwagnon 11/10/2011)

Map Date: 11/10/2011

Figure 5a. Sensitive Species Observations

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)

Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\SSS_Locations\SpecialStatusSpeciesLocations_20111103.mxd (dwagnon 11/10/2011)

Map Date: 11/10/2011

Figure 5b. Sensitive Species Observations

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Aerial Photo: NAIP (2010)

Location: N:\2010\2010-087.013 SR 138 High Desert Corridor\MAPS\SSS_Survey_and_Mapping\SSS_Locations\SpecialStatusSpeciesLocations_20111103.mxd (dwagnon 11/10/2011)

Map Date: 11/10/2011

Figure 5c. Sensitive Species Observations

2010-087.013 High Desert Corridor Wildlife Studies

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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Loggerhead Shrike

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American Badger

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Le Conte's Thrasher

□he □e Co□te□s thr□sher is desig□□ted □s □ CD□□ □□C□□his s□ecies is □ □oc□□ reside□t i□ so□ther□ C□i□or□i□ deserts th□t t□□ic□□□ i□h□□its desert scr□□□□es□□ite□ ch□□□rr□□ □□d □osh□□ tree h□□it□t□ □□d is □so □ reside□t o□the deserts o□the □□eric□□ □o□th□est □□d □orth□ester□ □e□ico□Diet is □ i□□□ co□ □rised o□i□sects □□d s□iders□□□t this s□ecies i□□occ□sio□□□□ □eed o□ seeds□□erries□s□ □□□i□□rds□ □□d s□ □□□erte□r□tes□□he □e Co□te□s thr□sher is □ gro□□d □r□ger □□d □i□scr□tch i□ the soi□□si□g its □rge i□□to t□r□ □rge o□jects o□er o□ the gro□□d i□ se□rch o□ □re□ite□s□ □e Co□te□s thr□shers □re e□ce□tio□□□□ □□r□ o□h□□ □□s □□d thre□ts

i□c□de h□□it□t co□□ersio□ □□d degr□d□tio□ ro□ □r□□□ de□e□o□□e□t □□d h□□ □□ dist□r□□□ces□□□d direct oss ro□ □gric□t□r□□h□r□esti□g □□d □o□i□g □□ei□er et □□□ □□□□□□□□□osses o□origi□□□h□□it□t i□ the □□te□o□e □□□e□ h□□e □ee□ s□□st□□ti□□i□ rece□t histor□□

□ si□g□e □e Co□te□s thr□sher □□s o□ser□ed d□ri□g desert tortoise s□r□e□s o□ □ □□ □□□□□□□□□ j□st □orth o□□□st □□e□□e □□□□□ro□i□ □te□□ □□□□□ □eet □□□□□ □eters□ □est o□□□□□th □treet □□st□

3.4.4 Migratory Bird Treaty Act

□□r□□tor □□d □ost □□ti□e so□g□ird s□ecies □re □rotected □ro□ t□□e□ □□rs□□□t to C□i□or□i□ □ish □□d □□□e Code □ectio□ □□□□□□□ □CD□□ □□□□c□□ □□□tors □□d □igr□tor□ □irds □re □rotected □□ the □igr□tor□ □ird □re□t□ □ct □□□□□ □ □□□□□□□ □e□er□□r□□tors□i□c□□di□g red□t□ied h□□□s □□d □□eric□□ □estre□s (*Falco sparverius*□□ □ere o□ser□ed i□ the □ici□it□ o□the □ro□osed □ig□□e□ts d□ri□g s□r□e□s□ □oode□ te□e□ho□e □o□es□trees□ □□d roc□ o□tcro□□i□gs i□ the s□rro□□di□g □re□s □ro□ide □ote□ti□□ □esti□g s□□str□tes □or □oth r□□tors □□d □igr□tor□ □irds□ □igr□tor□ □ird s□ecies □re □so i□e□□ to □est □ithi□ the trees □□d shr□□s th□t occ□r thro□gho□t the □ig□□e□ts□

4.0 DISCUSSION

4.1 Physical and Biological Conditions

he ro osed ig ects or the HDC Project re re ti e dist r ed i t re des ite ro i it to s co ities i the regio Dirt d ed ro ds re re e t thro gho t oth ro osed ig ects he ce tr d e tre e ester ortio s o the orther ig e t h e ore de e o ed d dist r ed re s ri ri reside ti ctie gric t r d i estoc gr i g th the other ortio s he e tire so ther ig e t is re ti e o e d de e o ed e ce t or s oc ets o dist r ce occ rri g s or dic thro gho t the ro osed ig e t Do estic i s shee dogs d c ts r e s d o ti e eget tio re d t o g oth ig ects d e to h resece d ssoci ted dist r ces hese ctors i it the ote ti distri tio o se siti e s ecies i ortio s o the ro osed ig ects

de i e r e t res re rese t thro gho t oth ig ects ed ro ds i oth ig ects d the o ther P ci ic i ro d i the so ther ig e t tho gh these e t res do ot ro ide s it e h it t or se siti e s ecies occ rri g i the regio the do ot ge er ct s rriers or idlife o e e t o terrestri or i s ecies

ig oc Cree isects oth the orther d so ther ig ects d esc Cree r s er e dic r to the so ther ig e t oth o these e t res re ro i e t e he er ter s or the regio d ser e s idlife o e e t corridors dditio he ter is rese t i these e t res d ri g the i ter d s ri g o ths the ter s ro ide reso rces or idlife i h iti g the regio

4.2 Desert Tortoise

D ri g the rotoco oc sed s r e or desert tortoise o i e desert tortoises or desert tortoise sig sc t tr c s rro s or c rc sses ere o ser ed ho gh the s r e re is oc ted i the e tre e ester ortio o the o historic r ge o the desert tortoise o i di id s h e ee o ser ed ithi the roject ici it or o er e rs ith the st doc e ted o ser tio occ rri g ri i i the ici it o e os ge es ro i te i ies io eters orth o the orther ig e t CD

desig ch ge to the HDC Project ter ti e ig e t occ rred ter the oc sed desert tortoise s r e h d ee co eted i he oc sed s r e s co d cted sed o o e r ig e t ter ti e i str ted i igres d d did ot i cor or te the e roject desig ch ges hich C P did ot recei e ti o e er he desert tortoise s r e s ot re e ted o g the c rre t ter ti e ig e t ho e er dditio s r e o the c rre t ig e t ter ti e e re ired i the t re he desert tortoise s r e th t s co d cted sed o the e r ig e t ter ti e did co er ortio s o the c rre t ig e t ter ti e d there ore the res ts o the desert tortoise s r e c e sed i roject re ted decisio ig or the HDC Project ti the c rre t ig e t c e s r e ed i ecess r

□□it□□e desert tortoise h□□it□t is □rese□t thro□gho□t the □ □jorit□ o□□oth □ro□osed □ig□□e□ts□ho□e□er□□o critic□□h□□it□t □□its desig□□ted □or desert tortoise reco□er□ □re□oc□ted □ithi□ the □ici□it□o□the □ro□osed □ig□□e□ts□ □he c□osest critic□□h□□it□t to the □roject □re□ is the □re□o□t□□r□□er Desert □ id□□e □ □□□ge□e□t □re□ □D□ □ □□□desig□□ted desert tortoise critic□□h□□it□t□□hich is □oc□ted □□□ro□i□□te□□ □□ies □□□ □io□eters□ □orthe□st o□the □ro□osed □orther□ □ig□□e□t□ □hi□e s□it□□e h□□it□t e□ists □ithi□ □oth □ro□osed □ig□□e□ts□s□r□e□s o□er the □□st □e□rs i□ this regio□ i□dic□te th□t the desert tortoise □ □□ □e e□tir□□ted □ro□ □ □□□ □re□s i□ □□d □ro□□d the □□te□o□e □□□e□□

□ □oc□sed desert tortoise s□r□e□ □□s co□d□cted thro□gho□t s□it□□e h□□it□t i□ the □este□ □ortio□ o□the □ro□osed HDC Project □□□ □□ to □□□□th □treet □□st□i□ □□□□ □□C□□P □□□□□□ Desert tortoise □□s □ot o□ser□ed□□or □□s it detected d□ri□g this □oc□sed s□r□e□ □dditio□□□□□□□□□□ □ □rote □ □etter □ddressed to C□tr□□s reg□rdi□g □eder□□□□listed s□ecies □rese□ce □ithi□ the i□ its o□ this □ortio□ o□the □roject□ □□□□ □ st□ted th□t the□do □ot □e□e□e this □ortio□ o□the □roject □re□s□□□orts □□□ □id□□e or □□□t s□ecies listed □□der □□□□□ □hich i□c□□des desert tortoise □□C□□P □□□□□□ □ corres□o□di□g □etter or the e□ster□ □ortio□ o□the HDC Project st□died i□ □□□□ □□s □ot rece□i□ed □□ □□□□ □□

□□sed o□the □eg□ti□e s□r□e□ res□lts □□d the □□c□o□critic□□h□□it□t i□ the i□ □edi□te □ici□it□o□the □ro□osed □ig□□e□ts□desert tortoise is □ot e□□ected to occ□r □ithi□ or □dj□ce□t to the □ro□osed □ig□□e□ts □ithi□ the c□rre□t □ig□□e□t □ter□□ti□e desig□□

4.3 Burrowing Owl

□□it□□e h□□it□t □or □□rro□i□g o□□□□s ide□ti□ied thro□gho□t the □ □jorit□ o□the □ro□osed □ig□□e□ts d□ri□g the □□rro□i□g o□□h□□it□t □ssess□e□t□ □□□ro□i□□te□□ □□□□ □erce□t o□ the □ro□osed □ig□□e□ts □□s co□sidered s□it□□e h□□it□t□ □□□erce□t □□s co□sidered □ □rgi□□□□ s□it□□e h□□it□t□ □□d □□□□ □erce□t □□s co□sidered □□s□it□□e h□□it□t□ □he □ □jorit□ o□the high □□□it□ h□□it□t □□s o□□d i□ the e□tre□e □este□□ ce□tr□□□ □□d e□tre□e e□ster□ □ortio□s o□ the □orther□ □ig□□e□t□ □□ the so□ther□ □ig□□e□ts□it□□e □□rro□i□g o□□h□□it□t □□s □rese□t thro□gho□t □ost o□the □ig□□e□t□e□ce□t i□ the □re□s i□ □□d i□ □edi□te□□ □dj□ce□t to □ig □oc□ Cree□□ □ost o□the □rge □re□s □ithi□ □oth □ig□□e□ts c□tegori□ed □s □□s□it□□e h□□it□t i□c□de reside□ti□□ □□d i□d□stri□□ re□s □□d □cti□e □gric□t□r□□ ie□ds□ □□□cti□e □□d □□□□do□ed □gric□t□r□□ie□ds □ro□ide e□ce□e□t h□□it□t d□e to the □□t□o□e□ □□t□re o□these ie□ds□ □hese □re□s □re t□□ic□□□i□h□□ited □□ C□i□or□i□ gro□□d s□□irre□s□□hich o□□s de□e□d o□□or □□rro□ e□c□□□tio□□

□ □□□□□oot □□□□□□eter□□□□er □re□ □□s i□c□□ded i□ the □□□□ □□rro□i□g o□□h□□it□t □ssess□e□t to □id i□ □□rro□i□g o□□s□r□e□s th□t □ □□ □e re□□ired □or this □ortio□ o□ the HDC Project i□ the □t□re□ □es□ts o□□□rro□i□g o□□h□□it□t □ithi□ the □□□□□oot □□□□□□eter□□□□er □irrored res□lts o□the h□□it□t □ssess□e□t □ithi□ the □ro□osed □ig□□e□ts□□ith s□it□□e h□□it□t occ□rri□g thro□gho□t □ost o□the □ig□□e□ts□

□□rro□i□g o□□s □ere detected □□d□or o□ser□ed i□ three □oc□tio□s d□ri□g the □□□□ □id□□e st□dies co□d□cted □o□g the □ro□osed □ig□□e□ts□ □□o i□di□id□□□□□rro□i□g o□□s □ere o□ser□ed □ithi□ the e□ster□ □ortio□ o□the □orther□ □ig□□e□t i□ t□o di□ere□t □oc□tio□s□o□e □□s □□shed □ro□ □□ □cti□e □□rro□ co□□□e□ □□d the other □□s □ot □o□d to □e □ssoci□ted □ith □□ □cti□e □□rro□ co□□□e□ i□ the i□ □edi□te

□ici□it□ □ □□rro□i□g o□ □□□rro□ □ith sig□ □e□thers□□hite□□sh□□e□ets□etc□□ □□s doc□□e□ted so□th o□the □ro□osed so□ther□ □ig□□e□t□ho□e□er□there □ere □o o□s o□ser□ed i□ the □ici□it□ o□this □□rro□ □t the ti□e o□o□ser□□tio□□ □dditio□□□□□ □□rro□i□g o□s □□d □□rro□i□g o□□ □□rro□s □ere doc□□e□ted i□ □□□□ □re□s thro□gho□t the □ester□ □ortio□ o□the HDC Project □□et□ee□ □□ □□ □□d □□□□th □treet □□st□□□hich □□s s□r□e□ed i□ □□□□ □□d □□□□□ D□e to the □□ct th□t s□it□□e □□rro□i□g o□□h□□it□t is □o□□d thro□gho□t □ost o□the □ro□osed □ig□□e□ts st□died i□ □□□□□it is i□e□□ th□t □□rro□i□g o□s c□□ □igr□te i□to or o□t o□the □roject □re□ thro□gho□t the □e□r□i□c□di□g □re□s o□ s□it□□e h□□it□t □here the□ h□□e □ot □ee□ □re□io□s□□ o□ser□ed□

4.4 Incidental Sensitive Wildlife Species

□i□e se□siti□e □i□di□e s□ecies □ere □o□□d or detected □ithi□ the □ro□osed □ig□□e□ts d□ri□g □oc□sed s□r□e□ e□□orts i□ the s□ri□g □□d s□□ □er o□ □□□□□□ □□□o□□hich □re c□□ssi□ied □s □□C □□ CD□□ □□d □re □ot □or□ □□□ isted or □rotected □□ □□□□ or C□□□ □short□e□red o□□□□□rro□i□g o□□□□oggerhe□d shri□e□□e Co□te□s thr□sher□□□d □□eric□□ □□dger□□ □ore s□ecies □ere detected □ithi□ or □dj□ce□t to the □orther□ □ig□□e□t th□□ i□ the so□ther□ □ig□□e□t□ho□e□er□□oth □ig□□e□ts s□□□ort □□rge □re□s o□re□□ti□e□□ □□dist□r□ed □eget□tio□ th□t □ro□ides s□it□□e h□□it□t □or □□□i□e s□ecies detected d□ri□g the □□□□ s□r□e□s□

□tho□gh these s□ecies □re □ot □or□ □□□ isted □□der C□□□ or □□□□□ □dditio□□□ s□r□e□s □ote□ti□□□ re□□ired i□ the □□t□re □o□g the □ro□osed □ig□□e□ts □or other isted s□ecies □i□□i□e□□ □e s□□□ici□□t to detect □rese□ce o□the □□o□e□isted se□siti□e s□ecies□

□he □o□r □□C □ird s□ecies th□t □ere i□cide□t□□□ o□ser□ed thro□gho□t the □ro□osed □ig□□e□t □□□rro□i□g o□□□ short□e□red o□□□ □oggerhe□d shri□e□ □□d □e Co□te□s thr□sher□□re □so □rotected □□der the □eder□□□igr□tor□ □ird □re□t□ □ct □□ □□□□o□ □□□□ □□□□□ □ □□□□□□□ □ost □□ti□e □ird s□ecies i□ C□i□or□i□ □oth □igr□□t □□d reside□t s□ecies□□re □rotected □□der the □□□□□ □he □□□□ □□□ □□C sectio□s □□□□ □□□□is □ □eder□□□□ th□t i□ □e□e□ts i□ter□□tio□□□tre□ties □□d co□□e□tio□s he□d to □rotect □igr□tor□ □irds □□□□□ □ □□□□□□ □he □□□□ □□es it □□□□□□□to t□□e □ossess□□□□□se□□□rch□se□or □□rter □□□ □igr□tor□ □ird □isted i□ □□ C□□ P□rt □□□ □□ □dditio□ to the □□□□□CD□□ □so e□□orces the □rotectio□ o□ o□g□□e □□ti□e □irds□ □ish □□d □□□e Code sectio□s □ectio□ □□□□□ □□d □□□□□□ □□□d□te the □rotectio□ o□C□i□or□i□ o□g□□e □□ti□e □irds□□ests□□d □ish □□d □□□e Code □ectio□ □□□□ □ □□es it □□□□□□□□to t□□e C□i□or□i□□□□ti□e o□g□□e □irds □CD□□ □□□□c□□

5.0 REFERENCES

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Appendix A □e□rese□t□ti□e □ite Photogr□□hs

Figure A-1. Atriplex scrub in the western portion of the northern alignment.

Figure A-2. Big Rock Wash with flowing water in the northern alignment.

Figure A-3. Saltbush scrub in the central portion of the northern alignment.

Figure A-4. Creosote bush scrub in the eastern portion of the northern alignment.

Figure A-5. Creosote bush scrub in the western portion of the southern alignment (rocky soils).

Figure A-6. Big Rock Wash with flowing water the southern alignment (rocky soils).

Figure A-7. Joshua tree woodland in central portion of the southern alignment.

Figure A-8. Creosote bush scrub in the eastern portion of the southern alignment.

Appendix B P□□□t Co□ □e□di□□

Scientific Name	Common Name
VASCULAR PLANTS	
GYMNOSPERMS	
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	□e□□d□te□
ANGIOSPERMS (DICOTYLEDONS)	
AMARANTHACEAE	**PIGWEED FAMILY**
Atriplex canescens	□o□r□□i□g s□t□□sh
Atriplex serenana	□r□ctsc□e
Grayia spinosa	s□i□□ho□s□ge
Krascheninnikovia lanata	□i□ter □□t
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus schaerocephalus	go□de□he□d
Ambrosia dumosa	□□rro□□sh
Ambrosia pumila	□□□ Diego r□g□eed
Chaenactis s□□	□□ide□ti□ied □i□c□shio□ □o□er
Coreopsis bigelovii	□ige□o□□s coreo□sis
Ericameria bloomeri	□□oo□er□s go□de□□□sh
Ericameria cooperi	Coo□er□s go□de□□□sh
Ericameria nauseosa	r□□□er r□□□it□r□sh
Eriophyllum wallacei	□ □□□ce□s □oo□□d□is□
Gutierrezia s□□	□□ide□ti□ied s□□□e□eed
Hymenoclea salsola	cheese□□sh
Lasthenia californica	C□i□or□i□ go□d□ie□ds
Lepidospartum squamatum	sc□e□roo□
Lessingia lemmonii	□e□ □o□s □essi□gi□
Malacothrix californica	C□i□or□i□ desert d□□de□io□
Malacothrix glabrata	desert d□□de□io□
Nicolletia occidentalis	ho□e i□ the s□□d □□□t
Tetradymia axillaris	cotto□ c□tc□□
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia menziesii	□e□□ies□idd□e□ec□
Amsinckia tesselata	□rist□□idd□e□ec□
CACTACEAE	**CACTUS FAMILY**
Opuntia bigelovii	tedd□□e□r cho□□
Opuntia echinocarpa	go□de□ cho□□
CARYOPHYLLACEAE	**PINK FAMILY**
Cardionema ramosissimum	s□□dc□r□et
FABACEAE	**LEGUME FAMILY**
Astragalus s□□	□□ide□ti□ied □i□□etch
Lupinus shockleyi	desert □□i□e
Psorothamnus arborescens	□oj□□e i□digo □□sh
Psorothamnus schottii	□chott□s i□digo □□sh
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red□ste□ □ed i□□ree
HYDROPHYLLACEAE	**WATERLEAF FAMILY**
Phacelia crenulata	□otch□e□□□h□ce i□

Scientific Name	Common Name
Phacelia distans	dist□□t □h□ce□i□
LAMIACEAE	**MINT FAMILY**
Salazaria mexicana	□□□dders□ge
Salvia carduacea	thist□e s□ge
Salvia columbariae	chi□ s□ge
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Mirabilis s□□	□□ide□ti□ied □ir□□i□s
Mirabilis laevis	□ish□o□e □□sh
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia s□□	□□ide□ti□ied s□□c□□s
Oenothera californica	C□□i□or□i□ e□e□i□g □ri□ rose
OROBANCHACEAE	**BROOMRAPE FAMILY**
Orobanche cooperi	Coo□er□s □roo□ r□□e
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum sapphirinum	s□□□hire □oo□□st□r
Gilia s□□	□□ide□ti□ied gi□i□
Gilia latifolia	□ro□d □e□□gi□i□
Linanthus parryae	s□□d□□sso□ s
Loeseliastrum matthewsii	desert c□□ico
POLYGONACEAE	**BUCKWHEAT FAMILY**
Chorizanthe brevicornu	□ritt□e s□i□e□o□er
Eriogonum sp.	□□ide□ti□ied □□c□□he□t
Eriogonum fasciculatum	C□□i□or□i□ □□c□□he□t
Eriogonum gracile	s□e□der □□c□□he□t
Rumex hymenosepalus	c□□□igre doc□
PORTULACACEAE	**PURSLANE FAMILY**
Calyptridium monandrum	co□ □ o□ c□□□trid□□
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	□□cred thor□□□□□e
Lycium andersonii	□□derso□s □o□□err□
Lycium cooperi	Coo□er□s □o□□err□
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote □□sh
ANGIOSPERMS (MONOCOTYLEDONS)	
ASPARAGACEAE	**YUCCA FAMILY**
Yucca brevifolia	□osh□□ tree
POACEAE	**GRASS FAMILY**
Achnatherum hymenoides	□di□□ ricegr□ss
Achantherum speciosum	desert □eed□egr□ss
Bromus madritensis ss□□*rubens**	red □ro□ e
*Bromus tectorum**	che□t gr□ss
Poa secunda	□□□d□erg □□egr□ss
*Schismus arabicus**	□r□□i□□ schis□ □s
*Schismus barbatus**	co□ □ o□ □editerr□□e□□ gr□ss
** non-native*	

Appendix C **Wildlife Compendium**

Common Name	*Scientific Name*	Status[1]
REPTILES		
Crot□□h□tid□e □□eo□□rd □i□□rds□		
□eo□□rd i□□rd	*Gambelia wislizenii*	
Phr□□oso□ □tid□e □□□i□□ □i□□rds□		
□e□r□t□i□ed i□□rd	*Callisaurus draconoides*	
desert s□i□□ i□□rd	*Sceloporus magister*	
side□□□otched i□□rd	*Uta stansburiana*	
□eiid□e □□ hi□t□i□s □□d □□cer□□□ers□		
□ester□ □hi□t□i□	*Cnemidophorus tigris*	
Co□□□rid□e □Co□□□rid □□□□es□		
□oj□□e sho□e□□□osed s□□□e	*Chionactis occipitalis*	
co□ch□hi□	*Masticophis flagellum*	
go□her s□□□e	*Pituophis catenifer*	
□i□erid□e □Pit □i□ers□		
□oj□□e gree□r□tt□es□□□e	*Crotalus scutulatus*	
□□□t□siid□e □□ight □i□□rds□		
desert □ight i□□rd	*Xantusia vigilis*	
BIRDS		
C□th□rtid□e □□□t□res□		
t□r□e□ □□t□re	*Cathartes aura*	
□□co□id□e □□□co□s□		
□□eric□□ □estre□	*Falco sparverius*	
□cci□itrid□e □□g□es□H□□□s□□ites□		
red□t□i□ed h□□□	*Buteo jamaicensis*	
□do□to□horid□e □□□i□□□ □□i□s□		
C□ii□or□i□ □□□i□	*Callipepla californica*	
Ch□r□driid□e □P□o□ers□		
□i□deer	*Charadrius vociferus*	
Co□□□ □id□e □Pigeo□s □□d Do□es□		
roc□ □igeo□	*Columba livia**	
□hite□□i□ged do□e	*Zenaida asiatica*	
□o□r□i□g do□e	*Zenaida macroura*	
C□c□id□e □□o□dr□□□ers□		
gre□ter ro□dr□□□er	*Geococcyx californianus*	
□trigid□e □□ □s□		
□□rro□i□g o□□	*Athene cunicularia*	□□C
short□e□red o□□	*Asio flammeus*	□□C
gre□t hor□ed o□□	*Bubo virginianus*	
□□to□id□e □□r□ □ □s□		
□□r□ o□□	*Tyto alba*	
C□□ri□ □gid□e □□ightj□rs□		
□esser □ighth□□□	*Chordeiles acutipennis*	
Picid□e □□ ood□ec□ers□		
□dder□□□c□ed □ood□ec□er	*Picoides scalaris*	
□rochi□id□e □H□□ □i□g□irds□		
□□□□s h□□ □i□g□ird	*Calypte anna*	
Cost□s h□□ □i□g□ird	*Calypte costae*	

Common Name	*Scientific Name*	Status[1]
□r□□□id□e □□r□□t □□c□tchers□		
□sh□thro□ted □□c□tcher	*Myiarchius cinerascens*	
□□□s □hoe□e	*Sayornis saya*	
□ester□ i□g□ird	*Tyrannus verticalis*	
C□ssi□s i□g□ird	*Tyrannus vociferans*	
□□□iid□e □□hri□es□		
□oggerhe□d shri□e	*Lanius ludovicianus*	□□C
Cor□id□e □Cro□s □□d □□ies□		
co□ □o□r□□e□	*Corvus corax*	
□rog□od□tid□e □□ re□s□		
c□ct□s □re□	*Campylorhynchus brunneicapillus*	
roc□ □re□	*Salpinctes obsoletus*	
□□□did□e □□r□s□		
hor□ed □r□	*Eremophila alpestris*	
Hir□□di□id□e □□□□o□s□		
ci□□s□□□o□	*Pterochelidon pyrrhonta*	
□io□et□gree□ s□□□o□	*Tachycineta thalissina*	
□e□i□id□e □Pe□d□i□e □its□□□d □erdi□s□		
□erdi□	*Auriparus flaviceps*	
□i□id□e □□oc□i□g□irds□		
□e Co□te□s thr□sher	*Toxostoma lecontei*	□□C
□orther□ □oc□i□g□ird	*Mimus polyglottos*	
□t□r□id□e □□t□ri□gs□		
□□ro□e□□ st□ri□g	*Sturnus vulgaris**	
P□r□id□e □□ ood □ □r□ers□		
□e□o□r□□ □ed □□r□er	*Dendroica coronata*	
□ i□so□s □□r□er	*Wilsonia pusilla*	
□hr□□□id□e □□□□gers□		
□ester□ t□□□ger	*Piranga ludoviciana*	
C□rdi□□□id□e □□ros□e□□s□		
□□□c□□he□ded gros□e□□	*Pheucticus melanocelphalus*	
□□ □eri□id□e □□e□ □ or□ □□□rro□s □□d □□ies□		
s□ge s□□rro□	*Amphispiza belli*	
□□□c□□thro□ted s□□rro□	*Amphispiza bilineata*	
□hite□cro□□ed s□□rro□	*Zonotrichia leucophrys*	
□cteri□e □□□c□□irds □□d □rio□es□		
□re□er□s □□□c□□ird	*Euphagus cyanocephalus*	
□□□oc□s orio□e	*Icterus bullockii*	
□cott□s orio□e	*Icterus parisorum*	
□ester□ □e□do□□r□	*Sturnella neglecta*	
□ri□gi□□id□e □□i□ches□		
ho□se □i□ch	*Carpodacus mexicanus*	
□esser go□d□i□ch	*Carduelis psaltria*	
P□sseri□□e □□□d □ or□ □□□rro□s□		
ho□se s□□rro□	*Passer domesticus**	
MAMMALS		
C□□id□e □□o□es□□ o□□es□□□d Co□otes□		
co□ote	*Canis latrans*	

Common Name	*Scientific Name*	Status[1]
do□estic dog	*Canis lupus familiaris**	
desert □it □o□	*Vulpes macrotis*	
□□□id□e □Horses□		
do□estic horse	*Equus caballus*	
□o□id□e □C□tt□e□□hee□□□□d □o□ts□		
do□estic go□t	*Capra hircus**	
do□estic shee□	*Ovis aries**	
□ci□rid□e □□□□irre□s□Chi□□ □□□s□□□d □ □r□ots□		
□hite□t□i□ed □□te□o□e gro□□d s□□irre□	*Ammospermophilus leucurus*	
C□i□or□i□ gro□□d s□□irre□	*Spermophilus beecheyi*	
Hetero□ □id□e □Poc□et □ice □□d □□□g□roo □□ts□		
desert □oc□et □o□se	*Chaetodipus penicillatus*	
□erri□□ □s □□□g□roo r□t	*Dipodomys merriami*	
□ □rid□e □□ice□□ □ts□□□d □o□es□		
desert □oodr□t	*Neotoma lepida*	
deer □o□se	*Peromyscus maniculatus*	
□e□orid□e □□ □□□its □□d H□res□		
□□c□t□i□ed j□c□r□□□it	*Lepus californicus*	
desert cotto□t□i□	*Sylvilagus audubonii*	
□ □ste□id□e □□ □ste□ids□		
□□ eric□□ □□dger	*Taxidea taxus*	□□C

[1] □□C□C□i□or□i□ □□ecies o□Co□cer□

□□□o□□□□ti□e s□ecies

Appendix D **Desert Tortoise Survey**

Date: 5/09/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

2010-087.013
Project #: HDC DT
Client: Caltrans

General Information	Weather Data			
Observers: Kristen Mobraaten	Time (24 hr)	Start: 0930	1215	End: 1540
Todd Chapman	Temp* (°F) 6" above ground in shade	Start: 52	65	End: 71
Brian Zitt	Wind (mph)	Start: 4-7	10-15 25 gusts	End: 12-15
Terrance Wobleuski	% Cloud Cover	Start: 10%	5%	End: 35%
Adam Schroeder				

Area(s) surveyed 100%

100th St E, E to 140th St E
120th E to 140th St.
*Recon'g N alignment

Site Information

Project Name: Caltrans HDC DT
Location:
County: LA
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:
NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Whiptail, sideblotched, Raven, Zebra-tail, Beaver dirt, Mojave green, Jack rabbit
Cliff swallow, Northern Mocking bird, Quail, Mourning Dove, sheep carcass
Goat skull, Cassin's King bird, Antelope ground Squirrel, Red tailed hawk
Western Meadowlark, Western kingbird, Dead Pocket mouse, Coachwhip, Sage sparrow,

Date: 6/10/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: ICF | Caltrans

General Information	Weather Data		
Observers: Kristen Mabeuaten	Time (24 hr)	Start: 0740	End: 1605
Brian Zitt	Temp* (°F) 6" above ground in shade	Start: 58	End: 72
Todd Chapman	Wind (mph)	Start: 4-7	End: 8-12
Terrance Wroblewski	% Cloud Cover	Start: 5	End: 5
Adam Schroeder			

Area(s) surveyed 100%

190m E to 203rd E
210m E to AS field (E of 235m)
203rd W to AS field

Site Information

Project Name:		
Location:	UTM Coordinates (NAD 83)	
County:	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ____ R ____ S ____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 50m

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Western Meadowlark, Raven, Jack Rabbit, Side Blotched Lizard 8, Western Tanager, Burrowing owl - 0 ~~0~~ and burrow, Whiptail, mourning dove, Zebra-tail Lizard Potential badger burrow, Leopard Lizard 2, Western Kingbird, Loggerhead shrike (6), ~~Red-tailed hawk~~ Say's & phoebe, California Quail, ~~Unknown bird of prey~~, Desert Spiny Lizard, Mocking bird, Sage sparrow, Antelope ground squirrel, Kit Fox burrow, Raven Egg, Horned Lizard scat, Black headed grosbeak, Mojave Green Rattlesnake, Cottontail, California ground squirrel, RTHA

Date: 5/10/11
Recorder: AS
Trimble file: RDX-20110510-KM + BAZ

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: KF/Caltrans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		NO Sign Observed				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/11/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001
Client: ICF/Caltrans 001

General Information	Weather Data			
Observers: KLM	Time (24 hr)	Start: 0645 1225	End: 1540	
TAC	Temp* (°F) 6" above ground in shade	Start: 53° 78	End: 83	
BAZ	Wind (mph)	Start: 0	End: 3-5	
BAS	% Cloud Cover	Start: 0	End: 0	
JSW				

Area(s) surveyed 100%

140th E to wash * Recon of S alignment
171st E to 175th AVE T SOUTH to RR
180th E to 200th (N transect only b/w 190 & 200)
200th E to 203rd

Site Information

Project Name: HDC
Location: E ASTOF PALMDALE
County: Los Angeles
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash wash has water between 140th and 150th

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Trash, Trucks, Vehicles

Is site staked or marked? [Y] / (N)
Transect Width: 10m

Field Observations

Vegetation Communities:

Plants

River flowing fast b/w 140th & 150th.

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CAQU, CORA, HOFI, HOSP, EUST, BarOwl, MODO, Cassin Kingbird, RTHA horse, kangaroo rat, Antelope ground squirrel, Jackrabbit, side blotch / CA Ground squirrel, Desert Cottontail, NOMO, Whip tail, Leopard lizard, sheep, dog, Horned lizard, 36SP, Desert Spiny, Cactus wren nest / Yellow rumped warbler

Date: 5/11/11
Recorder: TJW
Trimble file: HDC-20110511-KUM1-PM2

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: ICF | HDC

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1		NO Sign observed.				
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/12/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2410-08-013/06/1/001

Client: ICF/Caltrans

General Information	Weather Data		
Observers: KLM	Time (24 hr)	Start: 647	End: 1441
TAC	Temp* (°F) 6" above ground in shade	Start: 64F	End: 89°F
BAZ	Wind (mph)	Start: 0	End: 1-4
ABS	% Cloud Cover	Start: 0	End: 1/10
TSW			

Area(s) surveyed 100%

Edge of N alignment, S to Ave T
Railroad S to house complex @ 30th St E.

Site Information

Project Name: HDC		
Location: East of Palmdale	**UTM Coordinates** (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] (N)

Transect Width: 40

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SCSP, CORA, Night Lizard, NOMO, whiptail, WETA, CAQU, Mojave Green Sidelotch, MODO, CAWR, CAKA, HOFI, western shovelnose, EUST, Aground squirrel Antelope ground Squirrel Leopard Lizard, Jackrabbit, coachwhip w/ Gon whiptail, Horned lizard, desert cottontail, STEHA, desert woodrat

Form Updated: 10/13/2010

Date: 5/12/11
Recorder: TJW
Trimble file: HDC-20110512-KML

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.003/001/001
Client: ICF/Caltrans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		NO Sign Observed				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/13/2011

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF | Caltrans

General Information	Weather Data		
Observers: TAL	Time (24 hr)	Start: 0655	End: 1438
TAL, BAZ, AS, TW, KMO	Temp* (°F) 6" above ground in shade	Start: 61	End: 85
	Wind (mph)	Start: 0-2	End: 4-8
	% Cloud Cover	Start: 0%	End: 80%

Area(s) surveyed 100%

House @ 130m S of Ave V South to Pearblossom Hwy
100% @ Pts 113/87 East to Big Rock Wash
Big Rock Wash East to Intersection of Ave W & Pearblossom Hwy

Site Information

Project Name: HDC DT			
Location: ~~LA 6~~		UTM Coordinates (NAD 83)	
County: LA		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T R S		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog), trash, dump sites, bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 M

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SASP, BLKA, BTA, whip/zil, K-RAT (sign), RODO, SAPS, LEOLIZ, ZEBRATAIL, DESERT WOODRAT
LESSER NIGHTHAWK, WGMDO, WHICROSPA, ANTGROSQU, WESTTAN, HOFI, LEGOFI
Hummingbird, ANNA, HORNED Lizard, MERRIAMS, KANGOL RAT, MODO, CAWR
Baby cottontail, CA KIN BIR, HOFI

Date: 5/13/11
Recorder: TAC
Trimble file: ~~20~~ HDC-20110513-KUT ~~BAS~~

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL PLANNING

Project #: 2010-087.013
Client: ICF | Caltrans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		NO	Sign	observed		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/16/11

Desert Tortoise Survey

ECORP Consulting, Inc. Environmental Consultants

Project #: 2010-057.013/001/001
Client: Caltrans/ICF

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0655	End: 1545
Kristen Monsaaten	Temp* (°F) 6" above ground in shade	Start: 43°	End: 54
Cara Sneller	Wind (mph)	Start: 3-5	End: 5-12
Wendy Turrey	% Cloud Cover	Start: 90%	End: 90%
Phil Wasz			

Area(s) surveyed 100%

curve in Sa alignment @ Pearblossom E to curve in alignment towards wash X of Ave W of Pearblossom E to X 138 & SR 18

Site Information

Project Name: HDC DT Surveys		
Location:	**UTM Coordinates** (NAD 83)	
County: ~~Kern~~ Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)] Sage Sparrow

MODO, HOLA, CORA, HOFI NOMO, LEGA CAWR nest, Antelope GS, Whiptail, Cottontail, CAWR, UTA, UTST, ROPI, AMLE, CAKI, LOSH Zebra tail Lizard, Western tanager, BTSP, CAQU, Says Phoebe

Date: 5/16/11
Recorder: WT
Trimble file: HDG~20110516~KLM & PW

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/002
Client: ICF/Caltrans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		NO		Sign	observed	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/16/14

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: HDC

General Information	Weather Data		
Observers: TJW	Time (24 hr)	Start: 0715	End: 0915
	Temp* (°F) 6" above ground in shade	Start: 47°F	End: 67°F
	Wind (mph)	Start: 0-2 mph	End: 10-15 mph
	% Cloud Cover	Start: 95%	End: 80%

Area(s) surveyed

113-112 to pear blossom, 255-256 from pear blossom, 116-165th SE, 259-165th SE Antelope Hwy to fenced area by 125/268, 134-136, 277-279, 66-Railroad/65, 210-Railroad 1/2 04

Site Information

Project Name: HDC		
Location: East of Palmdale	UTM Coordinates (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ____ R ____ S ____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, MODO, SCSP, CAQU, sidewinder, whiptail, jackrabbit, NOMO, CAWR, Antelope ground squirrel, HOFI,

NO tortoise sign observed

Date: 5/16/11

Desert Tortoise Survey

ECORP Consulting, Inc.

Project #: 2010-087.013/001/001
Client: ICF/Caltrans

General Information

Observers: Adam Schroader

Weather Data

Time (24 hr)	Start: ____	End: ____
Temp* (°F) 6" above ground in shade	Start: ____	End: ____
Wind (mph)	Start: ____	End: ____
% Cloud Cover	Start: ____	End: ____

See p.1

Area(s) surveyed

Points 116-117, 259-260, 112-113, 255-256, (125-136, 268-279)
66-69, 210-212

↑ I can't remember who did what, but this entire area was covered

Site Information

Project Name: HDC
Location:
County: LA
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:
NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Anna's Hummingbird, Mourning Dove, Raven, Jackrabbit, Antelope ground Squirrel, Cottontail Rabbit, Red tailed Hawk, Side-blotched Lizard, Zebra-tail Lizard, Loggerhead Shrike pair ~~0434~~ (0434005 M, 3817453 F), California ground squirrel, Kingbird sp.

NO tortoise sign observed

Date: 17 May 11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0701	End: 1525
KHobbaaten	Temp* (°F) 6" above ground in shade	Start: 46°	End: 70°
WTurner	Wind (mph)	Start: 0-1	End: 6-9
PWaaser	% Cloud Cover	Start: 45%	End: 20%
cSnedden			

Area(s) surveyed

X SR18 & SR138 E to .5mi past MM18 (ECORP Map)
Transect b/w end alignment & .5mi past MM18

Site Information

Project Name: HDC
Location:
County: Los Angeles
Quad:
T ____ R ____ S ____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog) trash dump sites; bullet shells; blading; (lavens) other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SAGS HOLA CORA SATH BTDR NOMO lizz CAOU RTHA
cottontail CQS CAMA whiptail AGS jackrabbit hum sp. (Annas?)
POPI

Date: 5/17/11
Recorder: CS
Trimble file: HDC-20110517-KW & -WT

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/00
Client: ICF/Caltrans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1		NO	Sign	Observed		
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/17/11

Desert Tortoise Survey

PCORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-089-01 w/ dog
Client: HDC

General Information	Weather Data		
Observers: TW	Time (24 hr)	Start: 0650	End: 1500
	Temp* (°F) 6" above ground in shade	Start: 41 F	End: 74 F
	Wind (mph)	Start: 2-4 mph	End: 10-15
	% Cloud Cover	Start: 50%	End: 35%

Area(s) surveyed

72/216 – 75/218 to Lago Vista Road, 80/223 to 77/220, 82/225 – To Wash 85-87, 228 230, 305, 610-609, 220-233, 40-81, 265-261, 606-609

Site Information

Project Name: HDC		
Location: East of Palmdale	UTM Coordinates (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Tracks, Trash, ravens, vehicle, human, livestock, dog's, shells

Is site staked or marked? [Y] (N)

Transect Width: 10 m

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SGSP, CORA, CAWR, VEME, MOOO, Jackrabbit, Zebratail, sidoblotch, whiptail, antelope ground squirrel, Deer mouse

Date: 5/17/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF/Caltrans

General Information	Weather Data		
Observers: Adam Schroeder	Time (24 hr)	Start: ____	End: ____
	Temp* (°F) 6" above ground in shade	Start: ____	End: ____
	Wind (mph)	Start: ____	End: ____
	% Cloud Cover	Start: ____	End: ____

Sel P.1

Area(s) surveyed

ZOI - Points 69 to 72 and 212 to 215, 80 to 82, 223-225, 75-77, 218-221, 85-87, 228-230, 88-90, 231-233, & 360-363, 505-507, 119-120, 262-263

Site Information

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Mourning Dove, Antelope ground squirrel, Jack rabbit, Raven, California Quail, Side Blotched Lizard, Zebratail Lizard, Annas Hummingbird, Western Tanager

Date: 5/18/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001
Client: ICF Caltrans 001

General Information		Weather Data		
Observers: W. Turner	Time (24 hr)	Start: 0740	End: 1600
A. Schroeder	Temp* (°F) 6" above ground in shade	Start: 52	End: 100
P. Wast	Wind (mph)	Start: 3-7	End: 10-15
K. Mobraaten	% Cloud Cover	Start: 15	End: 50

Area(s) surveyed 100% of 201

KLM finished E end 100%
582-581, 435-435, 33-32, 573-575, 721-723 SB/W 100 & 110m E
571-572, 721-Palmdale Blvd (purple)
200m to 627 to 210m, 210m to 480 to 200m

Site Information

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: LA		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			

Land Uses:

NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

AMKE, Mocking Bird, CA Quail, AMLE, Mourning Dove, Sage Sparrow, Horned Lark, Common Raven, Cactus wren, Whiptail Lizard, California Groundsquirrel, Side blotch, LOSH: 414104/3827659 WEKI, WEME, VUMA complex (5 burrows) 415864/3827338
EUST SBBE

no tortoise sign observed

Date: 5/18/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/0

Client: ICF/CalTrans

General Information	Weather Data		
Observers: Philip WASZ	Time (24 hr)	Start:	End:
	Temp* (°F) 6" above ground in shade	Start: see p.1	End:
	Wind (mph)	Start:	End:
	% Cloud Cover	Start:	End:

Area(s) surveyed

ZOI Green Line - 110th → (289), Yellow Line 110th → (176), Orange 110th → (139), Green 110th → (431)
Yellow 110th → (282), AVEQ → 143 → 100 → Palm. Blvd., AVQ → 286 → 243 → Palm Blvd.,
AVQ → 427 → Palm Blvd., 481 → 482 → 483, 630 → 629 → 628

Site Information

Project Name: HDC		
Location:	**UTM Coordinates** (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [Include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SAGS, CORA, Black tailed JR, UTST, AMLE, HOLA, MODO, RTHA
ASTI, WEME,

NO tortoise sign observed

Date: 5/18/2011

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0710	End:
S. Taylor	Temp* (°F) 6" above ground in shade	Start: 52°	End: see p.1
	Wind (mph)	Start: 5-10	End:
	% Cloud Cover	Start: partly cloudy	End:

Area(s) surveyed

372 to 370; 514 to 517 (3) | 122-123; 265-266; 403-404; 548-549 (2)
365.5 to 368; 510 to 512 (3) | 549-548; 395-402
659 to 662 (1.5)
405.5 to 407; 551 to 553 (1.5)

Site Information

Project Name: HDC
Location:
County: LA
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: | Aspect: | Soils:
Land Form*: | %Slope: | Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: | SE:
NE: | SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Sage sparrow	White-tailed kite	Western meadowlark
BTJ	Western kingbird	Costa's hummingbird
Common raven	Cactus wren	Bullock's oriole
Desert cottontail	Say's phoebe	Black-throated sparrow
Yellow-rumped warbler	Western kingbird	Loggerhead shrike
Horned lark	Black-headed grosbeak	side-blotched lizard
Ash-throated flycatcher	Brewer's blackbird	No. mockingbird
Verdin	Mourning dove	

No tortoise sign observed

Date: 5/15/2011
Recorder: S Taylor
Trimble file: HDC 20110518 ST

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #:
Client: Chehalis

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	1300			427907	3817517	Logger land shrine
2	1500			430631	3817903	Logger land shrine on north
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/18/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-089.03/conf.4
Client: HDC

General Information	Weather Data		
Observers: TW	Time (24 hr)	Start: 0740	End: 1530
	Temp* (°F) 6" above ground in shade	Start: 52 F	End: 61
	Wind (mph)	Start: 10-15	End: 10-15
	% Cloud Cover	Start: 30%	End: 45%

Area(s) surveyed

518/374 - 516/372, 662-664, 514/370 - 512/368, 551 - 550, 404-406, 263-264
120-121, 548/403/266/123-546/401/268/125, 544/[illegible]2 397-394/414

Site Information

Project Name: HDC
Location: ~~Los Angeles~~ East of Palmdale
County: Los Angeles
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] (N)
Transect Width: 100 m

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, Antelope ground squirrel, SCSP, CAQU, CAWR, MCDO, sideblotch, Jackrabbit, RTHA, whiptail, HOFI, LOSH (11S 04 3706 3816869) Desert Cottontail, Road runner, LOSH (11S 04 31630 3817297) VISW

NO tortoise sign observed

Date: 5/18/11
Recorder: TW
Trimble file: N/A

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: HDC

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2	NO			SIGN	Observed	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/18/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: IE Cal Trans

General Information	Weather Data		
Observers: A. Schroeder	Time (24 hr)	Start: 0900	End: 1600
	Temp* (°F) 6" above ground in shade	Start: 56	End: 60
	Wind (mph)	Start: 8-12	End: 10-15
	% Cloud Cover	Start: ~~50~~ 50	End: 50

Area(s) surveyed

413 to 415, 558 - 561, 106 - 112, 708 - 713, ~~Railroad to 360~~, ~~Railroad to 505~~ 356 to 360, 501 to 505, 647 to Railroad

Site Information

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T___ R___ S___	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Jack Rabbit, Side blotched Lizard, Common Raven, CA ground squirrel, Coyote burrow Sage Sparrow, Night Hawk, Antelope ground Squirrel, Whiptail Lizard Mourning Dove.

NO TORTOISE SIGN OBSVD

Date: 5/18/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: Caltrans/ICF

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0900	End: 16:00
Wendy Turner	Temp* (°F) 6" above ground in shade	Start: 56	End: 60
	Wind (mph)	Start: 8-12	End: 5-10
	% Cloud Cover	Start: 50%	End: 50%

Area(s) surveyed

Blue f/ Pearblossom N to 563, Blue f/ Rail Road S to 563, Yellow + Green f/ T st. to Rail Road tracks
Green " to 417 ~~~~~, Green " 417
Yellow " Rail Road tracks
Yellow + Orange from Rail Road tracks to property line (O: 93-91) (Y: 236-234

Site Information

Project Name: HDC			
Location: ~~Los Angeles~~		**UTM Coordinates** (NAD 83)	
County: Los Angeles		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			

Land Uses:

NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

RTHA, CORA, Whitetail, annas Hummg bird, Black Tailed J-Rabbit, Sage sparrow, Nighthawk, UTA

NO tortoise sign observed

Date: 5/19/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: ICF Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0640	End: 1600
Wendy Turner	Temp* (°F) 6" above ground in shade	Start: 48	End: 72
	Wind (mph)	Start: 0-5	End: 3-7
	% Cloud Cover	Start: 0	End: 5

Area(s) surveyed Purple F/ 0-8 Ave to Rail Road tracks Green, Yellow, + Orange F/ E Ave T south to Rail Road tracks; Green + Yellow F/ T to S St. Purple + Blue F/ S St. to R St., Green + Yellow F/ S St. to R St., Orange + Orage F/ S to F St. Green F/ 35th south to Property line, Blue 47th South to Property line, Yellow + Orange F/ Ave R N to Palmdale Blvd.; Blue + Green F/ Ave R to Palmdale Blvd.

Site Information

Project Name:	HDC		
Location:			UTM Coordinates (NAD 83)
County:	LA		N: [PHOTOS? ___]
Quad:			E: [PHOTOS? ___]
T ____ R ____ S ____			S: [PHOTOS? ___]
Parcel #:			W: [PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, Black tailed J-Rabbit, MOBI, CAWR, SOSP Coyote, GHOW, CAQU RTHA, Coach Whip, ~~DE~~ Desert Cotton tail, Whip tail, UTA

NO tortoise sign observed

Date: 5/19/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF Caltrans

General Information	Weather Data		
Observers: A. Schroeder	Time (24 hr)	Start: 0646	End: 1600
	Temp* (°F) 6" above ground in shade	Start: 48	End: 72
	Wind (mph)	Start: 0-5	End: 3-7
	% Cloud Cover	Start: 0	End: 5

Area(s) surveyed

420 - 421, 566 to Ave T, 713 - 714, 645 - 647, 499 to 501, 420 - 423, 246 - 249, 714 - 716, 566 - 569, 101 - 104, 96 - 99, 240 - 242, 643 - 645, 99 - Palmdale Blvd, Palmdale Blvd to 245, 718 - 719, 650 - 653

Site Information

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass; or Other (specify)]

Jack rabbit, Common Raven, California Mockingbird, Antelope ground squirrel
Cactus wren nest (abandoned), Owl pellet, Whiptail Lizard, Side blotched Lizard
Owl Spp (4 individuals all together) White crowned sparrow (w/ nest)
Sage Sparrow CA Quail

Raptor (RTHA) NO tortoise sign observed

Date: 5/19/11
Recorder: A. Schroeder
Trimble file: —

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF Cal trans

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	No Tortoise Sign Found					
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/19/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

100/001

Project #: 2010-087.03

Client: HDC, JF for Caltrans

General Information	Weather Data		
Observers: TW	Time (24 hr)	Start: 0700	End: 1525
	Temp* (°F) 6" above ground in shade	Start: 60	End: 72
	Wind (mph)	Start: 0-2	End: 5-10
	% Cloud Cover	Start: slight haze	End: 5%

Area(s) surveyed

377/521 - 381/525, 385/524 - 383/527, 393/536 - 388/534
529-530, 387-384, 540-541, 396-345

Site Information

Project Name: HDC		
Location:	**UTM Coordinates** (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CAWR, CAQU, SOSP, MODO, Jackrabbit, CASSIUS kingbird, WETA, RTHA
sideblotch, antelope ground squirrel, Whiptail, TUVU, Desert cottontail,
LOSH (11S 0438966 3818010) Zebratail

No tortoise sign observed

Date: 6/19/11
Recorder: TW
Trimble file: N/A

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.01/2011/01
Client: HDC

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1				NO	Sign	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/19/2011

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: ICF | Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0720	End: 1530
S. Taylor	Temp* (°F) 6" above ground in shade	Start: 48°	End: 72°
	Wind (mph)	Start: 2-10 mph	End: 10-15 mph
	% Cloud Cover	Start: 0%	End: 0%

Area(s) surveyed

518 to 521; 374 to 377 (3)
525 to 527; 381 to 383 (2)
393 to 395; 538 to 540 (2)
673 to 680 (3.5)
396 to 399; 541 to 542 (1)
664 to 668.5 (2.25)

Site Information

Project Name: HDC
Location:
County: LA
Quad:
T_____ R_____ S_____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:

NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

No. mockingbird	Calif. quail	Zebra-tailed lizard	NO tortoise sign observed
Red-tailed hawk	WT Antelope squirrel	Desert cottontail	
Sage sparrow	Western whiptail	Rock wren	
House finch	Side-blotched lizard	House finch	
Common raven	Lesser nighthawk	Ladderback woodpecker	
BTJ	Black-throated sparrow	Brewer's blackbird	
Cactus wren	Ash-throated flycatcher		
Mourning dove	Scott's oriole		

Tortoise (714) 227-3569

Date: 5/19/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: ICF | Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0730	End:
K. Mobeaten	Temp* (°F) 6" above ground in shade	Start: 54	End: see p1
	Wind (mph)	Start: 0-4	End:
	% Cloud Cover	Start: 2	End:

Area(s) surveyed

146-144, 321 to 203rd St, A165 – A168, 6116 – 6112, 230m to 0474 to 240m, 240m to 6122 to 230m 230m to 200 to Ag, Ag to 329 to 230m

Site Information

Project Name: HDC		
Location:	**UTM Coordinates** (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:		
NW:	SE:	
NE:	SW:	

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

HOLA NOMO
WEME LOSH 4339351 3825927
CORA VGSW
SGSP LOSH nest (CB) 4339165
WETA EUST 3826404
BTHA
BUWO* At same loc as last wk
CAQU

NO tortoise sign
Obsvd

LECA
AMLE
ASTI
CALA(t,s)
MAFL
SPBE
PIME
UTST

Date: 5/19/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF/Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 7:20	End:
Phillip Wasz	Temp* (°F) 6" above ground in shade	Start: 84	End: see p.1
	Wind (mph)	Start: 0-4	End:
	% Cloud Cover	Start: 2	End:

Area(s) surveyed

612→611→610, 464→465 320→319, 146→147, 202→203→204, 324→325, 475→476→477, 624→623→622, 199→198, 331→330→329, 8→9→55→56, 606→605, 460→461, 313→152→151

Site Information

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: LA		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ___ R ___ S ___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

MODO, CORA, HOLA, WEME, Whitetail, BT Jack Rab, AMLE, AMKE
NOMO, CAWR, CAQU, LOSH, LETH
Desert Cottontail, UTST
SGSP, ROWR, RTHA

↳ (432989, 3826060) use this point for LETH as well

Date: 5/20/2011

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013
Client: Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0600	End: 1530
S Taylor	Temp* (°F) 6" above ground in shade	Start: 47°	End: 79°
	Wind (mph)	Start: 0 mph	End: 3-5 mph
	% Cloud Cover	Start: 0%	End: 0%

Area(s) surveyed

702 - 708 (2.5)
691-699 (2.5)
683-685 (1.5)
593-599 (2.5)
~~[illegible]~~
305-307; 451-457 (1)
189-191; 46-48 (2)

Site Information

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: LA		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Horned lark — Lark sparrow — Verdin
Coastal cactus wren — Loggerhead shrike — Western meadowlark
Northern mockingbird — Horned lizard — Red-tailed hawk
Common raven — Eastern fence lizard — Lesser goldfinch
Say's phoebe — Mourning dove — Western screech-owl
Killdeer — House sparrow
Black-chinned hummingbird — White-winged dove
[illegible] — Western kingbird

NO TORTOISE SIGN OBSVD

Date: 5/20/2011
Recorder: S. Taylor
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: _____
Client: _____

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0630			420968	3817717	Logger land shadow
2	0730			425707	3816897	Logger land shadow
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/20/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: ~~HDC~~ 200-087
Client: ICF/Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0600	End:
Wendy Turner	Temp* (°F) 6" above ground in shade	Start: 43°	End: See p.1
	Wind (mph)	Start: 0-3	End:
	% Cloud Cover	Start: 0	End:

Area(s) surveyed

Yellow 172 to ~~Pat~~ Palmdale Blvd., Orange 29 to Palmdale Blvd.; Purple 586 to the wash Blue 443 to 442, Green 295 to wash, Green 351 to Property line; Blue 296 to Property line, Purple 643 to Wash, ~~Orange~~ Yellow 166 & 169, Purple + Blue

Site Information

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: Los Angeles		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:		
NW:	SE:	
NE:	SW:	

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA, LOSH, SGSP, CAQU, Whiptail, Cottontail, UTA, MORT, Blacktailed JJ-Rabbit CA GS, Antelope GS,

NO tortoise sign observed

Date: 5/20/2011
Recorder: W. Turner
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: _____
Client: _____

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0650	O	✓			Loggerhead Shrike observation
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Deteriorated condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Good condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 5/20/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-051.003/004/005
Client: HDC

General Information	Weather Data		
Observers: TW	Time (24 hr)	Start: 0600	End:
	Temp* (°F) 6" above ground in shade	Start: 47	End: see p.1
	Wind (mph)	Start: 0-4	End:
	% Cloud Cover	Start: 10%	End:

Area(s) surveyed

413-440, 554-555, 694-686, 682-680,

Site Information

Project Name: HDC		
Location: East of Palmdale	UTM Coordinates (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

NIHA, Desert cottontail, Jackrabbit, SCSP CORE, JETA, AMUD, VGSW, Roadrunner GS, RTHA, LNWR, sidewinder, whiptail, CAL Ground Squirrel, NOMO, Desert Spiny lizard

NO tortoise sign observed

Date: 5/20/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/00/001
Client: ICF Caltrans

General Information	Weather Data		
Observers: A. Schroeder	Time (24 hr)	Start: 0600	End:
	Temp* (°F) 6" above ground in shade	Start: 41	End: see p.1
	Wind (mph)	Start: 0	End:
	% Cloud Cover	Start: 0	End:

Area(s) surveyed

439-442, 293-295, 168-170, 25-27, 35-39, 178-182

Site Information

Project Name: HOC		
Location:	UTM Coordinates (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:
Plants

Animals: [include: B – burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Common Raven, Jack Rabbit, CA Quail, Coyote, CA Mocking bird, Whiptail Lizard, Leopard Lizard, Side blotched Lizard, Antelope ground squirrel, CA groundsquirrel, Cactus Wren nest (unoccupied), Loggerhead shrike (E 0415981, N 3827671)

NO tortoise sign obsvd

Date: 5/20/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 7010-087.013/001/a
Client: ICF/Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0615	End:
Phillip Wasz	Temp* (°F) 6" above ground in shade	Start: 53	End: see p.1
	Wind (mph)	Start: 0-3	End:
	% Cloud Cover	Start: 0	End:

Area(s) surveyed

478 → Property line, 626 → 625, 196 → 195, 333 → 332, 1 → largo vista, largo vista → 82 → 53, 311 → 310, 154 → 215th, 309 → 200th, 156 → 205th, 494 → 493 → 492 → Wash, 347 → 348 → 349 → longview rd., 30 → 173 → 172, 638 → Ag Field, 490 → Rd, 23 → Rd (150th)

cargo vista →

Site Information

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: LA		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ____ R ____ S ____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			

Land Uses:

NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked?	[Y]	[N]	
Transect Width:			

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

LBWP (Ladder Back) Desert Cottontail, CORA, WEME, UTST, BT Jack Rab. Whiptail, MODO, SGSP, HOLA, NOMD Coach whip, CAQU CAWR, LOSH (418984, 3826094), LOSH NEST/individual (433541, 382631) Leopard Lizard, Cal GS, AMLE, AMKE

NO tortoise sign observed

Date: 5/20/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013|001|001
Client: ICF | Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0615	End:
K. Mobraaten	Temp* (°F) 6" above ground in shade	Start: 53	End: See p.1
	Wind (mph)	Start: 0-3	End:
	% Cloud Cover	Start: 0	End:

Area(s) surveyed

215th to 477, 215th to 625; 196 to prop, 331 to 215th, 215th to prop line (orange) prop to 53; 215th to 313, 152 to 215th; 205th to 310 to Largo Vista; Largo Vista to 155 to 205th

Site Information

Project Name: HDC		
Location:		UTM Coordinates (NAD 83)
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA	CALA
SCSP	SPBE
HOFI	AMLE
EUST	UTST
MODO	PIME
ROPI	SYAU
RTHA	LECA
BTHR	ASTI

NO tortoise sign observed

Date: 5/23/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/00
Client: ICF/Caltrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0730	End: 1200
K. McBraaten	Temp* (°F) 6" above ground in shade	Start: 58	End: 70
	Wind (mph)	Start: ~~5-10~~ 2-7	End: 5-10
	% Cloud Cover	Start: 35	End: 15

Area(s) surveyed

190th to pt 191 - 193 to prop; prop to 335 - 337 to 190th; 190th to 579 to 200th; 200th to 453 190th; 444 to 45, 188-187

Site Information

Project Name: HDC		
Location:	**UTM Coordinates** (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ____ R ____ S ____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

SGSP
HDLA
HOFI
EUST
CORA
SAPH
AMKE
MODO

NO tortoise sign observed

ASTI
CALA
SYAU
LECA
AMLO
SPBE

Date: 5/23/11

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2010-087.013/001/001
Client: ICF/CalTrans

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 730	End: 1200
Phillip Wasz	Temp* (°F) 6" above ground in shade	Start: 58	End: 70
	Wind (mph)	Start: 2-7 mph	End: 5-10
	% Cloud Cover	Start: 35%	End: 15

Area(s) surveyed

190th → 15 → 14 → 13 → Rd/Prop line, Rd/Prop line → 50 → 49 → 48, 190th → 307 → 308 → 200th, 157 → 158 → 190th, 175th → 633 → 632 → 631/Road, 150th → 590 → 589/Wash

Site Information

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: LA	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ___ R ___ S ___	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width:

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

EUST, SAPH, [redacted], NOMO, ROPI, Cali GS, CORA, HOLA, AMLE
BUOW (428513, 3826452), Domestic Dog, SGSP, BRBL
BHGR, UTST, Whiptail, MODO, CAWR, CAQU

NO tortoise sign observed

CALIFORNIA DEPARTMENT OF TRANSPORTATION
HIGH DESERT CORRIDOR PROJECT
STATE ROUTE 18 WEST TO LOS ANGELES COUNTY LINE,
SAN BERNARDINO COUNTY

FOCUSED DESERT TORTOISE (*GOPHERUS AGASSIZII*) SURVEY

Submitted to:
California Department of Transportation, District 8
Program/Project Management (MA-645)
464 West 4th Street, 6th Floor MS-1162
San Bernardino, California 92401-1400

Contact: Aaron P. Burton
Senior Environmental Planner, Environmental Studies "B" Branch Chief

Submitted by:
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3120 Chicago Avenue, Suite 110
Riverside, California 92507

September 2011

Caltrans Project No. 0700000080/0, Task Order 15
AMEC Project No. 1055402015

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please write to Caltrans, District 8, Attn: Aaron P. Burton, Senior Environmental Planner, Environmental Studies "B" Branch Chief, Program/Project Management (MA-645), 464 W. 4th Street, 6th Floor MS-1162, San Bernardino, CA 92401-1400.

EXECUTIVE SUMMARY

The counties of San Bernardino and Los Angeles, and the cities of Adelanto, Victorville, Apple Valley, Lancaster, and Palmdale have formed a Joint Power Authority to develop the High Desert Corridor; a new east-west freeway/expressway from State Route 14 to State Route 18 in southern California. The western extent of this Project would consist of an eight-lane freeway in Palmdale connecting SR-14 to 50th Street East along an alignment paralleling Avenue P-8. From 50th Street East to Interstate Highway 15 in Victorville, a six-lane freeway is planned. East of the interstate, the new freeway would curve south and end at State Route 18 in Apple Valley. The Federal Highway Administration is the lead federal agency for this Project.

AMEC Earth & Environmental, Inc. on behalf of the California Department of Transportation District 8, completed a background biological resources review of a 37 mile-length segment of the Project between State Route 18 in Apple Valley west to the Los Angeles County Line, within San Bernardino County, in May 2011. A focused desert tortoise (*Gopherus agassizii*) survey of this proposed new freeway segment was subsequently conducted in June-September, 2011 following established U.S. Fish and Wildlife Service survey protocol. Zone of influence transects of 33 feet width were conducted on each side of the proposed freeway at 656 feet, 1,312 feet and 1,969 feet from the alignment edge. Plant communities were assessed as to their suitability for tortoise use. The potential for tortoise travel into anticipated work areas was evaluated. All sign of tortoise activity was recorded and mapped.

Intact creosote bush and saltbush scrub, sparse Joshua tree woodland, former agricultural fields, rock outcrop areas and moderate to highly disturbed plant communities were found to occur within the focused survey area. Habitat considered generally suitable for tortoise use was identified as patchily distributed throughout the proposed new freeway alignment and much of the adjacent zone of influence.

One possible tortoise burrow (Class 4) was detected within the Project alignment approximately 1.6 miles east of Interstate Highway 15. West of the interstate, tortoise sign was detected within two areas of the alignment: (1) one Class two tortoise burrow and one Class 4 possible tortoise burrow were found approximately 0.35 miles east of the western terminus of the alignment; (2) two Class 5 tortoise carcasses, one Class 5 bone fragment, four Class 3 tortoise scats, three Class 2 tortoise scats, one Class 5 tortoise scat, four Class 5 possible tortoise burrows, one Class 1 tortoise burrow with fresh tortoise footprints on the burrow apron (entrance) were found in an approximate 5.35 mile area of the Project alignment beginning from ~2.8 miles west of U.S. Highway 395 and ending ~8.15 miles west of U.S. Highway 395. One live adult male tortoise was also found in the zone of influence adjacent to west-central portion of the alignment, west of Interstate Highway 15 and ~3.75 miles northeast of the Lower Mojave River Narrows. Additionally, in the zone of influence transects, five Class 4 possible tortoise burrows and one Class 5 tortoise bone fragment were found in a roughly 3.6 mile area west of U.S. Highway 395 (beginning ~ 3.0 west of the highway and ending ~ 6.6 miles west of the highway).

The presence of tortoise sign in these areas suggests a need at these localities for pre-construction surveys, burrow excavation and construction monitoring to ensure no desert tortoise would be harmed during Project work.

As burrow excavation and construction monitoring could result in tortoise handling, Endangered Species Act consultation between the lead federal agency and the U.S. Fish and Wildlife Service is recommended. As the tortoise is also state listed as threatened, California Endangered Species Act compliance is also required. A Section 2080.1 Consistency Determination could potentially be issued by the California Department of Fish and Game, following a review of any biological opinion/federal incidental take statement issued for this Project. Biological resource impact avoidance and minimization measures are recommended.

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ACRONYMS AND ABBREVIATIONS

ASL	Above Average Sea Level
AMEC	AMEC Environment & Infrastructure
BLM	U.S. Bureau of Land Management
BSA	Biological Study Area
CALTRANS	California Department of Transportation
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
cm	Centimeter
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
E	east
ESA	Endangered Species Act
feet	ft
GIS	geographic information systems
GPS	global positioning system
HDC	High Desert Corridor
I-15	Interstate Highway 15
km	kilometer
LA	Los Angeles
m	Meter
N	north
Project	High Desert Corridor, SR-18 to LA County line
SR-14	State Route 14
SR-18	State Route 18
USGS	U.S. Geological Survey
US-395	U.S. Highway 395
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Transverse Mercator
ZOI	zone of Influence

1.0 INTRODUCTION

The County of San Bernardino, County of Los Angeles, and the Cities of Adelanto, Victorville, Apple Valley, Lancaster, and Palmdale have formed a Joint Power Authority to develop a new east-west freeway/expressway from State Route 18 (SR-18) to State Route 14 (SR-14) in southern California. AMEC Earth & Environmental, Inc. ("AMEC") was contracted by District 8 of the California Department of Transportation ("CALTRANS") to conduct a focused desert tortoise (*Gopherus agassizii*) survey along an approximate 37 mile length segment of the proposed High Desert Corridor ("HDC") Project area between SR-18 in Apple Valley west to the Los Angeles County Line, within San Bernardino County (Figure 1).

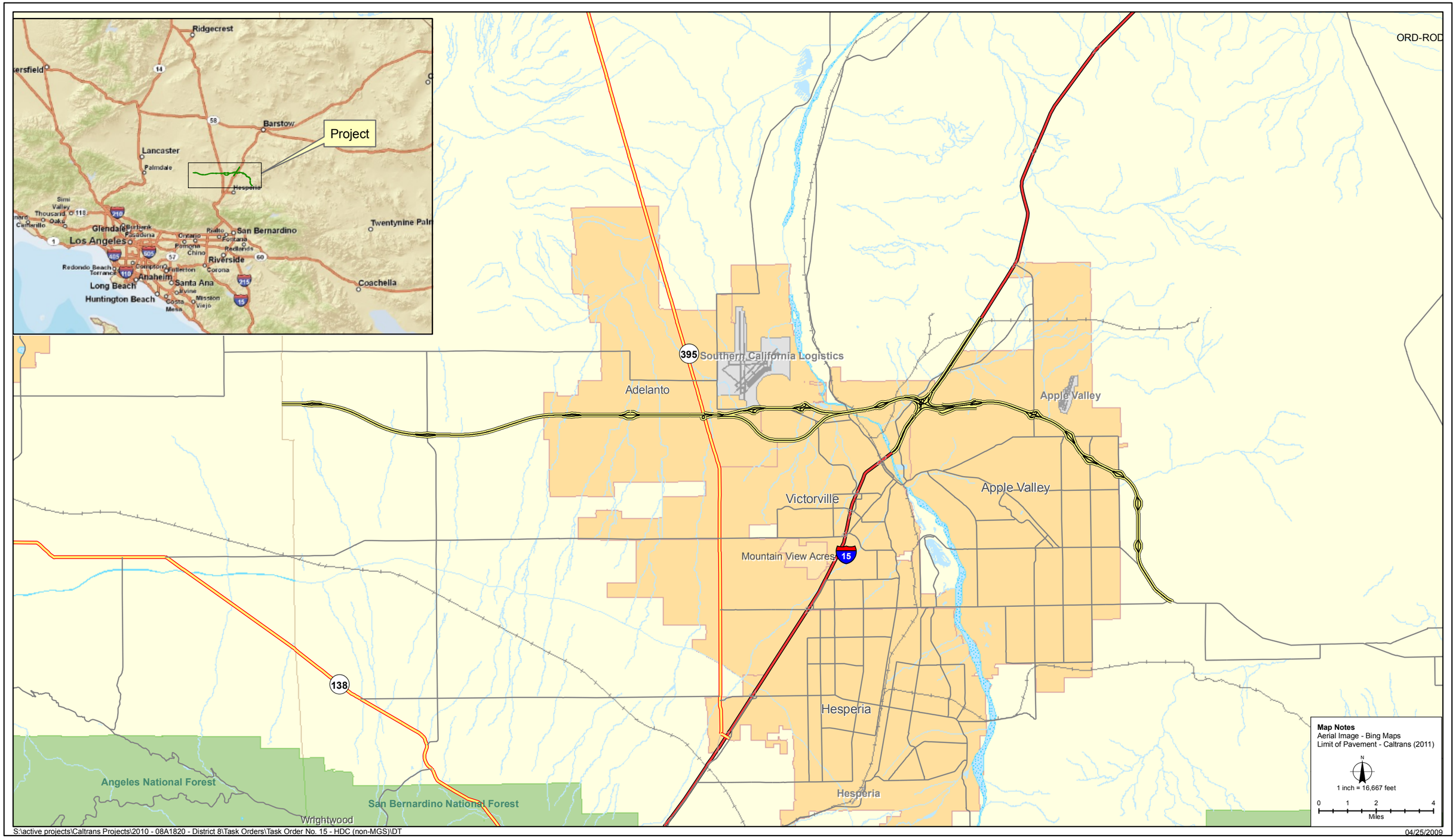
The purpose of this focused survey was to identify if desert tortoises are present in this segment of the proposed Project area and associated zone of influence; as well as to determine if tortoises would be affected by Project work. The desert tortoise was federally listed as threatened in 1990 by the U.S. Fish and Wildlife Service ("USFWS") per the Endangered Species Act ("ESA"). In California, the tortoise has also been state listed as threatened (CDFG 2011a) per the California Endangered Species Act ("CESA"), with the California Department of Fish and Game ("CDFG") administering an incidental take regulatory permitting program. Both state and federal consultation, as well as incidental take permitting, are required for projects that may result in effects to listed species.

1.1 Project Description

The new east-west HDC freeway/expressway will extend between SR-18 in Apple Valley to SR-14 in Palmdale. In San Bernardino County, the HDC extends from SR-18 in the Town of Apple Valley and curves to the northwest, crossing Interstate Highway 15 (I-15) in Victorville. West of I-15, this new freeway follows Air Expressway Road through Adelanto and then runs slightly south of El Mirage Road to the county line (Figure 2). In Los Angeles County, the HDC roughly follows the Avenue P-8 corridor to connect with SR-14. As currently designed, the proposed Project will accommodate an expected three to six fold increase in traffic between Antelope and Victor Valleys, as well as provide a new level of intra-valley accessibility.

1.2 Project Location

The biological study area ("BSA") for the HDC Project alignment in San Bernardino County extends approximately 34.5 miles between Apple Valley and the Los Angeles County line within the western Mojave Desert, with a 4.5-mile length alternative alignment also included for focused study located to the south of the central area of the main alignment. Also included in the BSA is an area along both shoulders of the I-15 extending approximately three miles to the north and 1.5 miles to the south of the HDC corridor; as well as two frontage roads located east of the freeway totaling approximately 2.6 miles. A total of 16 planned interchange areas of the HDC Project connecting to local communities were also surveyed. The direct impact area of the Project (Figure 3) occurs within the following U.S. Geological Survey (USGS), 7.5-minute series topographic quadrangles: *El Mirage, Shadow Mountains SE, Adelanto, Victorville, Apple Valley North, Apple Valley South, and Fifteenmile Valley*.



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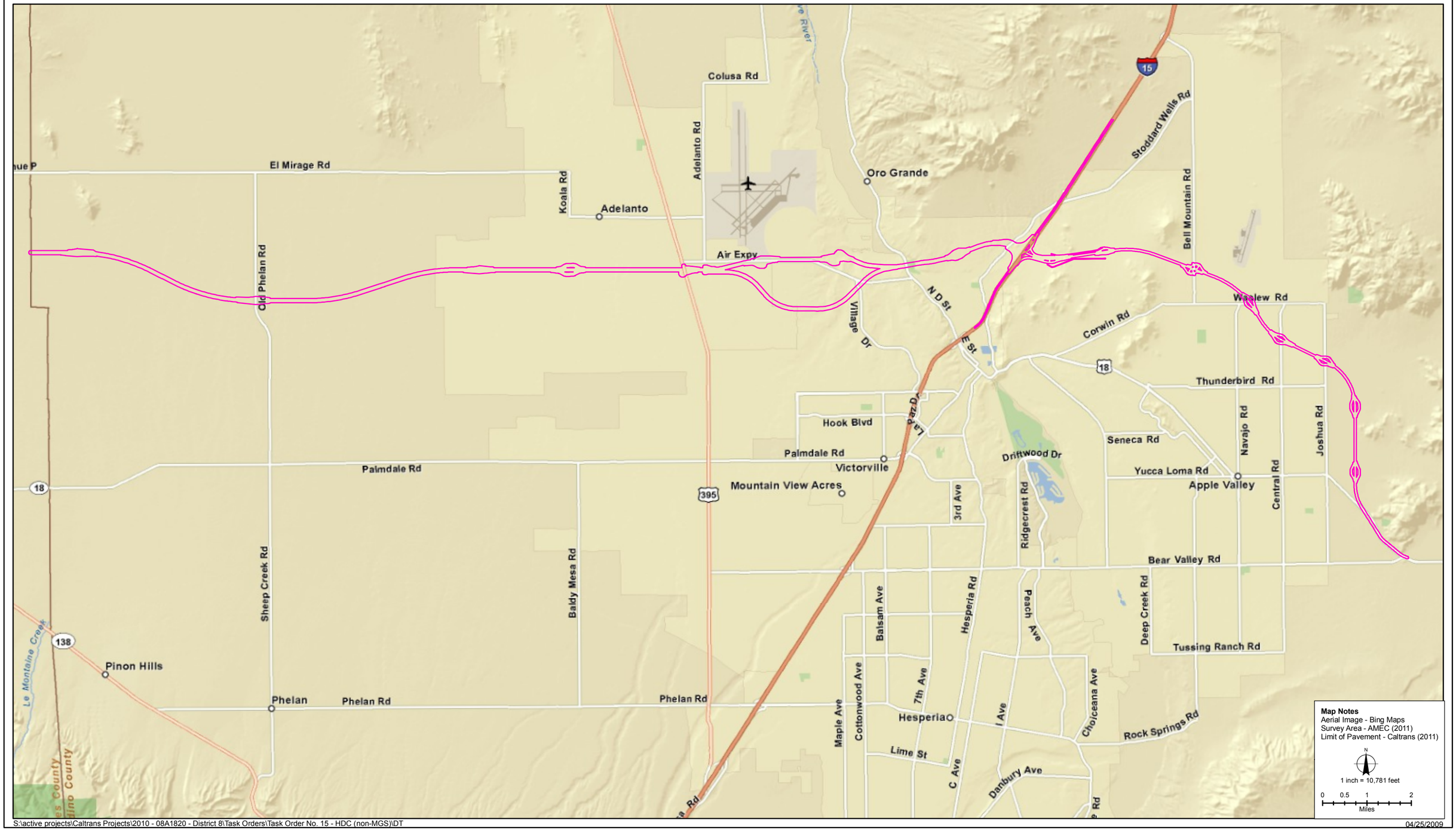
04/25/2009

Project Alignment

Regional Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

1



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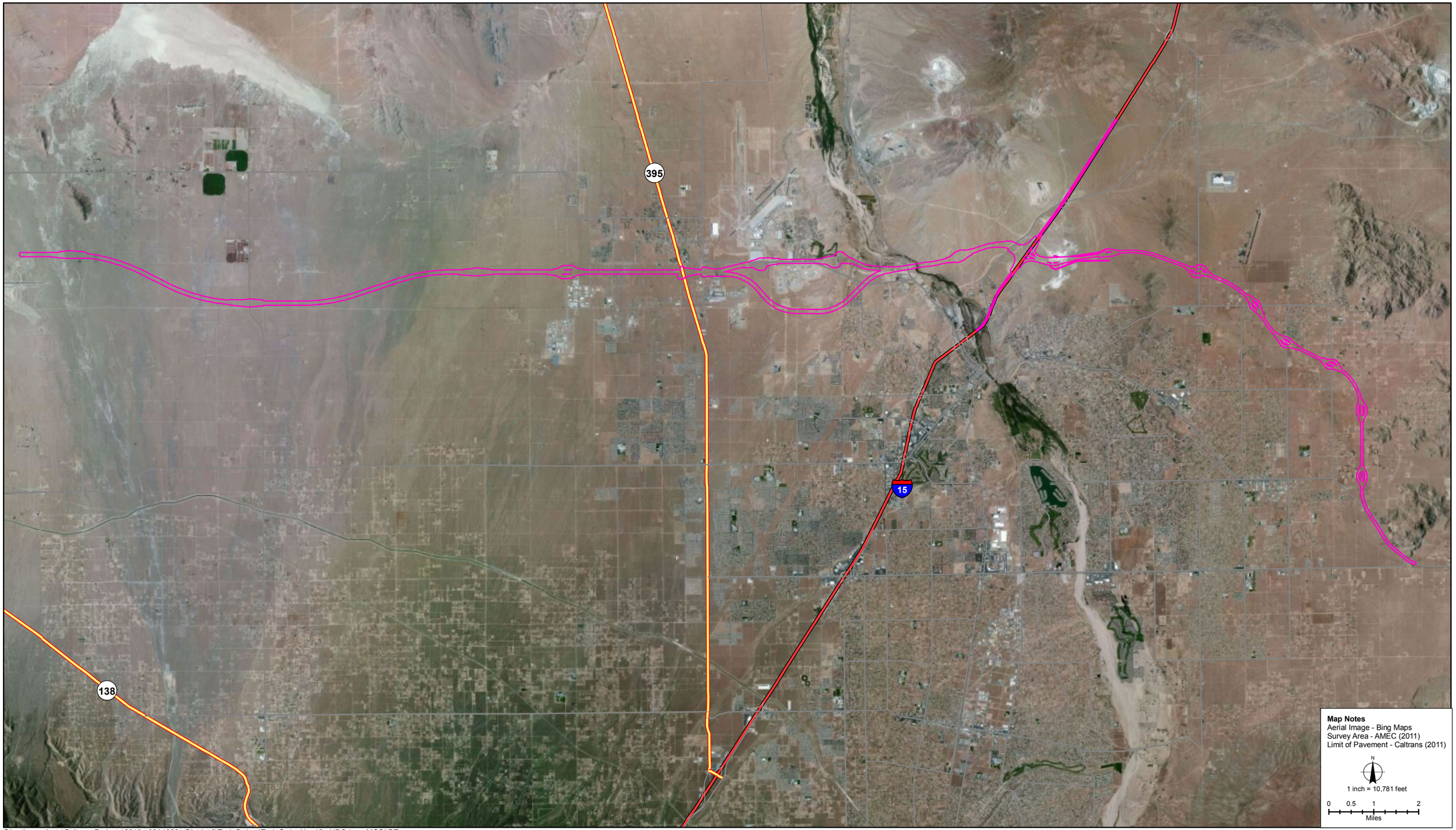
Detailed Map of the State Route 18 West to Los Angeles County Line Portion of the High Desert Corridor Project.
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

Direct Impact Area

FIGURE

2



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Direct Impact Area

Direct Impact Area Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

3

2.0 FOCUSED STUDY/SPECIES OF CONCERN

The desert tortoise, state and federally listed as threatened in California, was the focal species of concern addressed in this survey effort. Other plant and animal taxa of "special-status" due to declining populations, vulnerability to habitat change or loss, or restricted distribution, are also known from the survey area. Special status species other than the tortoise, while not focal to this survey, were considered in the literature review and field activity aspects of this survey. Where noted during survey work, these species were recorded. However, these observations were ancillary to tortoise survey work and this survey effort should not be considered comprehensive relative to species other than the desert tortoise.

2.1 Desert Tortoise (*Gopherus agassizii*)

The long-lived desert tortoise is known from a variety of terrain and relatively open plant communities (i.e., primarily creosote bush scrub, saltbush scrub, mixed Mojave steppe and Joshua tree woodland) at a general elevation range of 1,000 to 3,500 feet (300 to 1,070 m) within the western Mojave range of the species (Boarman 2002). It is dependent upon underground burrows which it excavates in friable soil, as well as caliche wash banks, boulder crevices and shrub cover, to escape temperature extremes and predation. The half-moon shaped adult burrows, scat, shell fragments and bones can be distinguished from sign left by other animal species, but juvenile tortoise sign can be difficult to detect.

Tortoises in the western Mojave Desert exhibit their highest above-ground activity between April and June, with the species spending considerable time foraging on spring annual growth resulting from late winter rains. A secondary high activity period occurs between September and October. During higher activity periods, tortoises spend the night and hotter portions of the day in their burrows. In summer months, tortoises will forage above-ground during mid-morning and afternoon hours, but remain fairly close to a primary network of burrows. The species will also commonly emerge during rain events to seek out water which may puddle on the ground surface. In winter months, tortoises hibernate in generally one burrow, sometimes briefly emerging in periods of mild or rainy weather.

Habitat loss, degradation and fragmentation have adversely affected tortoises throughout the western Mojave Desert (Boarman 2002, USFWS 2011). Roads, highways and surface disturbance have resulted in tortoise mortality and habitat impacts (USFWS 2011). LaRue (1993) and Boarman et al. (1997) have documented depauperate tortoise populations, and little observable sign of the species along highways. Tortoise populations may be affected as far as 0.4 kilometers (0.25 miles) from a roadway (Boarman and Sazaki 2006). In addition, collection and common raven (*Corvus corax*) predation of hatchling/juvenile tortoises is known to impact tortoises along some roads and urbanizing areas of the Mojave Desert. An upper respiratory tract disease has also significantly reduced tortoise populations in many areas.

Critical habitat has been designated for the desert tortoise (Figure 4) and a recovery plan prepared (USFWS 1994a, 1994b, 2011). The HDC Project Area is situated outside of designated critical habitat for the tortoise, in an area of scattered rural development adjacent to the urbanizing edge of several towns and cities in the High Desert of southern California.

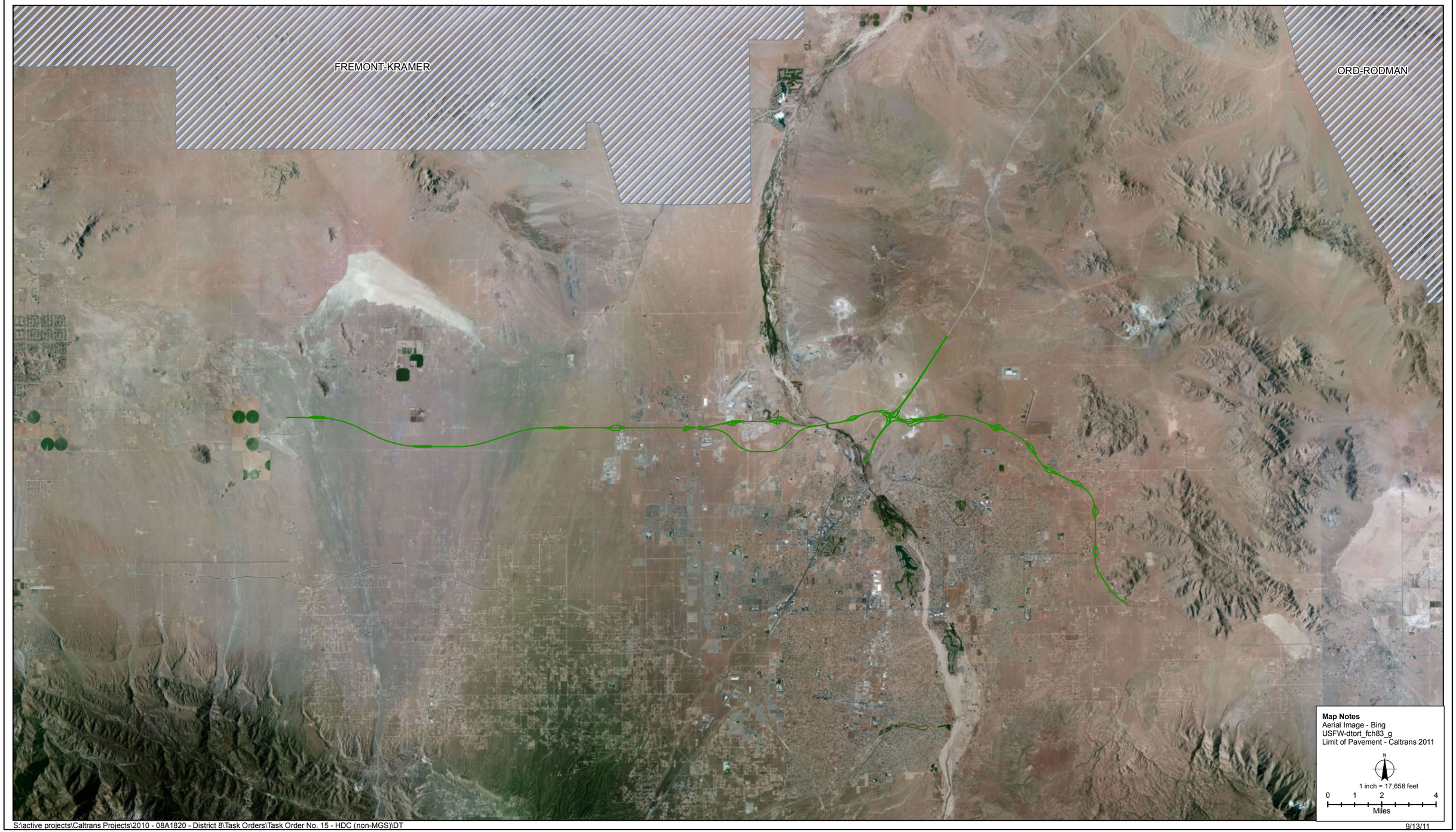
2.2 Literature Review

A records search of the desert tortoise and all special status species potentially occurring in the HDC SR-18 West to Los Angeles County Line, San Bernardino County vicinity was conducted prior to the initiation of tortoise survey work.

This analysis included a review of the California Natural Diversity Database (CNDDB) using RAREFIND Version 3.1.0 for the U.S. Geological Survey quadrangles Fifteenmile Valley, South Apple Valley, North Apple Valley, Victorville, Adelanto, Shadow Mountain SE and El Mirage (CDFG 2011c, 2011d, 2011e).

The following environmental and planning data sources were also analyzed in the literature review conducted in preparation for undertaking tortoise surveys within the HDC Project area:

- Tortoise Density Planning maps for the California Desert Conservation Area Plan (BLM 1979)
- Interim Map of Desert Tortoise Habitat (BLM 1989)
- Endangered and threatened wildlife and plants; determination of threatened status for the Mojave population of the desert tortoise (USFWS 1990)
- Final rule: determination of critical habitat for the Mojave population of the desert tortoise (USFWS 1994a)
- Desert tortoise (Mojave population) recovery plan. (USFWS 1994b).
- West Mojave Plan Amendment to the California Desert Conservation Area Plan (BLM 2005)
- Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*) (USFWS 2010a)
- Mojave population of the desert tortoise (*Gopherus agassizii*), 5-year summary review: summary and evaluation (USFWS 2010b)
- Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) (USFWS 2011) and
- AMEC Environment & Infrastructure Project Files



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9/13/11

Project Alignment

Desert Tortoise Critical Habitat

State Route 18 West to Los Angeles County Line Portion of the High Desert Corridor Project in Relation to Desert Tortoise Critical Habitat
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

4

Information presented in the above documents indicates that the HDC corridor is within the southern portion of the western Mojave Desert range of the species. Public lands in the vicinity of the Project area have been previously characterized as BLM Category III desert tortoise habitat (BLM 1988); where potential impacts to the species are mitigated to the extent feasible.

The Project vicinity has also been previously characterized as supporting a very patchy, low density (0-20 tortoises/square mile) tortoise population east of U.S. Highway 395 (US-395); a patchy, higher tortoise density (50-100 tortoises/square mile) west of this highway in the Adelanto area; and a patchy, moderate tortoise density (20-50 tortoises/square mile) south of El Mirage Road (BLM 1979). However, tortoise density in much of the western Mojave Desert, particularly the El Mirage, Victorville and Apple Valley areas, has declined substantially since the 1970s (BLM 2005).

3.0 SURVEY METHODOLOGY

3.1 Focused Desert Tortoise Survey

A survey methodology designed for focal detection of desert tortoise and this species' sign (i.e., juvenile/adult animals, carcasses, burrows, scat, shell fragment, bone, eggshell fragments) as well as potential habitat necessary to support this species, was utilized for the HDC focused desert tortoise survey effort. A team of qualified AMEC biologists (Appendix B) trained in detecting desert tortoise sign used this methodology during pedestrian surveys of the subject HDC Project area. Involved surveyors and survey dates are outlined in Table 1.

Focused desert tortoise surveys following protocols specified in "*Preparing For Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii)*" (USFWS 2010a: Appendix C) were conducted. Tortoise presence-absence clearance (100% coverage) belt transects of ~30 ft (~10 m)-width totaling 150 ft (50 m) were walked on each side of the subject highway centerline east of I-15. The Project corridor west of I-15 widened to a width of 250 ft (76.2 m) on each side of the highway centerline. Additional zone of influence ("ZOI") sampling transects (USFWS 2010) were conducted at 656 ft (200 m), 1,312 ft (400 m) and 1,969 ft (600 m) intervals from each (north and south) highway edge). The map set presented in Appendix D depicts all survey transects undertaken for this segment of the HDC Project.

ZOI surveys were completed as close to the identified transect lines as possible where fencing, buildings or domestic dogs precluded conducting them exactly. Trimble Juno series hand-held global positioning system (GPS) units pre-loaded with transect route coordinates were used by surveyors to navigate along each survey transect line.

The dominant plant community was noted on each transect. All tortoise sign (i.e., live tortoises, tracks, burrows, scat, carcasses, shell fragments) and suitable habitat parameters were documented on survey forms. Desert woodrat (*Neotoma lepida*) "midden" nests were closely examined to identify potential tortoise sign, which is sometimes incorporated into these structures. All observed animal burrows were closely examined for potential tortoise presence and sign.

The quality of potential habitat for tortoises was assessed. Human influences upon the affected landscape were recorded, particularly those impacts which would serve to fragment tortoise habitat or act as barriers to tortoise movement.

Tortoise sign was mapped using GPS equipment where encountered. This data was then transferred to office computers for geographical information systems (GIS) configuration.

Table 1.
Desert tortoise surveyors and survey dates in the summer of 2011 for the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project.

Surveyor	Survey Dates
M. Amalong	6/6, 6/8-10
T. Chumley	6/6-10, 6/13-17, 6/21-24, 6/27-30
P. Clevinger	6/6-10, 6/13-14, 6/16, 6/21-22
P. del Pizzo	6/8-10, 6/13-17, 6/22-24
J. Green	9/1
R. Johnson	8/31
N. Kimball	6/13-17, 6/21-24, 6/29-30
D. King	7/25-29, 8/1-5
C. Kraft	6/13-14
E. LaCoste	6/15-17, 6/21-22, 6/28-29, 7/25-29, 8/1-5
N. Moorhatch	6/6-10, 6/13-17, 6/21, 6/23-24, 6/27-30, 8/31, 9/1
S. Myers	6/8, 6/10
J. Ogawa	6/7-10, 6/13-17, 6/21-24, 6/27-30
T. Price	6/7-10, 6/13-15
T. Rado	6/6-10, 6/13-17, 6/21-24, 6/27-30, 7/25-29, 8/1-5, 8/31, 9/1
M. Wilcox	6/23-24, 6/27-28

4.0 FOCUSED SURVEY RESULTS

4.1 Environmental Setting

4.1.1 Survey Area Field Constraints

Due to scattered residential development and fencing in portions of the survey area, certain segments of ZOI tortoise survey transects were routed outside of specific protocol distances. In addition, clearance and ZOI sampling transects were not completed within any property posted as "No trespassing" or in areas considered by the involved surveyors to be non-tortoise habitat (refer to Photo 14 in Appendix E).

Excluding the few residential, fenced/posted areas and non-habitat within the survey area was judged to not compromise the overall tortoise survey field effort in any manner.

4.1.2 Climate

The proposed Project is located within a Mediterranean climate region consisting of hot dry summers and mild winters with little rainfall. In summer, temperatures often reach above 100º F and winter temperatures fall into the 30s, with occasional freezing weather. Average annual temperature ranges are fairly moderate for the area, ranging from 43.8 degrees Fahrenheit (ºF) to 77.5º F (Western Regional Climate Center [WRCC] 2011).

Annual precipitation for the general Project vicinity (Victorville weather station) over the 92 year period from 1917 to 2009 averaged 5.56 inches (WRCC 2011). The 2011 desert tortoise survey was conducted following the 2010-2011 winter season that received higher than normal rainfall within the Project area. In light of this data, plant growth conditions were sufficient to support summer foraging activity by tortoises.

4.1.3 Topography

Topography in the BSA includes flats, low hills, small wash drainages and the Mojave River. In the western area of the alignment numerous small washes cross a relatively flat landscape, generally draining from north to south. East of town of Adelanto, the topography transitions to a series of low hills, and west of town drops into the wide valley associated with the Mojave River at Mojave Heights. The river crossing is at a steep, rocky gorge. East of the river, the alignment climbs a boulder slope through Bell Mountain Pass onto a wide, alluvial area associated with Bell Mountain Wash. In this area, numerous north-south running washes cross the corridor, with occasional rocky cairns protruding from the sandy flats.

East of the I-15 freeway, the corridor continues over a series of hills modified by and active mining area, through then into the flats of the eastern portion of the alignment. Near the eastern terminus of the alignment, the northern edge of the BSA extends onto the rocky foothills of the Granite Mountains. Elevations within this area range from approximately 2,600 to 3,600 ft (792.48 to 1,097.28 m) above mean sea level.

4.1.4 Vegetation

Mojave creosote bush scrub (Holland 1986) is the predominant native plant community within the survey area. Saltbush scrub is the second most commonly encountered plant community, followed by low density Joshua tree woodland in the western portion of the alignment and mixed Mojave woody scrub in the east-central portion of the Project area. Non-native grassland extent occurs patchily throughout the alignment, particularly in the vicinity of Victorville, as does considerable disturbed and developed lands.

Table 2 below depicts the acreage of varying plant communities per the Sawyer-Keeler Wolfe classification system (Sawyer et al. 2009) found within the survey area in May of 2011 (AMEC 2011). It should be noted that this classification system varies in the degree of detail from the Holland plant community classification system referenced above. Appendix F provides a list of all vascular plant species observed during the May 2011 botanical survey/plant community mapping effort and the June-September 2011 focused desert tortoise survey.

4.1.5 General Wildlife

The most conspicuous wildlife observed during the survey effort was the cactus wren, which was observed nesting in several golden cholla (*Cylindropuntia echinocarpa*) and Joshua tree locations. Other representative bird species included sage sparrow (*Amphispiza belli*), black-throated sparrow (*A. bilineata*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), Anna's hummingbird (*Calypte anna*), ladder-backed woodpecker (*Picoides scalaris*), red-tailed hawk (*Buteo jamaicensis*) and common raven.

Representative mammals, directly observed and/or detected by sign, included Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), desert woodrat (*Neotoma lepida*), California jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kit fox (*Vulpes macrotis*) and coyote (*Canis latrans*). Large animal burrows were surprisingly infrequent.

Desert night lizard (*Xantusia vigilis*) was found beneath down woody debris in plant communities containing *Yucca* species. Other representative reptiles observed in the survey area included desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis=Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipsosaurus dorsalis*), Mojave rattlesnake (*Crotalus scutulatus*) and gopher snake (*Pituophis catenifer*). Several other snake species common to the region are also expected to occur in the survey area, but were undetected.

Representative insect species observed during the survey include harvester ant (*Pogonomyrmex* spp.), creosote bush grasshopper (*Bootettix argentatus*) and desert stink beetle (*Eleodes* sp.). A complete list of animal species observed during the focused desert tortoise survey has been included in Appendix G.

Table 2.
Plant community acreage within the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project (AMEC 2011).

Plant Community	Acreage
Allscale Scrub (AS)	368.67
Allscale Scrub/Creosote Bush Scrub (AS/CBS)	15.83
Creosote Bush Scrub (CBS)	1382.03
Creosote Bush Scrub/White Bursage Scrub (CBS/WBS)	18.85
Channel (CHAN)	3.20
Disturbed Allscale Scrub (DAS)	11.87
Disturbed Creosote Bush Scrub (DCBS)	60.32
Developed (DEV)	357.45
Disturbed (DIST)	114.68
Disturbed Joshua Tree Woodland (DJTW)	13.31
Disturbed Saltgrass Flats Alliance (DSF)	3.68
Fremont Cottonwood Forest (FCF)	6.29
Fourwing Saltbush Scrub (FSS)	10.00
Joshua Tree Woodland (JTW)	86.71
Joshua Tree Woodland/Creosote Bush Scrub (JTW/CBS)	140.58
Mojave Yucca Scrub (MYS)	131.56
Nonnative Grassland (NNG)	140.08
Parry's Rabbitbrush Scrub (PRS)	2.91
Rock Outcropping (ROCK)	18.94
Saltgrass Flats Alliance (SF)	15.50
Sandbar Willow Thickets (SWT)	1.29
White Bursage Scrub (WBS)	9.78
White Bursage Scrub/Nonnative Grassland (WBS/NNG)	22.62
Winterfat Scrubland (WFS)	23.20

4.2 Desert Tortoise

Much of the patchily distributed creosote bush scrub and Joshua tree woodland within the Project's direct impact zone and zone of influence was assessed as generally suitable desert tortoise habitat during this 2011 survey. However, a considerable amount of this habitat has been degraded to varying degrees by a range of human disturbance factors (i.e., mining residential development, sheep grazing, vehicle use). Areas of non-native grassland, disturbed

areas lacking shrubs and developed lands within the Project's direct impact zone were assessed as unsuitable habitat for the tortoise.

Substantial barriers to tortoise movement proximal to the Project alignment include extensive residential housing and urban development south of the alignment associated with the cities of Adelanto, Victorville and the Town of Apple Valley; several active mines, the Southern California Logistics Airbase and a large federal prison in Adelanto; several high traffic highways; and the Mojave River. Nonetheless, open desert occurs to the north and south of a considerable portion of the alignment. The potential for tortoise travel into active work zones throughout the alignment is considered low, with a slightly higher potential for such travel to occur in specific localities (mainly on the western portion of the alignment).

During the course of this survey, only one possible desert tortoise burrow (Class 4) was detected in the eastern Project alignment, east of I-15. However, to the west of I-15, one live adult male tortoise (UTM 0471342, 3825987) was detected in the Project zone of influence north of the west-central portion of the Project alignment east of the Mojave River, on a southwesterly-facing bajada north of the Lower Mojave River Narrows.

Tortoise sign (refer to Table 3) was also detected further to the west at two areas of the Project alignment west of US-395: (1) one Class 2 tortoise burrow and one Class 4 possible tortoise burrow were found ~ 0.35 miles east of the western terminus of the alignment; (2) two Class 5 tortoise carcasses, one Class 5 bone fragment, four Class 3 tortoise scats, three Class 2 tortoise scats, one Class 5 tortoise scat, four Class 5 possible tortoise burrows, one Class 3 tortoise burrow, , and one Class 1 tortoise burrow with fresh tortoise footprints on the apron were found in an approximately 5.35 mile area of the project alignment beginning from ~ 2.8 miles west of US-395 and ending ~8.15 miles west of this highway. Additionally, in the zone of influence transects, five Class 4 possible tortoise burrows and one Class 5 tortoise bone fragment were found in a roughly 3.6 mile area west of US-395 (beginning ~ 3.0 west of the highway and ending ~ 6.6 miles west of the highway).

An overview map of tortoise/tortoise sign locales is presented in Figure 5. Detailed maps of each are subsequently presented as Figure 5-1, 5-2, 5-3, 5-4 and 5-5. No other listed plant or animal species was detected during this focused tortoise survey.

Table 3.
Desert Tortoise Sign Key

Sign Type	Class 1	Class 2	Class 3	Class 4	Class 5
Burrow and den	Currently active with tortoise or recent tortoise sign	Good condition, definitely tortoise but no evidence of recent use	Deteriorated condition but definitely tortoise	Deteriorated condition, possibly tortoise (no other corroborating sign)	Good condition, possibly tortoise (no other corroborating sign)
Scat	Wet or moist but not from rain or dew or dried but with obvious odor	Dry, dark brown, has a glaze, and some odor	Dry, has no glaze or odor, is slightly bleached, is light brown, and plant fibers are tightly packed	Dry, has no glaze or odor, is somewhat bleached, is light brown to pale yellow, plant fibers are not tightly packed, and has a scaly appearance.	Dry, has no glaze or odor, is bleached, & white, and consists only of plant fibers
Carcasses, shell remains and bone fragments	Fresh or putrid	Fresh or putrid, is of normal color and the scutes adhere to the bone	Scutes are peeling from the bone	Shell bone is falling apart and the growth rings on the scutes are peeling	Disarticulated and scattered

Table 4.
Summary of Desert Tortoise Sign Found on the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project.

Sign Type	Class	Location (UTM)	Date Observed	Alignment / ZOI
Burrow	Class 4	477294 E, 3825751 N	6/10/11	Alignment
Carcass Fragment	Class 5	458069 E, 3825272 N	6/22/11	Alignment
Possible Burrow	Class 5	457407 E, 3825402 N	6/22/11	Alignment
Possible Burrow	Class 5	456185 E, 3825338 N	6/23/11	Alignment
Tortoise Scat	Class 3	455783 E, 3825392 N	6/23/11	Alignment
Tortoise Scat	Class 3	455607 E, 3825369 N	6/23/11	Alignment
Tortoise Carcass	Class 5	451244 E, 3824729 N	6/24/11	Alignment
Possible Burrow	Class 5	454189 E, 3825353 N	6/24/11	Alignment
Tortoise Scat	Class 3	450479 E, 3824479 N	6/24/11	Alignment
Tortoise Scat	Class 2	450452 E, 3824467 N	6/24/11	Alignment
Tortoise Carcass	Class 5	450430 E, 3824458 N	6/24/11	Alignment
Tortoise Scat	Class 2	450404 E, 3824466 N	6/24/11	Alignment
Tortoise Scat	Class 5	450459 E, 3824593 N	6/24/11	Alignment
Tortoise Scat	Class 3	450491 E, 3824601 N	6/24/11	Alignment
Tortoise Scat	Class 2	450569 E, 3824578 N	6/24/11	Alignment
Tortoise Burrow	Class 3	450529 E, 3824542 N	6/24/11	Alignment
Tortoise Burrow (w/ tortoise tracks)	Class 1	450499 E, 3824506 N	6/24/11	Alignment
Possible Burrow	Class 5	449683 E, 3824429 N	6/27/11	Alignment
Tortoise Burrow	Class 2	439326 E, 3826093 N	6/29/11	Alignment
Possible Burrow	Class 4	439386 E, 3826108 N	6/29/11	Alignment
Live Tortoise	Adult male	471340 E, 3825985 N	8/01/11	ZOI
Possible Burrow	Class 4	456248 E, 3826070 N	8/04/11	ZOI
Carcass Fragment	Class 5	457451 E, 3826051 N	8/04/11	ZOI
Possible Burrow	Class 4	454043 E, 3824718 N	8/04/11	ZOI
Possible Burrow	Class 4	451859 E, 3825681 N	8/05/11	ZOI
Possible Burrow	Class 4	443383 E, 3825906 N	9/01/11	ZOI
Possible Burrow	Class 4	439398 E, 3826676 N	9/01/11	ZOI

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9/2/11

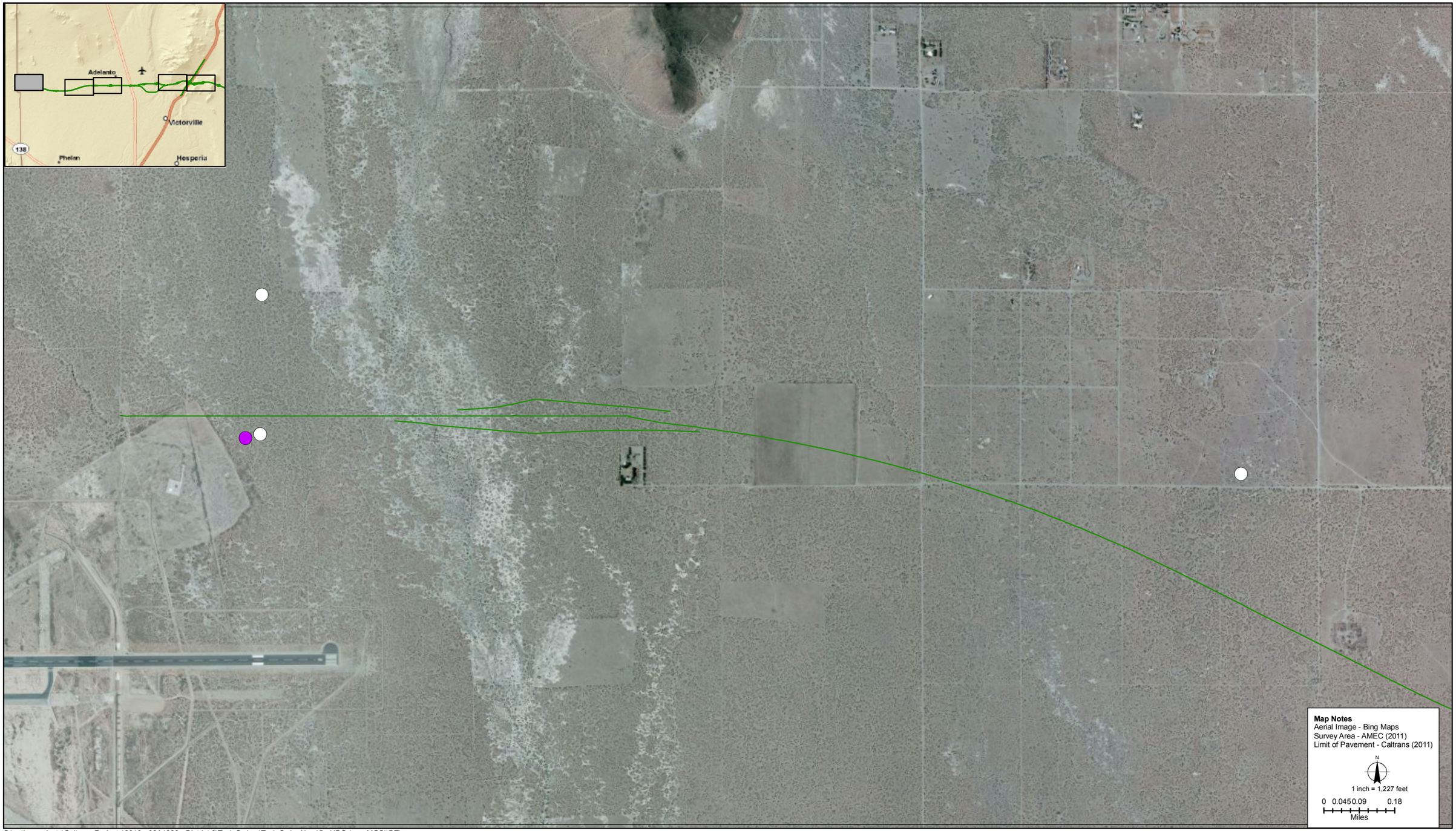
Project Alignment

Map Index

Desert Tortoise Survey Results Overview Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

5



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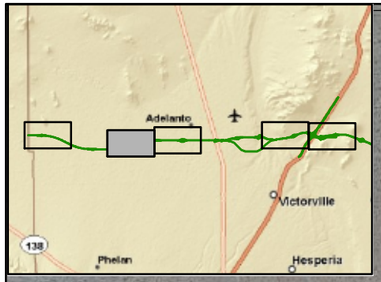
9/2/11

Desert Tortoise Burrow
Possible Desert Tortoise Burrow
Desert Tortoise Burrow w/sign
Carcass
Scat
Live Desert Tortoise

Desert Tortoise Survey Results Detail Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
5- 1



Map Notes
Aerial Image - Bing Maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans (2011)

N

1 inch = 1,227 feet

0 0.05 0.1 0.2

Miles

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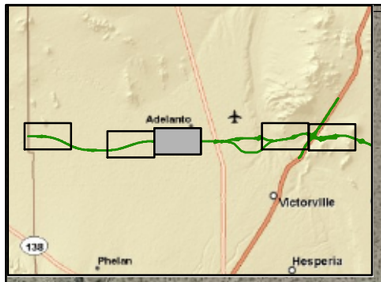
9/2/11

Desert Tortoise Burrow
Possible Desert Tortoise Burrow
Desert Tortoise Burrow w/sign
Carcass
Scat
Live Desert Tortoise

Desert Tortoise Survey Results Detail Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
5- 2



Map Notes
Aerial Image - Bing Maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans (2011)

N

1 inch = 1,227 feet

0 0.05 0.1 0.2

Miles

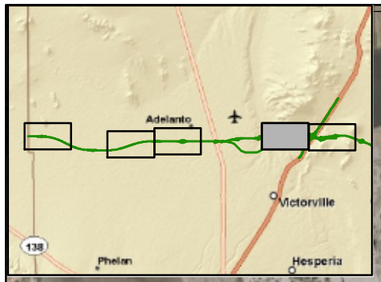
S:\active projects\Caltrans Projects\2010 - 08A1820 - District 8\Task Orders\Task Order No. 15 - HDC (non-MGS)\DT\maps

9/2/11

Desert Tortoise Burrow
Possible Desert Tortoise Burrow
Desert Tortoise Burrow w/sign
Carcass
Scat
Live Desert Tortoise

Desert Tortoise Survey Results Detail Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
5- 3



Map Notes
Aerial Image - Bing Maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans (2011)

N

1 inch = 1,227 feet

0 0.05 0.1 0.2
Miles

S:\active projects\Caltrans Projects\2010 - 08A1820 - District 8\Task Orders\Task Order No. 15 - HDC (non-MGS)\DT\maps

9/2/11

Desert Tortoise Burrow
Possible Desert Tortoise Burrow
Desert Tortoise Burrow w/sign
Carcass
Scat
Live Desert Tortoise

Desert Tortoise Survey Results Detail Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
5-4

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9/2/11

Desert Tortoise Burrow
Possible Desert Tortoise Burrow
Desert Tortoise Burrow w/sign
Carcass
Scat
Live Desert Tortoise

Desert Tortoise Survey Results Detail Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
5- 5

5.0 CONCLUSIONS

- Desert tortoise sign was observed in two main locations within the western portion of the HDC Project alignment and in one location within the east-central portion of the HDC Project alignment. The observed east-central sign location was a possible tortoise burrow (Class 4). Desert tortoise sign observed on the zone of influence transects was also located in proximity to one of the locations mentioned above (within a ~5 mile stretch west of US-395).
- One live desert tortoise was observed in the zone of influence north of west-central portion of the HDC Project alignment.
- The presence of tortoise sign in the areas noted above suggests a need at these localities for pre-construction surveys, burrow excavation and construction monitoring to ensure no desert tortoise would be harmed during Project work.

6.0 BIOLOGICAL RESOURCE RECOMMENDATIONS

- ESA consultation between the lead federal agency and the USFWS relative to the HDC Project and its potential effects upon the desert tortoise is recommended. CESA compliance is also required for this state-listed species. A CESA Section 2080.1 Consistency Determination could potentially be issued by the CDFG, following a review of any biological opinion/federal incidental take statement issued for this Project.
- An education program for all persons employed on the HDC Project should be prepared and provided to all involved personnel prior to their performing work on-site. This program should consist of a presentation from a qualified biologist that outlines desert tortoise information, project-specific protective measures and which provides instruction on what personnel are to do if a tortoise is encountered.
- As desert tortoise burrows and other tortoise sign were observed in western and central portions of the HDC Project area, a pre-construction biological survey should be undertaken in theses area prior to vegetation removal and general surface-disturbance activities taking place. An effort should be made to carefully excavate all observed tortoise burrows to ensure no occupying tortoise would be adversely affected by the Project surface disturbance. Any tortoises found in project construction/equipment staging areas should be translocated to areas adjacent to the Project alignment approved by the involved regulatory agencies. It should be noted that any harm, harassment, translocation or tortoise “take” of any kind requires an incidental take permit from the CDFG and USFWS.
- As a tortoise has been observed in the Project zone of influence and tortoise sign has been identified in western portions of the HDC Project area, there is a low potential for tortoises to be encountered during project work. Biological monitoring to ensure tortoises do not travel into active work zones is recommended. Should this biological monitoring note a potential for tortoise harm, proximal work activity should be halted until such time as the observed tortoise leaves the area on its own accord or measures are put in place (i.e., tortoise translocation, tortoise exclusion fence installation, etc.) to ensure tortoises are not adversely affected. Again, it should be noted that any harm, harassment, translocation or tortoise “take” of any kind requires an incidental take permit from the CDFG and USFWS.
- A trash abatement plan should be developed and employed during the HDC Project. Trash and food items should be contained in closed (raven-proof) containers and removed daily to avoid attracting opportunistic predators of tortoises such as ravens, coyotes, and feral dogs.

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8.0 CERTIFICATION

CERTIFICATION: *"I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project."*

DATE: 23 September 2011 SIGNED: _____
Report Author

Resumes of involved biological personnel have been attached to this document as Appendix B. Include names and signatures for those performing fieldwork.

1) Fieldwork Performed By:

/s/ Matt Amalong
Name

2) Fieldwork Performed By:

/s/ Tim Chumley
Name

3) Fieldwork Performed By:

/s/ Phil Clevinger
Name

4) Fieldwork Performed By:

/s/ Patrick del Pizzo
Name

5) Fieldwork Performed By:

/s/ John Green
Name

6) Fieldwork Performed By:

/s/ Rob Johnson
Name

7) Fieldwork Performed By:

/s/ Nicole Kimball
Name

8) Fieldwork Performed By:

/s/ David King
Name

9) Fieldwork Performed By:

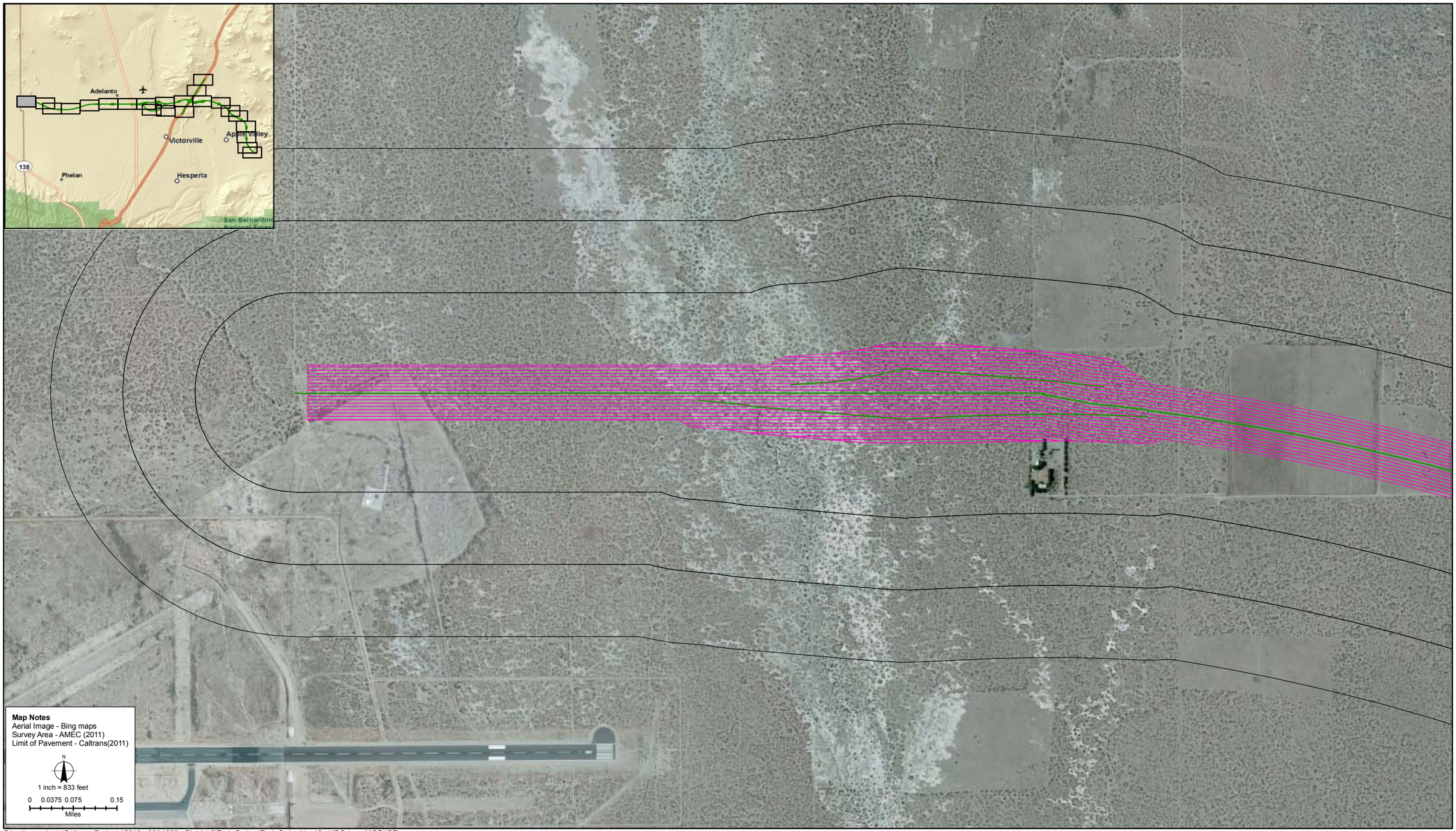
/s/ Clayton Kraft
Name

10) Fieldwork Performed By:

/s/ Erik LaCoste
Name

APPENDIX D

FOCAL DESERT TORTOISE SURVEY TRANSECT MAP SET 1-5



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9/13/11

Project Alignment

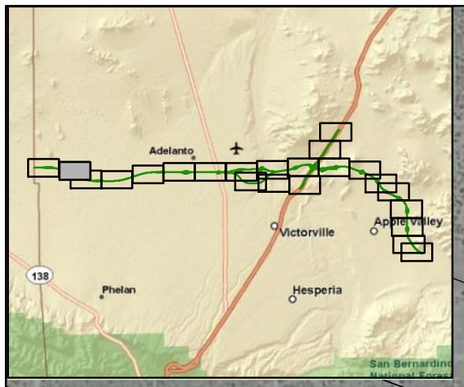
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-1



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

S:\active projects\Caltrans Projects\2010 - 08A1820 - District 8\Task Orders\Task Order No. 15 - HDC (non-MGS)\DT

9/13/11

Project Alignment

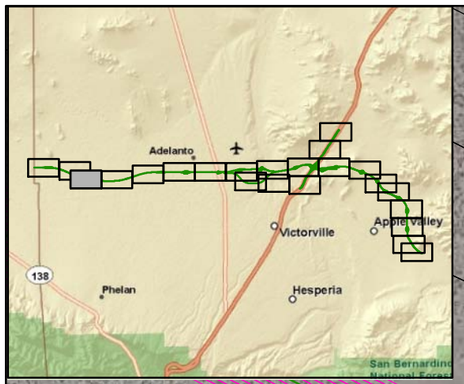
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-2



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

Project Alignment

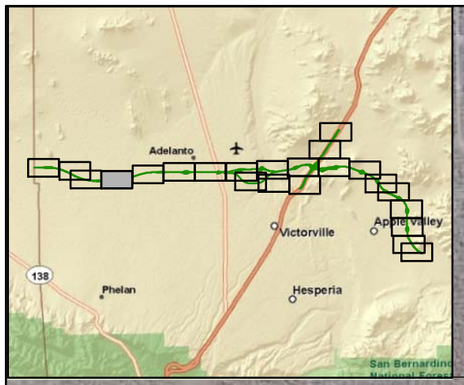
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-3



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

Project Alignment

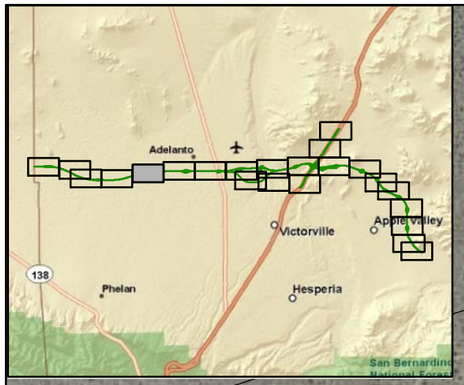
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-4



Map Notes
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Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

Project Alignment

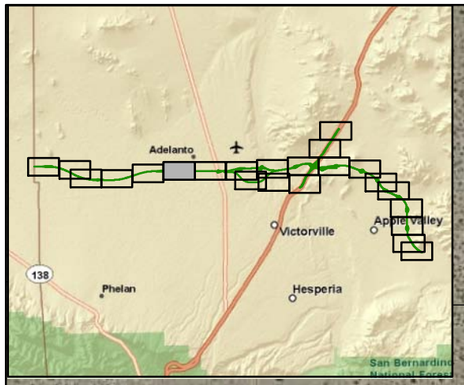
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-5



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

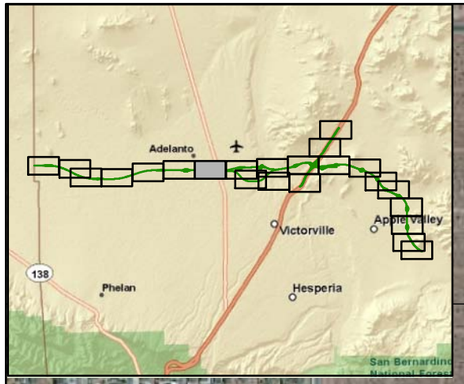
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-6



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

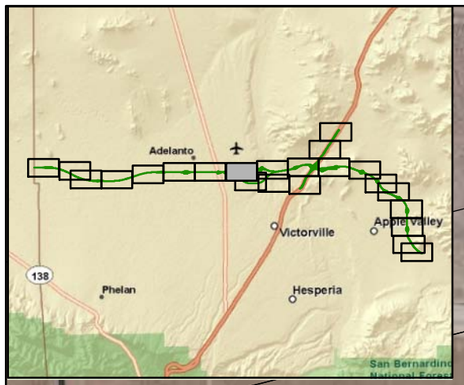
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-7



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

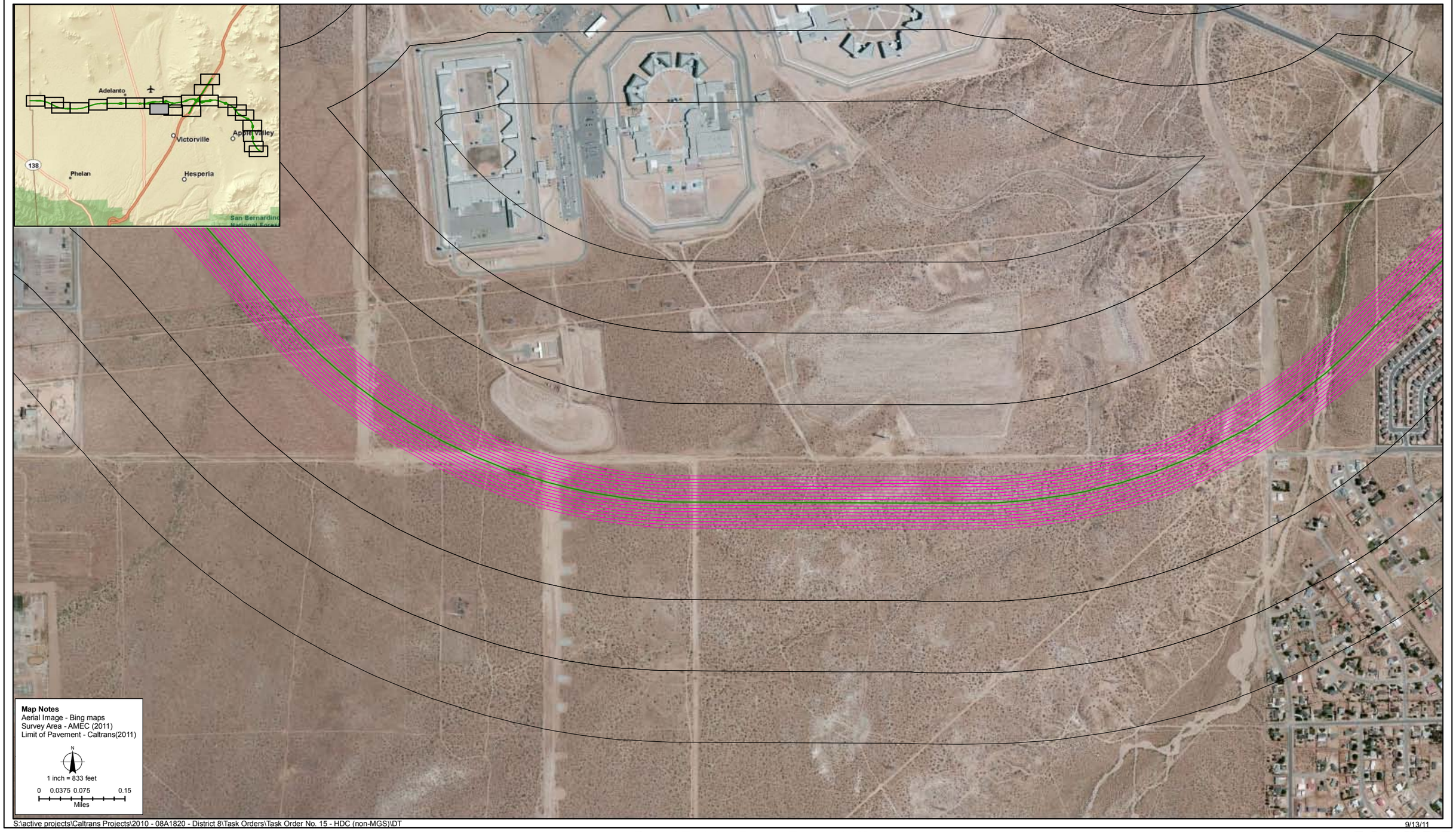
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-8



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9/13/11

Project Alignment

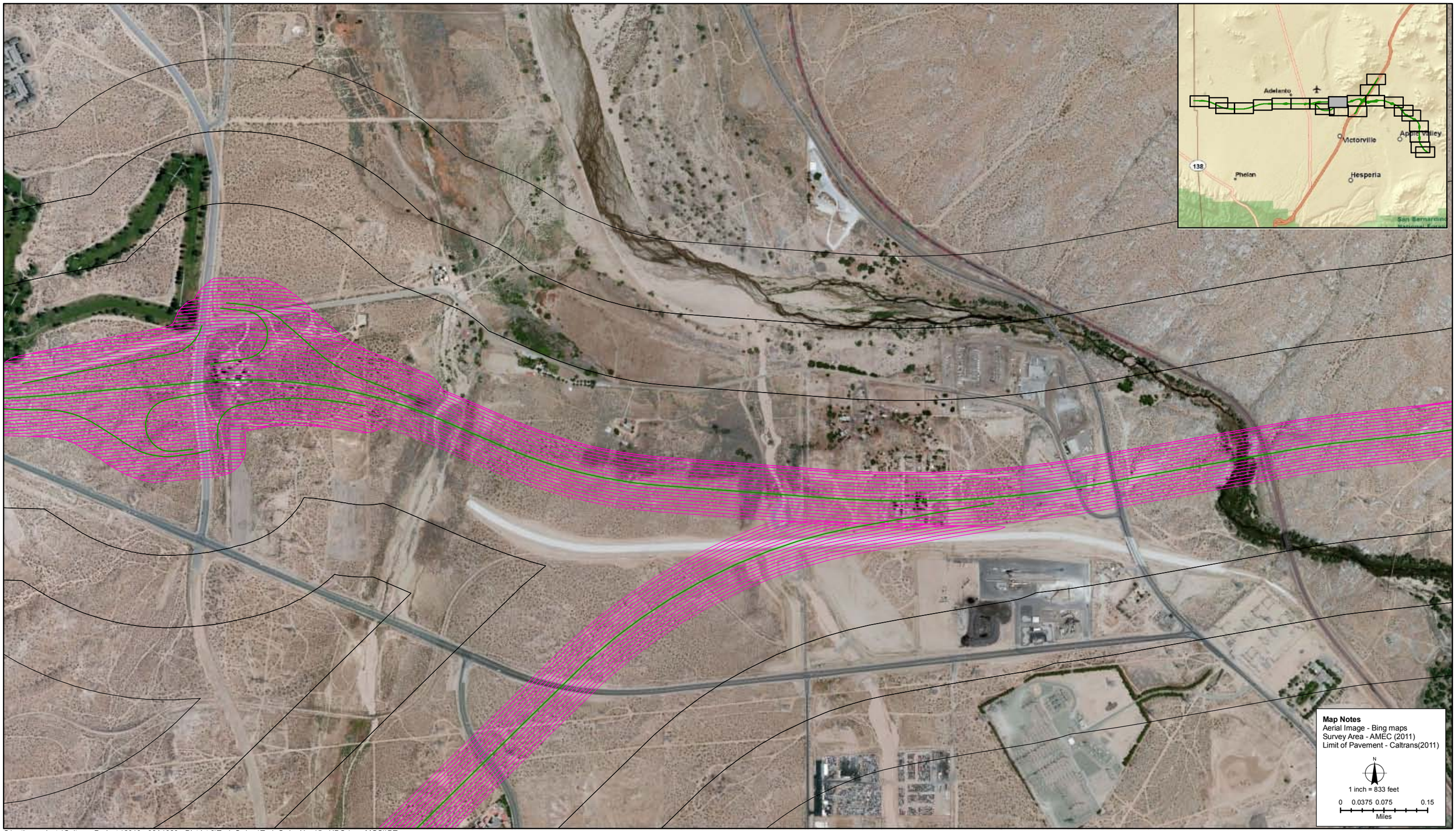
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-9



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9/13/11

Project Alignment

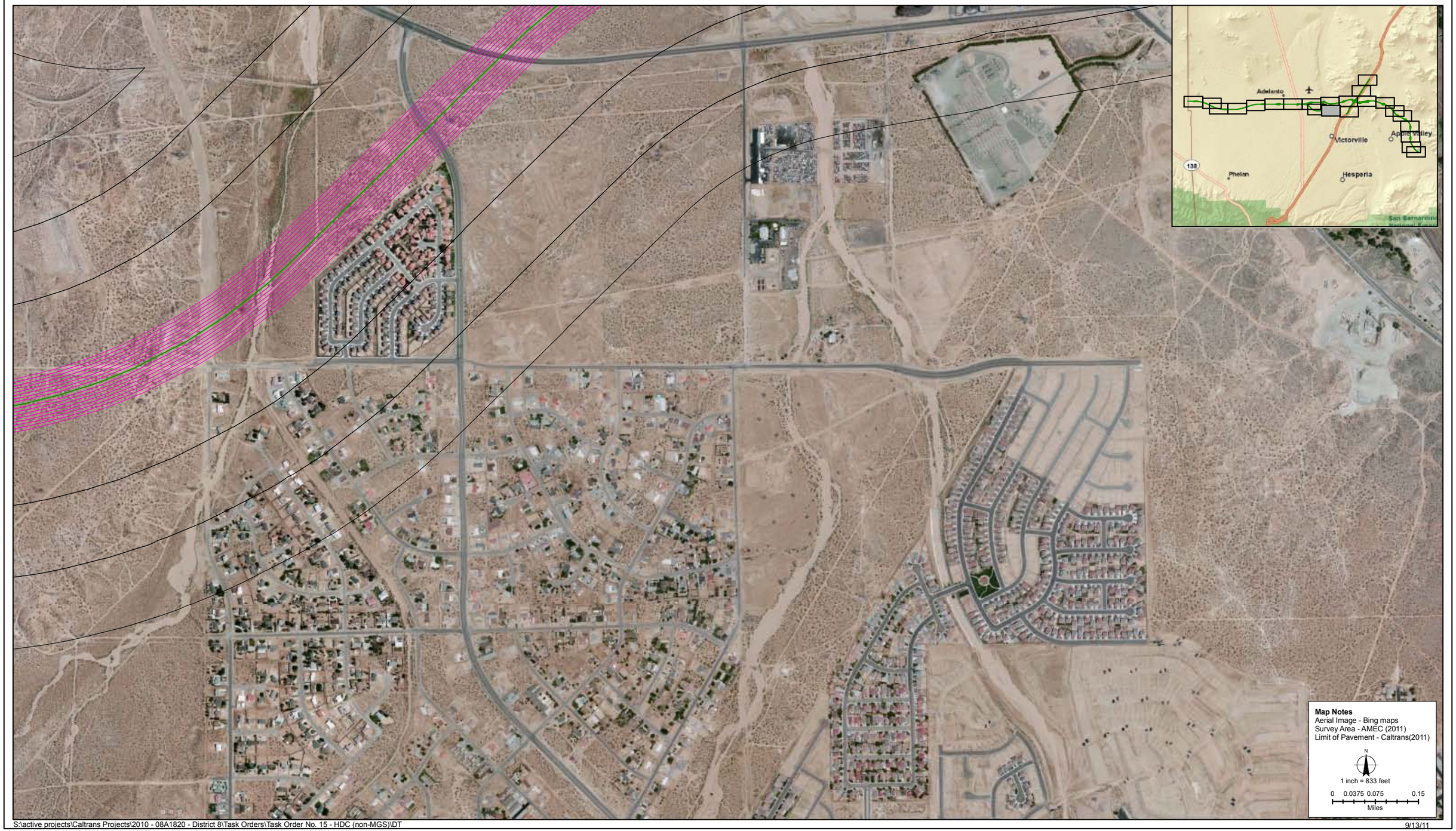
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 10



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9/13/11

Project Alignment

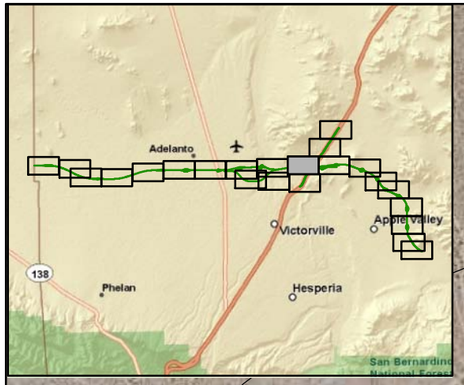
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 11



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

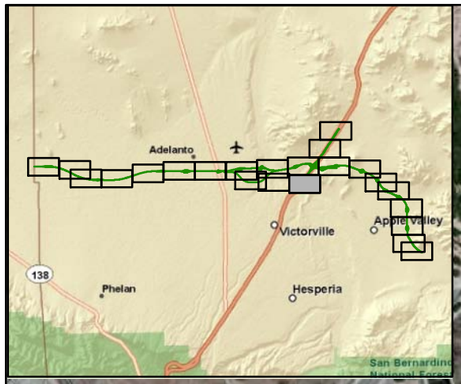
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-12



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-13

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9/13/11

Project Alignment

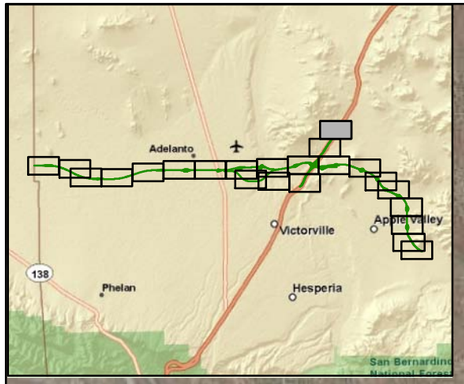
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-14



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

S:\active projects\Caltrans Projects\2010 - 08A1820 - District 8\Task Orders\Task Order No. 15 - HDC (non-MGS)\DT

9/13/11

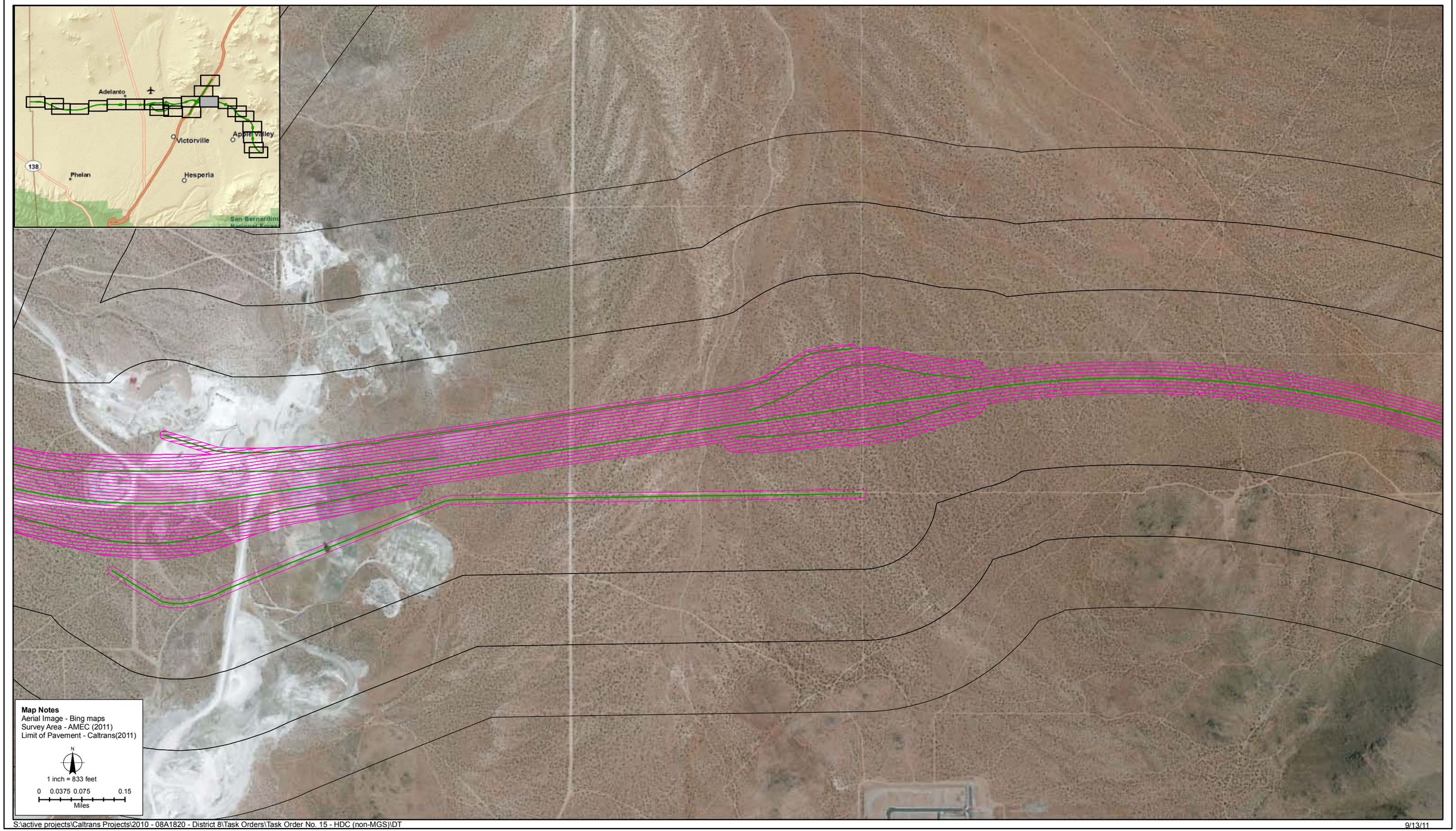
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-15



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9/13/11

Project Alignment

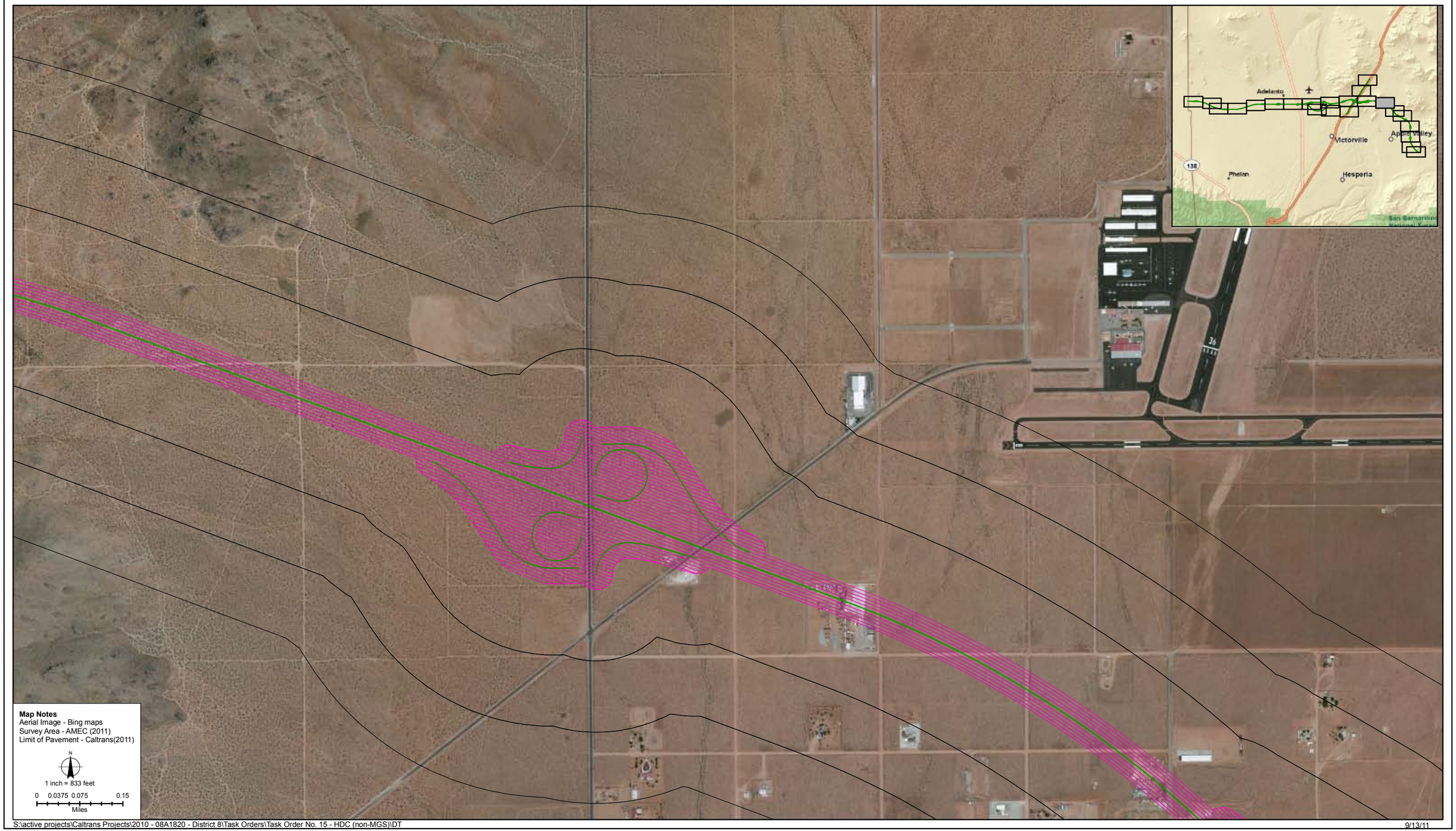
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-16



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9/13/11

Project Alignment

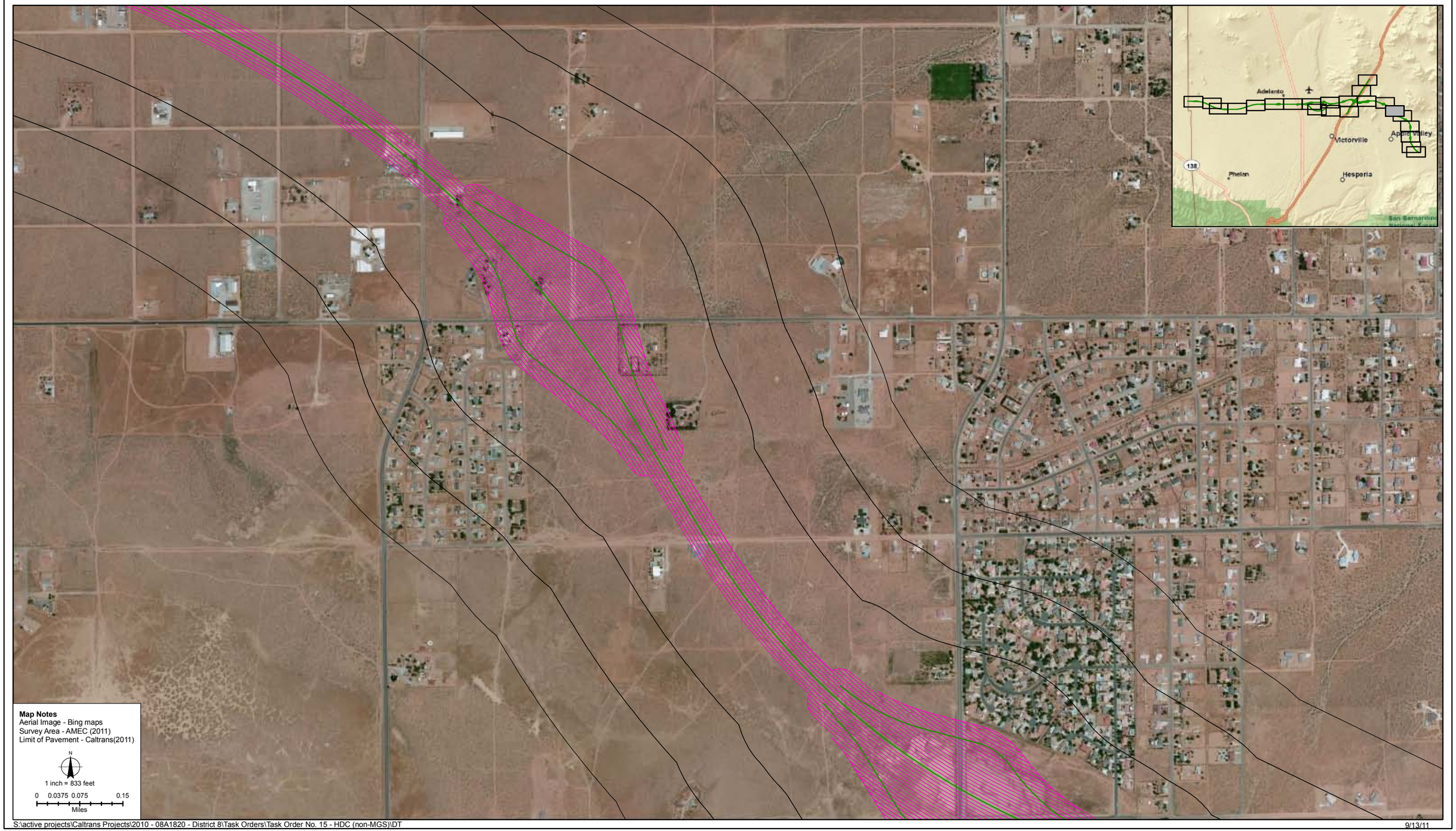
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 17



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9/13/11

Project Alignment

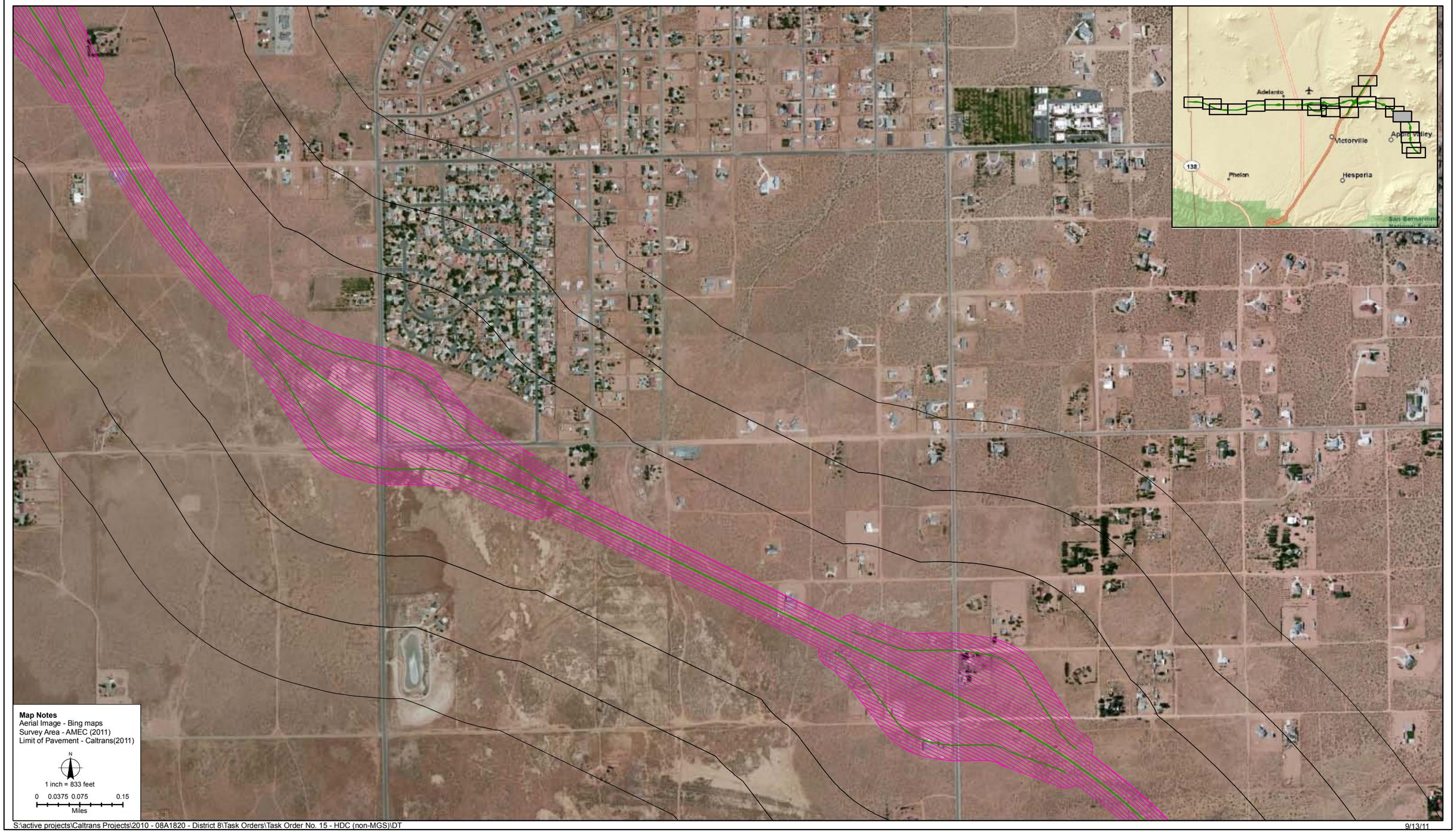
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 18



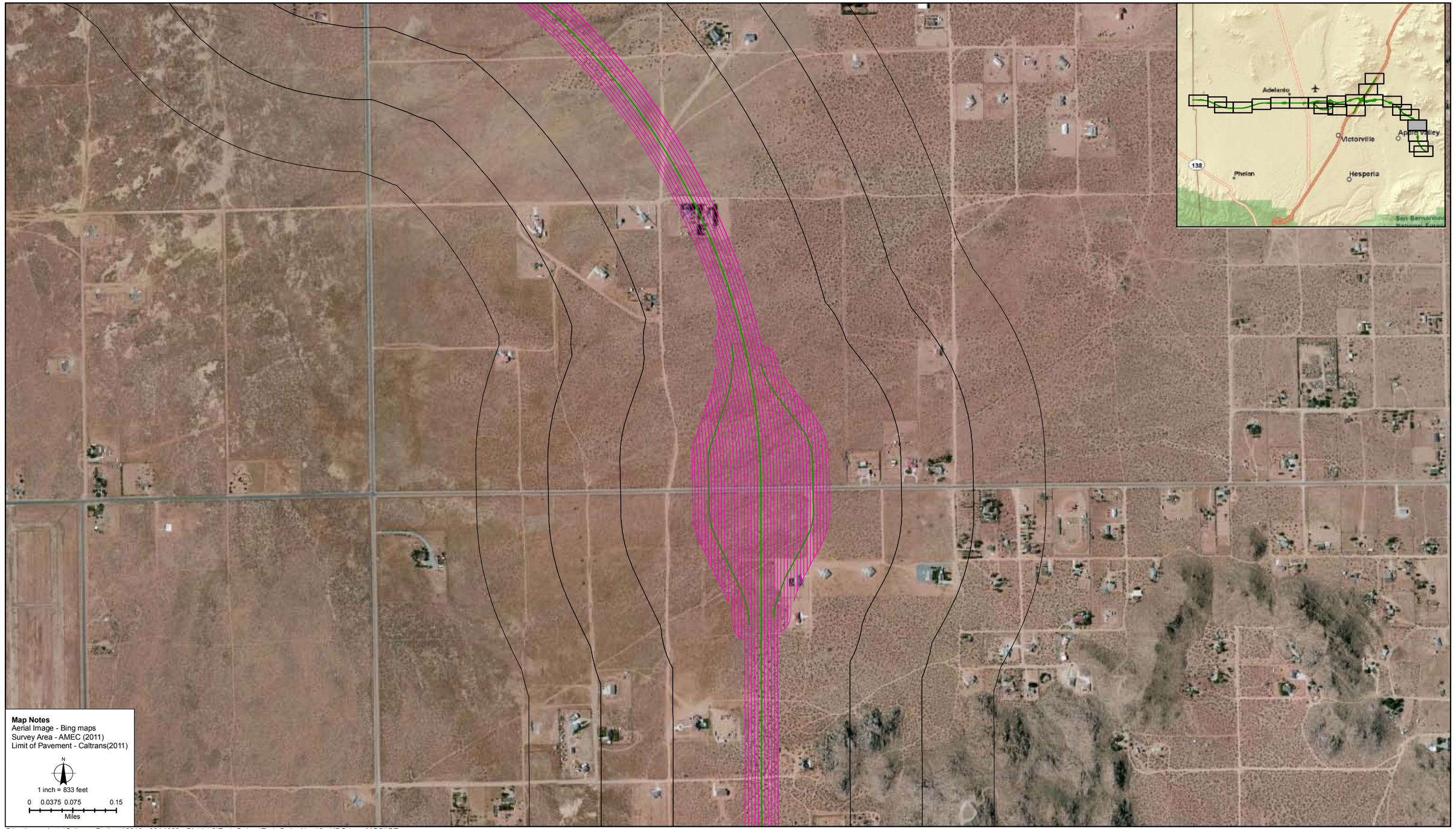
Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D- 19



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9/13/11

Project Alignment

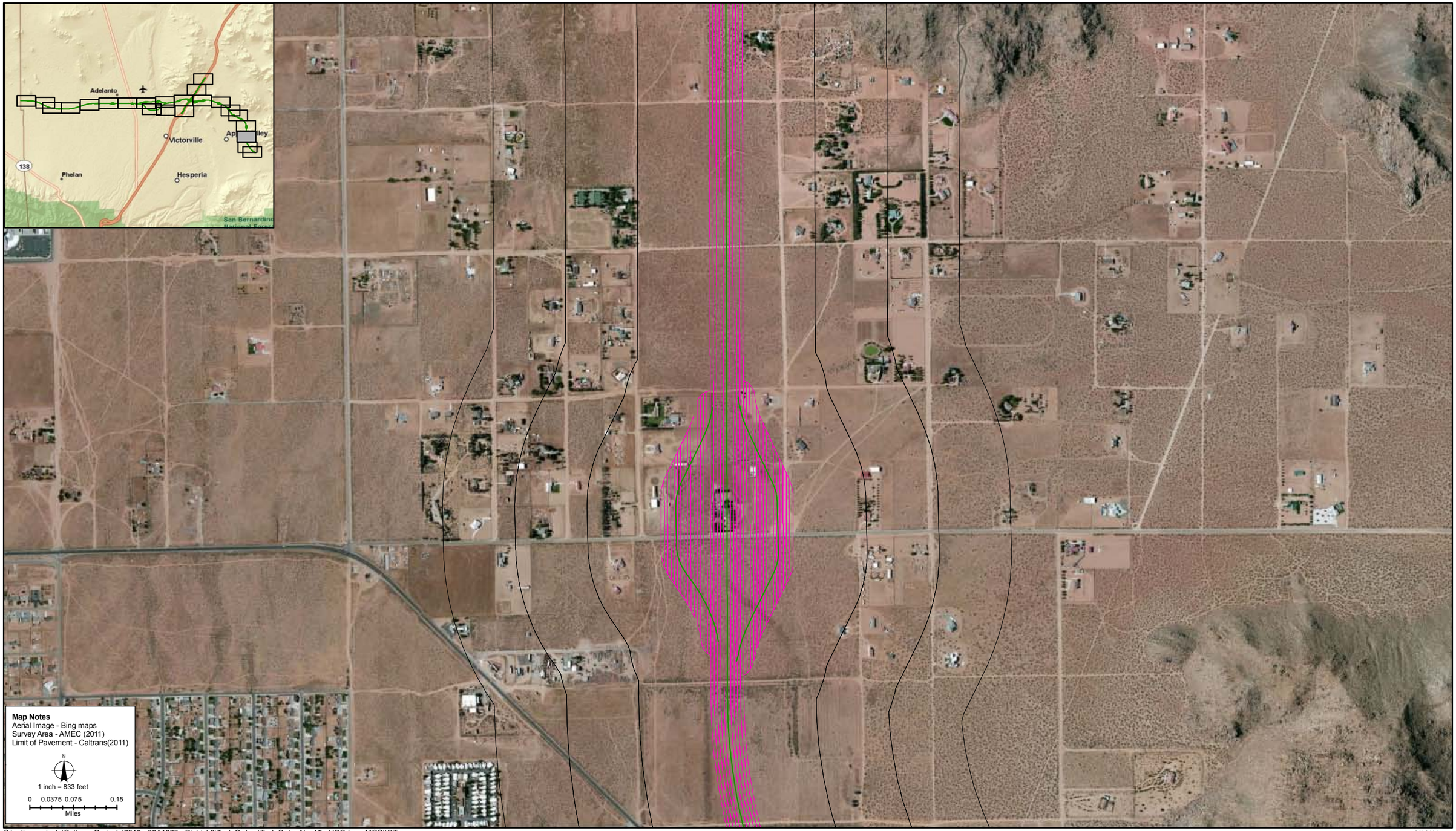
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 20



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9/13/11

Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-21

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9/13/11

Project Alignment

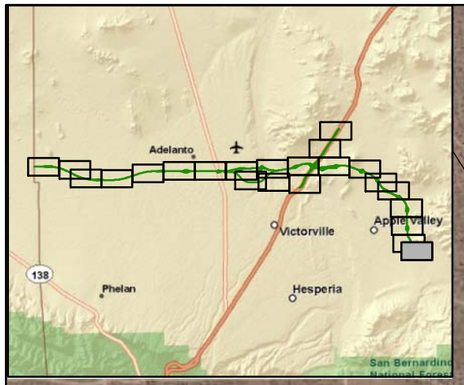
10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D-22



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

N

1 inch = 833 feet

0 0.0375 0.075 0.15
Miles

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9/13/11

Project Alignment

10 Meter Transects

Zone of Influence

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D-23

APPENDIX E

SITE PHOTOGRAPHS

Photo 1. Live adult male desert tortoise located near the northern 400 meter ZOI, ~ 3.75 miles northeast of Mojave River.

Photo 2. Desert tortoise habitat, in vicinity of where the live tortoise was found.

amec

Hign Desert Corridor
Project Photographs

Photo 3. Class 1 desert tortoise burrow (occupied) with slide marks and fresh footprints.

Photo 4. Habitat in vicinity of burrow in Photo 3 above.

Photo 5. Fresh tortoise footprint on apron of Class 1 tortoise burrow, note individual scale marks.

Photo 6. Class 2 tortoise burrow ~ 0.35 miles east of western alignment end.

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Project Photographs

Photo 7. Class 3 tortoise burrow ~150ft. north of Class 1 burrow in Photo 3.

Photo 8. Class 2 desert tortoise scat.

Photo 9. One of the two Class 5 tortoise carcasses found on the alignment.

Photo 10. The other Class 5 tortoise carcass found on the alignment.

Photo 11. Class 5 tortoise plastron fragment found ~ 2.8 miles west of State Highway 395.

Photo 12. Survey crew on Desert Tortoise survey west of I-15.

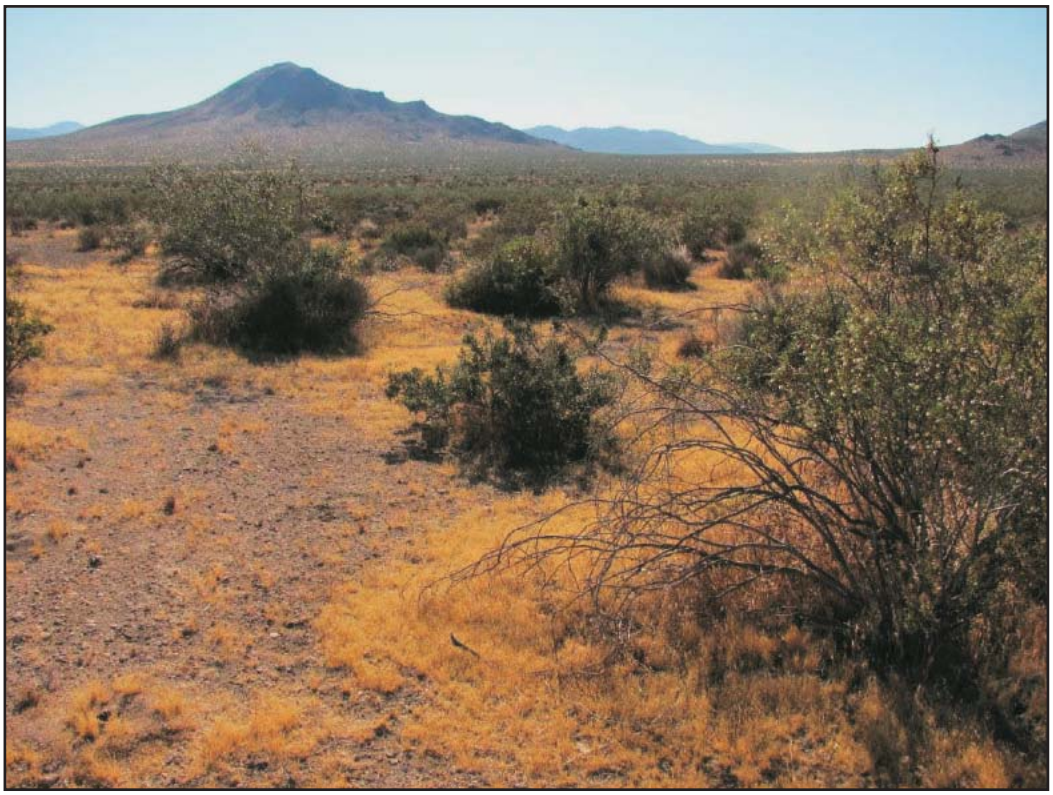

Photo 13. Mojave Creosote Bush Scrub east of I-15 looking towards Bell Mountain.

Photo 14. Non-desert tortoise habitat near west end of alignment, old agricultural field.

Photo 15. Sparse Salt Bush habitat looking east from east end of alignment, low potential desert tortoise habitat.

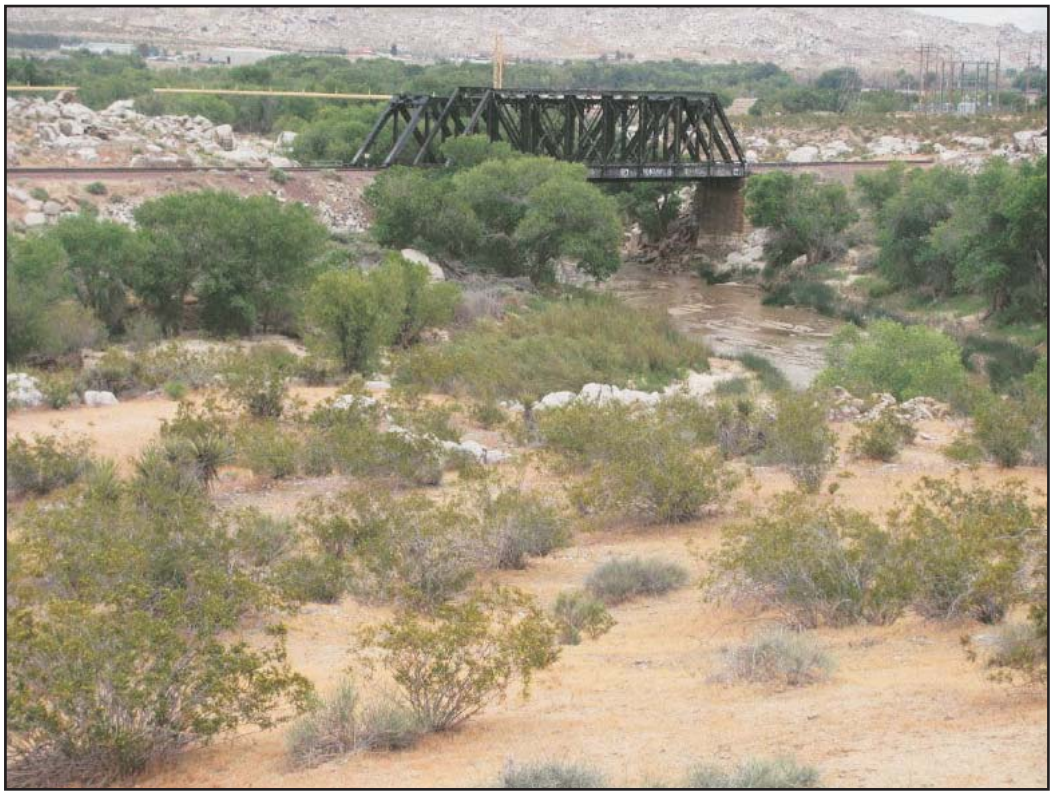

Photo 16. Mojave River crossing, view from south ZOI transect.

amec

Hign Desert Corridor
Project Photographs

Photo 17. Salt Bush habitat looking east from east end, low potential desert tortoise habitat.

Photo 18. Disturbed creosote scrub habitat, east of former George AFB, looking west, low potential desert tortoise habitat.

Photo 19. Creosote bush scrub/salt bush habitat, south of air base, looking west.

Photo 20. Joshua tree woodland west of 395, view facing east.

Photo 21. Representative creosote bush scrub habitat, view looking west from east end of alignment.

Photo 22. Braided wash habitat near west end of alignment (silty soils).

Photo 23. Another example of unsuitable habitat for tortoise on western portion of alignment.

Photo 24. Western end of alignment, San Bernardino/Los Angeles County line.

High Desert Corridor
State Route 18 West to Los Angeles County Line,
San Bernardino County
Vascular Plant Species

Vascular plant species observed during a June-September 2011 focused desert tortoise survey within the State Route 18 west to Los Angeles County line, San Bernardino County portion of the High Desert Corridor, are listed below. While 2010-11 rainfall levels were above-average for the region, certain plant species may have been overlooked or were undetectable due to their active growth season. Botanical nomenclature follows Baldwin et al. (2002) and Hickman (1993).

SYMBOLS AND ABBREVIATIONS:

* Non-native (introduced) species.
** Special status plant species.
sp. Identified only to genus; species unknown (plural = spp.).

CONIFERAE	**CONE BEARING PLANTS**
GNETAE	**JOINT FIRS**
Ephedraceae	**Ephedra Family**
Ephedra californica	California joint fir
Ephedra nevadensis	Nevada joint fir
ANGIOSPERMAE	**FLOWERING PLANTS**
DICOTYLEDONEAE	**DICOTYLEDONOUS PLANTS**
Amaranthaceae	**Goosefoot Family**
Amaranthus alba	Tumble pigweed
Atriplex canescens	Four-wing saltbush
Atriplex lentiformis	Quailbush
Atriplex polycarpa	Allscale
*Chenopodium alba**	Lamb's quarters
Chenopodium foliosum	Leafy goosefoot
Grayia spinosa	Spiny hopsage
Krascheninnikovia lanata	Winterfat
*Salsola tragus**	Russian thistle
Amaryllidaceae	**Amaryllis Family**
Allium fimbriatum	Fringed onion
Apiaceae	**Carrot Family**
Lomatium mohavense	Mojave Desert parsley

Asclepiadaceae	**Milkweed Family**
Asclepias erosa	Desert milkweed
Asteraceae	**Sunflower Family**
Acamptopappus sphaerocephalus	Rayless goldenhead
Adenophyllum cooperi	Cooper dyssodia
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia dumosa	Burro-weed
Ambrosia (=Hymenoclea) salsola	Cheesebush
Artemisia douglasiana	Mugwort
Baccharis salicifolia	Mulefat
Baileya pleniradiata	Desert woolly marigold
Brickellia californica	California brickellbush
Calycoseris parryi	Yellow tack-stem
Chaenactis carphoclina	Peirson's pincushion
Chaenactis fremontii	Fremont's pincushion
Chrysothamnus nauseosus	Rabbitbrush
Conyza canadensis	Horseweed
Coreopsis californica	California Tickseed
Encelia virginensis	Virgin River brittlebush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly sunflower
Euthamia occidentalis	Western goldenrod
Glyptopleura marginata	Keysia
Gutierrezia californica	California matchweed
Lactuca serriola	Prickly lettuce
Lasthenia californica	California goldfields
Layia glandulosa	Tidy tips
Machaeranthera tortifolia	Mojave aster
Malacothrix californica	Desert dandelion
Malacothrix coulteri	Snake's head
Malacothrix glabrata	Smooth desert dandelion
Matricaria matracariodes	Pineapple weed
Monoptilon bellidiforme	Daisy desertstar
Rafinesquia neomexicana	Desert chicory
Stylocline sp.	Neststraw
Stylocline micropoides	Woollyhead neststraw
Stephanomeria exigua var. *cororiaria*	Small wire lettuce
Stephanomeria pauciflora	Wire lettuce
Tetradymia axillaris var. *longispina*	Longspine horsebrush
Tetradymia stenolepis	Mojave cottonthorn

Boraginaceae	**Borage Family**
Amsinckia tessellata	Checkered fiddleneck
Cryptantha circumcissa	Cushion forget me not
Cryptantha maritima	Guadalupe catseye
Cryptantha micrantha	Purple-rooted forget me not
Eucrypta chrysanthemfolia	Spotted hideseed
Nama demissum	Purple mat
Heliotropium curassavicam	Chinese parsley
Pectocarya penicillata	Winged combseed
Pectocarya recurvata	Curvenut combseed
Pectocarya setosa	Moth combseed
Plagiobothrys sp.	Plagiobothrys species
Plagiobothrys leptocladus	Alkali plagiobothrys
Tiqilia plicata	Fanleaf crinklemat
Brassicaceae	**Mustard Family**
*Brassica tournefortii**	Sahara mustard
Descuriana pinnata	Tansy mustard
Dithyrea californica	California spectacle-pod
Guillenia cooperi	Cooper's jewelflower
*Hirschfelda incana**	Hoary mustard
Lepidium flavum var. *felipense*	Pepperweed
Lepidium fremontii	Desert alyssum
Lepidium lasiocarpum	Shaggyfruit pepperweed
*Sisymbrium irio**	London rocket
Stanleya pinnata	Prince's plume
Tropidocarpum gracile	Dobie pod
Cactaceae	**Cactus Family**
Echinocereus engelmannii	Strawberry hedgehog cactus
Echinocactus polycephalus	Cottontop cactus
Opuntia basilaris	Beavertail
Opuntia (=Cylindropuntia) echinocarpa	Golden cholla
Opuntia (=Cylindropuntia) ramossissima	Pencil cholla
*Sclerocactus polyancistrus***	Mojave fishhook cactus
Crassulaceae	**Orpine Family**
Dudleya lanceolata	Lanceleaf liveforever
Euphorbiaceae	**Spurge Family**
Chamaesyce albomarginata	Rattlesnake spurge
Croton californicus	California croton
Stillingia paucidentata	Stillingia

Fabaceae	**Legume Family**
Astragalus acutirostris	Sharpkeel milkvetch
Astragalus didymocarpus	Two-seeded milkvetch
Astragalus layneae	Widow's milkvetch
Astragalus lentiginosus	Freckled milkvetch
Lotus humistratus	Foothill deervetch
Lupinus concinnus	Bajada lupine
Lupinus microcarpus var. *horizontalis*	Dense-flowered lupine
Lupinus oderatus	Mojave lupine
Psorothamnus arborescens var. *minutiflores*	Mojave indigobush
Geraniaceae	**Geranium Family**
*Erodium cicutarium**	Red-stemmed filaree
Hydrophyllaceae	**Waterleaf Family**
Phacelia sp.	Phacelia
Phacelia fremontii	Yellowthroat
Lamiaceae	**Mint Family**
Salazaria mexicana	Bladder Sage
Salvia carduacea	Thistle sage
Salvia columbariae	Chia
Tricostemma lanceolatum	Vinegar weed
Loasaceae	**Loasa Family**
Mentzelia albicaulis	Whitestem blazing star
Petalonyx thurberi	Thurber's sandpaper plant
Malvaceae	**Mallow Family**
Malva parviflora	Mallow
Sphaeralcea ambigua	Apricot mallow
Melanthiaceae	**Bunch-flower Family**
Zigadenus brevibractatus	Desert deathcamas
Nyctaginaceae	**Four O' Clock Family**
Abronia villosa	Desert sand verbena
Mirabilis californica	California wishbone bush
Mirabilis bigelovii	Bigelow's wishbone bush

Onagraceae	**Evening Primrose Family**
Camissonia boothii ssp. *desertorum*	Desert sun cup
Camissonia campestris	Mojave sun cup
Camissonia palmeri	Palmer evening primrose
Oenothera deltoides	Birdcage evening primrose
Oenothera primiveris	Desert evening primrose
Oenothera tanacetifolia	Tansey-leaf evening primrose
Papaveraceae	**Poppy Family**
Eschscholtzia minutiflora	Little gold poppy
Plantanaceae	**Sycamore Family**
Plantanus occidentalis	American sycamore
Plantaginaceae	**Plantain Family**
Plantago eriopoda	Redwool plantain
Plantago ovata	Desert plantain
Polemoniaceae	**Phlox Family**
Eriastrum wilcoxi	Wilcox's woollystar
Gilia sp.	Gilia species
Gilia bicolor	Bird's eye Gilia
Gilia brecciarum	Nevada Gilia
Langloisia setossima var. *punctata*	Bristly langlosia
Linanthus aureus ssp. *decorus*	Golden desert trumpet
Loeseliastrum matthewsii	Desert calico
Loeseliastrum schottii	Schott's calico
Polygonaceae	**Buckwheat Family**
Chorizanthe brevicornu	Brittle spineflower
Chorizanthe rigida	Spiny herb
Chorizanthe thurberi	Thurber's spineflower
Eriogonum deflexum	Flat-top buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracillimum	Rose and white buckwheat
Eriogonum inflatum	Desert trumpet
Eriogonum nidularium	Birdnest buckwheat
Eriogonum reniforme	Kidney-leaf buckwheat
Eriogonum trichopes	Little trumpet
Oxytheca perfoliata	Roundleaf puncturebract
Polygonum aviculare	Pigweed
Rumex crispa	Curled dock
Rumex hymenosepalus	Wild rhubarb

Pteridaceae	**Maidenhair Fern Family**
Cheilanthes gracilliana	Lace lip fern
Ranunculaceae	**Rue Family**
Delphinium parishii	Desert larkspur
Rosaceae	**Rose Family**
Prunus fasciculata	Desert almond
Rutaceae	**Rue Family**
Thamnosma montana	Turpentine broom
Salicaeae	**Willow Family**
Populus fremontii	Fremont cottonwood
Salix exigua	Sandbar willow
Salix laevigata	Red willow
Scrophulariaceae	**Figwort Family**
Mimulus guttatus	Common monkeyflower
Solanaceae	**Nightshade Family**
Datura wrightii	Jimson weed
Lycium andersonii	Anderson desert-thorn
Lycium cooperi	Peach-thorn
Nicotiana obtusifolia	Desert tobacco
Tamaricaeae	**Tamarisk Family**
*Tamarix chinensis**	Chinese tamarisk
*Tamarix ramosissima**	Saltcedar
Ulmaceae	**Elm Family**
Ulmus parvifolia	Chinese elm
Vitaceae	**Grape Family**
Vitis californica	California wild grape
Zygophyllaceae	**Caltrop Family**
Larrea tridentata	Creosote bush
*Tribulus terrestris**	Puncture vine

MONOCOTYLEDONEAE	MONOCOTYLEDONOUS PLANTS
Cyperaceae	**Sedge Family**
Scirpus americanus	Three square bulrush
Scirpus californicus	California bulrush
Juncaeae	**Sedge Family**
Juncus mexicanus	Mexican rush
Liliaceae	**Lily Family**
*Calochortus striatus***	Alkali mariposa lily
Calochortus kennedyi	Desert mariposa lily
Yucca brevifolia	Joshua tree
Yucca schidigera	Mojave yucca
Poaceae	**Grass Family**
Achnatherum hymenoides	Indian ricegrass
Achnatherum speciosum	Desert needlegrass
*Arundo donax**	Giant reed
Avena fatua	Common wild oat
*Bromus diandrus**	Ripgut brome
Bromus madritensis var. *rubens**	Red brome
*Bromus tectorum**	Cheatgrass
*Bromus trinii**	Chilean cress
Cynodon dactylon	Bermuda grass
Distichlis spicata	Saltgrass
Hillaria rigida	Big galleta grass
*Hordeum marinum**	Seaside barley
*Hordeum leporinum**	Hare barley
Leymus triticoides	Beardless wild rye
Poa secunda	Sandberg bluegrass
Polypogon monspeliensis	Rabbitsfoot grass
*Schismus arabicus**	Arabian splitgrass
Themidaceae	**Brodiaea Family**
Dichlostemma capitatum	Blue dick

APPENDIX G

ANIMAL SPECIES

High Desert Corridor
State Route 18 West to Los Angeles County Line,
San Bernardino County
Animal Species

Animal species observed during a June-September 2011 focused desert tortoise (*Gopherus agassizii*) survey within the State Route 18 west to Los Angeles County line, San Bernardino County portion of the High Desert Corridor, are listed below. While 2009-10 and 2010-11 rainfall levels for the region were average and above-average, respectively, certain animal species may have been overlooked or were undetectable due to their activity periods, behavior or type of habitat use. Nomenclature follows Milne and Milne (1992) for insects; Stebbins (2003) for reptiles; National Geographic Society (2008) for birds; and Reid (2006) for mammals.

SYMBOLS AND ABBREVIATIONS:

* Special status species

CLASS AMPHIBIA	**AMPHIBIANS**
Hylidae	**Tree Frog Family**
Pseudacris regilla	Pacific tree frog
CLASS AVES	**BIRDS**
Accipitridae	**Hawk, Kite & Eagle Family**
Buteo jamaicensis	Red-tailed hawk
Aegithalidae	**Bushtit Family**
Psaltriparus minimus	Bushtit
Apodidae	**Swift Family**
Aeronautes saxatalis	White-throated swift
Cathartidae	**Vulture Family**
Cathartes aura	Turkey vulture
Columbidae	**Pigeon & Dove Family**
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasion collared dove
Zenaida asiatica	White-winged dove

Corvidae	**Jay, Magpie & Crow Family**
Corvus corax	Common raven
Cuculidae	**Cuckoo & Roadrunner Family**
Geococcyx californianus	Greater roadrunner
Emberizidae	**Sparrow Family**
Amphispiza belli	Sage sparrow
Amphispiza bilineata	Black-throated sparrow
Geothlypis trichas	Common yellowthroat
Pheucticus melanocephalus	Black-headed grosbeak
Falconidae	**Falcon Family**
Falco sparverius	American kestrel
Fringillidae	**Finch Family**
Carduelis psaltria	Lesser goldfinch
Carpodacus mexicanus	House Finch
Hirudinidae	**Swallow Family**
Stelgidopteryx semipennis	Northern rough-winged swallow
Icteridae	**Blackbird Family**
Euphagus cyanocephalus	Brewer's blackbird
Piranga ludoviciana	Western tanager
Sturnella neglecta	Western meadowlark
Lanidae	**Shrike Family**
*Lanius ludovicianus**	Loggerhead shrike
Mimidae	**Mockingbird Family**
Mimus polyglottos	Northern mockingbird
Muscicapidae	**Thrush Family**
Sialia mexicana	Western bluebird
Odontophoridae	**New World Quail Family**
Callipepla californica	California quail
Parulidae	**Wood Warbler Family**
Wilsonia pusilla	Wilson's warbler

Passeridae	**Old World Sparrow Family**
Passer domesticus	House sparrow
Phasianidae	**Grouse Family**
Alectoris chukar	Chukar
Picidae	**Woodpecker Family**
Picoides scalaris	Ladder-backed woodpecker
Remizidae	**Penduline Tit Family**
Auriparus flaviceps	Verdin
Strigidae	**Owl Family**
*Athene cunicularia**	Burrowing Owl
Sturnidae	**Starling Family**
Sturnus vulgaris	European starling
Trochilidae	**Hummingbird Family**
Calypte anna	Anna's hummingbird
Troglodyditae	**Wren Family**
Campylorhynchus brunneicapillus	Cactus wren
Salpinctes obsoletus	Rock wren
Tyrannidae	**Tyrant Flycatcher Family**
Myiarchus cinerascens	Ash-throated flycatcher
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
CLASS INSECTA	**INSECTS**
Acrididae	**Short-horned Grasshopper Family**
Bootettix argentatus	Creosote bush grasshopper
Formicidae	**Ant Family**
Conomyrma spp.	Crater-nest ant
Pogonomyrmex rugosus	Harvester ant
Nymphalidae	**Brush-footed Butterfly Family**
Cynthia cardui	Painted lady

Tenebrionidae	**Darkling Beetle Family**
Eleodes sp.	Desert stink beetle
CLASS MAMMALIA	**MAMMALS**
Canidae	**Fox, Wolf & Coyote Family**
Canis familiaris	Dog
Canis latrans	Coyote
Vulpes macrotis	Kit fox
Castoridae	**Beaver Family**
Castor canadensis	American beaver
Cricetidae	**New World Rat & Mouse Family**
Neotoma lepida	Desert woodrat
Felidae	**Cat Family**
Felis rufus	Bobcat
Geomyidae	**Pocket Gopher Family**
Thomomys bottae	Botta's pocket gopher
Leporidae	**Rabbit & Hare Family**
Lepus californicus	Black-tailed jackrabbit
Sylvilagus audubonii	Desert cottontail
Sciuridae	**Squirrel Family**
Ammospermophilus leucurus	White-tailed antelope squirrel
Spermophilus beecheyi	California ground squirrel
CLASS REPTILIA	**REPTILES**
Colubridae	**Colubrid Family**
Pituophis catenifer	Western gopher snake
Crotaphytidae	**Collared & Leopard Lizard Family**
Gambelia wislizenii	Long-nosed leopard lizard
Iguanidae	**Iguanid Family**
Dipsosaurus dorsalis	Desert iguana

Phrynosomatidae	**Spiny Lizard Family**
Callisaurus draconoides	Zebra-tailed lizard
Phrynosoma platyrhinos	Desert horned lizard
Sceloporus magister	Desert spiny lizard
Uta stansburiana	Side-blotched lizard
Teiidae	**Whiptail Family**
Aspidoscelis (=Cnemidophorus) tigris	Great Basin whiptail
Testudinae	**Land Tortoise Family**
*Gopherus agassizii***	Desert tortoise
Viperidae	**Viper Family**
Crotalus scutulatus	Mojave rattlesnake
Xantusiidae	**Night Lizard Family**
Xantusia vigilis	Desert night lizard

Biological Survey Results Report for the State Route 138 New Freeway Construction Project Los Angeles County, California EA 116720

April 2012

Prepared for:
California Department of Transportation, District 7,
Los Angeles, California

Prepared by:
ECORP Consulting, Inc.
Santa Ana, California

This report is not to be distributed publicly. It is intended solely for the use of the California Department of Transportation in its consultation with the regulatory agencies.

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April 2012

Prepared for:
California Department of Transportation, District 7
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I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

DATE: _____ SIGNED: _____

Ms. Kristen Mobraaten

Executive Summary

The California Department of Transportation (Caltrans) is proposing the realignment and construction of the new State Route (SR) 138 in the Antelope Valley, Los Angeles County, called the SR 138 New Freeway Construction Project (project). Focused surveys for sensitive plant species, Agassiz's desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus* [*Spermophilus*] *mohavensis*), and burrowing owl (*Athene cunicularia*) were conducted to characterize the biological resources present within the proposed footprint. Vegetation mapping, an estimate of Joshua tree (*Yucca brevifolia*) density, and a wildlife crossing study were also conducted within the project footprint to identify additional potential biological constraints. These surveys were conducted in order to fulfill the requirements of the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), and to aid in the documentation processes required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The proposed project, comprised of two alternative alignments (Alternatives 2 and 3), is located in and adjacent to the City of Palmdale and generally follows the Technology Drive/Avenue P-8 corridor between SR 14 (Antelope Valley Freeway) and 100th Street East (E).

Several populations of two sensitive plant species were identified within the project area, white pygmy poppy (*Canbya candida*) and crowned muilla (*Muilla coronata*). Survey results were negative for desert tortoise and Mohave ground squirrel. Three burrowing owls and several burrowing owl complexes were identified throughout the project area. Eleven vegetation communities were mapped throughout the project area, two of which were not native to desert ecosystems. The estimate of Joshua tree densities revealed that Alternative 3 appeared to have a higher density of Joshua trees than Alternative 2. The wildlife crossing study identified some areas used frequently for local wildlife travel, from which the data will be used to design a wildlife-crossing friendly freeway. Lastly, three sensitive bird species were observed or detected throughout the project area: tricolored blackbird (*Agelaius tricolor*), short-eared owl (*Asio flammeus*), and loggerhead shrike (*Lanius ludovicianus*). Results, discussion, and analyses of each of these biological studies are presented in detail in this document. An analysis of each proposed project alternative and recommended mitigation measures are also included in this document to aid in future project planning.

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List of Abbreviated Terms

°	degree
ACOE	United States Army Corps of Engineers
AGS	white-tailed antelope ground squirrel
C	Celsius
Caltrans	California Department of Transportation
CBOC	California Burrowing Owl Consortium
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cm	centimeter(s)
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
desert tortoise	Agassiz's desert tortoise
E	East
ECORP	ECORP Consulting, Inc.
F	Fahrenheit
FESA	Federal endangered Species Act
ft	foot/feet
GIS	Geographic Information Systems
GPS	Geographic Positioning System
HDC	High Desert Corridor
in	inch(es)
km	kilometer(s)
LAWA	Los Angeles World Airport
m	meter(s)
MBTA	Migratory Bird Treaty Act
mi	mile(s)
MOU	Memorandum of Understanding
msl	mean sea level
NAD 83	North American Datum 1983

NEPA	National Environmental Policy Act
OHV	off-highway vehicle
PM	post mile
project	State Route 138 New Freeway Construction Project
SBBM	San Bernardino Baseline and Meridian
SR	State Route
SSC	California Species of Special Concern
ROW	Right of Way
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
ZOI	Zone of Influence

Chapter 1. Introduction

The California Department of Transportation (Caltrans) is proposing the realignment and construction of the new State Route (SR) 138 in the Antelope Valley, Los Angeles County. This project is referred to as the SR 138 New Freeway Construction Project (project). Biological surveys were conducted for the project throughout 2008 and 2009 to characterize the biological resources present within the proposed footprint and to identify any potential biological constraints for the project. Focused, protocol-level surveys were conducted for sensitive plant species, the federally and state-listed (threatened) Agassiz's desert tortoise (*Gopherus agassizii*, desert tortoise), the state-listed (threatened) Mohave ground squirrel (*Xerospermophilus* [*Spermophilus*] *mohavensis*), and the California Department of Fish and Game (CDFG) Species of Special Concern (SSC) burrowing owl (*Athene cunicularia*). Vegetation mapping, an estimate of Joshua tree (*Yucca brevifolia*) density, and a wildlife crossing study were also conducted within the project footprint to identify additional potential biological constraints. This biological survey results report discusses each of these studies, the results, and how the results pertain to the project. A jurisdictional delineation to identify features within the project area that are potentially jurisdictional under CDFG and/or the United States Army Corps of Engineers (ACOE) was also conducted; however, results of that study are presented under a separate cover (ECORP 2010). These surveys were conducted in order to fulfill the requirements of the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), and to aid in the documentation processes required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.1 Project Location

The proposed project is located in the Antelope Valley, approximately 40 miles (mi) (64 kilometers [km]) northeast of the City of Los Angeles, Los Angeles County (Figure 1). The proposed project footprint is approximately 10 mi (16 km) long and generally follows the Technology Drive/Avenue P-8 corridor between SR 14 (Antelope Valley Freeway) and 100th Street East (E). The proposed right-of-way (ROW) for the project is not within an existing transportation corridor; therefore, post mile (PM) markers are not available.

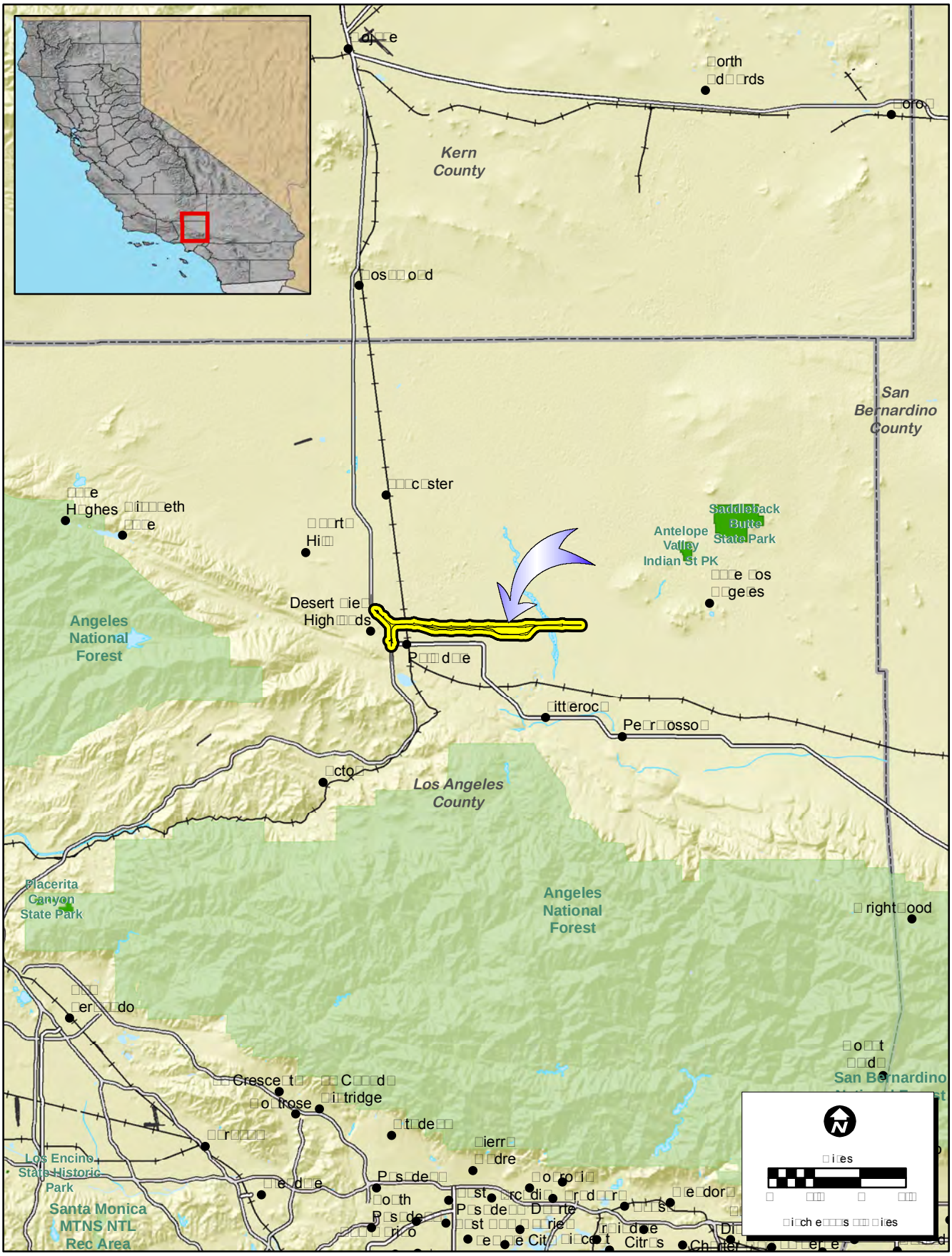

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Figure 1. Vicinity Map

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The proposed project is located within the Littlerock, Palmdale, and Ritter Ridge United States Geological Survey (USGS) 7.5-minute topographical quadrangles and is located in Sections 15, 16, 22, 23, 24, and 27 of Township 6 North, Range 12 West; Sections 19 through 24 of Township 6 North, Range 11 West; and Sections 19 and 20 of Township 6 North, Range 10 West, San Bernardino Baseline and Meridian (SBBM). Elevation in the project area is approximately 2,760 to 3,000 feet (ft) (841 to 914 meters [m]) above mean sea level (msl).

1.2 Project Description

The location of where Caltrans is proposing the construction and realignment of the SR 138 freeway is approximately 2 mi (3 km) north of the existing SR 138 ROW. This proposed realignment of SR 138 is consistent with the High Desert Corridor (HDC) plan to provide a larger overall transportation system for the high desert region (Victorville, Apple Valley, Palmdale, Lancaster, and surrounding areas). This approximately 10 mi (16 km) long section is the first phase of the multiple phase HDC plan.

The proposed project consists of construction of a new freeway/expressway following the existing Technology Drive/Avenue P-8 corridor, beginning at the intersection with SR 14 and running east to 100th Street E (Figure 2). At least two lanes in each direction are proposed throughout the realigned freeway, with local interchanges at the intersections of 10th, 30th, and 50th Streets E.

Three alternatives are proposed for the project and are described briefly below; one No Build alternative, and two Build alternatives. Both of the Build alternatives (Alternatives 2 and 3) would include adding 8 lanes of freeway from SR 14 to 15th Street E and 4 lanes of freeway from 15th Street E to 100th Street E.

Alternative 1 – No Build

Alternative 1 is a No Build alternative that would not affect the location of the existing SR 138. A new freeway alignment would not be built and transportation infrastructure would remain as it currently exists. Alternative 1 acts as Caltrans' baseline for Alternatives 2 and 3.

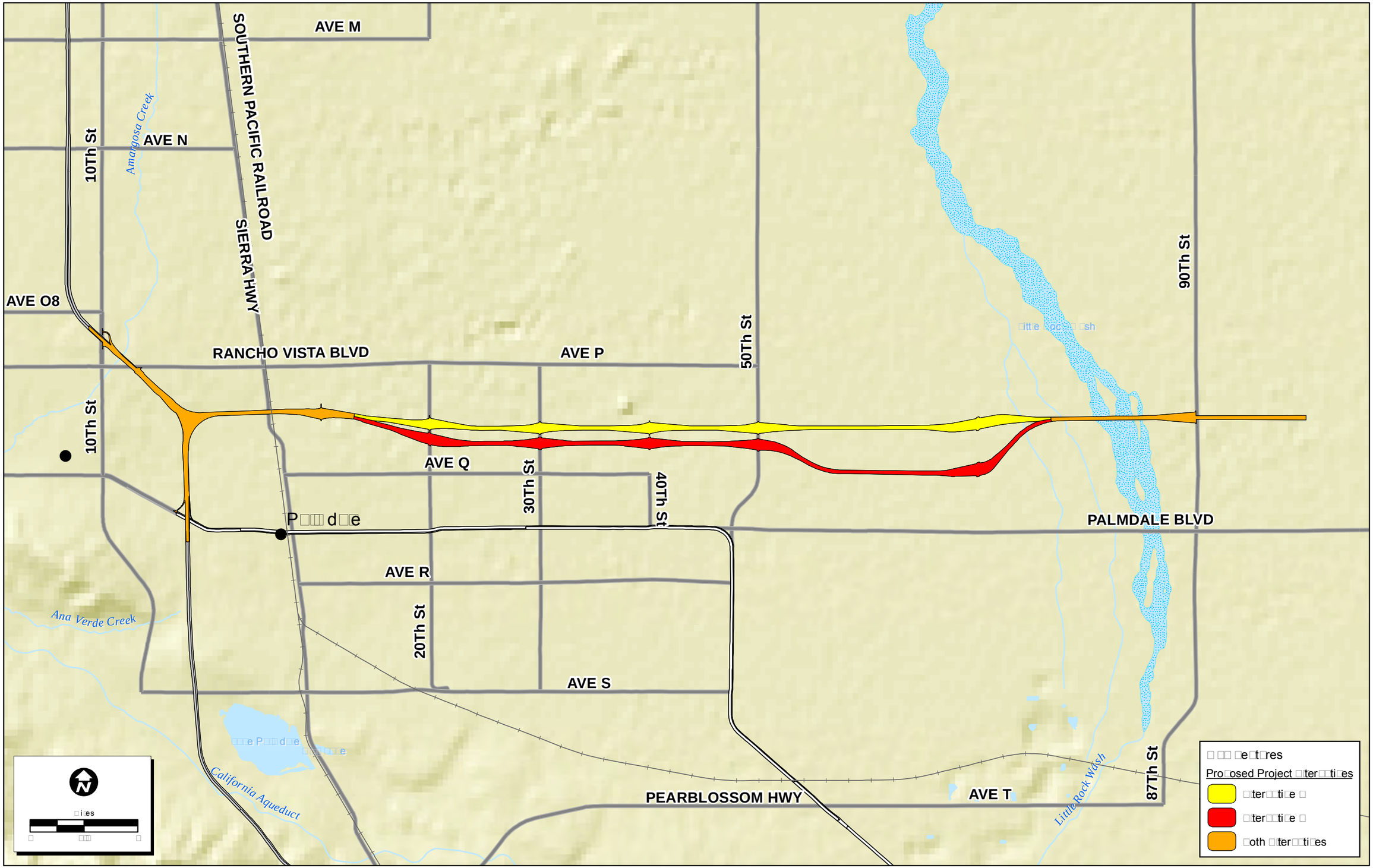

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Figure 2. Locality Map

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Alternative 2 – Northern Alignment

Alternative 2 is the northern-most alignment proposed for this project (Figure 2). It would consist of constructing the new SR 138 parallel to and in the vicinity of the existing Technology Drive/Avenue P-8 corridor. Two infrastructure alternatives for Alternative 2 are proposed, however these do not affect the overall footprint of the alternative.

Alternative 3 – Southern Alignment

Alternative 3 is the southern-most alignment proposed for this project and is located within the easement that Los Angeles World Airport (LAWA) agreed to donate for the purposes of the SR 138 realignment. This alternative follows the same proposed footprint as Alternative 2 along Technology Drive/Avenue P-8 eastward from SR 14 until 15th Street E. At 15th Street E, Alternative 3 begins to run south of the Avenue P-8 corridor (Figure 2). Alternative 3 runs approximately 1,000 ft (305 m) south of the Alternative 2 alignment between 15th and 50th Streets E. Alternative 3 then drops farther south between 50th and 75th Streets E to approximately 2,190 ft (668 m) south of the Alternative 2 alignment. At 75th Street E, the alignment heads north until just before Littlerock Wash, where it then joins and follows the same footprint as Alternative 2 until its termination at 100th Street E. Two infrastructure alternatives within Alternative 3 are proposed, Alternatives 3A and 3B, but these do not affect the overall footprint of the alternative.

Prior to April 2009, the proposed footprint of Alternative 3 ran parallel and slightly south of Alternative 2 for the entire proposed alignment. In April 2009, Caltrans provided an amendment to the proposed footprint of Alternative 3 that included a more southerly shift to the alignment between 50th and 75th Streets E, as described above and shown on Figure 2 and is the version of Alternative 3 referred to throughout this report.

1.3 Purpose and Objectives

The purpose of the proposed project is to increase transportation efficiency and travel safety along SR 138. The enhanced mobility and efficient transport of goods and services is a focus of this project, as the existing SR 138 is experiencing high traffic volumes of trucks and recreational vehicles. Reduction of accident rates involving truck traffic is also a high priority, in addition to other safety issues and concerns.

The proposed freeway alignment will help alleviate traffic congestion in the area, as large scale growth is expected for the region within the next 10 years.

This document was prepared to assist the Environmental Division of Caltrans and responsible federal and state agencies to make appropriate land use decisions regarding the management of the biological resources present in the project area, as well as to aid in CEQA and/or NEPA documentation required for the project.

Chapter 2. Methodology

2.1 Literature Review

A review of CDFG's California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) Electronic Inventory was performed before surveys were conducted to determine whether special-status species have been previously reported in the area. The Ritter Ridge, Palmdale, and Littlerock USGS 7.5-minute topographic quadrangles, as well as the surrounding quadrangles including Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Lovejoy Buttes, Pacifico Mountain, Sleepy Valley, and Valyermo (CDFG 2008; CNPS 2009) were searched for the purposes of this study.

2.2 Site Characterization and Vegetation Mapping

An initial field visit was conducted on March 20, 2008 by ECORP biologists to characterize the project area and to create a map of the vegetation communities within the project area. Biologists drove along existing roads and surveyed areas on foot that were not accessible by vehicles to adequately characterize and map the existing vegetation communities present in and around the proposed project area. The site characterization and vegetation community mapping was conducted to determine the extent of focused biological surveys that would be conducted throughout the proposed project footprint. Vegetation community type descriptions followed the designations in Sawyer and Keeler-Wolf (1995) and all plant and wildlife species observed during the initial site characterization were documented on data sheets.

2.3 Biological Studies

Surveys for sensitive and listed plant and wildlife species and a wildlife crossing study were conducted in the project area. The specific survey methodology for each study is described below.

During the focused studies conducted in the proposed alignments, biologists and botanists recorded all plant and wildlife observations. Plant and wildlife species were identified using a variety of sources, including:

- *The Jepson Manual* (Hickman 1993);
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003);
- *The American Ornithologists' Union (AOU) Checklist of North American Birds*, 7th edition with 50th Supplement (AOU 1998, 2009); and
- *Mammal Species of the World* (Wilson and Reeder 2005).

Locations of sensitive species (including those incidentally observed) were recorded using a handheld Geographic Positioning System (GPS) unit in Universal Transverse Mercator (UTM) coordinates, North American Datum 1983 (NAD 83), Zone 11 S.

2.3.1 Sensitive Plants

Sensitive plant surveys were conducted by qualified biologists with experience conducting botanical surveys and knowledge of plant taxonomy, plant species in the region, and sensitive plant species. Focused plant surveys were scheduled to coincide with the blooming periods of target species and were conducted on April 1, 2, 8, and 15, 2008 within suitable habitat in the project area. The focused sensitive plant survey was conducted by ECORP biologists Brad Haley, Anthony Mann, Kerry Myers, Danica Schaffer-Smith, Manna Warburton, and Brian Zitt in accordance with the CNPS Botanical Survey Guidelines published by CNPS (2001).

The winter months in the 2007-2008 year had an average amount of rainfall, with the last major winter rain event occurring in February 2008 (www.NOAA.org). The rain event was immediately followed by unseasonably high temperatures. Most plant species in the Mojave Desert bloomed early in the spring of 2008, as much as a full month before the typical peak of their bloom periods. Therefore, the sensitive plant survey conducted in 2008 was scheduled according to the accelerated blooming period. Areas with high levels of disturbance were not surveyed because very disturbed habitats were not suitable for the sensitive plants that were identified during the literature search.

In April 2009 Caltrans provided the amendment to Alternative 3 (as discussed in Section 1.2). A sensitive plant survey was conducted in late April 2009 in the amended portion of Alternative 3 to detect presence of additional sensitive plant species and/or populations. Prior to conducting the additional sensitive plant survey, ECORP biologists Brad Haley and Kristen Mobraaten conducted a site visit on April

21, 2009 to assess the blooming status of plant species within the project area. The additional plant survey was conducted on April 26 and 27, 2009 by ECORP biologists Margaret Bornyasz, Ryan Gilmore, Brad Haley, Blaine Schoolfield, and Christine Tischer in accordance with the CNPS Botanical Survey Guidelines (CNPS 2001). Because the 2009 survey was conducted towards end of the blooming period for the sensitive plants, biologists surveyed at a slower pace and were more careful in identification of plant species observed during the survey in order to more accurately identify and/or detect sensitive plant presence in Alternative 3.

2.3.1.1 ESTIMATE OF JOSHUA TREE DENSITY

A Joshua tree survey was not conducted within the proposed project footprint; however, an estimate was made of the quantities of Joshua trees within each alternative. The estimation exercise was performed using Geographic Information Systems (GIS) mapping software and high resolution aerial maps of the project area. Using biologists' extensive knowledge of the vegetation communities within the project area, Joshua tree densities were estimated within each alternative by an ECORP biologist familiar with the project area and a mapping technician.

2.3.2 Desert Tortoise

2.3.2.1 NATURAL HISTORY

The desert tortoise was listed as threatened under the CESA in 1989 by CDFG and listed as threatened under FESA by the United States Fish and Wildlife Service (USFWS) in 1990 due to decline of population and the threat of habitat destruction (USFWS 1990). The recovery plan for the desert tortoise was published in the *Federal Register* in 1994 (USFWS 1994) and was revised in 2011. A final revision of the recovery plan was submitted on May 6, 2011 (USFWS 2011).

Prior to 2011, the desert tortoise was considered one species throughout its known range within the Mojave, Colorado, and Sonoran Deserts in the southwestern United States and northwestern Mexico. Based on genetic, taxonomic, and behavioral differences between tortoises found north and west of the Colorado River and those found south and east of the Colorado River, the desert tortoise has been split into two separate genera, Agassiz's desert tortoise (*Gopherus agassizii*) and Morafka's desert tortoise (*Gopherus morafkai*) (Murphy et al. 2011). Agassiz's desert tortoise is found in desert habitats north and west of the Colorado River (formerly referred to as the Mojave population), while Morafka's desert tortoise is found in desert habitats south and east of the Colorado River (formerly referred to as the Sonoran population). The

desert tortoise species surveyed for and discussed in this document is Agassiz's desert tortoise (more simply referred to as 'desert tortoise' for the purposes of this report)

The range of the desert tortoise has declined because of several factors including habitat loss due to human-related activities, disease caused by reintroduction efforts and other contamination by humans, illegal collection, road kills, habitat degradation by invasive plants, and predation on adult tortoises by canids and juvenile tortoises by ravens (Berry and Medica 1995).

The desert tortoise, federally and state-listed as threatened (USFWS 1990; CDFG 2009a), occurs west and north of the Colorado River in southwestern Utah, northwestern Arizona, southern Nevada, and southern California. In California, desert tortoise occurs from Inyo County to Imperial County, including eastern Kern, Los Angeles, San Bernardino, Riverside, and San Diego counties east of the Sierra Nevada and Transverse Ranges (Berry et al. 2002).

Desert tortoises are associated primarily with Mojave creosote bush scrub, but have also been found in succulent scrub, cheesebush scrub, blackbush scrub, hopsage scrub, shadscale scrub, microphyll woodland, and Mojave atriplex-allscale vegetation communities (Boarman 2002). In the Mojave Desert, this species inhabits flats, valleys and bajadas, washes, rocky hillsides, and open flat desert areas with sandy to sandy-gravel soils that offer suitable substrates for burrowing and nesting (Boarman 2002; USFWS 1994). Desert tortoises are typically found at an elevation range of approximately 1,968 to 3,280 ft (600 to 1,000 m) above msl, but have been found up to 7,808 ft (2,380 m) above msl (Aslan et al. 2003). Desert tortoises can occupy a home range of 0.75 to 1.5 square mi (1.9 to 3.9 square km) and may travel long distances (USFWS 1994; Edwards et al. 2004). The desert tortoise may be considered an indicator species (Desert Tortoise Council, Inc. 1985), which is a species that serves as a unique indicator of the overall health of that species' ecosystem and its suitability for other species that co-occur with it.

Desert tortoise activity patterns are controlled primarily by ambient temperature and precipitation regimes. In the western Mojave Desert, desert tortoises are generally most active between April and June, and September and October, when herbaceous vegetation (grasses and annual plants) is most abundant. In periods of harsh or unusually dry conditions, desert tortoises can retreat to burrows where they lower their metabolism to prevent loss of water and consume very little food. During periods of activity, tortoises usually spend nights and the hotter parts of a day in a burrow or resting under shrubs (Boarman 2002).

Desert tortoises experience delayed sexual maturity and long life. They reach sexual maturity at approximately 12 to 20 years of age. In the Mojave, tortoise eggs are laid in spring (April to June) and occasionally into fall (September to October). Female tortoises lay one to eight eggs in sandy or friable soil, usually at the apron of a burrow. The eggs incubate unattended for 90 to 120 days, during which the sex of the young is determined by soil temperature. In the Mojave Desert, the number of clutches a female produces ranges from zero to three clutches per year, and clutch size increases with increasing body size (Boarman 2002).

2.3.2.2 SURVEY METHODOLOGY

Protocol desert tortoise surveys were conducted in high quality, suitable habitat in the project area by qualified biologists with extensive experience in identifying tortoises, scat, shelter sites, carcasses, and other tortoise sign. ECORP biologists Brad Haley, Kristen Mobraaten, Danica Schaffer-Smith, and Barbara Stein conducted the protocol-level survey from June 2 through June 5, 2008. The survey was conducted according to the standard accepted protocol at the date of the survey, Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992). The USFWS protocol calls for two types of survey techniques be employed during a protocol desert tortoise survey; 100-percent coverage of the proposed project footprint and zone of influence (ZOI) transects around the proposed project boundaries. The 100-percent coverage survey consisted of walking 30-ft (10-m) transects through undisturbed, native habitat within the project area. Following the 100-percent coverage survey, ZOI transects, comprised of concentric transects around the perimeter of the 100-percent survey area at approximately 100, 300, 600, 1,200, and 2,400 ft (30, 91, 183, 366, and 732 m), were surveyed. Posted private property and disturbed or developed areas (residential, commercial, agriculture, etc.) were excluded from the tortoise surveys.

Prior to conducting biological surveys in the project area, Caltrans received a letter from the USFWS in response to a scoping request that made a determination regarding federally listed species presence in and around the project area. In the letter, USFWS informed Caltrans that USFWS believes the project area does not support any species listed under the FESA (Appendix A). This determination included the desert tortoise, which is a federally listed species.

Caltrans also consulted with CDFG regarding desert tortoise presence in the proposed project area because of the species' state-listed designation. It was determined during this consultation that desert tortoise surveys would be conducted only in areas of the proposed project footprint where highest quality desert tortoise habitat was present

(undisturbed, native vegetation communities). This survey area was determined to be between 45th and 90th Streets E and also included a small area between 95th and 100th Streets E (Figures 3A and 3B).

Survey data, including weather data, incidentally observed sensitive species, and other survey information, were recorded onto data sheets for each survey day. The locations of sensitive species observed were documented using a GPS unit in UTM coordinates in NAD 83, Zone 11 S.

2.3.3 Mohave Ground Squirrel

2.3.3.1 NATURAL HISTORY

The Mohave ground squirrel is listed as threatened by the State of California (CDFG 2009a). In 2009 the Mohave ground squirrel underwent a generic revision. Squirrels classified under the genus *Spermophilus* (under which the Mohave ground squirrel has been classified since the mid-20th century) were split into two groups based on genetic and morphological features: *Spermophilus* and *Xerospermophilus* (Helgen et al. 2009). The Mohave ground squirrel is now classified under the genus *Xerospermophilus*.

The populations of this endemic rodent species have become limited in size due mainly to agricultural development, grazing, off-road vehicle use, and other human disturbances (BLM 2005). Overall, large portions of the habitat for Mohave ground squirrel has deteriorated due to development (agricultural, residential, industrial, and commercial), with more of that habitat being lost as development spreads rapidly in the southern part of their range (Laabs 1998).

The Mohave ground squirrel is endemic to California where it is limited to a geographic range in the western Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo Counties. The historic range of the Mohave ground squirrel is from Palmdale in the southwest, north to Olancha, and northwest to the Coso and Argus Mountain Ranges. Its northeastern range extends from the Avawatz and Soda Mountain Ranges to the Mojave River on the southeastern border of its range. The southern edge is delineated by the northern flanks of the San Bernardino and San Gabriel Mountain Ranges.

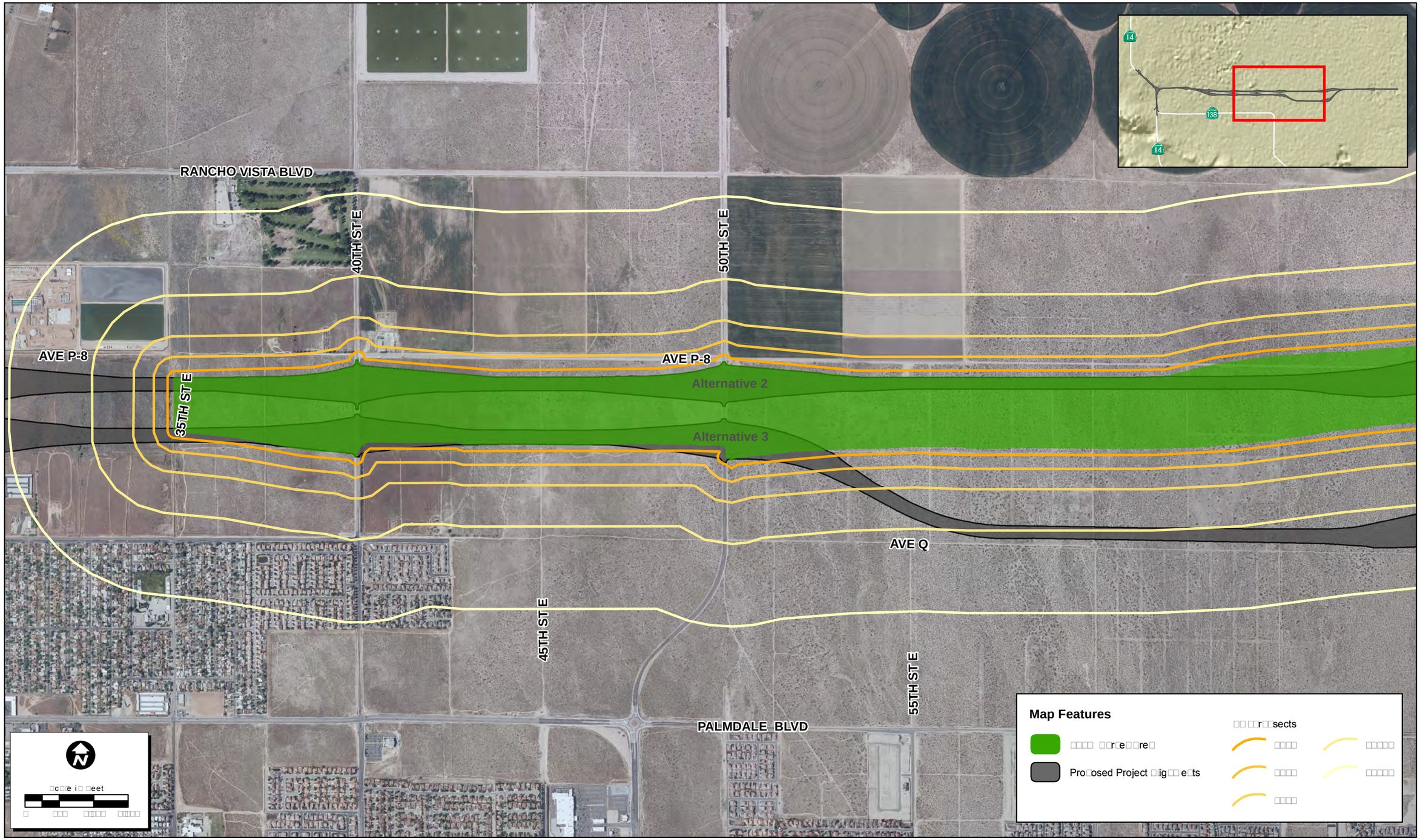

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Figure 3A. Desert Tortoise ZOI Survey - Map 1 of 2

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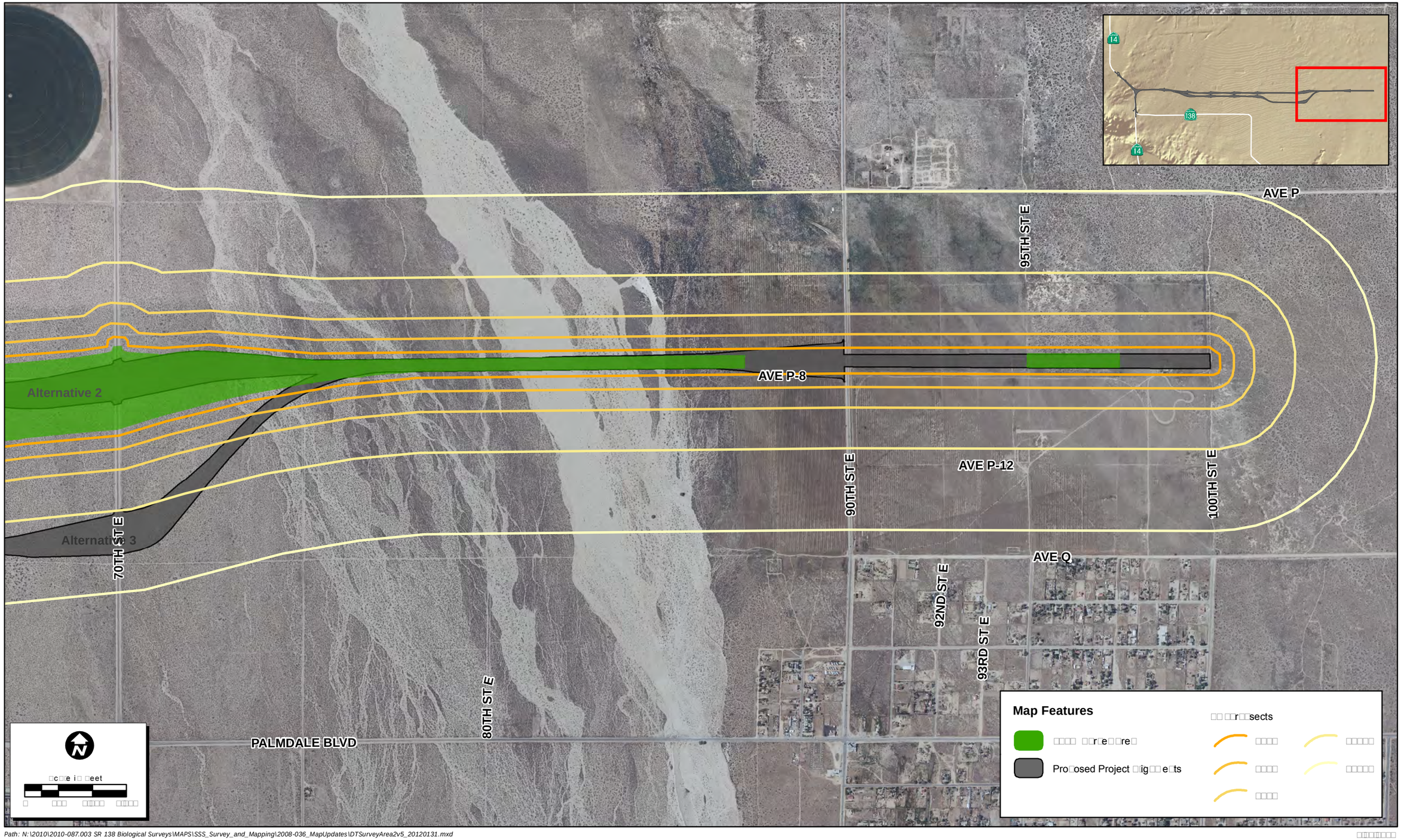

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Figure 3B. Desert Tortoise ZOI Survey - Map 2 of 2

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Studies have shown that the optimal habitat types typically include plant communities that harbor spiny hopsage (*Grayia spinosa*) and winterfat (*Kraschenninikovia lanata*), including creosote bush scrub, xerophytic saltbush, and Joshua tree woodland communities (Scarry et al. 1996; Leitner and Leitner 1998). However, recent data suggest that Mohave ground squirrels also occur in communities where neither spiny hopsage nor winterfat are present, but rather where kochia (*Kochia* sp.) is the only dominant forage plant available (Dr. Philip Leitner, California State University Stanislaus, personal communication). Mohave ground squirrels have been found at elevations ranging from 1,800 to 5,000 ft (549 to 1524 m) above msl (Brooks and Matchett 2002; BLM 2005).

The natural history and habitat requirements for the Mohave ground squirrel are very dependent on elevation, climate, topography and weather. This diurnal squirrel is only active in the early spring through summer (approximately mid-February through July) when they feed on native shrubs and annual plants. Adults emerge from their burrows in February to begin reproduction, with males emerging approximately two weeks before females. By the end of March, litters of four to ten young (average of six) are born to each female and by late May the young begin to disperse (BLM 2005). As summer approaches and vegetation begins to dry out, Mohave ground squirrels prepare for a long period of dormancy by consuming as many nutrients and fats as they can in their diet. By mid-summer (July to mid-August), the squirrels return to the underground nests and by this time body temperature, heart rate, and metabolism have fallen drastically to prepare for aestivation during the remaining summer months and hibernation during the fall and winter months. This species is able to survive in this physiological state on their stored body fats until the winter rains come and restore the vegetation. If sufficient rains (less than 3 inches [in] [7 centimeters (cm)]) do not occur during the winter, Mohave ground squirrels will likely not reproduce due to lack of sufficient vegetation to support the young (Harris and Leitner 2004). When a drought year occurs, the squirrels will convert all available forage to body fat and enter aestivation as early as April. These biological and physiological adaptations allow them to survive the harsh conditions which occur in the Mojave Desert.

2.3.3.2 TRAPPING SURVEY METHODOLOGY

Mohave ground squirrel trapping was performed in the project area in accordance with the CDFG Mohave Ground Squirrel Survey Guidelines (2003). Mohave ground squirrel biologists utilized the map of Caltrans' proposed locations of the alignments to determine the most appropriate areas to place trapping grids. Trapping grids were placed in several habitat types throughout the project area. Based on CDFG project requests, surveys were conducted only in the areas of highest quality habitat within the proposed alignments.

Trapping was conducted in 2008 under a Memorandum of Understanding (MOU) between CDFG and ECORP, with Donald Mitchell listed as the Principal Investigator. Trapping for the project was conducted by Mr. Mitchell and Field Investigator Brad Haley. Field Assistants Kristen Mobraaten and Barbara Stein assisted Field Investigators in establishing grid locations in the project area, setting up and taking down grids, opening and baiting the traps, processing the animals captured in the traps, closing the traps, and recording data during the trapping survey.

The timeframe for conducting live-trapping inventories for Mohave ground squirrel is divided into three sessions: Session 1 is held between March 15 and April 30; Session 2 is held between May 1 to May 31; and Session 3 is held between June 15 and July 15 (CDFG 2003). Table 1 lists the dates of each trapping session and the Investigator responsible for each grid.

Table 1. Mohave Ground Squirrel Trapping Survey Dates

Grid	Investigator (Assistant)*	Survey Dates		
		Session 1	Session 2	Session 3
1	BJH (KLM, BS)	03/23/08 – 03/27/08	05/13/08 – 05/17/08	06/27/08 – 07/01/08
2	DRM (KLM, BS)	03/23/08 – 03/27/08	05/13/08 – 05/17/08	06/27/08 – 07/01/08
3	BJH (KLM)	03/18/08 – 03/22/08	05/03/08 – 05/07/08	06/16/08 – 06/20/08
4	DRM (KLM)	03/18/08 – 03/22/08	05/03/08 – 05/07/08	06/16/08 – 06/20/08

* BJH – Brad Haley, BS – Barbara Stein, DRM – Donald Mitchell, KLM – Kristen Mobraaten

Grids of 100 traps were arranged in four lines of 25 traps each and spaced 115 ft (35 m) apart, covering a rectangular area of approximately 2.5 acres (1 hectare). Each traditional (four lines of 25 traps each) Mohave ground squirrel grid was 2,756 ft (840 m) long, by 344 ft (105 m) wide. Trap lines were labeled A through D,

and traps numbered 1 through 25. In one case where there was not enough contiguous habitat to place a traditional 4-trap by 25-trap grid, the grid was split up so that trapping in suitable potential habitat in the project area was maximized (Grid 1). The western half of Grid 1 was labeled Grid 1A and the eastern half was labeled Grid 1B (Figure 4).

A total of four grids were trapped during the 2008 inventory, labeled 1 through 4 from west to east. Each grid was trapped for five consecutive days during each of the three sessions, for a total of 1,500 trap-days per grid. The MOU holder, Mr. Mitchell, consulted with CDFG for concurrence with the study design throughout the trapping study.

Due to the time constraints outlined in the Mohave ground squirrel survey protocol, trapping grids were set up prior to Caltrans providing mapping data of the final project footprint. At the start of the trapping survey, Grid 4 was placed in an east-west manner along the north side of Avenue P-8 and east of 70th Street E. After completion of the first trapping session, Caltrans provided an amended project footprint to ECORP. Mr. Mitchell (ECORP) contacted Scott Harris of CDFG on April 25, 2008 to discuss changing the orientation of Grid 4A to an orientation that better sampled the proposed alignments. As a result, Grid 4A was realigned in a north-south orientation prior to the start of the second session of trapping and was renamed Grid 4B (Figure 4).

Each trap was shaded with a cardboard A-frame oriented north-south to keep temperatures moderate inside the shade and trap. Traps were opened within 1 hour of sunrise in the morning and checked at least every 4 hours. Traps were closed within one hour of sunset or when the air temperature at 6 in (15 cm) above the ground exceeded 90 degrees (°) Fahrenheit (F) [32° Celsius (C)].

Data including species, age class (adult, subadult, or juvenile), sex, reproductive condition, and any notes of unusual or abnormal circumstances (including a general health assessment) were recorded on each squirrel captured. Additional data collected at each trapping grid included vegetation (dominant perennial and annual species, and other species), land forms, soil description, invasive or exotic species presence, and disturbances. Weather data were recorded throughout the day during trapping. Digital photographs were taken from the center of both ends of each grid.

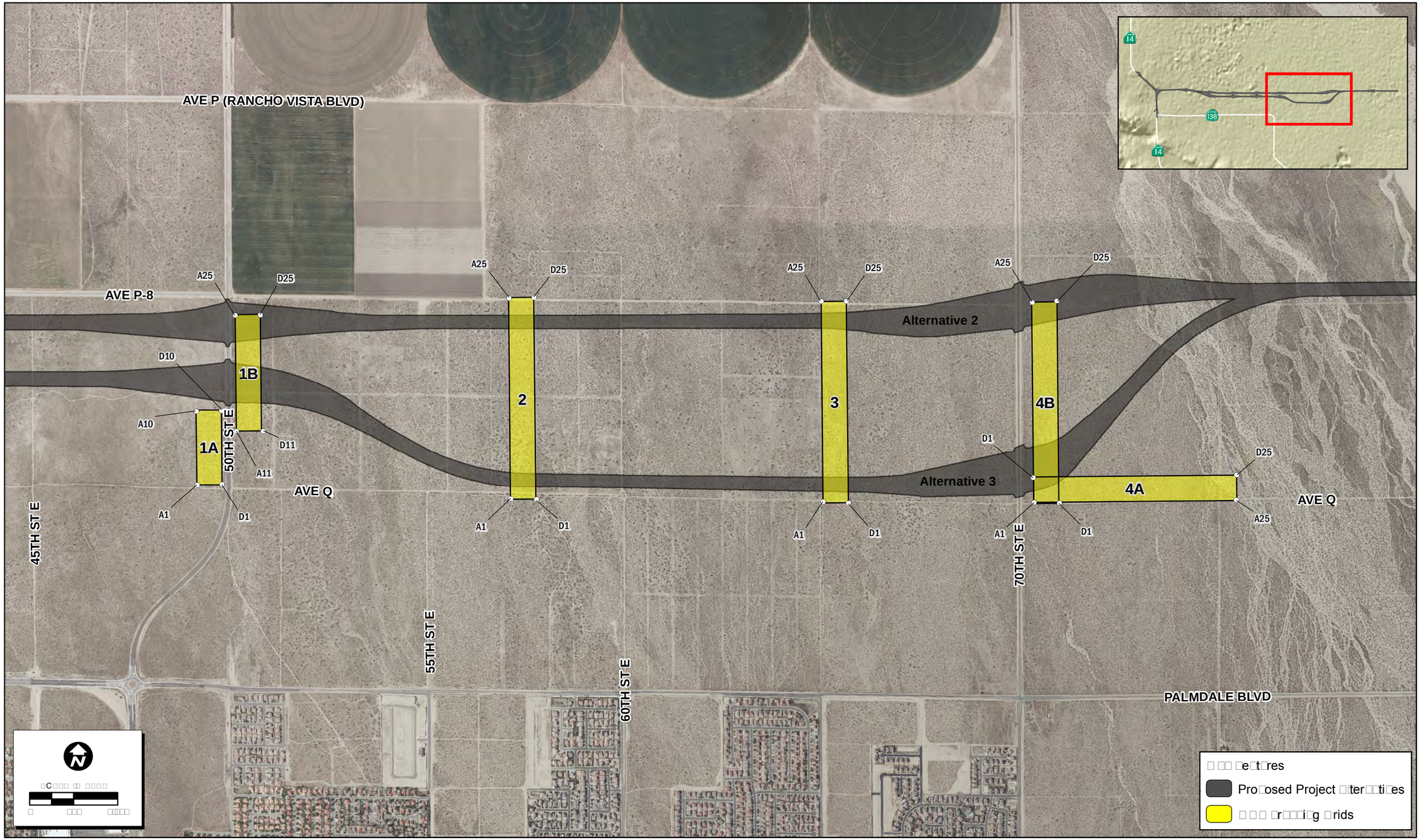

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Figure 4. Mohave Ground Squirrel Trapping Grid Locations

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2.3.3.3 NOCTURNAL TRAPPING

In addition to conducting diurnal Mohave ground squirrel trapping, one night of nocturnal trapping was conducted at each trapping grid to inventory the common nocturnal small mammal species present within the project area. Two lines of 25 traps were left open on one night during the second session of trapping when nighttime temperatures exceeded 50°F (10°C). Traps were checked at sunrise the following morning. Animals were identified to species, sexed, reproductive condition was noted, and any other overall health observations or unusual circumstances were recorded.

2.3.4 Burrowing Owl

2.3.4.1 NATURAL HISTORY

The burrowing owl is a CDFG SSC. Burrow sites in breeding locations throughout California and wintering sites in several counties in northern California are included under the SSC designation (CDFG 2009b).

The primary reasons for burrowing owl population decline are habitat loss, degradation, and fragmentation due to agricultural and urban development. Predation by natural predators (hawks, larger owls, mammals) and introduced predators (domestic cats and dogs) is also responsible for large declines of this species.

The burrowing owl is a small, migratory owl found in various habitats throughout North America. With a mottled brown and white appearance, burrowing owls are usually very cryptic with their surroundings when not flying or foraging. Most of their time is spent on the ground in front of burrow entrances or sitting on low perches near their burrows. These owls are unusual in that they either rely on California ground squirrels (*Spermophilus beecheyi*) and other burrowing mammals for burrow construction or they either excavate their own burrows for shelter and breeding purposes (Gervaris et al. 2008).

Burrowing owls are not permanent residents in all parts of the Mojave Desert where they are found. Some desert areas provide wintering habitat, some areas provide breeding habitat, and some areas provide both wintering and breeding habitat. Because of this, one location in the desert could contain both wintering individuals and permanent residents in proximity to one another.

Habitat requirements for burrowing owls consist of arid, open areas with sparse vegetation cover such as deserts, abandoned agricultural areas, grasslands, and

disturbed open habitats. Friable soils are also important habitat requirements for this species. Though habitat loss due to urbanization is a contributing factor to population declines, burrowing owls seem to be highly tolerant of nearby human impacts when suitable habitat is present and maintained, and when owls are not breeding (Gervaris et al. 2008).

Burrowing owls breed in the spring and are generally monogamous throughout the breeding season. Typically, only one clutch is laid per breeding season and average clutch sizes are 6 to 7 eggs, although usually only 3 to 5 hatchlings survive to fledging stage. The female will incubate the eggs for 27 to 30 days while the male provides food for the female during incubation and to the female and hatchlings just after hatching (NatureServe 2009). The young fledge the nest around 6 weeks and have been known to remain in the natal area and forage with the adults for a period of time thereafter. Although active throughout the day, burrowing owls mainly forage nocturnally for small vertebrate and invertebrate prey items such as small mammals, lizards, birds, and beetles.

2.3.4.2 SURVEY METHODOLOGY

Burrowing owl surveys were conducted by qualified ECORP biologists familiar with burrowing owl habitat, behavior, sign, and vocalizations. ECORP biologists Todd Chapman, Brad Haley, Erik Keethe, Anthony Mann, Holly McClure, Kristen Mobraaten, Kevin Ortega, Danica Schaffer-Smith, Debra Sykes, Jeff Swager, Scott Taylor, and Christine Tischer conducted four protocol-level burrowing owl surveys (two breeding season and two wintering) between May 2008 and January 2009 in accordance with the California Burrowing Owl Consortium's (CBOC) *1993 Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993). Following Caltrans' consultation with CDFG, additional 2008 breeding season surveys were not conducted. A table of the surveyors and survey dates is found below (Table 2).

On May 13, 2008, ECORP biologist Mari Quillman contacted Scott Harris (CDFG) regarding a modified survey protocol for the project. The 1993 CBOC protocol states that surveys shall be conducted from one hour before to two hours after sunrise and two hours before to one hour after sunset. CDFG agreed to allow surveyors to survey up to three hours after sunrise and up to three hours before sunset, with the most suitable habitat being surveyed during regular protocol hours.

Table 2. Burrowing Owl Surveyors and Survey Dates

Survey Number	Surveyors	Survey Dates	Type of Survey (Breeding/Wintering)
1	B. Haley, H. McClure, K. Mobraaten, D. Schaffer-Smith, D. Sykes	May 19 – 22; May 27 – 28, 2008	Breeding
2	B. Haley, H. McClure, K. Mobraaten, D. Schaffer-Smith, J. Swager	August 18 – 22, 2008	Breeding
3	T. Chapman, B. Haley, E. Keethe, H. McClure, K. Mobraaten, K. Ortega	January 6 – 9, 2009	Wintering
4	T. Chapman, B. Haley, A. Mann, H. McClure, K. Mobraaten, S. Taylor, C. Tischer	January 26 – 29, 2009	Wintering

2.3.5 Wildlife Crossing Study

A wildlife crossing study was conducted throughout the project area to identify the areas that large mammals most likely use as travel routes, especially areas where wildlife would potentially be crossing the new freeway. Data from the wildlife crossing study will be used in the project design process so that the new freeway can be designed and constructed in such a way that it will be conducive to local wildlife moving throughout the area. A wildlife-friendly freeway design will not only result in safer travel for motorists on the freeway, but it will also result in safer travel for wildlife crossing the freeway.

Wildlife travel throughout their home ranges for several different reasons: to forage or find food resources, to search for shelter, to find a mate (reproduction purposes), or to disperse from natal areas (young animals only). The wildlife crossing study focused on detecting areas used for travel by native, large mammals because these species are more likely to utilize larger areas for local travel and home ranges than smaller wildlife species. The native, large mammal species that inhabit in the Antelope Valley do not generally migrate over long distances, therefore this study was focused on local wildlife travel. Birds were not targeted during this study because of their ability to fly over roadways and other obstacles, and other animals occurring in the region (small mammals, reptiles, and amphibians) were not targeted during this study because of their tendency to reside in and move throughout smaller areas.

Thirty-five temporary tracking stations were placed in areas throughout the proposed alignments that would likely be used by large mammal species for local movement, or as potential crossing areas for the new freeway. Areas which would obviously require bridges, major road overcrossings (or under-crossings), and/or large drainage culverts (e.g., Littlerock Wash) during freeway design and construction were not a primary focus of the study because it was assumed these areas would remain open to wildlife movement.

The tracking stations were studied on a seasonal basis throughout a one-year period, between spring of 2008 and winter of 2009. Stations varied in size and shape depending on the location, and were classified as either a "point" station (small, circular or square-shaped) or a "linear" station (long, rectangular-shaped). Point stations were generally established at intersections of dirt roads and/or drainage features (such as washes and drainage culverts) or at areas where wildlife travel would be constrained due to topography, vegetation, or structural features (e.g., culverts or buildings). Linear stations were generally established within or parallel to existing roads or drainage features that contained no apparent bottleneck features or other barriers to wildlife movement. Biologists recorded the exact location of each of the stations using a GPS unit. Surveyors and survey dates for the wildlife crossing study are listed in Table 3.

Each of the four survey events, conducted during the new moon phase of the moon cycle, consisted of five consecutive days and each station was visited twice daily (morning and evening). In the evenings, approximately three to four hours prior to sunset, the native soils at each station were cleared using a large broom or carpet drag (rolled-up carpet mounted to steel pipes attached to a vehicle bumper by metal chains) that smoothed out the soils to create a 'blank' station. The stations were subsequently checked early the following morning for tracks, scat, or additional sign of wildlife activity. Biologists identified each set of tracks present at every station and recorded the species, track location (using GPS), direction of travel, and any other pertinent notes for all large mammal species detected. Track and stride measurements were recorded for some track sets to aid in identification of the species that created the tracks. Data were also recorded for small wildlife species that were detected (i.e., birds, lizards, small mammals); however, detailed location information and direction of travel were not documented because they were not species targeted for the study.

Table 3. Wildlife Crossing Study Survey Dates

Survey Name	Surveyors	Study Dates
Spring 2008	A. Mann, D. Mitchell, K. Mobraaten, D. Schaffer-Smith	April 28 – May 2, 2008
Summer 2008	B. Haley, A. Mann, D. Mitchell, D. Schaffer-Smith, B. Zitt	August 4 – 8, 2008
Fall 2008	B. Haley, A. Mann, D. Mitchell, K. Mobraaten, B. Zitt	November 3 – 7, 2008
Winter 2009	B. Haley, A. Mann, M.B. Schoolfield, S. Taylor, B. Zitt	February 23 – 27, 2009

Chapter 3. Results

3.1 Literature Review

The CNDDB and CNPS included records of several special-status species in the vicinity of the project area (CDFG 2008; CNPS 2009). The special-status species that were documented within the Littlerock, Palmdale, Ritter Ridge and surrounding USGS 7.5-minute topographic quadrangles (Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Lovejoy Buttes, Pacifico Mountain, Sleepy Valley, and Valyermo) are listed in Tables 4 and 5.

All sensitive species identified during the database searches were assessed for their potential to occur on site based on the following criteria:

Present: Species was observed in or immediately adjacent to the project area during a site visit or focused survey.

High: Habitat (including soils and elevation factors) and known historical range for the species occurs in the project area and a known occurrence has been recorded within 5 mi (8 km) of the site.

Moderate: Habitat (including soils and elevation factors) for the species occurs in the project area and a known occurrence occurs within the database search, but not within 5 mi (8 km) of the site; or a known occurrence is located within 5 mi (8 km) of the site and marginal or limited amounts of habitat occurs in the project area.

Low: Limited habitat for the species occurs in the project area and a known occurrence was found during the database search, but not within 5 mi (8 km) of the site; or suitable habitat strongly associated with the species occurs on site, but no records were found within the database search.

Presumed Absent: Species was not observed during focused surveys conducted in accordance with protocol guidelines at the appropriate time for identification; habitat (including soils and elevation factors) does not

exist on site; or the known geographic range of the species does not include the project area.

Note: Location information on some sensitive species may be of questionable accuracy or unavailable; therefore, for survey purposes, environmental factors associated with species occurrence requirements may be considered sufficient reason to give a species a positive potential for occurrence.

The literature search documented 23 sensitive plant species (one state-listed as rare) in the vicinity of the project area. Six of these plant species were determined to have a potential to occur (Table 4). The remaining 17 species were presumed to be absent from the project area because the known range, elevation, soils, or habitats present in the project area are not suitable for presence. Two species, white pygmy poppy (*Canbya candida*) and crowned muilla (*Muilla coronata*), were found in the project area during focused sensitive plant surveys; results of these surveys are described in depth in Section 3.3.1. All plant species considered sensitive or special-status by governing agencies (USFWS, CDFG) with potential to occur in and around the project area have been included in this table. Federal, state, and CNPS designations are explained at the end of the table. More detailed information regarding these species is found in Section 3.4.

Table 4. Sensitive Plant Species with Potential to Occur within the Project Area

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Abronia villosa* var. *aurita Chaparral sand-verbena	Fed: CA: CNPS:	none none 1B.1	January-September 75-1,600	Chaparral, coastal scrub, desert dunes.	**Presumed Absent:** No suitable habitat is present in the project area.
Arctostaphylos glandulosa* ssp. *gabrielensis San Gabriel manzanita	Fed: CA: CNPS:	none none 1B.2	March 595-1,500	Chaparral; rocky sites.	**Presumed Absent:** No suitable habitat is present in the project area.
Astragalus lentiginosus* var. *antonius San Antonio milk-vetch	Fed: CA: CNPS:	none none 1B.3	April-July 1,500-2,600	Lower and upper montane coniferous forest.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Astragalus preussii* var. *laxiflorus Lancaster milk-vetch	Fed: CA: CNPS:	none none 1B.1	March-May 700	Chenopod scrub.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Calochortus striatus Alkali mariposa lily	Fed: CA: CNPS:	none none 1B.2	April-June 70-1,595	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps.	**Moderate:** Suitable habitat is present in the project area and a population is documented 6 mi (9 km) northwest of the project area. Species was not observed during focused surveys.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Calystegia peirsonii Peirson's morning glory	Fed: CA: CNPS:	none none 4.2	April-June 30-1,500	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland.	**Presumed Absent:** No suitable habitat is present in the project area.
Canbya candida White pygmy poppy	Fed: CA: CNPS:	none none 4.2	March-June 600-1,460	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; gravelly, sandy, granitic sites.	**Present:** Suitable habitat is present in the project area and multiple populations of this species were observed during focused surveys.
Carex vulpinoidea Fox sedge	Fed: CA: CNPS:	none none 2.2	May-June 30-1,200	Marshes and freshwater swamps, riparian woodland.	**Presumed Absent;** The project area does not support suitable habitat for this species.
Castilleja gleasonii Mount Gleason Indian paintbrush	Fed: CA: CNPS:	none RARE 1B.2	May-September 1,160-2,170	Chaparral, lower montane coniferous forest, pinyon and juniper woodland; granitic sites.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Chorizanthe parryi* var. *parryi Parry's spineflower	Fed: CA: CNPS:	none none 1B.1	April-June 275-1220	Chaparral, cismontane woodland, coastal scrub, valley and foothill grasslands; sandy or rocky openings.	**Presumed Absent:** No suitable habitat is present in the project area.
Clarkia xantiana* ssp. *parviflora Kern Canyon clarkia	Fed: CA: CNPS:	none none 4.2	May-June 700-3,620	Chaparral, cismontane woodland, Great Basin scrub, valley and foothill grasslands; sandy or rocky slopes, sometimes roadsides..	**Presumed Absent:** No suitable habitat is present in the project area.
Layia heterotricha Pale-yellow layia	Fed: CA: CNPS:	none none 1B.1	March-June 300-1,705	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; alkaline or clay.	**Presumed Absent:** No suitable habitat is present in the project area.
Lilium parryi Lemon lily	Fed: CA: CNPS:	none none 1B.2	July-August 1,220-2,745	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Linanthus concinnus San Gabriel linanthus	Fed: CA: CNPS:	none none 1B.2	April-June 1,520-2,800	Chaparral, lower and upper montane coniferous forests; rocky openings.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Loeflingia squarrosa* var. *artemisiarum Sagebrush loeflingia	Fed: CA: CNPS:	none none 2.2	April-May 700-1,615	Desert dunes, Great Basin scrub, Sonoran desert scrub; sandy soils.	**Low:** Limited suitable habitat is present in the project area and a population is documented 5 mi (8 km) north of the project area. Species was not observed during focused surveys.
Lupinus peirsonii Peirson's lupine	Fed: CA: CNPS:	none none 1B.3	April-June 1,000-2,500	Joshua tree woodland, lower montane coniferous forest, pinyon-juniper woodland, upper montane coniferous forest; gravelly or rocky soils.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Muhlenbergia californica California muhly	Fed: CA: CNPS:	none none 4.3	June-September 100-2,000	Chaparral, coastal scrub, lower montane coniferous forest, meadows and seeps; mesic, seeps and streambanks.	**Presumed Absent:** No suitable habitat is present in the project area.

Scientific Name Common Name	**Status**		**Typical Flowering Period Elevation (meters)**	**Habitat**	**Potential for Occurrence**
Muilla coronata Crowned muilla	Fed: CA: CNPS:	none none 4.2	March-May 765-1,960	Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	**Present:** Suitable habitat is present in the project area and multiple locations of this species were observed during focused surveys.
Opuntia basilaris* var. *brachyclada Short-joint beavertail	Fed: CA: CNPS:	none none 1B.2	April-August 425-1,800	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon-juniper woodland, riparian woodland.	**High:** Suitable habitat is present in the project area and a population is documented 2 mi (3 km) southwest of the project area. Species was not observed during focused surveys.
Orobanche valida* ssp. *valida Rock Creek broomrape	Fed: CA: CNPS:	none none 1B.2	May-September 1,250-2,000	Chaparral, pinyon-juniper woodland on slopes of loose decomposed granite. Parasitic on various chaparral shrubs.	**Presumed Absent:** No suitable habitat is present and project area is outside the typical elevation range.
Plagiobothrys parishii Parish's popcorn-flower	Fed: CA: CNPS:	none none 1B.1	March-November 750-1,400	Great Basin scrub, Joshua tree woodland; alkaline soils, mesic sites.	**Moderate:** Suitable habitat is present in the project area and a population is documented 8 mi (12 km) east of the project area. Species was not observed during focused surveys.

Scientific Name Common Name	Status		Typical Flowering Period Elevation (meters)	Habitat	Potential for Occurrence
Stylocline masonii Mason's neststraw	Fed: CA: CNPS:	none none 1B.1	March-May 100-1,200	Chenopod scrub, pinyon and juniper woodland; sandy sites.	**Presumed Absent:** No suitable habitat is present in the project area.
Symphyotrichum greatae Greata's aster	Fed: CA: CNPS:	none none 1B.3	June-October 300-2,010	Broadleaf upland forest, chaparral, cismontane woodland, lower coniferous forest, riparian woodland; mesic sites.	**Presumed Absent:** No suitable habitat is present in the project area.

Federal Designations
(FESA, USFWS)
END: Federally listed, endangered
THR: Federally listed, threatened

State Designations
(CESA, CDFG)
END: State-listed, endangered
THR: State-listed, threatened
RARE: State-listed as rare

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 (CDFG 2009c). This interpretation is inconsistent with other definitions.)
1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2: Plants rare, threatened or endangered in California, but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.
List 1B, 2, and 4 extension meanings:
.1 Seriously endangered in California (over 80% of occurrences threatened or have high degree and immediacy of threat).
.2 Fairly endangered in California (20-80% occurrences threatened).
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known).

Source: California Natural Diversity Database (CDFG 2008), California Native Plant Society Electronic Inventory (CNPS 2009) Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Littlerock, Lovejoy Buttes, Pacifico Mountain, Palmdale, Ritter Ridge, Sleepy Valley, and Valyermo USGS 7.5-minute topographic quadrangles.

Twenty-three sensitive wildlife species were found to have a potential to occur in the vicinity of the project area during the literature search (Table 5). Of those, four species were found in the project area: tricolored blackbird (*Agelaius tricolor*), burrowing owl, short-eared owl (*Asio flammeus*), and loggerhead shrike (*Lanius ludovicianus*). Detailed information on these species can be found in Section 3; federal and state status designations are explained in the last cell of the table.

Table 5. Sensitive Wildlife with Potential to Occur within the Project Area

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
FISH			
Catostomus santaanae Santa Ana sucker	Fed: **THR** CA: SSC	Found in small to medium-sized freshwater streams with cobble bottoms in the Los Angeles Basin.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
Gasterosteus aculeatus williamsoni Unarmored threespine stickleback	Fed: **END** CA: **END**	Inhabits slow-moving, clear streams with mud or sand bottoms. Presence of aquatic vegetation is required for nest building.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
AMPHIBIANS			
Anaxyrus* [*Bufo*] *Californicus Arroyo toad	Fed: **END** CA: SSC	Occurs within California and Baja Mexico stream systems. Found in shallow water and pools and upland habitat immediately adjacent.	**Presumed Absent;** Habitat not present in the project area – no suitable water sources present.
Rana draytonii California red-legged frog	Fed: **THR** CA: SSC	Found in lowlands and foothills in or near deep permanent water sources with dense or shrubby riparian vegetation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Rana muscosa Sierra Madre yellow-legged frog	Fed: **END** CA: SSC	Referring to the populations in the San Gabriel, San Jacinto and the San Bernardino Mountain Ranges only. Rarely found away from water; requires permanent water sources between 1,200 and 7,500 ft (365 and 2,286 m) in elevation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
REPTILES			
Actinemys marmorata pallida Southwestern pond turtle	Fed: none CA: SSC	Inhabits deep pools in permanent or nearly permanent bodies of water below 6,000 ft (1829 m) in elevation with basking sites.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
Anniella pulchra pulchra Silvery legless lizard	Fed: none CA: SSC	Inhabits a variety of habitats containing sandy or loose soils.	**High;** Several recent records occur within 5 mi (8 km) of the project area and suitable habitat is present throughout the proposed alignments.
Gopherus agasizzii Agassiz's desert tortoise	Fed: **THR** CA: **THR**	Prefers desert scrub habitats, arid sandy washes, and canyon bottoms.	**Presumed Absent;** Habitat is present; however tortoises and sign were not observed during focused 2008 surveys, and observations have not been made within the project area in the last 20 years.
Phrynosoma blainvillii Coast horned lizard	Fed: none CA: SSC	Occurs in open scrub and other open areas with ample native ant prey base.	**High;** Habitat is present and recent and historical records exist within 5 mi (8 km) of the project area.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Thamnophis hammondii Two-striped garter snake	Fed: none CA: SSC	Often found near permanent fresh water sources in habitats ranging from mountaintops to desert oases at elevations ranging from sea level to 8,000 ft (2,438 m) in elevation.	**Presumed Absent;** Habitat not present in the project area – no suitable permanent water sources present.
BIRDS			
Agelaius tricolor Tricolored blackbird	Fed: none CA: SSC	Highly colonial species, often found near cattail marshes, grasslands, and agricultural areas.	**Present;** Species observed during various surveys in the agricultural field at the intersection of Avenue P-8 and 50th Street E.
Athene cunicularia Burrowing owl	Fed: none CA: SSC	Numerous records exist for this species nearby. Prefers open, sparsely vegetated scrublands and grasslands.	**Present;** One breeding pair and one wintering individual and several burrow complexes were observed within the project area during focused surveys. Habitat is present throughout the project area.
Asio flammeus Short-eared owl	Fed: none CA: SSC	Inhabits cropland, old field, hedgerow, grassland, and savannah habitats.	**Present;** One wintering individual was observed east of 70th Street E, adjacent to the Littlerock Wash.
Buteo swainsoni Swainson's hawk	Fed: none CA: **THR**	This species inhabits open habitat such as shrublands, deserts, croplands, and herbaceous grasslands. Often found in habitats within close proximity to riparian areas.	**Moderate;** Several recent observations of this species occur between 5 and 10 mi (8 and 16 km) north of the project area and suitable habitat is present.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Charadrius montanus Mountain plover	Fed: none CA: SSC	A wintering resident in southern California, often associated with short grasslands, deserts, and freshly plowed agricultural areas.	**High;** Suitable habitat is present throughout the project area and one recent record is located approximately 3 mi (5 km) north of the project area.
Lanius ludovicianus Loggerhead shrike	Fed: none CA: SSC	Prefers open, arid habitats with many perching sites.	**Present;** This species was observed in several areas throughout the project area, habitat present in all desert scrub habitats.
Toxostoma lecontei Le Conte's thrasher	Fed: none CA: SSC	Prefers creosote bush scrub and barren desert plains.	**Moderate;** Suitable habitat is present throughout the project area, but all records of the species are more than 20 years old (historic).
MAMMALS			
Antrozus pallidus Pallid bat	Fed: none CA: SSC	Usually found near open water with nearby rocky cliffs for roosting,	**Low;** Suitable habitat is not present in the project area.
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	Fed: none CA: SSC	This species occurs in sandy, herbaceous areas occurring in desert wash, desert scrub and desert succulent shrub habitats.	**Moderate;** Suitable habitat is present in the areas surrounding the wash in the eastern portion of the project area; however, no records are located with 5 mi (8 km) of the project area.
Eumops perotis californicus Western mastiff bat	Fed: none CA: SSC	Inhabits habitats that are open and semi-arid, including grasslands, chaparral, woodlands, and coastal scrub.	**Moderate;** Suitable habitat is present throughout the project area; however, no records are located within 5 mi (8 km) of the project area.
Onychomys torridus ramona Southern grasshopper mouse	Fed: none CA: SSC	Inhabits desert scrub habitats consisting of low to moderate shrub cover with friable soils.	**Moderate;** Suitable habitat is present in the project area; however, no records are located with 5 mi (8 km) of the project area.

Scientific Name **Common Name**	**Status**	**Habitat Preferences**	**Potential for Occurrence**
Xerospermophilus* [*Spermophilus*] *mohavensis Mohave ground squirrel	Fed: none CA: **THR**	Occurs in desert scrub, alkali scrub and Joshua tree woodland habitats in the Mojave Desert.	**Presumed Absent:** Historical known occurrences (more than 20 years old) exist within 5 mi (8 km) of the project area; however, this species was not captured during focused trapping surveys conducted in suitable habitat.
Taxidea taxus American badger	Fed: none CA: SSC	Inhabits arid, open areas with friable soils for digging. This species is found in desert, shrub, forest, and herbaceous habitats.	**Moderate;** Suitable habitat occurs throughout most of the project area; however, no recent records occur within 5 mi (8 km) of the project area.

Federal Designations	**State Designations**
(FESA, USFWS)	(CESA, CDFG)
END: Federally listed, endangered	**END:** State-listed, endangered
THR: Federally listed, threatened	**THR:** State-listed, threatened
	SSC: California Species of Special Concern

Source: California Natural Diversity Database (CDFG 2008) Acton, Agua Dulce, Alpine Butte, Del Sur, Hi Vista, Juniper Hills, Lancaster East, Lancaster West, Littlerock, Lovejoy Buttes, Pacifico Mountain, Palmdale, Ritter Ridge, Sleepy Valley, and Valyermo 7.5-minute USGS quads.

3.2 Site Characteristics and Vegetation Mapping

The Mojave Desert Province, a geologically defined region in which the Antelope Valley is located, is characterized by dry lakes (playas), alluvial fans, and low mountains. The project area lies between the elevations of 2,760 and 3,000 ft (841 and 914 m) above msl. Topography throughout the entire project site is flat, with sandy and gravelly soils. Commercial and residential developments, agricultural fields, and utility structures are scattered throughout most of the western portion of the project area. The eastern portion of the project area is relatively undisturbed desert habitat. Several drainages, washes, and areas of standing water are present in the project area. Most notably, the eastern portion of the proposed project area runs perpendicular to Littlerock Wash, between 75th and 85th Streets E.

The project area supports several different vegetation communities with varying levels of disturbance. The dominant communities include creosote bush scrub series, Joshua tree series, and rabbitbrush series, which intergrade frequently with several other vegetation communities throughout the proposed project footprint. Table 6 lists the acreage of each vegetation community found within the proposed project footprint. Substantial portions of the project area are disturbed from previous agricultural use, fire, unauthorized off-highway

vehicle (OHV) use, and trash dumping. Figures 5A through 5C illustrate the vegetation communities that were observed within the project area. Survey data sheets from the vegetation community mapping survey are included in Appendix B. Each vegetation community and the associated plants observed in the project area are discussed individually below.

Table 6. Vegetation Communities Acreages

Vegetation Community	Acreage		Total Acreage in Proposed Project Footprint
	Alternative 2	Alternative 3	
Big Sagebrush Series	5.56	5.56	5.56
Creosote Bush Series	6.24	6.24	6.24
Creosote Bush Series/Joshua Tree Series	36.90	38.44	75.34
Fourwing Saltbush Series/Rubber Rabbitbrush Series	0.00	5.94	5.94
Joshua Tree Series	69.59	71.09	140.68
Mixed Willow Series/Cattail Series	0.00	2.40	2.40
Rubber Rabbitbrush Series	126.18	126.44	203.67
Rubber Rabbitbrush Series/Atriplex Series	28.99	23.13	37.39
Scalebroom Series	9.58	9.58	9.58
Disturbed/Developed	145.66	146.94	178.52
Ornamental	0.84	0.37	1.21
Total	429.54	436.13	666.52

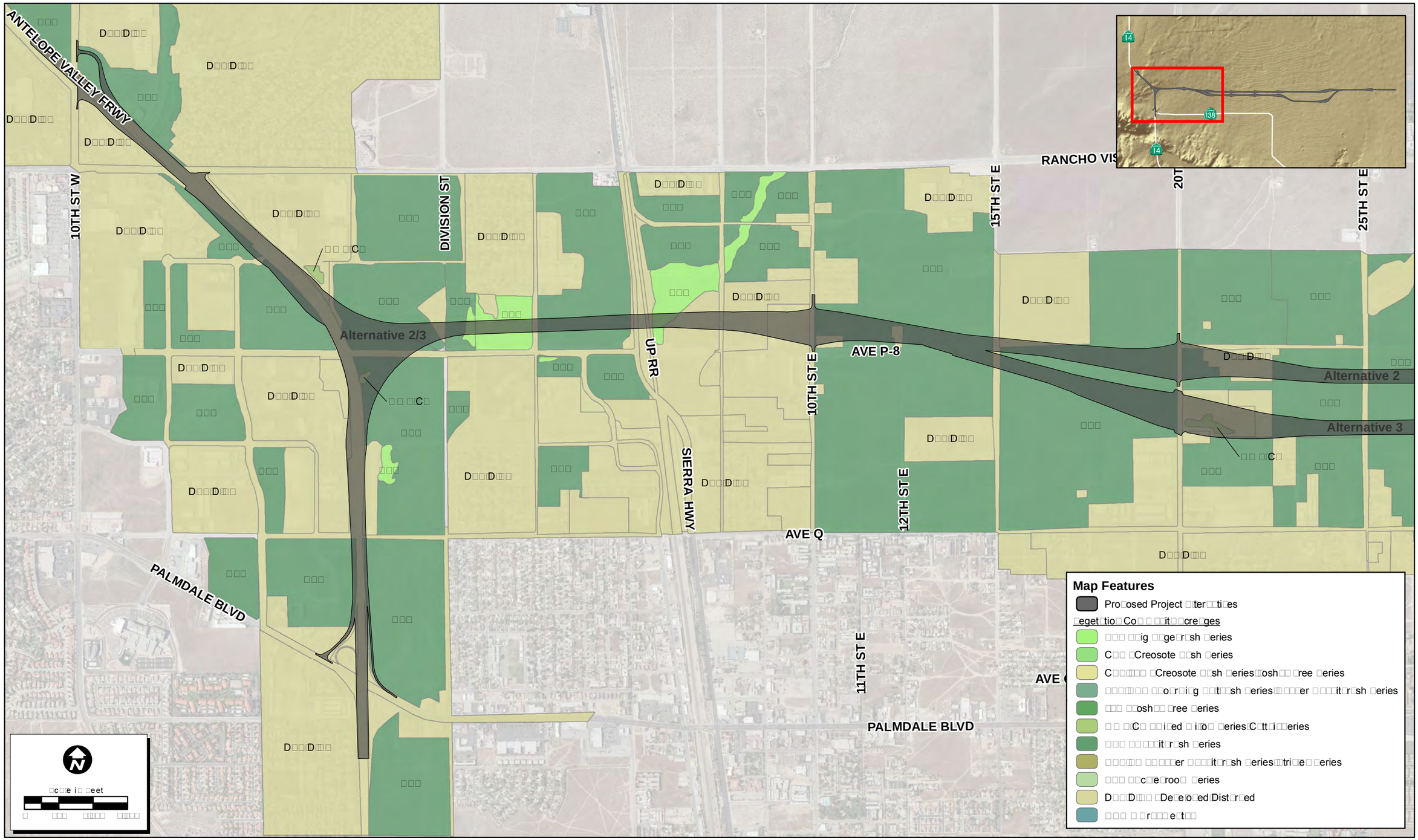

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Figure 5A. Vegetation Communities - Map 1 of 3

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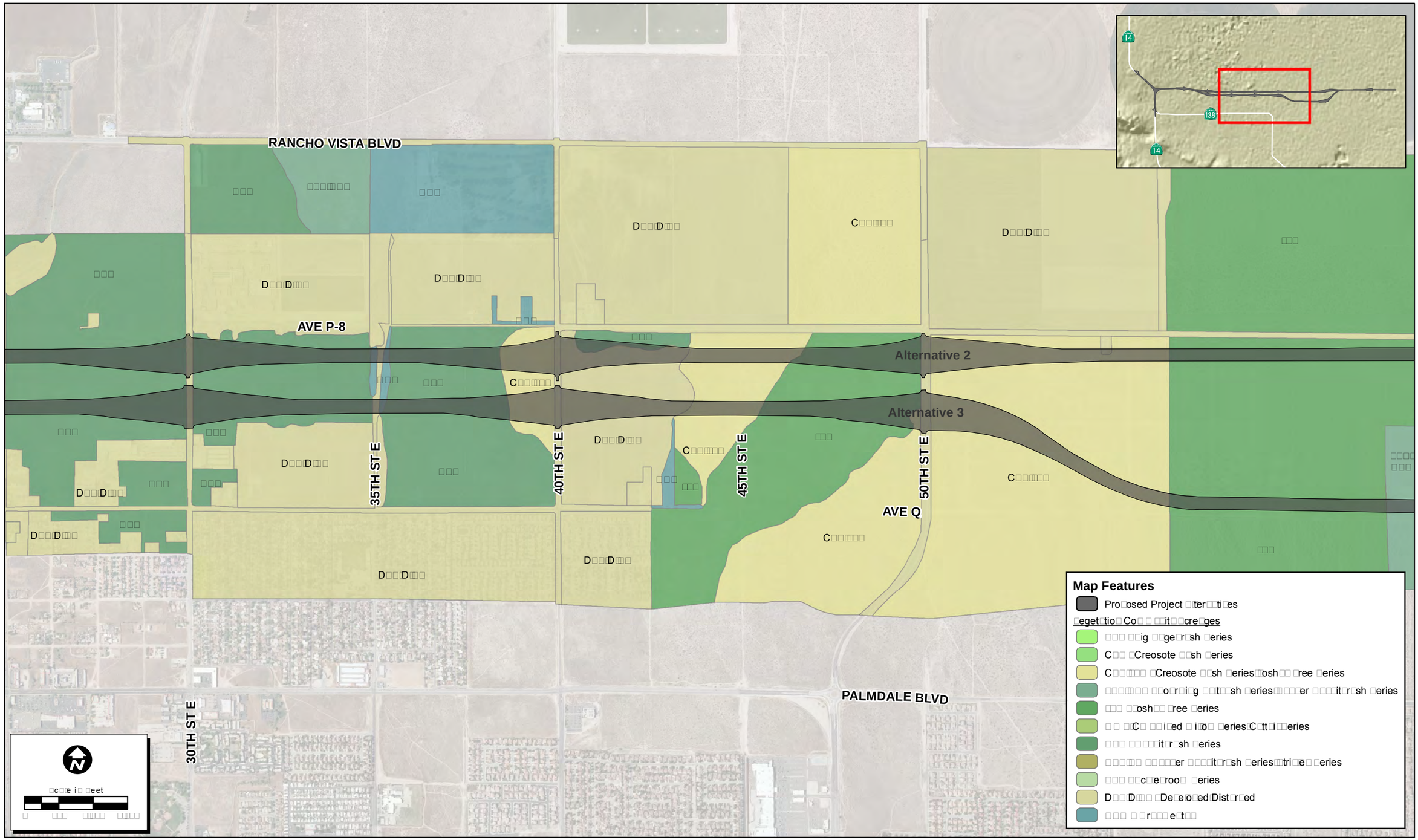

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Figure 5B. Vegetation Communities - Map 2 of 3

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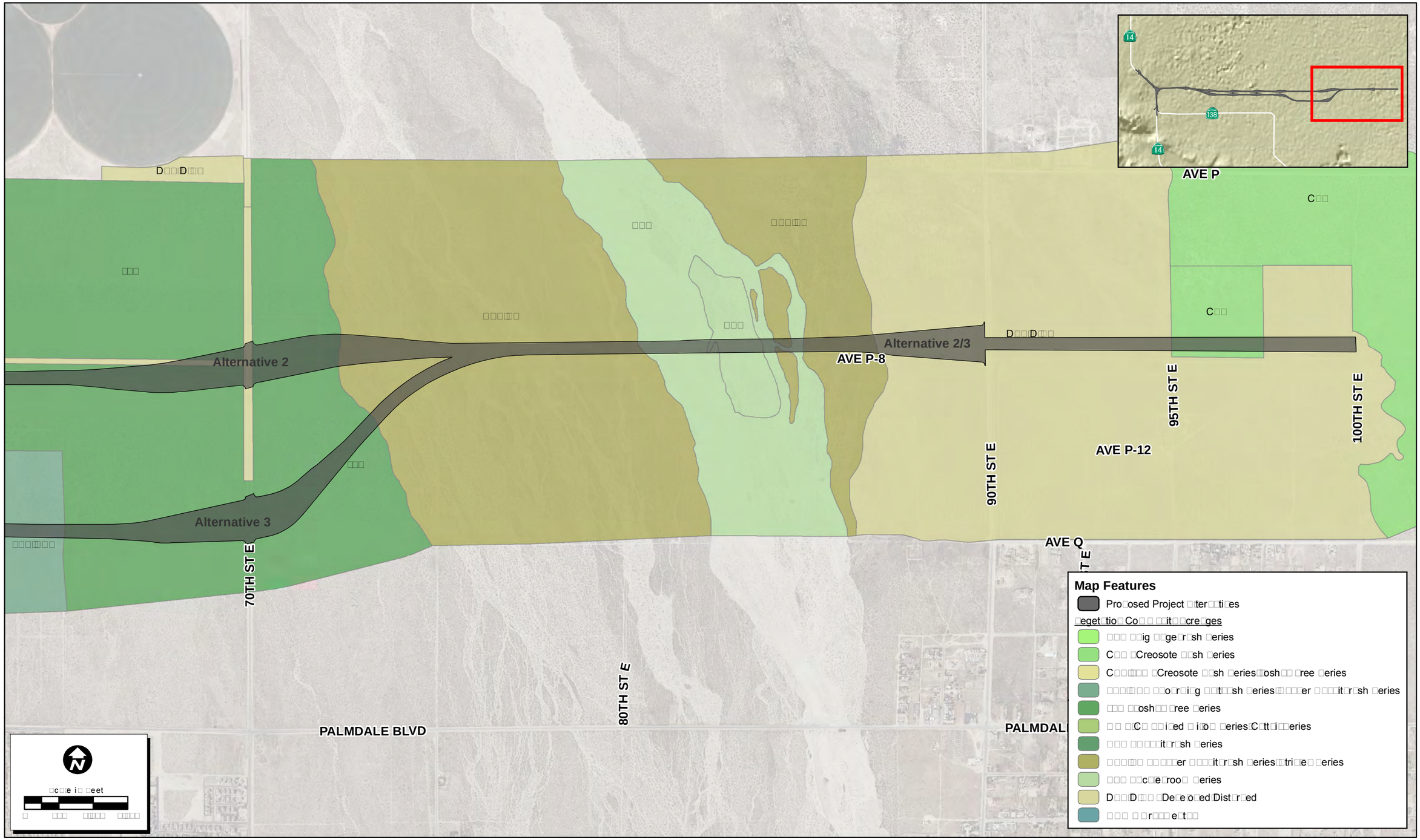

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Figure 5C. Vegetation Communities - Map 3 of 3

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Big Sagebrush Series

Big sagebrush series is characterized by mostly soft-woody shrubs with bare ground underneath and between the shrubs. This community is typically dominated by big sagebrush with the co-dominate species being yellow rabbitbrush (*Chrysothamnus viscidiflorus*) and mountain ephedra (*Ephedra viridis*). Associate native species in the project area include: common fiddleneck (*Amsinckia menziesii*), fourwing saltbush (*Atriplex canescens*), wild tarragon (*Artemisia dracunculus*), white tidy-tips (*Layia glandulosa*), slender-stemmed buckwheat (*Eriogonum gracillimum*), and wild rhubarb (*Rumex hymenosepalus*). Non-native species observed in the understory included foxtail fescue (*Vulpia myuros*) and wild oat (*Avena barbata*). This vegetation community is present both east and west of Sierra Highway in the western portion of the project area.

Creosote Bush Series

Creosote bush series is characterized by fairly open stands of the dominant shrub creosote bush (*Larrea tridentata*). Typically, this community occurs on well-drained sandy soils below 4,000 ft (1,219 m) above msl. Associated species include white bursage (*Ambrosia dumosa*), cheesebush (*Hymenoclea salsola*), allscale (*Atriplex polycarpa*), mountain ephedra, and linear-leaved goldenbush (*Ericameria linearifola*). Understory plant species include Wallace's woolly daisy (*Eriophyllum wallacei*), sandblossoms (*Linanthus parryae*), desert dandelion (*Malacothrix glabrata*), and purple mat (*Nama demissum*). This community mostly intergrades with Joshua tree series in the project area, but a relatively pure stand of creosote bush series is found in the extreme eastern portion of the project footprint between 95th and 100th Streets E. A representative photo of the creosote bush series community in the project area is found in Figure 6.

Figure 6. Creosote Bush Scrub Series

Fourwing Saltbush Series

This community is dominated by a single species of saltbush, the fourwing saltbush (Sawyer and Keeler-Wolf 1995). Fourwing saltbush series is commonly less than 3 ft (1 m) in height and typically occurs on fine-textured, poorly drained soils with high alkalinity and/or salinity. It usually surrounds playas on slightly higher open ground. The other co-dominant plant species are creosote bush, cheesebush, allscale, and yellow rabbitbrush. Associated species in this community include broad-flowered gilia (*Gilia latiflora*), California evening primrose (*Oenothera californica*), Joshua tree, Wallace's woolly daisy, browneyes (*Camissonia clavifomis* var. *claviformis*), white bursage, and mountain ephedra. This plant community intergrades with rubber rabbitbrush series in portions of the project area and is found between 20th and 40th Streets E, and between 50th and 70th Streets E.

Joshua Tree Series

The Joshua tree series typically occurs on gently sloped alluvial fan areas. It is characterized by a dense overstory of Joshua trees up to 39 ft (12 m) in height, which may be associated with many different understory shrub communities. Dominant shrub species observed in the Joshua tree series in the project area include: mountain ephedra, big sagebrush (*Artemisia tridentata*), and yellow rabbitbrush. Diverse herbaceous species were observed in the

understory of this community, such as yellow cups (*Camissonia brevipes*), desert calico (*Loeseliastrum matthewsi*), coldenia (*Tiquilia plicata*), and Mojave sand verbena (*Abronia pogonantha*). Disturbances are present in some portions of this habitat type, including trash dumping and a burned area west of 50th Street E. This community intergrades with creosote bush series in some areas and is dominant throughout the central portion of the project area, between 50th and 75th Streets E. Figure 7 illustrates representative Joshua tree series vegetation found within the project area.

Figure 7. Joshua Tree Series

Mixed Willow Series/Cattail Series

Mixed willow series is a riparian community characterized by dense, broad-leafed, winter-deciduous thickets typically dominated by several species of willows (*Salix* spp.) and mule fat (*Baccharis salicifolia*). The dominant willow is this particular habitat is narrow leaf willow (*Salix exigua*) with a small amount of arroyo willow (*S. lasiolepis*) also present. In the project area, the mixed willow series intergrades with cattail series and it occurs in three small areas within the western portion of project area. Cattail series is an herbaceous community consisting of emergent vegetation less than 13 ft (4m) in height that occurs in freshwater marsh areas that flood on an irregular basis. The associated plant species in these

communities include narrowleaf cattail (*Typha domingensis*), Coulter's lupine (*Lupinus sparsiflorus*), saltgrass (*Distichlis spicata*), and California goldfields (*Lasthenia californica*). Associated non-native species in this plant community include ripgut grass (*Bromus diandrus*), red-stemmed filaree (*Erodium cicutarium*), London rocket (*Sisybrium irio*), Siberian elms (*Ulmus pulima*), and alfalfa (*Medicago sativa*). Figure 8 illustrates the mixed willow/cattail series vegetation with Siberian elms present.

Figure 8. Mixed Willow/Cattail Series with Siberian Elms

Rubber Rabbitbrush Series

This is a disturbance-maintained native shrub community dominated by yellow rabbitbrush. This community intergrades with other communities, such as scalebroom series, around Littlerock Wash in the eastern portion of the project area. Disturbed areas are present in some portions of this vegetation community, mostly in the western portion, and between Littlerock Wash and 90th Street E in the east. Associated species observed in the rubber rabbitbrush series include big sagebrush, annual bursage (*Ambrosia acanthicarpa*), allscale, and Nevada jointfir (*Ephedra nevadensis*). Other plant species in the understory include white mallow (*Eremalche exilis*), hairy-leaved comb-bur (*Pectocarya penicillata*), and common fiddleneck.

Rubber rabbitbrush series intergrades with Atriplex series in a few areas in the project area. Atriplex series typically occurs on fine-textured, poorly drained soils with high alkalinity and/or salinity. It usually surrounds playas on slightly higher ground. This community is usually dominated by a single species of saltbush (*Atriplex* spp.). Associated species in this community include white bursage and desert tomato (*Lycium andersonii*).

Scalebroom Series

Scalebroom series is a mixed evergreen deciduous shrub community less than 5 ft (2 m) in height that typically occurs on quickly drained alluvial soils. This community is dominated by scalebroom (*Lepidospartum squamatum*) and is accompanied by the co-dominant plants big sagebrush, cheesebush, fourwing saltbush, and yellow rabbitbrush. Associated species in this community include Argus gilia (*Gilia brecciarum*), California evening primrose, Mojave sand verbena, Wallace's woolly daisy, evening primrose (*Camissonia campestris*), and white tidy-tips. This habitat is located in the east end of the project area where the alternatives converge between 75th and 85th Streets E. Two life stages of this community are present in the project area: pioneer and intermediate. Pioneer scalebroom series is found in the main channel of Littlerock Wash and is characterized by younger, smaller scalebroom plants resulting from a higher rate of disturbance in the wash. Intermediate scalebroom series consists of more mature plants than the pioneer stage, and this stage is found as a large 'island' located in the main channel of Littlerock Wash.

Developed/Disturbed

Portions of the project area subjected to roadside maintenance or long-term compaction, such as road shoulders, existing dirt access roads, unauthorized OHV use areas, and areas near residential and commercial development support little to no vegetation. This community, when vegetated, is dominated by non-native plants including black mustard, red-stemmed filaree, and cheeseweed (*Malva parviflora*). Associated native species are cocklebur (*Xanthium strumarium*) and yellow rabbitbrush. Associated non-native species are cheatgrass (*Bromus tectorum*), London rocket, ripgut grass, giant reed (*Arundo donax*), and Asian mustard (*Brassica tournefortii*). The western portion of the project area is more developed and disturbed than the eastern portion. Several paved roads and residential and commercial developments are present between SR 14 and 50th Street E. There is little to no native vegetation in the developed areas (Figure 9).

Some portions of the project area are under active cultivation or grazing, such as north of Avenue P-8 between 40th and 50th Streets E, and other areas exhibit obvious disturbances from similar agricultural or grazing activities occurring in the past. Inactive or historical agricultural areas consist of mostly non-native plant species, including wild oat, black

mustard (*Brassica nigra*), and red-stemmed filaree and were also classified as developed/disturbed throughout the project area.

Figure 9. Disturbed Area in Western Portion of the Project Area

Ornamental

Ornamental plant species occur in areas where they were specifically planted to provide aesthetic or border plantings. Ornamental trees and shrubs are present both east and west of 40th Street E, as well as in association with the Desert Aire Golf Course located just south of Avenue P. Siberian elm and an unidentified species of orchard tree are present in the project area, in addition to the plantings associated with the golf course.

3.3 Biological Studies

Focused, protocol-level surveys were conducted within all or portions of the project area for sensitive plant species, desert tortoise, Mohave ground squirrel, and burrowing owl. An estimate of Joshua tree density and a wildlife crossing study were also conducted to identify additional biological resources present in the project area. The results of each survey are presented below under their respective headings. A compendium of all plant species

observed during the surveys is found in Appendix C and a compendium of all wildlife species observed or detected during the surveys is included as Appendix D.

3.3.1 Sensitive Plant Surveys

Two sensitive plant species were observed within the project area during the initial focused sensitive plant surveys conducted in March and April 2008: white pygmy poppy and crowned muilla. Many special-status plant species identified in the literature searches and/or documented in the vicinity of the project area were presumed absent because suitable habitat (including soils and elevation) was not present in or around the project area or the project area was outside the known range of the species.

A site visit was conducted five days prior to the secondary survey conducted in April 2009 to assess the blooming status of known populations of white pygmy poppy and crowned muilla in the project area. At the time of the site visit, the poppies were nearing the end of their blooming period and were relatively difficult to identify. Known populations of crowned muilla had already gone to seed and were past their blooming period. The additional survey of the amended portion of Alternative 3 between 50th and 75th Streets E conducted in 2009 yielded no additional observations of sensitive plant species within the alternative footprint; however, this survey was conducted towards the end of the blooming period for some sensitive plant species with potential to occur.

The natural history and survey results for white pygmy poppy and crowned muilla are found in the following sections. Locations of these species observations are shown on Figure 10 and survey data sheets are found in Appendix E.

White Pygmy Poppy

White pygmy poppy is a CNPS List 4.2 (defined as being on a watch list of plants presumed to be endangered in California) annual herb endemic to California (CNPS 2009). This species typically occurs in sandy soils in the western Mojave Desert. Specific vegetation communities where this dicot is found include Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland at elevations ranging from 1,969 to 4,790 ft (600 to 1,460 m) above msl. The blooming period for white pygmy poppy is typically between March and June. Threats to this species include development, OHV use, grazing, and non-native invasive plants.

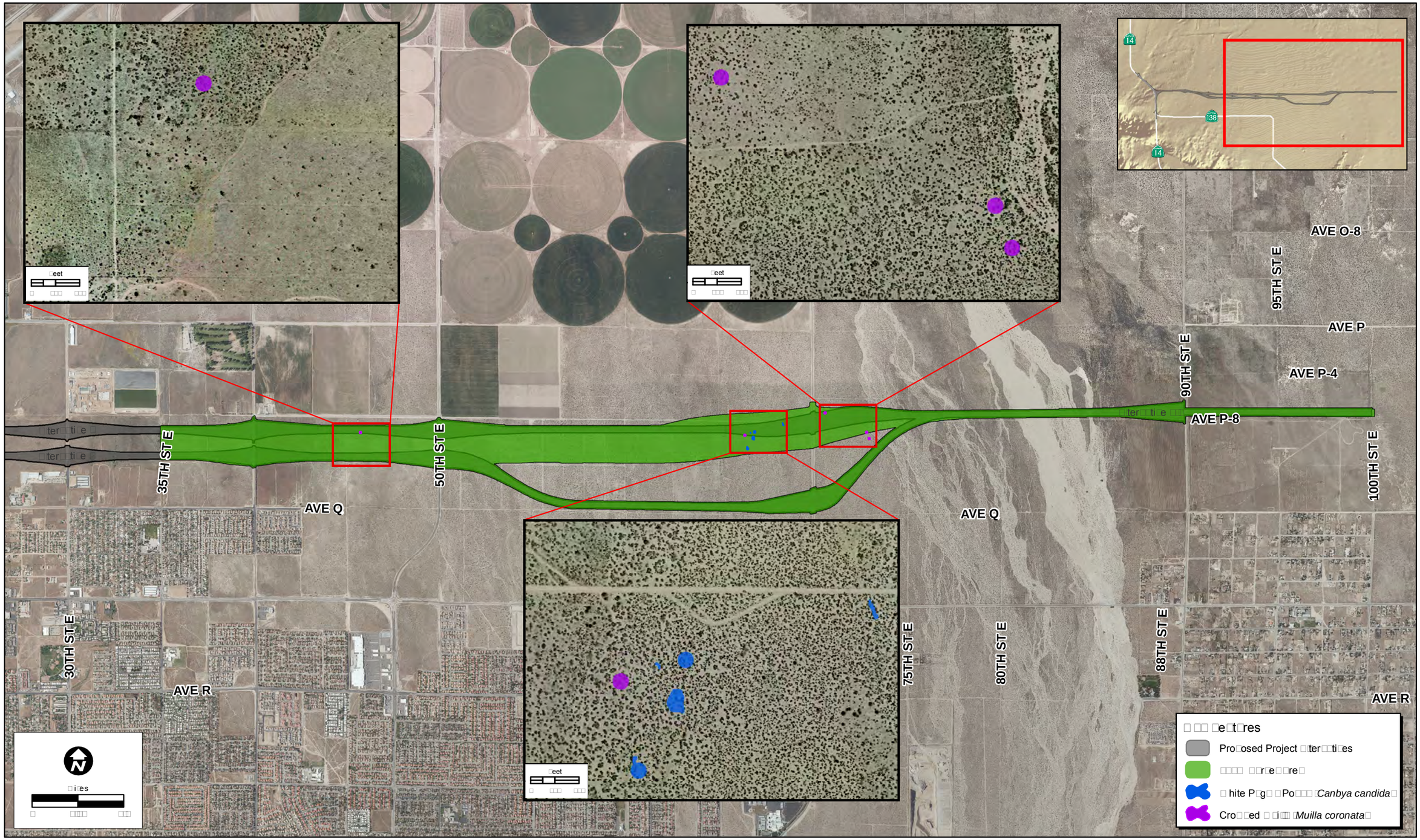

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Figure 10. Sensitive Plant Survey Results

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The literature searches documented the pygmy poppy in two locations within 10 mi (16 km) of the project area (CDFG 2008; CNPS 2009). The first record was approximately 7 mi (11 km) north of the project area at the intersection of Lancaster Boulevard and Sierra Highway in the City of Lancaster. There is no date for this record, however this location was documented in *Jepson Flora*, a reference book published in 1922 (CDFG 2008). The second record of this plant species was documented in 1926 and is located south of Littlerock Reservoir, approximately 10 mi (16 km) south of the project area (CDFG 2008).

Five populations of white pygmy poppy were identified in the project area during the focused sensitive plant survey conducted in 2008 (the blooming period for this species in 2008 was late March to early April). All five populations were found within approximately 2,600 ft (792 m) west of 70th Street E and south of Avenue P-8 (Figure 10). White pygmy poppy was not identified during the additional sensitive plant survey conducted along the south alignment between 50th and 75th Streets E in 2009 (the blooming period for this species in 2009 was early to mid-April). A photograph of a specimen observed during the 2008 survey is shown in Figure 11.

Figure 11. White Pygmy Poppy

Crowned Muilla

Crowned muilla is a CNPS List 4.2 (also on the watch list of plants presumed to be endangered in California) bulbiferous herb found only in California and Nevada (CNPS 2009). This perennial species typically occurs in heavy soils of chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland vegetation communities at elevations ranging from 2,510 to 6,430 ft (765 to 1,960 m) above msl. The blooming period is typically between March and April. Urban and commercial development are both considered threats to this species. Crowned muilla was not documented in the literature searches in the vicinity of the project area (CDFG 2008; CNPS 2009).

Five populations of crowned muilla were observed within the project area during the focused sensitive plant survey conducted in 2008 (the blooming period for this species in 2008 was late March to early April). Four of the five populations were documented approximately 2,600 ft (792 m) east and west of 70th Street E and south of Avenue P-8. The fifth population was recorded approximately halfway between 40th and 50th Streets E and south of Avenue P-8 (Figure 10). The focused sensitive plant survey conducted along the southern alignment in 2009 yielded no additional observations of crowned muilla (the blooming period for this species in 2009 was early to mid-April). A photograph of a specimen observed during the 2008 survey is presented in Figure 12.

Figure 12. Crowned Muilla

3.3.1.1 ESTIMATE OF JOSHUA TREE DENSITY

Joshua trees are a unique and characteristic plant species in the Mojave Desert. This species is a member of the lily family and is found at elevations between 1,640 and 6,561 ft (500 and 2,000 m) above msl (Calflora 2009). The Joshua tree is the largest yucca found in the United States and, like other yuccas, is pollinated by the yucca moth (*Tegeticula* sp.). This species does not flower every year; instead, flowering is dependent on a combination of precipitation and temperature (Schoenherr 1992). Several species of wildlife are associated with and depend on the Joshua tree for survival in the desert and, because of this Joshua trees are often considered an indicator plant for the health of desert ecosystems.

A formal Joshua tree survey was not conducted within the proposed project footprint; however, based on density estimates of Alternatives 2 and 3, it appeared that Alternative 3 had a higher density of Joshua trees than Alternative 2.

3.3.2 Desert Tortoise Survey Results

Only undisturbed, native habitat was surveyed for desert tortoise, per an agreement between Caltrans and CDFG during initial project coordination (see Section 2.3.2 for details). The western portion of the project area between SR 14 and 40th Street E, which is highly disturbed habitat from the residential and commercial development, was not surveyed for presence of desert tortoise. Desert tortoise and desert tortoise sign were not detected within either the 100-percent coverage survey area or the ZOI transects. Survey data sheets and weather conditions during the survey are found in Appendix F.

3.3.3 Mohave Ground Squirrel Trapping Results

Mohave ground squirrels were neither captured nor detected during the trapping survey conducted in the project area. One species of squirrel was captured during trapping efforts, the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*, AGS). A total of 165 AGS were captured during this inventory (Table 7); 85 females, 77 males, and 3 unknown (escapees). Of the identified individuals, slightly more AGS females (52%) were trapped than males (48%). Approximately 30 percent of males and 31 percent of females exhibited signs of reproductive readiness (i.e., enlarged external reproductive organs; pregnancy in females).

AGS were captured throughout all grids, with some grids having better success than others. Grids 1 (A and B) and 4 (A and B) resulted in the most AGS captures (54 and 50, respectively), whereas Grid 2 resulted in the lowest number of AGS captures (19).

Trapping results yielded a variety of other species including: western whiptail (*Aspidoscelis tigris*), coachwhip (*Masticophis flagellum*), desert spiny lizard (*Sceloporus magister*), cactus wren (*Campylorhynchus brunneicapillus*), deer mouse (*Peromyscus maniculatus*), and desert woodrat (*Neotoma lepida*) (Table 7).

The four trapping grids were established in the following vegetation communities: Joshua tree series, creosote bush series, and creosote bush series/Joshua tree series. Weather during the study was typical of the Mojave Desert ecosystem; high temperatures and wind events. The average temperature recorded while traps were open on each grid during the first session was 77°F (25°C), 87°F (30°C) in the second session, and 93°F (34°C) during the third session. The first day that traps were closed due to excessive heat (at or greater than 90°F [32°C]) was on May 14, 2008 for Grids 1 and 2. During most of the second session and all of the third session of trapping, the temperatures reached or exceeded 90°F (32°C) by late morning. Appendix G provides trapping data, grid characteristics, and weather during the trapping study.

3.3.3.1 NOCTURNAL TRAPPING

One night of nocturnal trapping was conducted at each Mohave ground squirrel grid during the second trapping session when nighttime temperatures did not fall below 50°F (10°C). Nocturnal trapping data are found in Appendix H.

Three nocturnal species of small mammals were captured during nocturnal trapping, Merriam's kangaroo rat (*Dipodomys merriami*), Panamint kangaroo rat (*D. panamintinus*), and desert pocket mouse (*Chaetodipus penicillatus*). The animal that was captured most frequently was Panamint kangaroo rat. All of the 21 male Panamint kangaroo rats captured and 11 of the 21 females captured (52%) exhibited signs of reproductive readiness. Ten Merriam's kangaroo rats were captured; 8 females and 4 males. All of the males and 6 of the 8 females (75%) exhibited signs of reproductive readiness. One female desert pocket mouse was captured and showed sign of reproductive activity (Table 8).

Table 7 . Mohave Ground Squirrel Trapping Results Summary

Grid #	AGS									ASTI	CAWR	MAFL	NELE	PEMA	SCMA
	Female				Male										
	Adult	SA	Juv	*Total # Repro*	Adult	SA	Juv	*Total # Repro*	Unknown						
1	14	15	4	*5*	16	4	1	*9*	*0*	1				1	2
2	5	5	0	*3*	7	2	0	*4*	*0*	14	1				
3	7	6	5	*7*	5	12	4	*3*	*3*	10		1			
4 (A & B)	14	7	3	*11*	11	11	4	*7*		3			1		2
Age Class Subtotal	**40**	**33**	**12**		**39**	**29**	**9**								
Gender Subtotal	**85**			***26***	**77**			***23***	***3***						
TOTAL	**165**									**28**	**1**	**1**	**1**	**1**	**4**
Amount Reproductive from **TOTAL**	*49*														

Legend

AGS = white-tailed antelope ground squirrel (*Ammospermophilus leucurus*)
ASTI = western whiptail (*Aspidoscelis tigris)*
CAWR = cactus wren (*Campylorhynchus brunneicapillus*)
MAFL = coachwhip (*Masticophis flagellum*)
NELE = desert woodrat (*Neotoma lepida*)
PEMA = deer mouse (*Peromyscus maniculatus*)
SCMA = desert spiny lizard (*Sceloporus magister*)

SA = subadult age class
Juv = juvenile age class

Table 8. Nocturnal Trapping Summary

Grid #	CHPE				DIME					DIPA					
	Female*		Male*		Female*			Male*		Female				Male*	
	Adult	*Total # Repro*	Adult	*Total # Repro*	Adult	Juv	*Total # Repro*	Adult	*Total # Repro*	Adult	SA	Juv	*Total # Repro*	Adult	*Total # Repro*
1 (A & B)	1	*1*	-	-	1	-	*1*	1	*1*	4	1	4	-	11	*11*
2	-	-	-	-	1	-	-	-	-	6	-	-	*5*	5	*5*
3	-	-	-	-	2	1	*2*	2	*2*	3	-	-	*3*	3	*3*
4 (A & B)	-	-	-	-	3	-	*3*	1	*1*	3	-	-	*3*	2	*2*
Age Class Subtotal	**1**		**0**		**7**	**1**		**4**		**16**	**1**	**4**		**21**	
Gender Subtotal	**1**	***1***	**0**	***0***	**8**		***6***	**4**	***4***	**21**			***11***	**21**	***21***
TOTAL	**1**				**12**					**42**					
Amount Reproductive from **TOTAL**	*1*				*10*					*32*					

CHPE = desert pocket mouse (*Chaetodipus penicillatus*)

DIME = Merriam's kangaroo rat (*Dipodomys merriami*)

DIPA = Panamint kangaroo rat (*Dipodomys panamintinus*)

Juv = juvenile age class

SA = subadult age class

* Age classes 'SA' and/or 'Juv' not shown because no animals in this age class were captured

3.3.4 Burrowing Owl Survey Results

Three owls and several burrow complexes were identified during the focused, protocol surveys. Each observation is discussed individually below and is shown on Figures 13A and 13B. Survey data sheets are found in Appendix I.

A pair of burrowing owls was observed prior to the start of the protocol-level burrowing owl surveys between 15th and 20th Streets E. During three of the four burrowing owl surveys conducted, either one or both owls of the pair were observed at this burrow complex. Burrowing owls were not observed at this location during the second (and last) winter survey. Although live juvenile burrowing owls were not observed by the surveyors, a carcass of a young burrowing owl was observed within 100 ft (30 m) of one of the burrow complexes during the second breeding season survey (in August 2008). Two burrow complexes were found to be associated with this pair, both of which were located between 15th and 20th Streets E. The first was located near 17th Street E and the second was located just east of 15th Street E, approximately 650 ft (200 m) west of the first complex (Figure 13). The owls were observed using both burrow locations during the surveys; both complexes exhibited sign of active use: presence of whitewash, pellets, feathers, and bones of prey items. Habitat surrounding the burrow complexes consists of disturbed rabbitbrush series. A photo of one of the adult owls of the pair is shown in Figure 14, and one of the two burrow complexes utilized by the burrowing owl pair is shown in Figure 15.

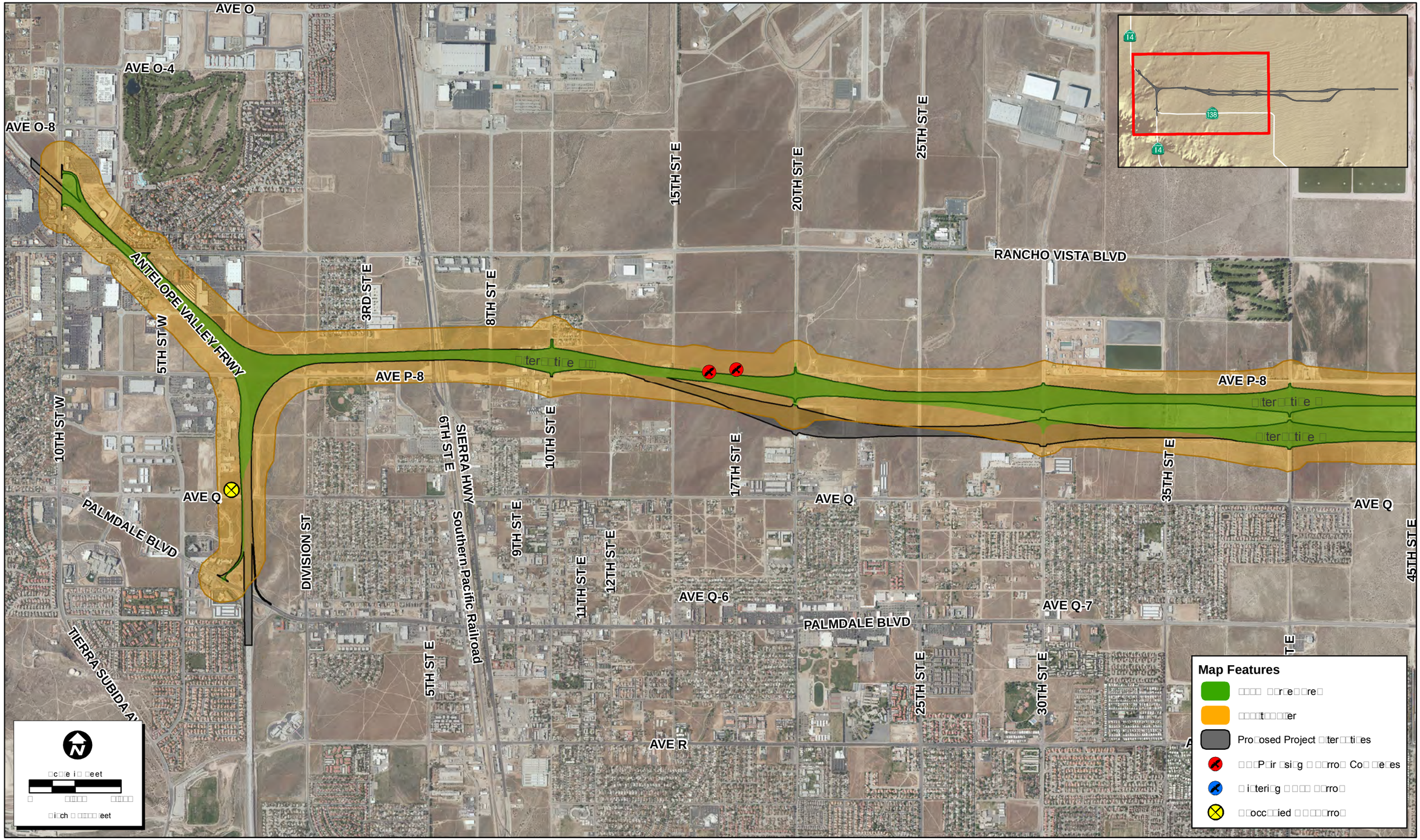

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Figure 13A. Burrowing Owl Survey Results - Map 1 of 2

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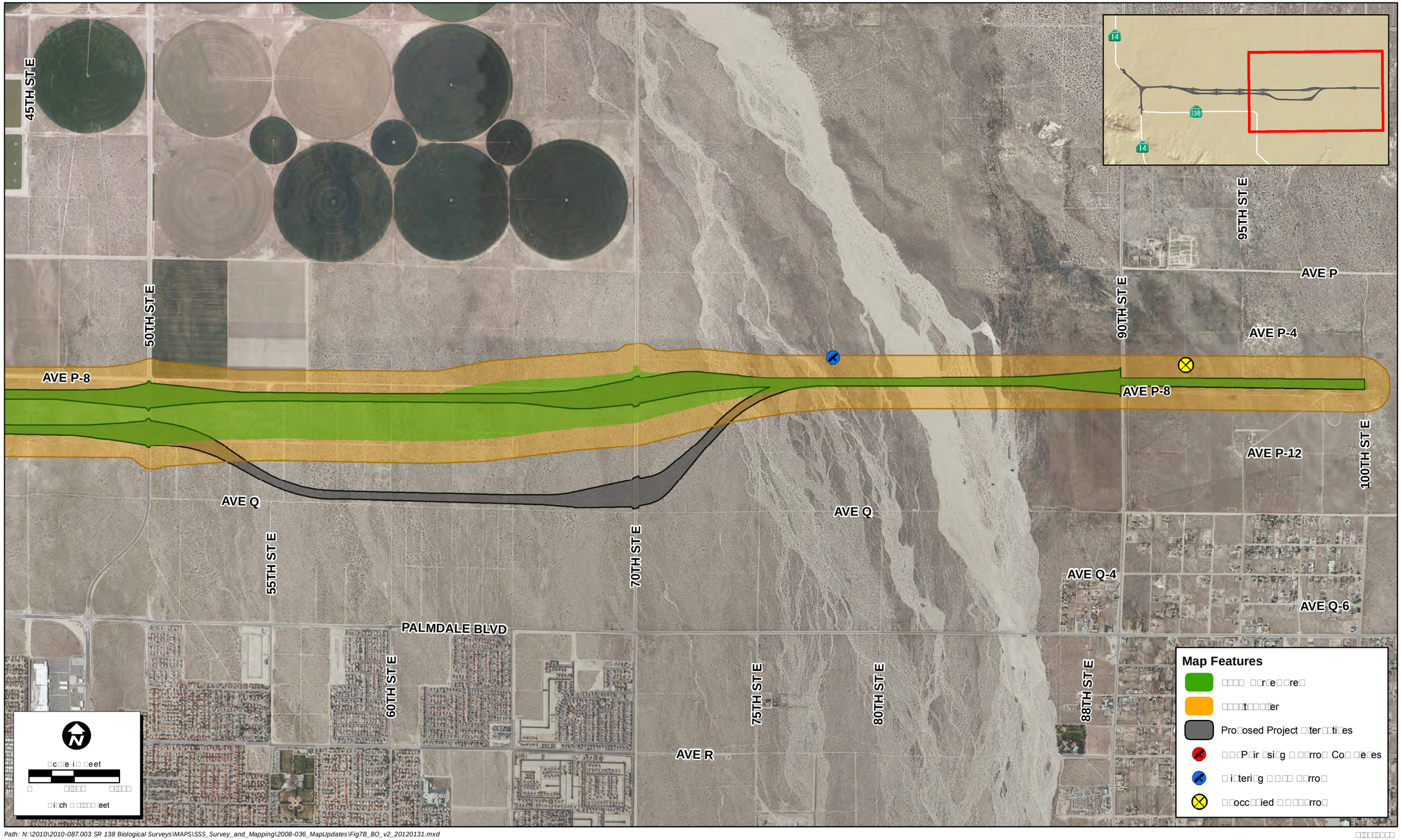

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Figure 13B. Burrowing Owl Survey Results - Map 2 of 2

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Figure 14. Adult Burrowing Owl (one of a pair located at 17th Street E)

Figure 15. Active Burrowing Owl Burrow Complex at 17th Street E

A single burrowing owl was observed in the eastern portion of the project between 75th Street E and Littlerock Wash in the Joshua tree/Atriplex scrub series vegetation. This owl was observed during both wintering season surveys, but not during the two breeding season surveys, indicating a winter resident. This owl appeared to be utilizing several burrows located in the vicinity; however one burrow appeared to be more heavily used than the others (Figure 16).

Figure 16. Primary Burrow Utilized by Wintering Owl East of 75th Street E

One burrowing owl complex was observed in the old agricultural field located between 90th and 100th Streets E. This complex had evidence of prior burrowing owl use (whitewash, pellets, bones of pre items, etc.); however, none of the sign observed was recent. The pellets disintegrated when handled due to their weathered state and the whitewash was not fresh. Burrowing owls were not observed at this location during any of the four protocol-level surveys.

One unoccupied burrow complex was observed at the extreme western portion of the project area, just west of SR 14 and south of Avenue P-8. Old burrowing owl sign was present; however, it appeared at the time of the survey that the complex was currently inhabited by California ground squirrels (Figure 17). Burrowing owls were not observed at this location during any of the four protocol-level surveys.

Figure 17. Unoccupied Burrow Complex Located West of SR 14

3.4 Wildlife Crossing Study

Thirty-five temporary tracking stations were placed throughout the project area (Figures 18A and 18B) to detect movements and direction of travel of native, large mammals moving throughout the project. At the start of the study, 38 stations were established; however, three stations were either eliminated due to high levels of human disturbance or, in one instance, the station's proximity to a pair of burrowing owls. Eliminating the three stations resulted in a non-sequential numbering system for the tracking stations.

Movements of three native large mammal species were detected during the study; coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), and bobcat (*Lynx rufus*). Coyotes were the most common species detected during this study, with their tracks appearing in stations throughout the entire project area despite presence of human disturbances (Figure 19). Kit foxes were the second most common large mammal track and bobcats were the least common. Additional mammal species detected at the tracking stations included desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit, domestic dog (*Canis familiaris*), raccoon (*Procyon lotor*), and domestic horse (*Equus caballus*).

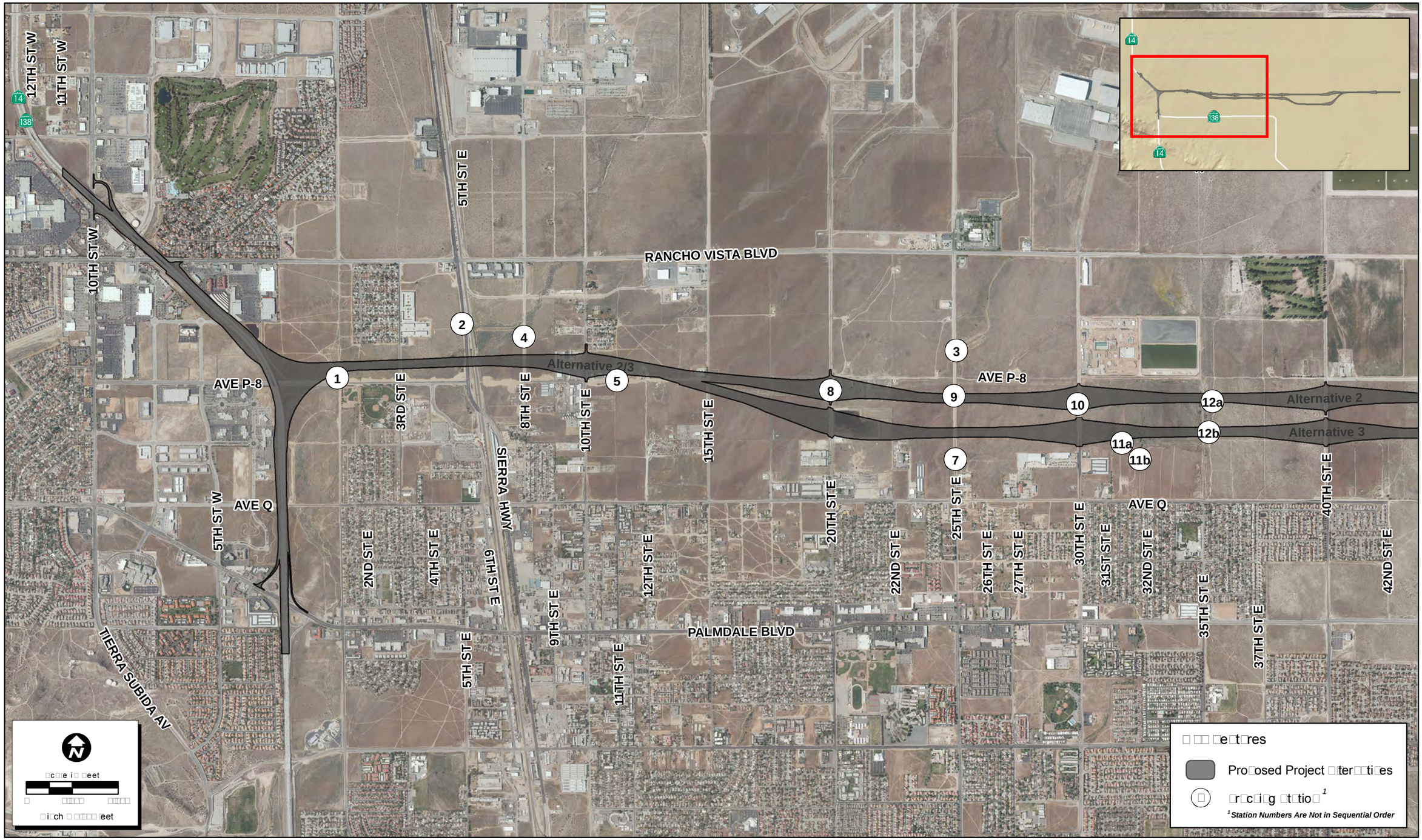

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Figure 18A. Wildlife Crossing Study Tracking Stations - Map 1 of 2

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RANCHO VISTA BLVD

50TH ST E

16 18 19 22 23 26 27 28 30 31 Alternative 2 32 33 34 35 36 Alternative 2/3 38

17 20 21 25 29 Alternative 3

45TH ST E
51ST ST E
70TH ST E
90TH ST E
95TH ST E
100TH ST E
AVE Q
91ST ST E
92ND ST E
93RD ST E
87TH ST E
88TH ST E
97TH ST E
PALMDALE BLVD
75TH ST E
80TH ST E
55TH ST E
60TH ST E
65TH ST E
52ND ST E
57TH ST E
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Pro□osed Project □ter□□ti□es
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[1] Station Numbers Are Not in Sequential Order

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Figure 18B. Wildlife Crossing Study Tracking Stations - Map 2 of 2

2010-087.003 SR 138 Biological Surveys

Figure 19. Adult coyote crossing Sierra Highway just south of the intersection with Avenue P (Rancho Vista Boulevard)

During the field surveys large mammal track sets were documented at each tracking station; each track set was classified as an "occurrence". Table 9 provides a summary of occurrence results for each tracking station. Detailed survey results maps that show a spatial representation of the species and directional travel data are included in Appendix J.

Table 9. Tracking Station Data Summary

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
1 (Point)	Coyote (10)	West (parallel with Avenue P-8)	Disturbed/Developed and Rabbitbrush Series	• High traffic volumes on dirt roads; • Avenue P-8 to south is highly traveled paved road; and • Residential areas nearby (high level of human disturbances).	• Nearby drainage ditch usually contained water; • Residential areas nearby could provide subsidized resources such as food or water; • Retention basin collected seasonal runoff from residential area to the north; and • Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads).	Station located between residential area and sports park. Station appears to have a high level of travel activity despite its urban location and high vehicle traffic volumes. With low densities of surrounding shrubs and vegetation, wildlife movement may not be concentrated in one area; wildlife could be traveling throughout the area.
2 (Linear)	Coyote (30)	East (across Sierra Highway)	Disturbed/Developed and Rabbitbrush Series	• Railroad and Sierra Highway east of the station are highly utilized for transportation; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel usually contained water; • Sparsely vegetated surrounding areas could create several routes of wildlife travel (travel not limited to existing roads); and • Residential areas nearby could provide subsidized resources such as food or water.	Station appears to have a high level of wildlife activity despite its urban location and high vehicle traffic volumes. Sierra Highway and the railroad do not appear to impede wildlife movements, as most occurrences were documented heading east.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
3 (Point)	Coyote (3)	South (parallel with 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• High vehicle activity on 25th Street E.	• Northeast-southwest drainage channel on east side of station usually contained water; and • Sparsely vegetated surrounding areas could create several routes of wildlife travel (travel not limited to existing roads)	Wildlife movement did not appear to be associated with drainage. With low densities of surrounding shrubs and vegetation, wildlife movement may not be limited to one area; wildlife could be traveling throughout area.
4 (Linear)	Coyote (43) Kit Fox (2)	All directions (across and parallel to 8th Street E).	Big Sagebrush series, Rabbitbrush Series, and Disturbed/Developed	• Railroad and Sierra Highway west of the station are highly utilized for transportation; and • Residential and commercial development nearby (human disturbances).	• Nearby drainage channel seasonally contained water; • Native vegetation surrounding the station could provide resources such as shelter and forage; and • Low vehicle activity on 8th Street E.	Wildlife movement did not appear to be associated with drainage or existing paved roadway; occurrences were documented in all directions. Majority of animals appeared to be traveling east and west across 8th Street E.
5 (Point)	Coyote (6)	North and south (parallel with the dirt road).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development nearby (human disturbances); • Unrestrained domestic dogs from nearby residence; • Avenue P-8 (dirt road) is highly used for local vehicle travel; and • Surrounding areas highly disturbed.	• Residential areas nearby could provide subsidized resources such as food or water.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
7 (Point)	Coyote (1)	East (across 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development nearby (human disturbances); • Surrounding areas highly disturbed; and • High vehicle activity on 25th Street E.	• Residential areas nearby could provide subsidized resources such as food or water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas away from disturbed areas.
8 (Linear)	Coyote (27)	East (across 20th Street E).	Disturbed/Developed and Rabbitbrush Series	• Surrounding areas highly disturbed.	• Detention basin southeast of station that may attract prey items due to seasonal inundation; and • Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads).	Wildlife movement did not appear to be associated with existing paved roadway. Majority of animals appeared to be traveling east and west across 20h Street E.
9 (Linear)	Coyote (29)	East and west (across 25th Street E).	Disturbed/Developed and Rabbitbrush Series	• Residential and commercial development south of station (human disturbances); and • High vehicle activity on 25th Street E.	• Drainage channel on west side of 25th Street E usually contained water; and • Residential areas nearby could provide subsidized resources such as food or water.	Majority of animals appear to be traveling east and west (from one block of habitat to another) across 25th Street E.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
10 (Linear)	Coyote (28)	East and west (across 30th Street E).	Disturbed/Developed and Rabbitbrush Series	• Commercial development north and south of station (human disturbances).	• Riparian area with drainage channel to the east near 35th Street E; and • Dense vegetation to the east of station may provide shelter and forage.	Mostly east/west movement in between commercial development from one open block of habitat to another. Riparian area with the drainage channel could attract wildlife as a water source.
11a (Point)	Coyote (1)	North	Disturbed/Developed and Rabbitbrush Series	• Surrounding areas are highly disturbed and adjacent to commercial development; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel to the east usually contained water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
11b (Point)	Coyote (1)	West	Disturbed/Developed	• Surrounding areas highly disturbed and adjacent to commercial development; and • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.).	• Nearby drainage channel to the northeast usually contained water.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
12a (Linear)	Coyote (6)	South (parallel to 35th Street E).	Disturbed/Developed, Rabbitbrush Series, and Ornamental	• Commercial development north of station; and • Numerous trash dump piles located within station.	• Riparian area with drainage channel adjacent to west side of station; and • Golf course located northeast of the station could attract prey items such as rodents.	Based on the low numbers of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
12b (Point)	Coyote (1)	West	Disturbed/Developed, Rabbitbrush Series, and Ornamental	• Commercial development north of station; and • Numerous trash dump piles located within station.	• Riparian area with drainage channel adjacent to the northwest side of station; and • Golf course located northeast of the station could attract prey items such as rodents.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
16 (Point)	Kit Fox (1)	West	Disturbed/Developed and Joshua Tree Series	• High vehicle activity on Avenue P-8.	• Agricultural field to the north of station.	Based on the single occurrence documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
17 (Point)	Coyote (7) Kit Fox (1)	West	Creosote Bush Series and Joshua Tree Series	• Surrounding areas highly disturbed; and • Residential area to southwest (high level of human disturbances).	• Low vehicle activity on 45th Street E; • Residential areas nearby could provide subsidized resources such as food or water; and • Sparsely vegetated (previously burned) surrounding areas could create several routes of travel (travel not limited to existing roads);	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
18 (Linear)	Coyote (22)	North and south (across Avenue P-8).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E and Avenue P-8.	• Agricultural field to the east and west; and • Native vegetation surrounding the station could provide resources such as shelter and forage.	Barbed wire along Avenue P-8 did not appear to impede wildlife movement. Most wildlife travel appeared to move between the two native vegetation communities across Avenue P-8.
19 (Point)	Coyote (4)	North and south (parallel with 50th Street E).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E and Avenue P-8; and • Locked gate at the intersection of Avenue P-8 and 50th Street E and barbed wire along 50th Street E may inhibit wildlife crossing areas.	• Station adjacent to agricultural field.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
20 (Point)	Coyote (10)	North and south (parallel with 50th Street E).	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 50th Street E; and • Surrounding areas to the west are highly disturbed due to proximity to road, trash dumping, and being previously burned.	• Agricultural field to the north and residential and commercial areas to south (could provide subsidized resources); and • Open, relatively undisturbed habitat to the west.	Wildlife appeared to use road shoulder on east side of 50th Street E, while the east-west dirt road did not appear as highly utilized for travel.
21 (Linear)	Coyote (20) Kit Fox (2)	West	Creosote Bush Series and Joshua Tree Series	No apparent limitations.	• Agricultural field to the north (could provide subsidized resources such as food or water); • East/west and north/south dirt roads not traveled often by vehicles; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation and there may be additional routes of travel being used by local wildlife in the surrounding areas.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
22 (Linear)	Coyote (13) Bobcat (1)	West and northeast (parallel to Avenue P-8 and into agricultural field)	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field immediately adjacent to north side of station could provide subsidized resources such as food or water; • Avenue P-8 is a wide, dirt road relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat to the south.	Soils at this station were very conducive to detecting animal tracks. Gates present at 50th and 70th Street E reduced vehicular traffic on Avenue P-8 to only the farmers. Wire fencing present on boundaries of the agricultural field did not appear to impede animal movement.
23 (Linear)	Coyote (50) Bobcat (4)	All directions	Creosote Bush Series, Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field immediately adjacent to north side of station (could provide subsidized resources such as food or water); • Avenue P-8 wide, dirt road relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding three sides of the station.	Most active station in the study, despite the relatively small station size. Great soils for detecting animal tracks. Gates present at 50th and 70th Street E, reducing vehicular traffic on Avenue P-8 to only the farmers. Wire fencing present on boundaries of field did not appear to impede animal movement.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
25 (Point)	Coyote (7) Kit Fox (3)	East (along dirt road)	Joshua Tree Series	• No apparent limitations.	• East/west and north/south dirt roads not traveled often by vehicles; and • Open, relatively undisturbed habitat surrounding the entire station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
26 (Linear)	Coyote (9)	North and west (parallel with and across Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station could provide subsidized resources such as food or water; • Avenue P-8 and the wide dirt road heading south are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
27 (Linear)	Coyote (20) Kit Fox (3)	North and east (parallel with and across Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 and the wide dirt road heading south are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
28 (Linear)	Coyote (19) Kit Fox (1)	East and west (parallel to Avenue P-8)	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 and wide dirt road are relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.
29 (Linear)	Coyote (7)	East and southwest (across 63rd Street E)	Fourwing Saltbush Series/Rubber Rabbitbrush Series	• No apparent limitations.	• Low vehicle activity on 63rd Street E; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
30 (Linear)	Coyote (49) Bobcat (2) Kit Fox (7)	East and West (parallel with Avenue P-8).	Joshua Tree Series and Disturbed/Developed	• No apparent limitations.	• Agricultural field to west of station (could provide subsidized resources such as food or water); • Avenue P-8 is relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Very active station for wildlife travel. Gates present at 50th and 70th Street E reduce vehicular traffic on Avenue P-8 to only the farmers. Station completely surrounded by mostly undisturbed, native vegetation.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
31 (Linear)	Coyote (33)	East and west (across 70th Street E).	Joshua Tree Series and Disturbed/Developed	• High vehicle activity on 70th Street E.	• Agricultural field to west and large wash to east of station (both offering resources such as food or water); • Avenue P-8 is relatively unused by vehicles in this area; and • Open, relatively undisturbed habitat surrounding the station.	Gate along Avenue P-8 at 70th Street E restricts use of P-8 to farmers only. Mostly east/west wildlife movement, although this station was a north/south station, so it is difficult to determine whether wildlife were using Ave P-8 for movement, or just crossing 70th Street E at various locations. Gate at Avenue P-8 and 70th Street E and barbed wire fencing parallel with 70th Street East did not appear to impede animal movement
32 (Point)	Coyote (3)	North and west	Rubber Rabbitbrush Series/Atriplex Series	• No apparent limitations.	• Low vehicle activity on 75th Street E (dirt road); • Littlerock Wash present in vicinity; and • Open, relatively undisturbed habitat surrounding the station.	Station completely surrounded by mostly undisturbed, native vegetation. Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas. Barbed wire present along west side of 75th Street E did not appear to impede animal movement.
33 (Linear)	Coyote (9) Kit Fox (2)	North (across Avenue P-8).	Rubber Rabbitbrush Series/Atriplex Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Animal movement appeared to be more associated with the Littlerock Wash than Avenue P-8.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
34 (Point)	Coyote (4)	East and west (parallel with Avenue P-8).	Rubber Rabbitbrush Series/Atriplex Series and Scalebroom Series	• No apparent limitations.	• Station within upland area of seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
35 (Linear)	Coyote (3)	North, south, and east (parallel with Avenue P-8 and Littlerock Wash).	Scalebroom Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas.
36 (Linear)	Coyote (21) Kit Fox (2)	All directions (parallel with Avenue P-8 and Littlerock Wash).	Rubber Rabbitbrush Series/Atriplex Series and Scalebroom Series	• No apparent limitations.	• Station within seasonal wash; • Low vehicle activity on Avenue P-8 (dirt road); and • Open, relatively undisturbed habitat surrounding the station.	Animal movement appeared to be more associated with the Littlerock Wash than with Avenue P-8.

Station ID and Type*	Species Detected (Total # Occurrences)	General Wildlife Movement Direction	Vegetation Communities Surrounding Station	Potential Limitations to Wildlife Movement/Travel	Potential Attractants for Wildlife Movement/Travel	Comments
37 (Point)	Coyote (7)	Northeast and south (along existing dirt roads).	Disturbed/Developed	• Residential area to south (high level of human disturbances); • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.); and • Domestic animals and livestock observed within vicinity of station.	• Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads); • Residential areas nearby (could provide subsidized resources such as food or water); and • During rain events, a small depression within station collected water.	Based on the low number of occurrences documented at this station, there may be additional routes of travel being used by local wildlife in the surrounding areas. High levels of human disturbances from nearby residences could negatively affect wildlife movement through this area.
38 (Linear)	Coyote (14) Kit Fox (2)	All directions (parallel with Avenue P-8 and 100th Street E).	Disturbed/Developed and Creosote Bush Series	• Residential area to south (high level of human disturbances); • Concentrated amounts of human disturbances (highly traveled roads, noises, trash, etc.); and • Domestic animals and livestock observed within vicinity of station.	• Sparsely vegetated surrounding areas could create several routes of travel (travel not limited to existing roads); • Residential areas nearby (could provide subsidized resources such as food or water); and • Native, undisturbed vegetation northeast of station.	Wildlife travel in this area did not appear to follow one linear feature; many routes of travel were evident. High levels of human disturbances from nearby residences could negatively affect wildlife movement through this area.
*Tracking stations were not numbered sequentially across the project area. Two types of stations were part of this project; point and linear. Stations that were generally established at the intersection of two roads are point stations. Stations that were generally established parallel to a section of one or two roads are linear stations.						

Seasonal variation in animal movement trends was also analyzed to determine whether a temporal effect was influencing large mammal travel and movement throughout the project area. The results of this analysis indicated that during the study highest wildlife travel activity occurred during the winter and spring months (26 of the 35 stations had high numbers of occurrences in either or both of these seasons). Many stations appeared to have the lowest activity levels in the summer. However, seasonal results varied between station locations, as some stations had higher activity levels during the same season that other similar stations had lower activity levels. Table 10 lists the seasonal variation data for each tracking station.

Table 10. Wildlife Crossing Study Seasonal Variation Data

Station ID*	Station Type	Species Occurrence by Season**				Total Occurrences per Station
		Spring 2008	Summer 2008	Fall 2008	Winter 2009	
1	Point	-	C: 1	C: 5	C: 4	**C: 10**
2	Linear	C: 6	C: 2	C: 12	C: 10	**C: 30**
3	Point	C: 2	-	C: 1	-	**C: 3**
4	Linear	C: 6	C: 16	C: 17 KF: 2	C: 4	**C: 43** **KF: 2**
5	Point	C: 2	C: 4	-	-	**C: 6**
7	Point	-	-	-	C: 1	**C: 1**
8	Linear	C: 13	C: 4	C: 1	C: 9	**C: 27**
9	Linear	C: 10	C: 12	-	C: 7	**C: 29**
10	Linear	C: 6	C: 3	C: 4	C: 15	**C: 28**
11a	Point	-	-	-	C: 1	**C: 1**
11b	Point	-	-	-	C: 1	**C: 1**
12a	Linear	C: 2	-	-	C: 4	**C: 6**
12b	Point	-	-	-	C: 1	**C: 1**
16	Point	-	-	-	KF: 1	**KF: 1**
17	Point	-	C: 2	C: 2	C: 3 KF: 1	**C: 7** **KF: 1**
18	Linear	C: 2	C: 7	C: 6	C: 7	**C: 22**
19	Point	-	-	C: 1	C: 3	**C: 4**
20	Point	-	-	C: 3	C: 7	**C: 10**
21	Linear	C: 14	-	C: 2	C: 4 KF: 2	**C: 20** **KF: 2**
22	Linear	C: 4	C: 4	B: 1 C: 3	C: 2	**B: 1** **C: 13**
23	Linear	B: 2 C: 26	C: 4	B: 2 C: 12	C: 8	**B: 4** **C: 50**
25	Point	C: 4	KF: 1	-	C: 3 KF: 2	**C: 7** **KF: 3**
26	Linear	C: 2	C: 3	C: 2	C: 2	**C: 9**
27	Linear	C: 6 KF: 2	C: 3	C: 4 KF: 1	C: 7	**C: 20** **KF: 3**

Station ID*	Station Type	Species Occurrence by Season**				Total Occurrences per Station
		Spring 2008	Summer 2008	Fall 2008	Winter 2009	
28	Linear	C: 6	C: 5	C: 3	C: 5 KF: 1	**C: 19** **KF: 1**
29	Linear	C: 4	-	-	C: 3	**C: 7**
30	Linear	B: 2 C: 22 KF: 6	C: 3	C: 16 KF: 1	C: 8	**B: 2** **C: 49** **KF: 7**
31	Linear	C: 14	C: 3	C: 8	C: 8	**C: 33**
32	Point	-	-	C: 1	C: 2	**C: 3**
33	Linear	C: 6	C: 1	C: 1	C: 1 KF: 2	**C: 9** **KF: 2**
34	Point	C: 2	-	C: 1	C: 1	**C: 4**
35	Linear	-	-	C: 2	C: 1	**C: 3**
36	Linear	C: 10	C: 5	C: 3	C: 3 KF: 2	**C: 21** **KF: 2**
37	Point	C: 4	-	C: 2	C: 1	**C: 7**
38	Linear	C: 8	C: 2	C: 2	C: 2 KF: 2	**C: 14** **KF: 2**
Total	**15 Point 20 Linear**	**B: 4 C: 181 KF: 8**	**B: 0 C: 84 KF: 1**	**B: 3 C: 114 KF: 4**	**B: 0 C: 138 KF: 13**	**B: 7 C: 517 KF: 26**

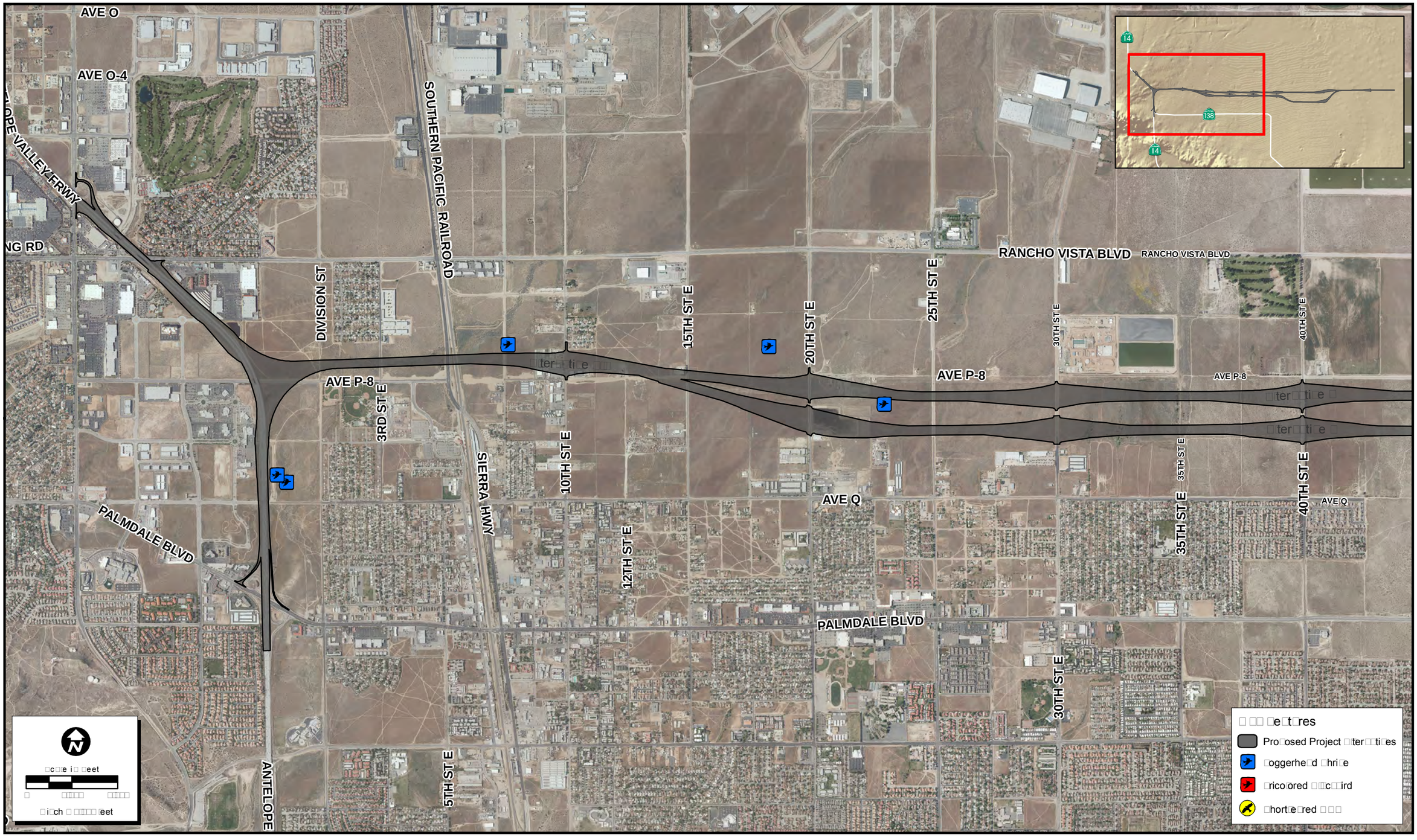
*Tracking stations were not numbered sequentially within the project area.
**B = Bobcat; C = Coyote; KF = Kit Fox

3.5 Incidental Wildlife Observations

Three sensitive bird species were incidentally observed during the surveys conducted in the project area: short-eared owl, loggerhead shrike, and tricolored blackbird. All three of these species are briefly described below. The locations of all incidental sensitive species observed in the project area are shown on Figures 20A and 20B.

Short-eared owl

The short-eared owl is designated as a SSC by CDFG. This crow-sized owl often inhabits open areas with large populations of rodents as a primary prey base and substantial amounts of herbaceous plants for concealing their ground nests during the breeding season (Roberson 2008). Populations appear to be directly related to microtine rodent populations; owls have been found to produce more young and extend their range in years that microtine rodents are most prolific (Roberson 2008). During the winter, short-eared owls often congregate in large groups in open areas with a large prey base. Threats to the short-eared owl include habitat loss and degradation due to human-induced disturbances, grazing, and invasive weed growth.



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\SSS_Survey_and_Mapping\2008-036_MapUpdates\IncidentalSensitiveSpecies_A_20120131.mxd

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Figure 20A. Incidental Sensitive Species Observations - Map 1 of 2

2010-087.003 SR 138 Biological Surveys

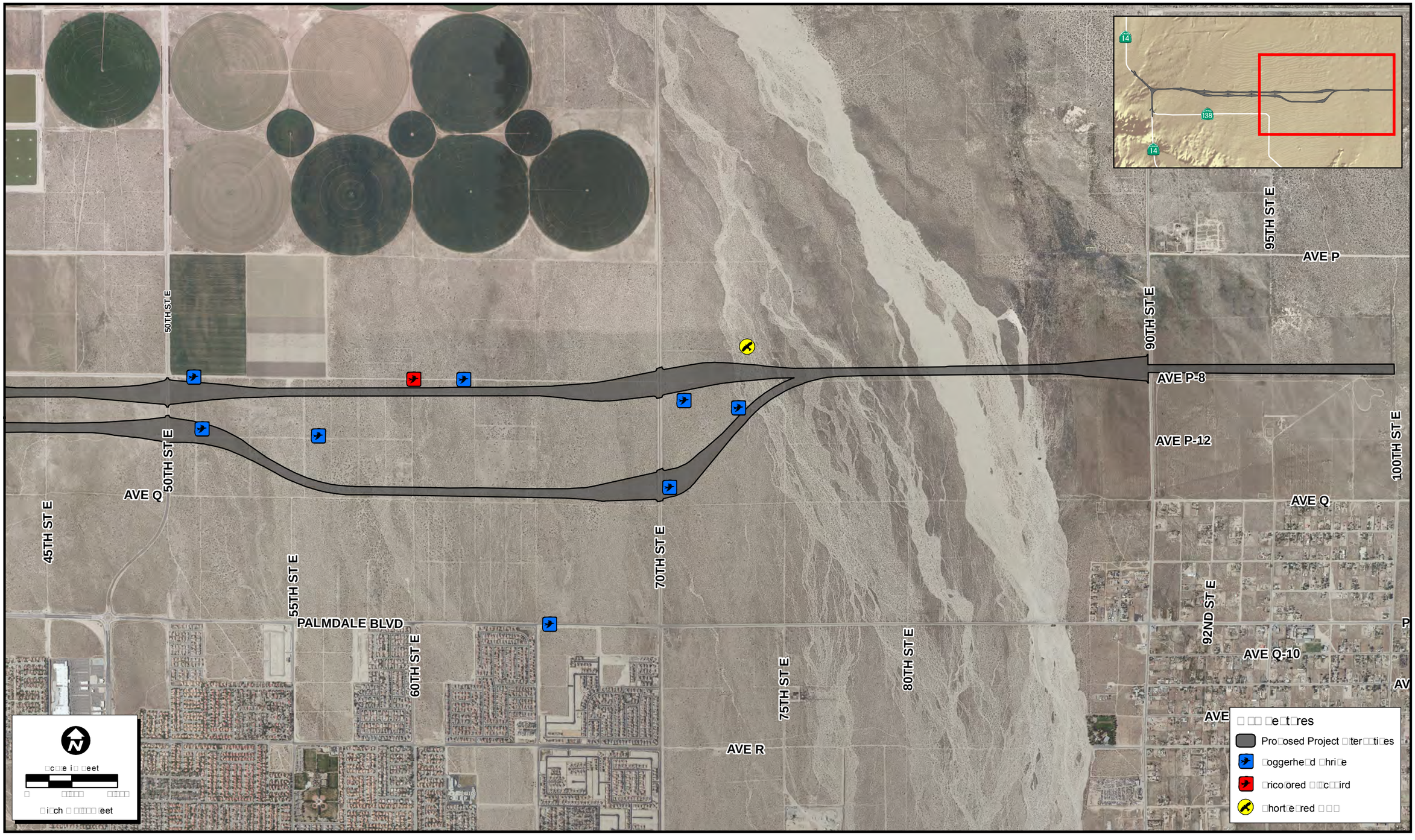

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Figure 20B. Incidental Sensitive Species Observations - Map 2 of 2

2010-087.003 SR 138 Biological Surveys

During the first wintering burrowing owl survey conducted in early January 2009, one short-eared owl was observed approximately 1,970 ft (600 m) east of 70th Street E in rabbitbrush series/Atriplex series vegetation community. It is very likely this was a migratory wintering individual due to the time of observation. It is unlikely that a short-eared would nest in the vicinity of the project area, as they typically nest in the northern-most parts of North America (Roberson 2008).

Loggerhead shrike

The loggerhead shrike is designated as a SSC by CDFG. It is a predatory songbird found in open, arid habitats such as deserts, shrublands, chaparral, and grassland throughout most of the United States and portions of Canada and Central America (Humple 2008). Populations are common in the Mojave Desert, where loggerhead shrikes are year-round residents. The loggerhead shrike feeds on invertebrates, lizards, small birds, frogs, and rodents. A characteristic habit of this species is that it will impale its food items on fences, particularly barbed wire. Threats to loggerhead shrikes include habitat loss, nest predation, and pesticide use.

This species was commonly observed throughout the desert scrub habitats in and around the project area during the various surveys.

Tricolored blackbird

The tricolored blackbird is designated as a SSC by CDFG. This species is a permanent resident throughout California, with more than 90 percent of the population in California residing in the Central Valley (Beedy 2008). Largely a colonial breeder, this species occupies breeding sites in close proximity to water sources that contain protected nesting substrates, such as cattails and willows. Tricolored blackbirds will winter in large, mixed-species flocks with other blackbirds where they inhabit open grassland and agricultural areas (Beedy 2008). Diet for this species includes a variety of insects and arachnids. Threats to tricolored blackbirds include habitat degradation from urban development and human disturbances and direct loss from agricultural harvesting and plowing.

This species was observed in a small flock in an agricultural field at the intersection of Avenue P-8 and 50th Street E during several of the surveys.

Chapter 4. Discussion

4.1 Site Characteristics and Vegetation Mapping

The western portions of the project area are heavily disturbed due to trash dumping and residential, commercial, agricultural (including livestock), and recreational uses (OHV use). Dirt and paved roads are prevalent throughout the entire project area. The western end of the project area has more developed areas (primarily commercial and residential) than the eastern end. Domestic dogs and cats, ravens, and non-native vegetation are abundant throughout the project area due to human presence and associated disturbances. These factors limit the potential distribution of sensitive plant and wildlife species in portions of the project area.

A total of 11 vegetation communities were mapped in the project area; all of which exhibited varying levels of disturbance. The vegetation communities were characteristic of those found in high elevation desert habitats. Several drainages and washes were scattered throughout the project area, the largest being Littlerock Wash, which bisects the project area in the east. Very few of these drainages had water present year-round; the drainages that did contain water usually contained year-round runoff from residential or commercial development areas.

4.2 Biological Studies

Several surveys were conducted throughout all or portions of the proposed alignments to identify biological resources present within the project area. A discussion of each survey is presented below.

4.2.1 Sensitive Plant Species

Federally and/or state-listed (threatened or endangered) plant species were not observed during focused sensitive plant surveys in the project area conducted in 2008 and 2009. Two sensitive (CNPS List 4.2) plant species, white pygmy poppy and crowned muilla, were detected in the project area. Both species are identified on the CNPS watch list (List 4) and are believed to be fairly endangered in California (0.2 extension meaning of 'List 4.2') (CDFG 2008; CNPS 2009). Because CDFG works in conjunction with CNPS in assessing the rarity and sensitivity of plants occurring in California, CNPS plant rankings are considered by CDFG to be valid

special-status rankings. Plants identified under CNPS designations (as well as other agency designations) are also required to be addressed by CEQA (and sometimes NEPA) project documentation.

The initial sensitive plant survey was conducted in the spring of 2008 during a year with average precipitation levels in mid-winter and below-average levels in late-winter/early-spring paired with unseasonably warm temperatures (www.NOAA.org). As a result, many plant species in the desert bloomed as much as a month earlier than their typical bloom periods during the spring of 2008. The plant survey conducted in 2008 was scheduled in early April to coincide with the early bloom periods for the sensitive plant species with a potential to occur in the project area. All sensitive plant species with a potential to occur within the project area that were targeted during the sensitive plant survey would have been detectable at the time of the 2008 survey.

In April 2009, Caltrans provided an amendment to Alternative 3 and this amendment required an additional rare plant survey. The additional survey was conducted in late April 2009, but no additional observations of sensitive plant species were documented during this survey. However, the additional sensitive plant survey was conducted near the end of the blooming period for both species. A site visit was conducted five days prior to the 2009 survey to assess the blooming status of known populations of white pygmy poppy and crowned muilla in the project area. At that time, the poppies were nearing the end of their blooming period and relatively difficult to identify and almost all crowned muilla plants had gone to seed and were past their blooming period. The microhabitats in which these plants were observed in during the 2008 survey were surveyed intensely in the Alternative 3 alignment and, although no additional plants were found, there is still a potential for sensitive plant species to occur along this alignment.

4.2.1.1 ESTIMATE OF JOSHUA TREE DENSITY

A formal Joshua tree survey was not conducted within the proposed project footprint, however, densities of Joshua trees in Alternatives 2 and 3 were estimated to aid in future project planning and permitting. Based on this exercise, it appeared that Alternative 3 had a higher density of Joshua trees.

Many cities and counties in the Mojave Desert have codes or regulations that prevent or mitigate for loss of Joshua trees from proposed projects occurring in native desert vegetation communities. The City of Palmdale requires special protection of this species in Chapter 14.04 of the Municipal Code (City of Palmdale 2009).

Requirements outlined in the City of Palmdale Municipal Code regarding Joshua trees are discussed further in Section 4.4.2.1.

4.2.2 Desert Tortoise

During the focused protocol survey for desert tortoise, no live desert tortoises or tortoise sign (scat, tracks, burrows) were observed or detected in the project area or surrounding areas. Though the project area is located in the extreme western portion of the known historic range of the desert tortoise, no individuals have been observed in the project vicinity for over 20 years (CDFG 2008). In addition, USFWS stated in a letter to Caltrans dated February 29, 2008 that USFWS does not expect the site to support any federally listed wildlife or plant species (Appendix A), which would include desert tortoise.

Suitable desert tortoise habitat was only present in the eastern portion of the project area, and no critical habitat units for desert tortoise recovery are located within the vicinity of the project area (USFWS 2011). In addition, the western portion of the project area was heavily disturbed by residential and commercial development, agricultural use, OHV activity and trash dumping. All of these factors limit the potential for desert tortoise to occur in the project area.

Based on the lack of critical habitat and recent desert tortoise observations in the project area and vicinity, the negative survey results, and the communication from the USFWS, desert tortoise is not expected to occur in the project area.

4.2.3 Mohave Ground Squirrel

Four protocol Mohave ground squirrel trapping grids were placed in the highest quality suitable habitat in the project area and trapped for a total of 15 days each during three trapping sessions between March 15 and July 15, 2008. Mohave ground squirrels were neither detected by observation or vocalization, nor captured during the trapping study. A total of 165 AGS and a handful of non-target, incidental species (desert spiny lizard, western whiptail, coachwhip, cactus wren, desert woodrat, and cactus mouse) were captured during the trapping study.

In the project area, suitable habitat for Mohave ground squirrel was only present in approximately 4 mi (6 km) of the project area located west of 50th Street E to east of 70th Street E. Habitat in the western and extreme eastern portions of the project area was too disturbed to be considered suitable habitat for Mohave ground squirrel.

The project area is located within the extreme western portion of the historic range of the Mohave ground squirrel, however, this species has not been documented within the vicinity of the project area since the 1930s (CDFG 2008). Although suitable desert scrub habitat is present in the western portion of the project area, Mohave ground squirrels are not expected to occur.

4.2.3.1 NOCTURNAL TRAPPING

One night of nocturnal trapping was conducted at each Mohave ground squirrel grid to identify common small mammal species that occur in the project area. Three nocturnal rodent species were captured; Merriam's kangaroo rat, Panamint kangaroo rat, and desert pocket mouse. These species commonly occur in desert scrub habitats throughout the Mojave Desert and do not have any special-status rankings.

4.2.4 Burrowing Owl

Burrowing owls and burrow complexes were observed in several locations throughout the project area. One pair of burrowing owls was observed in the western portion of the project occupying two burrow complexes between 17th and 15th Streets E. These owls were assumed to be successfully producing offspring due to the presence of a juvenile burrowing owl carcass observed in the vicinity of one of the pair's active burrow complex during the second breeding season survey (conducted in August 2008). A single wintering burrowing owl was observed east of 70th Street E, just north of Avenue P-8 within the 500-ft (150-m) buffer area. This owl was only observed during the two winter burrowing owl surveys and was not observed during the two breeding season surveys and is probably a winter resident only.

One unoccupied burrow complex was observed just west of SR 14, south of Avenue P-8. Although old burrowing owl sign (whitewash and bones of prey items) was present, it appeared to be inhabited by California ground squirrels at the time of the survey. Another burrowing owl complex was observed in the abandoned agricultural areas between 90th and 100th Streets E but did not appear recently used due to the presence of old burrowing owl sign. Both of these burrow complexes were located outside the project footprint in the 500-ft (150-m) surveyed buffer area.

Suitable habitat for burrowing owl is present throughout the entire project area, as burrowing owls inhabit various types of disturbed and undisturbed habitats. It is likely for owls to move into the project area at various times of year due to the migratory behavior of some individuals. Multiple burrows considered suitable for

burrowing owl use were found between 70th Street E and Littlerock Wash, and it is possible for burrowing owls to move into portions of the project area where they were not previously identified.

4.2.5 Wildlife Crossing Study

Thirty-five temporary tracking stations were placed in various locations throughout the project area to identify the areas that large mammals utilize most for local movement. Because there are potential impacts to wildlife movement patterns associated with the construction of a new freeway, identifying the areas of high wildlife use is important to the planning stages of the proposed project.

Overall, it appeared that the presence of water sources (seasonal and permanent) and large, contiguous blocks of native habitat both appeared to attract wildlife travel in both the urbanized and non-urbanized areas of the project footprint. However, because the location and size of the stations varied throughout the project area, it was determined that each station had its own list of factors that would influence wildlife movement in that location. For that reason, each station was analyzed individually to identify the potential limitations and attractants to wildlife travel in the immediate area of that respective station (Table 9).

There were some features in the project area that appeared to influence wildlife travel, such as the active agricultural fields. High numbers of wildlife occurrences were documented at the stations surrounding the active agricultural field located east of 50th Street E and north of Avenue P-8 (Appendix J, Figures J-4 through J-6). It is very likely that large mammals were attracted to this field because the field supports a consistent source of subsidized resources, such as prey items and water. The large amount of water that is used to support crop growth is also probably a reliable source of water for local wildlife. Additionally, the seeds or grains of the crops would likely attract small animals such as rodents and rabbits, thus creating a locally high population of prey items. Large mammals likely take advantage of this opportunity for a consistent and abundant source of food.

Other features that likely attracted large mammals included seasonal and permanent water sources (such as retention basins, drainages, and seasonal washes) and undisturbed, native habitat blocks (such as those in the eastern portion of the project area that exhibited low levels of human activity). Residential areas could also provide subsidized food and water resources to animals less affected by human

presence. Trash, rodents living near residences, and pets could all be considered food resources for opportunistic species such as coyotes.

While residential (and commercial) areas may attract some wildlife to travel through a particular location, these developed areas could also be a limitation to some wildlife species present in the project area. Developed areas usually have higher levels of disturbances surrounding them (such as vehicle use, trash dumping, high noise levels, domestic animals, and overall higher human activity) which may discourage shy wildlife species (such as bobcats) from utilizing that location for travel or resources. Additionally, these disturbances also usually result in degraded habitats which may provide fewer natural sources of prey and shelter for native wildlife. It is important to note that any location of concentrated wildlife travel activity within urbanized areas may, in fact, be more valuable to wildlife traveling through that particular location. This is because that location may be one of the few "crossing areas" native wildlife use to move in and throughout the urbanized western portion of the project.

Many of the tracking stations with high occurrence numbers possibly recorded animals traveling the same area on a daily or weekly basis. These animals may have also crossed many tracking stations during these regular travel events. While it was nearly impossible to document this phenomenon based solely on track identification at the stations, a family group of coyotes was observed traveling together and crossing many stations during a single travel event on November 3, 2008. One adult coyote and two older juveniles traveling together were observed crossing four different tracking stations in the extreme western portion of the project area (one of the coyotes observed crossing is shown in Figure 19). Though it was not studied during the wildlife crossing study, it is possible that this travel route is regularly used by this family group.

Seasonal trends for wildlife travel and activity in the project area were studied to determine whether or not there was a temporal effect on the data collected. Twenty-six of the 35 stations exhibited highest wildlife travel activity in either the winter or spring (one station had equally high occurrence levels in the winter and spring). Based on this finding, it appeared that large mammals in the project area were more likely to travel more frequently during the winter and spring months than during the other seasons. Biologically, the winter and spring months are an ideal time for large mammals to be highly mobile, as they are searching for mates, defending territories, or dispersing from natal areas to establish their own territories. Many of the stations

had lowest occurrence numbers in the summer, however, low occurrence numbers appeared to be station-specific (i.e., there was no season that all or most stations had lowest occurrence numbers).

Three native species of large mammals were detected during the wildlife crossing study: coyote, kit fox, and bobcat. Coyotes were the most commonly documented tracks in the study, with tracks found at stations located in both the disturbed, urbanized areas (western portion of the project) as well as in the undisturbed areas (eastern portion). Bobcats and kit foxes detected during the study tended to occur in more undeveloped areas of the project area where large, undisturbed blocks of native desert habitat were present.

Several limitations were present in the study design. The first and most obvious limitation to the study design is that two types of tracking stations were established for the study, point stations and linear stations. Because the linear stations sampled a larger area than the point stations, the linear stations collected more data and superficially represented higher activity levels through a given area than the point stations.

The size of each tracking station varied as well, making it difficult to compare one station's activity level to another, even when comparing the results of two similarly-classified stations (e.g., comparing one linear station to another). Station sizes varied for several different reasons, but station size was mostly driven by the location of each station and the prevalence of outside disturbances. For example, longer tracking stations were established in areas where human or vehicle disturbance levels were expected to be low so that the track data would not be degraded before it could be collected in the mornings, and smaller tracking stations were placed in areas where higher disturbance levels were expected. Despite the best efforts of the surveyors, disturbances at almost every tracking station were evident throughout the entire study. Additional factors that contributed to station degradation included high winds, rain events, presence of domestic animals or livestock, and OHV use. Disturbances were so prevalent and consistent at some tracking stations that the stations were dropped from the study completely because of their inability to collect accurate data.

One external factor that was difficult to maintain consistent between all stations was the variation in native soils throughout the project area. Soils at all tracking stations were different; some had finer soils (consisting of high clay content) than others,

which were more conducive to reading tracks than the coarser or more firmly packed soils (such as sandy or rocky areas). Stations with finer soils may have resulted in higher wildlife occurrence numbers simply because the characteristic features in the registered tracks were more easily identified in the finer soils than in the rockier or sandier stations.

Despite the fact that all tracking stations were established on or adjacent to linear features such as roads and drainages, the majority of the data showed wildlife traveling perpendicular to the dirt roads and linear features (i.e., traveling across, not with, the linear features). In most cases, it was difficult to identify one main route of travel utilized by wildlife in that area. This illustrates another constraint of the study, that the results and data analysis are biased toward the linear features present in and around the project area. The results do not necessarily accurately represent wildlife travel activity throughout areas lacking linear features. As the data from many of the individual stations suggest (Table 9), there could be many routes of travel for wildlife to use in any given area that do not follow existing linear features. This study did not focus on wildlife using non-linear features for local travel.

These discussion points and data analyses only represent a sample of wildlife travel activities in the project area and are not representative of long distance movement corridors, nor are they representative of local large mammal populations. The study was not designed to identify individual animals crossing through an area, nor was it designed to capture distance measurements of wildlife travel.

4.2.6 Incidental Sensitive Species

Three SSC bird species were incidentally observed in the project area: short-eared owl, loggerhead shrike, and tricolored blackbird. These bird species are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (USFWS 1918), which is governed by USFWS. Most native bird species in California, both migrant and resident species, are protected under the MBTA. The MBTA (16 USC sections 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds (USFWS 1918). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (CFR) Part 10.

CDFG also enforces the protection of non-game native birds. Fish and Game Code sections Section 3503, and 3503.5 mandate the protection of California non-game

native birds' nests, and Fish and Game Code Section 3800 makes it unlawful to take California-native non-game birds (CDFG 2009c).

4.3 Alternatives Analysis

Biological surveys conducted in early 2008 were based on a preliminary project alignment design provided by Caltrans in April 2008. Caltrans provided an amendment to Alternative 3 in April 2009 that included a southerly shift of the Alternative 3 alignment between 50th and 75th Streets E. An additional sensitive plant survey was conducted in the amended area, but the remaining surveys that were conducted in the original project footprint (desert tortoise, Mohave ground squirrel, burrowing owl, and wildlife crossing study) were not repeated in the amended portion of Alternative 3. These surveys were not repeated because either the original survey effort provided sufficient coverage of Alternative 3 (such as Mohave ground squirrel trapping), or there were time and seasonal constraints that prevented additional surveys from being conducted. Each biological survey performed in the project area is presented below with a discussion on how it relates to each proposed alternative.

4.3.1 Site Characterics and Vegetation Mapping

Site characteristics and vegetation communities in Alternatives 2 and 3 are almost exactly the same, with the exception of a small block of fourwing saltbush series/rubber rabbitbrush series that occurs in Alternative 3 but not Alternative 2. Soils, disturbances, and the presence of desert washes are all comparable between the two proposed alternatives.

4.3.2. Sensitive Plants

Two sensitive plants, white pygmy poppy and crowned muilla, were observed in multiple locations throughout the Alternative 2 alignment only. However, due to the late timing of the Alternative 3 plant survey, populations of these two species (and other sensitive plant species with potential to occur) may not have been detectable at the time of the survey. Therefore, it is difficult to presume presence or absence of sensitive plant species in the amended portion of Alternative 3. Additional surveys may need to be conducted to determine presence or absence of sensitive plant species in Alternative 3.

4.3.2.1 ESTIMATE OF JOSHUA TREE DENSITY

Based on aerial photos of the project area, it appeared that Alternative 3 had a higher density of Joshua trees than Alternative 2. However, this finding would need to be confirmed with a focused Joshua tree survey.

4.3.3 Desert Tortoise

The focused desert tortoise protocol surveys yielded negative results for desert tortoise and desert tortoise sign in suitable habitat throughout the areas surveyed in Alternative 2. Although desert tortoise surveys were only conducted within and surrounding the Alternative 2 footprint, many of the ZOI transects surveyed portions of the Alternative 3 alignment.

Based on the lack of critical habitat and recent desert tortoise observations in the project area and vicinity, the negative survey results, and the communication from the USFWS (Appendix A), desert tortoise is not expected to occur within either of the proposed Alternatives.

4.3.4 Mohave Ground Squirrel

The north-south alignment of all four Mohave ground squirrel grids allowed for accurate sampling of portions of suitable habitat between Avenue P-8 and Avenue Q. The new portion of the Alternative 3 alignment was sufficiently surveyed for Mohave ground squirrel during the 2008 trapping season. Mohave ground squirrels were not captured during the trapping study and are not expected to occur in either of the Alternative 2 or Alternative 3 alignments.

4.3.4.1 NOCTURNAL TRAPPING

Nocturnal trapping was conducted at each of the four Mohave ground squirrel grids, and three common nocturnal small mammal species were captured. Neither of the alternatives that comprise the project area lies within the known home ranges of any sensitive nocturnal small mammals.

4.3.5 Burrowing Owl

The four protocol burrowing owl surveys were conducted along the Alternative 2 footprint only. One pair of burrowing owls with two associated burrow complexes, and a lone wintering owl with its associated burrow were observed in the immediately areas surrounding Alternative 2. Two unoccupied burrows were also

observed in the extreme western and eastern portions in the areas surrounding Alternative 2.

The amended portion of Alternative 3 was not surveyed for burrowing owls due to project time constraints; however, portions of the 500-ft (150-m) survey buffer area covered much of Alternative 3. Suitable habitat for burrowing owl is present throughout the Alternative 3 alignment and there is a high potential for burrowing owl to occur. An additional burrowing owl survey may need to be conducted to identify burrowing owls and/or potential burrowing owl burrows within Alternative 3.

4.3.6 Wildlife Crossing Study

The wildlife crossing study surveyed for wildlife movement and travel routes across the entire proposed project area (Alignments 2 and 3). Although tracking stations were not placed directly within the new portion of the Alternative 3 alignment, the design of the study was such that it sampled wildlife potentially traveling through the proposed Alternative 3 alignment. Wildlife crossing study results for the new portion of Alternative 3 are expected to be the same as for Alternative 2.

4.3.7 Incidental Sensitive Species

The majority of the surveys were focused within the Alternative 2 alignment during the surveys conducted in 2008 and early 2009, therefore, incidentally observed sensitive wildlife species data collection was biased on the Alternative 2 alignment. Although the majority of the incidental sensitive species observations occur within the Alternative 2 alignment, it does not necessarily indicate a higher occurrence of sensitive species within that alternative. Sensitive wildlife species observed or detected in Alternative 2 are expected to occur at similar densities and in similar habitats within Alternative 3.

4.3.8 Alternatives Analysis Conclusion

Based on the relatively homogenous and ecologically similar nature of the habitat in the amended portion of Alternative 3 and proximity of the amended portion of Alternative 3 to the project area, it is assumed that biological resources present in the amended portion of Alternative 3 are similar and comparable to those present in Alternative 2. However, additional focused surveys may need to be conducted in the future to fulfill USFWS, CDFG, NEPA, and/or CEQA requirements for the project.

4.4 Mitigation Analysis

The following mitigation measures are proposed solely based on the findings of the focused biological surveys conducted in the project area. The mitigation measures have not been approved by CDFG, USFWS, or other resource agency. Consultation with the agencies will need to take place prior to the start of construction to determine what mitigation measures will be require, Additional mitigation measures not discussed in this section may be required for the project.

4.4.1 Vegetation Communities

Sensitive vegetation communities were not mapped within the project site; however, water features and associated riparian habitats potentially falling under the jurisdiction of CDFG, ACOE, and other resource agencies are present throughout the project area. A jurisdictional delineation was conducted in 2008 and 2009, results of which are presented under a separate cover (ECORP 2010). It is recommended that mitigation measures follow the results and discussion points outlined in the jurisdictional delineation report.

4.4.2 Sensitive Plants

Several populations of two sensitive plant species, white pygmy poppy and crowned muilla, were observed within the project area and proposed project footprint. Both of these plant species are identified as CNPS List 4.2 species, a watch list of plants presumed to be endangered in California (CNPS 2009). Because CDFG works in conjunction with CNPS in assessing the rarity and sensitivity of plants occurring in California, CNPS plant rankings are considered by CDFG to be valid special-status rankings. Plants identified under CNPS designations (as well as other agency designations) are also required to be addressed by CEQA (and sometimes NEPA) project documentation.

There is a potential for these populations (and other populations of sensitive plant species potentially present in the project area) to be eliminated during construction, which may result in significant impacts to these species. If these impacts are considered significant, compensatory mitigation measures (such as preserving acreage of sensitive plant habitat at a certain ratio of the acreage that will be affected by construction) may be required. If possible, the populations of these sensitive plants should be avoided during construction.

4.4.2.1 JOSHUA TREES

The City of Palmdale Municipal Code requires preservation of Joshua trees affected by projects occurring within the City limits. Although a formal Joshua tree survey was not conducted within the project area, an estimate of Joshua tree density in both alternative footprints was conducted. Chapter 14.04 of the City of Palmdale Municipal Code requires that a vegetation removal permit application be submitted prior to disturbing native desert habitat (City of Palmdale 2009). A report of all Joshua trees present in the project area (including the size, condition, and location of each plant) is to be included in the permit application packet. It is recommended that mitigation measures for Joshua trees affected by the project follow Chapter 14.04 of the City of Palmdale Municipal Code. When possible, Joshua trees should be avoided during construction activities.

4.4.3 Desert Tortoise

Mitigation for impacts to desert tortoise will likely not be required because of the negative survey results and the lack of recent observations of tortoise in the area (CDFG 2008). A pre-construction tortoise survey will likely be required prior to the start of construction in order to determine if any tortoises have moved into the project area. If a tortoise or tortoise sign is found on the project site or within the immediate vicinity during the pre-construction survey, then USFWS and CDFG will need to be immediately notified and avoidance and minimization efforts, in addition to a mitigation plan, will need to be created and implemented to offset potential impacts to the desert tortoise.

4.4.4 Mohave Ground Squirrel

Mitigation for Mohave ground squirrel will likely not be required due to the negative trapping results for Mohave ground squirrel and the lack of recent records of this species in the area since the 1930s (CDFG 2008). Consultation with CDFG will be required to determine whether the project will need mitigation for Mohave ground squirrel.

4.4.4.1 NOCTURNAL TRAPPING

Mitigation measures will be not required for impacts to nocturnal small mammals because the project area does not support any sensitive species of nocturnal small mammal species.

4.4.5 Burrowing Owl

Three burrowing owls and several burrow complexes were identified throughout the project area. A pre-construction burrowing owl survey will likely be required prior to the start of ground disturbing activities to determine if the owls are still present or if other owls have migrated in the project area. Burrowing owls are protected by CDFG and by the MBTA. In addition to protecting native, non-game bird species, the MBTA also requires that disturbances in and around active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 to August 31, annually) to avoid nest abandonment and/or loss of eggs or young (USFWS 1918). The loss of habitat upon which the birds depend during the nesting season could constitute a violation of the MBTA.

It is recommended that construction take place outside of the breeding season (typically September 1 to January 31) to avoid impacts to nesting raptors and songbirds. If construction is to occur during the breeding season, additional avoidance and minimization measures would need to be implemented to protect breeding birds and their nests within the project area. Examples of these avoidance and minimization measures would include pre-construction breeding bird surveys, presence of a biological monitor during vegetation clearing activities, no-disturbance buffers established around active nests, and monitoring of active nests by a qualified biologist.

If occupied burrowing owl burrows will be affected by the project, CDFG may require additional compensatory mitigation measures in the form of habitat preservation and artificial burrow construction in nearby areas. Consultation with CDFG regarding impacts to burrowing owl will be required prior to the start of the project.

4.4.6 Wildlife Crossing Study

Mitigation for project impacts to wildlife travel routes should be manifested in the form of freeway design. The design of a new freeway should include wildlife crossing mechanisms that are as natural and easy for wildlife to cross as possible to promote use by local wildlife. The following measures are recommended in the new freeway design (specific designs should be prepared in consultation with the regulatory agencies):

- When possible, use large, at-grade culverts under the new freeway where drainages bisect the ROW. Wildlife species are more likely to utilize at-grade culverts when they can see across to the other side. In addition, where the road may include medians requiring long culverts, the culverts should be daylighted in the median, where feasible.
- Bridges constructed over the drainage features should be constructed high enough to allow large wildlife to travel underneath.
- Focus wildlife crossing mechanisms on drainages, washes, and established dirt roads that cross the new freeway. These are natural movement corridors that are automatically attractive to large mammals when moving throughout the area. It may be more cost-effective for the project and valuable to wildlife to focus the placement of wildlife crossings on or around the existing features utilized as travel routes (washes, drainages, and roads).
- Except in areas where wildlife crossings are to be installed, maintain vegetation clearing adjacent to the freeway so it does not attract additional wildlife to roadways or road shoulders. Large trees and shrubs should not be included in revegetation plans immediately adjacent to the roadway. Additionally, artificial depressions that collect water should not be created or constructed adjacent to roadways. These measures will help reduce road-kill incidents on the new freeway by not attracting wildlife to the road shoulders.
- Install wildlife drift fencing (in sections) along busy roadways with natural under- or over-crossings for wildlife. Fences should be constructed with wings leading into each culvert or crossing to channel wildlife safely through the designated crossing areas.

4.4.7 Incidental Wildife Species

Three SSC bird species were incidentally observed within the project area (loggerhead shrike, short-eared owl, and tricolored blackbird). These birds are protected under the MBTA and would be adequately covered under the mitigation measures discussed for burrowing owl (refer to section 4.6.3). Additionally, impacts to these species will need to be addressed in the CEQA and/or NEPA documentation required for the project. If additional sensitive species are detected during pre-construction surveys, the appropriate agencies will need to be contacted to determine what mitigation, if any, will be required.

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APPENDIX C Plant Compendium

Scientific Name	**Common Name**
VASCULAR PLANTS	
ANGIOSPERMS (DICOTYLEDONS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Ambrosia acanthicarpa	annual bur-sage
Ambrosia dumosa	white bursage
Anisicoma acaulis	scale-bud
Artemisia californica	California sagebrush
Artemisia dracunculus	wild tarragon
Artemisia tridentata	Great basin sagebrush
Baccharis salicifolia	mulefat
Chaenactis fremontii	Fremont pincushion
Chrysothamnus viscidiflorus	stickyleaf rabbitbrush
Coreopsis californica var. *californica*	tickseed
Dicoria canescens	Dune dicoria
Encelia farinosa	brittlebush
Ericameria cooperi	Cooper's goldenbush
Ericameria linearifolia	interior goldenbush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly daisy
Hymenoclea salsola	cheesebush
Lasthenia californica	goldfields
Layia glandulosa	white tidytips
Lepidospartum squamatum	scale broom
Malacothrix glabrata	desert dandelion
Microseris lindleyi	Silver puffs
Stephanomeria spinosa	thorn skeletonweed
Tetradymia comosa	cottonthorn
Xanthium strumarium	cocklebur
BORAGINACEAE	**BORAGE fAMILY**
Amsinckia menziesii var. *intermedia*	common fiddleneck
Cryptantha circumscissa	Western forget-me-not
Cryptantha muricata	prickly popcorn flower
Cryptantha cf. *nevadensis*	popcorn flower
Cryptantha pterocarya	wingnut cryptantha
Heliotropium curassavicum	heliotrope
Nama demissum	purple mat
Pectocarya penicillata	winged comb seed
Phacelia crenulata	notch-leaved phacelia
Phacelia distans	common phacelia
Phacelia fremontii	Fremont's phacelia
Pholistoma membranaceum	white fiesta flower
Tiquilia plicata	coldenia

Scientific Name	**Common Name**
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Brassica tournefortii**	Sahara mustard
Descurainia pinnata	Western tansy mustard
*Hirschfeldia incana**	shortpod mustard
Lepidium flavuum var. *flavum*	yellow peppergrass
Sysimbrium irio[1]	London rocket
CACTACEAE	**CACTUS FAMILY**
Opuntia echinocarpa	silver cholla
CARYOPHYLLACEAE	**PINK FAMILY**
Loeflingia squarrosa var. *squarrosa*	Spreading loeflingia
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	fourwing saltbush
Atriplex polycarpa	saltbush
Grayia spinosa	spiny hopsage
Krascheninnikovia lanata	winterfat
*Salsola tragus**	Russian thistle
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Cuscuta denticulate	desert dodder
CUCURBITACEAE	**GOURD FAMILY**
Brandegea bigelovii	desert starvine
Marah fabaceus	California man-root
CUSCUTACEAE	**DODDER FAMILY**
Cuscuta denticulata	desert dodder
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Mormon tea
Ephedra viridis	green ephedra
EUPHORBIACEAE	**SPURGE FAMILY**
Chamaesyce albomarginata	rattlesnake weed
Croton californicus	California croton
Eremocarpus setigerus	doveweed
FABACEAE	**PEA FAMILY**
Astragalus cf. *lentiginosus*	freckled milkvetch
Collinsia sp.	Chinese houses
Lotus strigosus	hairy lotus
Lupinus concinnus	elegant lupine
*Medicago sativa**	alfalfa
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	filaree

Scientific Name	**Common Name**
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	common horehound
Salazaria mexicana	bladdersage
Salvia carduacea	thistle sage
Salvia columbariae	chia
LOASACEAE	**LOASA FAMILY**
Mentzelia affinis	blazing star
Mentzelia albicaulis	white-stemmed stickleaf
MALVACEAE	**MALLOW FAMILY**
Eremalche exilis	small-flowered eremalche
Sphaeralcea ambigua	apricot mallow
MELIACEAE	**MAHOGONY FAMILY**
*Melia azedarach**	China berry
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Abronia pogonantha	Mojave sand verbena
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia brevipes	yellow cups
Camissonia campestris	Mojave suncup
Camissonia claviformis var. *claviformis*	brown-eyed primrose
Oenothera californica	California evening primrose
Oenothera deltoides	birdcage evening primrose
PAPAVERACEAE	**POPPY FAMILY**
Canbya candida[1]	pygmy poppy
Eschscholzia minutiflora	Coville's poppy
POLEMONIACEAE	**PHLOX FAMILY**
Gilia brecciarum	small gilia
Gilia latiflora	broad-flowered gilia
Gilia transmontana	Transmontane gilia
Linanthus aureus	golden linanthus
Linanthus parryae	sand blossoms
Loeseliastrum matthewsii	desert calico
POLYGONACEAE	**BUCKWHEAT FAMILY**
Centrostegia thurberi	red triangles
Eriogonum davidsonii	Davidson's buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracillimum	slender stemmed buckwheat
Rumex hymenosepalus	wild rhubarb

Scientific Name	**Common Name**
PORTULACEAE	**PURSLANE FAMILY**
Calyptridium monandrum	pussy paws
ROSACEAE	**ROSE FAMILY**
Purshia tridentata	bitterbush
SALICACEAE	**WILLOW FAMILY**
Populus fremontii ssp. *fremontii*	Fremont's cottonwood
Salix exigua	sandbar willow
Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	**FIGWORT FAMILY**
Castilleja exserta	Purple owl's clover
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
Lycium andersonii	desert tomato
Lycium cooperi	peach thorn
Tiquilia plicata	coldenia
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix ramosissima**	saltcedar
ULMACEAE	**ELM FAMILY**
*Ulmus pumila**	Siberian elm
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
GYMNOSPERMS	
CUPRESSACEAE	**CYPRESS FAMILY**
Juniperus californica	California juniper
ANGIOSPERMS (MONOCOTYLEDONS)	
LILIACEAE	**LILY FAMILY**
Delphinium parishii	Desert larkspur
Dichelostemma capitatum	school bells
Muilla coronata[1]	crowned muilla
Yucca brevifolia	Joshua tree
POACEAE	**GRASS FAMILY**
Achnatherum hymenoides	rice grass
Achnatherum speciosum	desert needlegrass
*Arundo donax**	giant reed
*Avena barbata**	slender wild oats
*Bromus diandrus**	ripgut grass
Bromus madritensis ssp. *rubens**	foxtail chess
Bromus tectorum	cheat grass
Distichlis spicata	saltgrass

Scientific Name	Common Name
Hordeum marinum	barley
*Hordeum vulgare**	common barley
Polypogon monspeliensis	rabbitsfoot grass
*Schismus barbatus**	Medterranean grass
*Vulpia myuros**	vulpia
TYPHACEAE	**CATTAIL FAMILY**
Typha domingensis	narrowleaf cattail

[1] CNPS List 4.2 sensitive species
*: non-native species

APPENDIX D **Wildlife Compendium**

Scientific Name	Common Name	Status[1]
	INVERTEBRATES	
Araneae	**Spiders**	
Latrodectus hesperus	black widow	
Coleoptera	**Beetles**	
Coccinella californica	ladybird beetle	
Eleodes sp.	stink beetle	
Tenebrio sp.	darkling beetle	
Homoptera	**Homopterans**	
Tibicen sp.	cicada	
Orthoptera	**Grasshoppers and Katydids**	
Trimerotropis pallidipennis	pallid-winged grasshopper	
Stenopelmatus fuscus	Jerusalem cricket	
Lepidoptera	**Butterflies and Moths**	
Hyles lineata	white-lined sphinx moth	
Tegeticula maculata	yucca moth	
Vanessa cardui	painted lady	
	REPTILES	
Iguanidae	**Iguanid Lizards**	
Callisaurus draconoides	zebra-tailed lizard	
Dipsosaurus dorsalis	desert iguana	
Gambelia wislizenii	leopard lizard	
Phrynosomatidae	**Spiny Lizards**	
Sceloporus magister	desert spiny lizard	
Uta stansburiana	side-blotched lizard	
Teiidae	**Whiptails and Racerunners**	
Aspidoscelis tigris	western whiptail	
Colubridae	**Colubrid Snakes**	
Chionactis occipitalis	Mojave shovel-nosed snake	
Masticophis flagellum	coachwhip	
Pituophis melanoleucus	gopher snake	
Viperidae	**Pit Vipers**	
Crotalus scutulatus	Mojave green	

Scientific Name	**Common Name**	**Status[1]**
	BIRDS	
Anatidae	**Swans, Geese, and Ducks**	
Anas clypeata	northern shoveler	
Anas cyanoptera	cinnamon teal	
Anas platyrhynchos	mallard	
Oxyurua jamaicensis	ruddy duck	
Ardeidae	**Bitterns and Herons**	
Ardea alba	great egret	
Cathartidae	**Vultures**	
Cathartes aura	turkey vulture	
Accipitridae	**Hawks, Kites, Harriers, and Eagles**	
Accipiter cooperii	Cooper's hawk	
Buteo jamaicensis	red-tailed hawk	
Circus cyaneus	Northern harrier	
Falconidae	**True Falcons**	
Falco mexicanus	prairie falcon	
Falco sparverius	American kestrel	
Odontophoridae	**Quails**	
Callipepla californica	California quail	
Charadriidae	**Plovers**	
Charadrius vociferus	killdeer	
Recurvirostridae	**Stilts and Avocets**	
Himantopus mexicanus	black-necked stilt	
Laridae	**Jaegers, Gulls, and Terns**	
Larus sp.	unidentified gull	
Columbidae	**Pigeons and Doves**	
*Columba livia**	rock pigeon	
*Streptopelia decaocto**	Eurasian collared-dove	
Zenaida macroura	mourning dove	
Strigidae	**Owls**	
Athene cunicularia	burrowing owl	SSC
Asio flammeus	short-eared owl	SSC
Bubo virginianus	great horned owl	
Tyto alba	barn owl	
Caprimulgidae	**Goatsuckers**	
Chordeiles acutipennis	lesser nighthawk	
Picidae	**Woodpeckers**	
Picoides scalaris	ladder-backed woodpecker	

Scientific Name	**Common Name**	**Status[1]**
Trochilidae	**Hummingbirds**	
Archilochus alexandri	black-chinned hummingbird	
Calypte anna	Anna's hummingbird	
Tyrannidae	**Tyrant Flycatchers**	
Myiarchius cinerascens	ash-throated flycatcher	
Sayornis nigricans	black phoebe	
Sayornis saya	Say's phoebe	
Tyrannus verticalis	western kingbird	
Tyrannus vociferans	Cassin's kingbird	
Laniidae	**Shrikes**	
Lanius ludovicianus	loggerhead shrike	SSC
Corvidae	**Crows and Allies**	
Aphelocoma californica	western scrub jay	
Corvus corax	common raven	
Troglodytidae	**Wrens**	
Campylorhynchus brunneicapillus	cactus wren	
Thryomanes bewickii	Bewick's wren	
Sylviidae	**Gnatcatchers**	
Polioptila melanura	black-tailed gnatcatcher	
Turdidae	**Thrushes**	
Siala mexicana	western bluebird	
Allaudidae	**Larks**	
Eremophila alpestris	horned lark	
Hirundinidae	**Swallows**	
Hirundo rustica	barn swallow	
Tachycineta thalissina	violet-green swallow	
Remizidae	**Chickadees and Allies**	
Auriparus flaviceps	verdin	
Mimidae	**Mimids**	
Mimus polyglottos	northern mockingbird	
Toxostoma redivivum	California thrasher	
Ptilogonatidae	**Silky Flycatchers**	
Phainopepla nitens	phainopepla	
Sturnidae	**Starlings**	
*Sturnus vulgaris**	European starling	
Parulidae	**Wood Warblers**	
Dendroica coronata	yellow-rumped warbler	
Wilsonia pusilla	Wilson's warbler	

Scientific Name	**Common Name**	**Status[1]**
Emberizidae	**New World Sparrows and Allies**	
Amphispiza bilineata	black-throated sparrow	
Amphispiza belli	sage sparrow	
Chondestes grammacus	lark sparrow	
Melospiza melodia	song sparrow	
Pipilo crissalis	California towhee	
Zonotrichia leucophrys	white-crowned sparrow	
Icteridae	**Icterids**	
Agelaius tricolor	tri-colored blackbird	SSC
Agelaius phoeniceus	red-winged blackbird	
Euphagus cyanocephalus	Brewer's blackbird	
Quiscalus mexicanus	great-tailed grackle	
Sturnella neglecta	western meadowlark	
Fringillidae	**Finches**	
Carpodacus mexicanus	house finch	
Passeridae	**Old World Sparrows**	
*Passer domesticus**	house sparrow	
	MAMMALS	
Canidae	**Foxes, Wolves, and Coyotes**	
*Canis domesticus**	domestic dog	
Canis latrans	coyote	
Vulpes macrotis	desert kitfox	
Equidae	**Horses**	
Equus caballus	domestic horse	
Felidae	**Cats**	
*Felis catus**	domestic cat	
Felis rufus	bobcat	
Bovidae	**Cattle, Sheep, and Goats**	
*Ovis aries**	domestic sheep	
Sciuridae	**Squirrels, Chipmunks, and Marmots**	
Ammospermophilus leucurus	white-tailed antelope ground squirrel	
Spermophilus beecheyi	California ground squirrel	
Heteromyidae	**Pocket Mice and Kangaroo Rats**	
Chaetodipus penicillatus	desert pocket mouse	
Dipodomys merriami	Merriam's kangaroo rat	

Scientific Name	**Common Name**	**Status[1]**
Dipodomys panamintinus	Panamint kangaroo rat	
Muridae	**Mice, Rats, and Voles**	
Neotoma lepida	desert woodrat	
Peromyscus maniculatus	deer mouse	
Leporidae	**Rabbits and Hares**	
Lepus californicus	black-tailed jackrabbit	
Sylvilagus audubonii	desert cottontail	
Procyonidae	**Raccoons and Allies**	
Procyon lotor	common raccoon	

[1]SSC: California Species of Concern

*: non-native species

APPENDIX F Desert Tortoise Survey Data Sheets

Date: 6/2/08 **Desert Tortoise Survey with Zone of Influence**

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2008-036.001/001/001

Client: Caltrans D-7

General Information	Weather Data		
Observers: Todd Baker Barbara Stein Todd Chapman, Krishna M. Brad Haley	Time (24 hr)	Start: 0840	End: 1420
	Temp* (°F) 6" above ground in shade	Start: 73	End: 88
	Wind (mph)	Start: 4-8	End: 5-12
	% Cloud Cover	Start: clear	End: clear

Site Information

Project Name: LA 138 New Freeway Palmdale	
Location: B/w Ave P-8 + Q; 14 to 100th St. E.	**UTM Coordinates** (NAD 83)
County: LA	N: [PHOTOS? ___]
Quad: Palmdale	E: [PHOTOS? ___]
T____ R____ S____	S: [PHOTOS? ___]
Parcel #:	W: [PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils: sandy
Land Form*:	%Slope: 0-1	Other:
* e.g. mesa, bajada, wash		

Land Uses:

W: developed	N: Agricultural fields
E: open habitat	S: developed

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
some dumping, few vehicular tracks, past livestock evidence; dogs roaming many ravens

Is site staked or marked? [Y] [(N)]

Transect Width: 10 meters

Field Observations

Vegetation Communities: creosote bush scrubb

Plants

Amsinckia
creosote bush
Loselia stenum
Bromus
Mondarella
Lessingia glandulifera
many other annuals all dried up

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Coyote scat (S)
Zebra tail (O)
Ash-throated flycatcher (v)
LOSH (O) 0408363/3828334
Common raven (O)
Whiptail (O)
western meadowlark (v)
Mourning dove
black-throated sparrow
CA quail
Cactus wren
American crow

Comments

Date: 6/2/03

Desert Tortoise Survey with Zone of Influence

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 20058-036.001/001/001
Client: Caltrans D-7

Desert Tortoise Sign (Zone of influence distances - 100, 300, 600, 1200 and 2400 feet)			
Sign°	Class*	Location (UTM/Error) - Draw on Map	Comments
		No sign observed	

° B - burrow, T - tortoise, S - scat, Tr - tracks, C - carcass, O - other (specify)

5% Intensive Survey of Project Area? ____ (check if completed)

*BURROWS		*SCAT
1 - Currently active, w/tortoise or active sign	*Note ASPECT of burrow entrance	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no recent use		2 - Dry w/glaze and some odor, no bleaching
3 - Fair condition, definitely tortoise		3 - Dry w/o glaze or odor, light brown, tightly packed
4 - Deteriorated, definitely tortoise		4 - Dry w/o glaze or odor, yellow, loose material
5 - Good condition, possibly tortoise		5 - Dry w/o glaze or odor, bleached
6 - Deteriorated, possibly tortoise		

*LIVE TORTOISE (include MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS
1 - Healthy	A - Foraging	1 - Fresh or putrid
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone
4 - Peeling scutes	D - Digging	4 - Bones falling apart
5 - Ticks	E - Traveling	5 - Disarticulated

Date: 6/3/08

Desert Tortoise Survey with Zone of Influence

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2008-036.001/001/001
Client: Caltrans D-7

General Information	Weather Data		
Observers: Barbara Stein, Brad Haley, Kristen Mobrand, Darren Scheffer-Smith	Time (24 hr)	Start: 0800	End: 1345
	Temp* (°F) 6" above ground in shade	Start: 64	End: 89
	Wind (mph)	Start: 3-8	End: 0-8
	% Cloud Cover	Start: clear	End: clear

Site Information

Project Name: LA 138 New Freeway		
Location: Palmdale, CA b/w P-84 Q; I-14 to 105th St.	**UTM Coordinates** (NAD 83)	
County: Los Angeles	N:	[PHOTOS? ___]
Quad: Palmdale	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		
Land Uses:		
NW: see pg 1 6/2/08		SE:
NE:		SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

See data from 6/2/08

Is site staked or marked? [Y] [(N)]
Transect Width: 10 meters

Field Observations

Vegetation Communities: Creosote bush scrub + Joshua tree woodlands

Plants

see data from 6/2/08 + rare plant survey results for complete list

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

See data from 6/2/08

Comments

10 miles surveyed 100%.

Date: 6/3/08

Desert Tortoise Survey with Zone of Influence

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2008-036.001/601/607
Client: Caltrans D-7

Desert Tortoise Sign (Zone of influence distances - 100, 300, 600, 1200 and 2400 feet)			
Sign°	Class*	Location (UTM/Error) - Draw on Map	Comments
	Q	Sign observed	

° B - burrow, T - tortoise, S - scat, Tr - tracks, C - carcass, O - other (specify)

5% Intensive Survey of Project Area? ____ (check if completed)

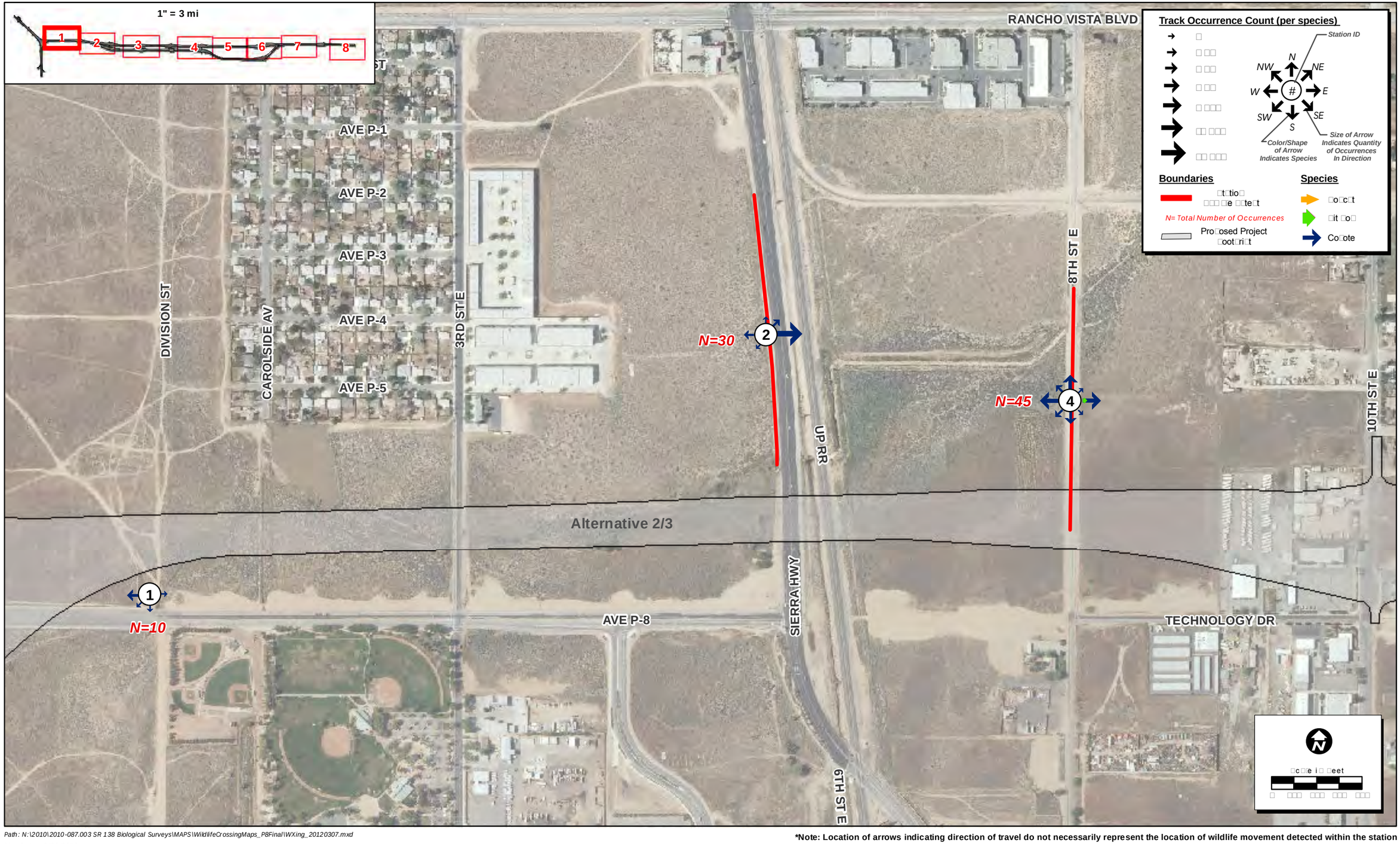
*BURROWS		*SCAT
1 - Currently active, w/tortoise or active sign 2 - Good condition, definitely tortoise, no recent use 3 - Fair condition, definitely tortoise 4 - Deteriorated, definitely tortoise 5 - Good condition, possibly tortoise 6 - Deteriorated, possibly tortoise	*Note ASPECT of burrow entrance	1 - Wet or freshly dried, obvious odor 2 - Dry w/glaze and some odor, no bleaching 3 - Dry w/o glaze or odor, light brown, tightly packed 4 - Dry w/o glaze or odor, yellow, loose material 5 - Dry w/o glaze or odor, bleached
*LIVE TORTOISE (include MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS
1 - Healthy 2 - URTD 3 - Shell Cracked 4 - Peeling scutes 5 - Ticks	A - Foraging B - Basking C - In burrow D - Digging E - Traveling	1 - Fresh or putrid 2 - Normal color, scutes adhered to bone 3 - Scutes peeled off bone 4 - Bones falling apart 5 - Disarticulated

Table F-1. Weather Conditions during the Desert Tortoise Survey

Date	Surveyors*	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
		Start	End	Start	End	Start	End	Start	End
06/02/08	BJH, BS, KLM, TAC	0840	1420	73	88	0	0	4-8	5-12
06/03/08	BJH, BS, DSS, KLM	0606	1345	64	89	0	0	3-8	0-8
06/04/08	BJH, BS, DSS, KLM	0605	1120	59	75	70	30	10-18	15-25
06/05/08	BJH, BS, DSS, KLM	0645	1205	55	78	0	0	0-3	0-4

*BJH = Brad Haley, BS = Barbara Stein, DSS = Danica Schaffer-Smith, KLM = Kristen Mobraaten, TAC = Todd Chapman

APPENDIX J **Wildlife Crossing Results**



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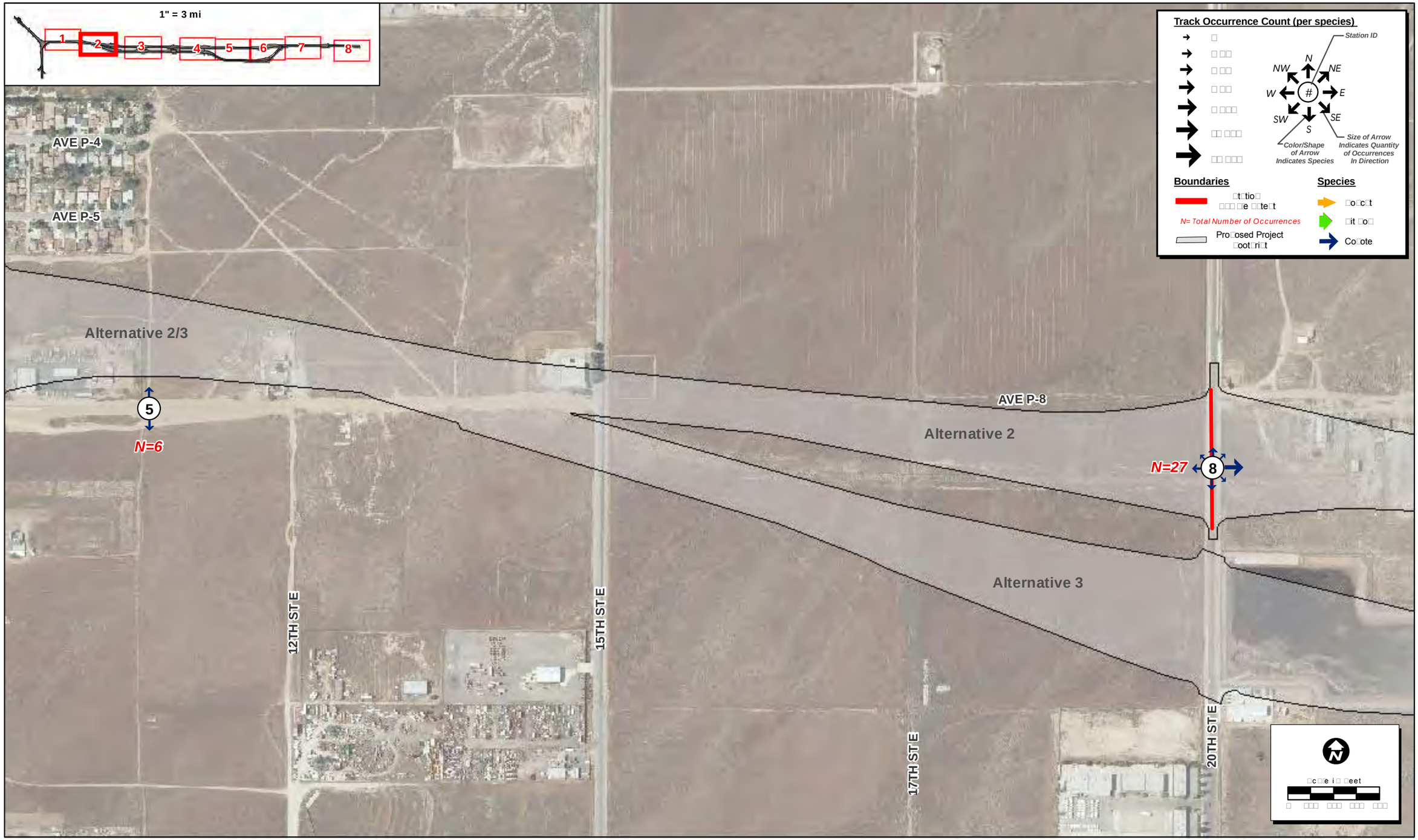
Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-1. Wildlife Crossing Study Results - Map 1 of 8

2010-036.003 CalTrans LA New Freeway-P8



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

*Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station

Figure J-2. Wildlife Crossing Study Results - Map 2 of 8

2010-036.003 CalTrans LA New Freeway-P8

Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-3. Wildlife Crossing Study Results - Map 3 of 8

2010-036.003 CalTrans LA New Freeway-P8

Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

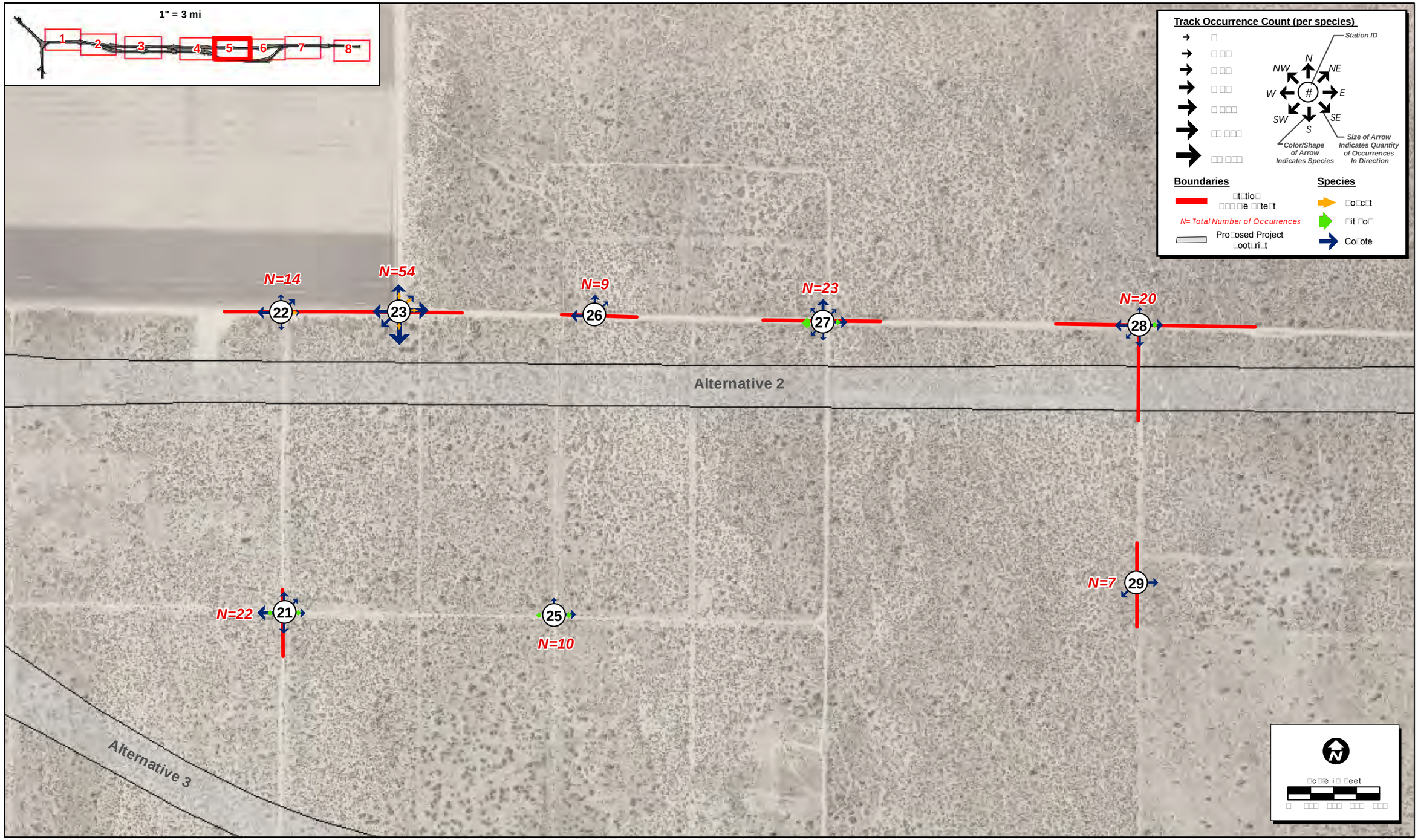
Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-4. Wildlife Crossing Study Results - Map 4 of 8

2010-036.003 CalTrans LA New Freeway-P8



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

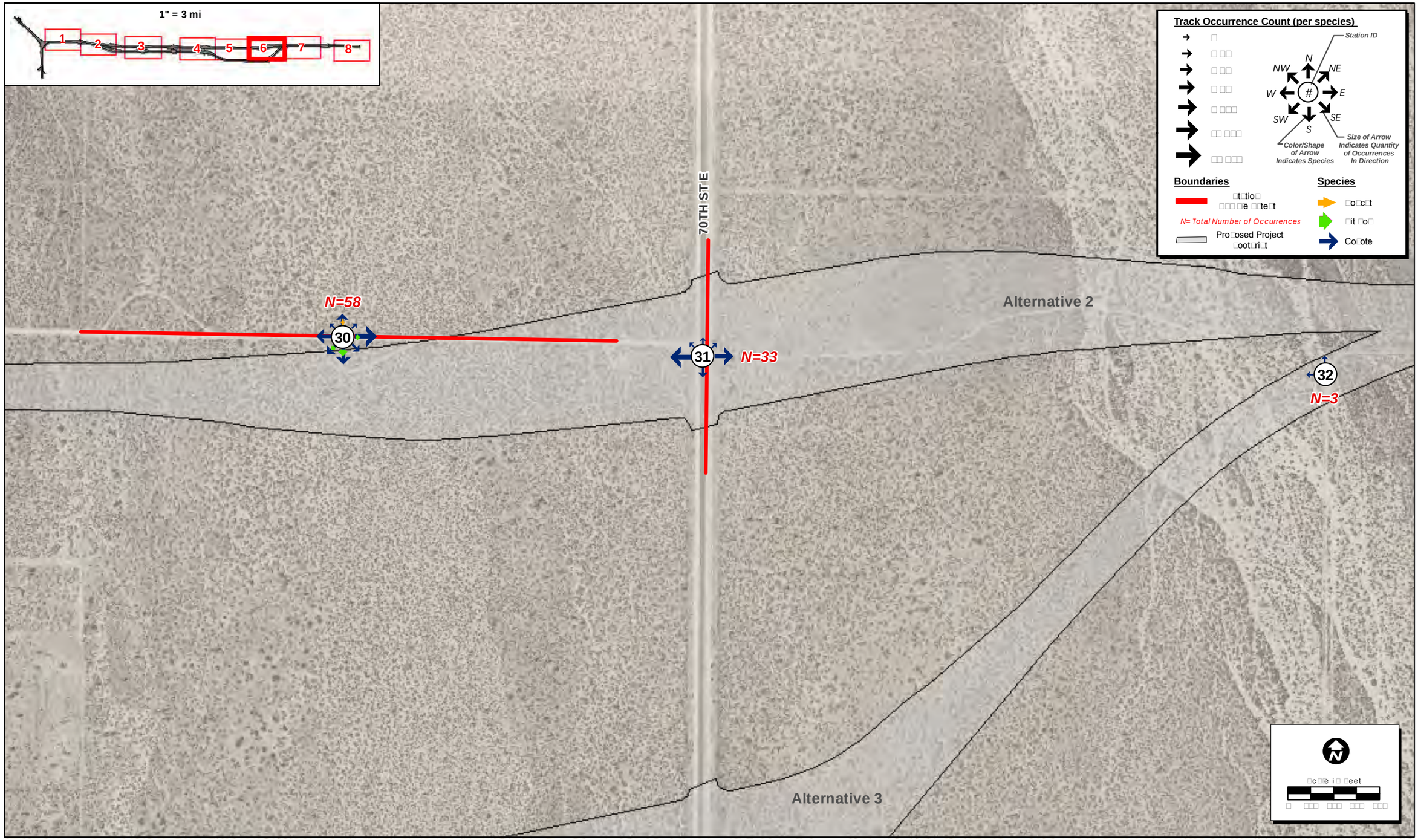
Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-5. Wildlife Crossing Study Results - Map 5 of 8

2010-036.003 CalTrans LA New Freeway-P8



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-6. Wildlife Crossing Study Results - Map 6 of 8

2010-036.003 CalTrans LA New Freeway-P8

Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

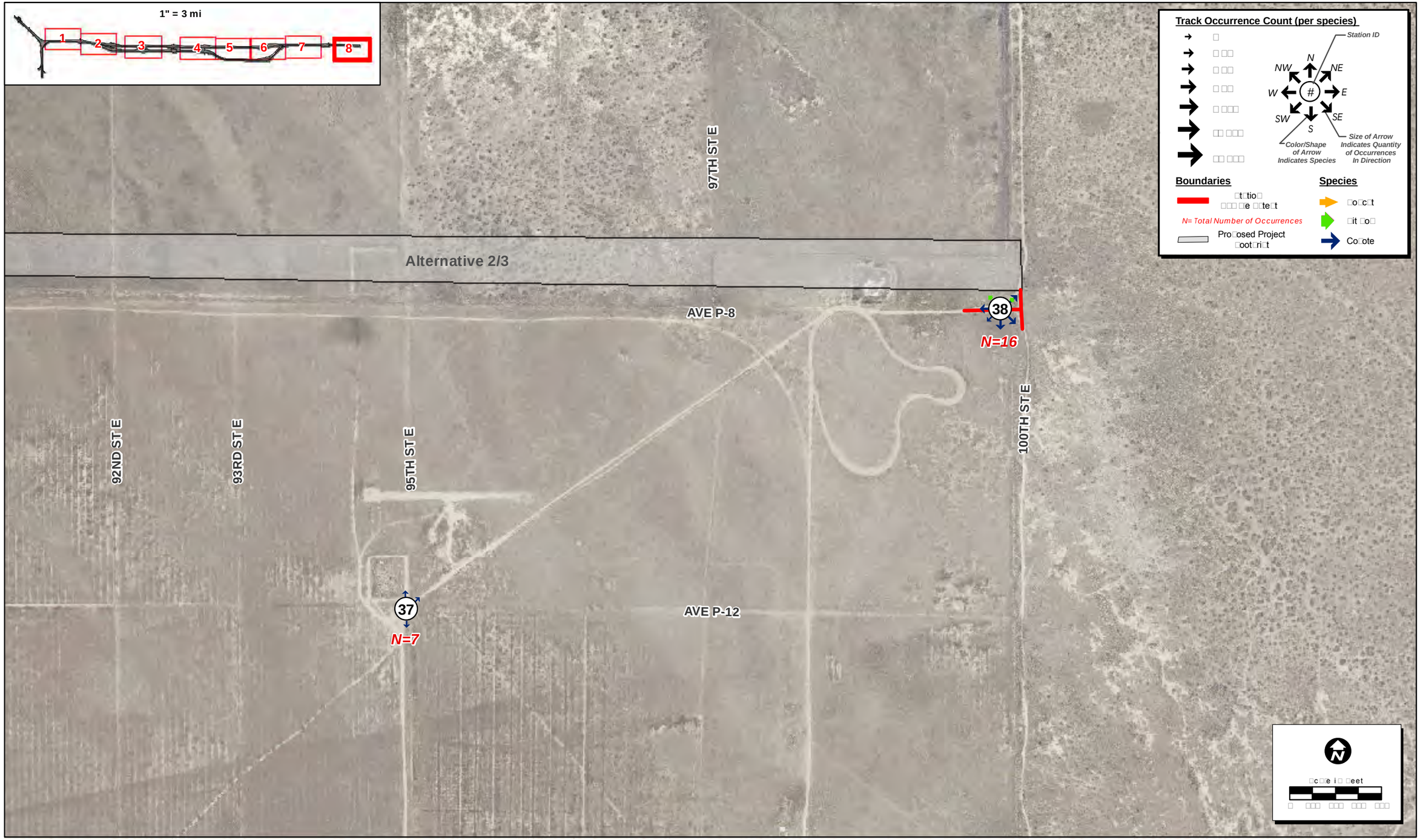
Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-7. Wildlife Crossing Study Results - Map 7 of 8

2010-036.003 CalTrans LA New Freeway-P8



Path: N:\2010\2010-087.003 SR 138 Biological Surveys\MAPS\WildlifeCrossingMaps_P8Final\WXing_20120307.mxd

Map Date: 3/22/2012
Photo Source: 2010 NAIP
Map Grid: UTM NAD83 11N

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

***Note: Location of arrows indicating direction of travel do not necessarily represent the location of wildlife movement detected within the station**

Figure J-8. Wildlife Crossing Study Results - Map 8 of 8

2010-036.003 CalTrans LA New Freeway-P8

CALIFORNIA DEPARTMENT OF TRANSPORTATION
HIGH DESERT CORRIDOR PROJECT
STATE ROUTE 18 WEST TO LOS ANGELES COUNTY LINE,
SAN BERNARDINO COUNTY

2012 FOCUSED DESERT TORTOISE (*GOPHERUS AGASSIZII*) SURVEY

Submitted to:
California Department of Transportation, District 8
464 West 4th Street, 6th Floor MS-1162
San Bernardino, California 92401
Attn: Scott Quinnell,
Senior Environmental Planner
Branch Chief,
Biological Studies & Permits Branch

&

California Department of Transportation, District 7
100 S. Main St., MS 16A
Los Angeles, CA 90012
Attn: Jeff Johnson,
Associate Environmental Planner (Biological Resources)
Division of Environmental Planning

Submitted by:
AMEC Environment & Infrastructure, Inc.
Riverside, California

31 August 2012

AMEC Project No. 1055402015

EXECUTIVE SUMMARY

The California Department of Transportation (Caltrans) proposes to construct the High Desert Corridor Project (project), which would include construction of an approximately 63-mile new freeway/expressway and possible toll way between SR-14 in the City of Palmdale, Los Angeles County, and SR-18 just east of the Town of Apple Valley, San Bernardino County. AMEC Earth & Environmental, Inc. ("AMEC") was contracted by District 8 of the California Department of Transportation ("CALTRANS") to conduct a focused desert tortoise (*Gopherus agassizii*) survey along an approximate 35 mile length segment of the proposed High Desert Corridor ("HDC") Project area between SR-18 in Apple Valley west to the Los Angeles County Line, within San Bernardino County. This year's survey included alternative alignments that differ from those surveyed during 2011, including approximately 27 miles of connecting roads, interchanges, frontage roads and project alternatives including an approximate seven (7) mile stretch to the north and south; along both shoulders of Interstate 15 (I-15)

The purpose of this 2012 focused survey was to identify if desert tortoises are present on these "new" segments and associated zone of influence; as well as to determine if tortoises would be affected by Project work. The desert tortoise was federally listed as threatened in 1990 by the U.S. Fish and Wildlife Service ("USFWS") per the Endangered Species Act ("ESA"). In California, the tortoise has also been state listed as threatened (CDFG 2011a) per the California Endangered Species Act ("CESA"), with the California Department of Fish and Game ("CDFG") administering an incidental take regulatory permitting program. Both state and federal consultation, as well as incidental take permitting, are required for projects that may result in effects to listed species.

AMEC Environment & Infrastructure, on behalf of the California Department of Transportation District 8, completed a background biological resources review of an approximate 35 mile-length segment of the Project between State Route 18 in Apple Valley west to the Los Angeles County Line, within San Bernardino County, in May 2011. A focused desert tortoise (*Gopherus agassizii*) survey of this proposed new freeway segment was subsequently conducted in June-September, 2011 and May-June, 2012 following established U.S. Fish and Wildlife Service survey protocol. Zone of influence transects of 33 feet width were conducted on each side of the proposed alignment segments at 656 feet, 1,312 feet and 1,969 feet from the alignment edge. Plant communities were assessed as to their suitability for tortoise use. The potential for tortoise travel into anticipated work areas was evaluated. All sign of tortoise activity was recorded and mapped.

Intact creosote bush and saltbush scrub, sparse Joshua tree woodland, former agricultural fields, rock outcrop areas and moderate to highly disturbed plant communities were found to occur within the focused survey area. Habitat considered generally suitable for tortoise use was identified as patchily distributed throughout the proposed new freeway alignment and much of the adjacent zone of influence.

During the course of the 2012 survey, only one desert tortoise burrow (Class 3) was detected in the eastern Project alignment, east of I-15. One Class 2 tortoise burrow was observed just west of I-15, and east of Stoddard Wells Road. The majority of the tortoise sign was detected further to the west. Unlike the 2011 survey, no live tortoises were detected on the Project alignment or in the zone of influence areas during the 2012 focused tortoise survey. However, a large amount of tortoise sign (scats, burrows, and tracks) were observed in the same general area where the live tortoise was observed during the 2011 survey (just east of the Mojave River). Another "concentration" of tortoise sign (scats, carcasses, and burrows) was found in the same general areas west of US-395 as observed during the 2011 focused survey.

The presence of tortoise sign in these areas suggests a need at these localities for pre-construction surveys, burrow excavation and construction monitoring to ensure no desert tortoise would be harmed during Project work.

As burrow excavation and construction monitoring could result in tortoise handling, Endangered Species Act consultation between the lead federal agency and the U.S. Fish and Wildlife Service is recommended. As the tortoise is also state listed as threatened, California Endangered Species Act compliance is also required. A Section 2080.1 Consistency Determination could potentially be issued by the California Department of Fish and Game, following a review of any biological opinion/federal incidental take statement issued for this Project. Biological resource impact avoidance and minimization measures are recommended.

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ACRONYMS AND ABBREVIATIONS

ASL	Above Average Sea Level
AMEC	AMEC Environment & Infrastructure
BLM	U.S. Bureau of Land Management
BSA	Biological Study Area
CALTRANS	California Department of Transportation
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
cm	Centimeter
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
E	east
ESA	Endangered Species Act
feet	ft
GIS	geographic information systems
GPS	global positioning system
HDC	High Desert Corridor
I-15	Interstate Highway 15
km	kilometer
LA	Los Angeles
m	Meter
N	north
Project	High Desert Corridor, SR-18 to LA County line
SR-14	State Route 14
SR-18	State Route 18
USGS	U.S. Geological Survey
US-395	U.S. Highway 395
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Transverse Mercator
ZOI	zone of Influence

1.0 INTRODUCTION

The California Department of Transportation (Caltrans) proposes to construct the High Desert Corridor Project (project), which would include construction of an approximately 63-mile new freeway/expressway and possible toll way between SR-14 in the City of Palmdale, Los Angeles County, and SR-18 just east of the Town of Apple Valley, San Bernardino County. AMEC Earth & Environmental, Inc. ("AMEC") was contracted by District 8 of the California Department of Transportation ("CALTRANS") to conduct a focused desert tortoise (*Gopherus agassizii*) survey along an approximate 35 mile length segment of the proposed High Desert Corridor ("HDC") Project area between SR-18 in Apple Valley west to the Los Angeles County Line, within San Bernardino County (Figure 1). This year's survey included alternative alignments that differ from those surveyed during 2011, including approximately 27 miles of connecting roads, interchanges, frontage roads and project alternatives including an approximate seven (7) mile stretch to the north and south; along both shoulders of Interstate 15 (I-15).

The purpose of this 2012 focused survey was to identify if desert tortoises are present on these "new" segments and associated zone of influence; as well as to determine if tortoises would be affected by Project work. The desert tortoise was federally listed as threatened in 1990 by the U.S. Fish and Wildlife Service ("USFWS") per the Endangered Species Act ("ESA"). In California, the tortoise has also been state listed as threatened (CDFG 2011a) per the California Endangered Species Act ("CESA"), with the California Department of Fish and Game ("CDFG") administering an incidental take regulatory permitting program. Both state and federal consultation, as well as incidental take permitting, are required for projects that may result in effects to listed species.

1.1 Project Description

The new east-west HDC freeway/expressway will extend between SR-18 in Apple Valley to SR-14 in Palmdale. In San Bernardino County, the project extends from SR-18 in the Town of Apple Valley and curves to the northwest, crossing Interstate Highway 15 (I-15) in Victorville. West of I-15, this new freeway follows Air Expressway Road through Adelanto and then runs slightly north of Parkdale Road to the county line (Figure 2). In Los Angeles County, the HDC roughly follows the Avenue P-8 corridor to connect with SR-14. As currently designed, the proposed Project will accommodate an expected three to six fold increase in traffic between Antelope and Victor Valleys, as well as provide a new level of intra-valley accessibility.

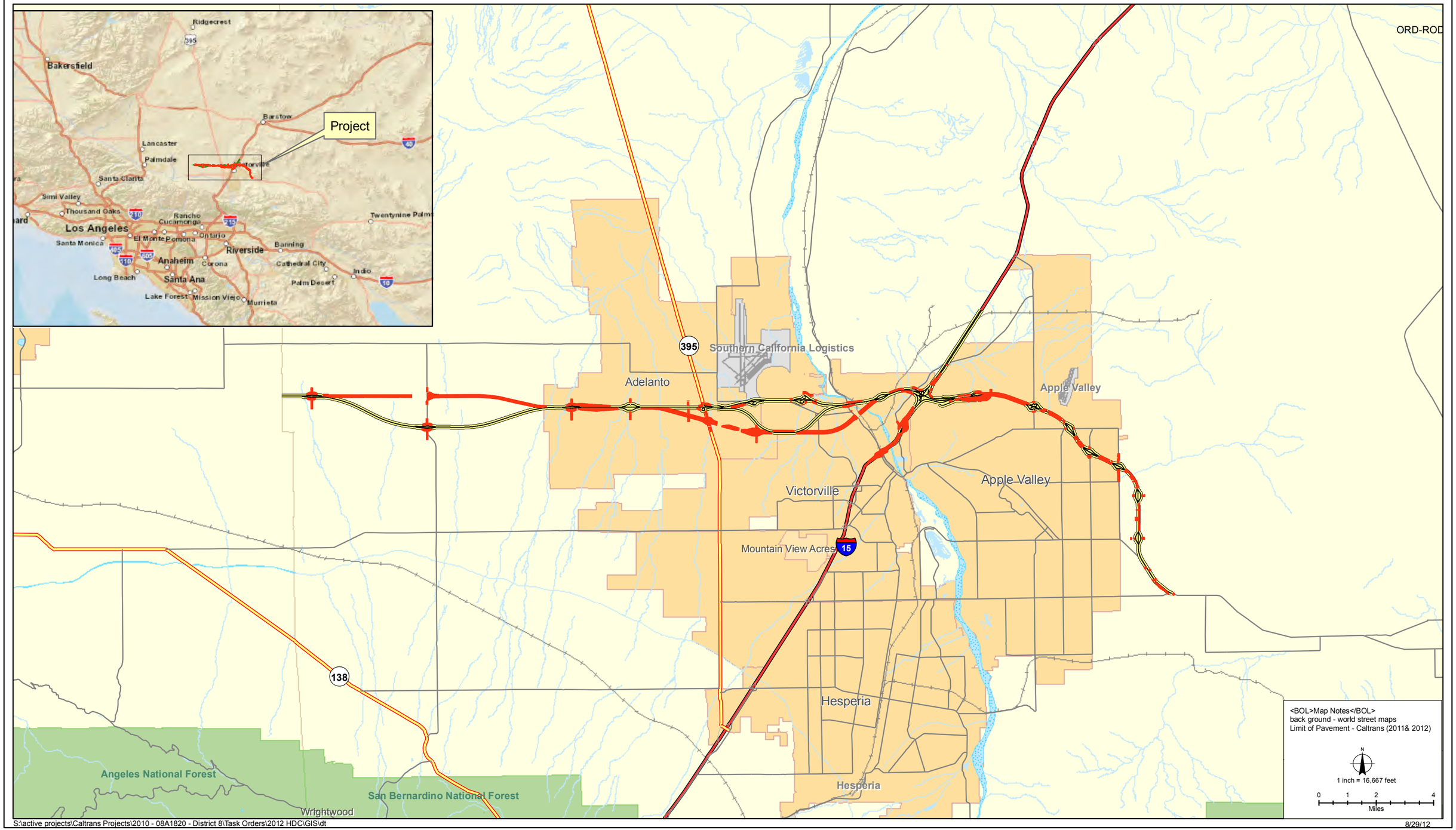
1.2 Environmental Setting

The project lies within the High Desert Plains and Hills subsection of the Mojave Desert region of California (U.S. Department of Agriculture [USDA] 1997). The subsection is mostly alluvial plain and pediment with relatively small areas of hills and low mountains. Land uses within the study area include undeveloped land, residential housing, commercial and industrial development, and existing roadway and shoulder as part of I-15 and city roadways. Mean annual precipitation is approximately 4 to 10 inches, and mean annual temperature is 60° to 66° Fahrenheit with a mean freeze-free period of approximately 250 to 275 days (USDA 1997).

The project area ranges in elevation from approximately 3,050 feet above mean sea level (AMSL) at the eastern project boundary and 2,995 feet AMSL at the western project boundary. The highest elevation (approximately 3,120 feet AMSL) occurs near Bell Mountain, just east of I-15. The lowest elevations are along the Mojave River, approximately 2,660 feet AMSL at the lowest point in the project area.

The project area contains a few distinct plant communities, including Mojave desert scrub and Joshua tree woodland, and to a lesser degree, desert riparian woodland and alkali sink. The upland habitats throughout the survey area are vegetated mainly with Mojave desert scrub or a mix of Mojave desert scrub and Joshua tree woodland. Dominant perennial plant species include creosote bush (*Larrea tridentata*), Joshua tree (*Yucca brevifolia*), white bursage (*Ambrosia dumosa*), saltbush (*Atriplex polycarpa, A. canescens*), spiny hopsage (*Grayia spinosa*), cheesebush (*Hymenoclea salsola*), turpentinebroom (*Thamnosma montana*), and Mojave cottonthorn (*Tetradymia stenolepis*).

The direct impact area of the Project (Figure 3) occurs within the following U.S. Geological Survey (USGS), 7.5-minute series topographic quadrangles: *El Mirage, Shadow Mountains SE, Adelanto, Victorville, Apple Valley North, Apple Valley South, and Fifteenmile Valley* (USGS, 1963). The geographic coordinates near the middle of the survey boundary are 34.55168° North latitude and -117.29272° West longitude.



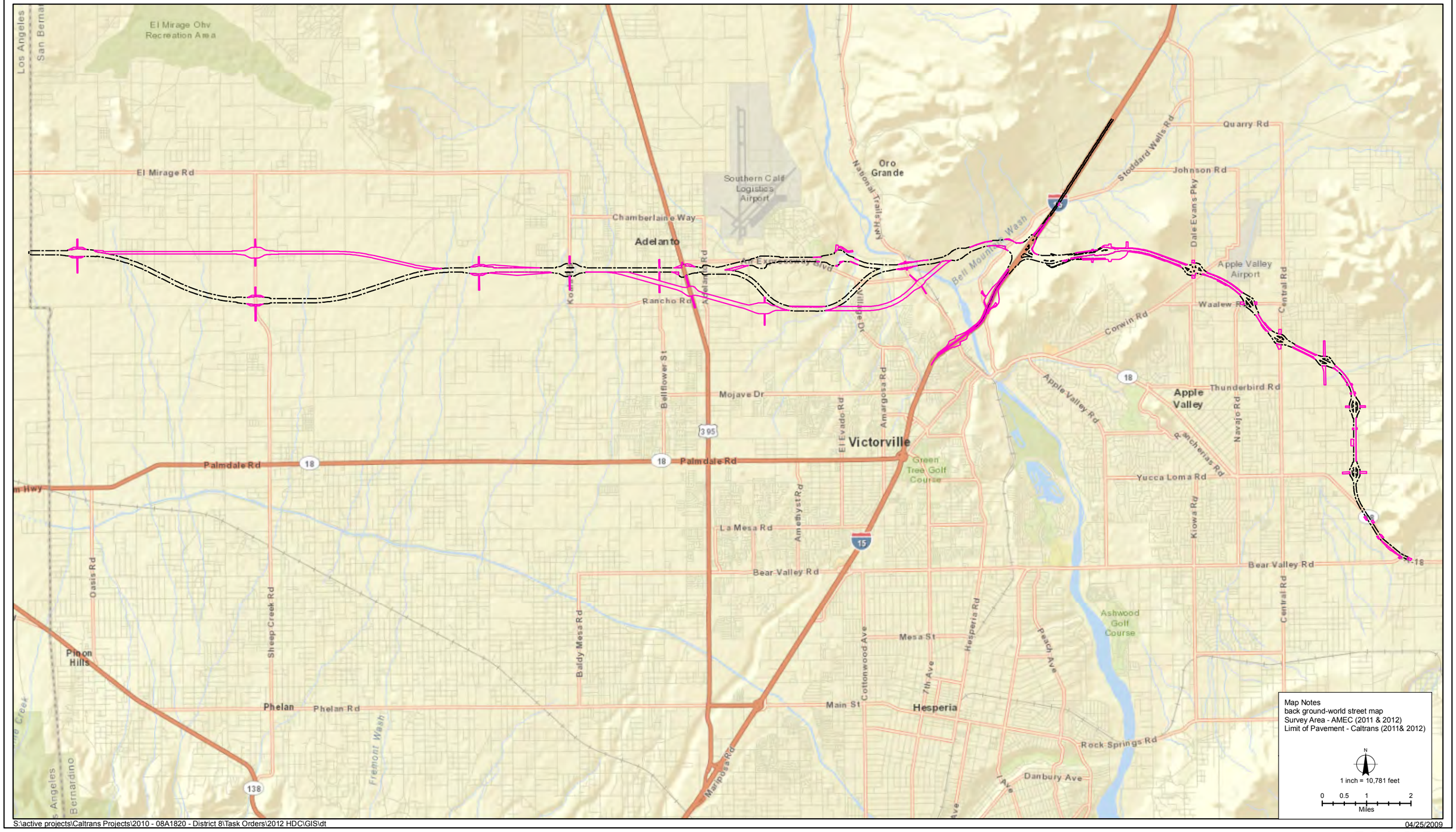
2012 Survey Area

2011 Project Alignment

Regional Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

1



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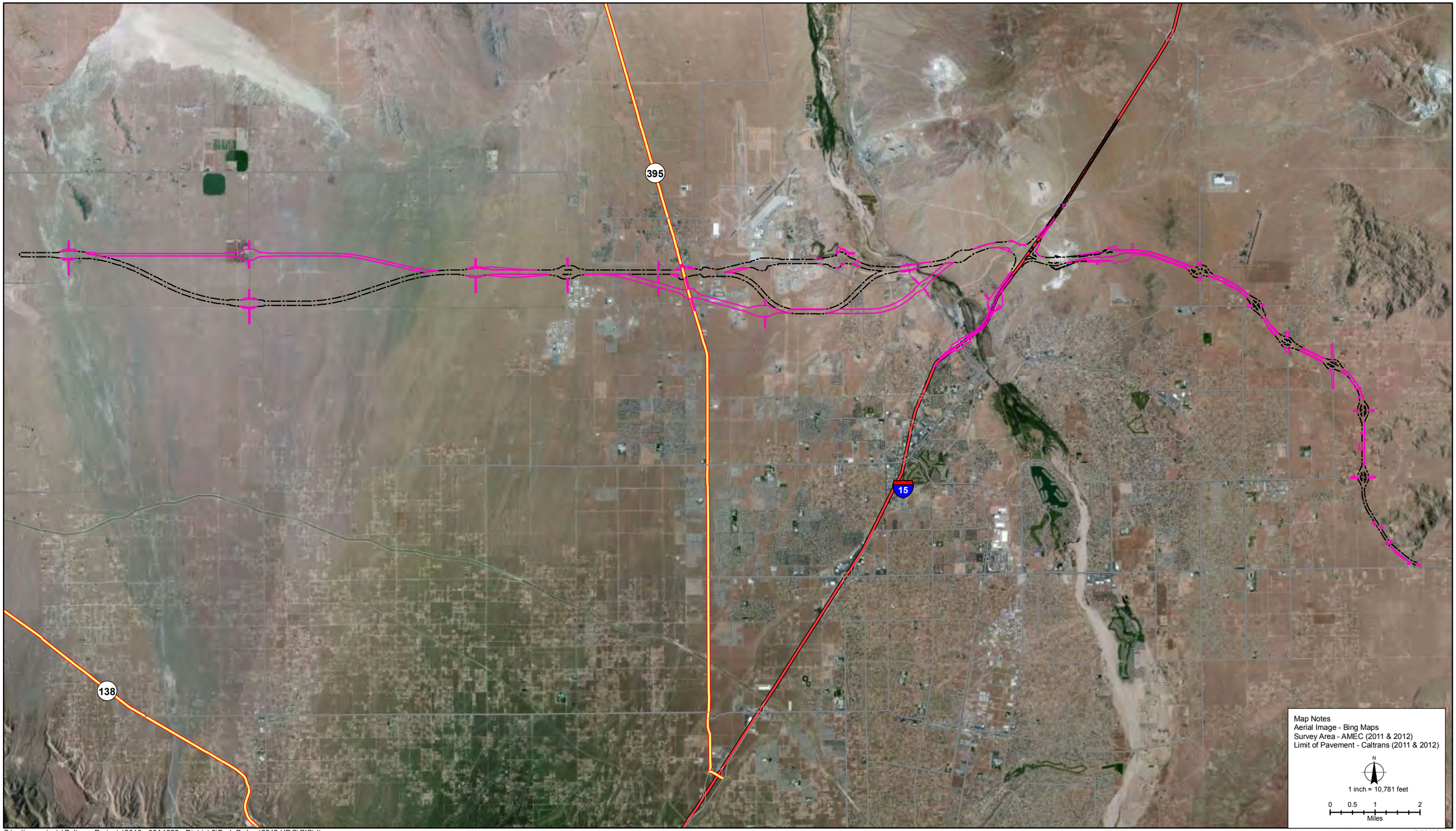
Direct Impact Area-2012

Direct Impact Area-2011

Detailed Map of the State Route 18 West to Los Angeles County Line Portion of the High Desert Corridor Project.
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

2



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Direct Impact Area-2012

Direct Impact Area - 2011

Direct Impact Area Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

3

2.0 FOCUSED STUDY/SPECIES OF CONCERN

The desert tortoise, state and federally listed as threatened in California, was the focal species of concern addressed in this survey effort. Other plant and animal taxa of "special-status" due to declining populations, vulnerability to habitat change or loss, or restricted distribution, are also known from the survey area. Special status species other than the tortoise, while not focal to this survey, were considered in the literature review and field activity aspects of this survey. Where noted during survey work, these species were recorded. However, these observations were ancillary to tortoise survey work and this survey effort should not be considered comprehensive relative to species other than the desert tortoise.

2.1 Desert Tortoise (*Gopherus agassizii*)

The long-lived desert tortoise is known from a variety of terrain and relatively open plant communities (i.e., primarily creosote bush scrub, saltbush scrub, mixed Mojave steppe and Joshua tree woodland) at a general elevation range of 1,000 to 3,500 feet (300 to 1,070 m) within the western Mojave range of the species (Boarman 2002). It is dependent upon underground burrows which it excavates in friable soil, as well as caliche wash banks, boulder crevices and shrub cover, to escape temperature extremes and predation. The half-moon shaped adult burrows, scat, shell fragments and bones can be distinguished from sign left by other animal species, but juvenile tortoise sign can be difficult to detect.

Tortoises in the western Mojave Desert exhibit their highest above-ground activity between April and June, with the species spending considerable time foraging on spring annual growth resulting from late winter rains. A secondary high activity period occurs between September and October. During higher activity periods, tortoises spend the night and hotter portions of the day in their burrows. In summer months, tortoises will forage above-ground during mid-morning and afternoon hours, but remain fairly close to a primary network of burrows. The species will also commonly emerge during rain events to seek out water which may puddle on the ground surface. In winter months, tortoises hibernate in generally one burrow, sometimes briefly emerging in periods of mild or rainy weather.

Habitat loss, degradation and fragmentation have adversely affected tortoises throughout the western Mojave Desert (Boarman 2002, USFWS 2011). Roads, highways and surface disturbance have resulted in tortoise mortality and habitat impacts (USFWS 2011). LaRue (1993) and Boarman et al. (1997) have documented depauperate tortoise populations, and little observable sign of the species along highways. Tortoise populations may be affected as far as 0.4 kilometers (0.25 miles) from a roadway (Boarman and Sazaki 2006). In addition, collection and common raven (*Corvus corax*) predation of hatchling/juvenile tortoises is known to impact tortoises along some roads and urbanizing areas of the Mojave Desert. An upper respiratory tract disease has also significantly reduced tortoise populations in many areas.

Critical habitat has been designated for the desert tortoise (Figure 4) and a recovery plan prepared (USFWS 1994a, 1994b, 2011). The HDC Project Area is situated outside of designated critical habitat for the tortoise, in an area of scattered rural development adjacent to the urbanizing edge of several towns and cities in the High Desert of southern California.

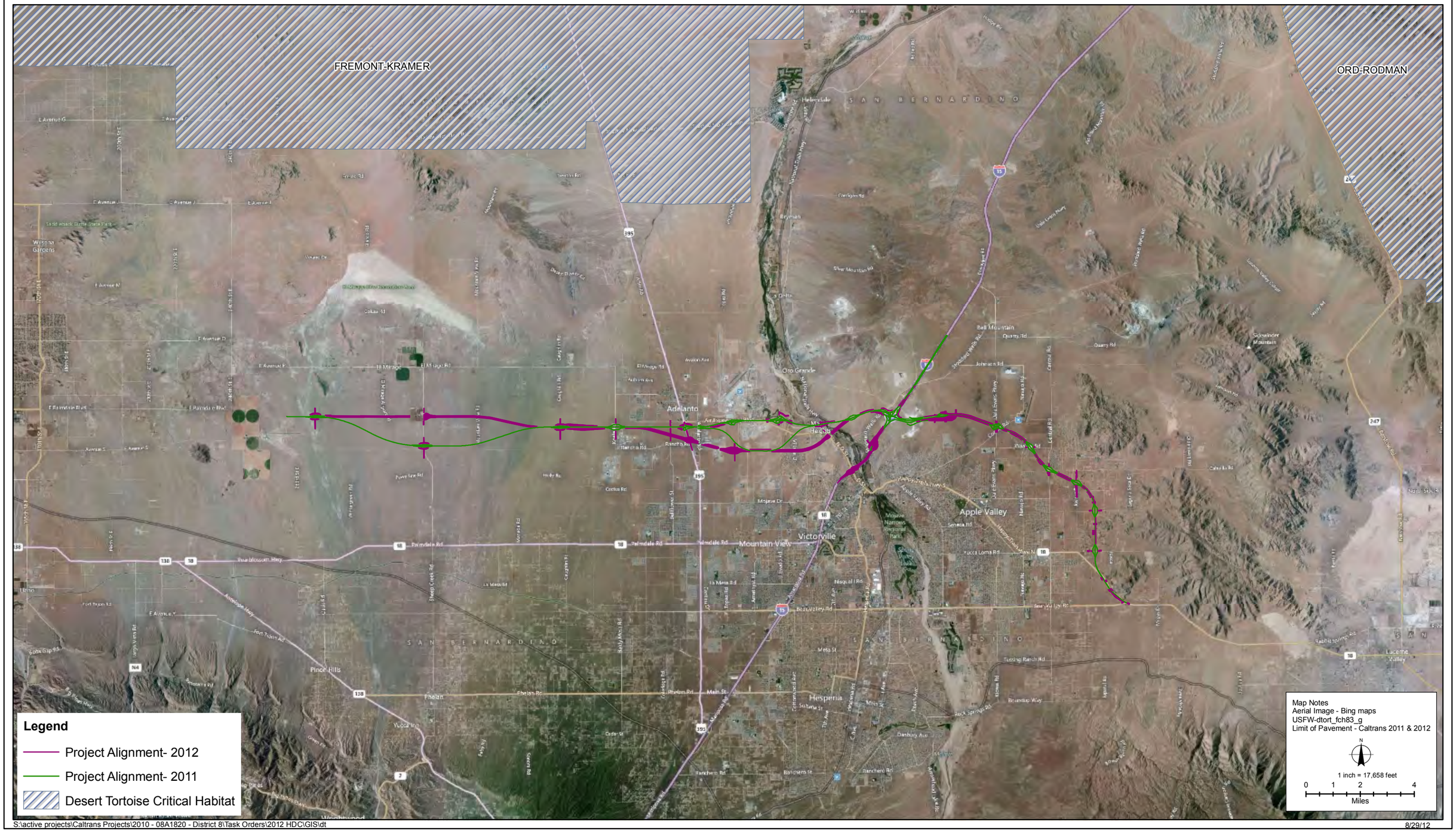
2.2 Literature Review

A records search of the desert tortoise and all special status species potentially occurring in the HDC SR-18 West to Los Angeles County Line, San Bernardino County vicinity was conducted prior to the initiation of tortoise survey work.

This analysis included a review of the California Natural Diversity Database (CNDDB) using RAREFIND Version 3.1.0 for the U.S. Geological Survey quadrangles Fifteenmile Valley, South Apple Valley, North Apple Valley, Victorville, Adelanto, Shadow Mountain SE and El Mirage (CDFG 2012c and 2012d).

The following environmental and planning data sources were also analyzed in the literature review conducted in preparation for undertaking tortoise surveys within the HDC Project area:

- Tortoise Density Planning maps for the California Desert Conservation Area Plan (BLM 1979)
- Interim Map of Desert Tortoise Habitat (BLM 1989)
- Endangered and threatened wildlife and plants; determination of threatened status for the Mojave population of the desert tortoise (USFWS 1990)
- Final rule: determination of critical habitat for the Mojave population of the desert tortoise (USFWS 1994a)
- Desert tortoise (Mojave population) recovery plan. (USFWS 1994b).
- West Mojave Plan Amendment to the California Desert Conservation Area Plan (BLM 2005)
- Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*) (USFWS 2010a)
- Mojave population of the desert tortoise (*Gopherus agassizii*), 5-year summary review: summary and evaluation (USFWS 2010b)
- Desert Tortoise habitat modeling map (Nussear et al. 2009)
- Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) (USFWS 2011) and
- AMEC Environment & Infrastructure Project Files



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State Route 18 West to Los Angeles County Line Portion of the High Desert Corridor Project in Relation to Desert Tortoise Critical Habitat
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

4

Information presented in the above documents indicates that the HDC corridor is within the southern portion of the western Mojave Desert range of the species. Public lands in the vicinity of the Project area have been previously characterized as BLM Category III desert tortoise habitat (BLM 1988); where potential impacts to the species are mitigated to the extent feasible.

The Project vicinity has also been previously characterized as supporting a very patchy, low density (0-20 tortoises/square mile) tortoise population east of U.S. Highway 395 (US-395); a patchy, higher tortoise density (50-100 tortoises/square mile) west of this highway in the Adelanto area; and a patchy, moderate tortoise density (20-50 tortoises/square mile) south of El Mirage Road (BLM 1979). However, tortoise density in much of the western Mojave Desert, particularly the El Mirage, Victorville and Apple Valley areas, has declined substantially since the 1970s (BLM 2005).

3.0 SURVEY METHODOLOGY

3.1 Focused Desert Tortoise Survey

A survey methodology designed for focal detection of desert tortoise and this species' sign (i.e., juvenile/adult animals, carcasses, burrows, scat, shell fragment, bone, eggshell fragments) as well as potential habitat necessary to support this species, was utilized for the 2012 HDC focused desert tortoise survey effort. A team of qualified AMEC biologists and subconsultants (Appendix B) trained in detecting desert tortoise sign used this methodology during pedestrian surveys of the subject HDC Project area. Involved surveyors and survey dates are outlined in Table 1.

Focused desert tortoise surveys following protocols specified in "*Preparing For Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii)*" (USFWS 2010a: Appendix C) were conducted. Tortoise presence-absence clearance (100% coverage) belt transects of ~30 ft (~10 m)-width were walked over each portion of the 2012 project alignment. Additional zone of influence ("ZOI") sampling transects (USFWS 2010) were conducted at 656 ft (200 m), 1,312 ft (400 m) and 1,969 ft (600 m) intervals from each (north and south) project edge. The map set presented in Appendix D depicts all survey transects undertaken for this segment of the HDC Project.

ZOI surveys were completed as close to the identified transect lines as possible where fencing, buildings or domestic dogs precluded conducting them exactly. Trimble Juno series hand-held global positioning system (GPS) units pre-loaded with transect route coordinates were used by surveyors to navigate along each survey transect line.

All tortoise sign (i.e., live tortoises, tracks, burrows, scat, carcasses, shell fragments) and suitable habitat parameters were documented on survey forms. Desert woodrat (*Neotoma lepida*) "midden" nests were closely examined to identify potential tortoise sign, which is sometimes incorporated into these structures. All observed animal burrows were closely examined for potential tortoise presence and sign.

The quality of potential habitat for tortoises was assessed. Human influences upon the affected landscape were recorded, particularly those impacts which would serve to fragment tortoise habitat or act as barriers to tortoise movement.

Tortoise sign was mapped using GPS equipment where encountered. This data was then transferred to office computers for geographical information systems (GIS) configuration.

Table 1.
Desert tortoise surveyors and survey dates in the spring of 2012 for the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project.

Surveyor	Survey Dates
N. Moorhatch	5/1-4, 5/7-11, 5/14-17, 6/7-8, 6/12-15, 6/18
T. Rado	5/1-4, 5/7-11, 5/14-17, 6/6-8, 6/12-15, 6/18
T.Herskovits	5/1-4, 5/7-11, 5/14-17,
M. Tollett	5/1-4, 5/7-11, 5/14-15,
H. Flores	5/1-4, 5/7-11, 5/14-17, 6/6-8, 6/12-15, 6/18
S. Blackwell	5/1-4, 5/7-11
Tom Egan	5/16-17, 5/20-25, 5/29-30, 6/1, 6/4, 6/6-8, 6/11-13, 6/15, 6/18
P. Clevinger	5/14/12
G.Winton	5/16-17/12
M. Wilcox	6/6/12

4.0 FOCUSED SURVEY RESULTS

4.1 Environmental Setting

4.1.1 Survey Area Field Constraints

Due to scattered residential development and fencing in portions of the survey area, certain segments of ZOI tortoise survey transects were routed outside of specific protocol distances. In addition, clearance and ZOI sampling transects were not completed within any property posted as "No trespassing" or in areas considered by the involved surveyors to be non-tortoise habitat (refer to Photo 14 in Appendix E).

Excluding the few residential, fenced/posted areas and non-habitat within the survey area was judged to not compromise the overall tortoise survey field effort in any manner.

4.1.2 Climate

The proposed Project is located within a Mediterranean climate region consisting of hot dry summers and mild winters with little rainfall. In summer, temperatures often reach above 100º F and winter temperatures fall into the 30's, with occasional freezing weather. Average annual temperature ranges are fairly moderate for the area, ranging from 43.8 degrees Fahrenheit (ºF) to 77.5º F (Western Regional Climate Center [WRCC] 2011).

Annual precipitation for the general Project vicinity (Victorville weather station) over the 92 year period from 1917 to 2009 averaged 5.56 inches (WRCC 2011). The 2012 desert tortoise survey was conducted following the 2011-2012 winter season that received lower than normal rainfall within the Project area.

4.1.3 Topography

Topography in the BSA includes flats, low hills, small wash drainages and the Mojave River. In the western area of the alignment numerous small washes cross a relatively flat landscape, generally draining from north to south. West of the town of Adelanto, the topography transitions to a series of low hills, and east of town drops into the wide valley associated with the Mojave River at Mojave Heights. The river crossing is at a steep, rocky gorge. East of the river, the alignment climbs a boulder slope through Bell Mountain Pass onto a wide, alluvial area associated with Bell Mountain Wash. In this area, numerous north-south running washes cross the corridor, with occasional rocky cairns protruding from the sandy flats.

East of the I-15 freeway, the corridor continues over a series of hills modified by an active mining area, then proceeds past these hills onto the flats of the eastern portion of the alignment. Near the eastern terminus of the alignment, the northern edge of the BSA extends onto the rocky foothills of the Granite Mountains. Elevations within this area range from approximately 2,600 to 3,600 ft (792.48 to 1,097.28 m) above mean sea level.

4.1.4 Vegetation

Mojave creosote bush scrub (Holland 1986) is the predominant native plant community within the survey area. Saltbush scrub is the second most commonly encountered plant community, followed by low density Joshua tree woodland in the western portion of the alignment and mixed Mojave woody scrub in the east-central portion of the Project area. Non-native grassland extent occurs patchily throughout the alignment, particularly in the vicinity of Victorville, as does considerable disturbed and developed lands.

Table 2 on the following page depicts the acreage of varying plant communities per the Sawyer-Keeler Wolfe classification system (Sawyer et al. 2009) found within the survey area during the 2011 and 2012 surveys (AMEC 2012). It should be noted that this classification system varies in the degree of detail from the Holland plant community classification system referenced above. Appendix F provides a list of all vascular plant species observed during the May 2011 botanical survey/plant community mapping effort, as well as the 2011 and 2012 focused desert tortoise surveys.

4.1.5 General Wildlife

The most conspicuous wildlife observed during the survey effort was the cactus wren, which was observed nesting in several golden cholla (*Cylindropuntia echinocarpa*) and Joshua tree locations. Other representative bird species included sage sparrow (*Amphispiza belli*), black-throated sparrow (*A. bilineata*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), Anna's hummingbird (*Calypte anna*), ladder-backed woodpecker (*Picoides scalaris*), red-tailed hawk (*Buteo jamaicensis*) and common raven.

Representative mammals, directly observed and/or detected by sign, included Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (S*permophilus beecheyi*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), desert woodrat (*Neotoma lepida*), California jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kit fox (*Vulpes macrotis*) and coyote (*Canis latrans*). Large animal burrows were surprisingly infrequent.

Desert night lizard (*Xantusia vigilis*) was found beneath down woody debris in plant communities containing *Yucca* species. Other representative reptiles observed in the survey area included desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis*=*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipsosaurus dorsalis*), Mojave rattlesnake (*Crotalus scutulatus*) and Great Basin gopher snake (*Pituophis catenifer deserticola*). Several other snake species common to the region are also expected to occur in the survey area, but were undetected.

Representative insect species observed during the survey include harvester ant (*Pogonomyrmex* spp.), creosote bush grasshopper (*Bootettix argentatus*) and desert stink beetle (*Eleodes* sp.). A complete list of vertebrate species observed during the focused desert tortoise survey has been included in Appendix G.

Table 2.
Plant community acreage within the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project (AMEC 2011).

Plant Community	Acreage 2011	Combined Acreage 2011 & 2012
Allscale Scrub (AS)	368.67	448.12
Allscale Scrub/Creosote Bush Scrub (AS/CBS)	15.83	29.76
Creosote Bush Scrub (CBS)	1382.03	1723.63
Creosote Bush Scrub/White Bursage Scrub (CBS/WBS)	18.85	139.89
Channel (CHAN)	3.20	7.95
Disturbed Allscale Scrub (DAS)	11.87	27.79
Disturbed Creosote Bush Scrub (DCBS)	60.32	276.65
Disturbed Creosote Bush Scrub/White Bursage Scrub (DCBS/WBS)	0	97.62
Developed (DEV)	357.45	593.91
Disturbed (DIST)	114.68	217.32
Disturbed Joshua Tree Woodland (DJTW)	13.31	13.31
Disturbed Saltgrass Flats Alliance (DSF)	3.68	3.77
Fremont Cottonwood Forest (FCF)	6.29	14.15
Fourwing Saltbush Scrub (FSS)	10.00	11.0
Joshua Tree Woodland (JTW)	86.71	110.64
Joshua Tree Woodland/Creosote Bush Scrub (JTW/CBS)	140.58	236.37
Mojave Yucca Scrub (MYS)	131.56	169.25
Nonnative Grassland (NNG)	140.08	172.23
Parry's Rabbitbrush Scrub (PRS)	2.91	5.79
Rock Outcropping (ROCK)	18.94	26.19
Saltgrass Flats Alliance (SF)	15.50	15.50
Sandbar Willow Thickets (SWT)	1.29	2.23
White Bursage Scrub (WBS)	9.78	9.78
White Bursage Scrub/Nonnative Grassland (WBS/NNG)	22.62	22.62
Winterfat Scrubland (WFS)	23.20	23.82
Rubber Rabbitbrush Scrub/Indian Ricegrass (RRB/IRG)	0	13.42

4.2 Desert Tortoise

Much of the patchily distributed creosote bush scrub and Joshua tree woodland within the Project's direct impact zone and zone of influence was assessed as generally suitable desert tortoise habitat during the 2011 and 2012 surveys. However, a considerable amount of this habitat has been degraded to varying degrees by a range of human disturbance factors (i.e., mining residential development, sheep grazing, vehicle use). Areas of non-native grassland, disturbed areas lacking shrubs and developed lands within the Project's direct impact zone were assessed as unsuitable habitat for the tortoise.

Substantial barriers to tortoise movement proximal to the Project alignment include extensive residential housing and urban development adjacent to the alignment associated with the cities of Adelanto, Victorville and the Town of Apple Valley; several active mines; the Southern California Logistics Airbase and a large federal prison in Adelanto; several high traffic highways; and the Mojave River. Nonetheless, open desert occurs to the north and south of a considerable portion of the alignment. The potential for tortoise travel into active work zones throughout the alignment is considered low, with a slightly higher potential for such travel to occur in specific localities (mainly on the western portion of the alignment).

During the course of the 2012 survey, only one desert tortoise burrow (Class 3) was detected in the eastern Project alignment, east of I-15 (see Figure 5-3). One Class 2 tortoise burrow was observed just west of I-15, and east of Stoddard Wells Road (Figure 5-3). The majority of the tortoise sign was detected further to the west (see Figures 5-1 & 5-2). Unlike the 2011 survey, no live tortoises were detected on the Project alignment or in the zone of influence areas during the 2012 focused tortoise survey. However, a large amount of tortoise sign (scats, burrows, and tracks) were observed in the same general area where the live tortoise was observed during the 2011 survey (just east of the Mojave River, see Figure 5-2).

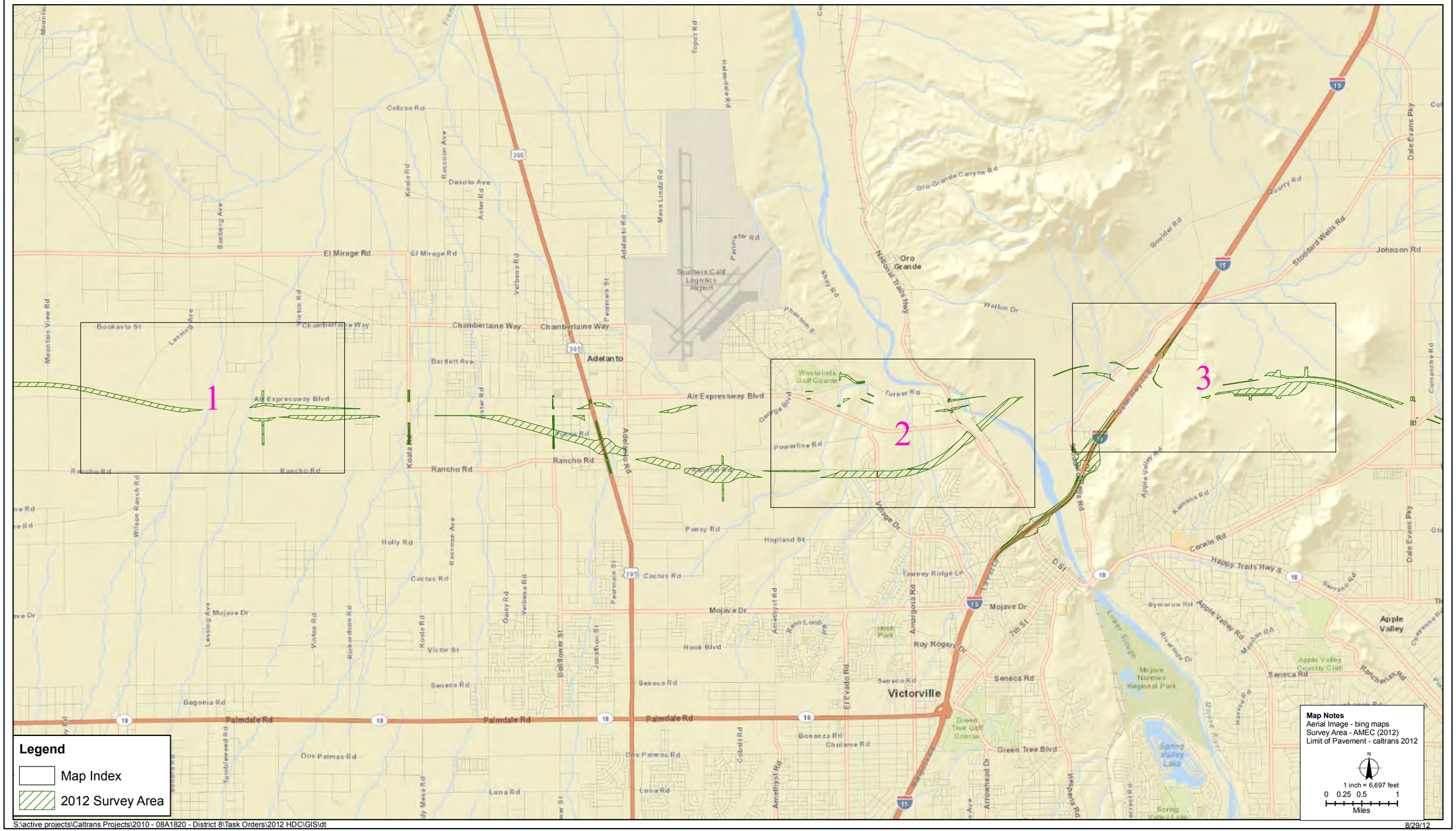
Another "concentration" of tortoise sign (scats, carcasses, and burrows) was found in the same general areas west of US-395 as observed during the 2011 focused survey (see Figures 5-1 & 6). An overview map of tortoise sign locations from both the 2011 and 2012 surveys is presented in Figure 6. Detailed maps of the tortoise sign locations for the 2012 survey are presented in Figures 5-1, 5-2, and 5-3. No other listed plant or animal species were detected during this focused tortoise survey.

Table 3.
Desert Tortoise Sign Key

Sign Type	Class 1	Class 2	Class 3	Class 4	Class 5
Burrow and den	Currently active with tortoise or recent tortoise sign	Good condition, definitely tortoise but no evidence of recent use	Deteriorated condition but definitely tortoise	Deteriorated condition, possibly tortoise (no other corroborating sign)	Good condition, possibly tortoise (no other corroborating sign)
Scat	Wet or moist but not from rain or dew or dried but with obvious odor	Dry, dark brown, has a glaze, and some odor	Dry, has no glaze or odor, is slightly bleached, is light brown, and plant fibers are tightly packed	Dry, has no glaze or odor, is somewhat bleached, is light brown to pale yellow, plant fibers are not tightly packed, and has a scaly appearance.	Dry, has no glaze or odor, is bleached, & white, and consists only of plant fibers
Carcasses, shell remains and bone fragments	Fresh or putrid	Fresh or putrid, is of normal color and the scutes adhere to the bone	Scutes are peeling from the bone	Shell bone is falling apart and the growth rings on the scutes are peeling	Disarticulated and scattered

Table 4.
2012 Summary of Desert Tortoise Sign Found on the State Route 18 to Los Angeles County line segment of the High Desert Corridor Project.

Sign Type	Class	Location (UTM)	Date Observed	Alignment / ZOI
Tortoise Burrow	Class 2	475290 E, 3826986 N	5/07/12	Alignment (just off)
Carcass Fragment	Class 5	456493 E, 3825292 N	5/11/12	Alignment
Tortoise Scat	Class 5	456493 E, 3825281 N	5/11/12	Alignment
Possible Burrow	Class 5	456006 E, 3825317 N	5/11/12	Alignment
Tortoise Carcass	Class 5	456543 E, 3825237 N	5/11/12	Alignment
Tortoise Scat (2)	Class 3	451385 E, 3825865 N	5/14/12	Alignment
Tortoise Scat	Class 4	451310 E, 3825912 N	5/14/12	Alignment
Tortoise Scat	Class 3	451466 E, 3825866 N	5/14/12	Alignment
Possible Burrow	Class 4	452617 E, 3825600 N	5/14/12	Alignment
Tortoise Scat (2)	Class 3	451447 E, 3825810 N	5/14/12	Alignment
Tortoise Scat (2 Class 4, 1 Class 3)	Class 4	451393 E, 3825853 N	5/14/12	Alignment
Tortoise Scat (2)	Class 4	451334 E, 3825866 N	5/14/12	Alignment
Tortoise Burrow (w/ 1 Class 4 scat)	Class 2	451320 E, 3825889 N	5/14/12	Alignment
Tortoise Scat	Class 4	471475 E, 3825792 N	5/29/12	ZOI
Tortoise Scat	Class 5	470729 E, 3825805 N	5/29/12	ZOI
Tortoise Scat	Class 5	470725 E, 3825793 N	5/29/12	ZOI
Tortoise Scat	Class 5	470771 E, 3825777 N	5/29/12	ZOI
Tortoise Scat	Class 5	470772 E, 3825774 N	5/29/12	ZOI
Tortoise Scat	Class 5	470750 E, 3825781 N	5/29/12	ZOI
Tortoise Scat	Class 5	471022 E, 3825782 N	5/29/12	ZOI
Tortoise Burrow	Class 3	476761 E, 3824970 N	6/08/12	ZOI
Tortoise Scat	Class 2	471353 E, 3826191 N	6/12/12	ZOI
Tortoise Scat (2)	Class 2	470856 E, 3826168 N	6/12/12	ZOI
Tortoise Burrow	Class 2	466988 E, 3823351 N	6/12/12	ZOI
Tortoise Scat	Class 5	471036 E, 3826030 N	6/13/12	ZOI
Tortoise Scat	Class 5	471376 E, 3826209 N	6/13/12	ZOI
Tortoise Scat	Class 5	471129 E, 3826186 N	6/13/12	ZOI
Tortoise Scat	Class 3	470868 E, 3825991 N	6/13/12	ZOI
Tortoise Burrow (w/ 1 Class 5 scat & tracks)	Class 1	470943 E, 3826031 N	6/13/12	ZOI
Tortoise Burrow (w/ 1 Class 2 scat & tracks)	Class 1	470866 E, 3825988 N	6/13/12	ZOI
Tortoise Scat	Class 4	471352 E, 3826193 N	6/13/12	ZOI
Tortoise Burrow	Class 2	452498 E, 3826271 N	6/14/12	ZOI



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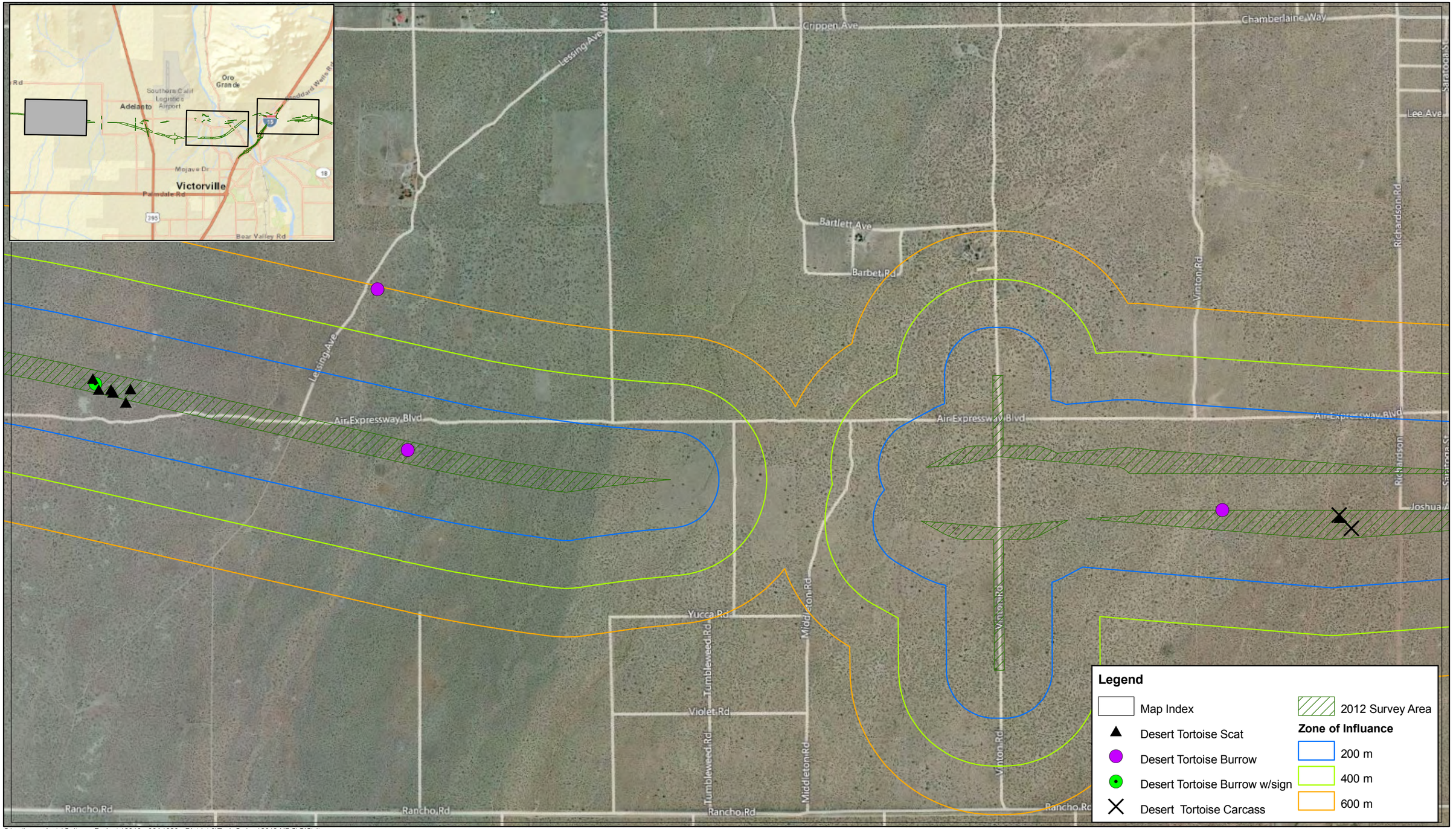
8/29/12

Desert Tortoise Survey Results Overview Map
High Desert Corridor Desert Tortoise Surveys
SR 18 to Los Angles County Line
San Bernardino

FIGURE

5



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8/29/12

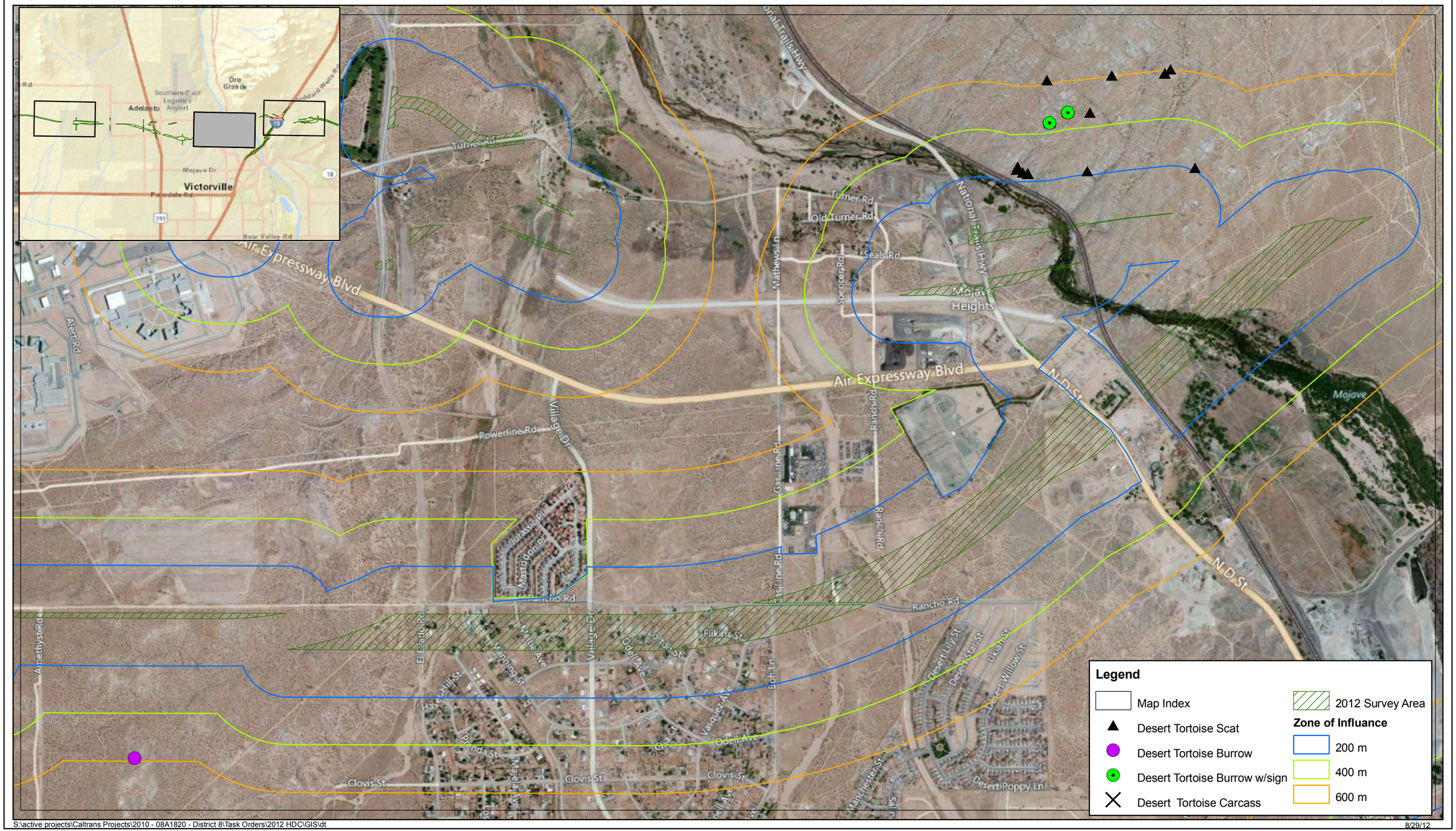
Map Notes
Aerial Image - bing maps
Survey Area - AMEC (2012)
Limit of Pavement - caltrans 2012

0 75 150 300
Meters
1 inch = 1,250 feet

N

Desert Tortoise Survey Results Overview Map
High Desert Corridor Desert Tortoise Surveys
SR 18 to Los Angles County Line
San Bernardino

FIGURE
5 - 1



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8/29/12

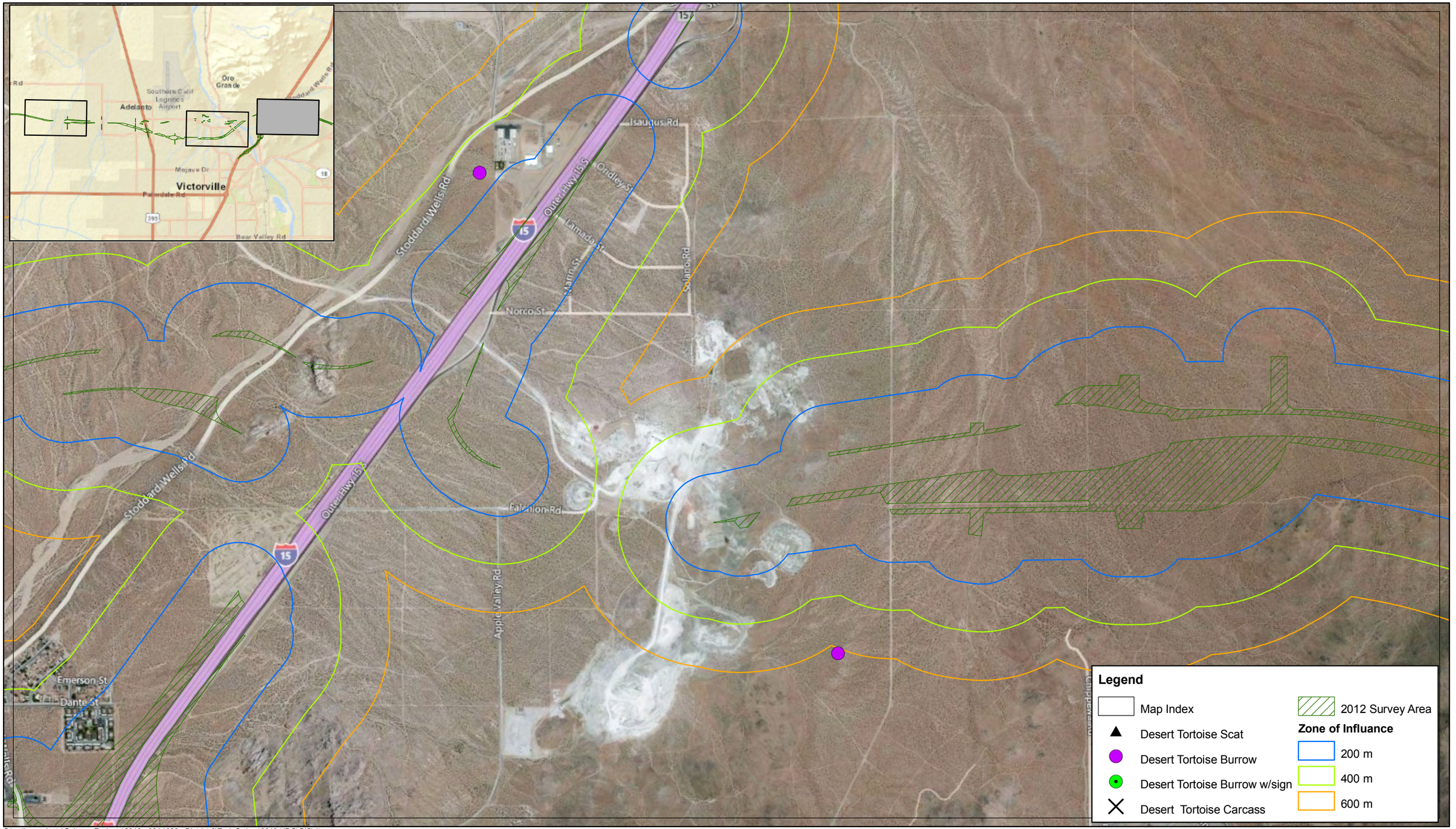
Map Notes
Aerial Image - bing maps
Survey Area - AMEC (2012)
Limit of Pavement - caltrans 2012

0 80 160 320
Meters
1 inch = 1,250 feet

N

Desert Tortoise Survey Results Overview Map
High Desert Corridor Desert Tortoise Surveys
SR 18 to Los Angles County Line
San Bernardino

FIGURE
5 - 2



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8/29/12

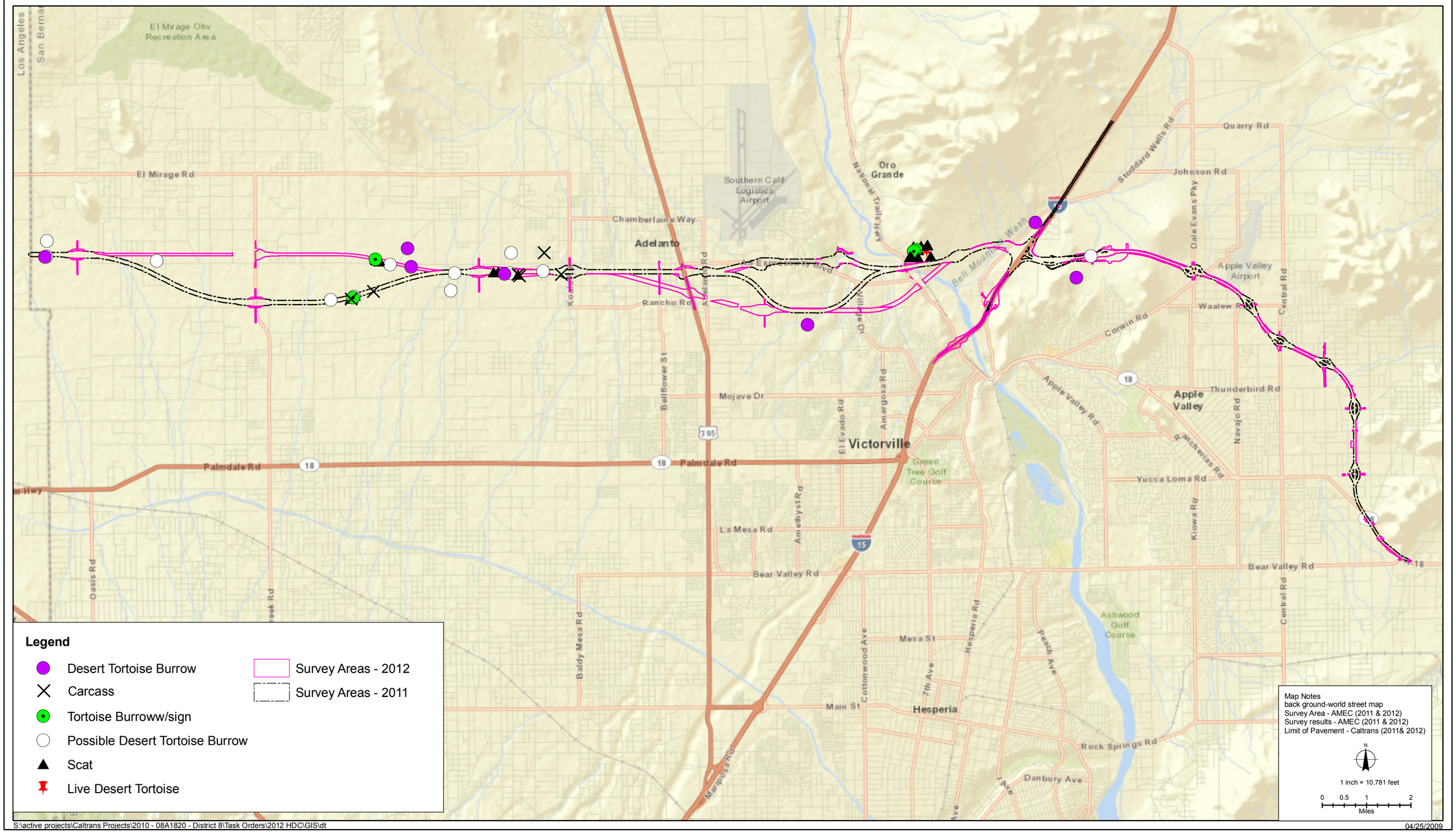
Map Notes
Aerial Image - bing maps
Survey Area - AMEC (2012)
Limit of Pavement - caltrans 2012

0 85 170 340
Meters
1 inch = 1,250 feet

N

Desert Tortoise Survey Results Overview Map
High Desert Corridor Desert Tortoise Surveys
SR 18 to Los Angles County Line
San Bernardino

FIGURE
5 - 3



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04/25/2009

2011 & 2012 Desert Tortoise Survey Results
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

6

5.0 CONCLUSIONS

- Desert tortoise sign was observed in three main locations within the HDC Project alignment during the 2012 survey. Desert tortoise sign observed on the zone of influence transects was also located in proximity to these same three locations.
- No live desert tortoises were observed on the HDC Project alignment or in the zone of influence survey areas during the 2012 survey.
- The presence of tortoise sign in the areas noted above suggests a need at these localities for pre-construction surveys, burrow excavation and construction monitoring to ensure no desert tortoise would be harmed during Project work.

6.0 BIOLOGICAL RESOURCE RECOMMENDATIONS

- ESA consultation between the lead federal agency and the USFWS relative to the HDC Project and its potential effects upon the desert tortoise is recommended. CESA compliance is also required for this state-listed species. A CESA Section 2080.1 Consistency Determination could potentially be issued by the CDFG, following a review of any biological opinion/federal incidental take statement issued for this Project.
- An education program for all persons employed on the HDC Project should be prepared and provided to all involved personnel prior to their performing work on-site. This program should consist of a presentation from a qualified biologist that outlines desert tortoise information, project-specific protective measures and which provides instruction on what personnel are to do if a tortoise is encountered.
- As desert tortoise burrows and other tortoise sign were observed in the western two-thirds of the HDC Project area, a pre-construction biological survey should be undertaken in theses area prior to vegetation removal and general surface-disturbance activities taking place. An effort should be made to carefully excavate all observed tortoise burrows to ensure no occupying tortoise would be adversely affected by the Project surface disturbance. Any tortoises found in project construction/equipment staging areas should be translocated to areas adjacent to the Project alignment approved by the involved regulatory agencies. It should be noted that any harm, harassment, translocation or tortoise “take” of any kind requires an incidental take permit from the CDFG and USFWS.
- As a tortoise has been observed in the Project zone of influence (2011 survey) and tortoise sign has been identified on portions of the HDC Project area, there is a low potential for tortoises to be encountered during project work. Biological monitoring to ensure tortoises do not travel into active work zones is recommended. Should this biological monitoring note a potential for tortoise harm, proximal work activity should be halted until such time as the observed tortoise leaves the area on its own accord or measures are put in place (i.e., tortoise translocation, tortoise exclusion fence installation, etc.) to ensure tortoises are not adversely affected. Again, it should be noted that any harm, harassment, translocation or tortoise “take” of any kind requires an incidental take permit from the CDFG and USFWS.
- A trash abatement plan should be developed and employed during the HDC Project. Trash and food items should be contained in closed (raven-proof) containers and removed daily to avoid attracting opportunistic predators of tortoises such as ravens, coyotes, and feral dogs.

7.0 REFERENCES

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8.0 CERTIFICATION

CERTIFICATION*: "I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project."*

DATE: 31 August 2012 SIGNED: /s/ Nathan Moorhatch
Report Author

Resumes of involved biological personnel have been attached to this document as Appendix B. Include names and signatures for those performing fieldwork.

1) Fieldwork Performed By:

/s/ Nathan Moorhatch
Name

2) Fieldwork Performed By:

/s/ Ted Rado
Name

3) Fieldwork Performed By:

/s/ Phil Clevinger
Name

4) Fieldwork Performed By:

/s/ Michael Wilcox
Name

5) Fieldwork Performed By:

/s/ Greg Winton
Name

6) Fieldwork Performed By:

/s/ Hugo Flores
Name

7) Fieldwork Performed By:

/s/ Michelle Tollett
Name

8) Fieldwork Performed By:

/s/ Steve Blackwell
Name

9) Fieldwork Performed By:

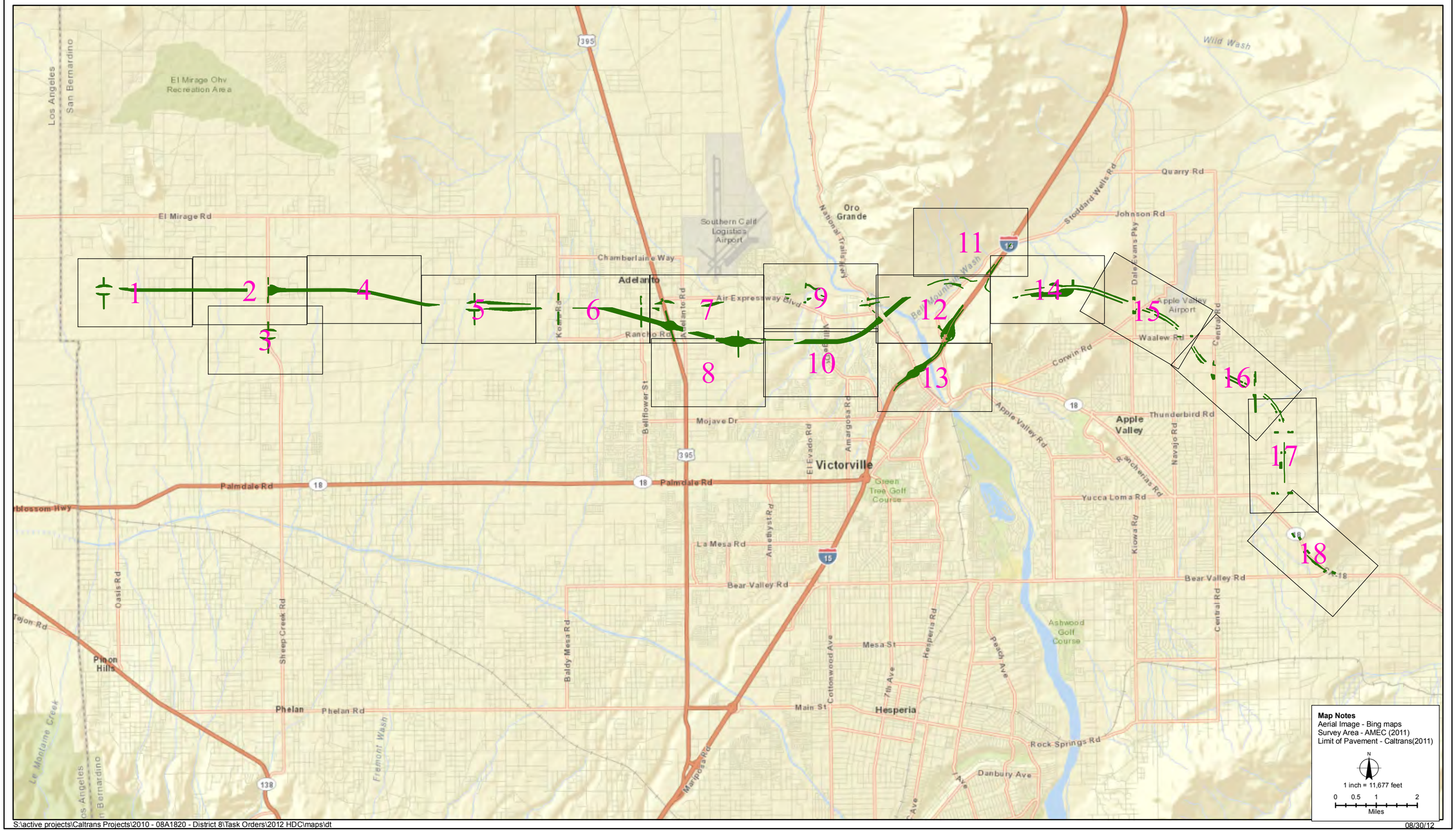
/s/ Tasya Herskovits
Name

10) Fieldwork Performed By:

/s/ Tom Egan
Name

APPENDIX D

FOCAL DESERT TORTOISE SURVEY TRANSECT MAP SET



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2011)
Limit of Pavement - Caltrans(2011)

1 inch = 11,677 feet

0 0.5 1 2
Miles

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08/30/12

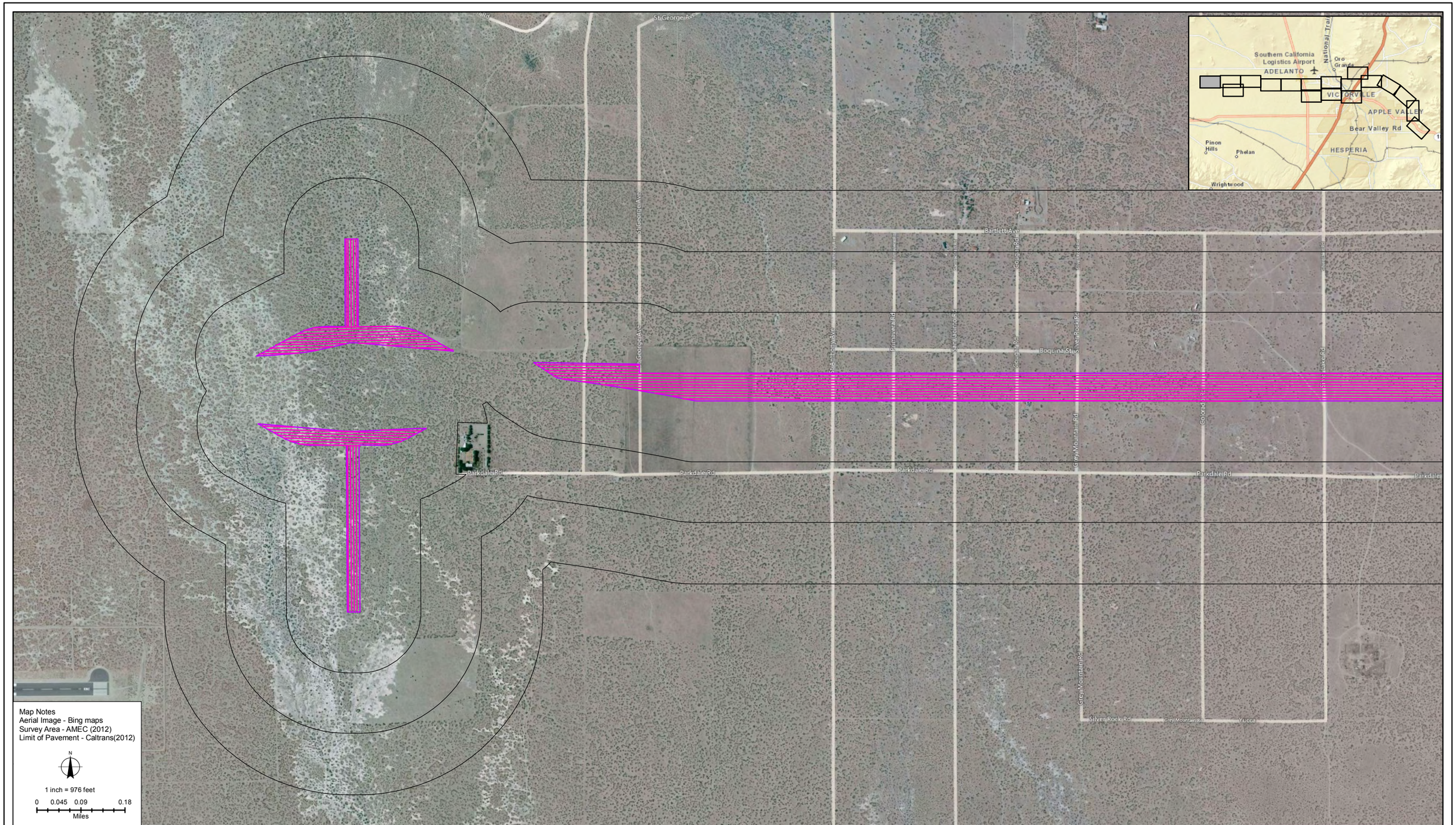
Project Alignment- 2012

Map Index

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D



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08/30/12

10 Meter Transects

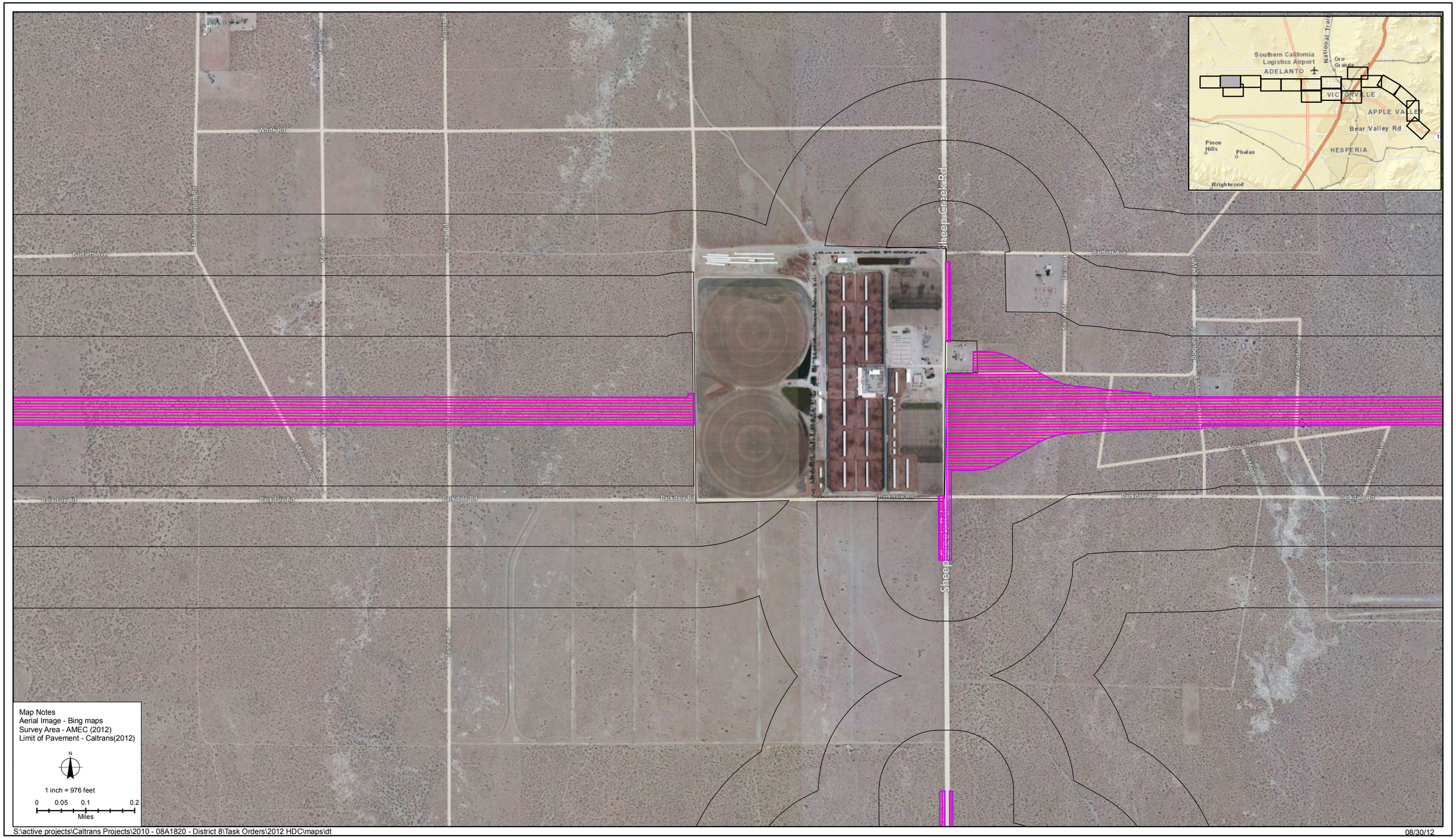
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 1



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08/30/12

10 Meter Transects

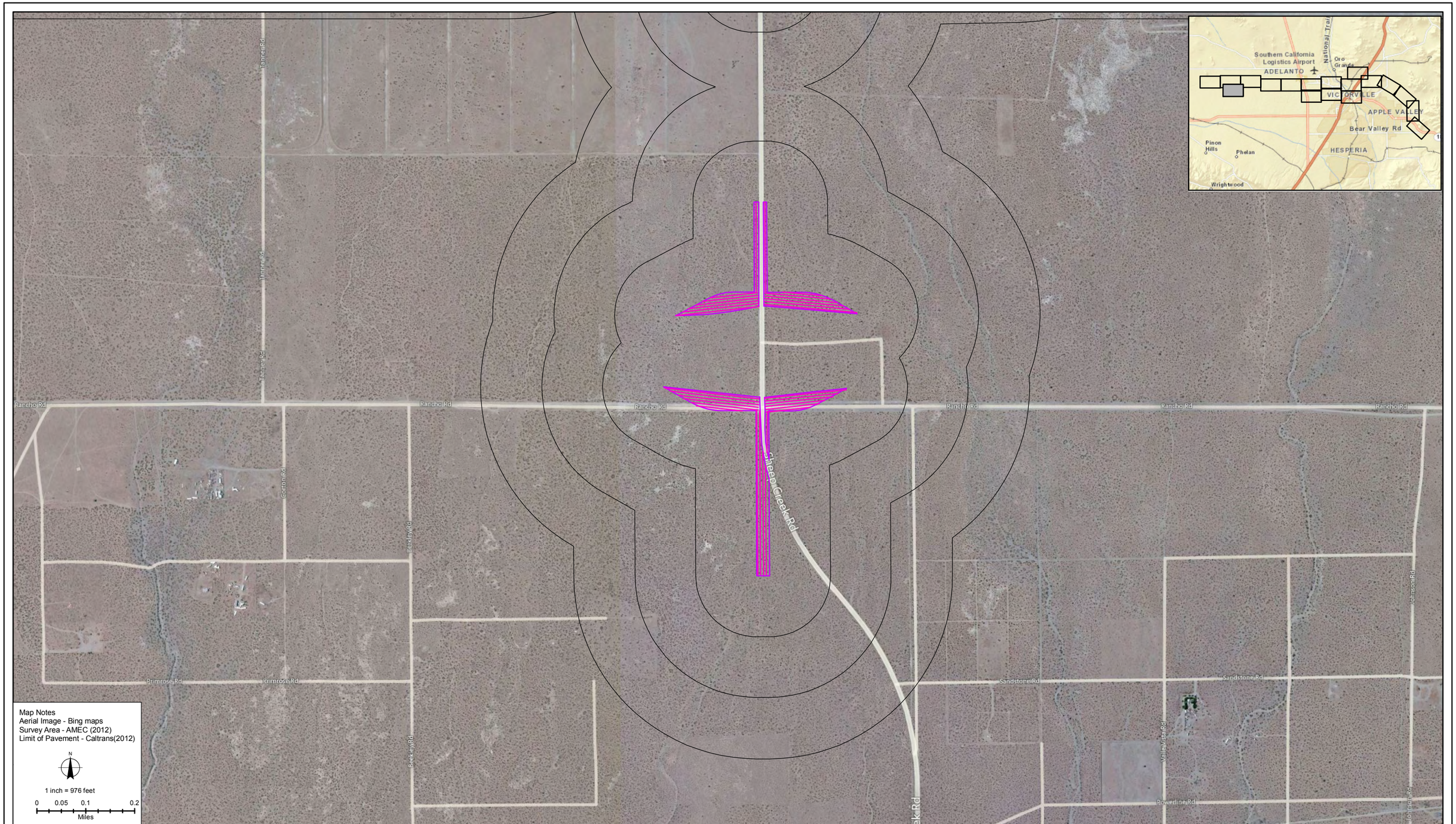
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 2



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08/30/12

10 Meter Transects

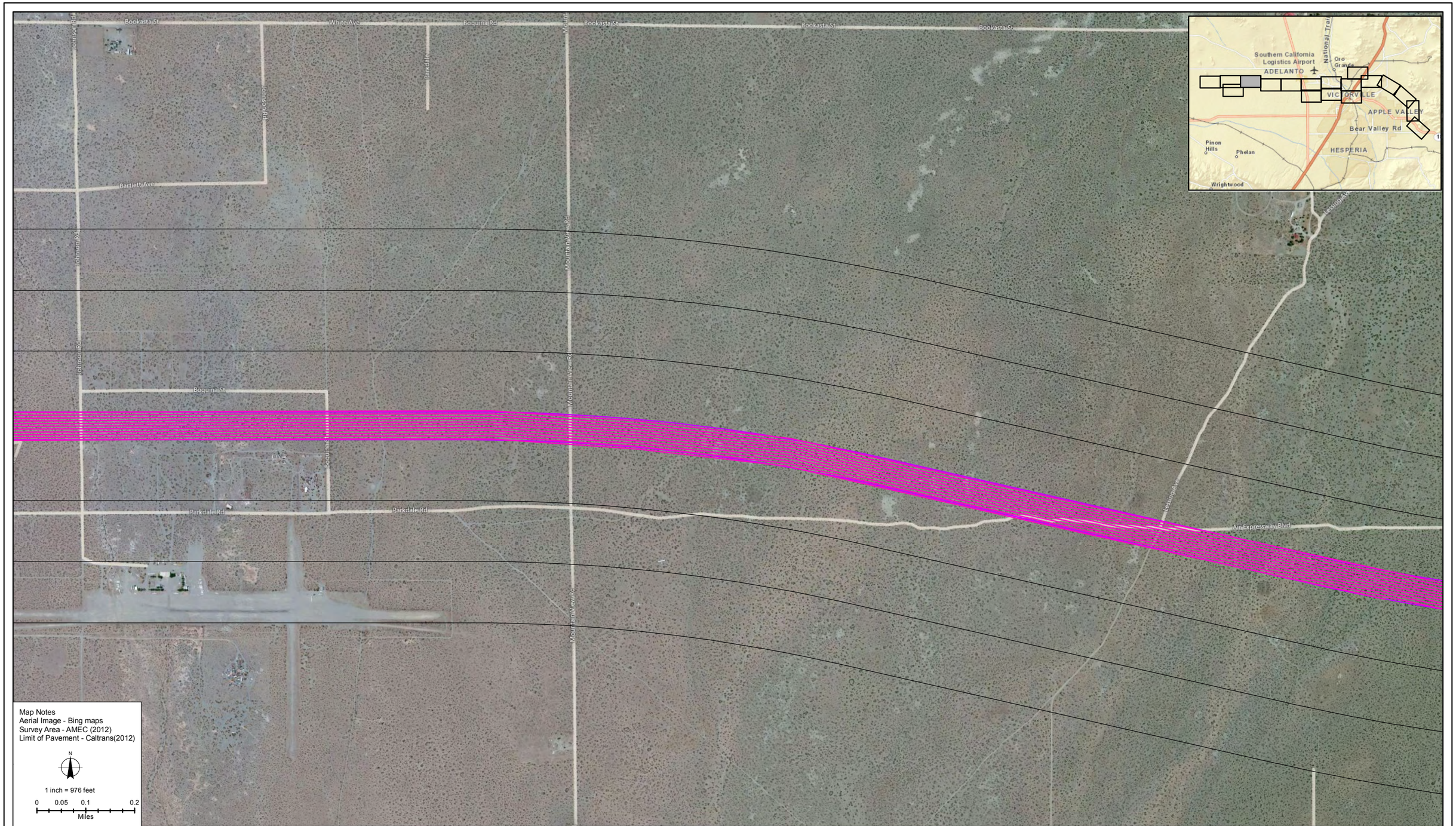
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 3



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08/30/12

10 Meter Transects

Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 4

Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2012)
Limit of Pavement - Caltrans(2012)

N

1 inch = 976 feet

0 0.05 0.1 0.2
Miles

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08/30/12

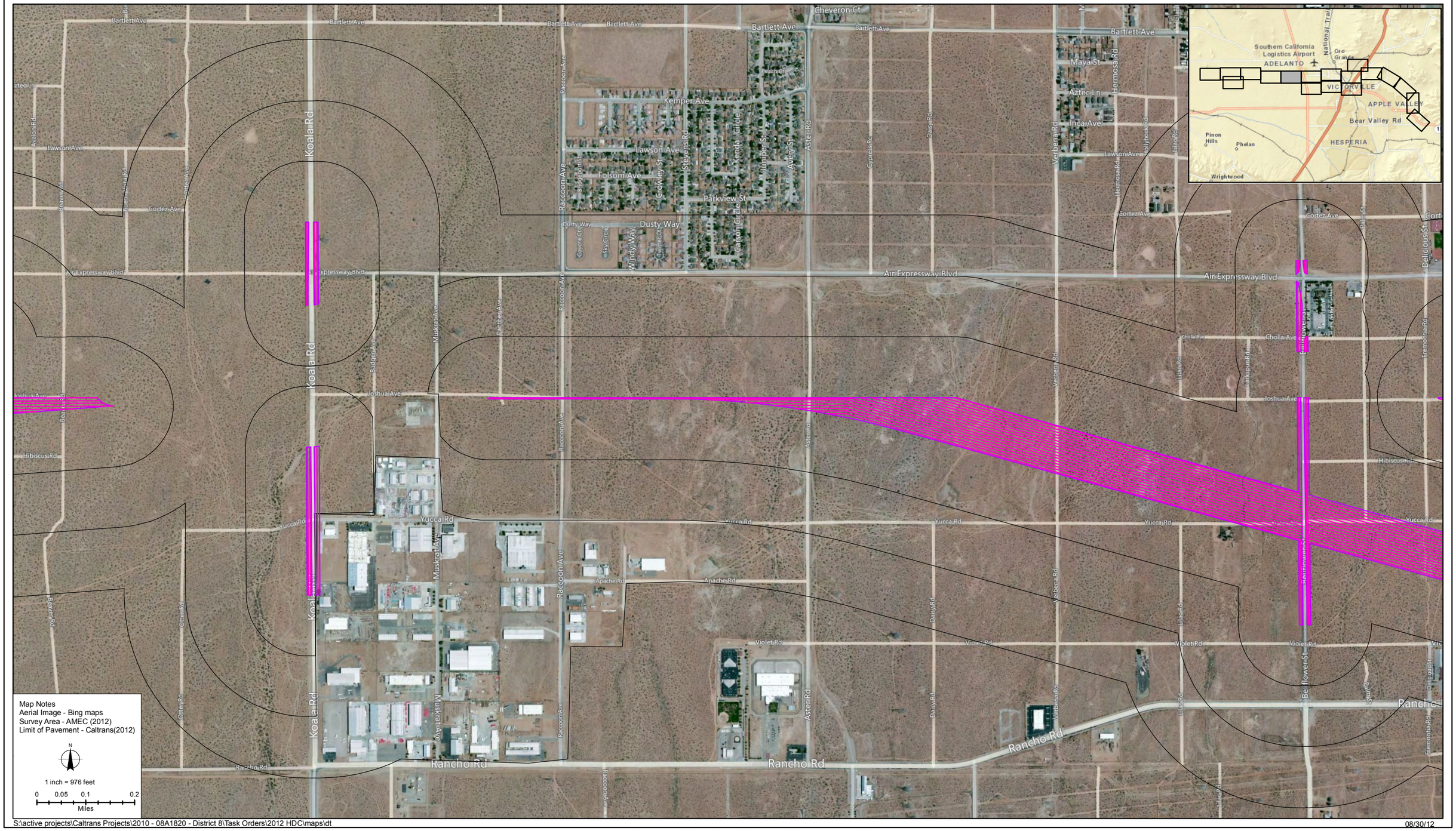
10 Meter Transects Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 5



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08/30/12

10 Meter Transects

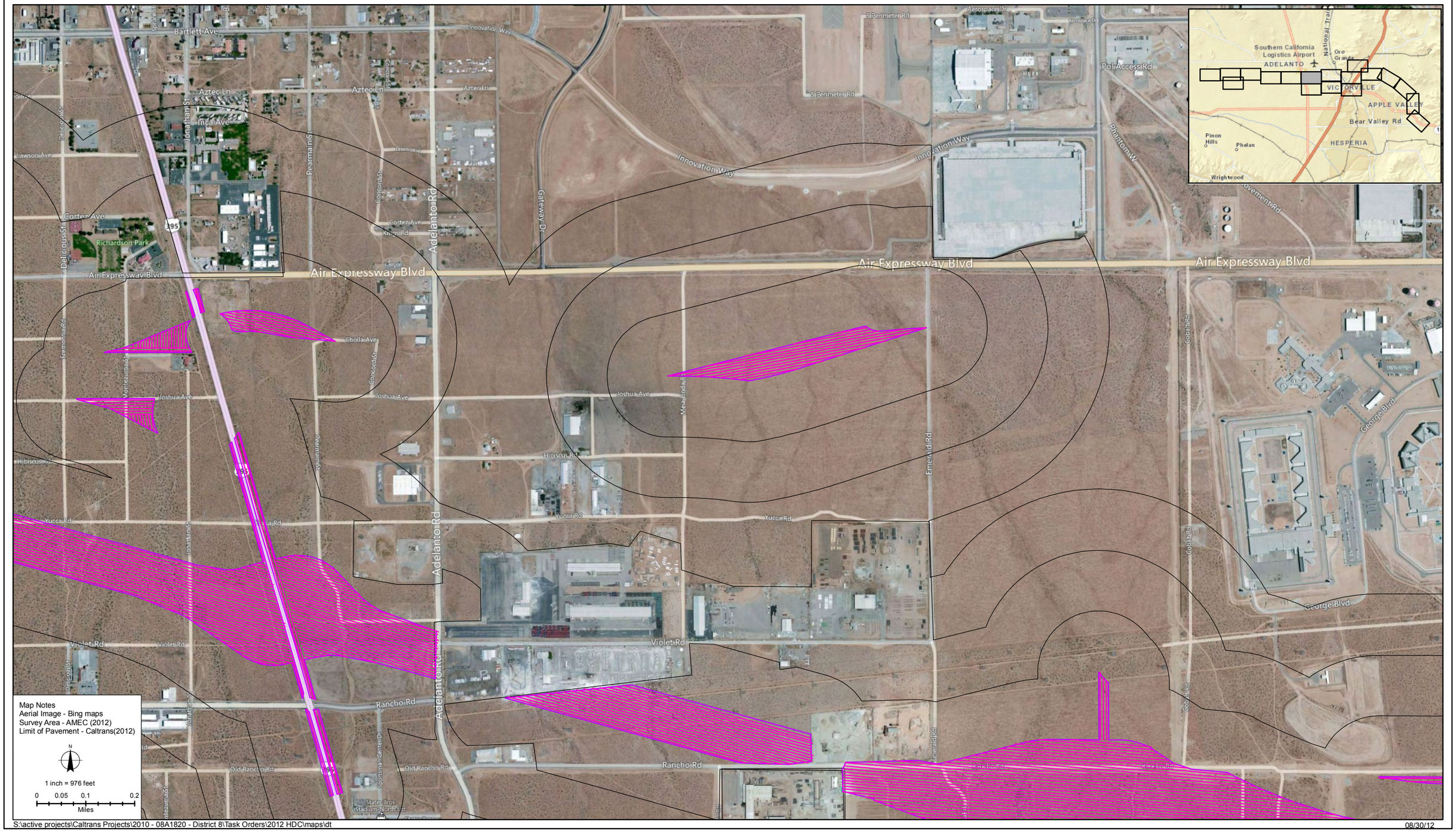
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 6



Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2012)
Limit of Pavement - Caltrans(2012)

N

1 inch = 976 feet

0 0.05 0.1 0.2
Miles

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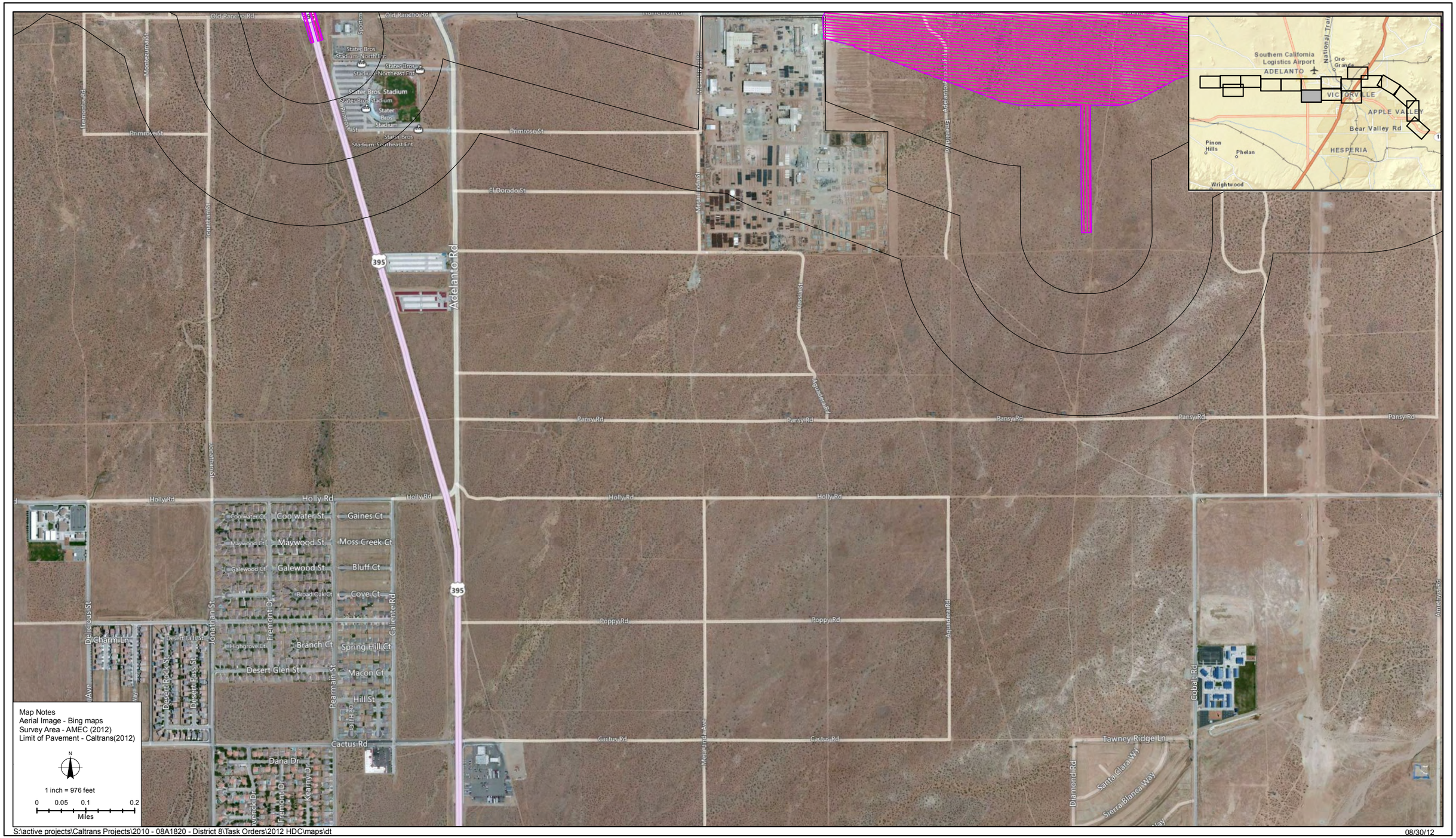
08/30/12

10 Meter Transects
Zone of Influence
Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D- 7



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08/30/12

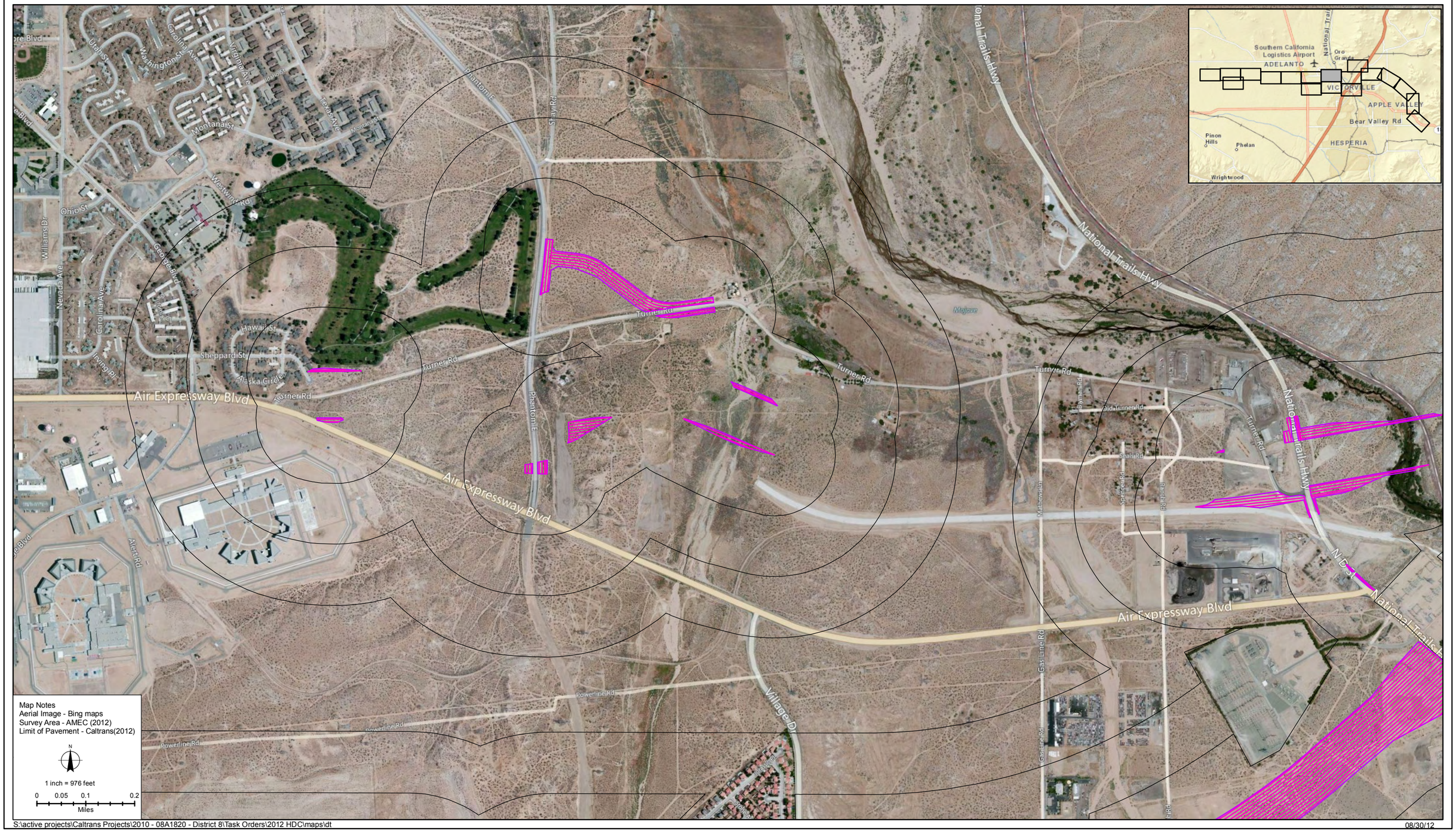
10 Meter Transects Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 8



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08/30/12

10 Meter Transects

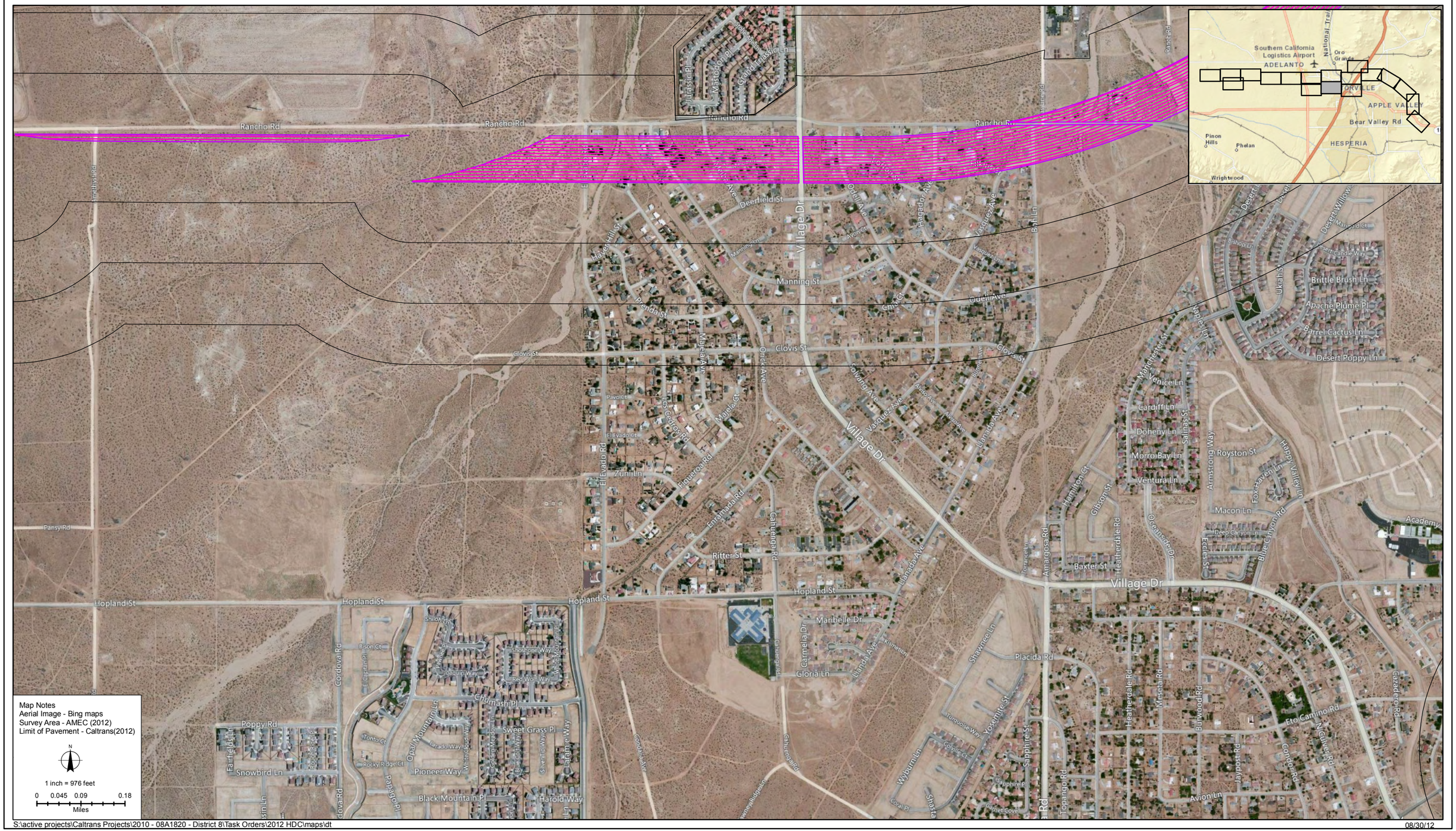
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 9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Manning St
Clovis St
Odell Ave
Deerfield St
Ritter St
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Gloria Ln
Placida Rd
Baxter St
Macon Ln
Royston St
Ventura Ln
Morro Bay Ln
Doheny Ln
Venice Ln
Cardiff Ln
Brittle Brush Ln
Apache Plume Pl
Barrel Cactus Ln
Desert Poppy Ln
Desert Willow
Ute Ln
Ukiah St
Bishop Ln
Manchester St
Salinas St
Armstrong Way
Fox Haven Ln
Happy Valley Ln
Blue Canyon Rd
Deep Canyon Ln
Academy
Hamilton Ct
Gibson St
Heatherdale Rd
Oceanside Dr
Fedler Ct
Amargosa Rd
Meseta Rd
Burwood Rd
Gazedale Rd
Ute Camino Rd
N Culver Rd
Condor Rd
Jaypost Rd
Avion Ln
Topango Rd
Sapphire St
Yosemite St
Turquoise Way
Wyburn Ln
Shasta Rd
Shawnee Ln
Carmelia Dr
Llanada Ave
Cahuenga Rd
Gondola Ave
Kenneth Ln
Jurupa Rd
Eucalyptus Rd
Pansy Rd
Cordova Rd
El Evado Rd
Figueroa Rd
Encinada Rd
Zuni Ln
Shiloh Ln
Bison Ct
El Capitan Pl
Shoshone Way
White Mountain Ln
Red Wolf Way
Chumash Pl
Sweet Grass Pl
Opal Mountain Ln
Tonto Ct
Rocky Ridge Ct
Pioneer Way
Black Mountain Pl
Harold Way
Lakeline Way
Silvertip Way
Buckskin Way
Arapaho Way
Pawnee Ridge Ln
Poppy Rd
Fairfield Ln
Snowbird Ln
Rosebud Ln
Papago Pl
Coral Pl
Pocket Gopher Ct
Pavo Ct
Los Cedros Rd
Mariela Ct
Ivanpah Rd
Jurupa Rd
Jasmine Rd
Jurupa Rd
Jurupa Pl
Mastodon Pl
Grand Jurassic Ln
Jurassic Pl
Ranchero Rd
Vasquez Ave
Odell Ave
Olivine Ave
Palmdale Rd
Palmdale Rd
Palmdale Rd

Map Notes
Aerial Image - Bing maps
Survey Area - AMEC (2012)
Limit of Pavement - Caltrans(2012)

N

1 inch = 976 feet

0 0.045 0.09 0.18
Miles

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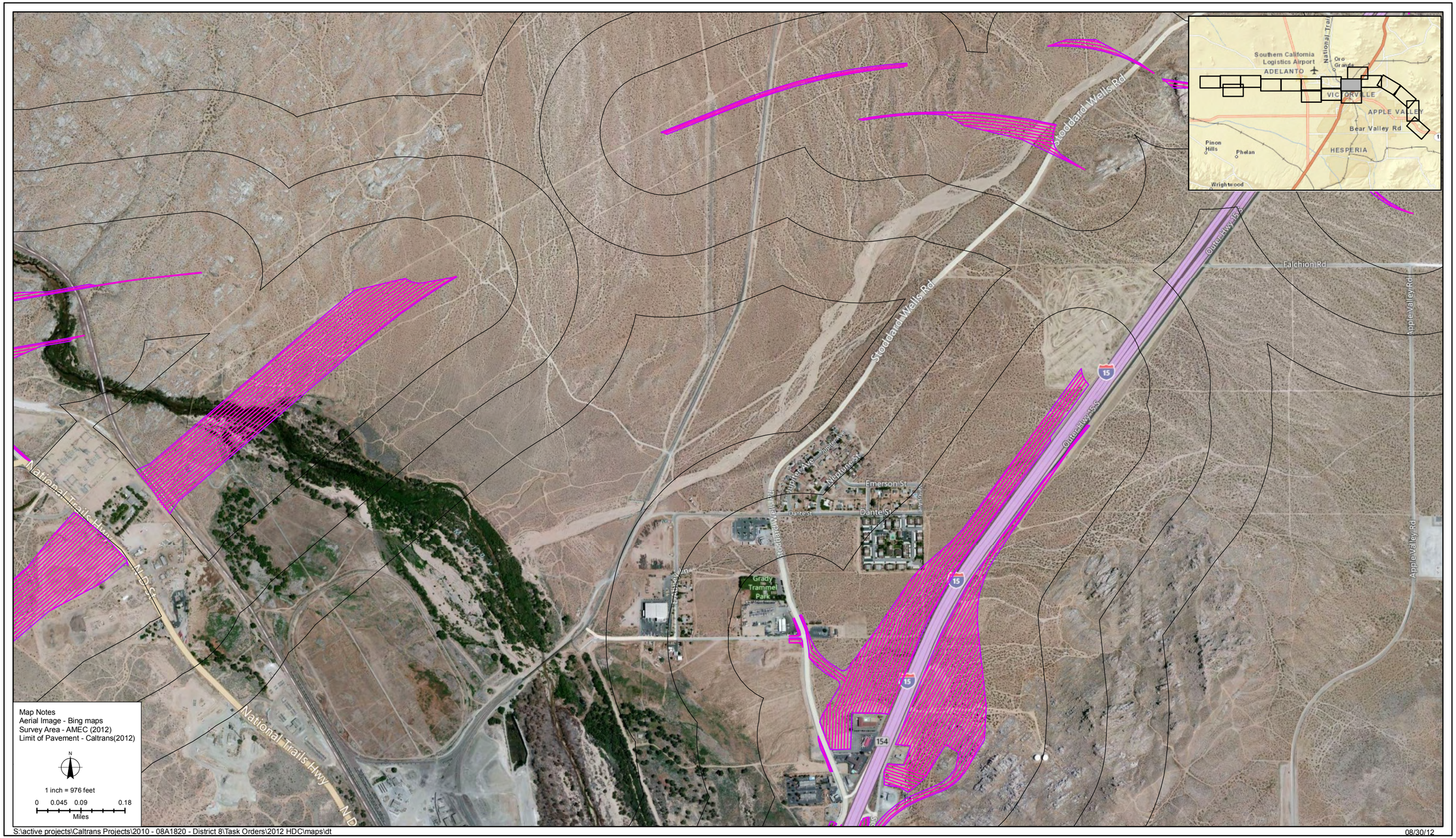
08/30/12

10 Meter Transects
Zone of Influence
Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE
D- 11



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08/30/12

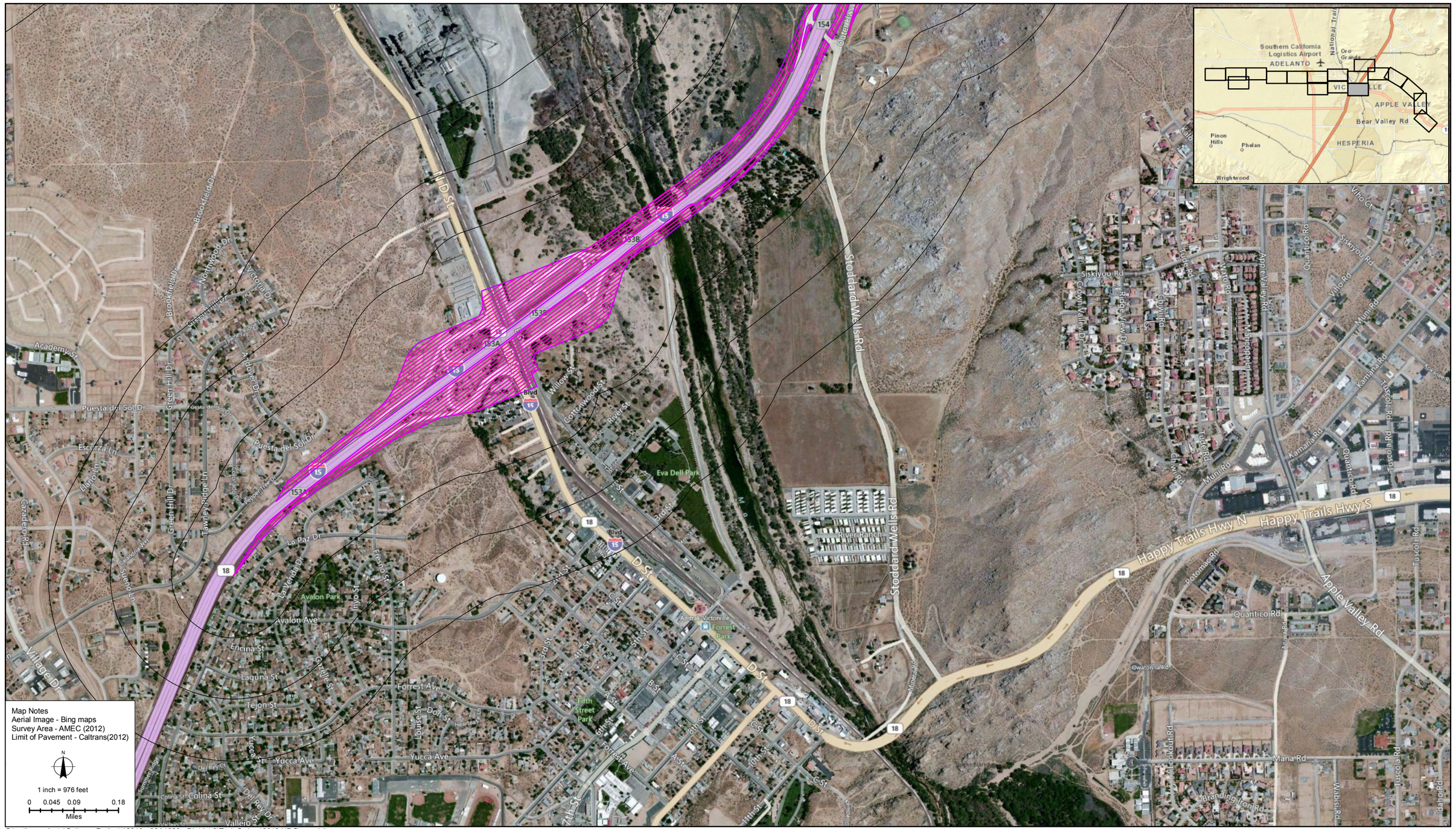
10 Meter Transects Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 12



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08/30/12

10 Meter Transects

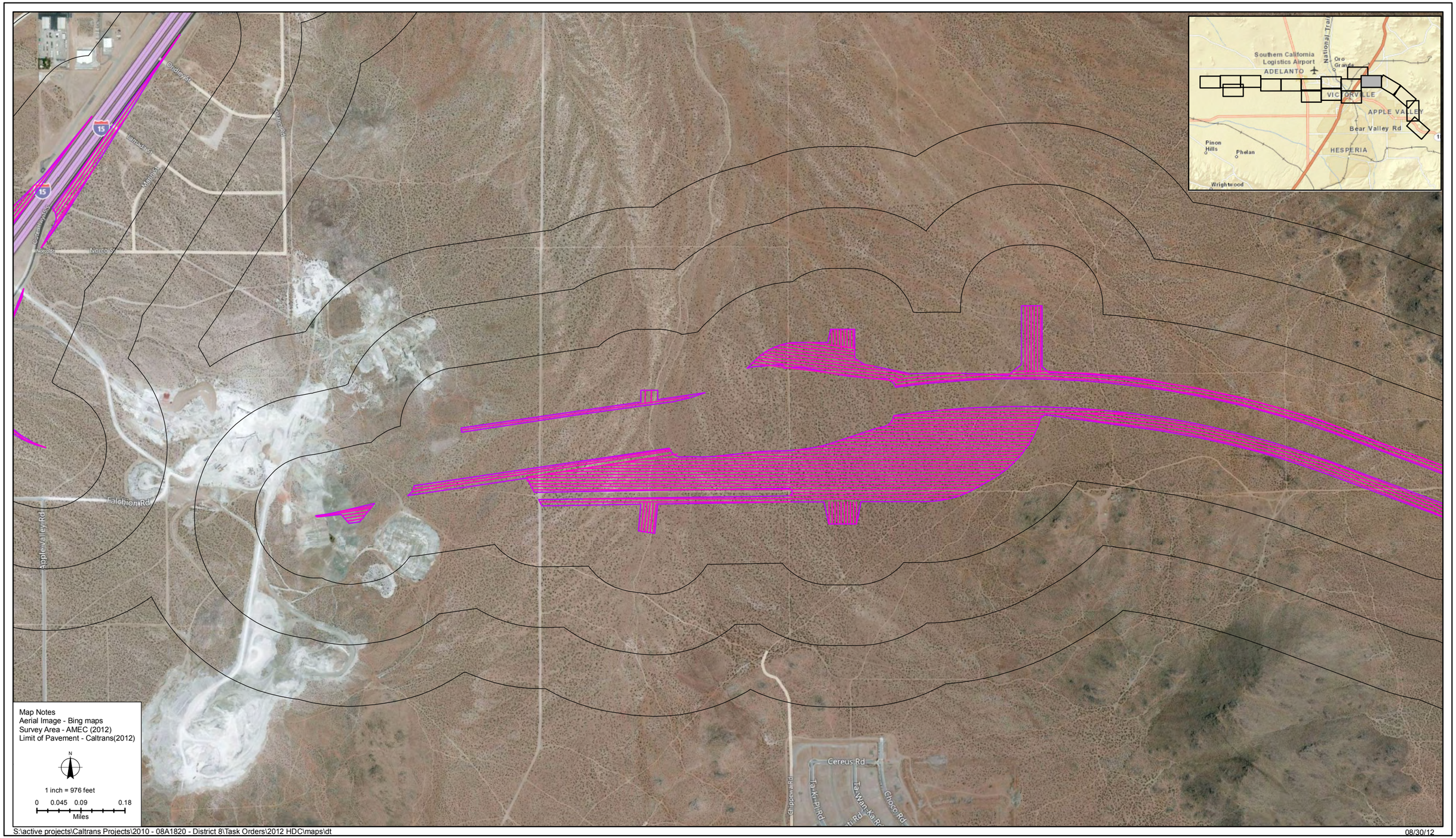
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 13



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08/30/12

10 Meter Transects

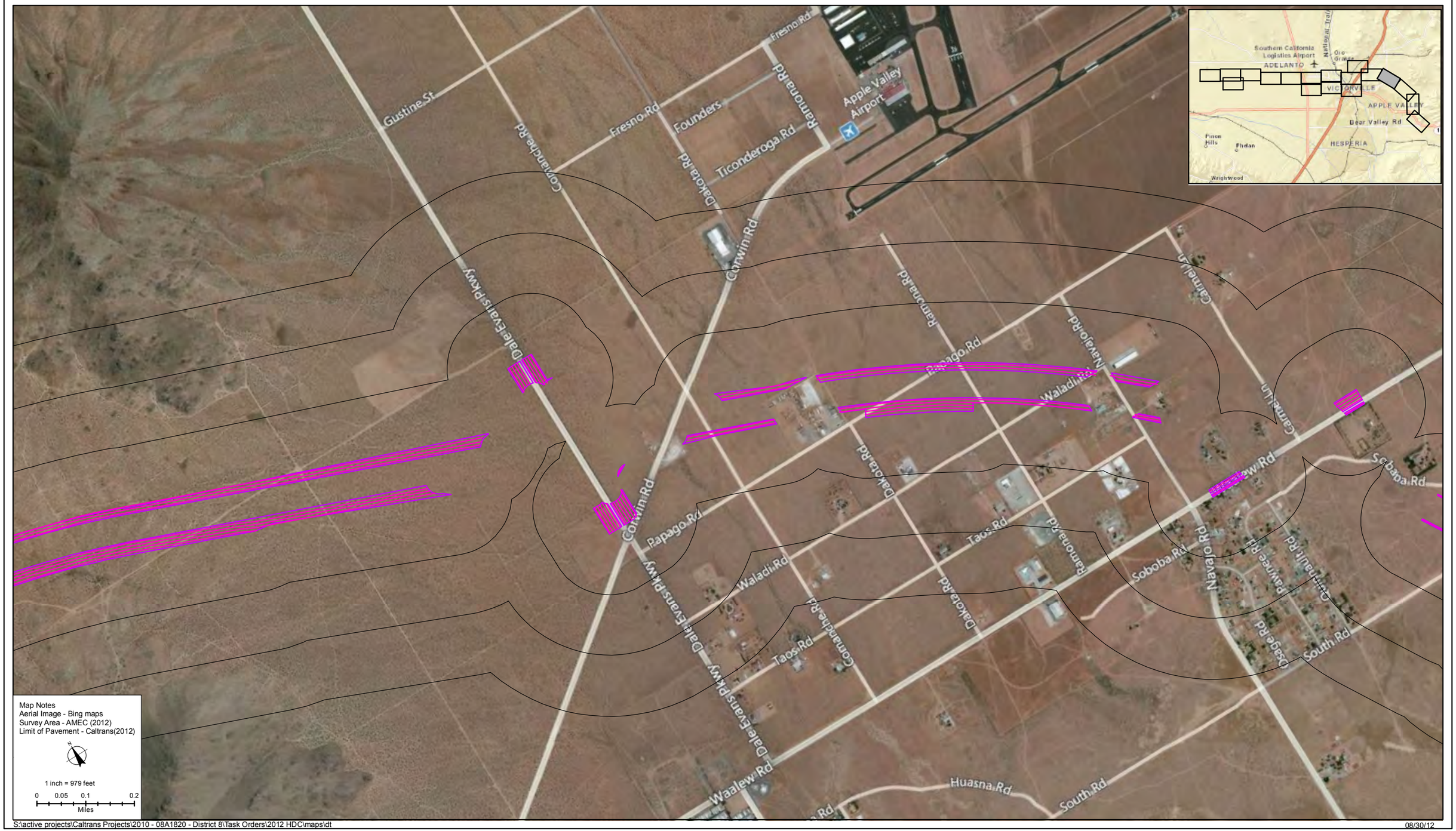
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 14



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08/30/12

10 Meter Transects

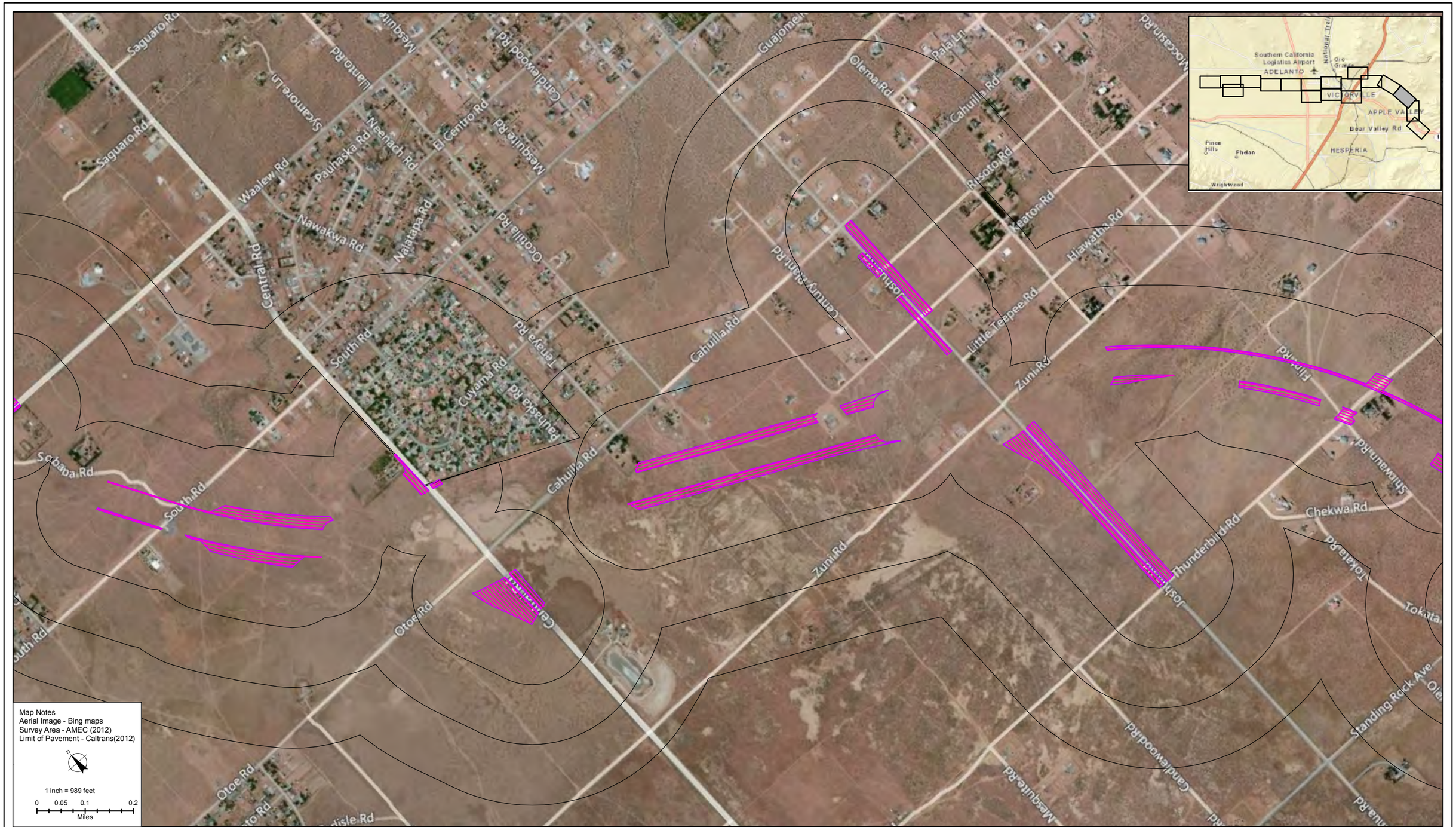
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 15



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08/30/12

10 Meter Transects

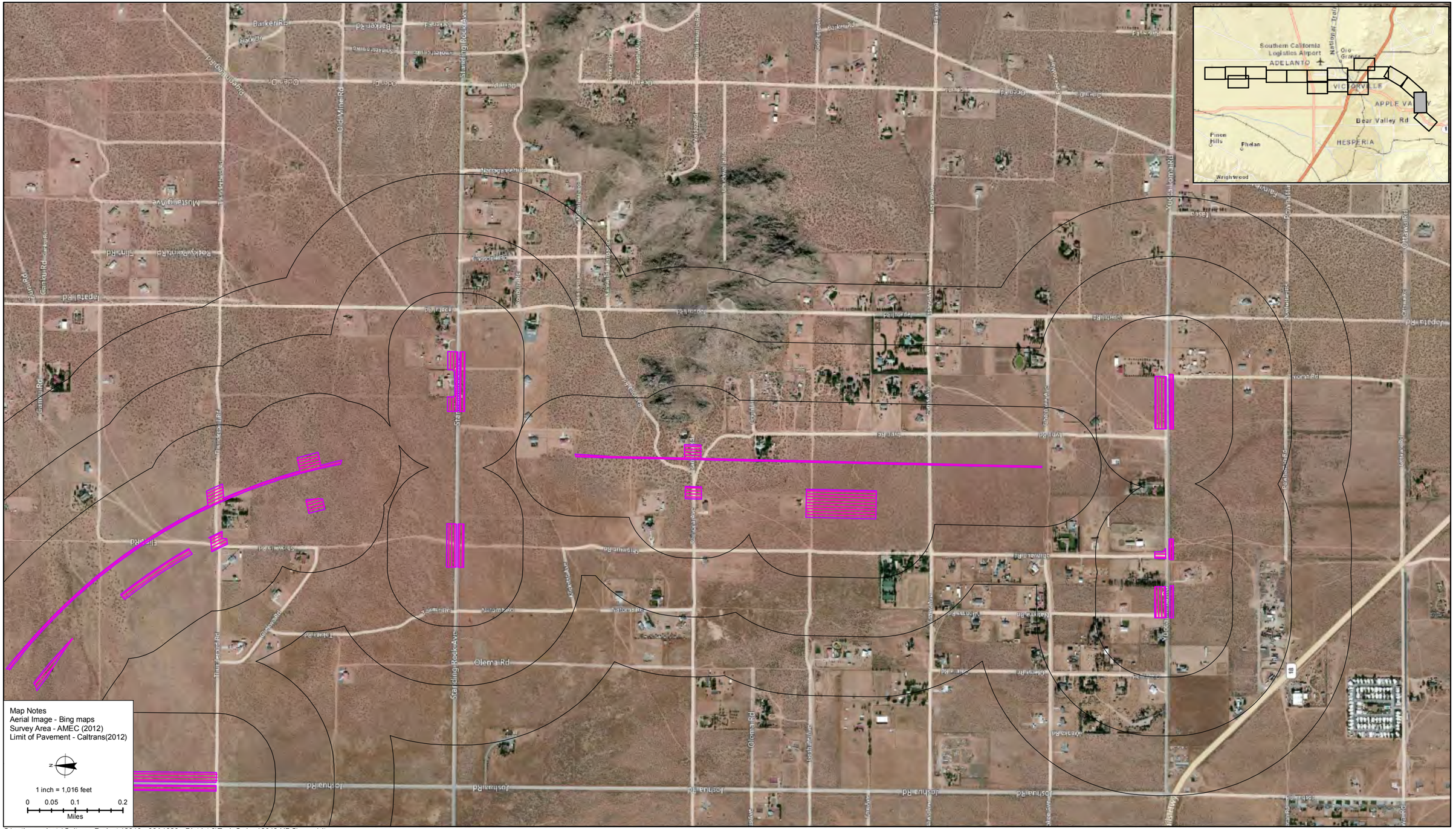
Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 16



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08/30/12

10 Meter Transects Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 17

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08/30/12

10 Meter Transects

Zone of Influence

Survey Area

Desert Tortoise Survey Transects Map
High Desert Corridor Desert Tortoise Survey:
SR 18 to Los Angeles County Line,
San Bernardino County

FIGURE

D- 18

APPENDIX E

SITE PHOTOGRAPHS

Photo 1. Joshua Tree Woodland, open space

Photo 2. Nonnative grassland

Photo 3. Salt grass flats in alkali playas, Apple Valley

Photo 4. Allscale scrub typical of the eastern study area

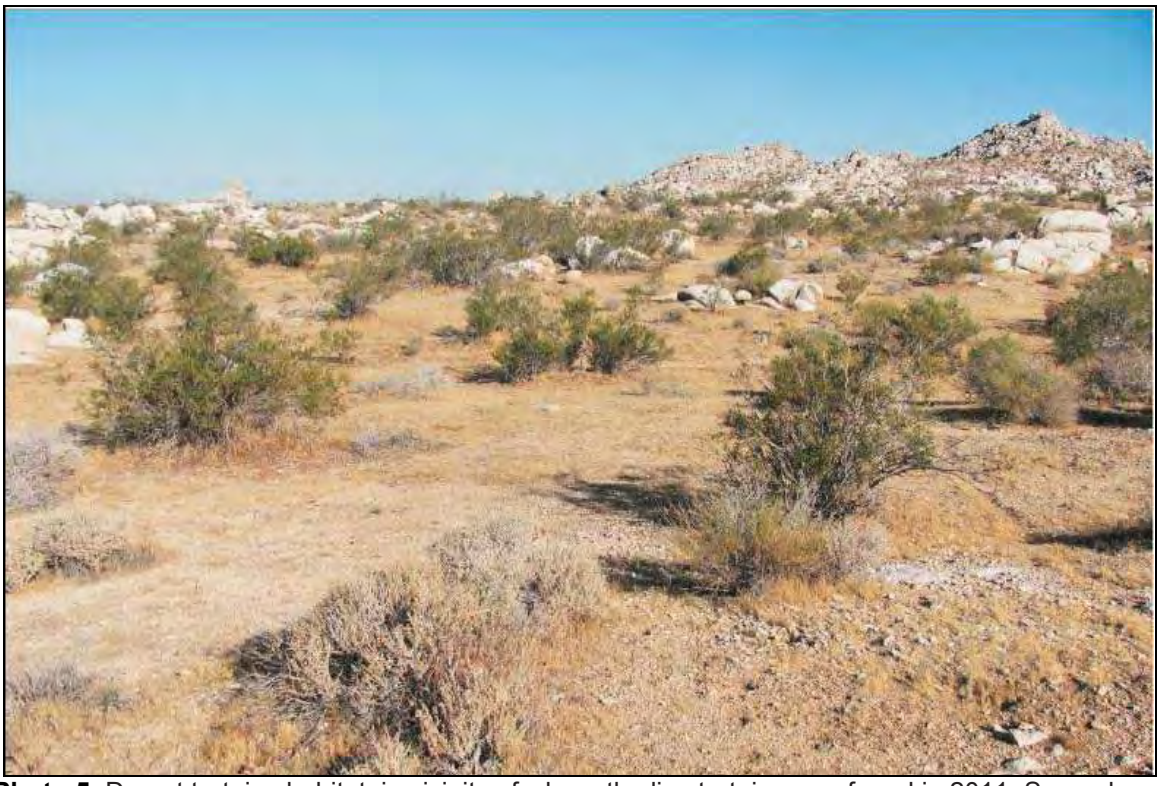

Photo 5. Desert tortoise habitat, in vicinity of where the live tortoise was found in 2011. Several tortoise scat, burrows, and tracks were observed in this area during the 2012 survey.

Photo 5. Class 5 tortoise carcasses found on the alignment.

Photo 5. Class 2 tortoise burrow located just east of Stoddard Wells Road and west of I-15.

Photo 5. Two of the old tortoise scat (Class 4 – 5) found on the western portion of the alignment.

APPENDIX F

VASCULAR PLANT SPECIES

High Desert Corridor
State Route 18 West to Los Angeles County Line,
San Bernardino County
Vascular Plant Species

Vascular plant species observed during the June-September 2011 and May-June 2012 focused desert tortoise surveys within the State Route 18 west to Los Angeles County line, San Bernardino County portion of the High Desert Corridor, are listed below. While 2010-11 rainfall levels were above-average for the region, 2012 rainfall levels appeared to be much lower in the project area, certain plant species may have been overlooked or were undetectable due to their active growth season, or lack of germination in 2012. Botanical nomenclature follows Baldwin et al. (2002) and Hickman(1993).

SYMBOLS AND ABBREVIATIONS:

- * Non-native (introduced) species.
- ** Special status plant species.
- sp. Identified only to genus; species unknown (plural = spp.).

CONIFERAE	**CONE BEARING PLANTS**
GNETAE	**JOINT FIRS**
Ephedraceae	**Ephedra Family**
Ephedra californica	California joint fir
Ephedra nevadensis	Nevada joint fir
ANGIOSPERMAE	**FLOWERING PLANTS**
DICOTYLEDONEAE	**DICOTYLEDONOUS PLANTS**
Amaranthaceae	**Amaranth Family**
Amaranthus alba	Tumble pigweed
Amaryllidaceae	**Amaryllis Family**
Allium fimbriatum	Fringed onion
Apiaceae	**Carrot Family**
Lomatium mohavense	Mojave Desert parsley

Asclepiadaceae	**Milkweed Family**
Asclepias erosa	Desert milkweed
Asteraceae	**Sunflower Family**
Acamptopappus sphaerocephalus	Rayless goldenhead
Adenophyllum cooperi	Cooper dyssodia
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia dumosa	Burro-weed
Ambrosia (=Hymenoclea) salsola	Cheesebush
Artemisia douglasiana	Mugwort
Artemisia tridentata	Great Basin sage
Baccharis salicifolia	Mulefat
Baileya pleniradiata	Desert woolly marigold
Brickellia californica	California brickellbush
Calycoseris parryi	Yellow tack-stem
Chaenactis carphoclina	Peirson's pincushion
Chaenactis fremontii	Fremont's pincushion
Chrysothamnus nauseosus	Rabbitbrush
Conyza canadensis	Horseweed
Coreopsis californica	California Tickseed
Encelia virginensis	Virgin River brittlebush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly sunflower
Euthamia occidentalis	Western goldenrod
Glyptopleura marginata	Keysia
Gutierrezia californica	California matchweed
Lactuca serriola	Prickly lettuce
Lasthenia californica	California goldfields
Layia glandulosa	Tidy tips
Malacothrix californica	Desert dandelion
Malacothrix coulteri	Snake's head
Malacothrix glabrata	Smooth desert dandelion
Matricaria matracariodes	Pineapple weed
Monoptilon bellidiforme	Daisy desertstar
Rafinesquia neomexicana	Desert chicory
Stylocline sp.	Neststraw
Stylocline micropoides	Woollyhead neststraw
Stephanomeria exigua var. *cororiaria*	Small wire lettuce
Stephanomeria pauciflora	Wire lettuce
Tetradymia axillaris var. *longispina*	Longspine horsebrush
Tetradymia stenolepis	Mojave cottonthorn
Xylorhiza tortifolia	Mojave-aster

Boraginaceae	**Borage Family**
Amsinckia tessellata	Checkered fiddleneck
Cryptantha circumcissa	Cushion forget me not
Cryptantha maritima	Guadalupe catseye
Cryptantha micrantha	Purple-rooted forget me not
Eucrypta chrysanthemfolia	Spotted hideseed
Nama demissum	Purple mat
Heliotropium curassavicam	Chinese parsley
Pectocarya penicillata	Winged combseed
Pectocarya recurvata	Curvenut combseed
Pectocarya setosa	Moth combseed
Phacelia sp.	Phacelia
Phacelia fremontii	Yellowthroat
Plagiobothrys sp.	Plagiobothrys species
Plagiobothrys leptocladus	Alkali plagiobothrys
Tiqilia plicata	Fanleaf crinklemat
Brassicaceae	**Mustard Family**
*Brassica tournefortii**	Sahara mustard
Descuriana pinnata	Tansy mustard
Dithyrea californica	California spectacle-pod
Guillenia cooperi	Cooper's jewelflower
*Hirschfelda incana**	Hoary mustard
Lepidium flavum var. *felipense*	Pepperweed
Lepidium fremontii	Desert alyssum
Lepidium lasiocarpum	Shaggyfruit pepperweed
*Sisymbrium irio**	London rocket
Stanleya pinnata	Prince's plume
Thysanocarpus curvipes	Fringepod
Tropidocarpum gracile	Dobie pod
Cactaceae	**Cactus Family**
Echinocereus engelmannii	Strawberry hedgehog cactus
Echinocactus polycephalus	Cottontop cactus
Opuntia basilaris	Beavertail
Opuntia (=Cylindropuntia) echinocarpa	Golden cholla
Opuntia (=Cylindropuntia) ramossissima	Pencil cholla
*Sclerocactus polyancistrus***	Mojave fishhook cactus
Caryophyllaceae	**Pink Family**
Eremogone macradenia	Mojave sandwort

Crassulaceae	**Stonecrop Family**
Dudleya lanceolata	Lanceleaf liveforever
Chenopodiaceae	**Goosefoot Family**
Atriplex canescens	Four-wing saltbush
Atriplex lentiformis	Quailbush
Atriplex polycarpa	Allscale
Atriplex spinifera	spiny saltbush
*Chenopodium alba**	Lamb's quarters
Chenopodium foliosum	Leafy goosefoot
Grayia spinosa	Spiny hopsage
Krascheninnikovia lanata	Winterfat
*Salsola tragus**	Russian thistle
Euphorbiaceae	**Spurge Family**
Chamaesyce albomarginata	Rattlesnake spurge
Croton californicus	California croton
Stillingia linearifolia	narrowleaf stillingia
Stillingia paucidentata	Mojave toothleaf
Fabaceae	**Legume Family**
Astragalus acutirostris	Sharpkeel milkvetch
Astragalus didymocarpus	Two-seeded milkvetch
Astragalus layneae	Widow's milkvetch
Astragalus lentiginosus	Freckled milkvetch
Lotus humistratus	Foothill deervetch
Lupinus concinnus	Bajada lupine
Lupinus microcarpus var. *horizontalis*	Dense-flowered lupine
Lupinus oderatus	Mojave lupine
Psorothamnus arborescens var *arborescens*	Mojave indigobush
Psorothamnus arborescens var. *minutifolius*	Mojave indigobush
Geraniaceae	**Geranium Family**
*Erodium cicutarium**	Red-stemmed filaree
Lamiaceae	**Mint Family**
Salvia carduacea	Thistle sage
Salvia columbariae	Chia
Scutellaria mexicana	bladder-sage
Tricostemma lanceolatum	vinegar weed

Loasaceae	**Loasa Family**
Mentzelia albicaulis	Whitestem blazing star
Petalonyx thurberi	Thurber's sandpaper plant
Malvaceae	**Mallow Family**
Malva parviflora	Mallow
Sphaeralcea ambigua	Apricot mallow
Melanthiaceae	**Bunch-flower Family**
Zigadenus brevibractatus	Desert deathcamas
Nyctaginaceae	**Four O' Clock Family**
Abronia villosa	Desert sand verbena
Mirabilis californica	California wishbone bush
Mirabilis bigelovii	Bigelow's wishbone bush
Onagraceae	**Evening Primrose Family**
Camissonia boothii ssp. *desertorum*	Desert sun cup
Camissonia campestris	Mojave sun cup
Camissonia palmeri	Palmer evening primrose
Oenothera deltoides	Birdcage evening primrose
Oenothera primiveris	Desert evening primrose
Oenothera tanacetifolia	Tansey-leaf evening primrose
Papaveraceae	**Poppy Family**
Eschscholtzia minutiflora	Little gold poppy
Phyrmaceae	**Lopseed Family**
Mimulus guttatus	common monkeyflower
Mimulus pilosus	downy monkeyflower
Plantanaceae	**Sycamore Family**
Plantanus occidentalis	American sycamore
Plantaginaceae	**Plantain Family**
Plantago eriopoda	Redwool plantain
Plantago ovata	Desert plantain
Polemoniaceae	**Phlox Family**
Eriastrum eremicum	desert woollystar
Eriastrum wilcoxi	Wilcox's woollystar
Gilia sp.	Gilia species
Gilia bicolor	Bird's eye Gilia
Gilia brecciarum	Nevada Gilia

Langloisia setossima var. *punctata*	Bristly langlosia
Linanthus aureus ssp. *decorus*	Golden desert trumpet
Loeseliastrum matthewsii	Desert calico
Loeseliastrum schottii	Schott's calico
Polygonaceae	**Buckwheat Family**
Chorizanthe brevicornu	Brittle spineflower
Chorizanthe rigida	Spiny herb
Chorizanthe thurberi	Thurber's spineflower
Eriogonum deflexum	Flat-top buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracillimum	Rose and white buckwheat
Eriogonum inflatum	Desert trumpet
Eriogonum nidularium	Birdnest buckwheat
Eriogonum reniforme	Kidney-leaf buckwheat
Eriogonum trichopes	Little trumpet
Oxytheca perfoliata	Roundleaf puncturebract
Persicaria amphibia	water smartweed
Polygonum aviculare	Pigweed
Rumex crispa	Curled dock
Rumex hymenosepalus	Wild rhubarb
Pteridaceae	**Maidenhair Fern Family**
Cheilanthes gracilliana	Lace lip fern
Ranunculaceae	**Rue Family**
Delphinium parishii	Desert larkspur
Rosaceae	**Rose Family**
Prunus fasciculata	Desert almond
Rutaceae	**Rue Family**
Thamnosma montana	Turpentine broom
Salicaeae	**Willow Family**
Populus fremontii	Fremont cottonwood
Salix exigua	Sandbar willow
Salix laevigata	Red willow
Solanaceae	**Nightshade Family**
Datura wrightii	Jimson weed
Lycium andersonii	Anderson desert-thorn
Lycium cooperi	Peach-thorn
Nicotiana obtusifolia	Desert tobacco

Tamaricaeae	**Tamarisk Family**
*Tamarix chinensis**	Chinese tamarisk
*Tamarix ramosissima**	Saltcedar
Ulmaceae	**Elm Family**
Ulmus parvifolia	Chinese elm
Vitaceae	**Grape Family**
Vitis californica	California wild grape
Zygophyllaceae	**Caltrop Family**
Larrea tridentata	Creosote bush
*Tribulus terrestris**	Puncture vine
MONOCOTYLEDONEAE	**MONOCOTYLEDONOUS PLANTS**
Cyperaceae	**Sedge Family**
Scirpus americanus	Three square bulrush
Scirpus californicus	California bulrush
Juncaeae	**Sedge Family**
Juncus mexicanus	Mexican rush
Liliaceae	**Lily Family**
*Calochortus striatus***	Alkali mariposa lily
Calochortus kennedyi	Desert mariposa lily
Yucca brevifolia	Joshua tree
Yucca schidigera	Mojave yucca
Poaceae	**Grass Family**
Achnatherum speciosum	Desert needlegrass
*Arundo donax**	Giant reed
Avena fatua	Common wild oat
*Bromus diandrus**	Ripgut brome
Bromus madritensis var. *rubens**	Red brome
*Bromus tectorum**	Cheatgrass
*Bromus trinii**	Chilean cress
Cynodon dactylon	Bermuda grass
Distichlis spicata	Saltgrass
Hillaria rigida	Big galleta grass
*Hordeum marinum**	Seaside barley
*Hordeum leporinum**	Hare barley
Leymus triticoides	Beardless wild rye

Poa secunda	Sandberg bluegrass
Polypogon monspeliensis	Rabbitsfoot grass
*Schismus arabicus**	Arabian splitgrass
Stipa hymenoides	Indian ricegrass
Themidaceae	**Brodiaea Family**
Dichlostemma capitatum	Blue dicks

APPENDIX G

ANIMAL SPECIES

High Desert Corridor State Route 18 West to Los Angeles County Line, San Bernardino County Animal Species

Animal species observed during a June-September 2011 and May-June 2012 focused desert tortoise (*Gopherus agassizii*) surveys within the State Route 18 west to Los Angeles County line, San Bernardino County portion of the High Desert Corridor, are listed below. While 2009-10 and 2010-11 rainfall levels for the region were average and above-average, respectively, certain animal species may have been overlooked or were undetectable due to their activity periods, behavior or type of habitat use. Nomenclature follows Center for North American Herpetology (2012) for reptiles and amphibians; California Bird Records Committee (2012) for birds; and California Department of Fish and Game (2008) for mammals.

SYMBOLS AND ABBREVIATIONS:

* Special status species

CLASS AMPHIBIA	**AMPHIBIANS**
Hylidae	**Tree Frog Family**
Pseudacris hypochondriaca	Baja California treefrog
CLASS REPTILIA	**REPTILES**
Testudinidae	**Land Tortoise Family**
*Gopherus agassizii***	Desert tortoise
Iguanidae	**Iguanid Family**
Dipsosaurus dorsalis	Desert iguana
Sauromalus ater	Chuckwalla
Crotaphytidae	**Collared & Leopard Lizard Family**
Gambelia wislizenii	Long-nosed leopard lizard
Phrynosomatidae	**Spiny Lizard Family**
Callisaurus draconoides	Zebra-tailed lizard
Phrynosoma platyrhinos	Desert horned lizard
Sceloporus magister	Desert spiny lizard
Uta stansburiana	Side-blotched lizard
Xantusiidae	**Night Lizard Family**
Xantusia vigilis	Desert night lizard
Teiidae	**Whiptail Family**
Aspidoscelis tigris tigris	Great Basin whiptail

Colubridae	**Egg-laying Snakes**
Chionactis occipitalis occipitalis	Mojave shovel-nosed snake (tracks)
Masticophis flagellum piceus	Red coachwhip
Pituophis catenifer deserticola	Great Basin gopher snake
Salvadora hexalepis mojavensis	Mojave patchnose snake
Crotalidae	**Pitviper Family**
Crotalus cerastes cerastes	Mojave sidewinder
Crotalus scutulatus	Mojave rattlesnake

CLASS AVES — **BIRDS**

Odontophoridae	**New World Quail Family**
Callipepla californica	California Quail
Callipepla gambelii	Gambel's Quail
Phasianidae	**Grouse Family**
Alectoris chukar	Chukar
Cathartidae	**Vulture Family**
Cathartes aura	Turkey Vulture
Accipitridae	**Hawk, Kite & Eagle Family**
Circus cyaneus	Northern Harrier
Buteo jamaicensis	Red-tailed Hawk
Charadriidae	**Lapwings and Plovers**
Charadrius vociferus	Killdeer
Columbidae	**Pigeon & Dove Family**
Columba livia	Rock Pigeon
Zenaida macroura	Mourning Dove
Streptopelia decaocto	Eurasian Collared-dove
Zenaida asiatica	White-winged Dove
Cuculidae	**Cuckoo & Roadrunner Family**
Geococcyx californianus	Greater Roadrunner
Tytonidae	**Barn Owls**
Tyto alba	Barn Owl
Strigidae	**Owl Family**
*Athene cunicularia**	Burrowing Owl
Caprimulgidae	**Goatsucker Family**
Chordeiles acutipennis	Lesser Nighthawk
Apodidae	**Swift Family**
Aeronautes saxatalis	White-throated Swift
Trochilidae	**Hummingbird Family**
Calypte anna	Anna's Hummingbird
Picidae	**Woodpecker Family**
Picoides scalaris	Ladder-backed Woodpecker

Falconidae	**Falcon Family**
Falco sparverius	American Kestrel
Falco mexicanus	Prairie Falcon
Tyrannidae	**Tyrant Flycatcher Family**
Myiarchus cinerascens	Ash-throated Flycatcher
Sayornis saya	Say's Phoebe
Tyrannus vociferans	Cassin's Kingbird
Tyrannus verticalis	Western Kingbird
Laniidae	**Shrike Family**
*Lanius ludovicianus**	Loggerhead Shrike
Corvidae	**Jay, Magpie & Crow Family**
Corvus corax	Common Raven
Alaudidae	**Lark Family**
Eremophila alpestris	Horned Lark
Hirudinidae	**Swallow Family**
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Hirundo rustica	Barn Swallow
Remizidae	**Penduline Tit Family**
Auriparus flaviceps	Verdin
Aegithalidae	**Bushtit Family**
Psaltriparus minimus	Bushtit
Troglodyditae	**Wren Family**
Campylorhynchus brunneicapillus	Cactus Wren
Salpinctes obsoletus	Rock Wren
Polioptilidae	**Gnatcatchers and Gnatwrens**
Polioptila caerulea	Blue-gray Gnatcatcher
Turdidae	**Thrush Family**
Sialia mexicana	Western Bluebird
Mimidae	**Mockingbird Family**
Mimus polyglottos	Northern Mockingbird
Toxostoma redivivum	California Thrasher
Sturnidae	**Starling Family**
Sturnus vulgaris	European Starling
Ptilogonatidae	**Silky-flycatchers**
Phainopepla nitens	Phainopepla
Parulidae	**Wood Warbler Family**
Geothlypis trichas	Common Yellowthroat
Setophaga petechia	Yellow Warbler
Setophaga townsendi	Townsend's Warbler
Cardellina pusilla	Wilson's Warbler

Emberizidae	**Sparrow Family**
Chondestes grammacus	Lark Sparrow
Amphispiza bilineata	Black-throated Sparrow
Artemisiospiza belli	Sage Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Cardinalidae	**Cardinals and Allies**
Piranga ludoviciana	Western Tanager
Pheucticus melanocephalus	Black-headed Grosbeak
Icteridae	**Blackbird Family**
Sturnella neglecta	Western Meadowlark
Euphagus cyanocephalus	Brewer's Blackbird
Fringillidae	**Finch Family**
Haemorhous mexicanus	House Finch
Spinus psaltria	Lesser Goldfinch
Passeridae	**Old World Sparrow Family**
Passer domesticus	House Sparrow

CLASS MAMMALIA	**MAMMALS**
Vespertilionidae	**Evening Bats**
Pipistrellus hesperus	western pipistrelle
Leporidae	**Rabbit & Hare Family**
Lepus californicus	Black-tailed jackrabbit
Sylvilagus audubonii	Desert cottontail
Sciuridae	**Squirrel Family**
Ammospermophilus leucurus	White-tailed antelope squirrel
Spermophilus beecheyi	California ground squirrel
Geomyidae	**Pocket Gopher Family**
Thomomys bottae	Botta's pocket gopher
Heteromyidae	**Pocket Mice and Kangaroo Rats**
Dipodomys sp.	Unidentified Kangaroo rat (tracks/tail drags)
Castoridae	**Beaver Family**
Castor canadensis	American beaver
Muridae	**Rat & Mouse Family**
Neotoma lepida	Desert woodrat (middens)
Canidae	**Fox, Wolf & Coyote Family**
Canis familiaris	Domestic dog
Canis latrans	Coyote
Vulpes macrotis	Kit fox
Felidae	**Cat Family**
Felis rufus	Bobcat

High Desert Corridor Project

2013 Focused Desert Tortoise (*Gopherus Agassizii*) Survey

EA 07-116720

EFIS 0712000035

July/August 2013

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

2013 Focused Desert Tortoise Survey

High Desert Corridor Alternative Alignment Areas

City of Palmdale to the Town of Apple Valley

Los Angeles and San Bernardino Counties, California

LA-07-138

EA: 116720

August 2013

STATE OF CALIFORNIA
Department of Transportation

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Recommended
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Approved By: _____ Date: 8/30/13
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California Department of Transportation, District 7

Summary

The California Department of Transportation was tasked with completing focused desert tortoise surveys (*Gopherus agassizii*) along the proposed alignment for the High Desert Corridor Project (HDC) as a follow up to surveys conducted in 2011 and 2012. These surveys were initiated due to design changes adding areas that were not surveyed in the previous years. Five locations were determined to not have been covered; these locations and their zones of influence are the focus of this study report.

The survey locations were primarily defined as desert scrub communities with the predominating plant communities being creosote bush scrub and Joshua tree woodland. The areas surveyed were found to be patchy in regards to the quality of desert tortoise habitat. Many barriers to tortoise distribution were present and included urbanization, roadways, farmland, grazing and surface disturbance (i.e. off-road vehicle recreation). Open desert area does occur within the proposed project alignment, and there is the potential for desert tortoise to occur.

A field assessment was conducted between July 10, 2013 and August 16, 2013. Desert Tortoise presence/absence surveys were conducted in accordance with the most current US Fish and Wildlife guidelines, and included areas of full coverage as well as zones of influence. The 2013 HDC desert tortoise surveys identified one living adult tortoise within Location 2 of the 2013 survey study areas. A majority of tortoise sign was discovered northeast of the Mojave River within Location 4 of the study area. Sign detected included burrows, shell fragments, a carapace and scat. The concentrated amount of tortoise sign correlates to the sign discovered in surveys done in previous years.

Due to the discovery of desert tortoise sign within the proposed project alignment, there is a need to develop avoidance and minimization measures, to avoid the occurrence of any individual "take" as a result of the proposed project. The amount of tortoise sign and the observation of a live individual indicate the need for preconstruction clearance surveys, with 100% coverage in designated areas and construction monitoring, by qualified biologist.

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List of Abbreviated Terms

ACOE	Army Corps of Engineers
CDFW	California Department of Fish and Wildlife
Caltrans	California Department of Transportation
dbh	Diameter at breast height (~4 ft)
FHWA	Federal Highway Administration
ft	foot/feet
FWS	Fish and Wildlife Service
km	kilometer(s)
KP	kilometer post
m	meter(s)
mi	mile(s)
NOAA Fisheries	National Marine Fisheries Service
NMFS	National Marine Fisheries Service
PM	post mile
USFWS	United States Fish and Wildlife Service

Chapter 1. Introduction

The California Department of Transportation was tasked with completing focused desert tortoise surveys (*Gopherus agassizii*) along the proposed alignment for the High Desert Corridor Project (HDC) as a follow up to surveys conducted in 2011 and 2012. These surveys were initiated due to design changes adding areas that were not surveyed in the previous years. Five locations were determined to not have been covered; these locations and their zones of influence are the focus of this study report.

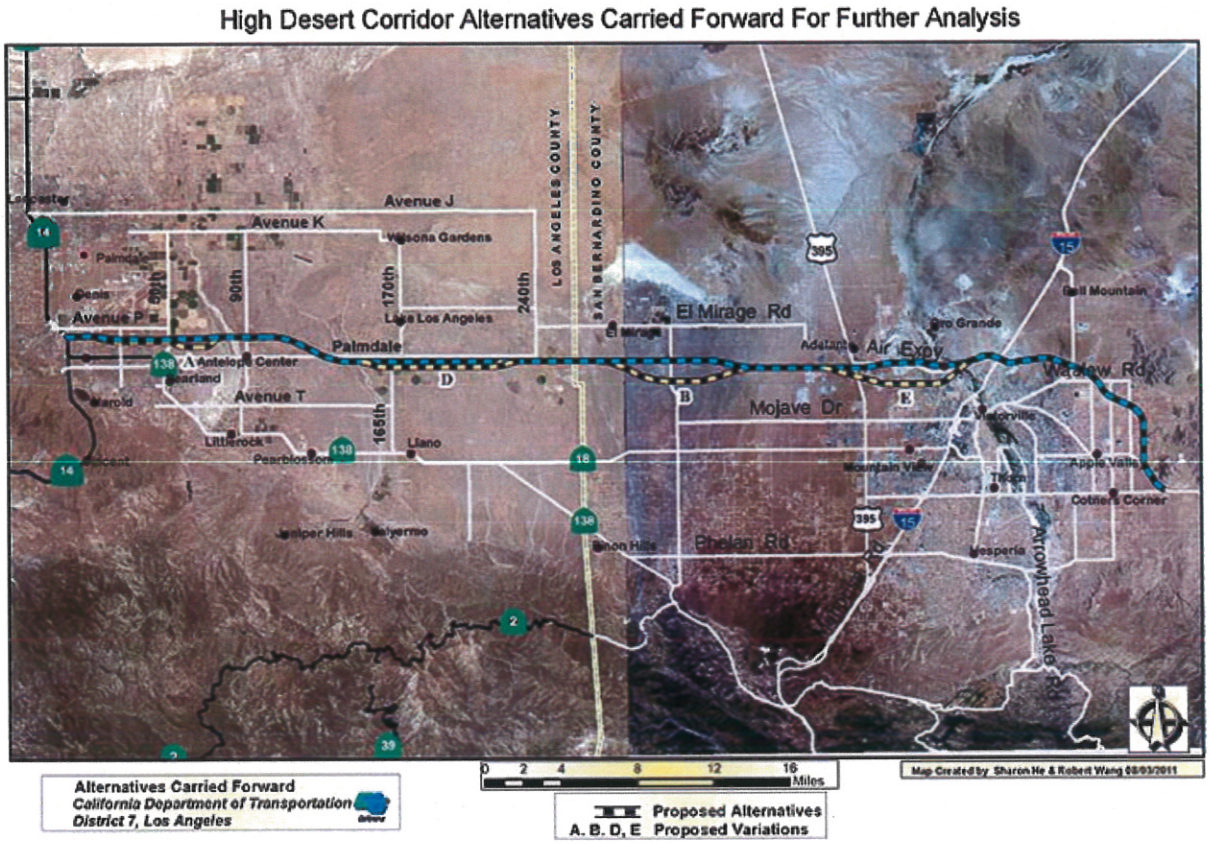
1.1. Project Description

The California Department of Transportation (Caltrans) in cooperation with The Los Angeles County Metropolitan Transportation Authority (Metro), are proposing a project to construct a new freeway/expressway, and possible toll way, in the High Desert area of Los Angeles and San Bernardino Counties that will extend for a distance of approximately 63 miles between SR-14 in Palmdale and SR-18 in Apple Valley. The project consists of an eight-lane freeway from SR-14 to 50th Street East along an alignment paralleling Avenue P-8 in Palmdale. From 50th Street East to 240th East and continuing to I-15, the project consists of a six-lane facility. East of I-15, the facility curves south until it ends at SR-18 in the Town of Apple Valley at Bear Valley Road. In addition, SR-14 and I-15 will be improved for approximately 3 miles north and south of the intersection with the proposed east-west facility. The exact type of the transportation facility will be determined by traffic analysis.

1.2. Project Location

The proposed project is located within High Desert Plains and Hills subsection of the Mojave Desert and will provide a link between SR -14 and SR-18, connecting the Cities of Palmdale and Apple Valley. The proposed alignment is found within the El Mirage, Shadow Mountains SE, Adelanto, Victorville, Apple Valley North, Apple Valley South and Fifteenmile Valley 7.5- minute series topographical quadrangles. Elevation throughout the project corridor ranges from approximately 2,660 feet above mean sea level (msl) along the Mojave River, to 3,120 feet above msl near the Bell Mountains. The project area consist mainly of desert associated plant communities, which include (but is not limited to) Joshua tree woodland, Mojave desert scrub, desert riparian woodland, alkali sinks, allscale scrub, big sage brush and rubber rabbitbrush scrub.

Figure 1: Project Location



1.3. Purpose of the Assessment

The purpose of this focused study is to determine the potential impacts that the project construction would have on the listed desert tortoise (*Gopherus agassizii*). Surveys took place in areas that had not been previously covered in the 2011 and 2012 focused surveys, due to design changes. This assessment has been prepared in order to aid the project development team in the selection of an environmentally sound alternative and to coordinate with the appropriate regulatory agencies.

Chapter 2. Focused Species Study

2.1. Desert Tortoise (*Gopherus agassizii*)

The desert tortoise is a state and federally listed species due in part to declining population as a result of habitat loss and/or change within the proposed project area. Under the Endangered Species Act (ESA) the desert tortoise is listed as threatened, and is under the jurisdiction of the US Fish and Wildlife Service (FWS). In California the desert tortoise is protected under the California Endangered Species Act (CESA) and is under the jurisdiction of the California Department of Fish and Wildlife (CDFW), they are currently listed as threatened under CESA. Critical habitat and a species recovery plan have been developed for the desert tortoise.

The desert tortoise inhabits a variety of desert terrain and plant communities throughout the western Mojave. They are known to exist within Joshua tree woodlands, creosote scrub, saltbush scrub and Mojave steppe. The characteristic crescent shaped burrow, dug by the adult tortoise to escape predation and the extreme temperatures of the desert, can be found within caliche wash banks, under boulders and shrub cover. Desert tortoises prefer friable soils, for the purpose of burrow construction; such soils can be found within alluvial fan and desert washes, as well as under desert brush. Juvenile tortoises have also been known to utilize the burrows of other desert wildlife, and their presence can be difficult to detect. Desert tortoise sign can be in the form of distinctive cigar shaped scat, shell fragments and bones, tortoise burrows and tracks.

The desert tortoise are most active between the months of April and June, when the above ground temperature is below 40°C (104°F), and there is an abundance of new vegetative growth. Desert tortoises also experience a secondary active period in the fall, from September through October. While above ground the desert tortoise will forage in the mid-morning and afternoon hours, when temperatures are optimal. They will commonly emerge during rain events to drink water, but will remain relatively close to their burrow. Desert tortoise will occasionally emerge from hibernation during the winter months during periods of rain or mild weather.

The proposed project alignment is not within the designated critical habit are for the desert tortoise, but it is within the southern range of the western Mojave Desert range of the species. The area within the project vicinity has been known to support a sparse and patchy population of the protected species. The population of desert tortoise has seen a profound decline within the project area due to predation from urban associated species (i.e. ravens, coyotes, and stray dogs), the spread of upper respiratory tract disease, habitat degradation due to urban development, surface disturbance and the construction of roadways.

2.2. Literature Review

A review of the CDFW's California Natural Diversity Database (CNDDB) was conduct along with a review of relevant literature, prior to the beginning of desert tortoise survey work. The following resources were reviewed in preparation to conducting any survey work.

- Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992)
- Desert Tortoise Recovery Plan (USFWS 1994)
- Determination of Critical Habitat for the Mojave Population of the Desert Tortoise (USFWS 1994)
- Mojave Population of the Desert Tortoise, 5-year Summary Review (USFWS 2010)
- Tortoise Density Planning Maps for the California Desert Conservation Area Plan (BLM 1979)
- West Mojave Plan Amendment to the California Desert Conservation Area Plan (BLM 2005)
- Interim Map of Desert Tortoise Habitat (BLM 1989)

Chapter 3. Survey Methodology

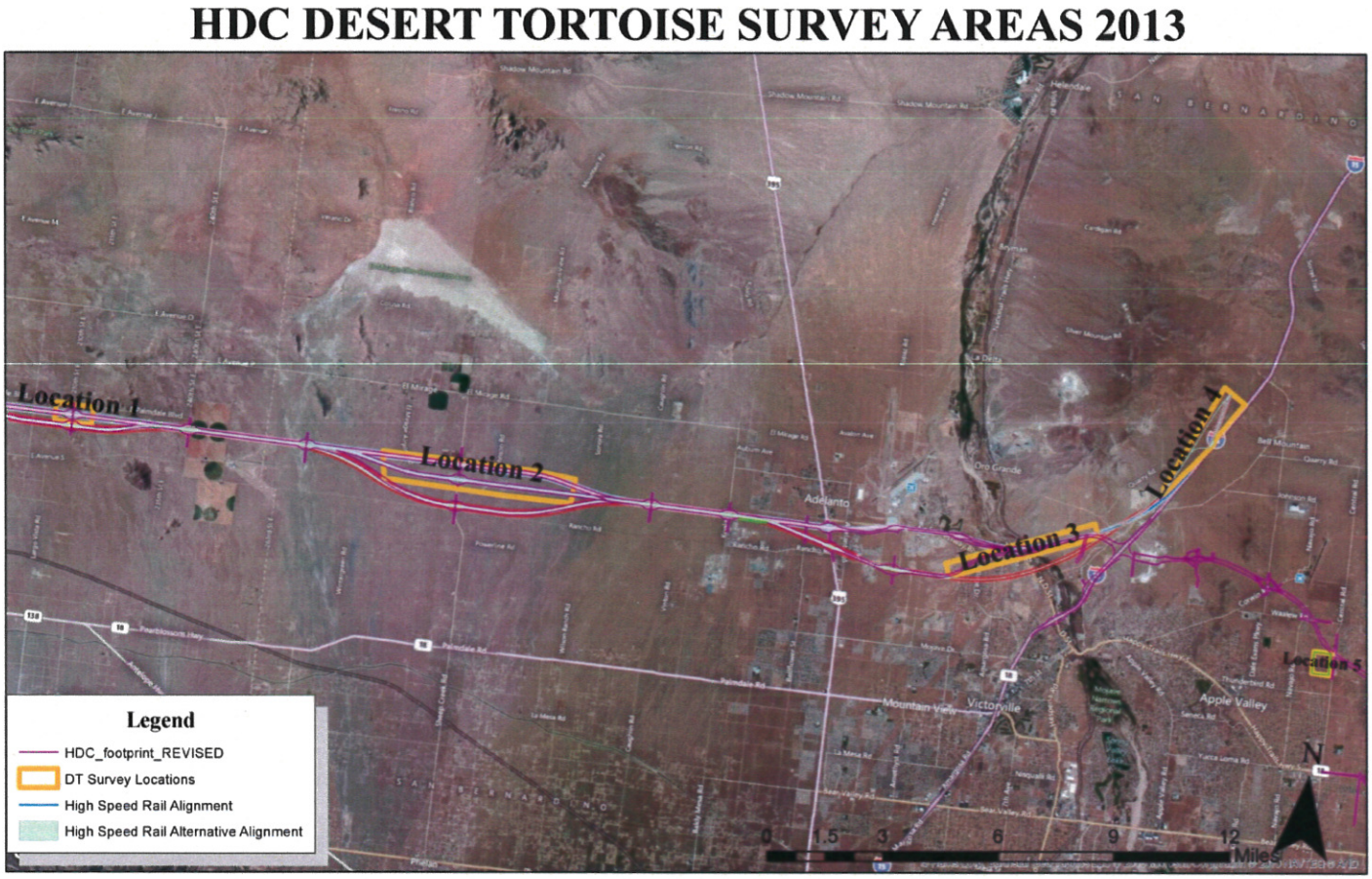
3.1. Focused Surveys

A field assessment was conducted at five predetermined locations (see Fig. 2), between July 10, 2013 and August 16, 2013. Desert Tortoise presence/absence surveys were conducted in accordance with the most current US Fish and Wildlife guidelines, and included areas of full coverage as well as zones of influence. The surveys took place in the mid-morning hours as to avoid extreme temperatures, therefore increasing the likelihood of discovering active desert tortoise individuals. One preapproved consultant supplied qualified biologist (ECORP Consulting) worked with a team of Caltrans supplied qualified biologist to determine the presence/absence of desert tortoise within the proposed project alignment.

Belt transects of approximately 10 meters were used for each portion covered by the project alignment to achieve 100% survey coverage, in accordance with the protocols dictated in the "Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992)". Zone of Influence (ZOI) surveys were also conducted at 200 meter, 400 meter and 600 meter intervals from the project's edge. Surveys were completed as close to the project alignment possible, but were sometimes precluded due to right of entry issues, fencing, domestic dogs and topographic constraints.

Desert tortoise sign (scat, shell fragments, bones, burrows and tracts) was cataloged using survey forms, photos and GPS tagged using Trimble Juno 3 field units. Potential habitat for desert tortoise was assessed based on the vegetation and landscape type. The survey areas included urbanized areas with residential housing, active farmland, undeveloped degraded land, abandoned grazing land, and areas of low hills and mountains. The plant community of the areas surveyed was cataloged, as well as any wildlife encountered.

Figure 2: Study Areas



3.2. Personnel and Survey Dates

A team of three Caltrans qualified biologist would survey each location with one qualified consultant biologist (ECORP Consulting). The consultant supplied biologists were approved by CDFW specialist Becky Jones, prior to any surveys taking place.

Table 1: Surveyors and Survey Dates for the 2013 HDC Desert Tortoise Surveys

Survey Date	Surveyors
July 10, 2013	Brad Haley, Christopher Stevenson, Mary Ngo, Jenny Barbour
July 11, 2013	Brad Haley, Mary Ngo, Celina Oliveri, Erika Reppun
July 12, 2013	Brad Haley, Mary Ngo, Celina Oliveri, Erika Reppun
July 15, 2013	Brad Haley, Celina Oliveri, Andrew Johnstone, Skylar Feltman
July 16, 2013	Brad Haley, Andrew Johnstone, Skylar Feltman, Mary Ngo
July 17, 2013	Brad Haley, Joel Bonilla, Christopher Stevenson, Mary Ngo
July 18, 2013	Brad Haley, Eric Hanson, Mary Ngo, Skylar Feltman
July 19, 2013	Brad Haley, Joel Bonilla, Mary Ngo, Skylar Feltman
July 22, 2013	Kristen Mobraaten, Sarah Baker, Eric Hanson, Andrew Johnstone
July 23, 2013	Kristen Mobraaten, Sarah Baker, Eric Hanson, Andrew Johnstone
July 24, 2013	Kristen Mobraaten, Sarah Baker, Eric Hanson, Andrew Johnstone
July 25, 2013	Brad Haley, Sarah Baker, Eric Hanson, Andrew Johnstone
July 26, 2013	Brad Haley, Jenny Barbour, Eric Hanson, Andrew Johnstone
July 29, 2013	Kristen Mobraaten, Sarah Baker, Mary Ngo, Andrew Johnstone
July 30, 2013	Kristen Mobraaten, Sarah Baker, Mary Ngo, Andrew Johnstone
July 31, 2013	Kristen Mobraaten, Sarah Baker, Mary Ngo, Andrew Johnstone
August 1, 2013	Kristen Mobraaten, Sarah Baker, Mary Ngo, Andrew Johnstone
August 5, 2013	Brad Haley, Leryn Gorlitsky, Eric Hanson, Erika Reppun
August 6, 2013	Brad Haley, Christopher Stevenson, Michael Klima, Erika Reppun
August 7, 2013	Brad Haley, Skylar Feltman, Newton Wong, Joel Bonilla
August 8, 2013	Brad Haley, Skylar Feltman, Newton Wong, Andrew Johnstone
August 12, 2013	Brad Haley, Erika Reppun, Christopher Stevenson, Eric Hanson
August 13, 2013	Brad Haley, Celina Oliveri, Eric Hanson, Joel Bonilla
August 14, 2013	Brad Haley, Mohammed Shaikh, Skylar Feltman, Joel Bonilla
August 15, 2013	Kristen Mobraaten, Andrew Johnstone, Skylar Feltman, Mohammed Shaikh
August 16, 2013	Kristen Mobraaten, Skylar Feltman, Joel Bonilla, Eric Hanson

Chapter 4. Survey Results

4.1. Focused Survey Results

Five locations that had not been surveyed during the 2011 and 2012 were the focus of the 2013 HDC desert tortoise surveys. The survey locations were primarily defined as desert scrub communities with the predominating plant communities being creosote bush scrub and Joshua tree woodland. The areas surveyed were found to be patchy in regards to the quality of desert tortoise habitat. Many barriers to tortoise distribution were present and included urbanization, roadways, farmland, grazing and surface disturbance (i.e. off-road vehicle recreation). Open desert area does occur within the proposed project alignment, and there is the potential for desert tortoise to occur. Although most of the area was assessed to be low quality habitat, desert tortoise sign was discovered during the 2013 focused surveys.

The 2013 HDC desert tortoise surveys identified one living adult tortoise within Location 2 (refer to fig. 2) of the 2013 survey study areas. A majority of tortoise sign was discovered northeast of the Mojave River within Location 4 of the study area. Sign detected included burrows, shell fragments, a carapace and scat. The concentrated amount of tortoise sign correlates to the sign discovered in surveys done in previous years. Please refer to the chart below for a summary of the tortoise sign discovered and the location; also, please refer to the maps attached in Appendix A for further details.

Table 2: Table of Sign Identified

Sign Type	Class	Location (UTM)	Date	Survey Area
Scat	2	483278 E, 3821985 N	7/11/13	Location 5
Carcass	5	476506 E, 3828993 N	7/12/13	Location 4
Burrow	3	477233 E, 3830239 N	7/15/13	Location 4
Carcass	5	477633 E, 3831134 N	7/15/13	Location 4
Carcass	5	477737 E, 3831374 N	7/15/13	Location 4
Scat	3	478404 E, 3832566 N	7/16/13	Location 4
Scat	3	478343 E, 3832511 N	7/16/13	Location 4
Scat	4	478159 E, 3832219 N	7/16/13	Location 4
Burrow	3	477775 E, 3831499 N	7/16/13	Location 4
Burrow	3	478083 E, 382114 N	7/16/13	Location 4

Borrow	3	478164 E, 3832263 N	7/16/13	Location 4
Scat	2	478269 E, 3832440 N	7/16/13	Location 4
Burrow	4	478238 E, 3831514N	7/16/13	Location 4
Pallet	3	476472 E, 3828519 N	7/16/13	Location 4
Pallet	5	476694 E, 3829053 N	7/17/13	Location 4
Burrow	4	477675 E, 3830457 N	7/17/13	Location 4
Burrow	5	476522 E, 3829349 N	7/17/13	Location 4
Burrow	4	476213 E, 3828851 N	7/17/13	Location 4
Burrow	5	477748 E, 3831438 N	7/18/13	Location 4
Scat	4	478129 E, 3832039 N	7/18/13	Location 4
Scat	3	478241 E, 3832780 N	7/18/13	Location 4
Carcass	5	477738 E, 3831862 N	7/18/13	Location 4
Scat	3	477952 E, 3832820 N	7/18/13	Location 4
Carcass	5	477772 E, 3832941 N	7/18/13	Location 4
Burrow	4	477912 E, 3833204 N	7/18/13	Location 4
Carcass	5	477916 E, 3833211 N	7/18/13	Location 4
Scat	2	477933 E, 3831207 N	7/19/13	Location 4
Scat	2	477896 E, 3831218 N	7/19/13	Location 4
Scat	2	478103 E, 3831444 N	7/19/13	Location 4
Carcass	5	478143 E, 3831768 N	7/19/13	Location 4
Carcass	5	477669 E, 3831282 N	7/19/13	Location 4
Carcass	5	477904 E, 3831232 N	7/25/13	Location 4
Scat	3	473747 E, 3826824 N	7/26/13	Location 3
Scat	2	473841 E, 3826769 N	7/26/13	Location 3

Scat	2	474062 E, 3826540 N	7/26/13	Location 3
Scat	2	4762673 E, 382608N	7/29/13	Location 3
Scat	3	4762673 E, 382608N	7/29/13	Location 3
Scat	4	471224 E, 3826347 N	7/29/13	Location 3
Scat	5	4712218 E, 382634 N	7/29/13	Location 3
Scat	2	471509 E, 3826059 N	7/29/13	Location 3
Burrow	5	450285 E, 3826035 N	8/6/13	Location 2
Tortoise	1	451401 E, 3825890 N	8/7/13	Location 2
Scat	3	451401 E, 3825890 N	8/7/13	Location 2
Burrow	1	451401 E, 3825890 N	8/7/13	Location 2
Scat	2	451388 E, 3825906 N	8/7/13	Location 2
Scat	3	451382 E, 3825893 N	8/7/13	Location 2
Scat	2	451349 E, 3825905 N	8/7/13	Location 2
Scat	4	451356 E, 3825915 N	8/7/13	Location 2
Scat	4	451299 E, 3825910 N	8/7/13	Location 2
Burrow	3	451080 E, 3825958 N	8/7/13	Location 2
Burrow	1	451417 E, 3825835 N	8/7/13	Location 2
Scat	2	451417 E, 3825835 N	8/7/13	Location 2
Burrow	2	451511 E, 3825818 N	8/7/13	Location 2
Scat	3	451446 E, 3825811 N	8/7/13	Location 2
Scat	3	451417 E, 3825814 N	8/7/13	Location 2
Scat	2	451417 E, 3825814 N	8/7/13	Location 2
Scat	3	451396 E, 3825829 N	8/7/13	Location 2
Scat	2	451382 E, 3825841 N	8/7/13	Location 2

Scat	2	451367 E, 3825832 N	8/7/13	Location 2
Scat	3	451256 E, 3825872 N	8/7/13	Location 2
Burrow	3	449874 E, 3825444 N	8/7/13	Location 2
Scat	5	450862 E, 3825388 N	8/8/13	Location 2
Burrow	3	451379 E, 3825732 N	8/13/13	Location 2
Scat	3	448959 E, 3826533 N	8/14/13	Location 2
Scat	5	450872 E, 3826791 N	8/14/13	Location 2
Scat	4	450937 E, 3826797 N	8/14/13	Location 2
Scat	4	451319 E, 3826718 N	8/14/13	Location 2
Scat	5	451419 E, 3826718 N	8/14/13	Location 2
Burrow	3	451370 E, 3826716 N	8/14/13	Location 2
Scat	4	451370 E, 3826716 N	8/14/13	Location 2
Scat	2	452130 E, 3826522 N	8/14/13	Location 2
Scat	3	452286 E, 3826413 N	8/14/13	Location 2

4.2. Limitations that may Influence Results

Due to budgetary constraints and design changes surveys were not able to be conducted during one of the desert tortoise's active periods (April-May or September-October). Every effort was made to work during times of day when ground temperatures did not exceed 40°C (104°F), to increase the likelihood of spotting a live tortoise. However, surveys did identify tortoise sign and one live tortoise was observed. This would indicate the need for avoidance and minimization measures, which should include preconstruction surveys and construction monitoring.

Chapter 5. Conclusions and Recommendations

5.1. Federal Endangered Species Act Consultation

Per the Endangered Species Act (ESA), the desert tortoise is federally listed as threatened as of 1990. Consultation with the U.S. Fish and Wildlife Service will be required under Section 7 of the ESA, and a Biological Assessment must be submitted to the USFWS. An incidental "take" permit may be required if an effect to the desert tortoise is determined to occur as a result of this project.

5.2. California Endangered Species Act Consultation

The California Department of Fish and Wildlife (CDFW) has listed the desert tortoise as threatened under the California Endangered Species Act. Consultation with CDFW is required and an incidental "take" permit may be issued under the section 2081 process.

5.3. Recommended Avoidance and Minimization Measures

- Desert tortoise sign was identified during the 2013 surveys, with one live individual being observed. The amount of tortoise sign and the observation of a live individual indicate the need for preconstruction clearance surveys, with 100% coverage in designated areas and construction monitoring, by qualified biologist.
- A clear delineation of the project limits and the establishment of Endangered Species Areas (ESA) would be required, with approved exclusionary devices in place. Any tortoise found within the project limits should be relocated, by a permitted biologist, to prevent a "take" of any kind.
- Any desert tortoise burrow located within the project limits shall be excavated by a permitted biologist, with any live tortoise or eggs relocated.
- Educational materials should be provided to all persons working on the HDC. These materials would outline the procedures involved with the protection of the desert tortoise, and other species of concern identified as having potential to be impacted by the project's construction.
- A trash abatement plan should be in place to discourage the occurrences of urban associated wildlife that prey on the desert tortoise.

With the incorporation of these measures would lessen the likelihood of a "take" as a result of project related activities.

Appendix A Project Maps

HDC DESERT TORTOISE SURVEY AREAS 2013

Appendix B Site Photos

Photo #1:	Location 1

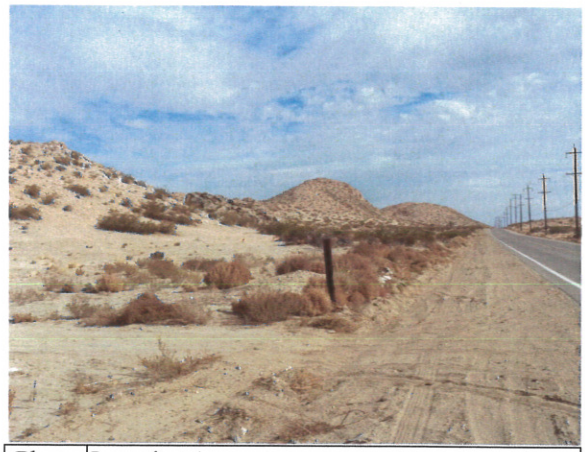


Photo #2:	Location 1

Photo #3:	Location 1

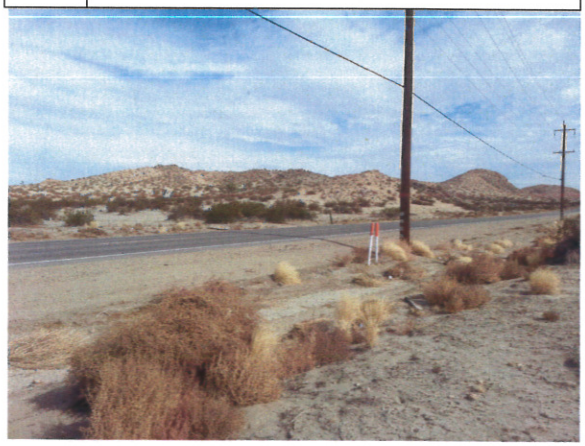


Photo #4:	Location 1

Photo #5:	Location 1

Photo #6:	Location 1

Photo #7:	Location 2

Photo #8:	Location 2

Photo #9:	Location 2

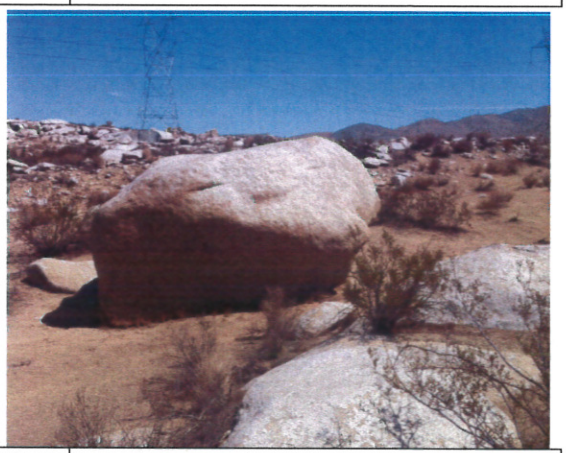


Photo #10:	Location 3 North

Photo #11:	Location 3 North

Photo #12:	Location 3 South

Photo #13:	Location 3 South

Photo #14:	Location 4

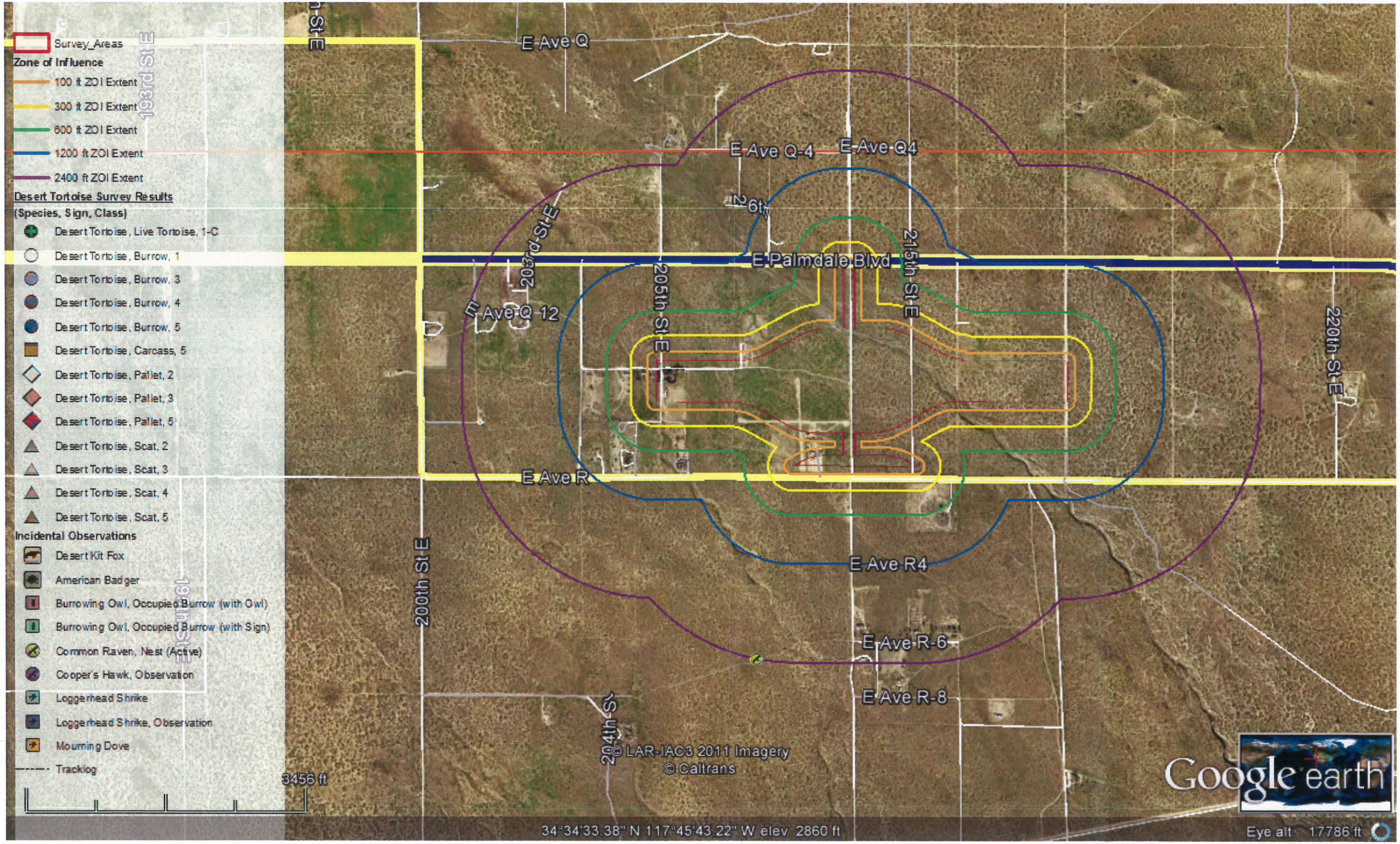
Photo #15:	Location 4

Appendix C Sign Observed

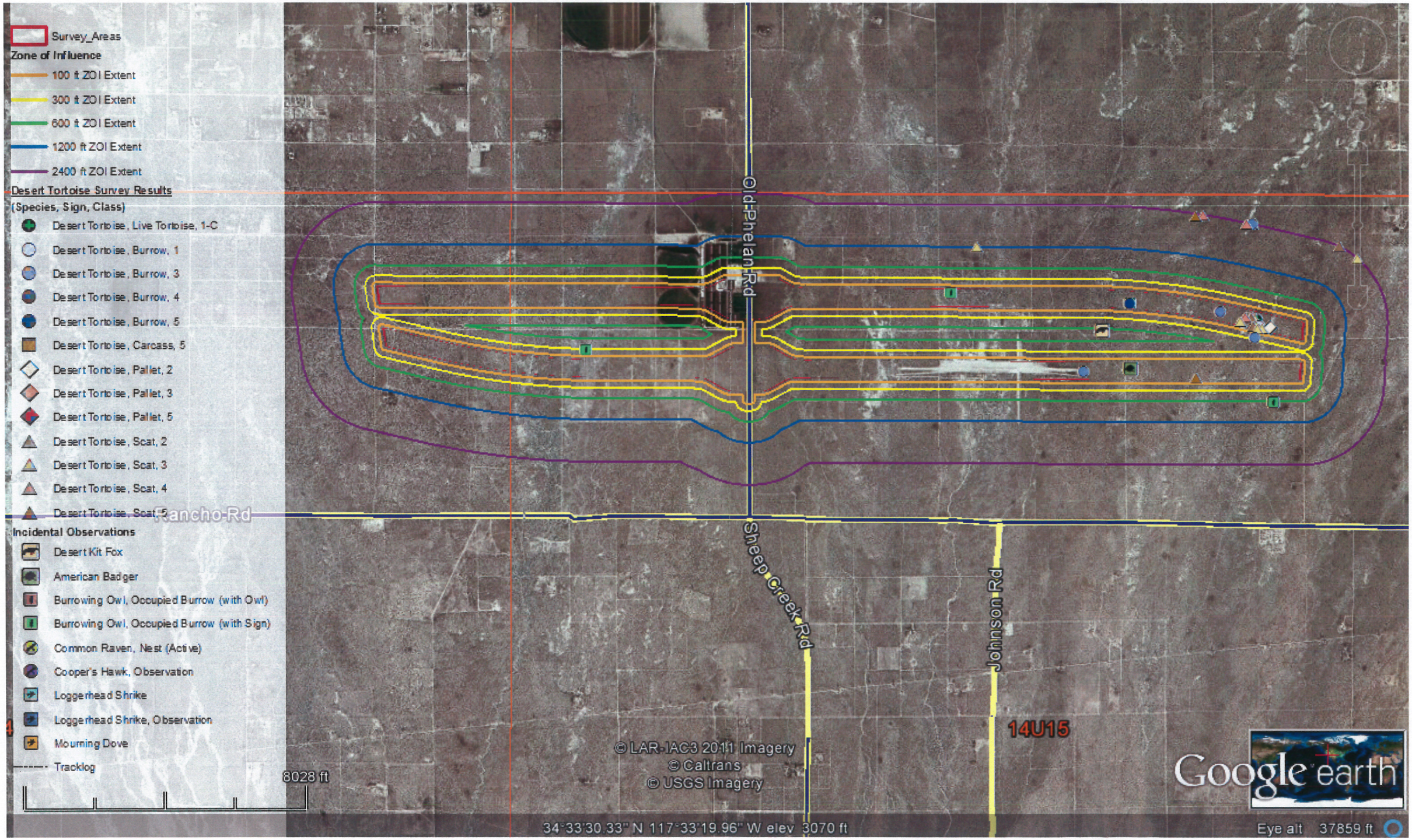
Incidental	Count	Species	Sign	Sign Class	Orientation	GenHabitat	Notes	GPS_Date	Location	BurrowType
No	2	Desert Tortoise	Scat	3		rocky hillside	2 pieces 1x2cm; rocky hillside; pic 1021	7/19/2013	4	
No	1	Desert Tortoise	Carcass	5		cbs	1 piece shell 4.5 x 4.5cm, very old; 1 scute	7/19/2013	4	
Yes	10	Desert Tortoise	Carcass	5		cbs	incidental; very old; 10 pieces; in 100% area; not found earlier; pics 1023-1025	7/19/2013	4	
No	1	Desert Tortoise	Pallet	3	SE	cbs	12 in wide, next to road on the W side; no sign;good desert tortoise shape; pics 90-992	7/17/2013	4	
No	1	Desert Tortoise	Pallet	5	SE	cbs	8 in; old; no sign; slight desert tportoise shape	7/17/2013	4	
No	1	Desert Tortoise	Burrow	4	N	cbs	6 in; old; no sign,	7/17/2013	4	
No	1	Desert Tortoise	Burrow	4	S	cbs	10 in; high domed; next to landfill fence and road, no sign; pics 993-995	7/17/2013	4	
No	2	Desert Tortoise	Scat	3		cbs	6 x 2cm; 2 pieces; pics 1004-1005	7/18/2013	4	
No	1	Desert Tortoise	Carcass	5		cbs	12 x 15cm; no bones other than plastron; 10pieces; no signs of predation; very few scutes present; pics 1010-1011	7/18/2013	4	
No	1	Desert Tortoise	Burrow	4	E	cbs	8 in; no sign; ok shape, E aspect	7/18/2013	4	
No	2	Desert Tortoise	Carcass	5		cbs	2 pieces of shell in woodrat midden	7/18/2013	4	
No	1	Desert Tortoise	Scat	3		cbs	3.5 x 1.5cm; pics 976-977	7/16/2013	4	
No	2	Desert Tortoise	Scat	3		rocky outcrop	in woodrat midden, two pieces: 5 x 1.5cm, 2 x 1.5 cm; pics 978-979	7/16/2013	4	
No	5	Desert Tortoise	Scat	4		cbs	5 pieces 2.5 by 1 cm; pics 980-981	7/16/2013	4	
No	1	Desert Tortoise	Burrow	3	N	cbs	12 in wide; N aspect; no sign; pic 984	7/16/2013	4	
No	1	Desert Tortoise	Burrow	3	SW	cbs	6 in wide; SW aspect; pic 985	7/16/2013	4	
No	1	Desert Tortoise	Burrow	3	W	cbs	6 in wide; W aspect; pic 986	7/16/2013	4	
No	1	Desert Tortoise	Scat	2		cbs	4 by 1.5 cm; pic 987	7/16/2013	4	
No	1	Desert Tortoise	Burrow	4	W	cbs	8 in wide; no sign; ok shape; W aspect	7/16/2013	4	
No	1	Desert Tortoise	Burrow	3	W	cbs	12 inch desert tortoise; 1 burrow; west facing; pic 969	7/15/2013	4	
No	1	Desert Tortoise	Carcass	5		cbs	23 cm wide by 30 cm long; large desert tortoise; broken into 10 pieces; no sign of predation; pics 972-973	7/15/2013	4	
No	1	Desert Tortoise	Carcass	5		cbs	found in woodrat midden-2 pcs; no other carcas pieces observed in vicinity; two pieces taken; pics 974-975	7/15/2013	4	
Yes	1	Desert Tortoise	Carcass	5		creosote bush	15 pieces 15cm wide by 20cm long; outside impact area, incidental	7/12/2013	4	
No	5	Desert Tortoise	Scat	2		saltbush scrub	5 pieces 2x3.5cm; pics 877-880	7/11/2013	5	
No	1	Desert Tortoise	Burrow	5			12 in; old, no sign; within kit fox burrow complex or other holes, no desert tortoise sign, possible desert tortoise shape	7/17/2013	4	
No	1	Desert Tortoise	Burrow	5	NW		7 in wide opening; gradual turn; no dt sign; NW aspect; signs of collapse	7/18/2013	4	
No	2	Desert Tortoise	Scat	4			3.5 x 1.5cm and 3 x 1.5cm; in woodrat midden	7/18/2013	4	
No	2	Desert Tortoise	Scat	3			2 pieces; 3.5 x 1.5cm and 3 x 1.5cm	7/18/2013	4	
No	9	Desert Tortoise	Carcass	5			5.5 x 3.5cm; 9 scattered bones	7/18/2013	4	
No	3	Desert Tortoise	Scat	2			3 x 1cm, 2 x 0.5cm, 2 x 1cm; small, has glaze, has odor, has dt shape and appearance	7/19/2013	4	
No	4	Desert Tortoise	Scat	2			3 x 1cm (2), 3 x 0.5cm, 1.5 x 0.5cm; small; has glaze; has odor; has dt shape and appearance; pics 1026-1030	7/19/2013	4	
No	1	Desert Tortoise	Carcass	5		rocky hill	1 piece of shell in woodrat midden	7/25/2013	4	
No	1	Desert Tortoise	Scat	3		cbs	1 piece 4 x 2cm; pic 240	7/26/2013	3	
No	1	Desert Tortoise	Scat	2		cbs	1 piece 3.5 x 1.5cm; pics 241-242	7/26/2013	3	
No	3	Desert Tortoise	Scat	2		cbs	3 pieces 5.5 x 1.5 cm, 3 x 1 cm, 4 x 1.5cm	7/26/2013	3	
No	1	Desert Tortoise	Scat	2	E	rocky hills creoso	1 piece juvenile scat; 3.5 x 0.5 cm	7/29/2013	3	
No	4	Desert Tortoise	Scat	4	N	rocky hills	2 pieces 0.5 x 3 cm and 2 pieces 0.5 x 3.25 cm	7/29/2013	3	
No	1	Desert Tortoise	Scat	5	NW	rocky hills	1 piece; 1 x 3 cm	7/29/2013	3	
No	2	Desert Tortoise	Scat	2	W	rocky hills	2 pieces; 0.5 x 3 cm	7/29/2013	3	
No	1	Desert Tortoise	Scat	2		sandy plateau an	1 piece; 1 x 4.5 cm	7/29/2013	3	
No	1	Desert Tortoise	Live Torto	1-C	NE	cbs	14 x 10 in; live tortoise inside burrow	8/7/2013	2	
No	1	Desert Tortoise	Scat	2		cbs	5 x 2 cm; within 100 ft of tortoise	8/7/2013	2	
No	4	Desert Tortoise	Scat	3		cbs	4 pieces; 2 x 2 cm, 3.5 x 2.5 cm, 4 x 1 cm	8/7/2013	2	
No	5	Desert Tortoise	Scat	2		cbs	5 pieces; 3 x 2 cm, 5 x 2 cm	8/7/2013	2	
No	1	Desert Tortoise	Scat	4		cbs	1 piece 4 x 2 cm	8/7/2013	2	

No	1	Desert Tortoise	Burrow	3		cbs	6 x 5 in; debris in enterance; pics 263-264	8/7/2013	2	
No	3	Desert Tortoise	Burrow	1	NE	cbs	14 x 10 in; NE aspect; with track; pics 263-264	8/7/2013	2	
No	1	Desert Tortoise	Scat	3		cbs	1 piece 5 x 1.5 cm	8/7/2013	2	
No	7	Desert Tortoise	Scat	2		cbs	7 pieces 6 x 2 cm; pic 275	8/7/2013	2	
No	1	Desert Tortoise	Scat	4		cbs	1 piece 5 x 2 cm; pic 262	8/7/2013	2	
No	1	Desert Tortoise	Pallet	2	NE	cbs	13 x 6 in, NE aspect; 12 in deep; no sign; no tortoise	8/7/2013	2	
No	1	Desert Tortoise	Scat	3		cbs	1 piece 3.5 x 1.5 cm	8/7/2013	2	
No	1	Desert Tortoise	Scat	2		cbs	1 piece 7 x 1.5 cm	8/7/2013	2	
No	6	Desert Tortoise	Scat	3		cbs	6 pieces 4 x 1.5 cm	8/7/2013	2	
No	8	Desert Tortoise	Scat	2		cbs	8 pieces 6 x 2 cm; all within 5 ft; pic 276	8/7/2013	2	
No	2	Desert Tortoise	Scat	3		cbs	2 pieces 4 x 1 cm	8/7/2013	2	
No	1	Desert Tortoise	Burrow	3	W	cbs	6 x 4in; W aspect; filled in; good shape; pic 278	8/7/2013	2	
No	1	Desert Tortoise	Burrow	5	S	cbs	7 x 6 inches; whitewash and old pellets at old burrow; pics 17-27	8/6/2013	2	
No	1	Desert Tortoise	Scat	5		cbs	3 x 2 cm	8/8/2013	2	
No	1	Desert Tortoise	Burrow	3	N	cbs	12 x 6 inches; in road berm; pics 290-291	8/13/2013	2	
No	2	Desert Tortoise	Scat	3		cbs	2 pieces; 2.0 x 0.5 in, 1.5 x 0.5 in	8/14/2013	2	
No	4	Desert Tortoise	Scat	5		cbs	4 pieces; 3.5 x 1 cm, 2.5 x 1 cm, 3.5 x 1 cm, 3 x 1 cm	8/14/2013	2	
No	1	Desert Tortoise	Scat	4		cbs	1 piece 5 x 2 cm	8/14/2013	2	
No	1	Desert Tortoise	Scat	4		cbs	1 piece 4 x 1.5 cm	8/14/2013	2	
No	1	Desert Tortoise	Burrow	3	N	cbs	1 burrow; 9 x 6.5 in; N aspect	8/14/2013	2	
No	3	Desert Tortoise	Scat	2		cbs	3 pieces; 5 x 1.5 cm, 3 x 1 cm	8/14/2013	2	
No	1	Desert Tortoise	Scat	3		cbs	1 piece 3.5 x 1.5 cm	8/14/2013	2	
No	2	Desert Tortoise	Scat	3	E	rocky hills creoso	2 pieces; 1.5 x 0.5 cm and 3 x 0.5cm	7/29/2013	3	
No	7	Desert Tortoise	Scat	3	NE	cbs	7 pieces outside of burrow	8/7/2013	2	
No	2	Desert Tortoise	Burrow	1	NE	cbs	tortoise facing inward; tracks present; NE aspect	8/7/2013	2	
No	14	Desert Tortoise	Scat	2	NE	cbs	14 pieces scat; 6 x 2 cm; pic 265	8/7/2013	2	
No	1	Desert Tortoise	Scat	5		cbs	1 piece 3 x 2 cm	8/14/2013	2	
No	4	Desert Tortoise	Scat	4		cbs	4 pieces scat; 2.5 x 1 cm	8/14/2013	2	
Yes	1	American Badger	No			cbs	ran away from us	7/16/2013	4	
Yes	1	American Badger	No			cbs	badger scrape marks; pics 284-285	8/8/2013	2	
Yes		Desert Kit Fox	Yes			wash	5 holes; kitfox complex	8/8/2013	2	Burrow
Yes	1	Mourning Dove	No			cbs	1 egg and 1 chick	7/18/2013	4	
Yes	2	Burrowing Owl	Yes			cbs	burrowing owl (two burrows); one desert tortoise burrow at location	7/15/2013	4	Burrow
Yes	2	Burrowing Owl	Yes			dist	inactive burrowing owl burrow; two burrows, no owl observed. burrow filled in with debris; whitewash and small mammal bones on apron. pictures 884-885.	7/12/2013	5	Burrow
Yes	1	Burrowing Owl	Yes			dist	occupied burrowing owl burrow; flushed 1 owl from burrow; fresh kangaroo rat whitewash and pellets in front. picture 886	7/12/2013	5	Burrow
Yes	1	Loggerhead Shrike	No			saltbush	perched on pole; 1 individual	7/11/2013	5	
Yes	1	Loggerhead Shrike	No			cbs		7/24/2013	3	
Yes	1	Cooper's Hawk	No			cbs	1 adult cooper's hawk flying overhead	7/26/2013	3	
Yes	1	Loggerhead Shrike	No				perched on boulder	7/29/2013	3	
Yes	1	Burrowing Owl	Yes			cbs	burrowing owl whitewash and pellets at old burrow	8/6/2013	2	Burrow
Yes	1	Burrowing Owl	Yes			cbs	burrowing owl whitewash and pellets at old burrow	8/6/2013	2	Burrow
Yes	2	Burrowing Owl	Yes			sand dune/cbs	whitewash and small mammal bones present; 2 burrows; pics 288-289	8/12/2013	2	Burrow
Yes	1	Burrowing Owl	Yes				whitewash present at old burrow	8/8/2013	2	Burrow
Yes	1	Common Raven	No			cbs	nest in joshuat ree; flushed from nest; unknown is nest is active; no desert tortoise sign at nest	8/16/2013	1	

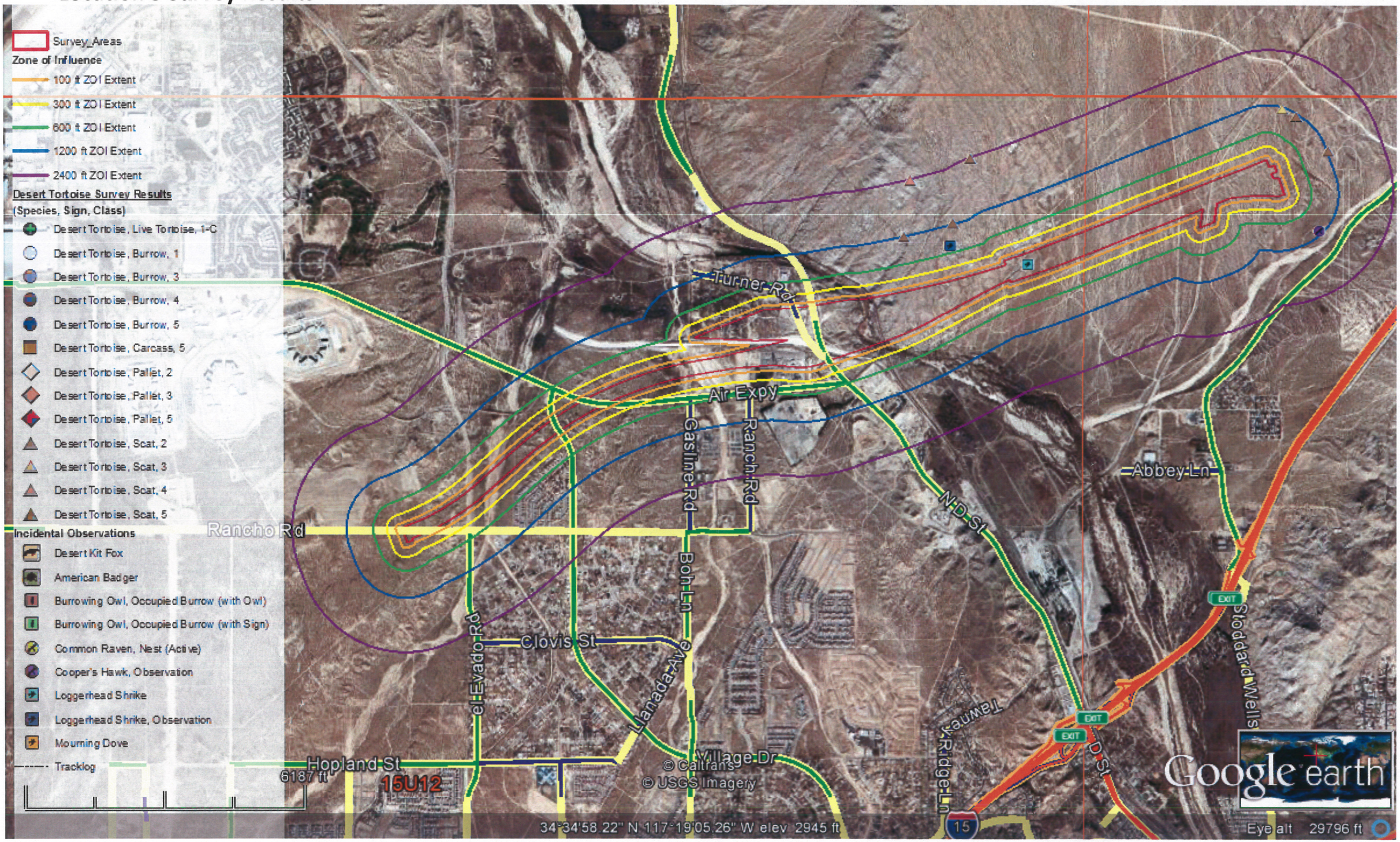
Location 1 Survey Results



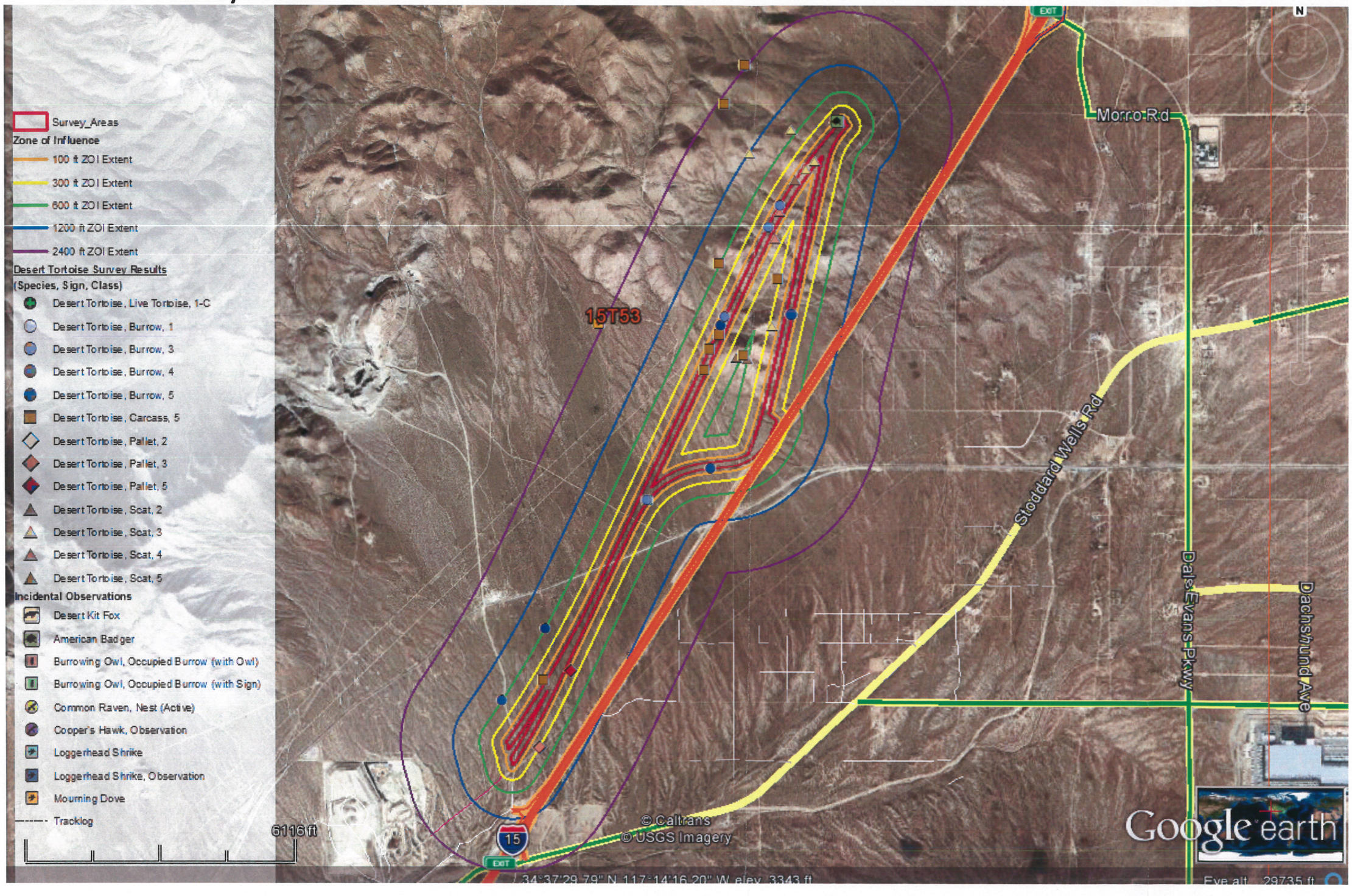
Location 2 Survey Results



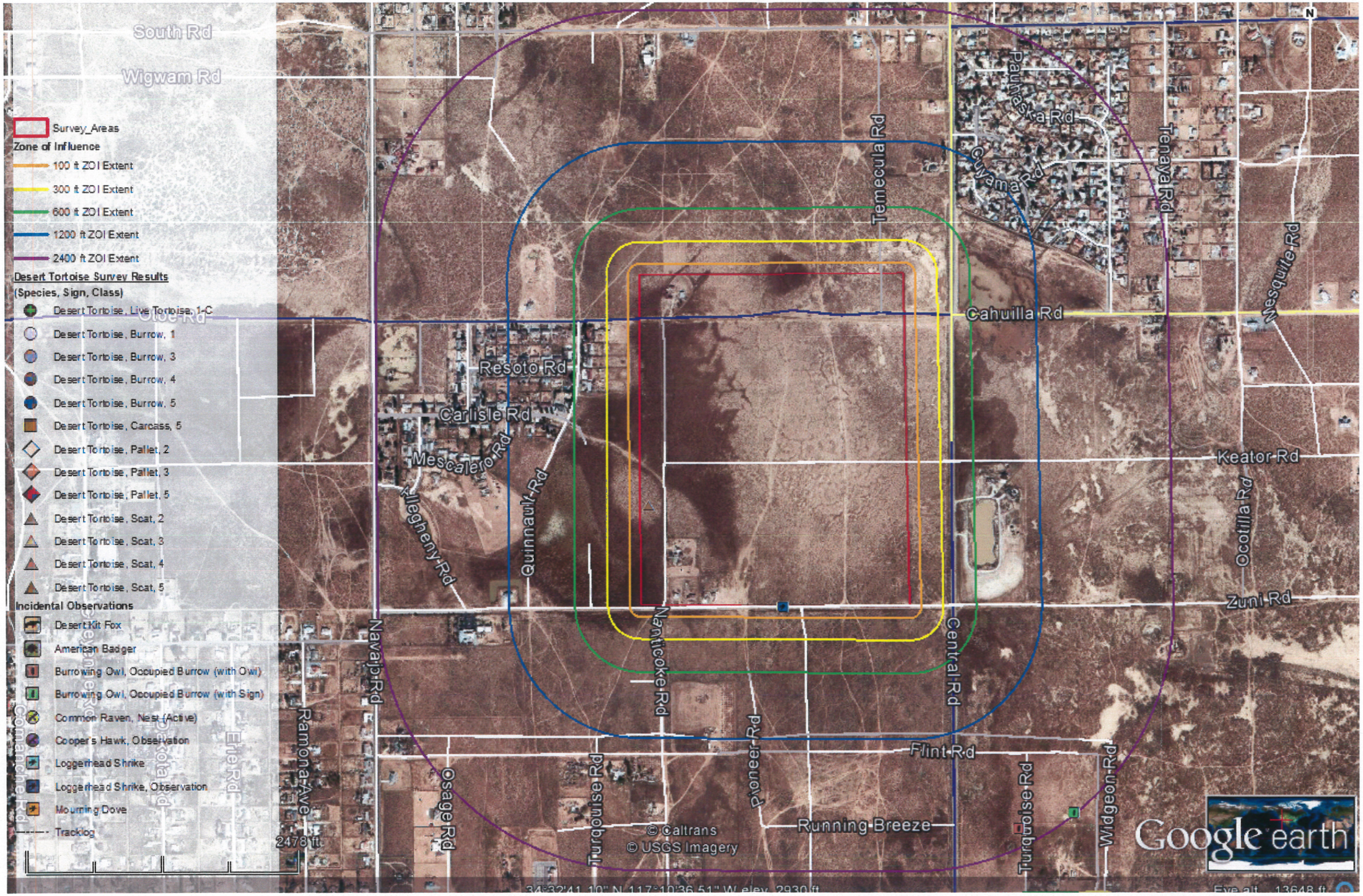
Location 3 Survey Results



Location 4 Survey Results



Location 5 Survey Results



Appendix D Field Notes

Date: 8/15/13

HDC20130815KM # AS

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 7:17 AM	End: 2:00 pm
K Mobaaten	Temp* (°F) 6" above ground in shade	Start: 74°F	End: 103
Andrew Johnstone	Wind (mph)	Start: 0-2	End: 2-4
Skylar Feltman	% Cloud Cover	Start: 0	End: 10%
Mohammad Shaik			

Area(s) surveyed

all 100% areas (location 1)
100, 300, 600, 1200 B/W pwr prop to WB Lago Vista Rd. to T01 lines
1200, 1600, 100 NE T01 lines
100 line complete around entire location

Site Information location 1

Project Name:	HDC		
Location:	1	UTM Coordinates (NAD 83)	
County:	Los Angeles	N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ___ R ___ S ___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:	
Land Form*:	%Slope:	Other:	
* e.g. mesa, bajada, wash			
Land Uses:			
NW:		SE:	
NE:		SW:	

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

fire, grazing, trash dumping, OHV, residential, domestic dog

Is site staked or marked? [Y] (N)

Transect Width: 10 M

Field Observations

Vegetation Communities: Veg has been burned in 100% area WB Lago Vista → creosote bush scrub, Atriplex scrub

Plants

creosote
box thorn
cheesebush

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Common raven (Nuptial), California quail, barn swallow, black-tailed jackrabbit

Date: 8/15/13
Recorder: A. Johnstone
Trimble file: tDC20130815KML & US

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1			NO	sign	observed	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/16/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDX 20130816KM

General Information		Weather Data		
Observers: KMobraaten	Time (24 hr)	Start: 0715	End: 1115
[redacted]	Temp* (°F) 6" above ground in shade	Start: 75	End: 100
[redacted]	Wind (mph)	Start: 0-1	End: 2-5
S Feldman	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Loc 1: 2400 pt 158 to 179 | priv. prop, 1200 from priv prop (141) to 158 1000 from priv prop (102) to 109; 800 from 77 to 72 (priv prop), 100 from 210m st. to 39; 100% on southern "dog leg"

Site Information (Location)

Project Name: HDX DT			
Location: Lake Los Angeles		UTM Coordinates (NAD 83)	
County: Los Angeles		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10M

Field Observations

Vegetation Communities: Creosote bush scrub

Plants	

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CAPU	cottontail
LEBO	jackrabbit
CORA	Common raven
SCSP	side-blotch
HDP1	

Date: 8/12/13
Recorder: K. Mobraaten
Trimble file: HDc20130812ckm

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0819	CORA	Nest	430313	3825236	in ft Trll, CORA turned from nest
2						no DT sign @ nest. Unk if nest is active
3						
4						
5		NO DT Sign observed				
6						
7						
8						
9						
10						
11						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/16/2013

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC 20130816 EH

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0715 am	End: 1120 am
Joel Bonilla	Temp* (°F) 6" above ground in shade	Start: 75	End: 100
Eric Hanson	Wind (mph)	Start: 01	End: 25
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

Location 1: 2400 from pt 158 to 177, 1200 from 138 to 131, 1600 from 99 to 104, 3000 from 70 to 51

Site Information location 1

Project Name: HDC DT Survey			
Location: Lake Los Angeles		UTM Coordinates (NAD 83)	
County: Los Angeles		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ___ R ___ S ___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			

Land Uses:

NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width: 10M

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

ATFL	Whipsaid	
CORA	jackrabbit	
SCSP		
CATO		

Date: 8/16/2013
Recorder: Joel Bonilla
Trimble file: HDC20130816EH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		No Sign Observed				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
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22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 8/14/2013

Date: 7/29/13

HDC20130729KM

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: ____	End: 13:40
K. Moorateh S. Baker	Temp* (°F) 6" above ground in shade	Start: ____ See	End: 97°
	Wind (mph)	Start: ____ p1	End: 5Mph
	% Cloud Cover	Start: ____	End: 0

Area(s) surveyed

Location 2 - 2400 & 1200 201 b/w Sheep Ck Rd & Johnson Rd S of alignment

Site Information location #2

Project Name: HDC		
Location: #2 Victorville	**UTM Coordinates** (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

old Ag, grazing, trash dumping, OHV

Is site staked or marked? [Y] [N]

Transect Width: 10 M

Field Observations

Vegetation Communities:

Plants Joshua tree, scrub, Atriplex Sawb, creosote bush scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Coyote (S), jack rabbit (B), whip tail lizard (O)

Date: 7/29/13
Recorder: S. Baker
Trimble file: HDL20130729 KM

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2				no sign observed		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/29/13

HDC20130729AS

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers: Andrew Johnstone, Mary Ngo	Time (24 hr)	Start: 12:25	End: 13:30
	Temp* (°F) 6" above ground in shade	Start: 95°	End: 97°
	Wind (mph)	Start: 2mph	End: 2mph
	% Cloud Cover	Start: 2%	End: 5%

Area(s) surveyed

Location #2: 201'-600' & 300' NE of B/W Sheep Ck Rd & Johnson Rd South of alignment

Site Information Location 2

Project Name: HDC		
Location: Victorville	**UTM Coordinates** (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ____ R ____ S ____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width: 10 M

Field Observations

Vegetation Communities:

Plants

Creosote
Joshua tree

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Date: 7/29/13
Recorder: Mary Ngo
Trimble file: HDC20130729 AJ

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						No DT signs on 201 680 &
2						300 line of 7/29/13 by
3						Andrew and Mary.
4						
5						
6						
7						
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11						
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29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET **(Note Aspect)**	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/30/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130730KM & MN

General Information		Weather Data	
Observers: K. Mobraaten	Time (24 hr)	Start: 0945	End: 1304
S. Baker	Temp* (°F) 6" above ground in shade	Start: 70	End: 98°
A. Kinnetone	Wind (mph)	Start: 0-1	End: 3-6mph
M. Ngo	% Cloud Cover	Start: 0	End: 5%

Area(s) surveyed

Location 2: 1100' NE end to Ag field
1000' SE end to dirt Rd.

Site Information Location 2

Project Name: HDC DT		
Location: Victorville	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10M

Field Observations

Vegetation Communities:

Plants
- Creosote bush
- Joshua Tree

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
- quail
- whiptail
- Mojave green rattlesnake
- common raven
- side-blotch lizard
- Sage Sparrow
- Horned Lark

Date: 7/30/13
Recorder: M. NgO
Trimble file: MDC20130730KMdLW

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		NO	Sign	Observed		
3						
4						
5						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/31/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

20130731 KH & SB

General Information		Weather Data	
Observers: K. Mobrautin	Time (24 hr)	Start: 0640	End: 13:52
A. Johnstone	Temp* (°F) 6" above ground in shade	Start: 66	End: 97°
M. Ngo	Wind (mph)	Start: 0-1	End: 8-12 mph
S. Bahn	% Cloud Cover	Start: 20	End: 2%

Area(s) surveyed

location 2: 100% E of Sheep Ck Rd to Johnson Rd; 100% of all 3 bubbled areas along Sheep Ck; 2400, 1200, 1000, 300 201 lines b/w Sheep Ck & Johnson Rd North of alignment

Site Information location 2

Project Name: HDC DT			
Location: Victorville		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ___ R ___ S ___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:	
Land Form*:	%Slope:	Other:	
* e.g. mesa, bajada, wash			

Land Uses:

NW:		SE:	
NE:		SW:	

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Sheep grazing; trash dumping; OHV; residential areas

Is site staked or marked? [Y] [N]

Transect Width: 10M

Field Observations

Vegetation Communities:

Plants J Tree, Scrub, Sandy Soil (Barren in spots)

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

AVGS (O), Sheep (Bones/Scat), Morning dove (O), whiptail (O)

Date: 7/31/13
Recorder: S. Baker
Trimble file: HDC20130731 KM & SB

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		No sign observed				
3						
4						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/1/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130801KM

General Information	Weather Data		
Observers: K. McKeaten	Time (24 hr)	Start: 0700	End: 1230
M. NEGO	Temp* (°F) 6" above ground in shade	Start: 54	End: 92
	Wind (mph)	Start: 0-1	End: 0-2
	% Cloud Cover	Start: 05	End: 20

Area(s) surveyed

100, 300, 600 around southern alignment b/w Parkdale & Tanner Rd. on N side
location 2
1200 ft b/w Parkdale & Tanner
100, 300, 600 ft b/w Parkdale & Tanner Rd.

Site Information location 2

Project Name: HDC		
Location: Victorville	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Grazing, trash dumping, OHV

Is site staked or marked? [Y] [N]

Transect Width: 10 m

Field Observations

Vegetation Communities:

Plants

Creosote bush Scrub, Atriplex Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

desert iguana
CORA
Side blotch
Whiptail
Sage Sparrow
RTHA

Date: 8/1/13
Recorder: Mortensen
Trimble file: HDC20B0801KM

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		No sign observed				
3						
4						
5						
6						
7						
8						
9						
10						
11						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8·1·2013

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130801AS

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 06:52	End: 12:30
S. Baker	Temp* (°F) 6" above ground in shade	Start: 59°	End: 92°F
A. Johnstone	Wind (mph)	Start: 1 MPH	End: 0 MPH
	% Cloud Cover	Start: 40%	End: 20%

Area(s) surveyed

Location #2 ZOI Lines, West of Sheep Creek Rd.
100, 300, 600, 1200 lines b/w Pardedale Rd & Dairy Farm N of N align.
100 & 300 lines b/w Pardedale Rd & Dairy SO N align.

Site Information location 2

Project Name: HDC		
Location: #2	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:

* e.g. mesa, bajada, wash

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
Human garbage / Abandoned house, dairy farm @ East end

Is site staked or marked? [Y] (N)
Transect Width: 10 M

Field Observations

Vegetation Communities:

Plants
Creosote scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
AVES (O), Jack Rabbit (O,S), Whiptail

Date: 8/1/13
Recorder: S. Baker
Trimble file: HDC20130801AS

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1			No Sign	Observed		
2						
3						
4						
5						
6						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 8/5/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC.20130805-BH

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 7:15	End: 1320
Brad Haley Leah Goodfrey Eric Hanson Erica Reppun	Temp* (°F) 6" above ground in shade	Start: 68°	End: 100
	Wind (mph)	Start: 0	End: 1-3
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

100% area Eastern extent of last weeks crew to Johnson road & airport.
Location 2

Site Information Location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities: Creosote bush scrub

Plants winter fat
- Creosote
- ephedra
- Amsinkia
- Tetradymia
- Joshua tree
- desert willow

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
- Desert Horned Lizard
- CORA
- HOLA
- whiptail

Date: 8/5/2013
Recorder: Leryn
Trimble file: hdc 20130805 bh

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		Ø sign		recorded	/ observed	
3						
4						
5						
6						
7						
8						
9						
10						
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26						
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29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 8/6/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130806 BH

General Information

Observers:
Erika Pelfrey
Michael Klima
Christopher Stevenson
Brad Haley

Weather Data

Time (24 hr)	Start: 0800	End: 1315
Temp* (°F) 6" above ground in shade	Start: 72°	End: 99°
Wind (mph)	Start: 0	End: 0-3
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed 100% only
~~Johnson Rd~~
N. alignment: Johnson Rd to 3,000' west of east end

Site Information Location 2

Project Name: HDC
Location: LOC #2
County: San Bernadino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [~~N~~]
Transect Width: 10m

Field Observations

Vegetation Communities: creosote bush scrub

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Horned Larks - O
whiptail lizard - O
BURROWING OWL - (sign)
~~N. Shrike~~

Form Updated: 7/9/2013

Date: 8/6/13
Recorder: Christopher
Trimble file: HDC20130806

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0900	NA	NA	448725	3826133	BUOW White Wash + pellets @ OLD Burrow
2	1130	NA	NA	450285	3826035	BUOW White Wash, Pellets @ OLD BURROW
3	1130	B	5	450285	3826035	7" x 6", Same as BUOW #2 "
4						Photo #'s 17 - 27
5						
6						
7						
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9						
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27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date 8/7/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: ~~7248~~ 0713	End: 1330
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 65°	End: 92
Skylar Fellman	Wind (mph)	Start: 0-2	End: 10-15
Newton Wong	% Cloud Cover	Start: 15	End: 5
Joel Bonilla	General Habitat Pictures # 271 - 275 east end of Northern alignment		

Area(s) surveyed 100% area only

N. alignment: Eastern 3,000 feet of alignment
S. alignment: Airport (east side) to Mountain View

Site Information Location 2

Project Name: MDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [~~N~~]
Transect Width: 10m

Field Observations

Vegetation Communities: Creosote bush scrub

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

CORA
HOLA
whiptail
MODO
desert tortoise
coyote scat

Date: 8-07-2013
Recorder: Joel Bonilla
Trimble file: bdc20130807bh+sf.

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0815	~~T~~	1-C	451401.78	3825890.42	14 inches wide by 10" tall, live tortoise inside burrow
2	0815	S	3	"	"	7 pieces outside of burrow
3	0815	B	1	"	"	Tortoise facing inward, tracks present, facing NE (Burrow)
4	0845	S	2	451388	3825906	5 cm x 2 cm (size), within 100 ft of tortoise, 1 piece
5	0851	S	3	451382	3825893	4 pieces 2cm x 2cm, 3.5cm x 2.5cm, 4cm x 1cm
6	0900	S	2	451349	3825905	5 pieces 3cm x 2cm, 5cm x 2cm
7	0904	S	4	451356	3825915	1 pieces 5cm x 2cm #262
8	0910	S	4	451299	3825910	1 Piece 4cm x 2cm
9	0926	B	3	451080	3825958	6" x 5" debris in enterance #263-264
10	1004	B	1	451417	3825835	14" x 10", Facing NE, no tortoise with tracks #266-269 scat
11	1004	S	2	451417	3825835	~~14 pieces~~ 6cm x 2cm 14 pieces scat #265
12	1020	~~T~~B	2	451511	3825818	13"x6", Facing NE, no sign, no tortoise, ~12" deep
13	1049	S	3	451446	3825811	1 piece 3.5 cm x 1.5 cm
14	1053	S	3	451417	3825814	1 piece 5cm x 1.5 cm
15	1053	S	2	451417	3825814	1 piece 7cm x 1.5 cm
16	1059	S	3	451396	3825829	6 pieces 4cm x 1.5 cm
17	1106	S	2	451382	3825841	4 pieces 7 6cm x 2cm #275
18	1106	S	2	451367	3825832	8 pieces 6 cm x 2cm #276
19	1113	S	3	451256	3825872	2 pieces 4cm x 1cm
20	1310	B	3	449874	3825444	6"x4", Good DT Shape, Facing West, #278
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

all DT related to same burrow

same Burrow

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: ~~7-1-13~~ 8/8/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers: Skyler Feltman	Time (24 hr)	Start: 644	End: 1328
Newton Wong	Temp* (°F) 5" above ground in shade	Start: 61	End: 98
Andrew Johnstone	Wind (mph)	Start: 0-3	End: 4-8
Brad Haley	% Cloud Cover	Start: 0	End: 5

Area(s) surveyed Rest of 100 % + 2 teams @ 2 for 201 lines

100' = Mountain View Road both sides of S alignment, eastside (60 - 69); 300' 157 - 159½
600' = 230½ - 228 + 15-20 (Paseo Road as west boundary); 1200' 281 - 283 (mtn view)

100% Southern alignment: Mtn View Road to east end of alignment (1 mile each transect)

Site Information Location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:	
Land Form*:	%Slope:	Other:	
* e.g. mesa, bajada, wash			
Land Uses:			
NW:		SE:	
NE:		SW:	

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 M

Field Observations

Vegetation Communities: Creosote bush scrub

Plants

winterfat

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

leopard lizard
horned lark
cactus wren
tanager or oriole
zebra tail
whiptail ****
yellow banded grasshopper
morning dove
Raven
badger (tracks)

Date: 8/8/13
Recorder: Skylar Feltman
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	842	n/a	n/a	450284	3825470	Badger scrapemarks. Pts: 284, 285
2	922	S	5	450862	3825388	3x2cm
3	1300	n/a	n/a	450033	3825884	Kit fox complex. 5 holes.
4	1300	n/a	n/a	451532	3825171	White wash present at old burrow. BUOW
5						
6						
7						
8						
9						
10						
11						
12						
13						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 8/8/13
12
HDC20130812 BH & EH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0700	End: 1300
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 65	End: 102
Erika	Wind (mph)	Start: 0	End: 1-3
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed team of 2 people 0.5 miles each

2400 (348 - 314); 100 (103 - 97); 200 (187 - 192); 100 (30 - 33½) Johnson Rd

Site Information Location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ____ R ____ S ____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 4m.

Field Observations

Vegetation Communities: Creosotebush Scrub

Plants
- Tequilla plizada

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
- whiptail
- raven
- horned lark
- AGS
- BT Jackrabbits

Date: 8/12/2013
Recorder: Erika
Trimble file: HDC20130812bh+EH.

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	7:25	NA	NA	445535	3825655	White wash and small mammal bones present. 2 burrows.
2						288 & 289
3						
4						
5	Ø	DT Sign observed				
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
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30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
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5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/12/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130812EH

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0703	End: 1300
Chris Stevenson	Temp* (°F) 6" above ground in shade	Start: 65°	End: 162°
Eric Hanson	Wind (mph)	Start: 0	End: 0-2
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed ZOI 1 team R2 = 10.5 miles total

① South of Southern alignment b/w Sheep Creek & Tanner Rd - all ZOI 1 lines
2400(344-348); 1200(292-289); 600(237-243); 300(167-174); 100(77-84);
② 100'(77-71) Johnson to Sheep Creek; ③ 100(54-57½ Johnson); 300(149½-141½ Johnson to Johnson)

Site Information location 2

Project Name: HDC		
Location: 2	UTM Coordinates (NAD 83)	
County: SAN BERNARDINO	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities: Creosote bush scrub

Plants
- CREOSOTE

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
- ASHT. FLYCATCHER
- WHIPTAIL
- AGS
- HORNED LIZ - Young
- JACK RAB.

Date: 8/12/13
Recorder: Christopher
Trimble file: HDE20130813EH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2	Ø	DT		Sign	observed	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
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26						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
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5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/13/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130813BH

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 0700	End: 1300
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 65	End: 105
Celina Oliveri	Wind (mph)	Start: 1-3	End: 1-3
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed | team - 2 people

1. 600 (223-228) ; 1200 (281-275) ; 100' (42-44½) 300' (132-134)
2. 100, 300, 600' Johnson to Junkyard) 71, 161, 232 ; 1200 (285-283) Johnson to Mtn View 2400' (339 to 337) Johnson to Mtn View).
3. Johnson to Paseo Rd (100 = 48, 300 = 141, 600 = 14 + 21-20)

Site Information location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: S. Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10M

Field Observations

Vegetation Communities: CBS

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Date: 8/13/13
Recorder: Belina
Trimble file: hdc 20130813bh

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	12:23	B	3	451379	3825732	~~15~~ 12" X 6" in road berm
2						290 & 291 photo #
3						
4						
5						
6						
7						
8						
9						
10						
11						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date 8/13/13

HDC20130813EH

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 1700	End: 1300
Eric Hansen Joel Bonilla	Temp* (°F) 6" above ground in shade	Start: 65	End: 105
	Wind (mph)	Start: 1-3	End: 1-3
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed 1 team 2 people

600'(21-13½ Johnson to Johnson); 100'(49½-54 Johnson to Sheep)
100' Johnson to Parkdale (33½-42) 300'(134-124½); 600(223-217) 1200(268½-27[illegible])

Site Information location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: SB.		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width: 10m

Field Observations

Vegetation Communities: Creosote bush Scrub

Plants

Animals: [Include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

- WHIP TAIL LIZZARD
- JACK RABBIT

Date: 8/13/13
Recorder: EHC
Trimble file: HOC20130813EH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2	Ø	DT		Sign	observed	
3						
4						
5						
6						
7						
8						
9						
10						
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27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date 8/14/13

HDC20130814BH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 0700	End: 1300
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 65	End: 100
Mohammed Shaikh	Wind (mph)	Start: 0	End: 1-2
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed 1 team of 2 people

300'(137 to 140½); 100'(48½ - 44½); 300'(151-150); 100'(58½ - 59½) mtn view
100'(69-mtn view - 70½); 300(160½ - 159½-mtn view); 600'(230½ - 231½)
100'. mtn view to pvt property on southern boundary & 100'.
2400'(329 - 337)

Site Information Location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:	
NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10M

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Mdoo
Whiptail
horned lark
CoRA
Jackrabbit.

Date: 8/14/13
Recorder: Brad
Trimble file: HDC20130814bw

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2	Ø	DT	- Sign	observed		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 8/14/13

HDC20130814SF

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 0700	End: 1300
Skylar Feltman	Temp* (°F) 6" above ground in shade	Start: 65	End: 100
Joel Bonilla	Wind (mph)	Start: 0	End: 1-2
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed [team 8 2 pp]

Johnson to Johnson 600 (214½ - 217); 1200 (268½ - 265½) 2400 (318½ - 329)

Site Information location 2

Project Name: HDC			
Location: 2		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]

Transect Width: 10M

Field Observations

Vegetation Communities:

Plants

Animals: [Include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Date: 8/14/13
Recorder: Joel Bonilla
Trimble file: HOCR13081415F

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0844	S	3	448959	3826533	2 pieces 2cm x .5cm & 1.8cm x .5cm
2	1009	S	5	450872	3826791	4 pieces 3.5cm x 1cm & 3cm x 1cm
3	1025	S	4	450937	3826797	1 piece 5cm x 2cm
4	1044	S	4	451319	3826718	1 piece 4cm x 1.5cm
5	1044	S	5	451319	3826718	1 piece 3cm x 2cm
6	1054	B	3	451370	3826716	Facing North 4 1/4" x 6.5",
7	1054	S	4	451370	3826716	4 pieces 2.5cm x 1cm
8	1122	S	2	452130	3826522	3 pieces 5cm x 1.5cm, 3cm x 1cm
9	1131	S	3	452286	3826413	2 piece 3.5cm x 1.5cm
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/22/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Initials: HDC20130722 KM

General Information	Weather Data		
Observers: Mamaatem	Time (24 hr)	Start: 0645	End: 1245
Sarah Baker	Temp* (°F) 6" above ground in shade	Start: 72°F	End: 89
Eric Hanson	Wind (mph)	Start: 0-1	End: 2-5
Andrew Johnstone	% Cloud Cover	Start: 70 high	End: 100

Area(s) surveyed

Location 3 → 100% b/w SW end of Ar expressway
100, 300, 400 b/w SW end of Ar expressway
portions of 1200 & 2400 b/w & SW end of Ar expressway

Site Information Location 3

Project Name: HDC		
Location: Victorville	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T___ R___ S___	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:

* e.g. mesa, bajada, wash

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

ORV, dumping

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities: Saltbush Scrub, creosote bush scrub

Plants

creosote, ephedra, cheesebush, winter fat, joshua tree, desert trumpet

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

common raven, Sage sparrow, ash-throated fly catcher, jack rabbit, zebra tail lizard, antelope ground squirrel, road runner, coyote, cactus wren

Date: 7/22/13
Recorder: A. Johnstone
Trimble file: HD220130722KM

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		No sign found				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/22/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers: K. Mobraaten, S. Baker	Time (24 hr)	Start: 8:36	End: 1245
	Temp* (°F) 6" above ground in shade	Start: 79°F	End: 89
	Wind (mph)	Start: 6 mph	End: 2-5
	% Cloud Cover	Start: 30%	End: 10

Area(s) surveyed

See page 1

Site Information location 3

Project Name: HDC DT Surveys
Location: #3
County:
Quad:
T ___ R ___ S ___
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
High amount of ORV tracks

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities:
Plants scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
Coyote (O) (S), jackrabbit (O, S)

Date: 7/22/13
Recorder: S. Baker
Trimble file: HDC20130722KM

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2			No	Sign	found	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/23/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130723KM

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0945	End: 1:30
Kristen Mobraaten	Temp* (°F) 6" above ground in shade	Start: 72	End: ~~95°F~~ 100°F
Sarah Baker	Wind (mph)	Start: 0-1	End: 3
	% Cloud Cover	Start: 0	End: 20

Area(s) surveyed

1200 & 2400 S of Air Expwy & West of Evado
100's b/w Air Expwy & Dist area
100, 1000, 3000, 1200, 2400' lines N of Air Expwy, W Turner Rd, & E RR tracks
1200 & 2400 S Air Expwy & N Ranchero Rd

Site Information (Locations)

Project Name: HDC
Location: Victorville
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: | Aspect: | Soils:
Land Form*: | %Slope: | Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: | SE:
NE: | SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities:
Plants Desert Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

GTOF1 LECA
Hummingbird sp.
SCSP
CAWR
COFA
ROPI

Form Updated: 7/9/2013

Date: 7/23/13
Recorder: S. Baker
Trimble file: HDC20130723KM

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		No Sign observed				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/23/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130723AS

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 630	End: 1:30
Andrew Johnstone	Temp* (°F) 6" above ground in shade	Start: ~72	End: 94°F
Eric Hanson	Wind (mph)	Start: 0-1	End: 3
Sarah Baker	% Cloud Cover	Start: 0	End: 20
Kristen ~~Stegman~~ Mobraaten			

Area(s) surveyed

See p. 1

Site Information location 3

Project Name: High Desert Corridor		
Location:	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ____ R ____ S ____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities:

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

California quail, jackrabbit, common raven, sage sparrow, coyote, whip-tail

Date: 7/23/13
Recorder: A. Johnstone
Trimble file: HDC20130723AS

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2			no sign observed			
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
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26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 7.24.2013

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130724KM&AJ

General Information	Weather Data		
Observers: K. Mobraaten	Time (24 hr)	Start: 06:20	End: 13:15
S. Baker	Temp* (°F) 6" above ground in shade	Start: 67 °F	End: 102°
~~K. Mobraaten~~	Wind (mph)	Start: 5	End: 6
E. Hanson	% Cloud Cover	Start: 0	End: 0
A. Johnstone			

Area(s) surveyed

Location #3: Mojave River, East
100% b/w Mojave River & Access Rd. ~~Rd~~
100% b/w Mojave River/RR tracks & dirt road E of River (appx 1.5 mi E)

Site Information location 3

Project Name: SCE
Location: Victorville
County: San Bernardino
Quad:
T S
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
*e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]
Roadways (Dirt) Human trash

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities:
Plants: Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
Whiptail lizard (O), House finch (O), Sage Sparrow (O) jack rabbit (O), Shrike (O), coyote (5), Ash-throated fly catcher (call)

Date: 7/24/13
Recorder: S. Baker
Trimble file: HDC20130724KM & AJ

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	07:44	LOSH		472018	3825780	Shrike (LOSH)
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7.25.2013

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC 20130725-BH & EH

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0600	End: 13:45
E. Hanson S. Baker Brad Haley Andrew Johnstone	Temp* (°F) 6" above ground in shade	Start: 75°	End: 110°F
	Wind (mph)	Start: 0	End: 1-3
	% Cloud Cover	Start: 0	End: 30%

Area(s) surveyed

Location #4: ZOI, Completed 600' 21-23 >inside "triangle"
Completed 100' 1-11
Completed 600' 81-83 east of I-15

Location #3: ZOI and 100% east of Mojave River
Completed eastern end of 100%.) - completely done w/ 100%.
100' RR(9) to past 11 (road), 300' Rd to RR (53-57)
600' RR to Road (87-89), 1200' Rd to RR (121-720)

Site Information Loc 4 & Loc 3

Project Name: HDC			
Location: #4 + #3		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T___ R___ S___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities:
Plants: Desert Scrub

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Whip tail lizard (O), wood rat (? jaw bone), Ash throated fly catcher (O), coyote (S), sage Sparrow (call), cactus Wren (Nest), zebra tail, raven, jackrabbit

Date: 7/25/2013
Recorder: Sarah
Trimble file: HDE20130725-bh teh

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
Loc4 1	0837	C	5	477904	3831232	1 piece of shell in woodrat nest.
2						
3						
4	Ø DT Sign observed in Location 3					
5						
6						
7						
8						
9						
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28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 7/26/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130726-BH

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 6:45	End: 1300
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 80°	End: 92
Jennifer Barbour	Wind (mph)	Start: 1-3	End: 8
Andrew Johnstone	% Cloud Cover	Start: 100	End: 100
Eric Hanson		slight drizzle all day	

Area(s) surveyed Location 3

Loc 3: 2400' 149 (RR) to 151 (River), 1200' River to Rd (124), 600' Rd (89) to 91 (River), 300' 55 (River) to Rd (53), 100' 15 (River) to Rd (11) / 2400' 149 (RR) to 170 (Road), 1200' RR (119) to 141 (Rd) 600' dirt road (111) to RR ~~to W~~ 112 & 79); 300' dirt road (76) to ~~RR to #~~ to 44 (past RR); 100' dirt road (41) to past RR to #1.

Site Information Location 3

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T ___ R ___ S ___	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [~~N~~]
Transect Width: 10m

Field Observations

Vegetation Communities: creosote

Plants		
lycium	winter fat	brittle bush (encelia)
paper bag bush	joshua tree	spiny herb
ephedra	jeneiel cholla	erkastrum
burrow bush	~~rabbit~~ brush	
indigo bush (psorothamnus)	coyote melon	
turpentine broom	thistle sage	
cheese bush	four wing saltbush	
	horse brush (tetradymia)	

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Raven	Sage sparrow
jack rabbit	Zebratail lizard
ash throated flycatcher	
cooper's hawk	
sidewinder rattlesnake	
antelope ground squirrel	
RTHA	
whiptail	

Date: 7/26/13
Recorder: Jennifer Barbour
Trimble file: HDC20130726-bh

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	09:00	N/A	N/A	474003	3826000	one adult Coopers Hawk flying overhead
2	11:09	S	3	473747	3826824	4x2 cm 1 piece photo 240
3	11:15	S	2	473841	3826769	3.5x1.5 cm 1 piece photo 241-242
4	11:30	S	2	474062	3826540	3 pieces 5.5x1.5 cm, 3x1 cm, 4x1.5 cm within
5						with in 10 ft of each other photo 243-244
6						
7						
8						
9						
10						
11						
12						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/29/13

Desert Tortoise Survey

RCORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130729KM

General Information	Weather Data		
Observers: K. Monaaten	Time (24 hr)	Start: 0945	End: 1340
S. Baker	Temp* (°F) 6" above ground in shade	Start: 68	End: 97°
	Wind (mph)	Start: 0-2	End: 5
	% Cloud Cover	Start: 0	End: 0

Area(s) surveyed

201 100 & 300 E of BNSF RR tracks on LOC 3
100, 300, 600 201 lines N/W Mojave River/RR & dirt road - LOC 3

Site Information location 3

Project Name: HDC		
Location: Victorville	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T_____ R_____ S_____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils: Boulder piles, sandy, gravelly
Land Form*:	%Slope:	Other:

* e.g. mesa, bajada, wash

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 M

Field Observations

Vegetation Communities: CRS

Plants

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

RTHA	horned lizard
COHA	Antelope ground squirrel
SCSP	whiptail
	Black-tailed jackrabbit

Date: 7/29/13
Recorder: K. Novaaton
Trimble file: TDC20130729KH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	0809	LOSH		471490	3825904	perched on boulder
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/29/13

Desert Tortoise Survey

ECORP Consulting, Inc.

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information

Observers:
Andrew Johnstone
Mary Ngo

Weather Data

Time (24 hr)	Start: [redacted] See P. 1	End:
Temp (°F) 6" above ground in shade	Start:	End:
Wind (mph)	Start:	End:
% Cloud Cover	Start:	End:

Area(s) surveyed

Location 3 1600 ZD1 b/w PR tracks Mojave River. PR tracks in E: 2400 & 1300 lines b/w dirt road

Site Information location 3

Project Name: HDL DT
Location: Victorville
County: San Bernardino
Quad:
T ____ R ____ S ____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS?]
E: [PHOTOS?]
S: [PHOTOS?]
W: [PHOTOS?]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:
NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; othe

Is site staked or marked? [Y] [N]
Transect Width: 10 m

Field Observations

Vegetation Communities:

Plants
jumping cholla
creosote bush
Ephedra
Joshua tree
Mojave Yucca
pencil cholla

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
jackrabbit
common raven
whiptail

Date: 7/29/13
Recorder: M&N
Trimble file: HDC-2013-0729 AJ

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	8:07	S	2	471[illegible]3E	382[illegible]	0.5 x 5cm 1pc ~867.23 M (HAE)
2	8:16	S	3	//		0.5 x 1.5cm 2pc 0.5 x 3cm
3	8:50	S	4	471224.67	3826347.63	0.5 x 3.0cm ~2 pieces
4						0.5 x 3.[illegible] cm 875[illegible]m (HAE)
5	9:55	S	5	471221[illegible]	382634[illegible]	1 x 3cm - 1pc
6	~~10:11~~	~~S~~	~~5~~	~~471[illegible]~~	~~382[illegible]~~	~~2.0 x 3cm~~ → Delete this, not scat
7	10:20	S	2			2pc 0.5 x 3cm
8	10:31	S	2	471509.43	3826059.21	1pc 1cm x 4.5cm
9						
10						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
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5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/12/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 6:37	End: 1215
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 72	End: 95
Mary Ngo	Wind (mph)	Start: 0	End: 1-3
Celina Oliveri	% Cloud Cover	Start: 80	End: 20
Erika Pegaun			

Area(s) surveyed

Completed location 5 - all of 24100 & rest of 6 600 + 1200 from 7/11.
Began location 4 - south end, west side, from RR tracks south along west edge w/ 4 people (1 mile)

Site Information location 5 & location 4

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 meters

Field Observations

Vegetation Communities: Location 4 = Creosote bush scrub

Plants

Creosote, cholla
E. inflatum
J tree
Lycium

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

whiptail, Horned lark,
Jack Rabbit
desert Cottontail — Zebra tail lizard
CAQU
Raven
Mourning dove
mocking Bird.

Date: 7/12/2013
Recorder: Erika
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	8:50	NA	NA	484459	3821134	Inactive burrowing owl burrow
2	X	X	X	X	X	2 burrows, no owl observed
3						burrow filled in with debris. White wash
4						and small mammal bones on apron
5						pics: 0884-0885
6	8:55	NA	NA	484305	3821090	Occupied burrowing owl burrow
7	X	X	X	X	X	1 BOW flushed from burrow
8						fresh krat whitewash and pellets in front
9						pic: 886
10	11:30	C	5	4765060	3828993	In 15 pieces 15cm wide x 20cm long
11						outside impact area, incidental
12						on 100' ZOI line; remains in open area
13						exposure to sun = 100%, remains were upright
14						No signs of predation; No shell present
15						40% scutes present; 50% bones present.
16						only plastron present
17					☆	pics: 0900-0901
18						
19					☆	pics: 0902-0904 habitat pics near 100' ZOI #6
20						
21					☆	pics: 887-890 from SE corner of loc 5
22						887=East 888=N 889=W 890=W
23						pics: 891-894 from near 100' ZOI #7 South central, east of house
24						891=E 892=NE 893=N 894=W
25						pics: 895-899 from near 100' ZOI #8 SW corner, west of house
26						895=E 896=NE 897=N 898=W 899=S
27						
28					☆	Pics from Mary @ NE & NW corners
29						
30						

Location 5

Location 4

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
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*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/15/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130715-Loc4-BH

General Information

Observers:
Brad Haley
Celina Oliven
Andrew Johnstone
Skylar Feltman

Weather Data

Time (24 hr)	Start: 7:10	End: 1403
Temp* (°F) 5" above ground in shade	Start: 72°	End: 103°
Wind (mph)	Start: 1-3	End: 5-10
% Cloud Cover	Start: 0	End: 0

Area(s) surveyed 2 teams of 2 on 20T

Location #4: Completed 100Y, south of RR tracks; 100' 20II RR north (42) to 45; 100% complete ~~wood forte~~ RR tracks north up west fork to transmission line road (45)

Site Information location 4

Project Name: HDC Near Viz Landfill
Location: ~~South of railroad tracks~~
County: San Bernardino
Quad:
T ____ R ____ S ____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

N: openspace
E: I-15 + openspace
S: Stoddard Wells Rd, Viz Landfill
W: Viz Landfill + openspace

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities: Creosotebush Scrub

Plants

desert trumpet
creosote
ephedra
cheesebush
cholla
box thorn
~~Yucca~~ Mojave yucca
*cotton topers

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

jack rabbit ✓
~~quail~~
raven
mourning dove
whip tail lizard ✓
*Zebra tail
desert woodrat (nest)
~~tarantula~~ hawk wasp
ash throated flycatcher
Antelope ~~ground~~ ground squirrel ✓
bullocks ~~cattle~~
oriole

Date: 7/15/13
Recorder: Celina/Skylar
Trimble file: HDc20130715-1ec4-bh

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
same location	11:33	B	3	477233	3830239	12" desert tortoise (1 burrow) west-facing 0969 ✓
1	11:33	B	N/A	477233	3830239	Burrowing Owl (2 burrows) many pellets ✓
pic 0972-0973 2	12:16	C	5	477633	3831134	23 cm wide x 30 cm long; large OT, more ✓
3	↓	↓	↓	↓	↓	~~found in woodrat midden~~ than 10 pieces
4	—	—	all pieces 56 tortoise present			~~2 pieces~~ broken into 10pcs, No signs of predation ✓
0974-0975 5	12:37	C	5	477737	3831374	found in woodrat midden (2 pieces)
6						No other carcass pieces obsd in vicinity
7						-2 pics taken (0974-0975)
8						
9						
10						
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29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/16/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130716-Loc4-BH

General Information

Observers:
Brad Haley
Andrew Johnstone
Skylar Feltman
Mary Ngo

Weather Data

Time (24 hr)	Start: ~~0545~~ 0711	End: 1350
Temp* (°F) 6" above ground in shade	Start: 72°	End: 95
Wind (mph)	Start: 3-5mph	End: 5-8
% Cloud Cover	Start: 10%	End: 2%

Area(s) surveyed 2 teams of 2 on 20 I

Location 4 - west side of hill - northern half
100' pt 45 to 47, 47-24, 24-30 (I-15)
100% all S6 Northern half, except southern part of triangle (103 m space downcut)

Site Information location 4

Project Name: HDC
Location:
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation:
Aspect:
Land Form*:
%Slope:
* e.g. mesa, bajada, wash
Soils:
Other:

Land Uses:
NW:
NE:
SE:
SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities: Creosote bush scrub

Plants

Creosote bush
~~Hyptis~~ emoryi - jumping cholla
Yucca spp. (Mojave)
pencil cholla
Cheesebush
winterfat
beavertail
Terpentine broom
Tetradymia
Cottonthorn
Eriogonum inflatum
Ephedra
Lycium
CA Buckwheat
Spiny herb (chorizanthe)
Mojave yucca
Joshua tree

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

American Badger
jackrabbit
raven
ash throated flycatcher
MDDO
whiptail
~~Desert iguana~~ zebra tail lizard

Date: 7/16/13
Recorder: Mary, Skyler, Andrew, Brad
Trimble file: HDE_20130716 Loc 4-6L

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	07:24	N/A	N/A	478558	3832844	American Badger
2	7:45	S	3	478404	3832566	3.5cm x 1.5cm (oldest side)
3	8:03	S	3	478343	3832541	5cm x 1.5cm 2 pc. 2x1.5cm in woodrat midden
4	8:34	S	4	478159	3832219	2.5cm x 1cm 5 pc. Brad 980 & 981
5	9:31	B	3	477775	3831499	1ft wide W aspect 984 - Brad pic
6	[illegible]	B	3	477083	3832114	6in wide SW aspect 985 - Brad pic
7	10:00	B	3	478164	3832263	6in wide W aspect 986 Brad pic
8	10:10	S	2	478269	3832440	4cm - 1.5cm Brad 987 - Brad pic
9	11:55	B	4	478238	3831514	8" wide W aspect
10						
11						
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° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/oder, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/17/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 0720	End: 1425
Brad Kiley	Temp* (°F) 6" above ground in shade	Start: 70°	End: 100
Joel Benilla	Wind (mph)	Start: 0	End: 1-2
Christopher Stevenson	% Cloud Cover	Start: 2%	End: 0
Mary Ngo			

Area(s) surveyed 2 teams of 2 completed 20I

Completed 100% @ South end of "triangle" - 100%. Now completely surveyed 100' I-15 (31) to 42 (completed all to 100' 20I); 300' I-15 (57) to 67.5 (RR), 600' I-15 (83) to landfill fence south, then fence (96) to 91.5 (RR), 1200' I-15 (106) to landfill fence (111.5) then 113 to 114.5 (RR); ~~3400~~ all west of I-15), 2400' 136 to 137

Site Information location 4

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: San Bernadino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T____ R____ S____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities: CREOSOTE SCRUB

Plants

- Ephedra
- Cottonthorn
- Mojave Yucca
- Joshua Tree
- Pencil Cholla
- Hedgehog Cactus

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

~~Burrowing Owl~~	whiptail
Bk-throated Sp.	~~Desert Tortoise~~
Verdin	Zebra Tailed Lizard.
Raven	1
Jack Rabbit	
Mourning Dove	
A.G.S.	
Ash-thr. Fly Catcher	

Date: 7/17/2013
Recorder: Chris Taylor
Trimble file: H0C20130717-1x4-bh

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)	
1	~~0732~~	~~B~~		~~0476423~~	~~3828520~~	~~GPS 100' Burrow #1 Grass in Burrow, Cobwebs~~	
2	~~0730~~	B P	~~5~~ 3	476472	3828519	12" wide, Nx to Westside Rd, No sign	✓
3						Good DT shape Pic 0990-0992	X
4	0800	P	5	476694	3829053	8" old, No sign, Slight DT shape	✓
5	1005	B	4	477675	3830457	6" old; North Aspect; No Sign;	✓
6	1357	B	5	476522	3829349	12" old; within Fox Holes, or other Holes, No	C
7	1415	B	4	476213	3828851	10" high domed, next to landfill fence & road, no sign Scat	✓
8							
9						pics along landfill fence: 0993-0995	
10							
11							
12							
13							
14							
15							
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29							
30							

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 7/18/13

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers: Mary, Skylar	Time (24 hr)	Start: 645	End: 1400
	Temp* (°F) 6" above ground in shade	Start: 69	End: 105
	Wind (mph)	Start: 1-3	End: 1-3
	% Cloud Cover	Start: 50	End: 0 smoky

Area(s) surveyed | team 62 pp |

300' ZoI RR (68) to 74, 74 to 48, 48 to 52
600' ZoI RR (92) to 97, 97 to 75, 75 to 78 [5.6 miles]

Site Information location 4

Project Name: HDC
Location:
County: San Bernardino
Quad:
T____ R____ S____
Parcel #:

UTM Coordinates (NAD 83)
N: [PHOTOS? ___]
E: [PHOTOS? ___]
S: [PHOTOS? ___]
W: [PHOTOS? ___]

Physical Characteristics

Elevation: Aspect: Soils:
Land Form*: %Slope: Other:
* e.g. mesa, bajada, wash

Land Uses:

NW: SE:
NE: SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width:

Field Observations

Vegetation Communities:

Plants

See 7/16

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

- whiptail lizard
- Antelope ground squirrel

Date: 7/18/13
Recorder: Skylar
Trimble file: N/A

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Add topos.

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)	
✓ Skylar pics	1	930	B	5	0477748	3831438	7" wide opening. Gradual turn, North West aspect. Signs of collapse.	O
	2	1015	S	4	0478129	3832039	3.5 cm long x 1.5 cm wide. In midden.	O
	3	↓	↓	↓	↓	↓	3 cm x 1.5 cm (2 pieces).	O
	4	1140	S	3	0478241	3832780	3.5 cm x 1.5 cm (2 pieces).	O
	5	↓	↓	↓	↓	↓	3 cm x 1.5 cm	O
	6	1225	C	5	0477738	3831862	5.5 cm x 3.5 cm #4 scattered bones	C
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
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	22							
	23							
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	25							
	26							
	27							
	28							
	29							
	30							

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
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4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Date: 7/18/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC20130719-Loc4-BH

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0645	End: 1400
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 69	End: 105
Eric Hansen	Wind (mph)	Start: 1-3	End: 1-3
	% Cloud Cover*	Start: 50/hazy	End: 0 smoky

Area(s) surveyed 1 team no 2 pp

1200' to I RR (115) to 121, 121 to 98, 98 to trans. line road (99)
2400' to I trans. line rd (124) to 122, 122 to 147, 147 to landfill fence (139) [7 miles]

~~3:14 1:22~~

Site Information Location 4

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ___ R ___ S ___		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities:

Plants
wire lettuce (Stephanomeria)
gray ja spinosa
Ambrosia dumosa
Chia
Salazaria mexicana

Animals: [Include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]
ATFI
BTJR
CAWR
CORA

Date: 7/18/13
Recorder: Eric
Trimble file: MDC20130718 loc4-bk

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	1115	S	3	477952	3832820	2 PIECE 6x2cm P1004, 1005 ✓
2	1300	C	5	477712	3832941	APPROX 10 PIECES. PLASTRON ONLY P1010, 1011, 12X Scm ✓
3	1321	B	4	477912	3833204	8IN. NO SIGN. OK SHAPE. EAST FACING ✓
4	1322	C	5	477916	3833211	2 PIECE SHELL IN WOODRAT MIDDEN
5						No signs predation, no shell observed, very old,
6						very few scutes present, no bones present
7						other than plastron.
8						pics: 0998-1015: from today 1200 & 2400' west side
9						998-1003 = general habitat pics 0°
10						1200 & 2400 20I lines on West side
11						1006-1009 = ger hab pics from 2400 20I
12						1012-1015 = various cacti
13	0846	—	—	476903	3831458	mourning dove nest; 1 chick, 1 egg, adult flushed ✓
14						
15						
16						
17						
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20						
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23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)
1 - Currently active, w/tortoise or recent sign
2 - Good condition, definitely tortoise, no evidence of recent use
3 - Deteriorated condition (describe), definitely tortoise
4 - Good condition, possibly tortoise (describe)
5 - Deteriorated condition, possibly tortoise (describe)

*SCAT
1 - Wet or freshly dried, obvious odor
2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)
1 - Healthy
2 - URTD
3 - Shell Cracked
4 - Peeling scutes
5 - Ticks
A - Foraging
B - Basking
C - In burrow
D - Digging
E - Traveling

*CARCASS
1 - Fresh or putrid
2 - Normal color, scutes adhered to bone
3 - Scutes peeled off bone
4 - Shell bone is falling apart; growth rings on scutes are peeling
5 - Disarticulated and scattered
A - signs of predation
B - No signs of predation

Form Updated: 7/9/2013

Date: 7/19/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information		Weather Data	
Observers:	Time (24 hr)	Start: 640	End: 1310
Mary Skylar Brad Ridley, Joel	Temp* (°F) 6" above ground in shade	Start: 65	End: 104
	Wind (mph)	Start: 1-2	End: 1-2
	% Cloud Cover	Start: 7	End: 4

Area(s) surveyed 2 teams F6 2/11

Mary + Skylar: 2400' east side I-15 (126 – 136), 1200' (102 to 106)
"triangle" 600' 23 to 19, 19 to 21 (leaves 23 to 21)
Brad + Joel: 2400' (124-126), 1200' (99 to 102), 600' (78–81), 300' (52 to 55)
"triangle" 300' complete (12–18) [Leaves 100' I-11, 600' 21-23]

Site Information location 4

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] ~~[N]~~
Transect Width: 10m

Field Observations

Vegetation Communities:

Plants

see 7/16

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

whiptail
ash throated fly-catcher
desert iguana
CORA
TUVU
zebra tail lizard.

Date: 7/19/13
Recorder: [redacted], Skylar
Trimble file: HDC20130719-loc4-bh

File name in Garmin

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)	
skylar + Mary (Garmin)	1 1203	S	~~3~~ 5	0477933	3831207	3cm x 1cm, 2cm x 0.5cm, small, has glaze, ~~[redacted]~~ (3 pieces), 2cm x 1cm	⊗
SC3PIC034	2 ~~1205~~ 1235	S	~~3~~ 5	0477856	3831218	2cm x 1cm, 3x1cm, 3x0.5cm, 1.5x.5cm 4 pieces, small, has glaze pics 1026-1030	⊗
	3						
	4						
Brad + Joel	5 1121	S	2	478103	3831444	rocky hillside, 2 pieces; 1x2cm; pic 1021	✓
	6 1133	C	5	478143	3831768	~~Pics~~ 4½x4½cm, very old, ~~1 scute~~ 1 scute	✓
	7 1227	C	5	477669	3831282	incidental in 100'. area, not found earlier, very old	✓
	8					10 pieces, pics 1023-1025	
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18					pics: 1016-1030	
	19					1016&17 habitat along I-15, 1018-1020 = gen habitat	
	20					from 300' ZOI on mtn b/w alignments	
	21					1021 = scat 1022 = old shell, 1023 & 1025 = old carcass	
	22					1026 - 1030 = scat on 600' ZOI in "triangle" wpt. 23	
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (Note Aspect)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 10 July 2013

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

HDC 2013 07 10 - Loc 5 - BH

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 0711	End: 1400
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 80°	End: 106
Christopher Stevenson	Wind (mph)	Start: 0	End: 5-8
Mary Ngo	% Cloud Cover	Start: 90%	End: 100
Jenny Barbour			

Area(s) surveyed

Location 5 - East side (start) ended @ completing all transects but western 3 transects (120 meters on west side)

Site Information Location 5

Project Name: High Desert Corridor			
Location:		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ____ R ____ S ____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:

* e.g. mesa, bajada, wash

Land Uses:

N: open space + residential	E: open space, & residential
S: open space	W: residential w/ horses

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

w/in location 5: No understory to veg - just atriplex scrub - OHV + motorcycle tracks, bullet shells, evidence of livestock grazing throughout; trash present throughout.

Is site staked or marked? [Y] [N]

Transect Width: 10 meters

Field Observations

Vegetation Communities: SALT BUSH SCRUB

Plants

Erodium - Filaree
Brassica -
Chaemisicie - Rattlesnake weed
Sphaeralcea - Desert Mallow
Amb. psilotrichia
Larrea tridentata
Horehound - Marrubium vn

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

Horned Lark
Jack Rabbit
K-rat [dead]
Whiptail Liz.
Raven
Amer. Kestrel
Sage Sparrow
Desert Spiny lizard?
Mockingbird
RS Hawk

Date: 7/10/13
Recorder: Christopher
Trimble file: ~~on front~~ HDC 20130710-Cal-BH

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1						
2		Ø	sign	observed		
3						
4						
5						Habitat pictures: 0874 - 0876
6						874: Looking north from SE corner
7						875: Looking NW from SE corner
8						876: Looking W from SE corner
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

*BURROW / PALLET (**Note Aspect**)	*SCAT
1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
2 - Good condition, definitely tortoise, no evidence of recent use	2 - Dry w/glaze and some odor, no bleaching, dark brown
3 - Deteriorated condition (describe), definitely tortoise	3 - Dry, no glaze/odor, light brown, tightly packed, signs of bleaching
4 - Good condition, possibly tortoise (describe)	4 - Dry, very light brown to yellow, loose material; scaly appearance
5 - Deteriorated condition, possibly tortoise (describe)	5 - Bleached or consisting only of plant fiber

*LIVE TORTOISE (MCL, Max Width, Width at 7/8 Marginal, Height)		*CARCASS	
1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 7/11/13

Desert Tortoise Survey

RCORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 7:34	End: ~~15~~ 14/10
Brad Hakey	Temp* (°F) 5" above ground in shade	Start: 79	End: 85
Mary Ngo	Wind (mph)	Start: 0	End: 1-3
Celina Oliven	% Cloud Cover	Start: 100 %	End: 100
Erika Reppun			slight sprinkling during day

Area(s) surveyed

Location 5 West side finished
ZOI: all 6 100' + 300' lines complete - No 2400' lines today
600' complete 42-39 - will complete 39-42 7/12
1200' complete 63-57/edge to dist. - will complete 58-62 7/12

Site Information Location 5

Project Name: HDC			
Location:		UTM Coordinates (NAD 83)	
County: San Bernardino		N:	[PHOTOS? ___]
Quad:		E:	[PHOTOS? ___]
T ____ R ____ S ____		S:	[PHOTOS? ___]
Parcel #:		W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:	Soils:
Land Form*:	%Slope:	Other:
* e.g. mesa, bajada, wash		

Land Uses:

NW:	SE:
NE:	SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10m

Field Observations

Vegetation Communities:

Plants

See 7/10

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

BLOSH, Jack Rabbit, mocking bird, mourning dove, Says phoebe raven, desert cottontail, Cal ground squirrel, American kestrel, Sage sparrow, CA Quail

Form Updated: 7/9/2013

Date: 7/11/2013
Recorder: Erika
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	7:20	NA	NA	483650	3821702	LOJH perched on pole 1 individual
2	9:13	S	2	483278	3821985	2 cm x 3.5 cm 5 pieces
3						pics: 877-0880
4						general habitat pics: 0881-0883
5						BB1: from 300' ZOI line in NW corner
6						near wpt: 27 looking south
7						BB2: same location as BB1, looking SE
8						BB3 same location as BB1, looking E
9						
10						
11						
12						
13						
14						
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16						
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22						
23						
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25						
26						
27						
28						
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

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1 - Currently active, w/tortoise or recent sign	1 - Wet or freshly dried, obvious odor
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1 - Healthy	A - Foraging	1 - Fresh or putrid	A - signs of predation
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3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

Form Updated: 7/9/2013

Date: 7/12/13

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

General Information	Weather Data		
Observers:	Time (24 hr)	Start: 6:37	End: 1215
Brad Haley	Temp* (°F) 6" above ground in shade	Start: 72	End: 95
Mary Ngo	Wind (mph)	Start: 0	End: 1-3
Celina Oliveri	% Cloud Cover	Start: 80	End: 20
Erika Pepeun			

Area(s) surveyed

Completed location 5 - all of 24100 & rest 86 600 + 1200 from 7/11.
Began location 4 - south end, west side, From RR tracks south along west edge w/ 4 people (1 mile)

Site Information location 5 & location 4

Project Name: HDC		
Location:	UTM Coordinates (NAD 83)	
County: San Bernardino	N:	[PHOTOS? ___]
Quad:	E:	[PHOTOS? ___]
T____ R____ S____	S:	[PHOTOS? ___]
Parcel #:	W:	[PHOTOS? ___]

Physical Characteristics

Elevation:	Aspect:		Soils:
Land Form*:	%Slope:		Other:
* e.g. mesa, bajada, wash			
Land Uses:			
NW:			SE:
NE:			SW:

Disturbances on Site: [e.g. tracks (vehicle, human, livestock, dog); trash; dump sites; bullet shells; blading; ravens; other]

Is site staked or marked? [Y] [N]
Transect Width: 10 meters

Field Observations

Vegetation Communities: Location 4 = Creosote bush scrub

Plants

Creosote, cholla
E. inflatum
J tree
Lycium

Animals: [include: B - burrow, S - scat, O - observed, T - tracks, C - carcass, or Other (specify)]

whiptail, Horned lark,
Jack Rabbit
desert Cottontail
Zebra tail lizard
~~Quail~~ CAQU
Raven
Morning dove
mocking Bird

Date: 7/12/2013
Recorder: Erika
Trimble file: _____

Desert Tortoise Survey

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Project #: 2012-061.004/002
Client: Caltrans District 7

location 5

location 4

Desert Tortoise Sign

	Time (24 hr)	Sign°	Class*	Easting UTM NAD83	Northing UTM NAD83	Comments (note aspect of burrows, Unique DT ID, measurements, behavior, etc.)
1	8:50	NA	NA	484459	3821134	Inactive burrowing owl burrow
2	X	X	X	X	X	2 burrows; no owl observed
3						burrow filled in with debris. White wash
4						and small mammal bones on apron
5						pics: 0884 - 0885
6	8:55	NA	NA	484305	3821090	Occupied burrowing owl burrow
7	X	X	X	X	X	1 BOW flushed from burrow
8						fresh krat whit wash pellets in front
9						pic: 886
10	11:30	C	5	4765060	3828993	In 15 pieces 15cm wide x 20cm long
11						outside impact area, incidental
12						on 100' ZOI line; remains in open area
13						exposure to sun = 100%, remains were upright
14						No signs of predation; No shell present
15						40% scutes present; 50% bones present.
16						only plastron present
17					☆	pics: 0900 - 0901
18						
19					☆	Pics: 0902 - 0904 habitat pics
20						near 100' ZOI #6
21					☆	pics: 887 - 890 from SE corner of loc 5
22						887 = East 888 = N 889 = W 890 = W
23						pics: 891 - 894 from near 100' ZOI #7 South central, east of house
24						891 = E 892 = NE 893 = N 894 = W
25						pics: 895 - 899 from near 100' ZOI #8 SW corner, west of house
26						895 = E 896 = NE 897 = N 898 = W 899 = S
27						
28					☆	Pics from Mary @ NE & NW corners
29						
30						

° T - tortoise, B - burrow, P - Pallet, S - scat, Tr - tracks, C - carcass, O - other (specify)

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2 - URTD	B - Basking	2 - Normal color, scutes adhered to bone	B - No signs of predation
3 - Shell Cracked	C - In burrow	3 - Scutes peeled off bone	
4 - Peeling scutes	D - Digging	4 - Shell bone is falling apart; growth rings on scutes are peeling	
5 - Ticks	E - Traveling	5 - Disarticulated and scattered	

2012 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys for the High Desert Corridor Project

Submitted to:

State of California, Department of Transportation
Environmental Planning
100 S. Main St, MS 16A
Los Angeles, CA 90012

Submitted by:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
215 North Fifth Street
Redlands, CA 92374

August 2012

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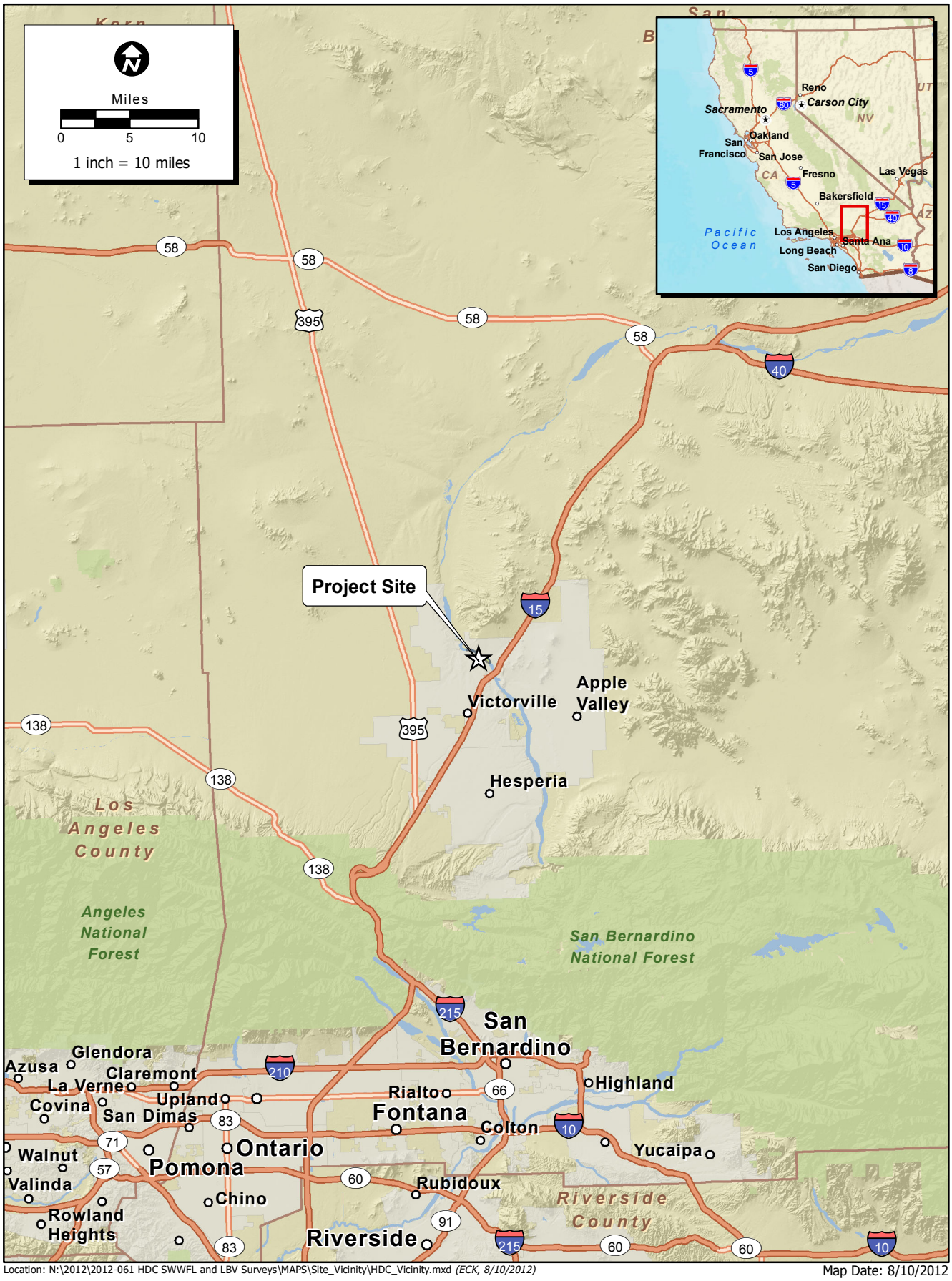
1.0 INTRODUCTION

1.1 Survey Purpose

Caltrans and Metro are proposing a project to construct a new freeway/expressway, and possible toll way, in the High Desert area of Los Angeles and San Bernardino Counties that will extend for a distance of approximately 63 miles between SR-14 in Palmdale and SR-18 in Apple Valley. The project consists of an eight-lane freeway from SR-14 to 50th Street East along an alignment paralleling Avenue P-8 in Palmdale. From 50th Street East to 240th East and continuing to I-15, the project consists of a six-lane facility. East of I-15, the facility curves south until it ends at SR-18 in the Town of Apple Valley at Bear Valley Road. In addition, SR-14 and I-15 will be improved for approximately 3 miles north and south of the intersection with the proposed east-west facility. The exact type of the transportation facility will be determined by traffic analysis. The project proposes to cross the Mojave River north of the City of Victorville within habitat that is potentially suitable for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*), both of which are federally- and state-listed as endangered. Surveys were conducted within the portion of the proposed project containing potentially suitable habitat for both species to determine their presence or absence and to assist project planners in avoiding or minimizing impacts to either species.

1.2 Survey Area Location

As depicted on the USGS 7.5-minute Victorville quadrangle, the survey area is located in Sections 29, 32 and 33 of Township 6 north, Range 4 west, San Bernardino Base and Meridian. The survey area is north of the City of Victorville, San Bernardino County, approximately 1 mile due north of the SR-15 and SR-66 junction, beginning approximately 0.25 mile (mi) (402 meters [m]) west of the National Trails Highway Bridge and ending to the east at the railroad crossing immediately west of the end of Abbey Lane (Figures 1 and 2). The survey area is roughly 141 acres and extends 2.1 mi (3.3 kilometers [km]) along the Mojave River. The Mojave River flows year round and the width of the flood plain within the survey area ranges from a minimum of approximately 100 feet (ft) (30 m) in the northern portion to a maximum of approximately 0.2 mi (330 m) in the southern portion. Elevation within the survey area ranges from approximately 2,640 ft (805 m) above mean sea level at the northern end to 2,690 ft (820 m) at the southern end.



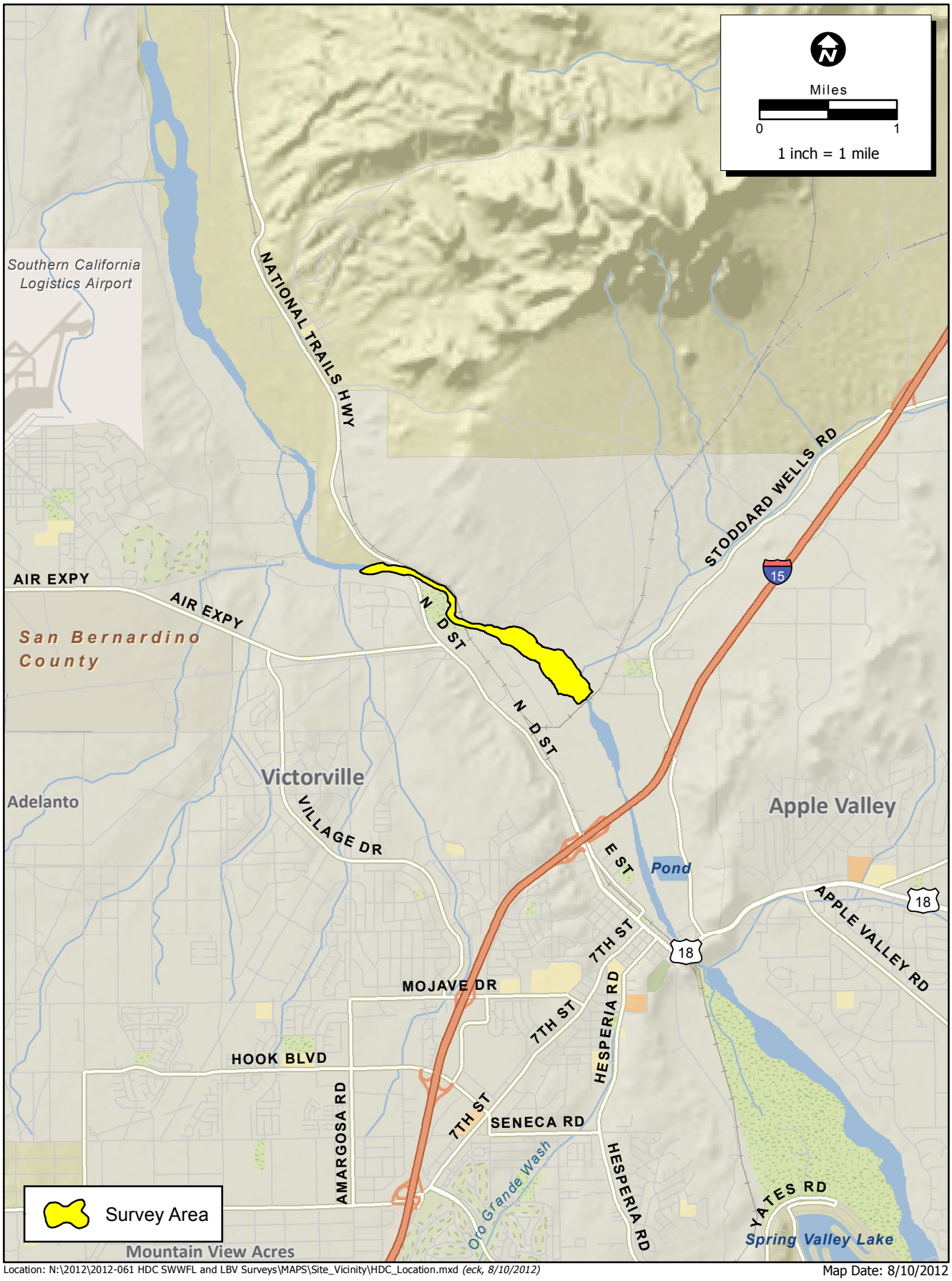
Location: N:\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\Site_Vicinity\HDC_Vicinity.mxd *(ECK, 8/10/2012)*

Map Date: 8/10/2012
Source: ESRI

Figure 1. Vicinity

2012-061.001 2012 SWWF and LBVI Surveys for the High Desert Corridor Project

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
KOrtega



Location: N:\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\Site_Vicinity\HDC_Location.mxd *(eck, 8/10/2012)*

Map Date: 8/10/2012
Source: ESRI

Figure 2. Project Location

2012-061.001 2012 SWWF and LBVI Surveys for the High Desert Corridor Project

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
KOrtega

2.0 VEGETATION AND HABITAT

Vegetation communities within the survey area are classified according to *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, and Evans 2009). Dominant vegetation communities within the survey area consist of riparian forest and riparian thicket communities including Fremont cottonwood forest (*Populus fremontii* alliance), red willow thickets (*Salix laevigata* alliance), sandbar willow thickets (*Salix exigua* alliance), and freshwater marsh communities including California bulrush-American bulrush marsh (*Schoenoplectus californicus-Schoenoplectus americanus* association) and narrowleaf cattail marsh (*Typha domingensis* alliance). Creosote bush scrub (*Larrea tridentate* alliance) is found in the upland habitat adjacent to the survey area.

2.1 Fremont Cottonwood Forest

Fremont cottonwood forest within the survey area consists of stands of mature Fremont cottonwoods along the banks of the river and upper-river terraces. Understory is sparse in upper elevations and is dominated by red willow, sandbar willow, and sweet clover (*Melilotus albus*) as the Fremont cottonwood forest community transitions into willow thickets and disturbed areas lower in the river channel. Fremont cottonwood forest covers a significant area within the southern third of the survey area where the Mojave River floodplain reaches a width of more than 980 ft (300 m) and becomes a more or less linear row along each river bank as the Mojave River becomes more constricted in the northern two-thirds of the survey area.

2.2 Red Willow Thickets

Red willow thickets within the survey area consist of mixed stands of willows dominated by red willows that include sandbar willows, occasional black willows (*Salix gooddingii*) and arroyo willows (*Salix lasiolepis*), as well as young Fremont cottonwoods. Dominant species in the understory include sandbar willow, cocklebur (*Xanthium strumarium*), hoary nettle (*Urtica dioica*), and sweet clover. Red willow thickets are found mostly within the southern third of the survey area but occur in patches along the river in the northern two thirds.

2.3 Sandbar Willow Thickets

Sandbar willow thickets within the survey area consist of dense, nearly monotypic stands of sandbar willow ranging in height from approximately 6.5 ft (2 m) for younger stands to approximately 25 ft (8 m) for mature stands. Sandbar willow thickets were concentrated in the southern third of the survey area with patchy distribution along river in the northern two-thirds.

2.4 California Bulrush-American Bulrush Marsh Association

California bulrush-American bulrush association within the survey area consists of stands of freshwater marsh vegetation where California bulrush and American bulrush are co-dominant. This vegetation community was found on the margins of the flowing river throughout the survey area.

2.5 Narrowleaf Cattail Marsh

Narrowleaf cattail marsh within the survey area consists of stands of freshwater marsh vegetation dominated by narrowleaf cattail. Narrowleaf cattail marsh is distributed along the margins of the flowing river throughout the survey area.

2.6 Creosote Bush Scrub

Creosote bush scrub consists of upland desert vegetation dominated by creosote bush. Creosote bush scrub was found in the upland areas adjacent to the survey area and outside the riparian zone.

2.7 Southwestern Willow Flycatcher Breeding Habitat

The southwestern willow flycatcher typically breeds within dense tree or shrubby riparian vegetation that is equal to or greater than 10 ft (3 m) tall (Allison et al. 2003). Suitable southwestern willow flycatcher breeding habitat is located throughout the southern third of the survey area, consisting of a mosaic of Fremont cottonwood forest, red willow thickets, sandbar willow thickets, and freshwater marsh communities (Appendix E, Photographs 1-2). Several beaver dams were found in this area, which can influence an increase in willow flycatcher habitat by extending the riparian zone (Appendix E, Photograph 3). Native plant species are generally dominant within this area, however a disturbed area dominated by sweet clover is located within the center of Polygon 1 (Figure 3), and invasive species including giant reed (*Arundo donax*) and tamarisk (*Tamarix ramosissima*) were infrequently observed throughout the southern portion of the survey area.

Southwestern willow flycatcher breeding habitat within the northern two-thirds of the survey area is marginal at best and occurs in fragmented patches consisting of sandbar willow thickets and red willow thickets bordered by Fremont cottonwoods higher on the river bank and bulrush and/or cattail marsh closer to the water (Appendix E, Photographs 4-7). According to Sogge et al. (2010), southwestern willow flycatchers rarely nest within isolated patches less than 33 ft (10 m) wide. Most of the patches of appropriate vegetation type within the northern two-thirds of the survey area are less than or only slightly greater than 33 ft (10 m) in width and therefore have a low probability of supporting breeding southwestern willow flycatchers.

2.8 Least Bell's Vireo Habitat

The least Bell's vireo breeds in dense, shrubby riparian vegetation, often dominated by willows (Franzreb 1989). Suitable breeding habitat is concentrated in the southern portion of the survey area where the Mojave River floodplain is widest and supports large stands of red willow thickets and sandbar willow thickets. Suitable least Bell's vireo habitat is found in the northern two-thirds of the survey consisting of isolated patches of red willow thickets and sandbar willow thickets.

2.9 Disturbances

Disturbances observed within the survey area include camp sites, an extended homeless encampment with large, aggressive dogs within the southern portion of Polygon 3 (Figure 3) on the north bank of the Mojave River and off-road vehicles. Evidence was noted of a truck-sized four-wheel-drive vehicle that had driven the length of the survey area during the interval between surveys three and four, in and out of the flowing channel and over stands of sandbar willow, southern cattail, and other vegetation.

Low numbers of brown-headed cowbirds (*Molothrus ater*) were observed in the southwestern portion of the survey area. San Bernardino County Flood Control is currently implementing a cowbird trapping program within this area to reduce nest parasitism on sensitive native species.

3.0 METHODS

3.1 Survey Dates, Personnel, and Conditions

All surveys were performed by ECORP Consulting, Inc. biologist Ben Smith, Federal Recovery Permit: TE-67390A-0, California Department of Fish and Game (CDFG) Scientific Collecting Permit: SCP-10933. The CDFG permit was in process when the surveys were started and surveys were authorized by e-mail letter (Appendix A) prior to receipt of the CDFG permit. Table 1 below lists the times, dates, survey area, weather conditions, and additional personnel assisting with the surveys.

Table 1. Survey Dates, Personnel, and Conditions

Date	Surveyors	Survey Area	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
			start	end	start	end	start	end	start	end
6/7/12	Ben Smith Alfredo Aguirre	Polygon 1	0519	1030	53	75	0	0	0	0
6/8/12	Ben Smith Krissy Day	Polygon 2	0515	1030	52	80	0	0	0	0
6/9/12	Ben Smith Brad Haley	Polygon 3	0455	1030	57	84	0	0	0	3-5
6/13/12	Ben Smith Brad Haley	Polygon 1	0445	0950	65	82	0	0	0	0
6/14/12	Ben Smith Krissy Day	Polygon 2	0445	1020	62	86	0	0	1	3-4
6/15/12	Ben Smith Krissy Day	Polygon 3	0445	1008	61	84	0	0	1	4
6/19/12	Ben Smith Chris Stevenson	Polygon 1	0450	0940	66	82	0	0	3	5
6/20/12	Ben Smith Krissy Day Chris Stevenson	Polygon 2	0450	0950	57	84	0	0	0-2	0
6/21/12	Ben Smith	Polygon	0445	1023	62	71	0	0	1-3	4-5

Date	Surveyors	Survey Area	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
			start	end	start	end	start	end	start	end
	Brad Haley	3								
6/26/12	Ben Smith Kristen Mobraaten	Polygon 1	0445	0950	58	82	0	0	0-3	0
6/27/12	Ben Smith Emily Graf	Polygon 2	0445	0945	57	80	0	0	0-2	0
6/28/12	Ben Smith Brad Haley	Polygon 3	0450	1015	61	79	0	0	1-2	5
7/10/12	Ben Smith Krissy Day	Polygon 1	0445	0850	60	86	0	0	0	4
7/11/12	Ben Smith Krissy Day	Polygon 2	0445	0925	70	91	0	0	0	3
7/12/12	Ben Smith Krissy Day Chris Stevenson	Polygon 3	0445	1015	80	89	0	0	1-3	7

3.2 Southwestern Willow Flycatcher

Surveys for the southwestern willow flycatcher followed the protocol outlined by Sogge et al. (2010). The 2010 protocol recommends five surveys during three survey periods, with two surveys occurring within each of the last two survey periods. These three survey periods are Period 1: May 15 to 31, Period 2: June 1 to 24, and Period 3: June 25 to July 17. A delay in authorization to conduct the surveys prevented completion of the Period 1 survey prior to the May 31 deadline; therefore, permission was obtained from the U.S. Fish and Wildlife Service (USFWS) Ventura field office to extend the Period 1 survey deadline to June 9 (Appendix B). The remaining four surveys were completed within the timeframes specified by Sogge et al. (2010).

Each survey was completed over a period of three days. The survey area was divided into three polygons, Polygon 1, Polygon 2, and Polygon 3 (Figure 3), and polygons were surveyed on consecutive days. Polygon 1 measures approximately 2,300 ft (700 m) in length, covers an area of 26 acres (ac) (10.5 hectares [ha]), and contains approximately 24 ac (9.7 ha) of potentially suitable willow flycatcher habitat (approximately 24 ac/9.7 ha surveyed per biologist per day). Polygon 2 measures approximately 2,070 ft (630 m) in length, covers an area of 26 ac (10.5 ha), and contains approximately 25 ac (10.1 ha) of potentially suitable willow flycatcher habitat (approximately 25 ac/10.1 ha surveyed per biologist per day). Polygon 3 measures approximately 1.6 mi (2.5 km) in length, covers an area of 89 ac (36 ha), and contains approximately 19 ac (7.7 ha) of potentially suitable willow flycatcher habitat (approximately 19 ac/7.7 ha surveyed per biologist per day). Surveys were conducted within all areas of suitable habitat along northeast/southwest transects spaced approximately 100 ft (30 m) apart. Southwestern willow flycatcher vocalizations were played at approximately 100-foot (30-m) intervals along each transect using an MP3 player and portable speaker system. The vocalization was played following an initial approximate one-minute period of listening. The period of listening followed by audio playback was repeated with another period of listening at

the end before moving to the next 100-foot (30-m) interval. Audio playback was not conducted within 180 ft (55 m) of an active southwestern willow flycatcher nest within Polygon 3 after it was identified during the fourth survey to avoid unnecessary harassment of the breeding pair. The continued presence of the pair within the nest territory was identified through passive observation during the fifth survey. The locations of willow flycatcher detections were recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy. Survey data were recorded in a field notebook and copied onto Willow Flycatcher Survey and Detection Forms. Completed survey forms are included in Appendix C.

3.3 Least Bell's Vireo

USFWS protocol for least Bell's vireo surveys specifies eight surveys spaced at least ten days apart (USFWS 2001). Surveys for least Bell's vireo were conducted concurrently with southwestern willow flycatcher surveys. All areas of suitable least Bell's vireo habitat within the survey area were traversed on foot with frequent stops to look and listen for least Bell's vireos. Surveys for least Bell's vireo did not meet the criteria specified by USFWS protocol in that only five visits were made rather than the required eight, and visits were spaced fewer than ten days apart. The locations of least Bell's vireo observations were either recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy or were noted from a distance as occurring within one of two territories, territory A within Polygon 1 or territory B within Polygon 2, where territorial behavior was consistently observed.

4.0 RESULTS

4.1 Southwestern Willow Flycatcher

Ten willow flycatcher detections were made during the first survey of the site June 6 through June 8 (Table 2, Figure 3). Several of these are expected to be multiple detections of the same bird due to the proximity to one another of a few of the observations. All willow flycatchers observed during the survey were found in the southern half of the survey area. Repeat observations of willow flycatchers occurred near only two of the ten Period 1 detection locations during subsequent survey Periods 2 and 3. The June 7 observation of a willow flycatcher at 11N, 472090mE, 3824727mN exhibiting a strong "fitz-bew" response to audio playback of willow flycatcher vocalizations (Table 2) occurred approximately 525 ft (160 m) south of the location of a willow flycatcher nest that was discovered during the fourth survey of the site. The June 8 observation of a willow flycatcher located at 11N, 472212mE, 3824798mN spontaneously "whitting" and responding to audio playback with one "fitz-bew" and by approaching the surveyor and "whitt" calls (Table 2) was located 640 ft (195 m) southeast of the aforementioned nest location. Willow flycatchers were detected during Period 1 surveys either by a "fitz-bew" song response to audio playback of willow flycatcher vocalizations or were observed spontaneously singing the characteristic "fitz-bew" song.

Seven willow flycatcher detections were made during Period 2 surveys of the site June 13 through June 15 and June 19 through June 21 (Table 2, Figure 3). Each of the observations occurred within an approximately 130-ft (40-m) radius of a willow flycatcher nest that was later discovered during Period 3 near the intersection of Polygons 2 and 3, with the exception of one

observation that was approximately 330 ft (100 m) east of the nest location. The characteristic "fitz-bew" song, key to the positive identification of the willow flycatcher (Sogge et al. 2010) was not observed during Period 2 surveys, either spontaneously sung or in response to audio playback. Willow flycatchers were detected by visual observation (Appendix E, Photograph 8), "whitt" call response to audio playback of willow flycatcher vocalizations, or by spontaneous "whitt" calls.

A willow flycatcher nest containing three eggs was encountered in Period 3 during the fourth survey of Polygon 3 on June 28 (Table 2, Figure 3; Appendix E, Photographs 9-10). The nest was located at a height of approximately 8 ft (2.4 m) in the fork of a sandbar willow within a dense stand of sandbar willows approximately 20 to 25 ft (6 to 8 m) tall bordered by Fremont cottonwoods approximately 50 ft (15 m) tall along the first terrace below the top of bank to the north and surrounded by stands of mixed willows on the other sides. The flowing river channel was located approximately 280 ft (85 m) to the west and soil moisture content was high in the vicinity of the nest. The nest was discovered within several yards of a 100-ft (30-m) interval point along a 100-ft (30-m) transect. An adult willow flycatcher was heard "whitting" as it approached the nest vicinity while the GPS data was being recorded nearby to note the location of the nest. It landed in a nearby willow, uttered one "britt" and flew to within less than approximately 3 ft (1 m) of the nest, but appeared wary of the presence of the surveyors and hesitated to enter the nest. The surveyors immediately left the area and audio playback of willow flycatcher vocalizations was avoided within 180 ft (55 m) of the nest from that point forward for the duration of the remaining surveys. The nest appeared unmaintained and was found to be empty during the fifth survey of the site July 10 through 12. Continued presence of the willow flycatcher was evidenced by the observation of two spontaneous "whit" calls near the nest location during the fifth survey of the site.

A second nest in a similar situation and of similar construction to the previously-detailed active nest was also discovered during the fourth survey of Polygon 3 on June 28 (Table 2, Figure 3; Appendix E, Photographs 11-12). The nest was located approximately 280 ft (85 m) west of the active nest at a height of approximately 6.5 ft (2 m) in the fork of a red willow within a dense stand of sandbar and red willows approximately 20 to 25 ft (6 to 8 m) tall. The nest was deteriorated, surrounded by cobwebs, filled with leaves, and was evidently from a previous nesting season.

Response to audio playback of willow flycatcher vocalizations was not observed during Period 3 surveys, either prior to or following discovery of the active nest and cessation of audio playback within the nest vicinity. All Period 3 willow flycatcher detections were made at and within approximately 130 ft (40 m) of the previously detailed active nest location (Table 2, Figure 3). Willow flycatchers were identified visually, by spontaneous "whitt" calls and by one "britt" from the individual that was seen approaching the nest. Willow flycatcher observations are summarized below in Table 2. A map of the observation locations is included in Figure 3. Survey results are also plotted on a USGS topographic map (Figure 4) as required by survey protocol (Sogge et al. 2010).

Table 2. Willow Flycatcher Survey Results

Survey Period	Date / Polygon	11N UTM	Status	Detection / Habitat Notes
Period 1	6/7/12 Polygon 1	472527mE 3824396mN	assumed migrant	fitz-bew response to recording/patch of *Salix exigua*
		472389mE 3824305mN	assumed migrant	approached surveyor, weak fitz-bew response to recording, not very vocal/mature *Populus fremontii*
		472363mE 3824361mN	assumed migrant	spontaneous fitz-bew, possibly the same bird as previous detection/mature *Populus fremontii*
		472178mE 3824429mN	assumed migrant	spontaneous fitz-bew/*Populus fremonti, Salix exigua, Salix gooddingii*
		472090mE 3824727mN	possible resident	strong fitz-bew response to recording/*Populus fremontii, Salix gooddingii* with little understory
		472256mE 3824573mN	assumed migrant	strong fitz-bew response to recording/*Salix gooddingii*
	6/8/12 Polygon 2	472448mE 3824475mN	assumed migrant	fitz-bew response to recording/*Populus fremontii*
		472179mE 3824671mN	assumed migrant	weak fitz-bew response to recording/*Salix gooddingii*
		472212mE 3824798mN	possible resident	spontaneous whitts, one fitz-bew, approach and whitt response to recording/dense *Salix laevigata*, *Salix exigua*, occasional *Populus fremontii*
	6/9/12 Polygon 3	471485mE 3825123mN	assumed migrant	fitz-bew repsonse to recording/small cluster of approx 20' tall *Populus fremontii*
Period 2	6/14/12 Polygon 2	472136mE 3824897mN	within resident territory	approached surveyor, whitt response to recording/dense *Salix exigua*, occasional *Populus fremontii*
	6/14/12 Polygon 3 observed from 2	472065mE 3824901mN	within resident territory	spontaneous whitts, whitt response to recording, moving around a large area/ dense *Salix exigua*, occasional *Populus fremontii*
		472049mE 3824846mN	within resident territory	spontaneous whitts/dense *Salix exigua* with small *Salix lasiolepis*, occasional large *Salix gooddingii*
	6/15/12 Polygon 3	472007mE 3824909mN	within resident territory	spontaneous whitt, whitt repsonse to recording/*Salix exigua*, *Salix laevigata*, *Populus fremontii*
	6/20/12 Polygon 3 observed from 2	472069mE 3824901mN	within resident territory	spontaneous whitts, no response to recording/*Salix exigua, Salix laevigata, Populus fremontii*
		472040mE 3824843mN	within resident territory	whitt response to recording/ *Salix exigua, Salix laevigata, Populus fremontii*
	6/21/12	472069mE	within	spontaneous whitts, no playback near

Survey Period	Date / Polygon	11N UTM	Status	Detection / Habitat Notes
	Polygon 3	3824901mN	resident territory	observation/ *Salix exigua, Salix laevigata, Populus fremontii*
Period 3	6/27 Polygon 3 observed from 2	472072mE 3824898mN	within resident territory	spontaneous whitts, no response to recording// *Salix exigua, Salix laevigata, Populus fremontii*
	6/28 Polygon 3	472035mE 3824880mN	within resident territory	adult whitting and one britt approached nest w/3 eggs approx 2.4 m high in fork in dense stand of *Salix exigua* 6-8 m tall, no response to recording prior to nest observation, recording not played w/in 55m after nest detection
		471954mE 3824903mN		likely previous season nest approx 2 m up in 4 cm dbh *Salix laevigata* in mixed stand of *Salix exigua* and *Salix laevigata* 6-8 m tall
	7/12/12 Polygon 3	472012mN 3824910mE	within resident territory	two whitts w/in 0.5 hour period, recording not played/dense *Salix exigua* with *Salix laevigata* approx. 6-8 m tall bordered by mature *Populus fremontii* on terrace

4.2 Least Bell's Vireo

The least Bell's vireo was observed within Polygons 1 and 2 during each of the five surveys of the site. Observations generally consisted of aural detection of a singing territorial male. The presence of two breeding territories within the survey area, Territory A and Territory B, was determined based on the consistent observation of territorial males within a defined area and on evidence of nesting within these areas (Table 3, Figure 3). Additional territories may have been present, but were not confirmed.

Territory A is located in the southwestern portion of the survey area within Polygon 1 (Figure 3). Vegetation within the territory consists of dense sandbar willow thickets and red willow thickets bordered by Fremont cottonwoods and disturbed areas vegetated with sweet clover and other herbaceous vegetation. A territorial male was observed singing within this territory during all five surveys of Polygon 1 and was frequently observed from a distance during surveys of adjacent Polygon 2. A female was observed with the male in this territory on June 19. The pair and at least one fledgling (Appendix E, Photograph 13) were observed within the territory on June 26. A family group of approximately five individuals consisting of the male and three or four juveniles and possibly the female was observed within this territory on July 10.

Territory B is located in the southeastern portion of the survey area within Polygon 2 (Figure 3). Vegetation within the territory is similar in composition to Territory A, but with higher cover by sandbar and red willow thickets and less cover by sweet clover. A territorial male was observed singing within or near this territory during each of the five surveys of the polygon. A recent empty least Bell's vireo nest was observed within the territory on June 27 at 11N, 472444mE, 3824507mN (Figure 3). The nest was located approximately 3 ft (1 m) above the ground within a dense stand of red willows. A juvenile singing a partial song was observed approximately 985

ft (300 m) northwest of this nest on June 26, however, it was unclear if the juvenile was associated with this nest, with territory A, or with a different territory altogether. A singing and scolding male that was potentially tending to a juvenile was observed approximately 660 ft (200 m) south of this nest on June 27. Least Bell's vireo observations are summarized below in Table 3. Observation locations are included in Figure 3.

Table 3. Least Bell's Vireo Survey Results

Date / Polygon	11N UTM	Territory	Observation Notes
6/7/12 Polygon 1	472025mE 3824837mN	A	male singing within *Salix exigua*, *Populus fremontii*, *Salix gooddingii*
	472436mE 3824458mN	A	male singing & scolding w/in dense *Salix exigua* up to 7 m tall
6/8/12 Polygon 2	472435mE 3824441mN	B	male singing w/in *Salix exigua*, *Populus fremontii*
6/13/12 Polygon 1	472145mE 3824458mN	A	male singing w/in *Salix exigua*, *Salix lasiolepis*, *Populus fremontii*
		A	male singing w/in territory A
6/14/12 Polygon 2	472483mE 3824415mN	B	male singing & scolding w/in location of territory B
6/19/12 Polygon 1	472229mE 3824465mN	A	pair in territory A
	472094mE 3824673mN	A	male singing, flew SW
		A	male singing within territory A
6/20/12 Polygon 1		A	male singing within territory A (observed from Polygon 2)
6/20/12 Polygon 2		B	male singing within territory B
6/26/12 Polygon 1		A	pair singing & scolding within territory A
	472246mE 3824408mN	A	pair with at least one fledgling
6/26/12 Polygon 2	472185mE 3824661mN	?	fledgling partial song (observed from Polygon 1)
6/27/12 Polygon 2	472444mE 3824507mN	B	empty recent nest
6/27/12 Polygon 1		A	male singing w/in dense *Salix exigua* (observed from Polygon 2)
6/27/12 Polygon 1	472314mE 3824512mN	A	male singing w/in *Populus fremontii*, *Salix gooddingii*, *Salix laevigata*, *Melilotus albus* (observed from Polygon 2)
	472445mE 3824295mN	B?	male singing & scolding, possible fledgling present (observed from Polygon 2), possibly associated with territory B
7/10/12 Polygon 1		A	male singing near cowbird trap within territory A

	472121mE 3824519mN	A	family group of approx 5, male w/3-4 juveniles
7/11/12 Polygon 1		A	male singing within territory A (observed from Polygon 2)
7/11/12 Polygon 2		B	male singing within territory B

4.3 Incidental Special Status Species

Wildlife species included on the CDFG special animals list (CDFG 2011) in addition to southwestern willow flycatcher and least Bell's vireo were observed within the survey area. Adult and juvenile yellow warblers (*Dendroica petechia brewsteri*), CDFG Species of Special Concern (SSC), were found throughout the survey area, but were most abundant in the southern third of the survey area where the highest density breeding habitat for the species is located (Appendix E, Photographs 14-15). Approximately three yellow-breasted chat (*Icteria virens*) territories, CDFG SSC, were noted within the southern third of the survey area. One active Cooper's hawk (*Accipiter cooperii*) nest, CDFG Watch List, with one visible chick was observed on the western side of Polygon 2 (Appendix E, Photograph 16). One singing male summer tanager (*Piranga rubra*), CDFG SSC, was observed on several occasions at the southern end of Polygon 1 and one female was observed north of that location on the western side of Polygon 2. A list of wildlife species observed during the surveys is included as appendix D.

One individual special status plant, Booth's evening primrose (*Camissonia boothii* ssp. *boothii*) (Appendix E, Photograph 18), listed by the California Native Plant Society (CNPS) as rare, threatened, or endangered in California, but common elsewhere (CNPS list 2.3) was observed outside the riparian habitat on the eastern side of Polygon 2. The locations of incidentally observed special status species are listed below in Table 4.

Table 4. Incidental Special Status Species Locations

Species	Location
Yellow Warbler *(Dendroica petechia brewsteri)*	Throughout survey area, highest concentration toward southern end.
Yellow-breasted Chat (*Icteria virens*)	11N, 471987mE, 3824919mN 11N, 472305mE, 3824639mN 11N, 472034mE, 3824812mN 11N, 472124mE, 3824900mN
Cooper's Hawk nest (*Accipiter cooperii*)	11N, 472309mE, 3824522mN
Summer Tanager (*Piranga rubra*)	11N, 472122mE, 3824723mN 11N, 472369mE, 3824331mN
Booth's Evening Primrose (*Camissonia boothii* ssp. *boothii*)	11N, 472457mE, 3824582mN

5.0 CONCLUSIONS

Breeding status of the southwestern willow flycatcher and the least Bell's vireo was confirmed within the southern third of the survey area.

5.1 Southwestern Willow Flycatcher

Presence of the southwestern willow flycatcher, according to survey protocol, is determined by the observation of breeding willow flycatchers or by willow flycatcher detection during the third survey period (June 25-July 17), at which point migrant willow flycatchers should no longer be present in the Southwest (Sogge et al. 2010). Eight of the ten willow flycatcher detections during the first survey are assumed to be of a non-listed subspecies of willow flycatcher passing through the area on migration. Two of the willow flycatcher observations during Period 1 surveys, labeled "possible resident" in Table 2, were located within 525 ft (160 m) and 640 ft (195 m) of the location of an active nest that was later discovered during the fourth survey and may have been early detections of the breeding pair associated with the nest territory.

One breeding pair of southwestern willow flycatchers was determined to be occupying the site based on the presence of an active nest observed on June 28 near the northern bank of the Mojave River within the southeastern third of the survey area (Table 2, Figure 3) and the detection of the southwestern willow flycatcher within the nest vicinity during Period 3 surveys. Baicich and Harrison (2005) give an approximate nestling period of 14 days for the willow flycatcher. The nest was noted as appearing unmaintained and was found to be empty less than 14 days after it was discovered with eggs, suggesting it failed as a result of predation. Southwestern willow flycatchers are known to replace failed nests (Sogge et al. 2010) and the continued presence of willow flycatchers within the vicinity of the nest during the fifth survey suggests a new nest effort may have been undertaken, however, this was not confirmed.

Additionally, the presence of a breeding pair of southwestern willow flycatchers within the survey area during a previous season is supported by the existence of a likely previous season southwestern willow flycatcher nest observed on June 28 approximately 280 ft (85 m) west of the current season nest (Table 2, Figure 3).

5.2 Least Bell's Vireo

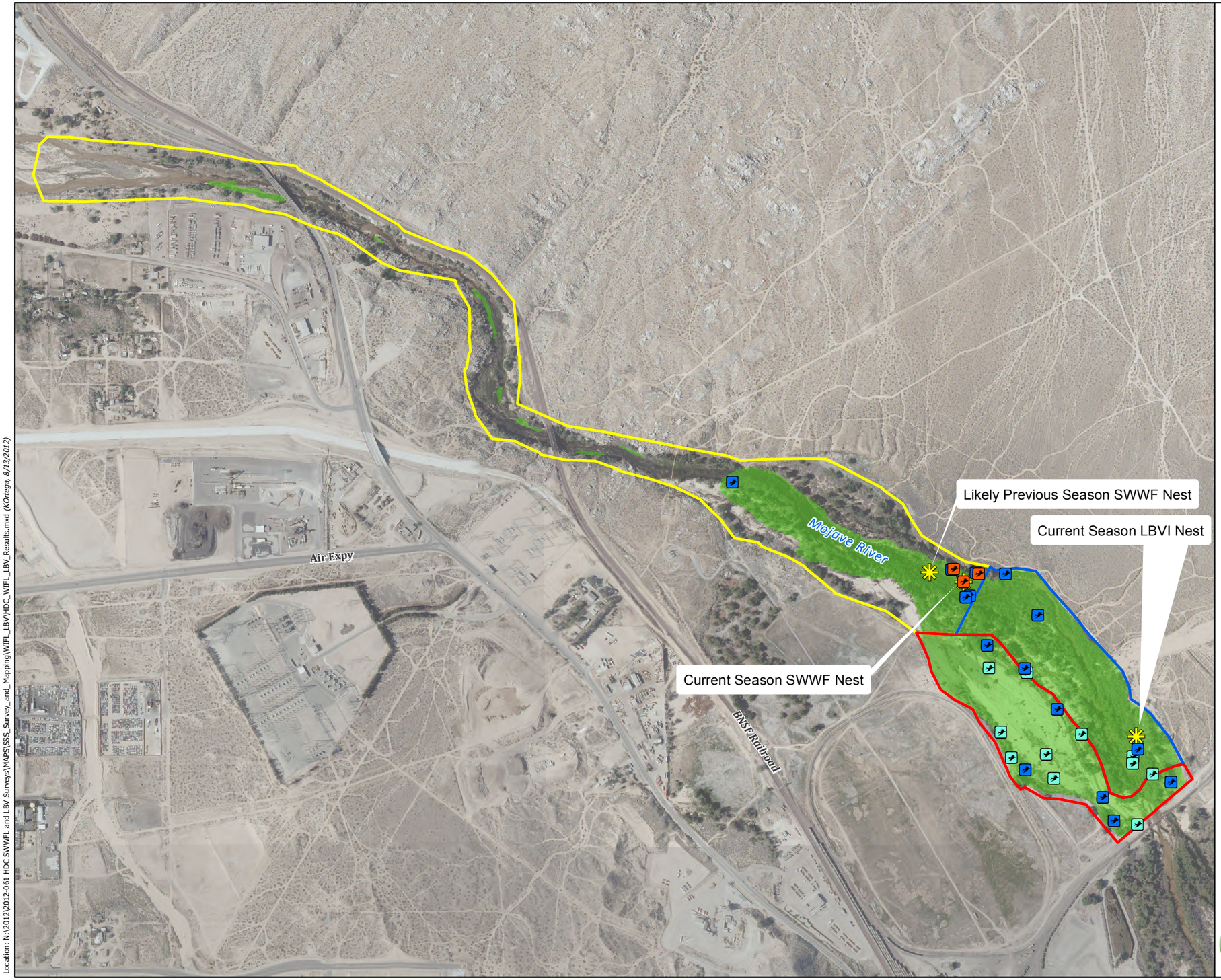
Breeding status of the least Bell's vireo was confirmed within the southern end of the survey area based on the presence of two observed breeding territories. Evidence of Territory A included consistent observation of a singing male within the territory as well as the presence of a pair and dependent fledglings within the territory. Evidence of Territory B included consistent observation of a singing male within the territory and the discovery of an empty, but current season nest also within the territory.

5.3 Recommendations

Breeding southwestern willow flycatchers and least Bell's vireos were found to be occupying habitat within the southern third of the survey area where the highest quality habitat for both

these species is located. Avoidance of this area is recommended to minimize project impacts to either species.

Figure 3.
Results

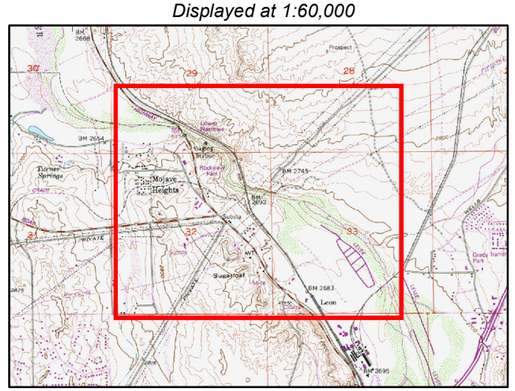


- Survey Polygon 1
- Survey Polygon 2
- Survey Polygon 3
- Potentially Suitable SWWF and/or LBVI Habitat

Bird Occurences

- least Bell's vireo
- willow flycatcher during migration period
- southwestern willow flycatcher post migration period

USGS 7.5' Topographic Quadrangle: Victorville
Displayed at 1:60,000



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
KOrtega

Location: N:\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\SSS_Survey_and_Mapping\WIFL_LBV\HDC_WIFL_LBV_Results.mxd (KOrtega, 8/13/2012)

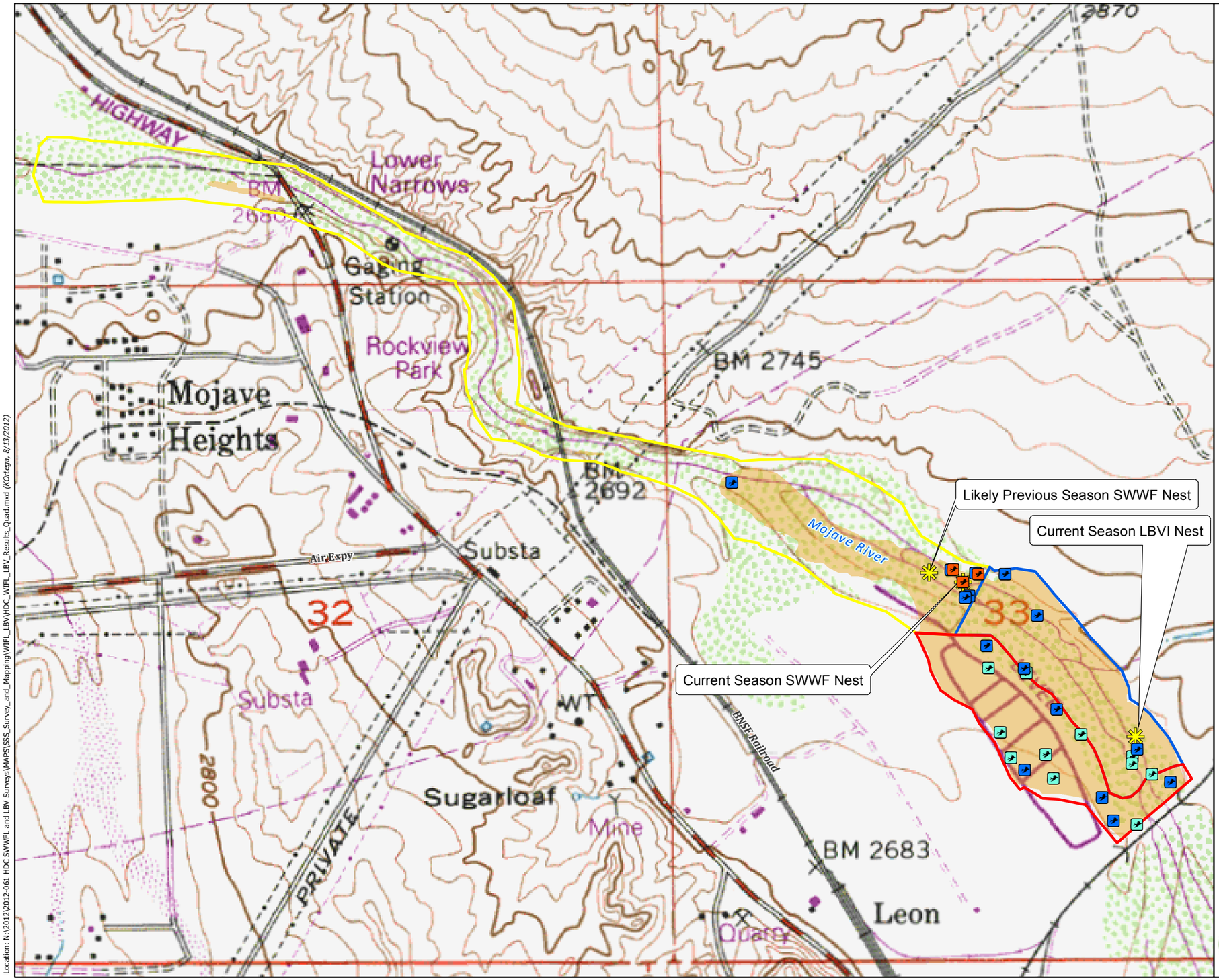
2012-061.001 2012 SWWF and LBVI Surveys for the High Desert Corridor Project

1 " = 800 '

Scale in Feet
0 400 800

Map Date: 8/13/2012

Figure 4.
Topographic Map

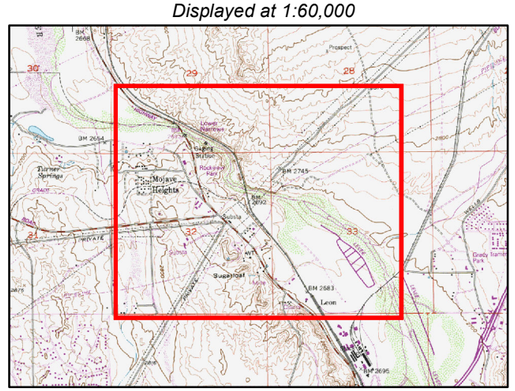


- Survey Polygon 1
- Survey Polygon 2
- Survey Polygon 3
- Potentially Suitable SWWF and/or LBVI Habitat

Bird Occurences

- least Bell's vireo
- willow flycatcher during migration period
- southwestern willow flycatcher post migration period

USGS 7.5' Topographic Quadrangle: Victorville
Displayed at 1:60,000



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
KOrtega

Map Date: 8/13/2012

2012-061.001 2012 SWWF and LBVI Surveys for the High Desert Corridor Project

1 " = 800 '

Scale in Feet
0 400 800

Location: N:\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\SSS_Survey_and_Mapping\WIFL_LBV\HDC_WIFL_LBV_Results_Quad.mxd (KOrtega, 8/13/2012)

6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

DATE: 8/27/2012 SIGNED: Ben Smith

7.0 LITERATURE CITED

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USFWS (2001). Least Bell's Vireo Survey Guidelines. U.S. Department of the Interior. Carlsbad, CA, USFWS**:** 3.

Appendix A

California Department of Fish and Game Authorization

Benjamin Smith

From: Esther Burkett [EBurkett@dfg.ca.gov] **Sent:** Tue 6/5/2012 6:41 PM
To: Benjamin Smith
Cc: Don Mitchell
Subject: RE: Authorization for southwestern willow flycatcher surveys; RE: Urgent: Ben Smith's MOU
Attachments:

Thank you for letting me know you rec'd the email.

Good luck on the surveys!

Esther

>>> Benjamin Smith <bsmith@ecorpconsulting.com> 6/5/2012 6:14 PM >>>
Dear Esther,

Thank you for the authorization. I will be sure to have copies of the documents referenced below in my posession while conducting the surveys and will follow up as required with the survey results.

Sincerely,

Benjamin Smith
Biologist

ECORP Consulting, Inc.
1801 East Park Court Place
Building B, Suite 103
Santa Ana, CA 92701
Phone: 714-648-0630
Cell: 714-651-3021
Fax: 714-648-0935

From: Esther Burkett [mailto:EBurkett@dfg.ca.gov]
Sent: Tue 6/5/2012 6:16 PM
To: Benjamin Smith; Don Mitchell
Subject: Authorization for southwestern willow flycatcher surveys; RE: Urgent: Ben Smith's MOU

Dear Benjamin,

This email serves as state authorization for you to conduct surveys for the SW willow flycatcher, as described below in your email, and in accordance with the federal recovery permit you reference, below.

Print out this email and carry it with you when conducting the work, along with your Scientific Collecting Permit and federal recovery permit. There is the requirement for annual reports of your work to be sent to DFG, and for CNDDB forms/data to be provided to DFG in the event you detect the species.

This authorization will be followed up with a state MOU as soon as possible.

Please contact me if you have any questions, and thank you for your work.

Sincerely,

Esther Burkett

Esther Burkett
California Department of Fish and Game
Wildlife Branch
Nongame Wildlife Program
1812 Ninth Street
Sacramento, CA. 95811
(916) 445-3764 (phone #)
(916) 445-4048 (fax #)
EBurkett@dfg.ca.gov

>>> Don Mitchell <DMitchell@ecorpconsulting.com> 6/4/2012 1:08 PM >>>
Hi Esther,

Actually, to finish by the 9th, he needs to start by Weds the 6th. His SCP ID is 10933.

Thanks,

Don

-----Original Message-----
From: Esther Burkett [mailto:EBurkett@dfg.ca.gov]
Sent: Monday, June 04, 2012 1:06 PM
To: Benjamin Smith
Cc: Don Mitchell
Subject: RE: Urgent: Ben Smith's MOU

Hi Benjamin,

I'll see what I can do for you, stand by a bit, and if you don't hear back before June 9th, please send me another urgent email.

Do you have a current Scientific Collecting Permit?

Esther

>>> Benjamin Smith <bsmith@ecorpconsulting.com> 6/4/2012 10:07 AM >>>
Dear Ms. Burkett,

ECORP Consulting, Inc. has been contacted by Caltrans to conduct protocol surveys for southwestern willow flycatcher this year for the High Desert Corridor Project near Victorville. USFWS has approved extending the deadline for period 1 surveys for the project until June 9, however, I do not yet have the MOU from CDFG that would allow me to proceed with the surveys. I anticipate each survey will take three days and would like to start on Wednesday, June 6 if at all possible. Any help you can provide would be very much appreciated. I have attached a

Appendix B

U.S. Fish and Wildlife Service Extension

You forwarded this message on 5/31/2012 1:32 PM.

Benjamin Smith

From: Carl_Benz@fws.gov [Carl_Benz@fws.gov] **Sent:** Thu 5/31/2012 1:06 PM
To: Benjamin Smith
Cc: Chris_Kofron@fws.gov; Kim_Craig@fws.gov; Robert_McMorran@fws.gov
Subject: Re: southwestern willow flycatcher surveys for Caltrans High Desert Corridor
Attachments:

Dear Mr. Smith:

Thank you for your email clarifying your request. We understand that your permit request , assigned number TE-67390A, is awaiting signature approval in the Pacific Southwest Regional Office, and has been delayed because of unforeseen circumstances. Furthermore, the survey protocol for the southwestern willow flycatcher establishes three survey periods, and the first period expires today.

Our response to your request to modify the survey protocol for the southwestern willow flycatcher, is contingent upon you having in your possession a signed approved recovery permit, #TA-67390A. With that permit , we approve your request to perform the period 1 protocol survey by June 9, 2012, rather than May 31, 2012. As a result of this modification, we understand survey period two will have three total surveys performed. Please retain this email approval with your records and document this modification in your annual report.

If you have any questions, please contact me at the number below.

Sincerely,

Carl T. Benz

= = = = = = = = = = = = = = = = = =
Assistant Field Supervisor
Ventura Fish and Wildlife Office
2493 Portola Rd., Suite B
Ventura, CA 93003

805-644-1766 Ext. 311

"Benjamin Smith" <bsmith@ecorpconsulting.com>

"Benjamin Smith" <bsmith@ecorpconsulting.com>

05/30/2012 05:04 PM

To<carl_benz@fws.gov>
cc
Subjectsouthwestern willow flycatcher surveys for Caltrans Hight Desert Corridor

Dear Mr. Benz,

As we discussed on the phone, I would like to request that the USFWS approve a modified survey protocol for southwestern willow flycatcher for the Caltrans High Desert Corridor Project along the Mojave River near Victorville, CA. Specifically, I am requesting to complete the period 1 survey by June 9 rather than May 31. The reason for the request is that the request for the surveys came in too late to allow hiring a subcontractor through the Caltrans process and due to personal issues, Daniel Marquez, the Region 8 recovery permit coordinator, was out for several weeks, which resulted in a delay in processing my permit to survey for southwestern willow flycatcher. I have been in touch with Daniel and he has processed and approved the permit and sent it to Sacramento for signatures and I should have a copy in my posession some time next week.

Protocol surveys for southwestern willow flycatcher consist of five surveys spaced a minimum of five days apart within three separate survey periods: May 15-31 (one survey), June 1-24 (two surveys), and June 25-July 17 (two surveys). The survey within the first period is the least critical of the five. It gives the biologist an idea of where territories are being established and is also the period during which migratory willow flycatchers that are not the endangered southwestern subspecies are most likely to be encountered. Pushing back the first survey 1-1.5 week should not affect the overall outcome of the surveys.

Attached is a Google Earth file as well as an image file showing the location of the survey area just north of the City of Victorville.

Please let me know if any additional information would be helpful.

Sincerely,

Benjamin Smith
Biologist

ECORP Consulting, Inc.
1801 East Park Court Place
Building B, Suite 103
Santa Ana, CA 92701
Phone: 714-648-0630
Cell: 714-651-3021
*Fax: 714-648-0935**[attachment "Caltrans HDC swifl.kmz" deleted by Carl Benz/VFWO/R1/FWS/DOI] [attachment "Caltrans HDC swifl.jpg" deleted by Carl Benz/VFWO/R1/FWS/DOI]*

Appendix C

Completed Willow Flycatcher Survey and Detection Forms

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Mojave River High Desert Corridor - Polygon 1 State CA County San Bernardino
USGS Quad Name Victorville Elevation 820 (meters)
Creek, River, Wetland, or Lake Name Mojave River
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* X *No* ___

Survey Coordinates: Start: E 34.56087 N -117.299244 UTM Datum NAD 83 (See instructions)
Stop: E 34.56417 N -117.305844 UTM Zone ___
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
** *Fill in additional site information on back of this page* **

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1 Observer(s) Ben Smith Alfredo Aguirre	Date 6/7/12 Start 519 Stop 1030 Total hrs 5.2	6	0	0	N	6 WIFL detections, several may be same individ.	# Birds	Sex	UTM E	UTM N
Survey # 2 Observer(s) Ben Smith Brad Haley	Date 6/13/12 Start 445 Stop 950 Total hrs 5.1	0	0	0	0		# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s) Ben Smith Chris Stevenson	Date 6/19/12 Start 450 Stop 940 Total hrs 4.8	0	0	0	0		# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s) Ben Smith Kristin Mobraaten	Date 6/26/12 Start 445 Stop 950 Total hrs 5.1	0	0	0	0		# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s) Ben Smith Krissy Day	Date 7/10/12 Start 445 Stop 850 Total hrs 4.1	0	0	0	0		# Birds	Sex	UTM E	UTM N

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 24.3	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	0	0	0	0	

Reporting Individual Benjamin Smith Date Report Completed 8/13/12
US Fish and Wildlife Service Permit # TE-67390A-0 State Wildlife Agency Permit # 10833
***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Benjamin Smith Phone # 714-651-3021
Affiliation ECORP Consulting, Inc. E-mail bsmith@ecorpconsulting.com
Site Name Mojave River High Desert Corridor Polygon 1 Date Report Completed 8/13/12
Was this site surveyed in a previous year? Yes ___ No ___ Unknown x
Did you verify that this site name is consistent with that used in previous years? Yes ___ No x Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County ___ State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) ___

Length of area surveyed: 0.7 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

x Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Popululs fremontii, Salix exigua, Melilotus albus

Average height of canopy (Do not include a range): 8 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Mojave River High Desert Corridor - Polygon 2 State CA County San Bernardino
USGS Quad Name Victorville Elevation 820 (meters)
Creek, River, Wetland, or Lake Name Mojave River
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes*___ *No*___

Survey Coordinates: Start: E 34.56117 N -117.299786 UTM Datum_____(See instructions)
Stop: E 34.56554 N -117.304162 UTM Zone _____
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
*** Fill in additional site information on back of this page ****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Ben Smith Krissy Day	Date 6/12/12 Start 515 Stop 1030 Total hrs 5.3	3	0	0	N	3 WIFL detections				
Survey # 2 Observer(s) Ben Smith Krissy Day	Date 6/14/12 Start 445 Stop 1020 Total hrs 5.6	2	0	0	0	1 WIFL detection within survey area; also observed in adjacent survey area Polygon 3	# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s) Ben Smith Chris Stevenson Krissy Day	Date 6/20/12 Start 450 Stop 950 Total hrs 5	2	0	0	0	WIFL detections in adjacent survey area Polygon 3	# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s) Ben Smith Emily Graf	Date 6/27/12 Start 445 Stop 945 Total hrs 5	1	1	1	N	WIFL detections in adjacent survey area Polygon 3	# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s) Ben Smith Krissy Day	Date 7/11/12 Start 445 Stop 1015 Total hrs 5.5	0	1	1	Y		# Birds	Sex	UTM E	UTM N

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 26.4	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	1				

Reporting Individual Benjamin Smith Date Report Completed 8/14/12
US Fish and Wildlife Service Permit # TE-67390A-0 State Wildlife Agency Permit # 10933
Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Benjamin Smith Phone # 714-651-3021
Affiliation ECORP Consulting, Inc. E-mail bsmith@ecorpconsulting.com
Site Name Mojave River High Desert Corridor Polygon 2 Date Report Completed 8/13/12
Was this site surveyed in a previous year? Yes___ No ___ Unknown x
Did you verify that this site name is consistent with that used in previous years? Yes ____ No X Not Applicable ___
If site name is different, what name(s) was used in the past?____
If site was surveyed last year, did you survey the same general area this year? Yes ____ No ____ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ____ No ____ If no, summarize below.

Management Authority for Survey Area: Federal____ Municipal/County ____ State ____ Tribal ____ Private ____
Name of Management Entity or Owner (e.g., Tonto National Forest) ____

Length of area surveyed: 0.6 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)

_____ Mixed native and exotic plants (mostly native, 50 - 90% native)

_____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

_____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Popululs fremontii, Salix laevigata, Salix exigua

Average height of canopy (Do not include a range): 8 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
One nest was identified within adjacent survey area Polygon 3. The breeding territory extended into Polygon 2. Individuals were detected from Polygon 2 that were in Polygon 3 and are detailed on the detection form for Polygon 3.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
1	6/8,14,20,27	472035	3824880	Y	Y	nest observed within adjacent survey area

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Mojave River High Desert Corridor - Polygon 3 State CA County San Bernardino
USGS Quad Name Victorville Elevation 810 (meters)
Creek, River, Wetland, or Lake Name Mojave River
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* X *No*

Survey Coordinates: Start: E 34.573853 N -117.328767 UTM Datum (See instructions)
Stop: E 34.564180 N -117.305107 UTM Zone

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

*** Fill in additional site information on back of this page ****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Ben Smith Brad Haley	Date 6/9/12 Start 455 Stop 1030 Total hrs 5.6	1	0	0	N	1 WIFL detections				
Survey # 2 Observer(s) Ben Smith Krissy Day	Date 6/15/12 Start 445 Stop 1008 Total hrs 5.4	1	0	0	N	1 WIFL detection within survey area				
Survey # 3 Observer(s) Ben Smith Brad Haley	Date 6/21/12 Start 445 Stop 1023 Total hrs 5.7	1	0	0	N	1 WIFL detection within survey area				
Survey # 4 Observer(s) Ben Smith Brad Haley	Date 6/28/12 Start 490 Stop 1015 1 Total hrs 5.4		0	0	Y	1 WIFL detection within survey area				
Survey # 5 Observer(s) Ben Smith Krissy Day Chris Stevenson	Date 7/12/12 Start 445 Stop 1015 Total hrs 5.5	1	0	0	Y	1 WIFL detection within survey area				

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 27.6	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	1	1	1	1 (pair assumed based on nest)	

Reporting Individual Benjamin Smith Date Report Completed 8/14/12
US Fish and Wildlife Service Permit # TE-67390A-0 State Wildlife Agency Permit # 10933

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Benjamin Smith Phone # 714-651-3021
Affiliation ECORP Consulting, Inc. E-mail bsmith@ecorpconsulting.com
Site Name Mojave River High Desert Corridor Polygon 3 Date Report Completed 8/13/12
Was this site surveyed in a previous year? Yes___ No ___ Unknown x___
Did you verify that this site name is consistent with that used in previous years? Yes ____ No x____ Not Applicable ___
If site name is different, what name(s) was used in the past?_____
If site was surveyed last year, did you survey the same general area this year? Yes ____ No ____ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ____ No ____ If no, summarize below.

Management Authority for Survey Area: Federal____ Municipal/County ____ State ____ Tribal ____ Private ____
Name of Management Entity or Owner (e.g., Tonto National Forest) _____

Length of area surveyed: 2.5 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

_____ Native broadleaf plants (entirely or almost entirely, > 90% native)

x____ Mixed native and exotic plants (mostly native, 50 - 90% native)

_____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

_____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Popululs fremontii, Salix exigua, Schoenoplectus californicus

Average height of canopy (Do not include a range): 5 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
One nest was located. Adults were observed individually and a pair is assumed based on the presence of the nest.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
1	6/15,21,28, 7/12	472035	3824880	Y	Y	a nest was observed

Attach additional sheets if necessary

Appendix D

Wildlife Compendium

Scientific Name	Common Name
Amphibians	
Anaxyrus	**North American Toads**
Anaxyrus boreas	western toad
Lithobates	**American Water Frogs**
*Lithobates catesbeinanus**	American bullfrog*
Pseudacris	**Chorus Frogs**
Pseudacris hypochondriaca	Baja California treefrog
Reptiles	
Aspidoscelis	**Whiptails**
Aspidoscelis tigris	tiger whiptail
Sceloporus	**Spiny Lizards**
Sceloporus occidentalis	western fence lizard
Uta	**Side-blotched Lizards**
Uta stansburiana	common side-blotched lizard
Coluber	**North American Racers, Coachwhips, and Whipsnakes**
Coluber flagellum piceus	red racer
Lampropeltis	**Kingsnakes and Milksnakes**
Lampropeltis getula californiae	California kingsnake
Birds	
Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	mallard
Odontophoridae	**New World Quail**
Callipepla californica	California quail
Ardeidae	**Herons, Bitterns, Allies**
Nycticorax nycticorax	black-crowned night heron
Ardea Herodias	great blue heron
Ardea alba	great egret
Butorides virescens	green heron
Egretta thula	snowy egret
Accipitridae	**Hawks, Kites, Eagles, Allies**
*Accipiter cooperii***	Cooper's hawk**
Buteo lineatus	red-shouldered hawk
Buteo jamaicensis	red-tailed hawk
Falconidae	**Caracaras, Falcons**
Falco sparverius	American kestrel
Rallidae	**Rails, Gallinules, Coots**
Rallus limicola	Virginia rail
Charadriidae	**Lapwings, Plovers**
Charadrius vociferous	killdeer
Columbidae	**Pigeons, Doves**
Zenaida macroura	mourning dove
	Cuckoos and Roadrunners
Geococcyx californianus	greater roadrunner

Tytonidae	**Owls**
Tyto alba	barn owl
Strigidae	**True Owls**
Bubo virginianus	great horned owl
Caprimulgidae	**Nighthawks and Nightjars**
Chordeiles acutipennis	lesser nighthawk
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
Trochilidae	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Selasphorus sasin	Allen's hummingbird
Calypte anna	Anna's hummingbird
Picidae	**Woodpeckers**
Picoides pubescens	downy woodpecker
Colaptes auratus	northern flicker
Picoides nuttallii	Nuttall's woodpecker
Tyrannidae	**Tyrant Flycatchers**
Myiarchus cinerascens	ash-throated flycatcher
Sayornis phoebe	black phoebe
Tyrannus vociferans	Cassin's kingbird
Empidonax difficilis	Pacific-slope flycatcher
Sayornis saya	Say's phoebe
*Empidonax traillii extimus***	southwestern willow flycatcher**
Tyrannus verticalis	western kingbird
Contopus sordidulus	western wood-pewe
Empidonax traillii	willow flycatcher
Vireonidae	**Vireos**
*Vireo bellii pusillus***	least Bell's vireo**
Corvidae	**Crows, Jays**
Corvus corax	common raven
Hirundinidae	**Swallows**
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Paridae	**Titmice and Chickadees**
Poecile gambeli	mountain chickadee
Remizidae	**Verdins**
Auriparus flaviceps	verdin
Aegithalidae	**Long-tailed tits, Bushtits**
Psaltriparus minimus	bushtit
Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's wren
Cistothorus palustris	marsh wren
Salpinctes obsoletus	rock wren
Sylviidae	**Old World Warblers and Gnatcatchers**
Poloptila caerulea	blue-gray gnatcatcher
Turdidae	**Thrushes**
Sialia Mexicana	western bluebird

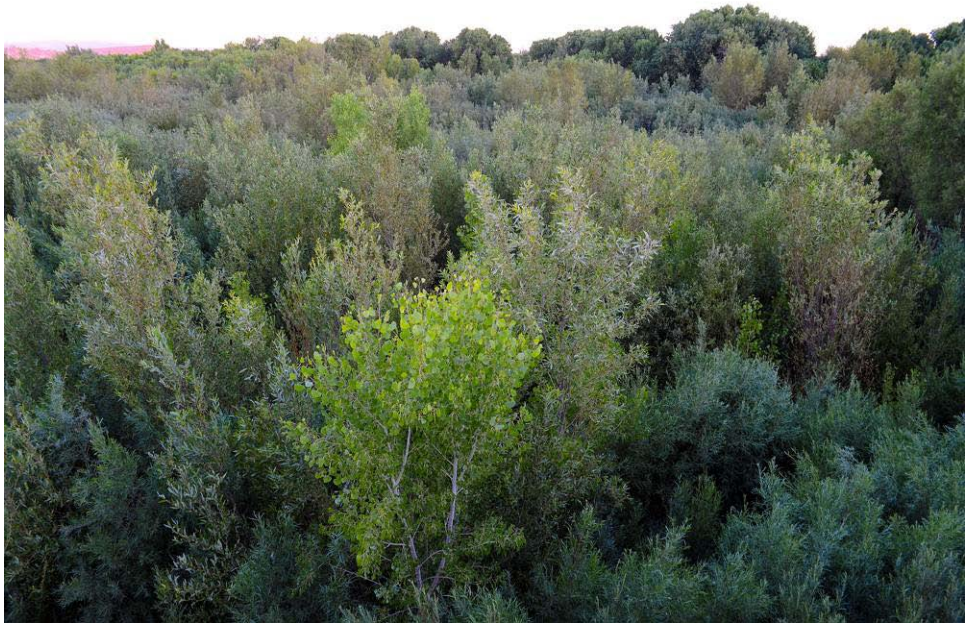
Mimidae	**Mockingbirds, Thrashers**
Toxostoma redidivivum	California thrasher
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling*
Parulidae	**Wood Warblers**
Geothlypis trichas	common yellowthroat
*Dendroica petechia***	yellow warbler**
*Icteria virens***	yellow-breasted chat**
Thraupidae	**Tanagers**
Piranga rubra	summer tanager**
Emberizidae	**Emberizids**
Amphispiza bilineata	black-throated sparrow
Pipilo crissalis	California towhee
Chondestes grammacus	lark sparrow
Pipilo maculatus	spotted towhee
Melospiza melodia	song sparrow
Cardinalidae	**Cardinals, Saltators, Allies**
Pheucticus melanocephalus	black-headed grosbeak
Passerina caerulea	blue grosbeak
Icteridae	**Blackbirds**
Molothrus ater	brown-headed cowbird
Icterus bullockii	Bullock's oriole
Quiscalus mexicanus	great-tailed grackle
Agelaius phoeniceus	red-winged blackbird
Fringillidae	**Fringilline and Cardueline Finches, Allies**
Carpodacus mexicanus	house finch
Carduelis psaltria	lesser goldfinch
Mammals	
Canidae	**Dogs, Foxes, Allies**
*Canis familiaris**	domestic dog*
Procyonidae	**Raccoons and Ringtails**
Procyon lotor	raccoon
Mustelidae	**Weasels, Martins, Skunks, Allies**
Mephitis mephitis	striped skunk
Castoridae	**Beavers**
*Castor Canadensis**	beaver*
Sciuridea	**Squirrels**
Spermophilus beecheyi	California ground squirrel
Neotoma	**Rats, Mice, Voles, Allies**
Neotoma sp.	woodrat
Leporidae	**Rabbits and Hares**
Lepus californicus	Black-tailed jackrabbit
Sylvilagus audubonii	Audubon's cottontail

* non-native species

** special status species

Appendix E

Survey Photographs



Photograph 1. Suitable willow flycatcher and least Bell's vireo habitat within the southeastern end of the survey area.

Photograph 2. Suitable willow flycatcher and least Bell's vireo habitat within the southwestern end of the survey area.

Appendix E

Survey Photographs

Photograph 3. Beaver dam expanding riparian habitat within the southern of the survey area.

Photograph 4. Representative example of habitat within the northern two-thirds of the survey area.

Appendix E

Survey Photographs

Photograph 5. Representative example of habitat within the northern two-thirds of the survey area.

Photograph 6. Representative example of habitat within the northern two-thirds of the survey area.

Appendix E

Survey Photographs

Photograph 7. Representative example of habitat within the northern two-thirds of the survey area.

Photograph 8. Southwestern willow flycatcher observed within breeding territory.

Appendix E

Survey Photographs

Photograph 9. Current season southwestern willow flycatcher nest within the survey area.

Photograph 10. Current season southwestern willow flycatcher nest within the survey area.

Appendix E

Survey Photographs

Photograph 11. Likely previous season southwestern willow flycatcher nest within the survey area.

Photograph 12. Likely previous season southwestern willow flycatcher nest within the survey area.

Appendix E

Survey Photographs

Photograph 13. Juvenile least Bell's vireo within Territory A.

Photograph 14. Adult male yellow warbler within the survey area.

Appendix E

Survey Photographs

Photograph 15. Juvenile yellow warbler within the survey area.

Photograph 16. Cooper's hawk chick in a nest within the southern third of the survey area.

Appendix E

Survey Photographs

Photograph 18. *Camissonia boothii* ssp. *boothii* (CNPS 2.3) within Polygon 2.

2013 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys for the High Desert Corridor Project

Submitted to:

State of California, Department of Transportation
Environmental Planning
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Appendix C – Wildlife Compendium
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1.0 INTRODUCTION

1.1 Survey Purpose

The State of California Department of Transportation and Metro are proposing to construct a new freeway/expressway and possible toll way in the High Desert area of Los Angeles and San Bernardino counties that will extend for approximately 63 miles between State Route (SR)-14 in Palmdale and SR-18 in Apple Valley. The project consists of an eight-lane freeway from SR-14 to 50th Street East along an alignment paralleling Avenue P-8 in Palmdale. The project consists of a six-lane facility from 50th Street East to 240th East and continuing to I-15. East of I-15, the facility curves south until it ends at SR-18 in the Town of Apple Valley at Bear Valley Road. In addition, SR-14 and I-15 will be improved for approximately 3 miles north and south of the intersection with the proposed east-west facility. The exact type of transportation facility will be determined by traffic analysis. The project proposes to cross the Mojave River north of the City of Victorville within habitat that is potentially suitable for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*), both of which are federally- and state-listed as endangered. Surveys were conducted within the portion of the proposed project containing potentially suitable habitat for both species to determine their presence or absence and to assist project planners in avoiding or minimizing impacts to either species.

1.2 Survey Area Location

As depicted on the USGS 7.5-minute Victorville quadrangle, the survey area is located in Sections 29, 31, 32, and 33 of Township 6 north, Range 4 west, San Bernardino Base and Meridian. The survey area is north of the City of Victorville, San Bernardino County, approximately 1 mile due north of the SR-15 and D Street junction, beginning approximately 0.25 mile (mi) (400 meters [m]) west of the National Trails Highway Bridge and ending to the southeast approximately 0.25 mi (400 m) northwest of the railroad crossing immediately west of the end of Abbey Lane (Figures 1 and 2). The survey area is roughly 130 acres and extends 1.5 mi (2.4 kilometers [km]) along the Mojave River. The Mojave River flows year round and the width of the flood plain within the survey area ranges from a minimum of approximately 100 feet (ft) (30 m) in the northwestern portion to a maximum of approximately 0.2 mi (330 m) in the southeastern portion. An area containing two small riparian vegetation patches approximately 0.5 mile (0.8 km) southwest of the National Trails Highway Bridge over the Mojave River at the northwestern end of the survey area on the river is also included in the survey area. Elevations within the survey area range from approximately 2,670 ft (815 m) above mean sea level (MSL) at the northwestern end to 2,690 ft (820 m) above MSL at the southeastern end.

The survey area was divided into Area 1 and Area 2 (Figures 3 and 4) because it was too large to survey in its entirety in one day. Area 1 was located in the southeastern end of the site and occupied the northern side of the Mojave River flood plain. Area 2 included southern side of the Mojave River flood plain in the southeastern end of the site, the northwestern end of the site, as well as the parcel containing two small riparian vegetation patches approximately 0.5 mile (0.8 km) southwest of the National Trails Highway Bridge over the Mojave River at the northwestern end of the survey area on the river.

Location: \\Rocklin\mapping data\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\Site_Vicinity\HDC_SWWF_2013_Region.mxd (MCuidryl)-mguidry 8/8/2013

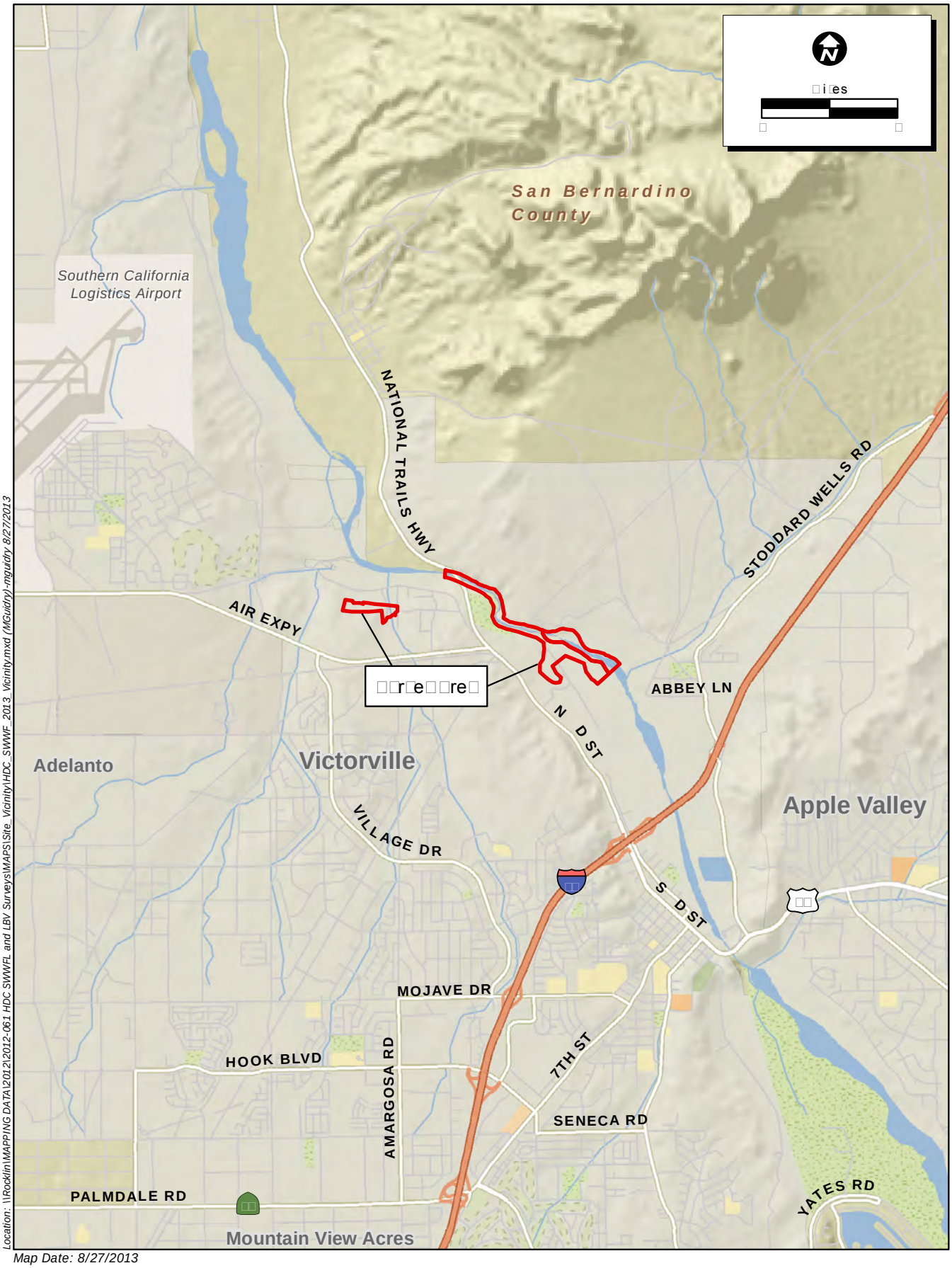
Map Date: 8/8/2013

Service Layer Credits: Sources: USGS, ESRI, TANA, AND

Figure 1: Regional Map

2012-061 HDC SWWF and LBVI Surveys

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS



Location: \\Rocklin\MAPPING DATA\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\Site_Vicinity\HDC_SWWF_2013_Vicinity.mxd (MGuidry) -mguidry 8/27/2013

Map Date: 8/27/2013
Source: ESRI

Figure 2: Vicinity Map

2012-061 HDC SWWF and LBVI Surveys

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2.0 VEGETATION AND HABITAT

Vegetation communities within the survey area were classified according to *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, and Evans 2009). Dominant vegetation communities within the survey area consisted of riparian forest and riparian thicket communities including Fremont cottonwood forest (*Populus fremontii* Alliance), red willow thickets (*Salix laevigata* Alliance), sandbar willow thickets (*Salix exigua* Alliance), and freshwater marsh communities including California bulrush-American bulrush marsh (*Schoenoplectus californicus-Schoenoplectus americanus* Association) and southern cattail marsh (*Typha domingensis* Alliance). Creosote bush scrub (*Larrea tridentata* Alliance) and desert saltbush scrub (*Atriplex polycarpa* Alliance) were found in the upland habitat adjacent to the survey area. Habitat photographs are included in Appendix D.

2.1 Fremont Cottonwood Forest (*Populus fremontii* Alliance)

Fremont cottonwood forest within the survey area consisted of stands of mature Fremont cottonwoods along the banks of the river and upper-river terraces (Appendix D, Photographs 3 – 6). Understory was sparse in upper elevations and was dominated by red willow, sandbar willow, and sweet clover (*Melilotus albus*) as the Fremont cottonwood forest community transitioned into willow thickets and disturbed areas lower in the river channel. Fremont cottonwood forest formed a more or less linear row along each river bank of the Mojave River and formed a semi-open woodland association with back willows (*Salix gooddingii*) in a low area south of the river in the southeastern portion of the survey area.

2.2 Red Willow Thickets (*Salix laevigata* Alliance)

Red willow thickets within the survey area consisted of mixed stands of willows dominated by red willows that include sandbar willows, occasional black willows and arroyo willows (*Salix lasiolepis*), as well as young Fremont cottonwoods (Appendix D, Photographs 7 and 13). Dominant species in the understory included sandbar willow, cocklebur (*Xanthium strumarium*), hoary nettle (*Urtica dioica*), and sweet clover. Red willow thickets were found mostly within the southern one third of the survey area but occurred in patches along the river in the northwestern two thirds of the survey area.

2.3 Sandbar Willow Thickets (*Salix exigua* Alliance)

Sandbar willow thickets within the survey area consisted of dense, nearly monotypic stands of sandbar willow ranging in height from approximately 6.5 ft (2 m) for younger stands to approximately 25 ft (8 m) for mature stands (Appendix D, Photographs 3, 8 – 12). Sandbar willow thickets were concentrated in the southern one third of the survey area with patchy distribution along the river in the northwestern two thirds of the survey area. Two small patches of sandbar willow thickets were also found in the riparian area approximately 0.5 mile (0.8 km) southwest of the National Trails Highway Bridge over the Mojave River.

2.4 California Bulrush-American Bulrush Marsh (*Schoenoplectus californicus-Schoenoplectus americanus* Association)

California bulrush-American bulrush association within the survey area consisted of stands of freshwater marsh vegetation where California bulrush and American bulrush were co-dominant (Appendix D, Photographs 3 and 13). This vegetation community was found on the margins of the flowing river throughout the survey area.

2.5 Southern Cattail Marsh (*Typha domingensis* Alliance)

Southern cattail marsh within the survey area consisted of stands of freshwater marsh vegetation dominated by southern cattail (Appendix D, Photograph 4). Southern cattail marsh was distributed along the margins of the flowing river throughout the survey area.

2.6 Creosote Bush Scrub (*Larrea tridentata* Alliance)

Creosote bush scrub consisted of upland desert vegetation dominated by creosote bush. Creosote bush scrub was found in the upland areas adjacent to the survey area and outside the riparian zone.

2.7 Desert Saltbush Scrub (*Atriplex polycarpa* Alliance)

Desert saltbush scrub consisted of nearly monotypic cover by allscale (*Atriplex polycarpa*). Desert saltbush scrub surrounded the two small stands of sandbar willow thickets found in the riparian area approximately 0.5 mile (0.8 km) southwest of the National Trails Highway Bridge over the Mojave River (Appendix D, Photograph 14).

2.8 Southwestern Willow Flycatcher Breeding Habitat

The southwestern willow flycatcher typically breeds within dense tree or shrubby riparian vegetation that is equal to or greater than 10 ft (3 m) tall (Allison et al. 2003). Suitable southwestern willow flycatcher breeding habitat was located throughout the southern one third of the survey area, consisting of a mosaic of Fremont cottonwood forest, red willow thickets, sandbar willow thickets, and freshwater marsh communities. Several beaver dams were found in this area, which can influence an increase in willow flycatcher habitat by extending the riparian zone. Native plant species were generally dominant within this area; however, a disturbed area dominated by sweet clover was located in the southeastern portion of the site, and invasive species including purple loosestrife (*Lythrum salicaria*), giant reed (*Arundo donax*), and tamarisk (*Tamarix ramosissima*) were infrequently observed throughout the southeastern portion of the survey area.

Southwestern willow flycatcher breeding habitat within the northwestern two-thirds of the survey area was marginal at best and occurred in fragmented patches consisting of sandbar willow thickets and red willow thickets bordered by Fremont cottonwoods higher on the river bank and bulrush and/or cattail marsh closer to the water. According to Sogge et al. (2010),

southwestern willow flycatchers rarely nest within isolated patches less than 33 ft (10 m) wide. Most of the patches of appropriate vegetation type within the northwestern two-thirds of the survey area were less than or only slightly greater than 33 ft (10 m) in width and therefore had a low probability of supporting breeding southwestern willow flycatchers.

2.9 Least Bell's Vireo Breeding Habitat

The least Bell's vireo breeds in dense, shrubby riparian vegetation, often dominated by willows (Franzreb 1989). Suitable breeding habitat was concentrated in the southeastern portion of the survey area where the Mojave River floodplain is widest and supports large stands of red willow thickets and sandbar willow thickets. Suitable least Bell's vireo habitat was found in the northwestern two-thirds of the survey area consisting of isolated patches of red willow thickets and sandbar willow thickets. Additionally, suitable habitat consisting of two stands of sandbar willows was located in the added 25-acre (10-ha) parcel northwest of the end of the survey area on the river that was included in Area 2; however, the sandbar willow stands were small, approximately 0.3 acre (0.12 ha) and 0.2 acre (0.08 ha), and were isolated from larger patches of suitable habitat.

2.10 Disturbances

Disturbances observed within the survey area included camp sites, a homeless encampment within Area 1 (Figures 3 and 4) on the north bank of the Mojave River, and off-road vehicles. Evidence was noted of a truck-sized four-wheel-drive vehicle that had driven the length of the survey area during several of the intervals between surveys, in and out of the flowing channel and over stands of sandbar willow, southern cattail, and other vegetation (Appendix D, Photographs 15 and 16). Additionally, the remains of a stolen truck were found dumped within the riparian habitat not far east of the southeastern end of the survey area.

Moderate numbers of brown-headed cowbirds (*Molothrus ater*), including fledglings, were observed throughout the survey area. The San Bernardino County Flood Control cowbird traps that were present during last year's survey of the site were not observed.

3.0 METHODS

3.1 Survey Dates, Personnel, and Conditions

All surveys were performed by ECORP Consulting, Inc. biologist Ben Smith, authorized to conduct protocol surveys for southwestern willow flycatcher under Federal Recovery Permit TE-67390A-0 and California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit SCP-10933 with the exception of least Bell's vireo survey number seven, which was conducted by Sonya Steckler, authorized to conduct nest monitoring of least Bell's vireo within San Diego County at the time of the survey under Federal Recovery Permit TE-61783A and CDFW Scientific Collecting Permit SCP-011729 (current amendment authorizes nest monitoring throughout the range of the species). Table 1 lists the times, dates, survey area, weather conditions, and additional personnel assisting with the surveys.

Table 1. Survey Dates, Personnel, and Conditions

Date	Surveyors	Survey	Survey Area	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
				start	end	start	end	start	end	start	end
5/15	Ben Smith, Sonya Steckler	SWWF#1 LBVI #1	Southern Area 1	0540	1040	55	80	0	0	0	5
5/16	Ben Smith, Sonya Steckler	SWWF#1 LBVI #1	Southern Area 2	0530	1030	55	80	50	0	0	2-3
5/17	Ben Smith, Sonya Steckler	SWWF#1 LBVI#1	Northwestern Areas 1 & 2*	0530	1030	55	80	100	0	0	5
5/27	Ben Smith, Sonya Steckler	LBVI#2	Southern Areas 1 & 2	0525	1015	58	76	50	50	0-1	1-4
5/28	Ben Smith, Sonya Steckler	LBVI#2	Northwestern Areas 1 & 2*	0540	1120	65	70	50	50	0-2	10-15
5/31	Ben Smith, Sonya Steckler	SWWF#1 LBVI #1	Area added to Area 2	0450	0705	58	70	0	0	0	0
6/7	Ben Smith, Sonya Steckler	SWWF#2 LBVI#3	Area 1	0550	1055	62	82	0	0	0	0
6/8	Ben Smith, Sonya Steckler	SWWF#2 LBVI#3	Area 2	0500	1030	60	87	0	0	1-3	0
6/19	Ben Smith, Brad Haley	SWWF#3 LBVI#4	Area 1	0500	1035	60	78	0	0	2-5	2-5
6/20	Ben Smith, Brad Haley	SWWF#3 LBVI#4	Area 2	0435	1035	49	84	0	0	0	2-5
6/29	Ben Smith, Sonya Steckler, C. Stephenson	SWWF#4 LBVI#5	Area 1	0450	1030	74	90	0	0	0	0
6/30	Ben Smith, Sonya Steckler	SWWF#4 LBVI#5	Area 2	0450	0950	70	90	0	0	0-2	0
7/9	Ben Smith, Sonya Steckler	SWWF#5 LBVI#6	Area 1	0500	1030	60	86	0	30	0	0
7/10	Ben Smith, Sonya Steckler	SWWF#5 LBVI#6	Area 2	0445	1030	79	88	90	55	0	2-5
7/19	Sonya Steckler, Wendy Turner	LBVI#7	Area 1	0525	1050	67	86	10	10	0	0

Date	Surveyors	Survey	Survey Area	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
				start	end	start	end	start	end	start	end
7/20	Sonya Steckler, Wendy Turner	LBVI#7	Area 2	0535	0910	74	88	95	30	4-7	0
7/29	Ben Smith, Brad Haley	LBVI#8	Area 1	0545	1055	65	84	0	0	2-5	2-5
7/30	Ben Smith, Brad Haley	LBVI#8	Area 2	0550	1025	66	75	0	0	0-5	0-5

*Additional area was added to this portion of Area 2 beginning on 5/31. See Appendix A and section 3.2 Southwestern Willow Flycatcher Methods below.

3.2 Southwestern Willow Flycatcher

Surveys for the southwestern willow flycatcher followed the protocol outlined by Sogge et al. (2010). The 2010 protocol recommends five surveys during three survey periods, with two surveys occurring within each of the last two survey periods. These three survey periods are Period 1: May 15 to 31, Period 2: June 1 to 24, and Period 3: June 25 to July 17.

Surveys were conducted within all areas of suitable habitat along northeast/southwest transects spaced approximately 100 ft (30 m) apart. Southwestern willow flycatcher vocalizations were played at approximately 100-foot (30-m) intervals along each transect using an MP3 player and portable speaker system. The vocalization was played following an initial approximate one-minute period of listening. The period of listening followed by audio playback was repeated with another period of listening at the end before moving to the next 100-foot (30-m) interval. The locations of willow flycatcher detections were recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy. Survey data were recorded in a field notebook and copied onto Willow Flycatcher Survey and Detection Forms. Completed survey forms are included in Appendix B.

The first survey of the site was conducted over a period of four days. The same area that was surveyed for the project during the 2012 season, which was divided into three polygons with each survey occurring over a period of three days (ECORP 2012), was covered during the first survey of the site during a three-day visit. It was then discovered that the engineering design of the project had been altered and the survey area revised. The southeastern approximately 30 acres (ac) (12 hectares [ha]) of the 2012 survey area had been eliminated, while an approximately 10-ac (4-ha) woodland that branches off from the southeastern end of the survey area, and a 25-acre (10-ha) parcel approximately 0.5 mi (0.8 km) west of the northwestern end of the survey area were added. The rest of the survey area remained the same as during the 2012 season. The 30-ac (10-ha) area that was removed from the survey contained an area of slight overlap with southwestern willow flycatcher surveys being conducted by San Bernardino Flood Control District. Arrangements had been made to avoid duplicate surveys of the overlap area, but with the elimination of this portion from the survey area, this was no longer an issue. The 10-ac (4-ha) woodland and 25-ac (10-ha) parcel were added to the survey area due to their inclusion in the U.S. Fish and Wildlife Service (USFWS)

2013 revision to critical habitat for the southwestern willow flycatcher (FR 2013). A fourth one-day visit was made during Period 1 to include these two areas in the first southwestern willow flycatcher survey of the site.

The site was divided into Area 1 and Area 2 following revision of the project engineering plans, and surveys two through five were each conducted over two-day periods (Figures 3 and 4). Area 1 was located on the southeastern end of the site and included the highest density of suitable southwestern willow flycatcher habitat as well as the location of a southwestern willow flycatcher territory and nest observed during the 2012 surveys (ECORP 2012). Extra attention was paid to this area in an effort to relocate the pair observed during 2012. Area 1 contained approximately 30 acres of habitat dominated by red willow thickets and sandbar willow thickets (approximately 30 ac/12 ha surveyed per biologist per day).

Area 2 included the southwestern and northwestern portions of the survey area as well as the added 25-acre (10-ha) parcel northwest of the end of the survey area on the river and the 10-acre (4-ha) woodland adjacent to the southwestern portion of the survey area. Area 2 measured approximately 90 ac (36 ha) in size, but suitable habitat for southwestern willow flycatcher was limited to stands of red willow thickets and sandbar willow thickets on the northwestern and southeastern ends of Area 2 and small, isolated stands of stands of sandbar willow thickets in the middle. Total potentially suitable habitat for the southwestern willow flycatcher was approximately 25 ac (10 ha) in size (approximately 25 ac/10 ha surveyed per biologist per day).

3.3 Least Bell's Vireo

USFWS protocol for least Bell's vireo surveys specifies eight surveys spaced at least ten days apart (USFWS 2001). Surveys for least Bell's vireo were conducted concurrently with southwestern willow flycatcher surveys. All areas of suitable least Bell's vireo habitat within the survey area were traversed on foot with frequent stops to look and listen for least Bell's vireos. A slight modification to the survey method for least Bell's vireo was approved by the USFWS for the 25-acre (10-ha) parcel and 10-acre (4-ha) woodland that were added after the second survey was completed (Appendix A). The modification consisted of these two areas receiving seven rather than eight visits and the second survey for these two areas being spaced seven rather than ten days from the first. However, it should be noted that habitat in these areas was limited to two small stands of sandbar willows 0.2 acre (0.08-ha) and 0.3 acre (0.12 ha), respectively, in size within the 25-acre (10-ha) parcel and was marginal at best within the 10-acre (4-ha) woodland. The locations of least Bell's vireo observations were either recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy or were plotted onto an aerial photograph.

4.0 RESULTS

4.1 Southwestern Willow Flycatcher

Six willow flycatcher detections were made during survey periods 1 and 2 (Table 2, Figures 3 and 4). Willow flycatchers were not detected within the site during survey period 3 despite a concerted effort to relocate the breeding pair observed during 2012.

Two individual adults were incidentally observed during the second least Bell's vireo survey on May 27. One of the adults was observed adjacent to but just outside the southeastern edge of the survey area in sandbar willow thickets adjacent to mature Fremont cottonwood forest. The other was observed in the southern portion of the southeastern end of the survey area foraging within the California bulrush-American bulrush association along the flowing river (cover photo).

Three, possibly four, willow flycatchers were incidentally detected during the second day of the second least Bell's vireo survey of the site on May 28. One, possibly two, adult willow flycatchers were detected singing and foraging from within sandbar willow thickets and Fremont cottonwood forest at the western end of Area 1 near the middle of the survey area. Two adult willow flycatchers were observed singing and chasing each other with interaction calls in sandbar willow thickets, red willow thickets, and Fremont cottonwood forest on the southwestern side of the river in the southeastern third of the survey area.

One adult willow flycatcher was detected during the second willow flycatcher survey on June 7. The willow flycatcher responded to audio playback of willow flycatcher vocalizations by singing the characteristic "fitz-bew" song from within a sandbar willow thicket on the southwestern side of the river in the southeastern third of the survey area.

One adult willow flycatcher was observed during the third willow flycatcher survey of the site on June 19 in mixed sandbar willow and red willow thickets at the southeastern end of the survey area. The willow flycatcher responded to audio playback of willow flycatcher vocalizations by giving an excited "whitt" as it flew in to the surveyors' location. It landed in a nearby sandbar willow tree, briefly examined the surveyors, and then flew off to the northwest.

Table 2. Willow Flycatcher Survey Results

Survey Period	Date	11N UTM	Detection/Habitat Notes
Period 1	5/27/13	472283mE 3824684mN	Incidental observation during least Bell's vireo survey. One adult observed in dense *Salix exigua* next to mature *Populus fremontii*.
		472008mE 3824734mN	Incidental observation during least Bell's vireo survey. One adult observed foraging from *Schoenoplectus* and *Typha* with adjacent *Salix exigua*, *Salix lasiolepis*, and *Salix laevigata*.
	5/28/13	471486mE 3825151mN	Incidental observation during least Bell's vireo survey. One, possibly two, adults singing in stand of *Salix exigua* and *Populus fremontii.*

Survey Period	Date	11N UTM	Detection/Habitat Notes
		471776mE 3824918mN	Incidental observation during least Bell's vireo survey. Two adults chasing each other with interaction calls and singing in *Salix exigua, Salix laevigata,* and *Populus fremontii*.
Period 2	6/7/13	471730mE 3824978mN	Vocal "fitz-bew" response from within a dense stand of Salix exigua next to flowing river with adjacent *Typha* and *Schoenoplectus*.
	6/19/13	472281mE 3824753mN	One adult gave an excited "whitt" as it flew in responding to recording in dense *Salix exigual Salix laevigata*. Landed in *Salix exigua*, briefly examined the surveyors, then flew off.

4.2 Least Bell's Vireo

Five least Bell's vireo detections were made within the survey area (Table 3, Figures 3 and 4). However, evidence of least Bell's vireos nesting within the survey area was not observed. Surveys of the site during 2012 indicated the presence of at least two least Bell's vireo breeding territories within the portion of the 2012 survey area that was eliminated from the 2013 survey area (ECORP 2012). Consistent observation of singing males in this area, which is southeast of the southeastern end of the 2013 survey area, indicated the continued presence of breeding least Bell's vireos within this area.

Three least Bell's vireo detections were made during the seventh least Bell's vireo survey of the site on July 19. One fledgling was heard calling from within a sandbar willow thicket on the north side of the river in the southeastern portion of the survey area. One adult least Bell's vireo was observed feeding a dependent fledgling on the south side of the river in sandbar willow thickets and Fremont cottonwood forest near the western end of Area 1 in the southeastern third of the site. One fledgling least Bell's vireo was observed calling and flying from a sandbar willow thicket to mixed sand willow, red willow, and black willow thickets in the southeastern end of the survey area.

Two least Bell's vireo detections were made during the eighth and final least Bell's vireo survey of the site. One fledgling was observed calling and foraging independently in mixed sandbar willow, red willow, and black willow thickets at the southeastern end of the survey area while an adult male was heard singing to the southeast outside the survey area. One fledgling was also heard calling from within a dense sandbar willow thicket approximately 350 ft (100 m) northwest of the first, although it was not confirmed that it was a different individual.

Table 3. Least Bell's Vireo Survey Results

Date	11N UTM	Observation Notes
7/19/13	471847mE 3824975mN	One fledgling least Bell's vireo was heard calling from within a stand of *Salix exigua*.
	471560mE 3825053mN	One adult least Bell's vireo was observed feeding a fledgling in a stand of *Populus fremontii*. Both individuals flew southeast to a stand of *Salix exigua*.

Date	11N UTM	Observation Notes
	472054mE 3824638mN	One fledgling least Bell's vireo was heard in a dense stand of *Salix exigua*, then observed flying to a stand of *Salix exigua*, *Salix laevigata*, and *Salix gooddingii*.
7/30/13	472073mE 3824587mN	One fledgling least Bell's vireo was observed calling and foraging independently in *Salix exigua*, *Salix laevigata*, and *Salix gooddingii.* An adult male was heard singing outside the survey area to the southeast.
	472004mE 3824686mN	One fledgling least Bell's vireo was heard calling from within a dense stand of *Salix exigua*.

4.3 Incidental Special Status Species

Wildlife species included on the CDFW special animals list (CDFG 2011) in addition to least Bell's vireo were observed within the survey area. Adult and juvenile yellow warblers (*Setophaga petechia)*, a CDFW Species of Special Concern (SSC), were found throughout the survey area, but were most abundant in the southeastern third of the survey area where the highest density breeding habitat for the species is located (Appendix D, Photograph 17). Summer tanagers (*Piranga rubra*), also an SSC, were observed in the southeastern third of the survey area and are known to breed in the area. White-faced ibises (*Plegadis chihi*), SSC, were observed flying over the site, but were not observed breeding or occupying habitat within the site. An olive-sided flycatcher (*Contopus cooperi*) was observed on May 27 in the southeastern portion of the survey area (Appendix D, Photograph 18); however, the site does not support typical breeding habitat for the species and the bird was assumed to be passing through on migration. The locations of incidentally observed special status species are listed below in Table 4. A list of wildlife species observed during the surveys is included as Appendix C.

Table 4. Incidental Special Status Species Locations

Species	Date	11N UTM	Observation Notes
Yellow warbler (*Setophaga petechia*)	5/15/13-7/30/13	Throughout survey area	Breeding within the site. Adults and fledglings were abundant throughout the survey area with the highest concentration in the southeastern portion.
Summer tanager (*Piranga rubra*)	5/27/13	471623mE 3825028mN	Adult female observed in mature *Populus fremontii*
	7/29/13	471582mE 3825086mN	Adult female observed in a snag near mature *Populus fremontii*
Olive-sided flycatcher (*Contopus cooperi*)	5/27/13	471773mE 3824949mN	One adult was observed perched on a dead limb in an open *Populus fremontii* forest
White-faced ibis (*Plegadis chihi*)	6/7/13	471624mE 3825026mN	Flyover of the survey area
	6/8/13	471624mE 3825026mN	Flyover of the survey area
	7/29/13	471624mE 3825026mN	Flyover of the survey area

5.0 CONCLUSIONS

Breeding status of the southwestern willow flycatcher was not confirmed within the survey area during 2013. Breeding status of the least Bell's vireo was not confirmed within the survey area during 2013, although the southeastern portion of the survey area was observed being used for dispersal by fledgling and adult least Bell's vireos from breeding territories near this end.

5.1 Southwestern Willow Flycatcher

Presence of the southwestern willow flycatcher, according to survey protocol, is determined by the observation of breeding willow flycatchers or by willow flycatcher detection during the third survey period (June 25 – July 17), at which point migrant willow flycatchers should no longer be present in the Southwest (Sogge et al. 2010). Evidence of breeding willow flycatchers, including nest building, recent nests, or fledglings, was not observed during surveys of the site, nor were willow flycatchers detected within the survey area during survey period 3. Therefore, it is assumed that the southwestern willow flycatcher was not present as a breeding species within the survey area during 2013.

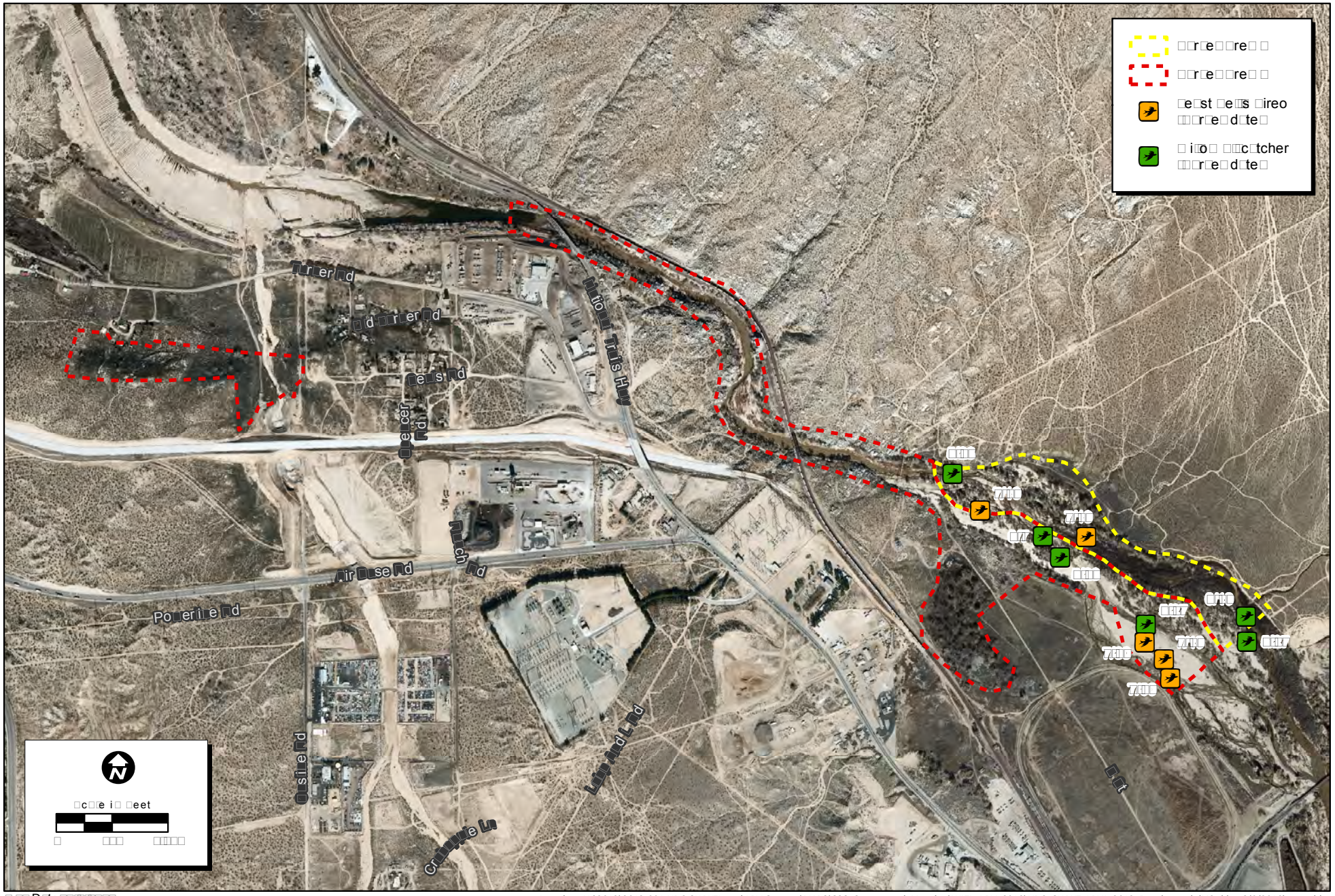
Although southwestern willow flycatchers show high site fidelity and often return to breed at the same site year after year, pairs may change locations within a site from year to year or may even move to a new site altogether (Sogge et al. 2010). Mortality, occupation of suitable habitat in the vicinity but outside the survey area, or a move to a different breeding site all serve as possible explanations for the 2013 absence of the breeding pair observed in 2012.

5.2 Least Bell's Vireo

Breeding status of the least Bell's vireo was not confirmed within the survey area during 2013 based on the absence of territorial pairs or nests within the survey area. However, the southeastern portion of the survey area appears to be important for fledglings and adults dispersing from nests southeast of the survey area, as indicated by the observation of dependent and independent fledglings within this area during the final two surveys of the site late in the season.

5.3 Recommendations

Breeding southwestern willow flycatchers and least Bell's vireos were not found within the survey area. However, the southeastern third of the survey area contains high-quality habitat for both species. A breeding pair of southwestern willow flycatchers was detected in this area during 2012 surveys (ECORP 2012) and the area may possibly be reoccupied in subsequent years. Also, the area appears to be important for postnatal/post breeding dispersal from nearby least Bell's vireo territories. Avoidance of the southeastern third of the site where willow flycatcher and least Bell's vireo detections were made (Figures 3 and 4) is recommended to minimize project impacts to either species.



Location: N:\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\SSS_Survey_and_Mapping\WIFL_LBV_2013\HDC_SWWF_LBVI_2013_Results.mxd (MGuidry, 8/9/2013) - mguidry

Photo Source: [illegible]

Figure 3: Results Map

2012-061 HDC SWWF and LBVI Surveys

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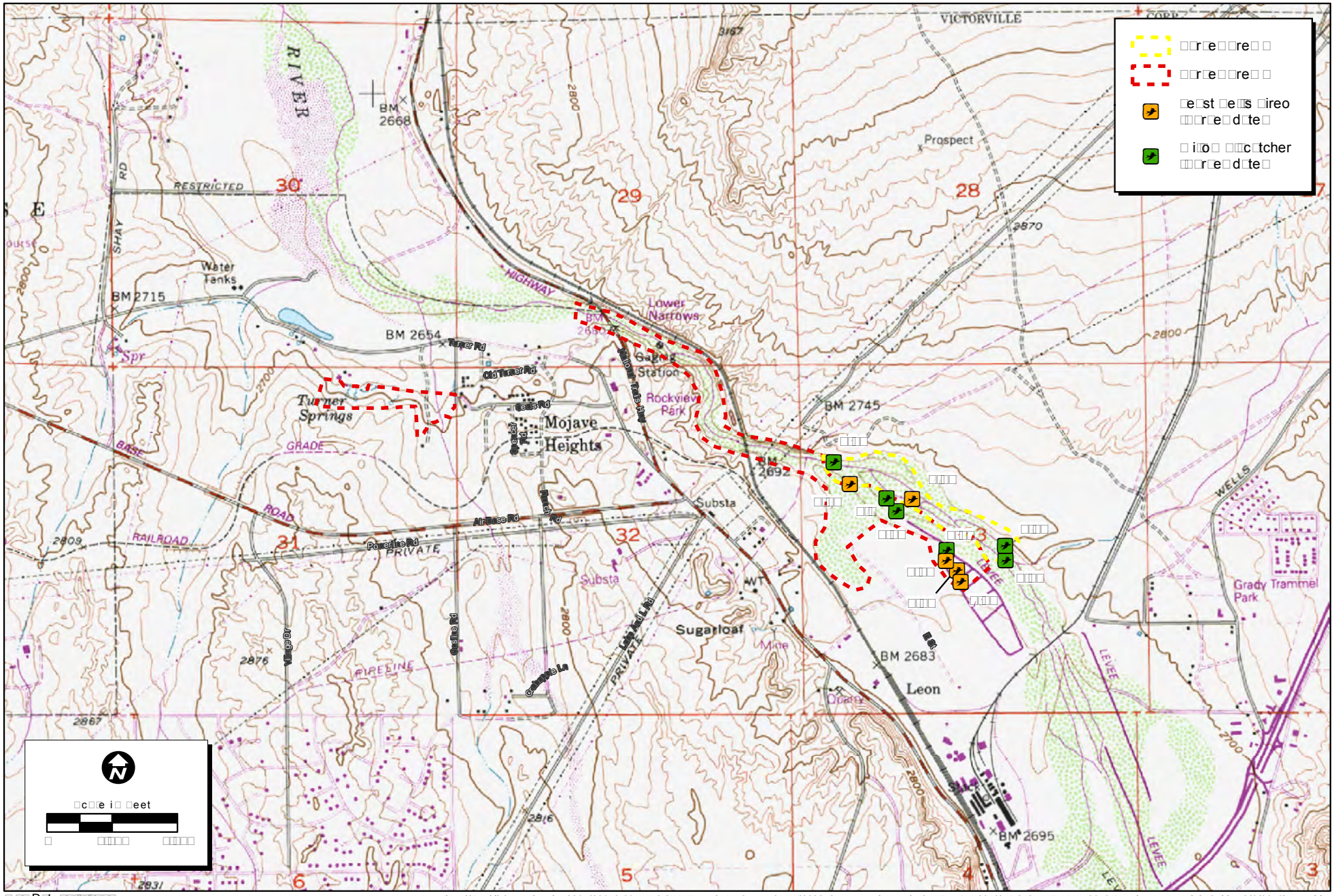
ENVIRONMENTAL CONSULTANTS


VICTORVILLE
RIVER
Prospect
Water Tanks
BM 2715
BM 2668
BM 2654
BM 2745
BM 2692
BM 2683
BM 2695
Lower Narrows
Gaging Station
Rockview Park
Turner Springs
Mojave Heights
Substa
Sugarloaf Mine
Leon
Grady Trammel Park
Air Base Rd
Old Toll Rd
Old Woman Springs Rd
Pipeline
PRIVATE
RESTRICTED
HIGHWAY
BASE
ROAD
GRADE
RAILROAD
PIPELINE
LEVEE
WELLS
SHAY RD
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32
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3
6
5
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2831
2816
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6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

DATE: 8/10/2013 SIGNED:

Benjamin Smith

7.0 LITERATURE CITED

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Appendix A

U.S. Fish and Wildlife Service LBVI Survey Modification Approval

Approval for SWWF survey modification, Caltrans High Desert Corridor nr Victorville: TE-67390A Benjamin Smith

Carl Benz <carl_benz@fws.gov>

Thu 6/6/2013 12:10 PM

To:Benjamin Smith <bsmith@ecorpconsulting.com>;

Cc:Chris Kofron <chris_kofron@fws.gov>; Aoese Oto <aoese_oto@fws.gov>;

1 attachment

RevisedHDCsurveyArea_2013.pdf;

2012-B-0124

Hi Benjamin,

Please consider this email correspondence our approval for you to commence surveys at the subject site according to the protocol (Sogge 2010) for the southwestern willow flycatcher and according to the conditions of your recovery permit. Furthermore, we find your proposed modification (as described below) to the survey protocol for the least Bell's vireo acceptable and will therefore accept your survey results. We are looking forward to your survey reports.

Sincerely,

Carl T. Benz
Assistant Field Supervisor

From: Benjamin Smith [mailto:bsmith@ecorpconsulting.com]
Sent: Tuesday, June 04, 2013 3:33 PM
To: Chris_Kofron@fws.gov
Subject: High Desert Corridor Southwestern Willow Flycatcher survey area modification

Dear Mr. Kofron,

A Map and photographs have been attached as a PDF document

The purpose of this e-mail is to inform you that the Caltrans High Desert Corridor alignment alternatives have been revised, resulting in a modification of the southwestern willow flycatcher/least Bell's survey area, and to request a minor change to the least Bell's vireo survey protocol for two added areas.

The southeastern approximately one-third of the survey area has been removed from the survey effort. The area that has been eliminated contains the previously documented occupied least Bell's vireo habitat and is the portion that had a slight overlap with surveys being conducted by San Bernardino Flood Control.

Additionally, a 25-acre parcel west of the previously identified survey area and southwest of the intersection of Turner Road and Gas Line Road has been added due to its inclusion in the recently revised critical habitat for the southwestern willow flycatcher. Habitat within the 25-acre parcel consists of desert saltbush scrub with scattered mature Fremont's cottonwoods (*Populus fremontii*) and black willows (*Salix gooddingii*) as well as two small, isolated stands of sandbar willow (*Salix exigua*), one approximately 0.3 acre in size and the other approximately 0.2 acre in size.

An approximately 10-acre open woodland consisting of mature Fremont's cottonwoods and black willows south of the previously identified survey area and northeast of National Trails Highway was also added due to its inclusion in the recently revised critical habitat for the southwestern willow flycatcher. The woodland is unlikely to support least Bell's vireo due to the absence of a dense understory that provides suitable nesting sites.

Current protocol for least Bell's vireo surveys requires a minimum of eight visits to a site spaced at least ten days apart between April 10 and July 31. However, the protocol instructions state that "...intensive surveys of small, marginal or extralimital habitats by experienced personnel may well result in defensible conclusions that eight (or more) individual surveys are unnecessary."

The 25-acre parcel containing 0.3-acre and 0.2-acre stands of sandbar willow and the 10-acre woodland were surveyed for least Bell's vireo on May 31. I am proposing that these areas be intensively surveyed for least Bell's vireo on the additional dates of 6/8, 6/20, 6/30, 7/10, 7/20, and 7/30, for a total of seven visits. The modification is requested only for the two added areas descibed above. Eight visits spaced a minimum of 10 days apart will be completed for the majority of the revised survey area and the protocol for southwestern willow flycatcher will be met for the entire revised survey area. Please let me know if this is acceptable.

Benjamin Smith
Biologist

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

1801 Park Court Place, Building B, Santa Ana, CA 92701
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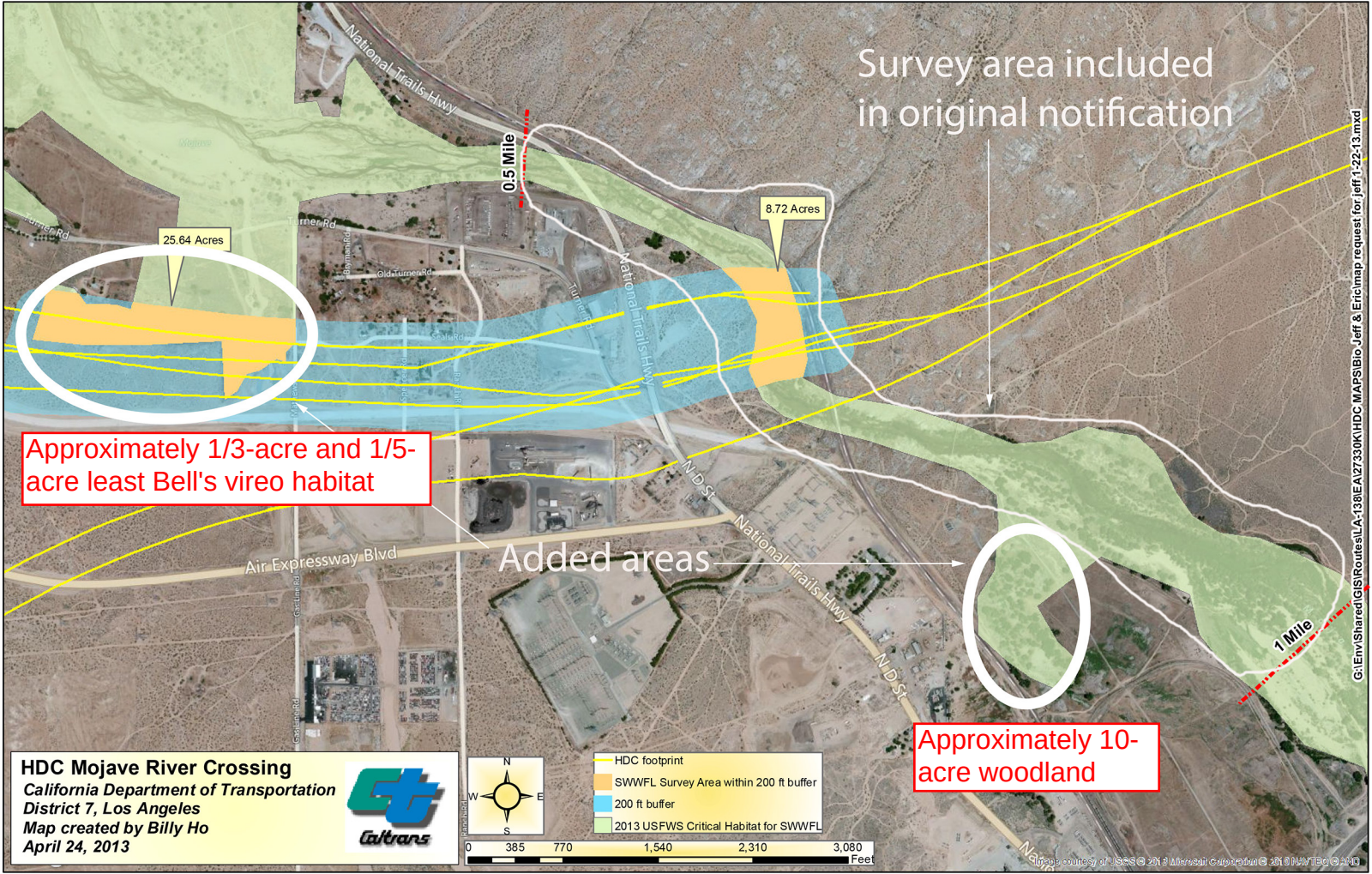
bsmith@ecorpconsulting.com♦ www.ecorpconsulting.com


Survey area included in original notification
National Trails Hwy
0.5 Mile
25.64 Acres
8.72 Acres
Turner Rd
Old Turner Rd
Seals Rd
Approximately 1/3-acre and 1/5-acre least Bell's vireo habitat
Added areas
Air Expressway Blvd
N D St
1 Mile
Approximately 10-acre woodland
G:\Env\Shared\GIS\Routes\LA-138\EA\27330K\HDC MAPS\Bio Jeff & Ericmap request for jeff 1-22-13.mxd
HDC Mojave River Crossing
California Department of Transportation
District 7, Los Angeles
Map created by Billy Ho
April 24, 2013
Caltrans
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W
E
S
HDC footprint
SWWFL Survey Area within 200 ft buffer
200 ft buffer
2013 USFWS Critical Habitat for SWWFL
0 385 770 1,540 2,310 3,080
Feet

Approximately 10-acre *Populus fremontii/*
Salix gooddingii woodland
© 2013 Google
Google earth

1/5 acre *Salix exigua, Populus fremontii*
1/3 acre *Salix exigua, Salix gooddingii, Populus fremontii*
Turner Rd
Mathews Ln
Gas Line Rd
Seals Rd
© 2013 Google
Google earth

View of the added approximately 1/3-acre least Bell's vireo habitat from the south.

View of the added approximately 1/3-acre least Bell's vireo habitat from the north.

View of the added approximately 1/5-acre least Bell's vireo habitat from the southeast

Appendix B

Completed Willow Flycatcher Survey and Detection Forms

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Mojave River High Desert Corridor - Area 1 State CA County San Bernardino
USGS Quad Name Victorville Elevation 820 (meters)
Creek, River, Wetland, or Lake Name Mojave River High Desert Corridor
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Coordinates: Start: E 472312 N 3824762 UTM Datum 83 (See instructions)
Stop: E 471485 N 3825114 UTM Zone 11N
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
*** Fill in additional site information on back of this page ****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Ben Smith/ Sonya Steckler	Date 5/15 Start 0540 Stop 1040 Total hrs 5	0	0	0	N					
Survey # 2 Observer(s) Ben Smith/ Sonya Steckler	Date 6/7 Start 0550 Stop 1050 Total hrs 5.0	1	0	0	N	1 vocal response from within dense SAEX stand near river	1		471730	3824978
Survey # 3 Observer(s) Ben Smith/ Brad Haley	Date 6/19 Start 0500 Stop 1035 Total hrs 5.5	1	0	0	N	1 excited "whitt" as bird flew in, looked at surveyor, then left	1		472281	3824753
Survey # 4 Observer(s) Ben Smith/ S. Steckler/ Chris Stephenson	Date 6/29 Start 0450 Stop 1030 Total hrs 5.75	0	0	0	N					
Survey # 5 Observer(s) Ben Smith/ Sonya Steckler	Date 7/9 Start 0500 Stop 1030 Total hrs 5.5	0	0	0	N					

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 29.25	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes ___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	0				

Reporting Individual Benjamin Smith Date Report Completed 8/9/13
US Fish and Wildlife Service Permit # TE-67390A-0 State Wildlife Agency Permit # 10933
***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Benjamin Smith Phone # 714-651-3021
Affiliation ECORP Consulting, Inc. E-mail bsmith@ecorpconsulting.com
Site Name Mojave River High Desert Corridor Area 1 Date Report Completed 8/8/12
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes X No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County ___ State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) ___

Length of area surveyed: 0.9 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Popululs fremontii, Salix laevigata, Salix exigua

Average height of canopy (Do not include a range): 10 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
See attached page for additional surveys

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher Survey and Detection Form – Additional Page

High Desert Corridor Area 1

Area 1 was initially surveyed over a period of two days from 5/15 to 5/16 and included an area to the southeast that was removed from the survey area for surveys two through five:

5/15: 472508mE 3824339mN to 472121mE 3824868

Start: 0540 End: 1040

total hours: 5

willow flycatchers observed: 0

5/16: 472436mE 3824294mN to 471915mE 3824860mN

Start: 0530 End: 1030

total hours: 5

willow flycatchers observed: 0

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Mojave River High Desert Corridor - Area 2 State CA County San Bernardino
USGS Quad Name Victorville Elevation 815 (meters)
Creek, River, Wetland, or Lake Name Mojave River High Desert Corridor
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* X *No* ___

Survey Coordinates: Start: E 472098 N 3824538 UTM Datum 83 (See instructions)
Stop: E 469467 N 3825555 UTM Zone 11 N
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Ben Smith/ Sonya Steckler	Date 5/17 Start 0530 Stop 1030 Total hrs 5	0	0	0	N					
Survey # 2 Observer(s) Ben Smith/ Sonya Steckler	Date 6/8 Start 0500 Stop 1030 Total hrs 5.5	0	0	0	N					
Survey # 3 Observer(s) Ben Smith/ Brad Haley	Date 6/20 Start 0435 Stop 1035 Total hrs 6	0	0	0	N					
Survey # 4 Observer(s) Ben Smith/ S. Steckler/ Chris Stephenson	Date 6/30 Start 0450 Stop 0950 Total hrs 5	0	0	0	N					
Survey # 5 Observer(s) Ben Smith/ Sonya Steckler	Date 7/10 Start 0445 Stop 1030 Total hrs 5.75	0	0	0	N					

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 32	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	0				

Reporting Individual Benjamin Smith Date Report Completed 8/9/13
US Fish and Wildlife Service Permit # TE-67390A-0 State Wildlife Agency Permit # 10933
***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Benjamin Smith Phone # 714-651-3021
Affiliation ECORP Consulting, Inc. E-mail bsmith@ecorpconsulting.com
Site Name Mojave River High Desert Corridor Area 1 Date Report Completed 8/8/12
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes X No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County ___ State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) ___

Length of area surveyed: 2.8 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Popululs fremontii, Salix laevigata, Salix exigua

Average height of canopy (Do not include a range): 8 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
See attached page for additional surveys

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher Survey and Detection Form – Additional Page

High Desert Corridor Area 2

Area 2 was initially surveyed over a period of three days: 5/16 to 5/17 for the main portion along the Mojave River and on 5/31 for two additional areas that were included in Area 2 for surveys two through five:

5/31: 469758mE 3825520mN to 469457mE 3825557mN and 471652mE to 471443mE to 3824876mN

Start: 0450 End: 0705

total hours: 2.25

willow flycatchers observed: 0

Appendix C

Wildlife Compendium

SCIENTIFIC NAME	COMMON NAME
Amphibians	
Ranidae	**True Frogs**
*Lithobates catesbeianus**	American bullfrog*
Hylidae	**New World Treefrogs**
Pseudacris hypochondriaca	Baja California chorus frog
Bufonidae	**Toads**
Anaxyrus boreas	western toad
Reptiles	
Teiidae	**Whiptails**
Aspidoscelis tigris	western whiptail
Phrynosomatidae	**Spiny Lizards**
Sceloporus occidentalis	western fence lizard
Uta stansburiana	common side-blotched lizard
Birds	
Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	Mallard
Odontophoridae	**New World Quail**
Callipepla californica	California quail
Ardeidae	**Herons, Bitterns, Allies**
Nycticorax nycticorax	black-crowned night heron
Ardea herodias	great blue heron
Butorides virescens	green heron
Ardea alba	great egret
Threskiornithidae	**Ibises and Spoonbills**
*Plegadis chihi***	white-faced ibis**
Cathartidae	**Vultures**
Cathartes aura	turkey vulture
Accipitridae	**Hawks, Kites, Eagles, Allies**
Buteo lineatus	red-shouldered hawk
Buteo jamaicensis	red-tailed hawk
Accipiter cooperii	Cooper's hawk
Rallidae	**Rails and Moorhens**
Rallus limicola	Virginia rail
Charadriidae	**Lapwings, Plovers**
Charadrius vociferus	Killdeer
Columbidae	**Pigeons, Doves**
Zenaida macroura	mourning dove
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	greater roadrunner
Strigidae	**True Owls**
Bubo virginianus	great horned owl
Tytonidae	**Barn Owls**
Tyto alba	barn owl
Caprimulgidae	**Nighthawks and Nightjars**
Chordeiles acutipennis	lesser nighthawk

SCIENTIFIC NAME	COMMON NAME
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
Trochilidae	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Alcedinidae	**Kingfishers**
Megaceryle alcyon	belted kingfisher
Picidae	**Woodpeckers**
Colaptes auratus	northwestern flicker
Picoides pubescens	downy woodpecker
Picoides nuttallii	Nuttall's woodpecker
Falconidae	**Falcons**
Falco sparverius	American kestrel
Tyrannidae	**Tyrant Flycatchers**
Myiarchus cinerascens	ash-throated flycatcher
Sayornis phoebe	black phoebe
Sayornis saya	Say's phoebe
Empidonax difficilis	Pacific-slope flycatcher
Empidonax traillii	willow flycatcher
*Contopus cooperi***	olive-sided flycatcher**
Contopus sordidulus	western wood-pewee
Tyrannus verticalis	western kingbird
Vireonidae	**Vireos**
Vireo huttoni	Hutton's vireo
*Vireo bellii pusillus***	least Bell's vireo**
Vireo gilvus	warbling vireo
Corvidae	**Crows, Jays**
Corvus corax	common raven
Quiscalus mexicanus	great-tailed grackle
Hirundinidae	**Swallows**
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northwestern rough-winged swallow
Remizidae	**Verdins**
Auriparus flaviceps	verdin
Aegithalidae	**Long-tailed tits, Bushtits**
Psaltriparus minimus	Bushtit
Sittidae	**Nuthatches**
Sitta carolinensis	white-breasted nuthatch
Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's wren
Cistothorus palustris	marsh wren
Salpinctes obsoletus	rock wren
Troglodytes aedon	house wren
Polioptilidae	**Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Turdidae	**Thrushes**
Sialia mexicana	western bluebird
Catharus ustulatus	Swainson's thrush

SCIENTIFIC NAME	COMMON NAME
Mimidae	**Mockingbirds, Thrashers**
Mimus polyglottos	northwestern mockingbird
Toxostoma redivivum	California thrasher
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling*
Ptilogonatidae	**Silky Flycatchers**
Phainopepla nitens	phainopepla
Parulidae	**Wood Warblers**
Geothlypis trichas	common yellowthroat
*Setophaga petechia***	yellow warbler**
Wilsonia pusilla	Wilson's warbler
Thraupidae	**Tanagers**
*Piranga rubra***	summer tanager**
Piranga ludoviciana	western tanager
Emberizidae	**Emberizids**
Amphispiza bilineata	black-throated sparrow
Melozone crissalis	California towhee
Pipilo maculatus	spotted towhee
Melospiza melodia	song sparrow
Cardinalidae	**Cardinals, Saltators, Allies**
Pheucticus melanocephalus	black-headed grosbeak
Passerina caerulea	blue grosbeak
Icteridae	**Blackbirds**
Agelaius phoeniceus	red-winged blackbird
Molothrus ater	brown-headed cowbird
Icterus bullockii	Bullock's oriole
Fringillidae	**Fringilline and Cardueline Finches, Allies**
Haemorhous mexicanus	house finch
Spinus psaltria	lesser goldfinch
Passeridae	**Old World Sparrows**
Passer domesticus	house sparrow
Mammals	
Felidae	**Cats**
Felis rufus	bobcat
Mustelidae	**Weasels, Martins, Skunks, Allies**
Mephitis mephitis	striped skunk
Leporidae	**Pika, Rabbits, and Hares**
Sylvilagus audubonii	desert cottontail
Sciuridea	**Squirrels**
Spermophilus beecheyi	California ground squirrel
Castoridae	**Beaver**
Castor canadensis	American beaver
Heteromyidae	**Kangaroo Rats and Pocket Mice**
Dipodomys sp.	kangaroo rat
Muridae	**Rats, Mice, Voles, Allies**
Neotoma sp.	Woodrat

* nonnative species
** special status species

Appendix D

Survey Photographs

Photograph 1. View facing southwest of habitat within the southeastern end of the survey area.

Photograph 2. View facing northwest of habitat within the southeastern end of the survey area.

Photograph 3. Representative view of Fremont cottonwood forest, sandbar willow thickets, and California bulrush-American bulrush marsh habitats within the northwestern two-thirds of the survey area.

Photograph 4. Representative view of Fremont cottonwood forest and southern cattail marsh habitats within the northwestern two-thirds of the survey area.

Photograph 5. Representative view of Fremont cottonwood forest in the added area on the west side of the southeastern portion of the survey area.

Photograph 6. Representative view of Fremont cottonwood forest in the added area on the west side of the southeastern portion of the survey area.

Photograph 7. Representative interior view of red willow thicket habitat.

Photograph 8. Exterior view of sandbar willow thicket habitat in the 25-ac (10-ha) parcel west of the northwestern end of the survey area on the river.

Photograph 9. Exterior view of sandbar willow thicket habitat in the 25-ac (10-ha) parcel west of the northwestern end of the survey area on the river.

Photograph 10. Exterior view of sandbar willow thicket habitat in the southeastern end of the survey area.

Photograph 11. Exterior view of sandbar willow thicket habitat in the southeastern end of the survey area.

Photograph 12. Representative interior view of sandbar willow thicket habitat.

Photograph 13. Representative view of California bulrush-American bulrush marsh surrounded by red willow thickets in the southeastern third of the survey area.

Photograph 14. Representative view of desert saltbush scrub habitat in the 25-ac (10-ha) parcel west of the northwestern end of the survey area on the river.

Photograph 15. Evidence of off-road vehicle use within the survey area.

Photograph 16. Evidence of off-road vehicle use within the survey area.

Photograph 17. Fledgling yellow warbler within the survey area.

Photograph 18. Olive-sided flycatcher within the survey area.

2014 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys for the High Desert Corridor Project Los Angeles and San Bernardino Counties, California

(Agreement No. 07A3145, Task Order No. 8, EA 07-116720)

Submitted to:

California Department of Transportation, Environmental Planning

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August 2014

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2014 Southwestern Willow Flycatcher and Least Bell's Vireo Surveys

High Desert Corridor Project

Los Angeles and San Bernardino Counties, California

Agreement No.: 07A3145, Task Order: 008

EA: 07-116720

August 2014

STATE OF CALIFORNIA
Department of Transportation

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This report and associated maps are not to be distributed publicly. They are intended solely for the use of the California Department of Transportation.

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1.0 INTRODUCTION

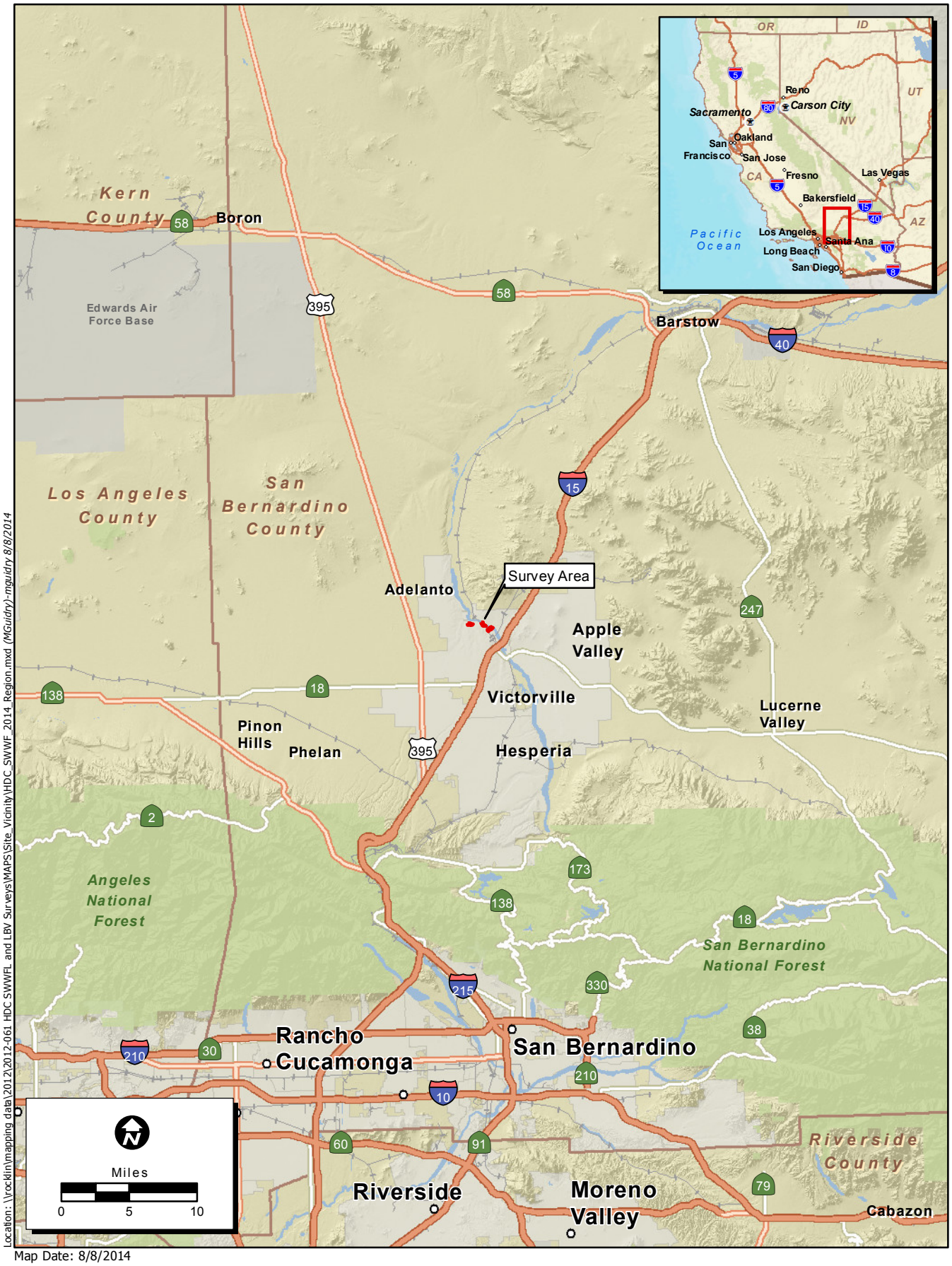
1.1 Survey Purpose

The California Department of Transportation (Caltrans) and Los Angeles County Metropolitan Transportation Authority (Metro) are proposing to construct a new freeway/expressway and possible toll way in the High Desert area of Los Angeles and San Bernardino Counties that will extend for approximately 63 miles between State Route (SR)-14 in Palmdale and SR-18 in Apple Valley. The project consists of an eight-lane freeway from SR-14 to 50th Street East along an alignment paralleling Avenue P-8 in Palmdale. From 50th Street East to 240th Street East and continuing to I-15, the project consists of a six-lane facility. East of I-15, the facility curves south until it ends at SR-18 in the town of Apple Valley at Bear Valley Road. In addition, SR-14 and Interstate (I)-15 will be improved for approximately 3 miles north and south of the intersection with the proposed east-west facility. The exact type of transportation facility will be determined by traffic analysis. The project proposes to cross the Mojave River north of the City of Victorville within habitat that is potentially suitable for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*), both of which are federally- and state-listed as endangered. Surveys were conducted within the portion of the proposed project containing potentially suitable habitat for both species to determine their presence or absence and to assist project planners in avoiding or minimizing impacts to either species.

1.2 Survey Area Location

The survey area is located in Sections 29, 31, 32, and 33 of Township 6 North, Range 4 West, San Bernardino Base and Meridian, as depicted on the United States Geological Survey (USGS) 7.5-minute Victorville quadrangle. The survey area is north of the City of Victorville, San Bernardino County, approximately 1.3 miles (mi) northwest of the SR-15 and D Street junction, (Figures 1 and 2). The survey area is approximately 60 acres (ac) (24.3 hectares [ha]) and consists of four polygons associated with two proposed crossing locations of the Mojave River (Appendix C, Photographs 1 and 2). The Mojave River flows year round and the width of the flood plain within the survey area ranges from a minimum of approximately 150 feet (ft) (45 meters [m]) at the northwestern end to a maximum of approximately 790 ft (240 m) at the southeastern end. Two areas away from the river, an area containing two small riparian vegetation patches approximately 0.5 mile (0.8 kilometer [km]) southwest of the National Trails Highway Bridge over the Mojave River (Appendix C, Photograph 3), and a low-lying area situated between the river and National Trails Highway and north of a railroad yard and cement plant (Appendix C, Photograph 4) are also included in the survey area. Elevations within the survey area range from approximately 2,660 ft (810 m) above mean sea level (msl) at the northwestern end to 2,700 ft (820 m) above msl at the southeastern end.

The survey area was divided into Area 1 and Area 2 (Figures 3 and 4) to allow thorough coverage of all potentially suitable habitat areas during the appropriate timeframe. Area 1 was approximately 46.6 ac (18.9 ha) and consisted of the two areas away from the river and the northern of two proposed river crossings. Area 2 was approximately 13.4 ac (5.4 ha) and consisted of the southern of two proposed river crossings.



Location: \\rocklin\mapping data\2012\2012-061 HDC SWWFL and LBV Surveys\MAPS\Site_Vicinity\HDC_SWWF_2014_Region.mxd *(MGuidry)-mguidry 8/8/2014*

Map Date: 8/8/2014

Service Layer Credits: Sources: USGS, ESRI, TANA, AND

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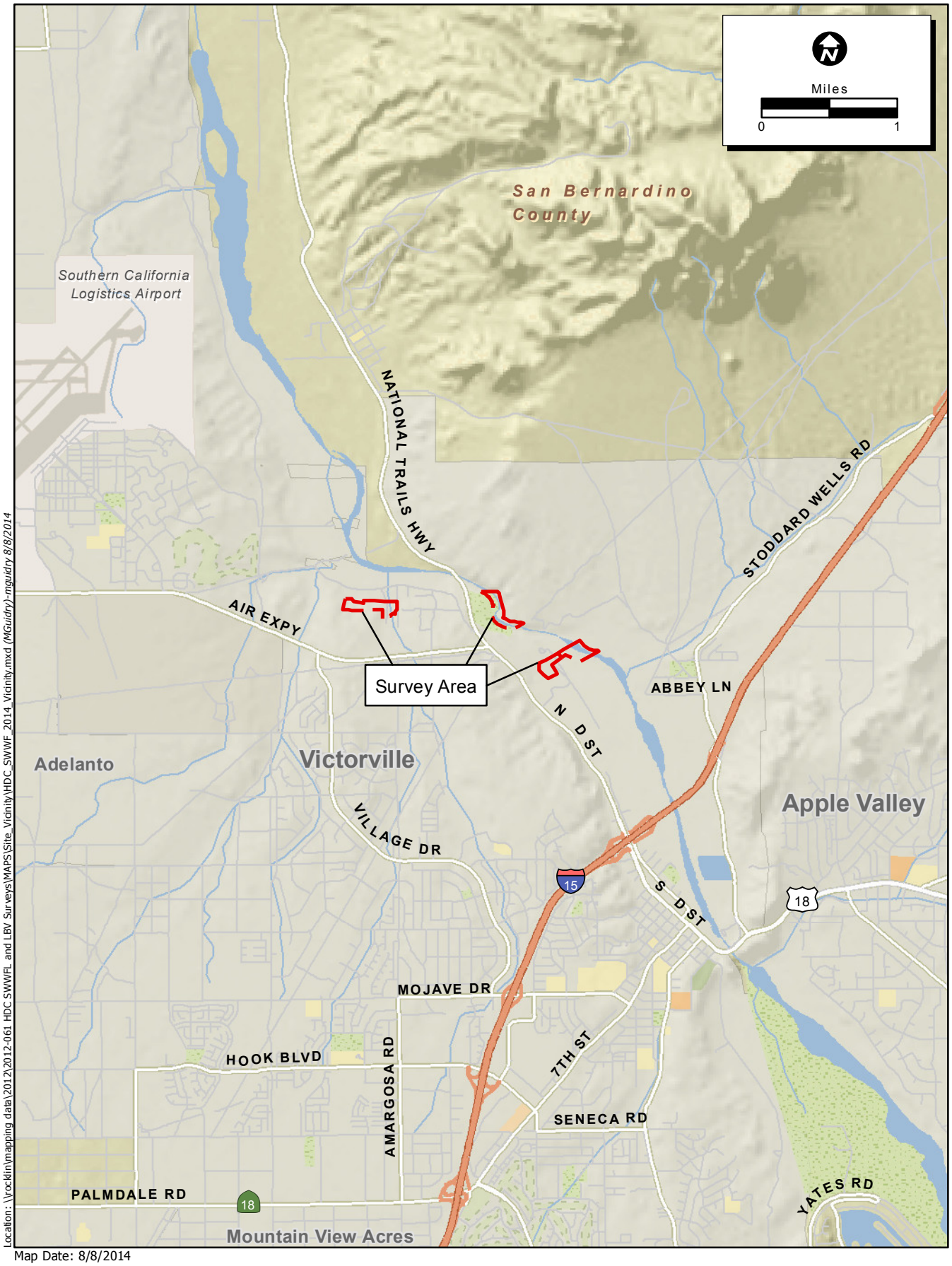
ENVIRONMENTAL CONSULTANTS

Figure 1. Regional Map

2012-061 HDC SWWF and LBVI Surveys



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Map Date: 8/8/2014
Source: ESRI

Figure 2. Vicinity Map

2012-061 HDC SWWF and LBVI Surveys

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2.0 VEGETATION AND HABITAT

Vegetation communities within the survey area were classified according to *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, and Evens 2009). Dominant vegetation communities within the survey area consisted of riparian forest and riparian thicket communities including Fremont cottonwood forest (*Populus fremontii* Alliance), red willow thickets (*Salix laevigata* Alliance), sandbar willow thickets (*Salix exigua* Alliance), and freshwater marsh communities including California bulrush-American bulrush marsh (*Schoenoplectus californicus-Schoenoplectus americanus* Association) and southern cattail marsh (*Typha domingensis* Alliance). Creosote bush scrub (*Larrea tridentata* Alliance) and desert saltbush scrub (*Atriplex polycarpa* Alliance) were found in the upland habitat adjacent to the survey area. Habitat photographs are included in Appendix C.

2.1 Fremont Cottonwood Forest (*Populus fremontii* Alliance)

Fremont cottonwood forest within the survey area consisted of stands of mature Fremont cottonwoods along the banks of the river and upper-river terraces (Appendix C, Photographs 1, 2, and 5). Understory was sparse in upper elevations and was dominated by red willow, sandbar willow, and sweet clover (*Melilotus albus*) as the Fremont cottonwood forest community transitioned into willow thickets and disturbed areas lower in the river channel. Fremont cottonwood forest formed a more or less linear row along each river bank of the Mojave River and formed a semi-open woodland association with black willows (*Salix gooddingii*) in a low area south of the river in the southeastern polygon of the Survey Area 1.

2.2 Red Willow Thickets (*Salix laevigata* Alliance)

Red willow thickets within the survey area consisted of mixed stands of willows dominated by red willows that include sandbar willows, occasional black willows and arroyo willows (*Salix lasiolepis*), as well as young Fremont cottonwoods (Appendix C, Photographs 2, 6, and 7). Dominant species in the understory included sandbar willow, cocklebur (*Xanthium strumarium*), hoary nettle (*Urtica dioica*), and sweet clover. Red willow thickets were found mostly within Area 2.

2.3 Sandbar Willow Thickets (*Salix exigua* Alliance)

Sandbar willow thickets within the survey area consisted of dense, nearly monotypic stands of sandbar willow ranging in height from approximately 6.5 ft (2 m) for younger stands to approximately 25 ft (8 m) for mature stands (Appendix C, Photographs 2, 3, 8 and 9). Sandbar willow thickets were found throughout Areas 1 and 2.

2.4 California Bulrush-American Bulrush Marsh (*Schoenoplectus californicus-Schoenoplectus americanus* Association)

California bulrush-American bulrush association within the survey area consisted of stands of freshwater marsh vegetation where California bulrush and American bulrush were co-dominant

(Appendix C, Photograph 10). This vegetation community was found on the margins of the flowing river throughout Areas 1 and 2.

2.5 Southern Cattail Marsh (*Typha domingensis* Alliance)

Southern cattail marsh within the survey area consisted of stands of freshwater marsh vegetation dominated by southern cattail (Appendix C, Photograph 10). Southern cattail marsh was distributed along the margins of the flowing river throughout Areas 1 and 2.

2.6 Creosote Bush Scrub (*Larrea tridentata* Alliance)

Creosote bush scrub consisted of upland desert vegetation dominated by creosote bush. Creosote bush scrub was found in the upland areas adjacent to the survey area and outside the riparian zone.

2.7 Desert Saltbush Scrub (*Atriplex polycarpa* Alliance)

Desert saltbush scrub consisted of nearly monotypic cover by allscale (*Atriplex polycarpa*). Desert saltbush scrub surrounded the two small stands of sandbar willow thickets found in the northwestern polygon of Area 1 (Appendix C, Photograph 3).

2.8 Southwestern Willow Flycatcher Breeding Habitat

The southwestern willow flycatcher typically breeds within dense tree or shrubby riparian vegetation that is equal to or greater than 10 ft (3 m) tall (Allison *et al.* 2003). Suitable southwestern willow flycatcher breeding habitat was located throughout Area 2, consisting of a mosaic of Fremont cottonwood forest, red willow thickets, sandbar willow thickets, and freshwater marsh communities. Several beaver (*Castor canadensis*) dams were found in this area, which can influence an increase in willow flycatcher habitat by extending the riparian zone. Native plant species were generally dominant within this area; however, invasive species including purple loosestrife (*Lythrum salicaria*), giant reed (*Arundo donax*), and tamarisk (*Tamarix ramosissima*) were infrequently observed throughout Area 2.

Southwestern willow flycatcher breeding habitat within Area 1 was marginal at best and occurred in fragmented patches consisting of sandbar willow thickets and red willow thickets bordered by Fremont cottonwoods higher on the river bank and bulrush and/or cattail marsh closer to the water. According to Sogge, Ahlers, and Sferra (2010), southwestern willow flycatchers rarely nest within isolated patches less than 33 ft (10 m) wide. Most of the patches of appropriate vegetation type within Area 1 were less than or only slightly greater than 33 ft (10 m) in width and therefore had a low probability of supporting breeding southwestern willow flycatchers.

2.9 Least Bell's Vireo Breeding Habitat

The least Bell's vireo breeds in dense, shrubby riparian vegetation, often dominated by willows (Franzreb 1989). Suitable breeding habitat was concentrated in Area 2 where the Mojave River

floodplain is widest and supports large stands of red willow thickets and sandbar willow thickets. Suitable least Bell's vireo habitat was found in portions of Area 1, consisting of isolated patches of red willow thickets and sandbar willow thickets.

2.10 Disturbances

Disturbances observed within the survey area included camp sites, an abandoned homeless encampment within Area 2 on the north bank of the Mojave River, and off-road vehicles. As in previous year surveys, evidence was noted of a truck-sized four-wheel-drive vehicle that had driven through the survey area during the survey period, in and out of the flowing channel and over stands of sandbar willow, southern cattail, and other vegetation.

Moderate numbers of brown-headed cowbirds (*Molothrus ater*), including fledglings, were observed throughout the survey area. The San Bernardino County Flood Control cowbird traps that were present during 2012 surveys of the site were not observed during 2014 surveys.

3.0 METHODS

3.1 Survey Dates, Personnel, and Conditions

All surveys were performed by ECORP Consulting, Inc. biologist Ben Smith, authorized to conduct protocol surveys for southwestern willow flycatcher under Federal Recovery Permit TE-67390A-0 and California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit SCP-10933. Table 1 lists the times, dates, survey area, weather conditions, and additional personnel assisting with the surveys.

Table 1. Survey Dates, Personnel, and Conditions

Date	Surveyors	Survey	Survey Area	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
				start	end	start	end	start	end	start	end
4/29	Ben Smith, Wendy Turner	LBVI #1	Areas 1 & 2	0620	1035	60	72	0	0	0-3	5-10
5/9	Ben Smith, Phil Wasz	LBVI #2	Areas 1 & 2	0610	1100	56	70	60	50	1-3	7-10
5/20	Ben Smith	SWFL#1 LBVI #3	Area 1	0645	1015	48	55	0	90	0	5-15
5/21	Ben Smith	SWFL#1 LBVI #3	Area 2	0705	1015	54	64	0	25	0	5-10
6/4	Ben Smith, Sonya Steckler	SWFL#2 LBVI #4	Area 1	0630	0930	64	75	0	0	0-1	1-5
6/5	Ben Smith, Sonya Steckler	SWFL#2 LBVI #4	Area 2	0610	1020	58	82	0	0	0	0
6/16	Ben Smith, Sonya Steckler	SWFL#3 LBVI #5	Area 1	0640	1015	61	72	50	25	0-3	2-5
6/17	Ben Smith, Sonya Steckler	SWFL#3 LBVI #5	Area 2	0615	1020	63	73	0	0	2-5	5-10

Date	Surveyors	Survey	Survey Area	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
				start	end	start	end	start	end	start	end
7/1	Ben Smith, Phil Wasz	SWFL#4 LBVI #6	Area 1	0630	0940	68	82	0	0	0	0
7/2	Ben Smith, Phil Wasz	SWFL#4 LBVI #6	Area 2	0550	1030	60	91	0	0	0	0-2
7/14	Ben Smith, Greg Hampton	SWFL#5 LBVI #7	Area 1	0600	0910	84	85	70	70	0-3	0-2
7/15	Ben Smith, Greg Hampton	SWFL#5 LBVI #7	Area 2	0545	0935	75	82	40	10	0	3-5
7/25	Ben Smith, Brad Haley	LBVI #8	Area 1 & 2	0615	1010	70	84	10	5	0	1-2

3.2 Southwestern Willow Flycatcher

Surveys for the southwestern willow flycatcher followed the protocol outlined by Sogge, Ahlers, and Sferra (2010). The 2010 protocol recommends five surveys during three survey periods, with two surveys occurring within each of the last two survey periods. These three survey periods are Period 1: May 15 to 31, Period 2: June 1 to 24, and Period 3: June 25 to July 17.

Surveys were conducted within all areas of suitable habitat along northeast/southwest transects spaced approximately 100 feet (30 m) apart. Southwestern willow flycatcher vocalizations were played at approximately 100-foot (30-m) intervals along each transect using an MP3 player and portable speaker system. The vocalization was played following an initial approximate one-minute period of listening. The period of listening followed by audio playback was repeated with another period of listening at the end before moving to the next 100-foot (30-m) interval. The locations of willow flycatcher detections were recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy. Survey data were recorded in the field and copied onto Willow Flycatcher Survey and Detection Forms. Completed survey forms are included in Appendix A.

The survey area was divided into Area 1 and Area 2 based on current engineering plans, which had been revised from previous year. Southwester willow flycatcher surveys one through five were each conducted over two-day periods (Figures 3 and 4). Area 1 included the two polygons away from the river that consisted of a 10-ac (4-ha) woodland adjacent to Area 2 and the area containing two small riparian vegetation patches approximately 0.5 mile (0.8 km) southwest of the National Trails Highway Bridge over the Mojave River, as well as the northern of two proposed crossings of the Mojave River. Area 1 measured approximately 46.6 ac (18.9 ha) in size (approximately 46.6 ac/18.9 ha surveyed per biologist per day).

Area 2 was located on the southeastern end of the survey area and included the highest density of suitable southwestern willow flycatcher habitat as well as the location of a southwestern willow flycatcher territory and nest observed during the 2012 surveys (ECORP 2012). Extra attention was paid to this area in an effort to relocate the pair observed during 2012. Area 2 contained approximately 13.4 ac (5.4 ha) of habitat dominated by red willow thickets and sandbar willow thickets (approximately 13.4 ac/5.4 ha surveyed per biologist per day).

3.3 Least Bell's Vireo

USFWS protocol for least Bell's vireo surveys specifies eight surveys spaced at least ten days apart (USFWS 2001). Surveys for least Bell's vireo were conducted concurrently with southwestern willow flycatcher surveys. All areas of suitable least Bell's vireo habitat within the survey area were traversed on foot with frequent stops to look and listen for least Bell's vireos. The locations of least Bell's vireo observations were recorded using a handheld GPS unit capable of 3- to 10-ft (1- to 3-m) accuracy.

4.0 RESULTS

4.1 Southwestern Willow Flycatcher

Three willow flycatcher detections were made during survey Periods 1 and 2 (Table 2, Figures 3 and 4). Willow flycatchers were not detected within the site during survey Period 3 despite a concerted effort to relocate the breeding pair observed during 2012 (ECORP 2012).

One individual willow flycatcher was observed during Period 1, Willow Flycatcher Survey 1 on May 20, 2014. The flycatcher responded to vocalization playback by singing the diagnostic "fitz-bew" song from a scraggly black willow that was adjacent to the flowing river and surrounded by a sparse sandbar willow thicket.

Two individual willow flycatchers were observed during Period 2, Willow Flycatcher Survey 3 on June 16 and 17, 2014. The flycatcher on June 16 (Appendix C, Photograph 11) responded to vocalization playback by singing the diagnostic "fitz-bew" from an approximately 50-foot by 100-foot stand of sandbar willow that was 150 feet southeast of where the flycatcher was observed on May 20. The flycatcher on June 17 responded to vocalization playback with excited "whitt" calls from within a dense stand of sandbar willows adjacent to the flowing river on the north end of Area 2 just outside the edge of the mapped survey area.

Each of the observations was of an individual willow flycatcher that responded to audio playback of willow flycatcher recordings. Willow flycatcher pairs were not detected and evidence of nesting or breeding behavior was not seen.

Table 2. Willow Flycatcher Survey Results

Survey Period	Date	11N UTM	Detection/Habitat Notes
Period 1	5/20/14	470880mE 3825338mN	One adult willow flycatcher sang "fitz-bew" song from a scraggly black willow surrounded by sparse sandbar willows adjacent to the flowing river in Area 1 in response to vocalization playback.
Period 2	6/16/14	470923mE 3825318mN	One adult willow flycatcher sang "fitz-bew" song from an approximately 50' x 100' stand of sandbar willows in Area 1 150' southeast of where the individual was observed on 5/20 in response to vocalization playback.

Survey Period	Date	11N UTM	Detection/Habitat Notes
	6/17/14	471713mE 3824953mN	One adult willow flycatcher responded to vocalization playback with "whitt" calls from a dense stand of sandbar willows adjacent to the flowing river adjacent to but just outside the northern edge of Area 2.

4.2 Least Bell's Vireo

Least Bell's vireos were not detected within the survey area during 2014 surveys. Surveys during 2012 indicated the presence of at least two least Bell's vireo breeding territories within the portion of the 2012 survey area that was eliminated from 2013 and 2014 survey areas (ECORP 2012). Incidental observation of a singing male in this area, which is southeast of Area 2, indicated the continued presence of breeding least Bell's vireos within this area. Furthermore, one juvenile least Bell's vireo was detected during Southwestern Willow Flycatcher Survey 5/Least Bell's Vireo Survey 7 on July 14, 2014 adjacent to and north of Area 2, suggesting the juvenile had fledged from a nest south of Area 2 and dispersed through Area 2 to the location where it was observed (Table 3, Figures 3 and 4). The juvenile vireo was heard making scold-like calls from within a dense stand of sandbar willow and then moving downstream in a northwesterly direction.

Table 3. Least Bell's Vireo Survey Results

Date	11N UTM	Observation Notes
7/14/14	471690mE 3824962mN	One fledgling least Bell's vireo was heard calling from within a stand of sandbar willow, just outside the north edge of Area 2.

4.3 Incidental Special Status Species

Wildlife species included on the CDFW special animals list (CDFG 2011) were observed within the survey area. Adult and juvenile yellow warblers (*Setophaga petechia*), a CDFW Species of Special Concern (SSC), were found throughout the survey area, but were most abundant in Area 2 where the highest density breeding habitat for the species is located. Summer tanagers (*Piranga rubra*), SSC, including adults and dependent young, were observed in and around Area 2 (Appendix C, Photograph 12). A yellow-breasted chat (*Icteria virens*), SSC, was observed singing within Area 2 during several surveys. An olive-sided flycatcher (*Contopus cooperi*), SSC, was observed on June 5, 2014 in Area 2; however, the site does not support typical breeding habitat for the species and the bird was assumed to be passing through on migration. Vaux's swifts (*Chaetura vauxi*), SSC, and white-faced ibises (*Plegadis chihi*), SSC, were seen flying overhead, but were not observed using habitat within the survey area. A list of wildlife species observed during the surveys is included as Appendix B.

One special status plant species was also observed in the survey area. Booth's evening primrose (*Eremothera boothii* ssp. *boothii*), California Rare Plant Rank 2B.3 (rare, threatened, or endangered in California, but more common elsewhere), was observed at several locations in and near Area 2. Approximately six individuals were found blooming in sandy/gravely soil on the northeast side of Area 2. A larger group of approximately 250 individuals was also noted along

the river outside the survey area between Areas 1 and 2. The locations of special status species incidentally observed within the survey area are listed below in Table 4.

Table 4. Incidental Special Status Species Locations

Species	Date	11N UTM	Observation Notes
Yellow warbler (*Setophaga petechia*)	4/29/14-7/25/14	Throughout survey area	Breeding within the site. Adults and fledglings were abundant throughout the survey area with the highest concentration in Area 2.
Summer tanager (*Piranga rubra*)	5/21/14	471871mE 3824879mN	First spring male singing from various locations and chasing off a Brown-headed Cowbird
	7/25/14	471907mE 3824875mN	Adult male accompanied by at least one fledgling
Yellow-breasted chat (*Icteria virens*)	6/5/14	471961mE 3824846mN	Adult male singing within dense riparian habitat
	7/21/14	471767mE 3824995mN	Adult male singing within dense riparian habitat
Olive-sided flycatcher (*Contopus cooperi*)	6/5/13	471957mE 3824859mN	Adult perched near the edge of Fremont Cottonwood Forest
Vaux's swift (*Chaetura vauxi*)	5/9/14	Area 1	Flyover during survey, not observed using habitat within survey area
White-faced ibis (*Plegadis chihi*)	4/29/14 5/20/14 7/1/14	Area 1	Flyover during survey, not observed using habitat within survey area
Booth's evening primrose (*Eremothera boothii* ssp. *boothii*)	6/5/14-7/15/14	471778mE 3824995mN	Approximately six individuals blooming in sandy/gravely soil on the northeast side of Area 2

5.0 CONCLUSIONS

Breeding status of the southwestern willow flycatcher was not confirmed within the survey area during 2014. Breeding status of the least Bell's vireo was not confirmed within the survey area during 2014, although the southeastern portion of the survey area was observed being used for dispersal by a fledgling least Bell's vireo.

5.1 Southwestern Willow Flycatcher

Presence of the southwestern willow flycatcher, according to survey protocol, is determined by the observation of breeding willow flycatchers or by willow flycatcher detection during the third survey period (June 25 – July 17), at which point migrant willow flycatchers should no longer be present in the Southwest (Sogge, Ahlers, and Sferra 2010). Evidence of breeding willow flycatchers, including nest building, recent nests, or fledglings, was not observed during surveys of the site, nor were willow flycatchers detected within the survey area during Survey Period 3.

Therefore, it is assumed that southwestern willow flycatchers were not present as a breeding species within the survey area during 2014 and that the individual willow flycatchers observed during Survey Periods 1 and 2 were of undetermined sub-species passing through the survey area on migration.

Although southwestern willow flycatchers show high site fidelity and often return to breed at the same site year after year, pairs may change locations within a site from year to year or may even move to a new site altogether (Sogge, Ahlers, and Sferra 2010). Mortality, occupation of suitable habitat in the vicinity but outside the survey area, or a move to a different breeding site, all serve as possible explanations for the 2014 absence of the breeding pair observed in 2012.

5.2 Least Bell's Vireo

Breeding status of the least Bell's vireo was not confirmed within the survey area during 2014 based on the absence of territorial pairs or nests within the survey area. However, Area 2 appears to be important for fledglings and adults dispersing from nests southeast of the survey area, as indicated by the observation of dependent and independent fledglings within this area during 2013 (ECORP 2013) and the observation of an independent fledgling adjacent to this area during 2014.

5.3 Recommendations

Breeding southwestern willow flycatchers and least Bell's vireos were not found within the survey area. However, Area 2 contains high-quality habitat for both species. A breeding pair of southwestern willow flycatchers was detected in this area during 2012 surveys (ECORP 2012) and the area may possibly be reoccupied in subsequent years. Also, the area appears to be important for postnatal/post breeding dispersal from nearby least Bell's vireo territories. Avoidance of Survey Area 2 is recommended to preserve high-quality breeding habitat for the least Bell's vireo and southwestern willow flycatcher and to minimize project impacts to either species.

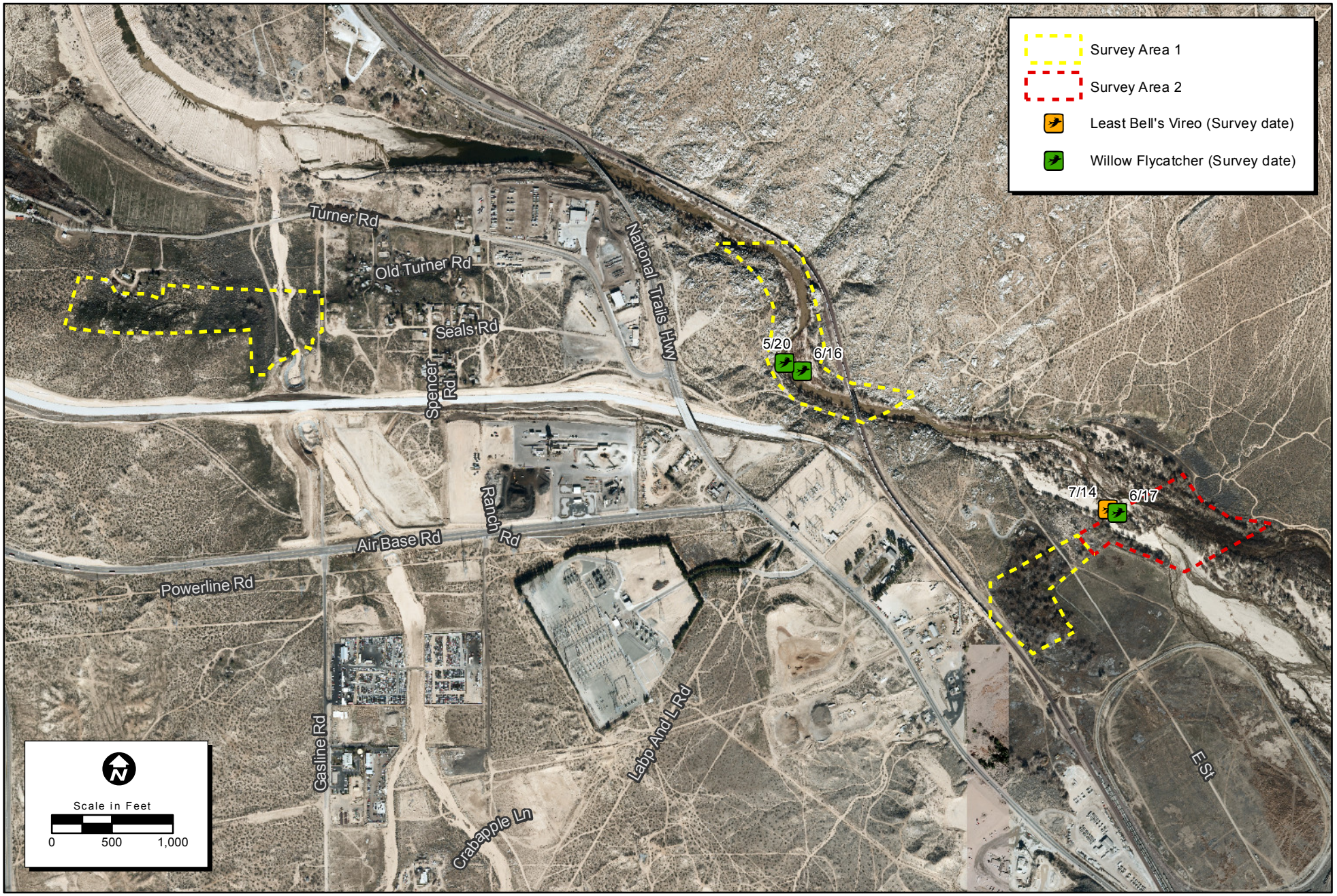

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Figure 3. Results Map

2012-061 HDC SWWF and LBVI Surveys

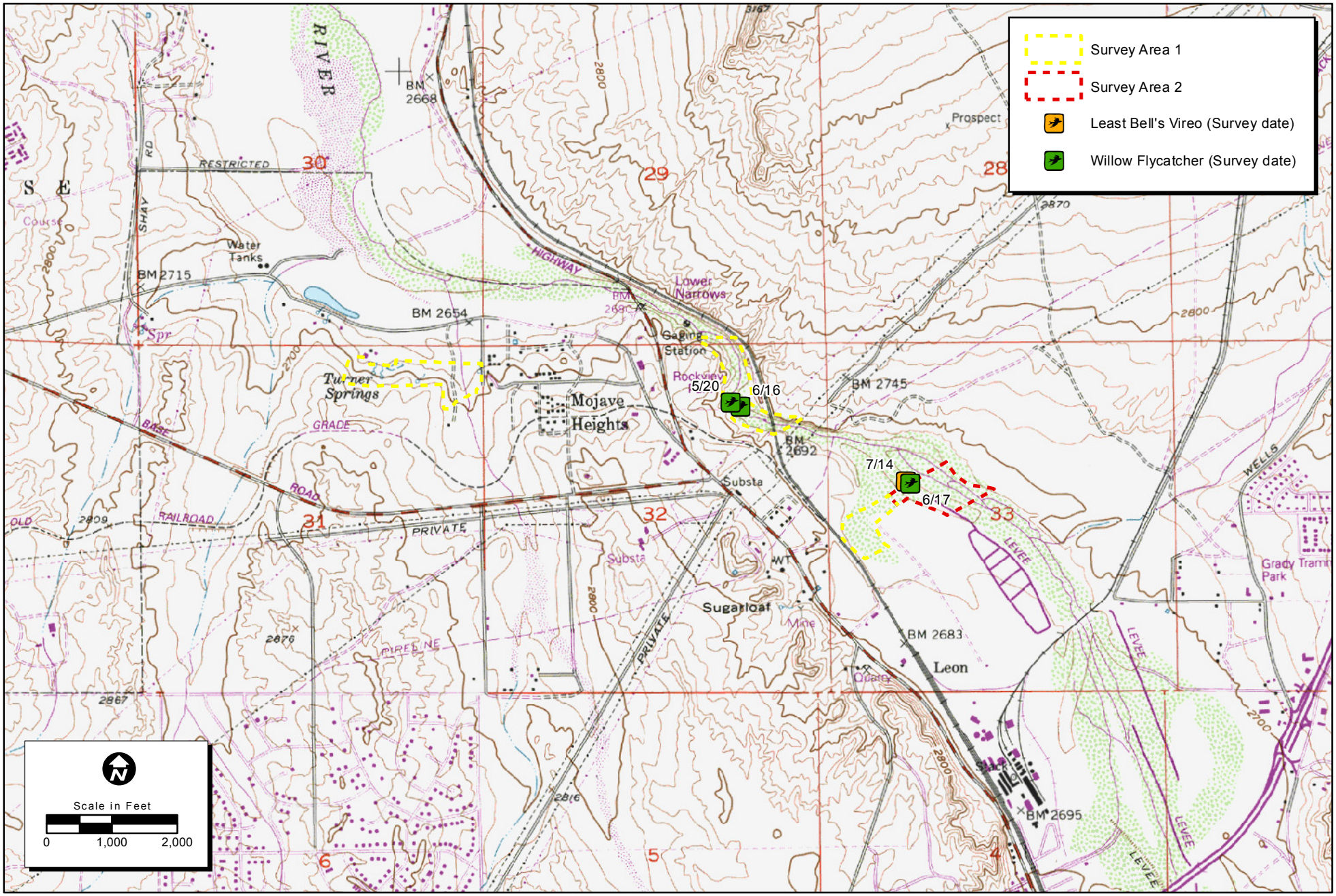

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Figure 4. USGS Topographic Map

2012-061 HDC SWWF and LBVI Surveys

6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

DATE: 8/31/14 SIGNED:

Benjamin Smith

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Appendix A

Completed Willow Flycatcher Survey and Detection Forms

Appendix B

Wildlife Compendium

SCIENTIFIC NAME	COMMON NAME
Amphibians	
Bufonidae	**Toads**
Anaxyrus boreas	western toad
Ranidae	**True Frogs**
*Lithobates catesbeianus**	American bullfrog*
Hylidae	**New World Treefrogs**
Pseudacris hypochondriaca hypochondriaca	Baja California treefrog
Reptiles	
Anguidae	**Alligator Lizards and Allies**
Elgaria multicarinata	alligator lizard
Colubridae	**Colubrids**
Lampropeltis californiae	California kingsnake
Phrynosomatidae	**Spiny Lizards**
Sceloporus occidentalis	western fence lizard
Uta stansburiana	common side-blotched lizard
Teiidae	**Whiptails**
Aspidoscelis tigris	western whiptail
Xantusiidae	**Night Lizards**
Xantusia sp.	night lizard
Birds	
Accipitridae	**Hawks, Kites, Eagles, Allies**
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Aegithalidae	**Long-tailed tits, Bushtits**
Psaltriparus minimus	bushtit
Alcedinidae	**Kingfishers**
Megaceryle alcyon	belted kingfisher
Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	Mallard
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
*Chaetura vauxi***	Vaux's swift
Ardeidae	**Herons, Bitterns, Allies**
Ardea alba	great egret
Ardea herodias	great blue heron
Butorides virescens	green heron
Nycticorax nycticorax	black-crowned night heron
Caprimulgidae	**Nighthawks and Nightjars**
Chordeiles acutipennis	lesser nighthawk
Cardinalidae	**Cardinals, Saltators, Allies**
Passerina amoena	lazuli bunting
Passerina caerulea	blue grosbeak
Pheucticus melanocephalus	black-headed grosbeak
Cathartidae	**Vultures**

SCIENTIFIC NAME	COMMON NAME
Cathartes aura	turkey vulture
Charadriidae	**Lapwings, Plovers**
Charadrius vociferus	killdeer
Columbidae	**Pigeons, Doves**
*Columba livia**	rock pigeon*
*Streptopelia decaocto**	Eurasian collared-dove*
Zenaida macroura	mourning dove
Corvidae	**Crows, Jays**
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	greater roadrunner
Emberizidae	**Emberizids**
Amphispiza belli	sagebrush sparrow
Artemisiospiza belli	Bell's sparrow
Chondestes grammacus	lark sparrow
Melospiza melodia	song sparrow
Melozone crissalis	California towhee
Falconidae	**Falcons**
Falco mexicanus	prairie falcon
Falco sparverius	American kestrel
Fringillidae	**Fringilline and Cardueline Finches, Allies**
Haemorhous mexicanus	house finch
Spinus psaltria	lesser goldfinch
Hirundinidae	**Swallows**
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
Icteridae	**Blackbirds**
Agelaius phoeniceus	red-winged blackbird
Icterus bullockii	Bullock's oriole
Molothrus ater	brown-headed cowbird
Quiscalus mexicanus	great-tailed grackle
Mimidae	**Mockingbirds, Thrashers**
Mimus polyglottos	Northern mockingbird
Toxostoma redivivum	California thrasher
Odontophoridae	**New World Quail**
Callipepla californica	California quail
Paridae	**Titmice and Chickadees**
Poecile gambeli	mountain chickadee
Parulidae	**Wood Warblers**
Geothlypis trichas	common yellowthroat
Oreothlypis celata	orange-crowned warbler
Oreothlypis ruficapilla	Nashville warbler
Setophaga coronata	yellow-rumped warbler
*Setophaga petechia***	yellow warbler**
Setophaga townsendi	Townsend's warbler
Wilsonia pusilla	Wilson's warbler
Passeridae	**Old World Sparrows**

SCIENTIFIC NAME	COMMON NAME
Passer domesticus	house sparrow
Picidae	**Woodpeckers**
Colaptes auratus	Northern flicker
Picoides pubescens	downy woodpecker
Picoides nuttallii	Nuttall's woodpecker
Polioptilidae	**Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Rallidae	**Rails and Moorhens**
Rallus limicola	Virginia rail
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Remizidae	**Verdins**
Auriparus flaviceps	verdin
Scolopacidae	**Sandpipers**
Actitis macularius	spotted sandpiper
Strigidae	**True Owls**
Bubo virginianus	great horned owl
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling*
Thraupidae	**Tanagers**
Piranga ludoviciana	Western tanager
*Piranga rubra***	summer tanager**
Threskiornithidae	**Ibises and Spoonbills**
*Plegadis chihi***	white-faced ibis**
Trochilidae	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Troglodytidae	**Wrens**
Cistothorus palustris	marsh wren
Salpinctes obsoletus	rock wren
Thryomanes bewickii	Bewick's wren
Turdidae	**Thrushes**
Catharus ustulatus	Swainson's thrush
Sialia mexicana	western bluebird
Tyrannidae	**Tyrant Flycatchers**
*Contopus cooperi***	olive-sided flycatcher**
Contopus sordidulus	western wood-pewee
Empidonax difficilis	Pacific-slope flycatcher
Empidonax hammondii	Hammond's flycatcher
Empidonax traillii	willow flycatcher
Empidonax wrightii	gray flycatcher
Myiarchus cinerascens	ash-throated flycatcher
Sayornis phoebe	black phoebe
Sayornis saya	Say's phoebe
Tyrannus verticalis	Western kingbird
Tytonidae	**Barn Owls**
Tyto alba	barn owl
Vireonidae	**Vireos**
*Vireo bellii pusillus***	least Bell's vireo**

SCIENTIFIC NAME	COMMON NAME
Vireo cassinii	Cassin's vireo
Vireo gilvus	warbling vireo
Mammals	
Canidae	**Dogs, Foxes, and Coyotes**
Canis latrans	coyote
Castoridae	**Beaver**
Castor canadensis	American beaver
Chiroptera	**Bats**
Unknown bat species	Unknown bat species
Felidae	**Cats**
Felis rufus	bobcat
Leporidae	**Pika, Rabbits, and Hares**
Lepus californicus	black-tailed jackrabbit
Sylvilagus audubonii	desert cottontail
Muridae	**Rats, Mice, Voles, Allies**
Neotoma sp.	Woodrat
Procyonidae	**Raccoons**
Procyon lotor	raccoon
Sciuridea	**Squirrels**
Spermophilus beecheyi	California ground squirrel

* nonnative species
** special status species

Appendix C

Survey Photographs

Photograph 1. Representative view of habitat within Area 1 consisting of southern cattail marsh and Fremont cottonwood forest.

Photograph 2. Representative view of habitat within Area 2 consisting of Fremont cottonwood forest, red willow thickets, and sandbar willow thickets.

Photograph 3. Representative view of habitat within the northern polygon away from the river in Area 1 with sandbar willow thicket in the background and desert saltbush scrub in the foreground.

Photograph 4. Representative view of habitat within the southern polygon away from the river in Area 1 consisting of Fremont cottonwood forest.

Photograph 5. Representative view of Fremont cottonwood forest in Area 2.

Photograph 6. Representative view of red willow thicket in Area 2.

Photograph 7. Representative view of red willow thicket in Area 2.

Photograph 8. Representative view of sandbar willow thicket in Area 1.

Photograph 9. Representative view of sandbar willow thicket in Area 2.

Photograph 10. View of California bulrush/American bulrush and southern cattail marsh near a beaver dam in Area 2.

Photograph 11. Willow flycatcher observed in Area 1 near the river during the migration period.

Photograph 12. Successfully breeding summer tanagers in Area 2.

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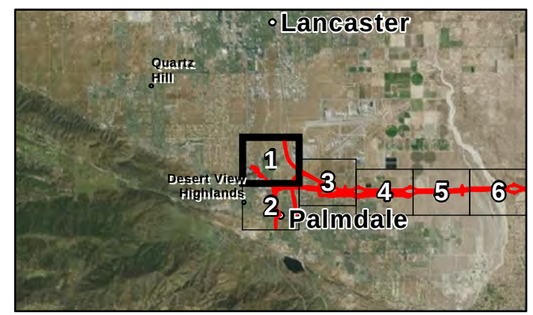

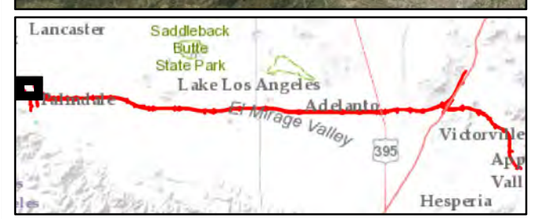

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

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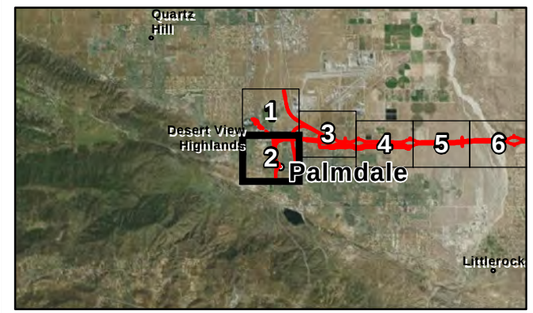

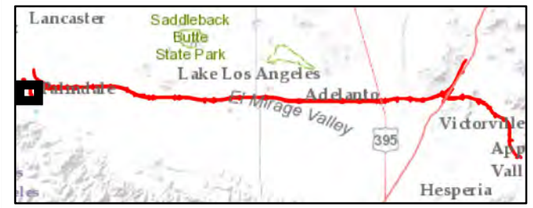

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
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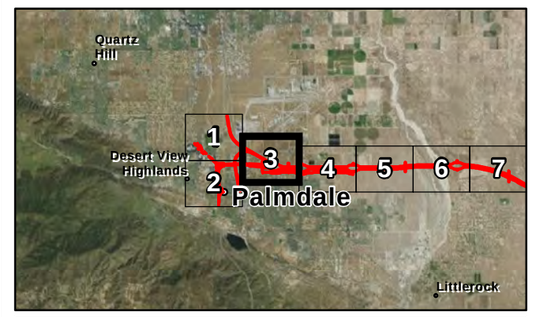

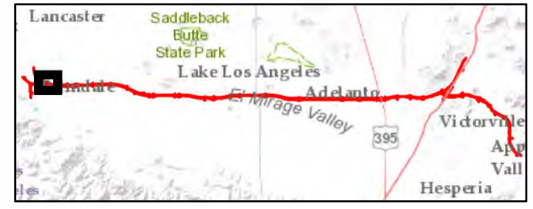

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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
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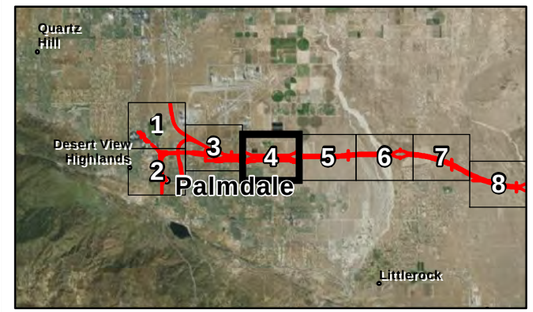

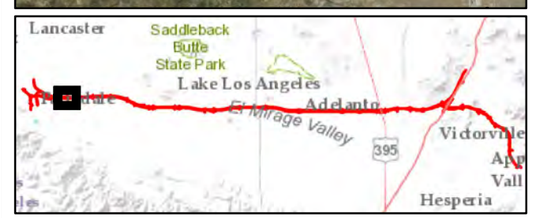

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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
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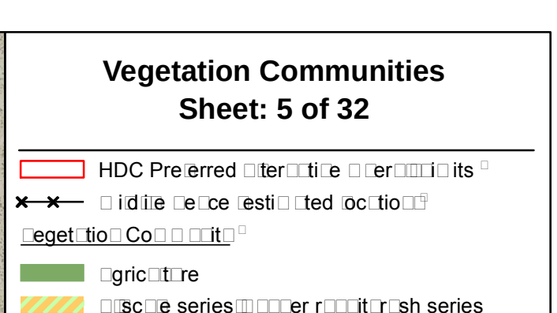

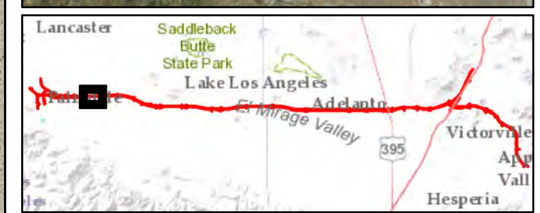

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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
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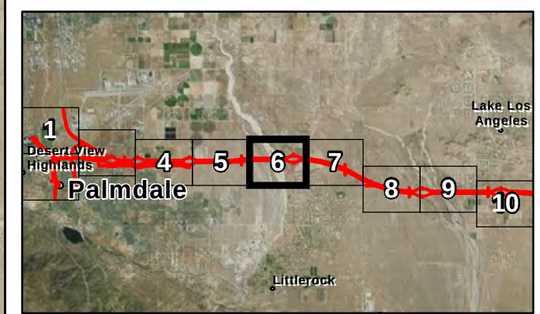

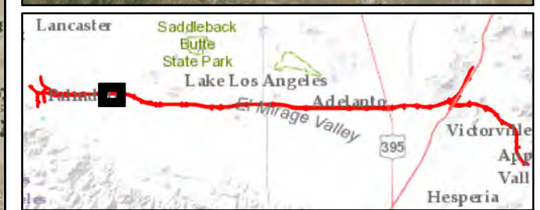

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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
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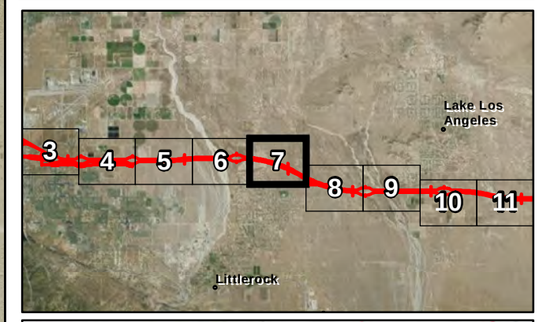

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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
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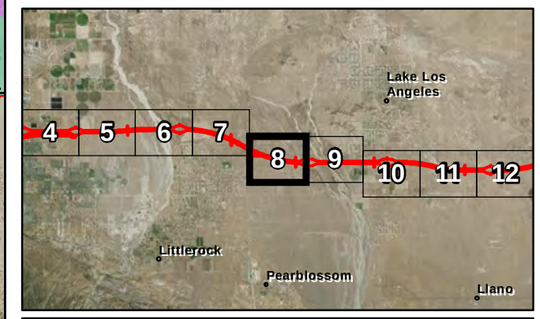

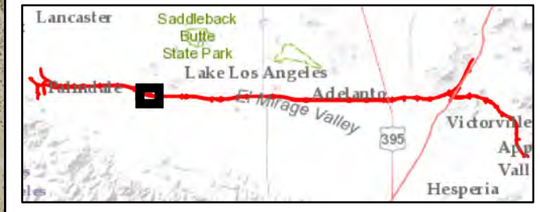

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2012-061 High Desert Corridor

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Vegetation Communities
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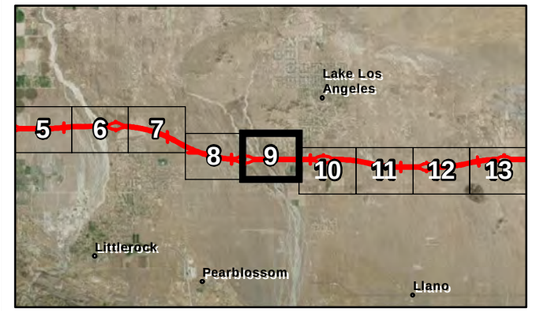

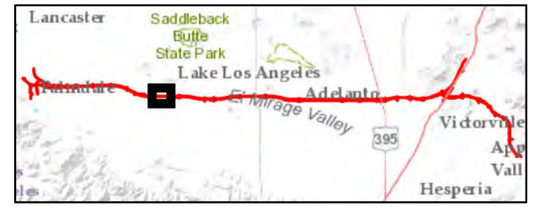

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2012-061 High Desert Corridor

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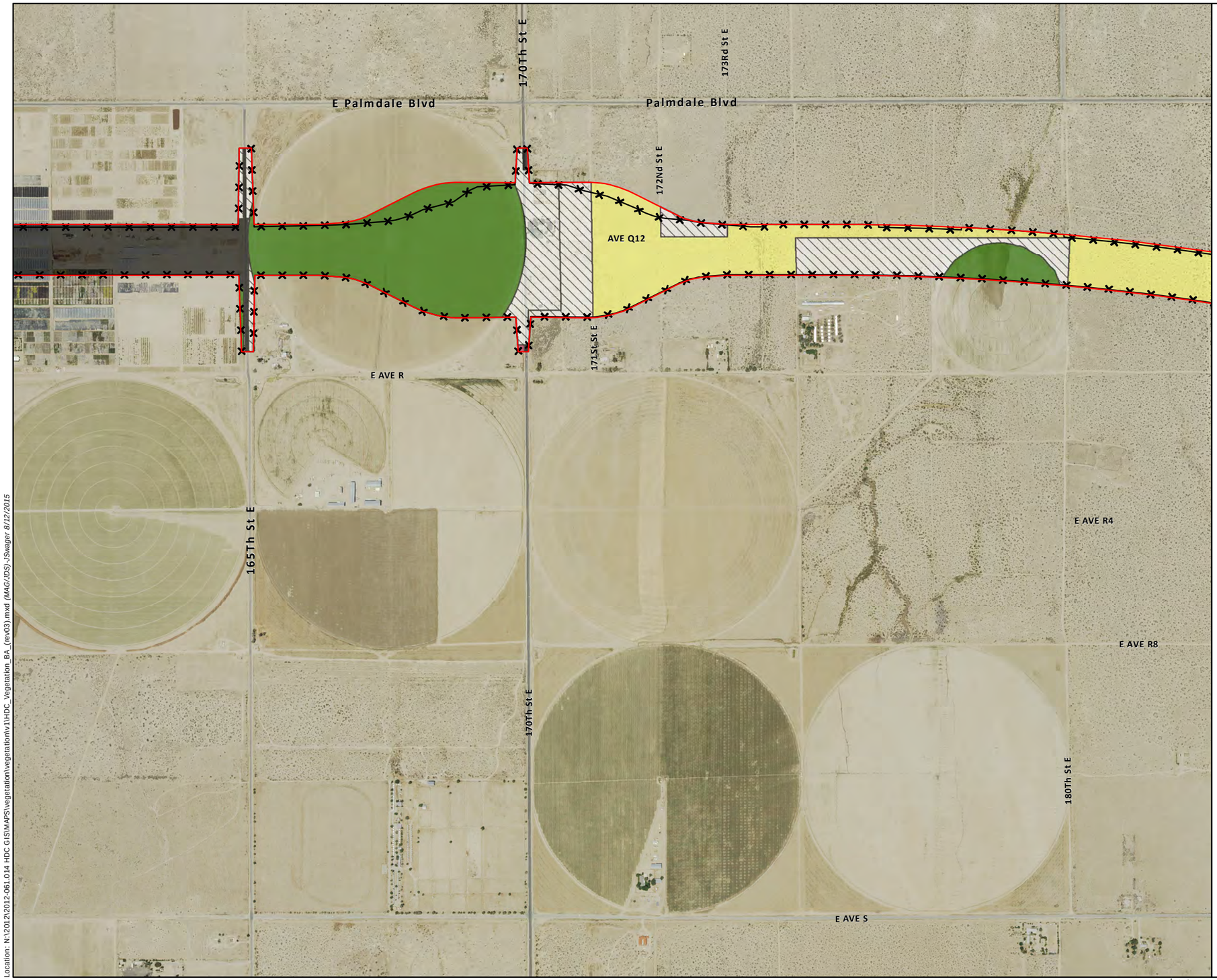

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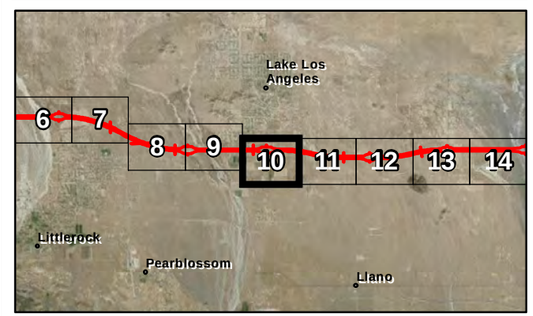

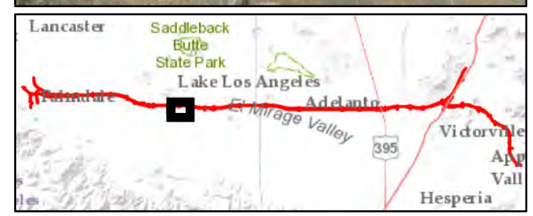

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Vegetation Communities
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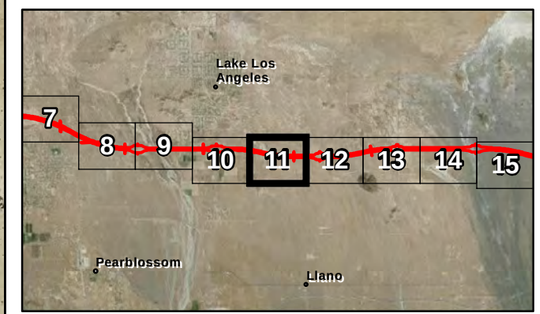

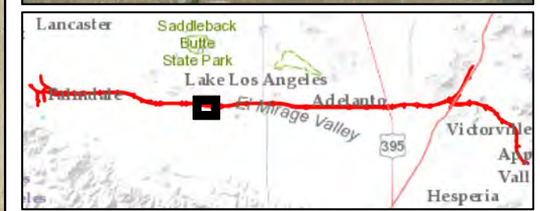

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Vegetation Communities
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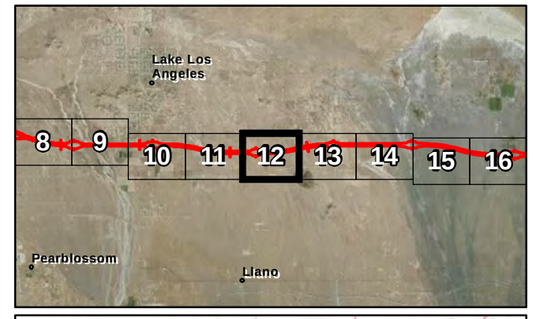

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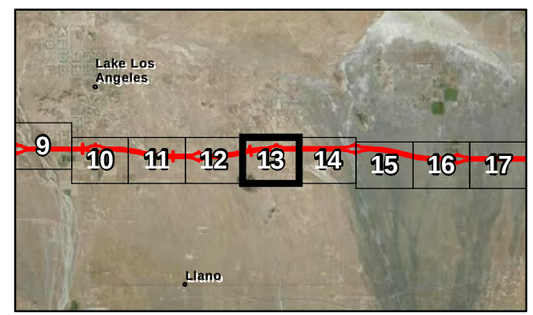

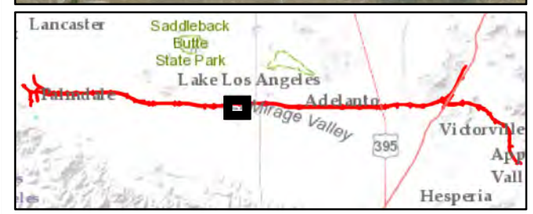

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Vegetation Communities
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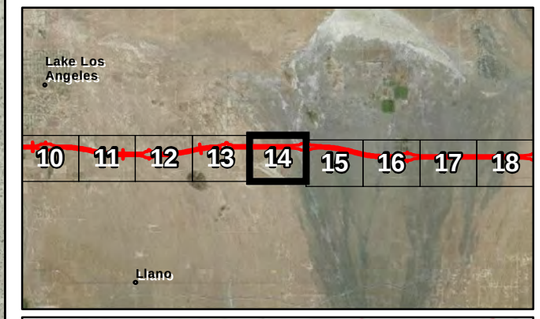

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Vegetation Communities
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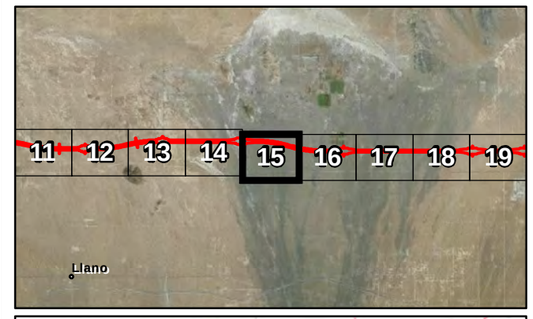

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
Sheet: 16 of 32

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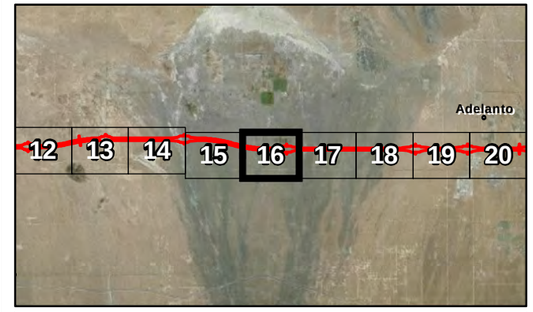

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Airport Rd
Keats Rd
Parkdale Rd
Tanner Rd
Old Phelan Rd
Rancho Rd
Pionero Rd
Corton St
Beekley Rd
Sheep Creek Rd
Sheep Creek Rd
Primrose Rd

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
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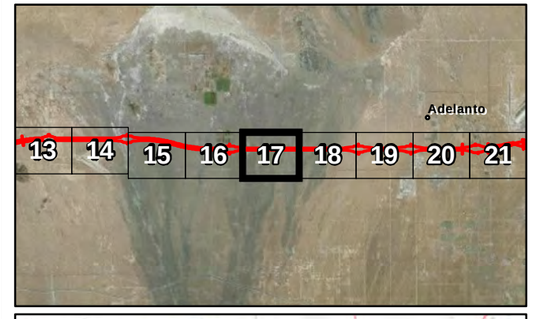

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Medio Rd
Boquina St
Paseo Rd
Parkdale Rd
Rancho Rd
Johnson Rd
Primrose Rd

Location: N:\2012\2012-061.014 HDC GIS\MAPS\vegetation\vegetationv11\HDC_Vegetation_BA_(rev03).mxd (MAC/JDS)-JSwager 8/12/2015

2012-061 High Desert Corridor

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[1] Caltrans
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Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
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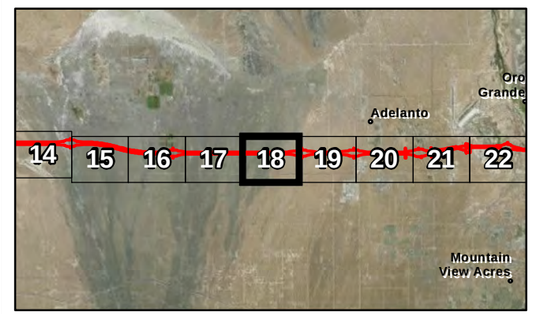

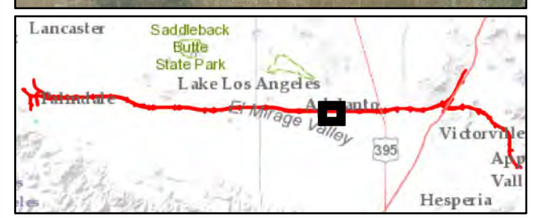

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Lessing Ave
Air Base Rd
Air Expy
Middleton Rd
Viaduct
Yucca Rd
Fremont Wash
Violet Rd
Lessing Rd
Apero Rd
Rancho Rd
Sonora Rd
Wilson Ranch Rd

2012-061 High Desert Corridor

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[1] Caltrans
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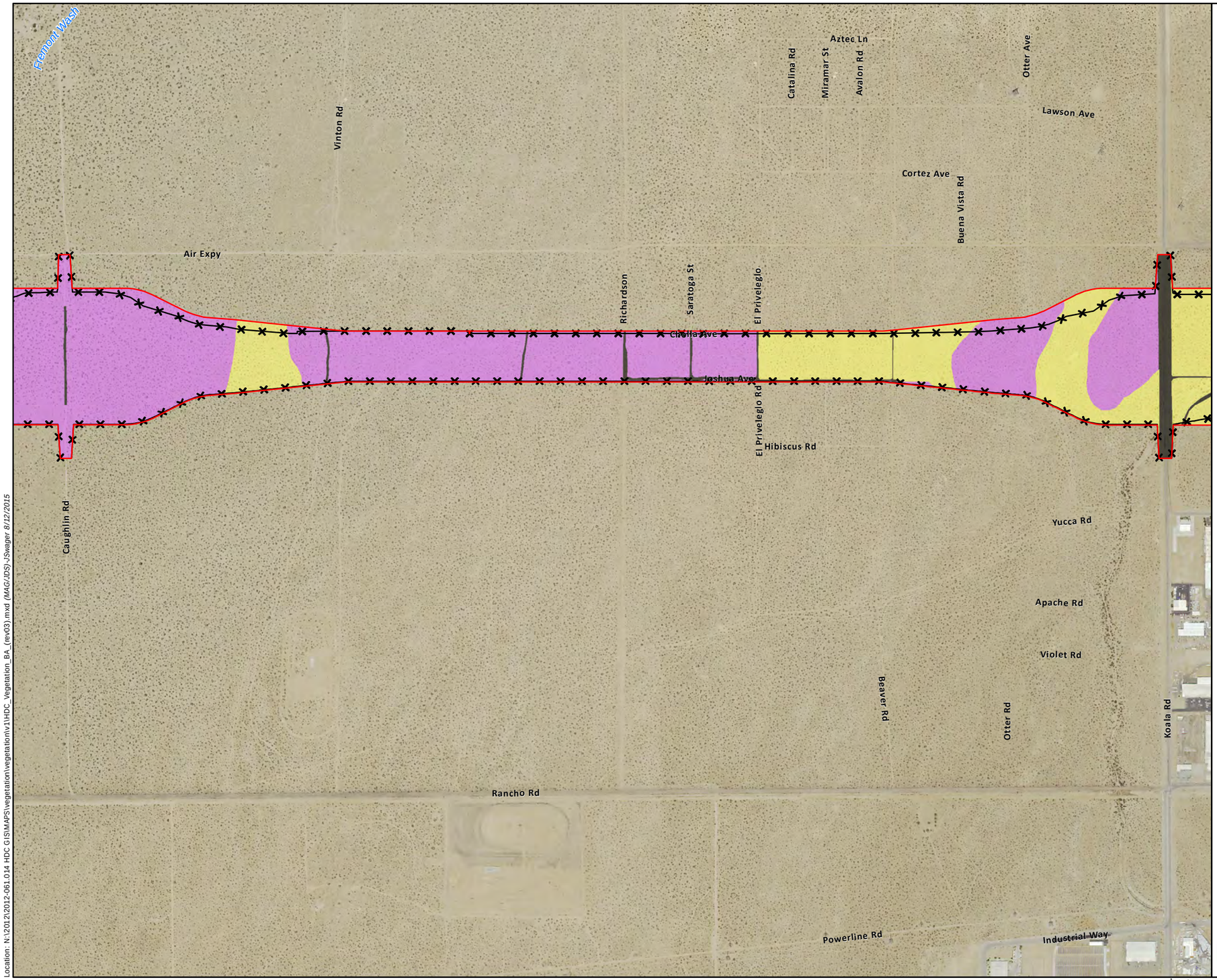

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Vegetation Communities
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HDC Preferred Alternative Alignments

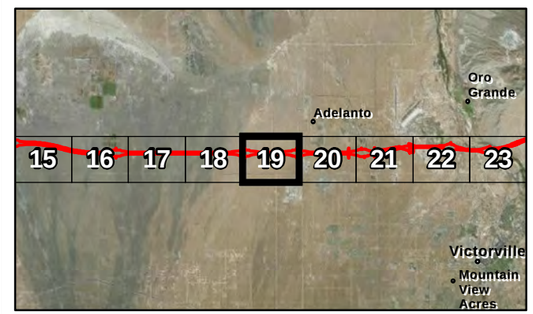
Middle Fence Erected (Estimated Location)

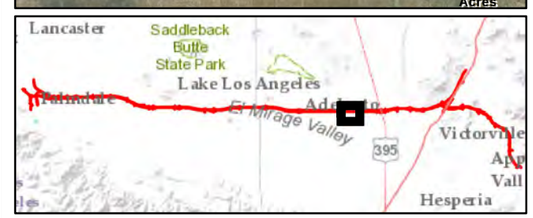
Vegetation Communities

Creosote Bush Scrub Alliance

Developed

Bush Tree Woodland Alliance





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2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
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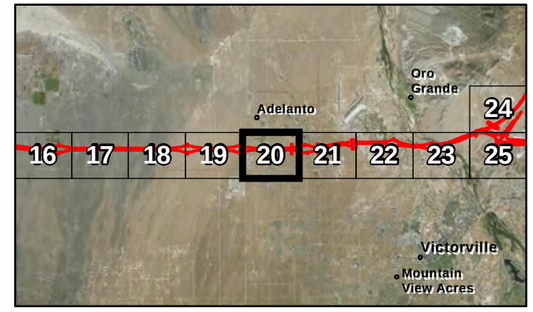

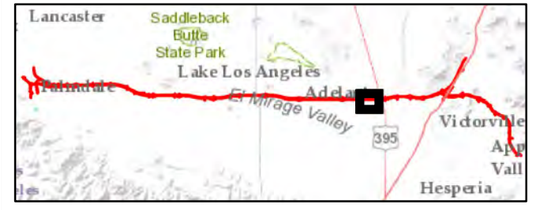

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2012-061 High Desert Corridor

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[1] Caltrans
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Vegetation Communities
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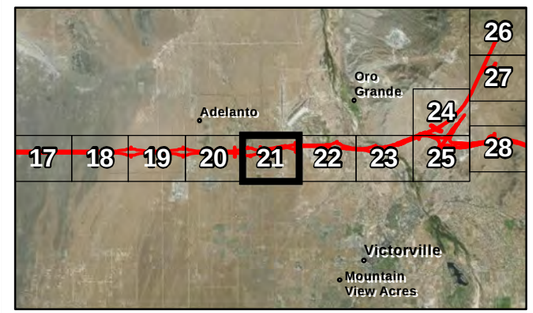

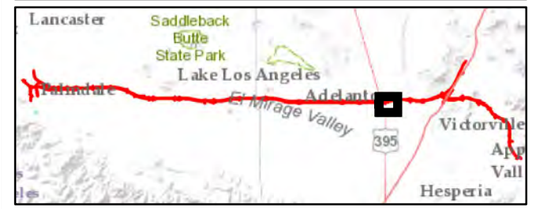

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
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Map Date: 8/12/2015

Vegetation Communities
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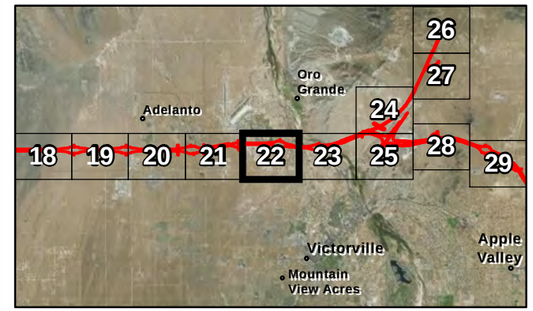

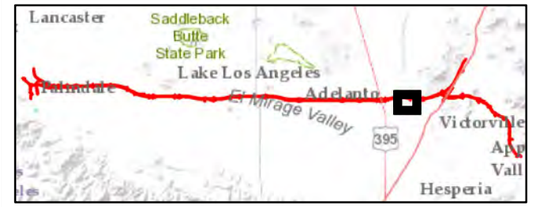

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Location: N:\2012\2012-061.014 HDC GIS\MAPS\vegetation\vegetation\v1\HDC_Vegetation_BA_(rev03).mxd (MAG/JDS) JSwager 8/12/2015

Vegetation Communities
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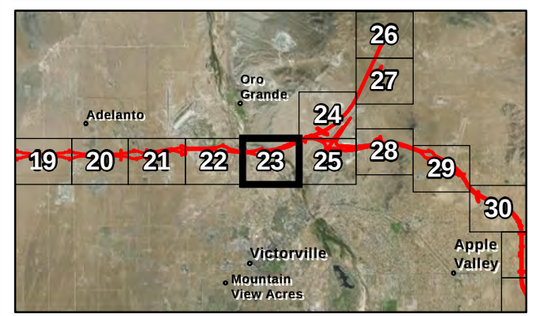

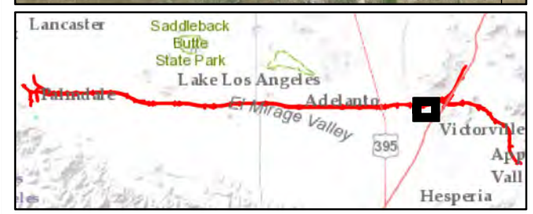

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2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
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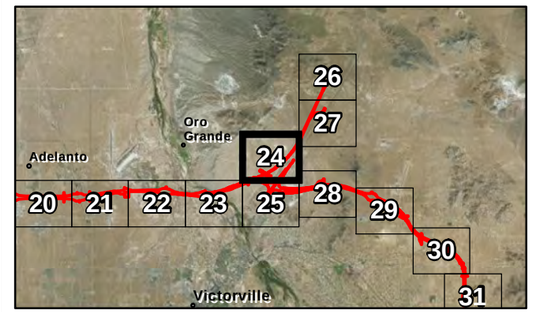

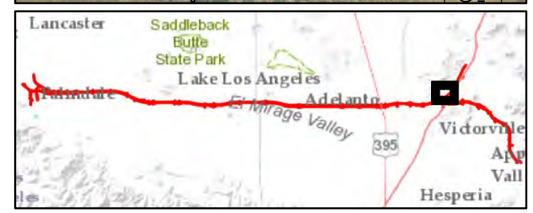

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2012-061 High Desert Corridor

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[1] Caltrans
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Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
Sheet: 25 of 32

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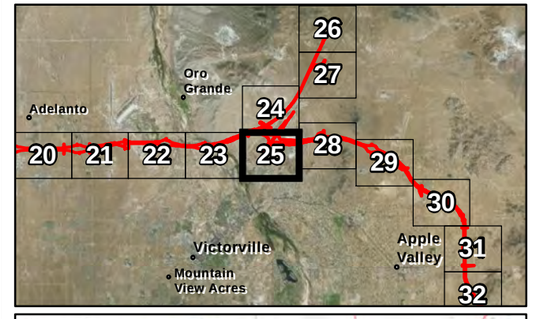

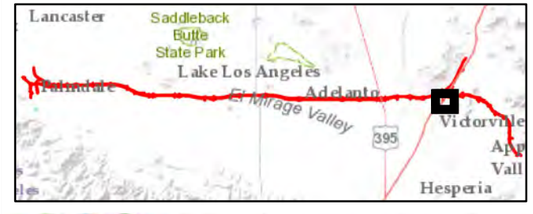

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Photo Source: NAIP 2014

Map Date: 8/12/2015

2012-061 High Desert Corridor

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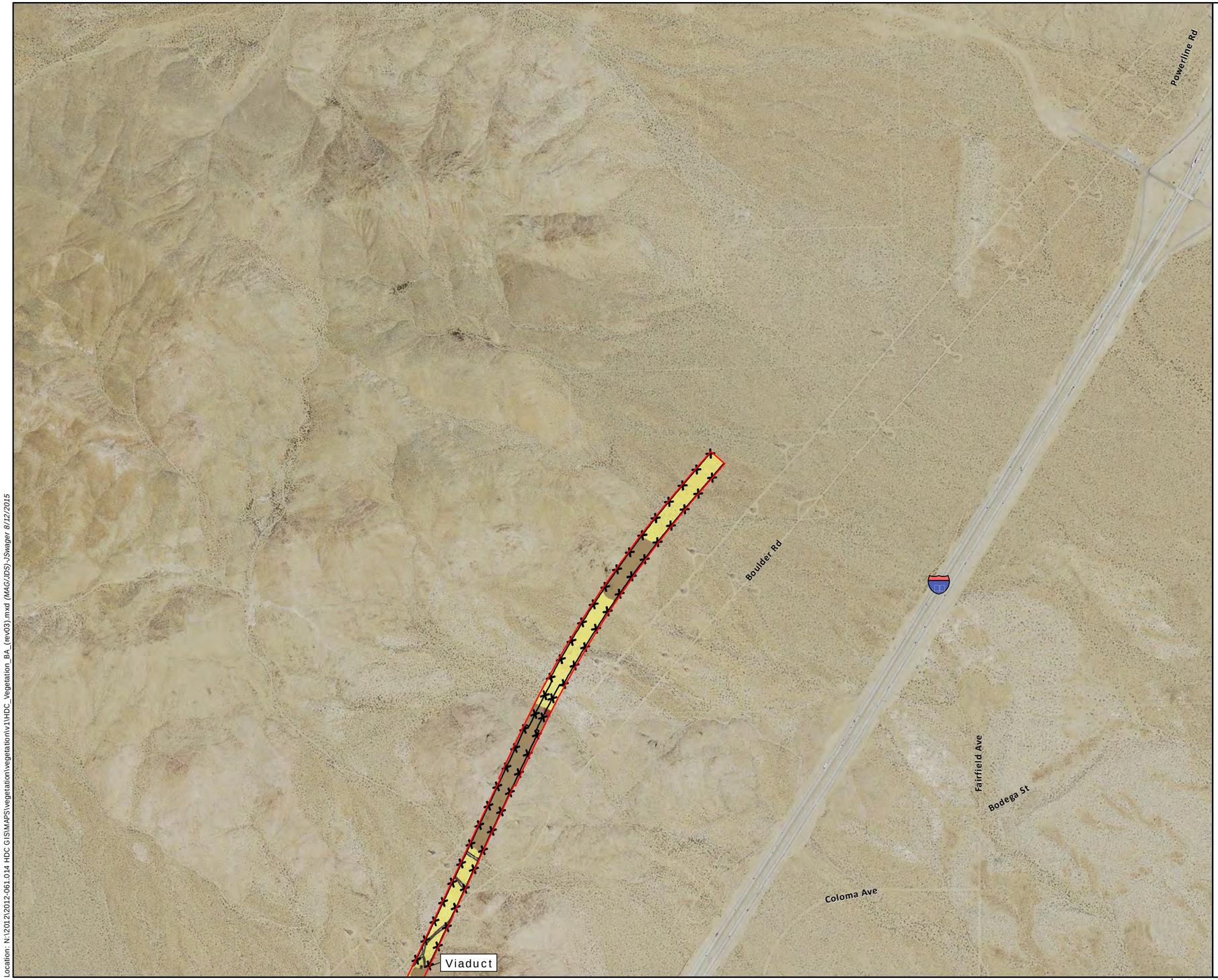

Vegetation Communities
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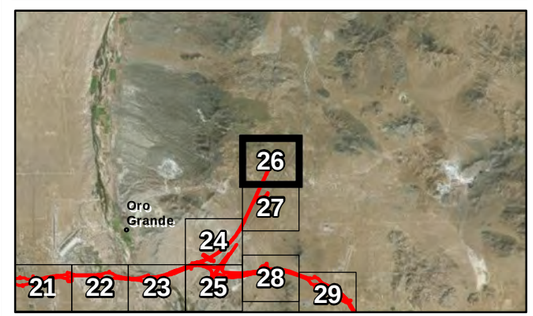

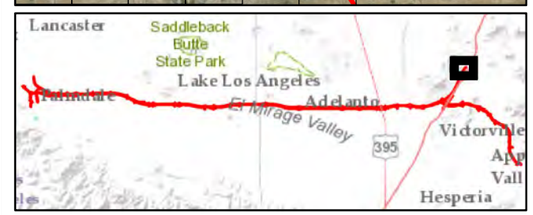

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2012-061 High Desert Corridor

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[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
Sheet: 27 of 32

HDC Preferred Alternative Alignments

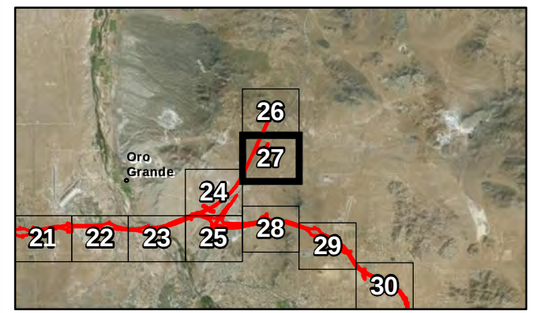
Middle Fence Estimated Location

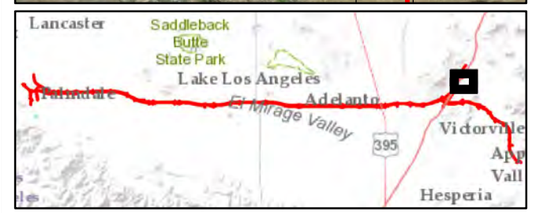
Vegetation Communities

Creosote Bush Scrub Vegetation

Disturbed

Project Area Bush Scrub Vegetation





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ENVIRONMENTAL CONSULTANTS

Kimshew St
Coloma Ave
Reves Ave
Serra Ave
Fairfax Rd
Powerline Rd
Langley St
Murieta St
Fairfield Ave
Boulder Rd
Viaduct
Puma Rd
Quarry Rd
Cordova Rd
Labrador Rd
Stoddard Wells Rd
Choco Rd
Pomona Rd
Alhambra St
Jacmacia St
Doberman St
Milton St
Manzana Rd
El Dorado Rd
Shepherd St
Johnson Rd
Grasshopper Rd
Bell Mountain Wash
Bell Mountain Wash

Location: N:\2012\2012-061.014 HDC GIS\MAPS\vegetation\vegetation\v1\HDC_Vegetation_BA_(rev03).mxd (MAG/JDS) JSwager 8/12/2015

2012-061 High Desert Corridor

Scale in Feet

[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
Sheet: 28 of 32

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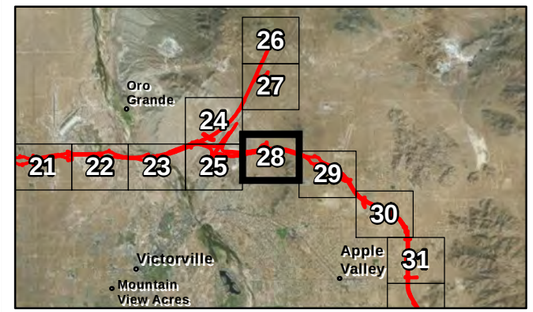

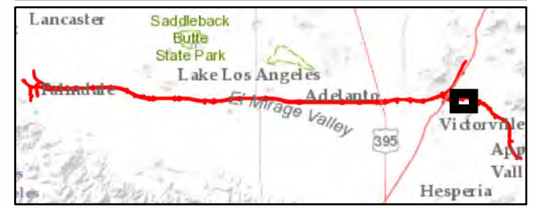

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Chippewa Rd
Falchion Rd
Chipeta Rd
Hemlock Rd
Choco Rd
Ta Ki Pi Rd
Arcata Rd
Tawanka Rd
Waalew Rd

2012-061 High Desert Corridor

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[1] Caltrans
[2] ECORP, ICF, AMEC
Photo Source: NAIP 2014

Map Date: 8/12/2015

Vegetation Communities
Sheet: 29 of 32

HDC Preferred Alternative Alignments

Middle Fence Estimated Location

Vegetation Communities

Mojave Scrub Vegetation

Disturbed Mojave Scrub Vegetation

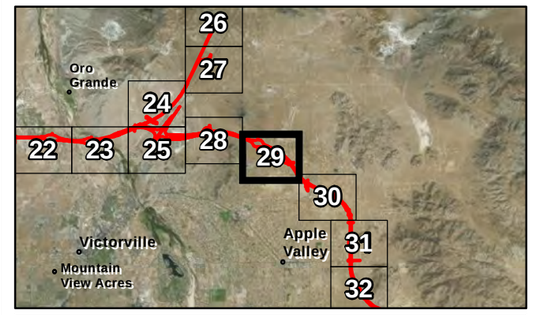
Creosote Bush Scrub Vegetation

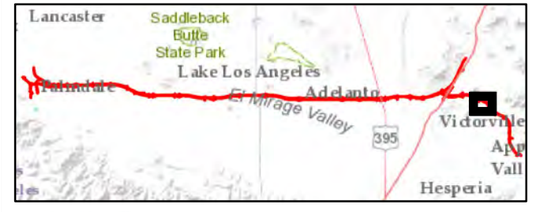
Disturbed Creosote Bush Scrub Vegetation

Developed

Disturbed

Ornamental Grassland





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2012-061 High Desert Corridor

Scale in Feet

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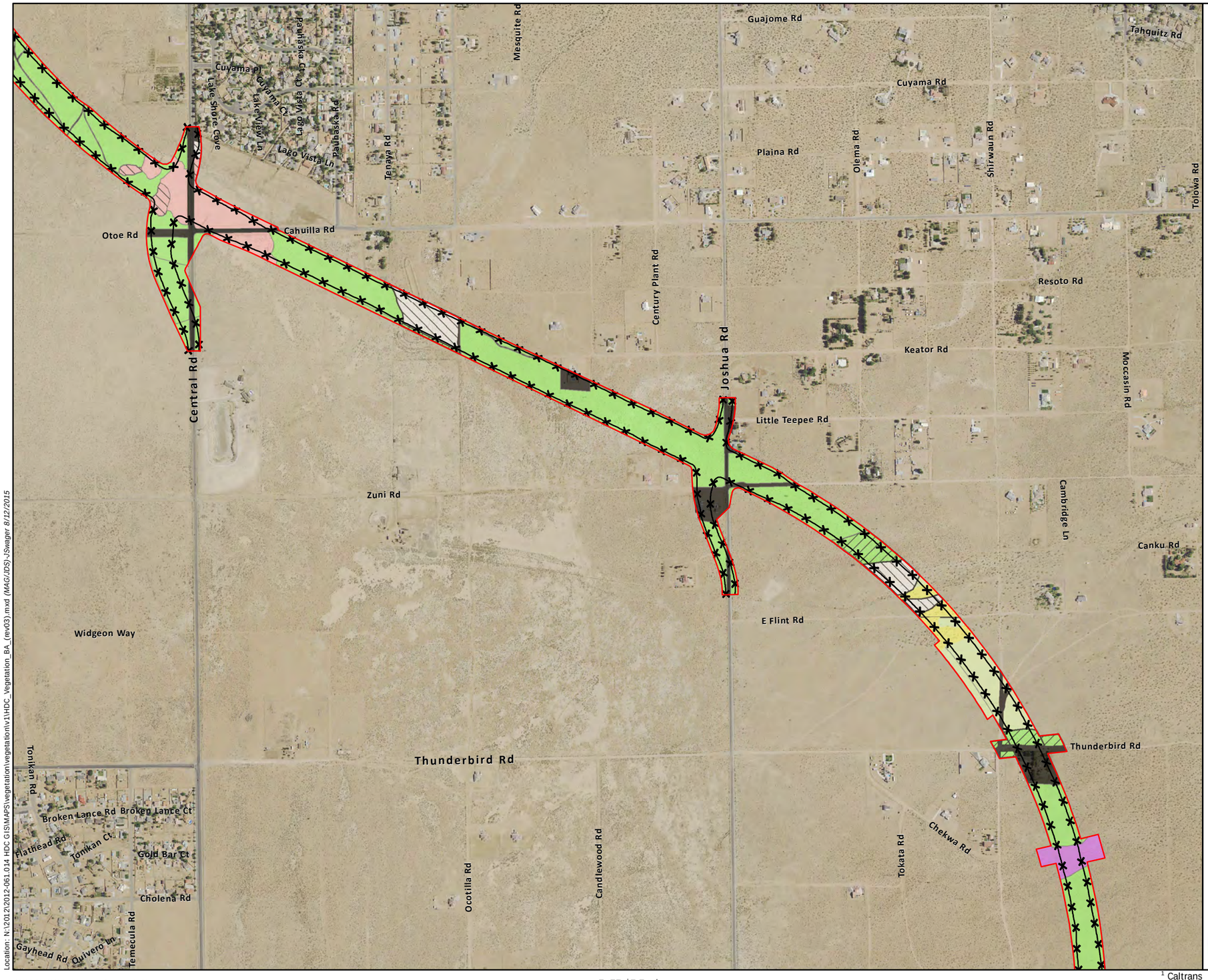


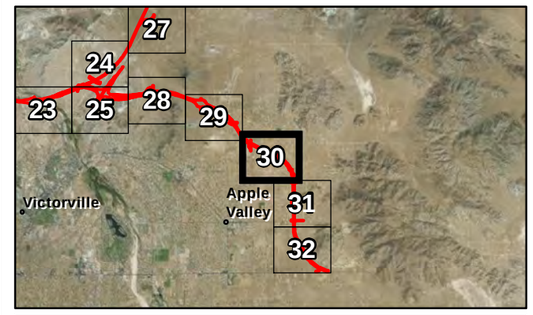
Vegetation Communities
Sheet: 30 of 32

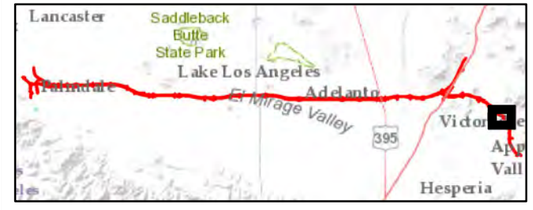
HDC Preferred Alternative Alignments

Wildlife Service Estimated Location

Vegetation Communities

- Desert scrub vegetation
- Disturbed desert scrub vegetation
- Creosote bush scrub vegetation
- Developed
- Disturbed
- Joshua tree woodland vegetation
- Ornamental grassland
- Natural grass lands vegetation
- Disturbed natural grass lands vegetation





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2012-061 High Desert Corridor

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Map Date: 8/12/2015

Vegetation Communities
Sheet: 31 of 32

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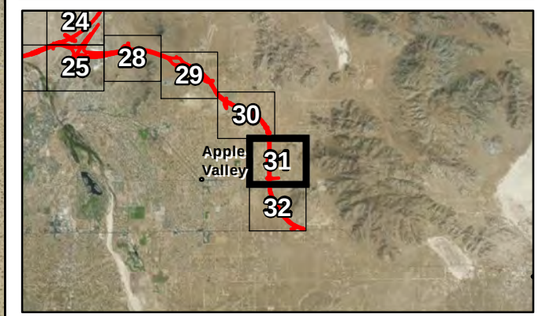

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2012-061 High Desert Corridor

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Vegetation Communities
Sheet: 32 of 32

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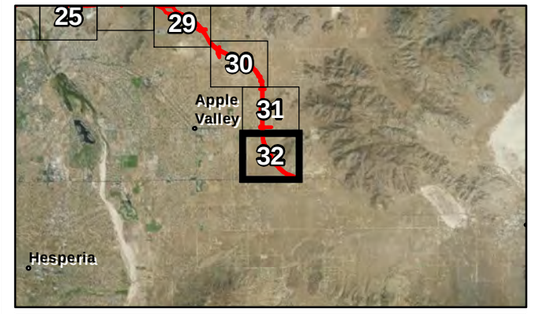

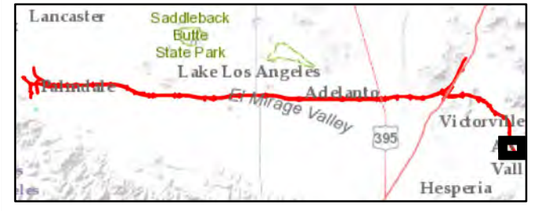

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Powhatan Rd
Selby Ln
Deerwood Rd
Eyota Rd
Ottawa Rd
Fairview Valley Rd
Lucilla Rd
Shoshonean Rd
Nisqually Rd
Sitting Bull Rd
Little Beaver Rd
Dover Rd
Japatul Rd
Narragansett Rd
Joshua Rd
Pah Ute Rd
Tehama Rd
Patomac Rd
Chipmunk Rd
Valley Vista Rd
Sioux Rd
Mustang Ave
Ranch Rd
Laguna Seca Dr
Chaparosa Dr
Deadman Saloon Dr
Bear Valley Rd

Location: N:\2012\2012-061.014 HDC GIS\MAPS\vegetation\vegetation\v1\HDC_Vegetation_BA_(rev03).mxd (MAG/JDS) JSwager 8/12/2015

2012-061 High Desert Corridor

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Photograph 1: Atriplex scrub in the western portion of the northern alignment.

Photograph 2: Big Rock Wash with flowing water in the northern alignment.

Photograph 3: Saltbush scrub in the central portion of the northern alignment.

Photograph 4: Creosote bush scrub in the eastern portion of the northern alignment.

Photograph 5: Creosote bush scrub in the western portion of the southern alignment (rocky soils).

Photograph 6: Big Rock Wash with flowing water the southern alignment (rocky soils).

Photograph 7: Joshua tree woodland in central portion of the southern alignment.

Photograph 8: Creosote bush scrub in the eastern portion of the southern alignment.

Photograph 9: Sandy wash near Sheep Creek Road looking to the east

Photograph 10: Desert tortoise in creosote scrub towards the northern alignment near Sheep Creek Road

Photograph 11: Creosote scrub to the south of the Victorville Landfill

Photograph 12: Creosote scrub and other mixed Mojave habitat in Victorville to the west of the Mojave River

Flora Compendium

SCIENTIFIC NAME	COMMON NAME
GYMNOSPERMS (GNETOPHYTA)	
CUPRESSACEAE	**CYPRESS FAMILY**
Juniperus californica	California juniper
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Mormon tea
Ephedra viridis	green ephedra
ANGIOSPERMS (DICOTYLEDONS)	
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Pistacia sp.	pistacio
APIACEAE	**CARROT FAMILY**
Lomatium mohavense	Mojave desert parsley
Tauschia perishii	Parish's umbrellawort
APOCYNACEAE *(or ASCLEPIADACEAE)*	**DOGBANE FAMILY**
Asclepias erosa	desert milkweed
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus sphaerocephalus	goldenhead
Acamptopappus sphaerocephalus var. *sphaeroce*	Rayless goldenhead
Adenophyllum porophylloides	San Felipe dogweed
Agoseris retrorsa	spearleaf mountain dandelion
Amblyopappus pusillus	dwarf coastweed
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia dumosa	Burro bush
Ambrosia psilostachya	Western ragweed
Ambrosia salsola (= Hymenoclea s.)	cheesebush
Anisocoma acaulis	scale bud
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Artemisia dracunculus	Tarragon
Artemisia ludoviciana	silver wormwood
Artemisia tridentata	big sagebrush
Baccharis salicifolia	Mulefat
Brickellia desertorum	desert brickellbush
*Cantaurea melitensis**	tocalote
*Cantaurea solstitialis**	yellow star-thistle
Calycoseris parryi	yellow tackstern
Chaenactis carphoclinia	pebble pincushion
Chaenactis fremontii	desert pincushion
Chaenactis xantiana	fleshy pincushion
Chrysothamnus nauseosus	rubber rabbitbrush
Chrysothamnus viscidiflorus	sticky rabbitbrush
Cirsium occidentale	western thistle
Corethrogyne filaginifolia (= *Lessingia f.*)	common sandaster
Dicoria canescens	Desert dicoria
Encelia actoni	Acton's brittlebush
Encelia farinosa	brittlebush

Encelia frutescens	button brittlebush
Encelia virginensis	virgin river brittlebush
Ericameria cooperi	Cooper's goldenbush
Ericameria cuneata	cliff goldenbush
Ericameria linearifolia	interior goldenbush
Ericameria nauseosa (= Chrysothamnus nauseosus)	Mojave rabbitbrush
Ericameria pinifolia	pinebush
Erigeron sp.	daisy
Erigeron canadensis (=Conyza c.)	horseweed
Erigeron foliosus	leafy daisy
Eriophyllum confertiflorum	golden yarrow
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly daisy
Gutierrezia californica	California matchweed
Gutierrezia microcephala	stick snakeweed
Heterotheca grandiflora	telegraph weed
Glyptopleura marginata	carveseed
*Lactuca serriola**	prickly lettuce
Lasthenia californica	coast goldfields
Layia glandulosa	white tidytips
Lepidospartum squamatum	scale-broom
Leptosyne bigelovii (= Coreopsis b.)	tickseed
Leptosyne californica (= Coreopsis c.)	California coreopsis
Lessingia glandulifera	valley lessingia
Logfia depressa (=Filago d.)	dwarf cottonrose
Logfia filaginoides	California cottonrose
Malacothrix californica	California dandelion
Malacothrix coulteri	snake's head
Malacothrix glabrata	desert dandelion
*Matricaria discoidea** (= *M. matricarioides*)	pineapple weed
Monoptilon bellidiforme	desert star
Nicolletia occidentalis	hole-in-the-sand plant
Palafoxia arida	desert palafox
Pluchea serricea	arrowweed
Psathyrotes ramosissima	turtleback
Pseudognaphalium stramineum (= Gnaphalium s.)	everlasting cudweed
Senecio flaccidus	threadleaf ragwort
Senecio flaccidus var. *douglasii*	Douglas' threadleaf ragwort
Solidago californica	California goldenrod
*Sonchus asper**	prickly sow thistle
Stephanomeria exigua	small wire-lettuce
Stephanomeria pauciflora	desert straw
Stephanomeria spinosa	thorn skeletonweed
Stylocline micropoides	desert nest straw
Tetradymia axillaris	cotton catclaw
Tetradymia comosa	hairy horsebrush

Tetradymia stenolepis	Mojave cottonthorn
Uropappus lindleyi (= *Microseris l.*)	silver puffs
Xanthium strumarium	cocklebur
Xylorihiza tortifolia	Mojave woody aster
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia intermedia	common fiddleneck
Amsinckia menziesii	Menzie's fiddleneck
Amsinckia tesselata	bristly fiddleneck
Cryptantha circumscissa	cushion cryptantha
Cryptantha decipiens	gravel cryptantha
Cryptantha maritima	Gaudalupe cryptantha
Cryptantha micrantha	red-root cryptantha
Cryptantha muricata	prickly cryptantha
Cryptantha nevadensis var. *rigida*	rigid crypthantha
Cryptantha oxygona	sharp-nut cryptantha
Cryptantha pterocarya	winged pick-me-not
Cryptantha recurvata	curved-nut cryptantha
Emmenanthe penduliflora	whispering bells
Eriodictyon trichocalyx	hairy yerba santa
Heliotropium curassavicum	salt heliotrope
Nama demissum	purple mat
Pectocarya penicillata	sleeping combseed
Pectocarya platycarpa	wide-toothed pectocarya
Pectocarya recurvata	combbur
Pectocarya setosa	round-nut pectocarya
Phacelia campanularia	desert bluebells
Phacelia crenulata	notch-laf phacelia
Phacelia distans	wild heliotrope
Phacelia fremontii	Fremont's phacelia
Phacelia tanacetifolia	lacy phacelia
Pholistoma membranaceum	white fiesta flower
Plagiobothrys acanthocarpus	Adobe popcornflower
Plagiobothrys arizonicus	Arizona popcornflower
Plagiobothrys nothofulvus	rusty popcornflower
Tiquilia nuttallii	annual tiquilia
Tiquilia plicata	plicate tiquilia
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Brassica tournefortii**	Sahara mustard
Caulanthus cooperi	Cooper's caulanthus
*Capsella bursa-pastoris**	Shepherd's purse
Descurainia pinnata	western tansy-mustard
Dithyrea californica	California shieldpod
*Hirschfeldia incana**	short-podded mustard
Lepidium flavum	yellow peppergrass
Lepidium fremontii	desert alyssum
Lepidium lasiocarpum	shaggyfruit pepperweed

*Lepidium latifolium**	perennial pepperweed
*Sisymbrium altissimum**	tumble mustard
*Sisymbrium irio**	London rocket
Stanleya pinnata	prince's plume
Tropidocarpum gracile	slender dobie-pod
CACTACEAE	**CACTUS FAMILY**
Cylindropuntia echinocarpa (=Opuntia e.)	golden cholla
Cylindropuntia parryi (= Opuntia p.)	valley cholla
Cylindropuntia ramosissima (= Opuntia r.)	pencil cholla
Echinocereus engelmannii	hedgehog cactus
Mammillaria tetrancistra	little fishhook cactus
Opuntia basilaris var. *basilaris*	beavertail cactus
*Sclerocactus polyancistrus***	Mojave fishhook cactus
CARYOPHYLLACEAE	**PINK FAMILY**
Loeflingia squarrosa	California loeflingia
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	four-wing saltbush
Atriplex polycarpa	cattle spinach
*Chenopodium album**	Lamb's quarter
Grayia spinosa	spiny hopsage
Krascheninnikovia lanata	winter fat
*Salsola tragus**	Russian thistle; tumbleweed
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Cuscuta denticulata	desert dodder
CRASSULACEAE	**STONECROP FAMILY**
Dudleya lanceolata	lance-leaved dudleya
CUCURBITACEAE	**GOURD FAMILY**
Brandegea bigelovii	desert starvine
Cucurbita palmata	coyote melon
Marah fabaceus	California manroot
EUPHORBIACEAE	**SPURGE FAMILY**
Chamaesyce albomarginata	whitemargin sandmat; rattlesnake weed
Chamaesyce polycarpa	smallseed sandmat
Croton californicus	California croton
Croton setigerus (= Eremocarpus setigerus)	dove weed
Stillingia paucidentata	Mojave stillingia
FABACEAE	**LEGUME FAMILY**
Acmispon strigosus (= Lotus s.)	strigose lotus
Astragalus coccineus	scarlet milkvetch
Astragalus didymocarpus	two-seeded milkvetch
Astragalus lentiginosus	freckled milkvetch
Astragalus lentiginosus var. *fremontii*	Fremont's milkvetch
Atragalus mohavensis	Mojave milkvetch
Dalea mollissima	soft prairie clover
Glycyrrhiza lepidota	wild licorice
Lupinus bicolor	miniature lupine
Lupinus concinnus	bajada lupine

Lupinus microcarpus var. *horizontalis*	chick lupine
Lupinus odoratus	Mojave lupine
*Medicago sativa**	alfalfa
*Melilotus alba**	white sweetclover
*Melilotus indicus**	sourclover
Psorothamnus arborescens var. minutifolius	Johnson's indigo bush
Trifolium sp.	clover
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Mentzelia albicaulis	small-flowered blazzing star
Monardella exilis	desert mint
Salvia carduacea	thistle sage
Salvia columbariae	chia
Salvia dorrii	blue sage
Scutellaria mexicana (= Salazaria m.)	paper-bag bush
Trichostema lanceolatum	vinegar weed
LOASACEAE	**LOASA FAMILY**
Mentzelia affinis	blazing star
Mentzelia albicaulis	white-stemmed blazingstar
Petalonyx thurberi ssp. Thurberi	Thurber's sandpaper plant
MALVACEAE	**MALLOW FAMILY**
Eremalche exilis	small flowered eremalche
Sphaeralcea ambigua	desert globemallow
MELIACEAE	**MAHOGANY FAMILY**
*Melia azedarach**	chinaberry tree
MONTIACEAE	**MINER'S LETTUCE FAMILY**
Calyptridium monandrum	common calyptridium
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Abronia pogonantha	Mojave sand verbena
Mirabilis laevis	desert wishbone bush
Mirabilis laevis var. villosa (= Mirabilis bigelovii)	wishbone bush
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia boothii	Booth's evening primrose
Camissonia campestris	Mojave suncup
Camissonia claviformis var. claviformis	brown-eyed primrose
Camissoniopsis palida	pale yellow sun cup
Chylismia brevipes (= Camissonia b.)	yellow cups
Epilobium ciliatum	California cottonweed
Eremothera boothii ssp. desertorum	desert woody bottle-washer
Oenothera californica	California evening primrose
Oenothera deltoides	dune evening primrose
Oenothera primiveris ssp. *bufonis*	desert evening primrose
Oenothera tanacetifolia	tansey-leaf evening primrose
OROBANCHACEAE	**BROOMRAPE FAMILY**
Castilleja exserta	purple owl's-clover

PAPAVERACEAE	**POPPY FAMILY**
Argemone corymbosa	Mojave pricklypoppy
Argemone munita	chicalote
*Canbya candida***	pygmy poppy
Eschscholzia californica	California poppy
Eschscholzia minutiflora	small-flowered desert poppy
PHRYMACEAE	**LOPSEED FAMILY**
Mimulus fremontii	Fremont's monkeyflower
PLANTAGINACEAE	**PLANTAIN FAMILY**
Antirrhinum coulterianum	Coulter's snapdragon
Collinsia heterophylla	Chinese houses
Plantago ovata	woolly plantain
Plantago patagonica	pursh plantain
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum densifolium	woollystar
Eriastrum eremicum ssp. Eremicum	desert woollystar
Eriastrum sapphirinum	sapphire woolly star
Gilia brecciarium	Nevada gilia
Gilia latiflora	broad-flowered gila
Gilia transmontana	transmontane gilia
Langloisia setosissima var. punctata	lilac sunbonnet
Leptosiphon androsaceus (= Linanthus a.)	common linanthus
Linanthus parryae	sandblossoms
Loeseliastrum matthewsii	desert calico
Loeseliastrum schottii	freeboot calico
POLYGONACEAE	**BUCKWHEAT FAMILY**
Centrostegia thurberi	Thurber's spineflower
Chorizanthe brevicornu	brittle spineflower
Chorizanthe rigida	spiny-herb
Chorizanthe watsonii	Watson's spineflower
Eriogonum angulosum	anglestem buckwheat
Eriogonum brachyanthum	short-flower wild buckwheat
Eriogonum davidsonii	Davidson's buckwheat
Eriogonum deflexum var. *polifolium*	flat-topped skeleton weed
Eriogonum fasciculatum	California buckwheat
Eriogonum fasciculatum var. *poliflorum*	Mojave desert California buckwheat
Eriogonum gracillimum	annual buckwheat
Eriogonum inflatum	desert trumpet
Eriogonum maculatum	spotted wild buckwheat
Eriogonum mohavense	western Mojave buckwheat
Eriogonum nidularium	whisk broom
Eriogonum nudum var. *pauciflorum*	little-flower wild buckwheat
Eriogonum plumatella	yucca buckwheat
Eriogonum pusillum	yellow turbans
Eriogonum reniforme	kidneyleaf buckwheat
Oxytheca perfoliata	roundleaf oxytheca
Rumex hymenosepalus	wild rhubarb

RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium parishii	desert larkspur
ROSACEAE	**ROSE FAMILY**
Andenostoma fasciculatum	chamise
Prunus fasciculata	desert almond
Purshia tridentata	antelope bush
RUTACEAE	**RUE FAMILY**
Thamnosma montana	turpentine broom
SALICACEAE	**WILLOW FAMILY**
Populus fremontii	Fremont's cottonwood
Salix exigua	sandbar willow
Salix gooddingii	black willow
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
Lycium andersonii	wolfberry
Lycium cooperi	peach thorn
Nicotiana obtusifolia	desert tobacco
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix chinensis**	five-stamen tamarisk
*Tamarix ramosissima**	Mediterranean tamarisk
ULMACEAE	**ELM FAMILY**
Ulmus parviflora	Chinese elm
Ulmus pumila	Siberian elm
VERBENACEAE	**VERVAIN FAMILY**
Verbena bracteata	bigbract verbena
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
*Tribulus terrestris**	puncturevine
ANGIOSPERMS (MONOCOTYLEDONS)	
AGAVACEAE (or Liliaceae)	**AGAVE FAMILY**
Hesperoyucca whipplei	chaparral yucca
Yucca brevifolia	Joshua tree
Yucca schidigera	Mojave yucca
ALLIACEAE	**ONION OR GARLIC FAMILY**
Allium fimbriatum var. fimbriatum	fringed onion
Allium fimbriatum var. *mohavense*	Mohave onion
CYPERACEAE	**SEDGE FAMILY**
Carex sp.	sedge
Eliocharis sp.	spikerush
JUNCACEAE	**RUSH FAMILY**
Juncus balticus ssp. ater (= J.balticus)	wire rush
Juncus sp.	rush
LILIACEAE	**LILY FAMILY**
Calochortus kennedyi	desert mariposa lily
*Calochortus striatus***	alkali mariposa lily

MELANTHIACEA	**FALSE-HELLBORE FAMILY**
Toxicoscordion brevibracteatum	desert deathcamas
POACEAE	**GRASS FAMILY**
Achnatherum coronatum	giant needlegrass
*Arundo donax**	giant reed
*Avena barbata**	slender wild oat
*Avena fatua**	common wild oat
Bromus berteroanus	Chilean chess
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
*Bromus madritensis ssp. rubens**	foxtail chess
*Bromus tectorum**	cheat grass
*Cynodon dactylon**	Bermuda grass
Dasyochloa pulchella	fluff grass
Distichlis spicata	saltgrass
Elymus elymoides	squirreltail
Elymus triticoides (= Leymus t.)	beardless wild rye
Festuca myuros (= Vulpia m.)*	fescue
*Hordeum marinum**	glaucous foxtail barley
Hordeum marinum var. *glaucum**	smooth barley
Hordeum marinum var. *leporinum*	hare barley
*Hordeum vulgare**	barley
Melica imperfecta	little California melica
Poa secunda	Malpais bluegrass
*Polypogon monspeliensis**	annual beard grass
*Schismus barbatus**	Mediterranean schismus
Stipa coronata (= Achnatherum coronatum)	giant needlegrass
Stipa hymenoides	sand rice grass
Stipa pulchra (= Nassella p.)	purple needlegrass
Stipa speciosa	desert needle grass
*Triticum aestivum**	common wheat
THEMIDACEAE	**BRODIADAEA FAMILY**
Dichelostemma capitatum	blue dicks
*Muilla coronate***	crowned muilla
TYPHACEAE	**CATTAIL FAMILY**
Typha domingensis	slender cattail
Typha latifolia	broad-leaved cattail
* non-native species	
** special-status species	

Fauna Compendium

SCIENTIFIC NAME	COMMON NAME
Insects	
Acrididae	**Short-horned Grasshoppers**
Bootettix argentatus	creosote bush grasshopper
Trimerotropis pallidipennis	pallid-winged grasshopper
Cicadidae	**Cicadias**
Tibicen sp.	cicada
Coccinellidae	**Ladybird Beetles**
Coccinella californica	ladybird beetle
Formicidae	**Ants**
Conomyrma sp.	crater-nest ant
Pogonomyrmex rugosus	harvester ant
Nymphlidae	**Brush-footed Butterflies**
Vanessa cardui	painted lady
Prodoxidae	**Yucca moths**
Tegeticula maculata	yucca moth
Sphingidae	**Sphinx Moths**
Hyles lineata	white-lined sphinx moth
Stenopelmatidae	**Jerusalem Crickets**
Stenopelmatus fuscus	Jerusalem cricket
Tenebrionidae	**Darkling Beetles**
Eleodes sp.	desert stink beetle
Tenebrio sp.	darkling beetle
Theridiidae	**Cobweb Weavers**
Latrodectus hesperus	black widow
Amphibians	
Bufonidae	**Toads**
Anaxyrus boreas	western toad
Ranidae	**True Frogs**
*Lithobates catesbeianus**	American bullfrog*
Hylidae	**New World Treefrogs**
Pseudacris hypochondriaca	Baja California treefrog
Reptiles	
Anguidae	**Alligator Lizards and Allies**
Elgaria multicarinata	alligator lizard
Colubridae	**Colubrids**
Arizona elegans	glossy snake
Chionactis occipitalis occipitalis	Mojave shovelnose snake
Lampropeltis getula californiae	California kingsnake
Masticophis flagellum	coachwhip
Pituophis catenifer	gopher snake
Salvadora hexalepis mojavensis	Mojave patchnose snake
Iguanidae	**Arboreal Lizards and Iguanas**
Callisaurus draconoides	zebra-tailed lizard

Dipsosaurus dorsalis	desert iguana
Gambelia wisizenii	long-nosed leopard lizard
Phrynosoma platyrhinos	desert horned lizard
Sauromalus ater	common chuckwalla
Sceloporus magister	desert spiny lizard
Sceloporus occidentalis	western fence lizard
Uta stansburiana	common side-blotched lizard
Teiidae	**Whiptails**
Cnemidophorus tigris	western whiptail
Testudinidae	**Tortoises**
*Gopherus agassizii***	desert tortoise**
Viperidae	**Vipers**
Crotalus cerastes cerastes	Mojave desert sidewinder
Crotalus scutulatus	Mojave green rattlesnake
Xantusiidae	**Night Lizards**
Xantusia vigilis	desert night lizard
Birds	
Accipitridae	**Hawks, Kites, Eagles, Allies**
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Circus cyaneus	northern harrier
Aegithalidae	**Long-tailed tits, Bushtits**
Psaltriparus minimus	bushtit
Alaudidae	**Larks**
Eremophila alpestris	horned lark
Alcedinidae	**Kingfishers**
Megaceryle alcyon	belted kingfisher
Anatidae	**Ducks, Geese, and Swans**
Anas clypeata	northern shoveler
Anas cyanoptera	cinnamon teal
Anas platyrhynchos	Mallard
Oxyura jamaicensis	ruddy duck
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
*Chaetura vauxi***	Vaux's swift**
Ardeidae	**Herons, Bitterns, Allies**
Ardea alba	great egret
Ardea herodias	great blue heron
Butorides virescens	green heron
Egretta thula	snowy egret
Nycticorax nycticorax	black-crowned night heron
Caprimulgidae	**Nighthawks and Nightjars**
Chordeiles acutipennis	lesser nighthawk
Cardinalidae	**Cardinals, Saltators, Allies**
Passerina amoena	lazuli bunting

Passerina caerulea	blue grosbeak
Pheucticus melanocephalus	black-headed grosbeak
Cathartidae	**Vultures**
Cathartes aura	turkey vulture
Charadriidae	**Lapwings, Plovers**
Charadrius vociferus	killdeer
Columbidae	**Pigeons, Doves**
*Columba livia**	rock pigeon*
*Streptopelia decaocto**	Eurasian collared-dove*
Zenaida asiatica	white-winged dove
Zenaida macroura	mourning dove
Corvidae	**Crows, Jays**
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	greater roadrunner
Emberizidae	**Sparrows**
Amphispiza belli	sage sparrow
Amphispiza bilineata	black-throated sparrow
Artemisiospiza belli	Bell's sparrow
Chondestes grammacus	lark sparrow
Melospiza melodia	song sparrow
Pipilo crissalis	California towhee
Pipilo maculatus	spotted towhee
Zonotrichia leucophrys	white-crowned sparrow
Falconidae	**Falcons**
Falco mexicanus	prairie falcon
Falco sparverius	American kestrel
Fringillidae	**Finches**
Haemorhous mexicanus	house finch
Carduelis psaltria	lesser goldfinch
Hirundinidae	**Swallows**
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Tachycineta thalassina	violet-green swallow
Icteridae	**Blackbirds**
Agelaius phoeniceus	red-winged blackbird
*Agelaius tricolor***	tricolored blackbird**
Euphagus cyanocephalus	Brewer's blackbird
Icterus bullockii	Bullock's oriole
Icterus parisorum	Scott's oriole
Molothrus ater	brown-headed cowbird
Quiscalus mexicanus	great-tailed grackle
Sturnella neglecta	western meadowlark

Laniidae	**Shrikes**
*Lanius ludovicianus***	loggerhead shrike**
Laridae	**Jaegers, Gulls, and Terns**
Larus sp.	unidentified gull
Mimidae	**Mockingbirds, Thrashers**
Mimus polyglottos	northern mockingbird
*Toxostoma lecontei***	Le Conte's thrasher**
Toxostoma redivivum	California thrasher
Odontophoridae	**New World Quail**
Callipepla californica	California quail
Callipepla gambelii	Gambel's quail
Paridae	**Titmice and Chickadees**
Poecile gambeli	mountain chickadee
Parulidae	**Wood Warblers**
Geothlypis trichas	common yellowthroat
*Icteria virens***	yellow-breasted chat**
Oreothlypis celata	orange-crowned warbler
Oreothlypis ruficapilla	Nashville warbler
Setophaga coronata	yellow-rumped warbler
*Setophaga petechia***	yellow warbler**
Setophaga townsendi	Townsend's warbler
Wilsonia pusilla	Wilson's warbler
Passeridae	**Old World Sparrows**
*Passer domesticus**	house sparrow*
Phasianidae	**Grouse and Pheasants**
*Alectoris chukar**	chukar*
Picidae	**Woodpeckers**
Colaptes auratus	northern flicker
Picoides pubescens	downy woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides scalaris	ladder-backed woodpecker
Polioptilidae	**Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Polioptila melanura	black-tailed gnatcatcher
Ptilogonatidae	**Silky Flycatchers**
Phainopepla nitens	phainopepla
Rallidae	**Rails and Moorhens**
Rallus limicola	Virginia rail
Recurvirostridae	**Stilts and Avocets**
Himantopus mexicanus	black-necked stilt
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Remizidae	**Verdins**
Auriparus flaviceps	verdin
Sittidae	**Nuthatches**
Sitta carolinensis	white-breasted nuthatch

Scolopacidae	**Sandpipers**
Actitis macularius	spotted sandpiper
Strigidae	**True Owls**
Athene cunicularia	burrowing owl
Asio flammeus	short-eared owl
Bubo virginianus	great horned owl
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling*
Thraupidae	**Tanagers**
Piranga ludoviciana	Western tanager
*Piranga rubra***	summer tanager**
Threskiornithidae	**Ibises and Spoonbills**
*Plegadis chihi***	white-faced ibis**
Trochilidae	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus sasin	Allen's hummingbird
Troglodytidae	**Wrens**
Campylorhynchus brunneicapillus	cactus wren
Cistothorus palustris	marsh wren
Salpinctes obsoletus	rock wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
Turdidae	**Bluebirds and Thrushes**
Catharus ustulatus	Swainson's thrush
Sialia currucoides	mountain bluebird
Sialia mexicana	western bluebird
Tyrannidae	**Tyrant Flycatchers**
*Contopus cooperi***	olive-sided flycatcher**
Contopus sordidulus	western wood-pewee
Empidonax difficilis	Pacific-slope flycatcher
Empidonax hammondii	Hammond's flycatcher
Empidonax traillii	willow flycatcher
*Empidonax traillii extimus***	southwest willow flycatcher
Empidonax wrightii	gray flycatcher
Myiarchus cinerascens	ash-throated flycatcher
Sayornis phoebe	black phoebe
Sayornis saya	Say's phoebe
Tyrannus verticalis	western kingbird
Tyrannus vociferans	Cassin's kingbird
Tytonidae	**Barn Owls**
Tyto alba	barn owl
Vireonidae	**Vireos**
*Vireo bellii pusillus***	least Bell's vireo**
Vireo cassinii	Cassin's vireo

Vireo gilvus	warbling vireo
Vireo huttoni	Hutton's vireo
Mammals	
Bovidae	**Cattle, Sheep, and Goats**
*Capra hircus**	domestic goat*
*Ovis aries**	domestic sheep*
Canidae	**Dogs, Foxes, and Coyotes**
Canis latrans	coyote
*Canis lupus familiaris**	domestic dog*
Vulpes macrotis	desert kit fox
Castoridae	**Beaver**
Castor canadensis	American beaver
Equidae	**Horses**
*Equus caballus**	domestic horse*
Felidae	**Cats**
*Felis cattus**	domestic cat*
Felis rufus	bobcat
Geomyidae	**Pocket Gophers**
Thomomys bottae	Botta's pocket gopher
Heteromyidae	**Pocket Mice and Kangaroo Rats**
Chaetodipus penicillatus	desert pocket mouse
Dipodomys merriami	Merriam's kangaroo rat
Dipodomys panamintinus	Panamint kangaroo rat
Leporidae	**Pika, Rabbits, and Hares**
Lepus californicus	black-tailed jackrabbit
Sylvilagus audubonii	desert cottontail
Muridae	**Rats, Mice, Voles, Allies**
Neotoma lepida	desert woodrat
Peromyscus maniculatus	deer mouse
Mustelidae	**Mustelids**
Mephitis mephitis	striped skunk
Taxidea taxis	American badger
Procyonidae	**Raccoons**
Procyon lotor	raccoon
Sciuridae	**Squirrels**
Ammospermophilus leucurus	white-tailed antelope ground squirrel
Spermophilus beecheyi	California ground squirrel
Vespertilionidae	**Evening Bats**
Parastrellus hesperus	western pipistrelle
* non-native species	
** special status species	

Photograph 1: Looking north under the existing SR-18 National Trails Highway Bridge over the Mojave River, approximately 1,200 feet west (downstream) of the Preferred Alternative.

Photograph 2: Looking north under the existing SR-18 National Trails Highway Bridge over the Mojave River, approximately 1,200 feet west (downstream) of the Preferred Alternative.

Photograph 3: Looking northwest under the existing SR-18 National Trails Highway Bridge over the Mojave River, approximately 1,200 feet west (downstream) of the Preferred Alternative.

Photograph 4: Looking northwest under the existing railroad bridge over the Mojave River, approximately 700 feet southeast of the Preferred Alternative.

Photograph 5: Looking southeast under the existing railroad bridge over the Mojave River, approximately 700 feet southeast of the Preferred Alternative.

Photograph 6: Looking east at the SR-18 Bridge over the Mojave River east of I-15.

Photograph 7: Looking east under the SR-18 Bridge over the Mojave River east of I-15.

Photograph 8: Looking northeast under the SR-18 Bridge and railroad tracks over the Mojave River east of I-15.

Photograph 9. Looking north under State Route 99 bridge near Fresno, California.