

Caltrans District 3 Yolo 80 Corridor Improvement Project



Bat Species of Special Concern Habitat Assessment

Sacramento, Yolo, and Solano Counties, California

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EA: 03-3H900 / EFIS: 0318000085

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STATE OF CALIFORNIA
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LIST OF ABBREVIATED TERMS

CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDDB	California Natural Diversity Database
I-80	Interstate 80
US-50	United States Route 50



Chapter 1 Introduction

The purpose of this document is to report the results of a preliminary field and habitat assessment for special-status bats and other bat species at the EA 03-3H900, Yolo 80 Corridor Improvement Project (project) within the project's environmental study limits (ESL), which encompasses all currently proposed project components and disturbance areas (e.g., road widening, paving, staging/laydown areas, etc.). This report focuses on three special-status bat species that occur in the region: the Townsend's big-eared bat (*Corynorhinus townsendii*), the pallid bat (*Antrozous pallidus*), and the western red bat (*Lasiurus blossevillii*). In addition, areas where other bat species, such as Mexican free-tailed bat (*Tadarida brasiliensis*), were identified roosting or could potentially establish maternity and/or winter roosts are reported here.



Chapter 2 Project Description

The California Department of Transportation (Caltrans) proposes to construct improvements consisting of managed lanes, pedestrian/bicycle facilities, and Intelligent Transportation System elements along Interstate 80 (I-80) and United States Route 50 (US-50) from Kidwell Road near the eastern Solano County boundary (near the City of Dixon), through Yolo County, and to West El Camino Avenue on I-80 and Interstate 5 on US-50 in Sacramento County (Figure 1). Caltrans is both the lead agency under the National Environmental Policy Act (as assigned by the Federal Highway Administration) and the California Environmental Quality Act (CEQA) for the Project. The purpose of this project is to improve multimodal mobility on the I-80 and US-50 corridors in Solano, Yolo, and Sacramento Counties. The project would decrease congestion through the corridor and the effects that congestion has on transit and freight. It would improve transit headway times, reliability, access, and viability through the corridor. The project would also increase people throughput by increasing transit, bicycle and pedestrian, and carpool use. Furthermore, the project would address non-recurrent congestion caused by incidents, including collisions, by improving incident detection, verification, response, and clearing. Project details including the precise limits of ground disturbance, timing, and duration of construction were not available at the time that this assessment was prepared.

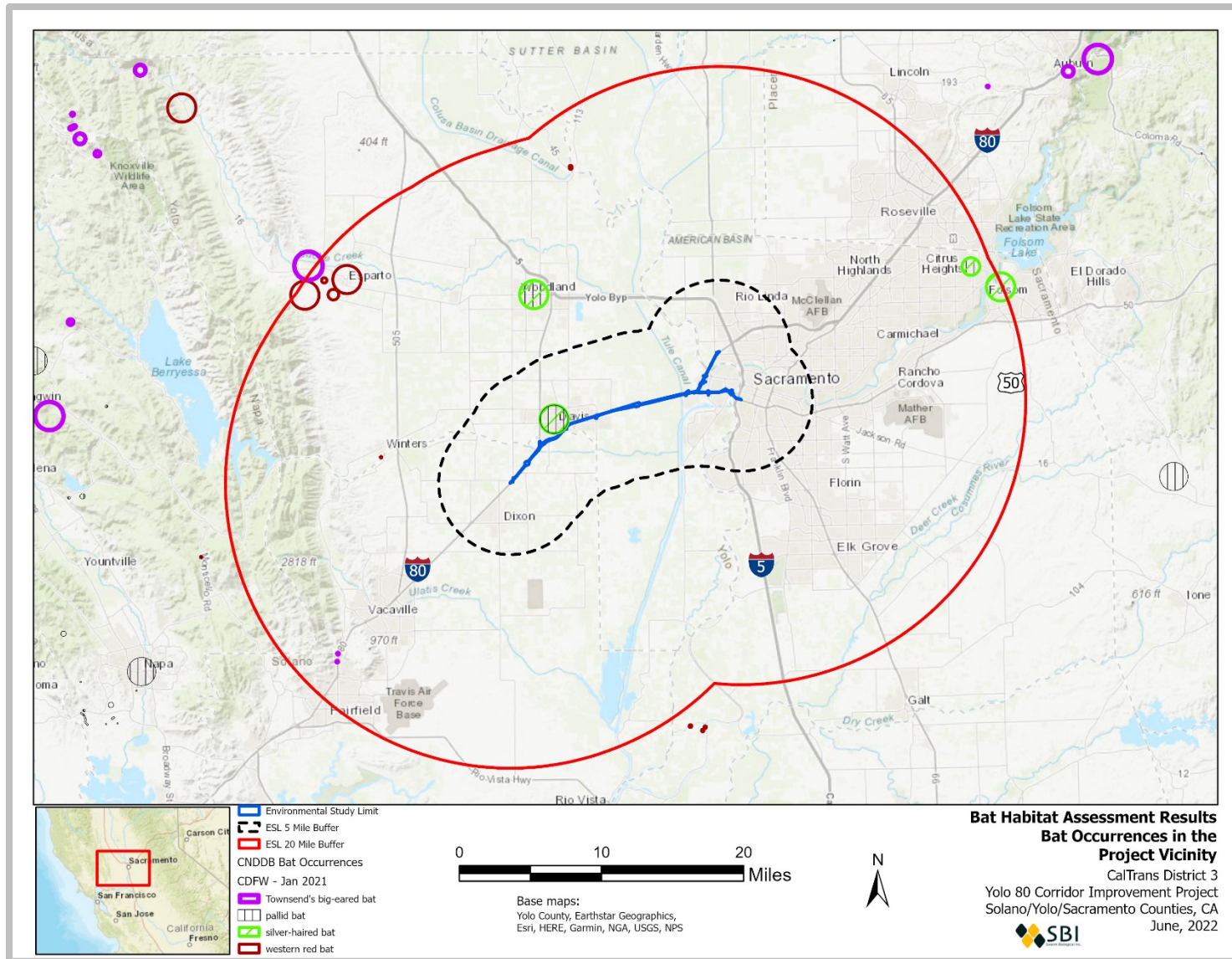


Figure 1. Overview of Project Area with Bat Occurrences in Project Vicinity

Chapter 3 Background Information

3.1 Regulatory Overview

CEQA compliance is the principal regulatory mechanism to protect bat populations in California. The CEQA Guidelines identify rare, threatened, and endangered species as plants or animals already listed by a governmental agency as being rare or endangered or that meet the definitions provided in the CEQA Guidelines (Title 14, California Code of Regulations, Section 15380). For example, California Department of Fish and Wildlife (CDFW) designates rare species, such as the pallid bat, western red bat and Townsend’s big-eared bat, as species of special concern (CNDDDB 2021). CEQA also requires the evaluation of impacts on resources that may be significantly affected as a result of project implementation. In addition, the California Code of Regulations Section 251.1 prohibits the harassment, herd, or drive of any game or nongame bird or mammal or furbearing mammal (Title 14, California Code of Regulations, Section § 251.1. Harassment of Animals). Therefore, this report focuses not only on the bat species designated as CDFW species of special concern but also on those species that may occur in the ESL and would need to be considered for evaluation under CEQA.

3.2 California Bat Species of Special Concern

Townsend’s Big-Eared Bat Overview

Listing Status

The Townsend’s big-eared bat is considered a species of special concern by CDFW (CDFW 2020) and is not listed under California or federal endangered species legislation.

Habitat and Current Range

Townsend's big-eared bats can occur throughout most of California where suitable habitat is present. They are found in all but subalpine and alpine habitats and may be found at any season throughout their range. The species requires open, cavernous/cavity-type habitats such as caves, tree basal hollows, mines, tunnels, buildings, bridges, or other human-made structures for roosting, and they may use separate sites for night, day, hibernation, or maternity roosts. Hibernation sites are generally cold, but not below freezing. Individuals may move within the hibernaculum to find suitable temperatures. Maternity roosts are found in generally warm sites established in late spring or early summer. Sites that do not warm up sufficiently, generally up to or over 85 degrees Fahrenheit, are considered less suitable

maternity roost habitat (Johnston et. al., 2019). Day roosting colonies can range from a singly roosted male or female depending on season, to groups of individuals into the hundreds during maternity season. This species has been documented to occasionally use bridges and culvert structures for roosting. Maternity colonies could be established as early as March 15, depending on location, and pups could be fully volant and independent by August 31.

Pallid Bat Overview

Listing Status

The pallid bat is considered a species of special concern by the CDFW (CDFW 2020) and is not listed under California or federal endangered species legislation.

Habitat and Current Range

Pallid bat day-roosting habitat typically includes rocky outcrops, cliffs, large-diameter live and snag trees, and spacious crevices with access to open habitats for foraging. Pallid bats may also roost in caves, mines, bridges, barns, porches, tree crevice roosts, and bat boxes, and even on the ground in stone piles, debris piles, baseboards, and rocks. Day roosts are generally warm and out of reach from ground predators and may consist of single- or mixed-sex colonies in crevices or man-made structures. Numbers of individuals in a day roost range from a few individuals up to a couple of hundred individuals. Pallid bats have been documented to use bridge and culvert structures for roosting. Maternity colonies could be established as early as March 15, depending on location, and pups could be fully volant and independent by August 31.

Western Red Bat Overview

Listing Status

The western red bat is considered a species of special concern by CDFW (CDFW 2020) and is not listed under California or federal endangered species legislation.

Habitat and Current Range

Western red bats can be found throughout California's lower elevations, with many records concentrated in the Central Valley. Like some bats found in California, western red bats seasonally make regional movements between their winter and maternity roosts. As a foliage roosting bat, the western red bat is associated with well-developed riparian habitats but will also utilize other habitats (e.g., orchard trees, eucalyptus [*Eucalyptus* sp.], tamarisk [*Tamarix* sp.], etc.) that provide suitable dense clusters of leaves creating suitable roosting sites. This

species has been observed roosting on the ground within leaf clutter. The western red bat is considered a solitary roosting bat but will occasionally roost in small groups. It will often have two pups per year. This species is unlikely to use bridge or culvert structures as roost habitat; however, trees may provide suitable maternity and winter roosting habitat for the western red bat. Maternity colonies could be established as early as March 15, depending on location, and pups could be fully volant and independent by August 31.

3.3 Other Bat Species – Non-Special Status Bat Species

Mexican Free-Tailed Bats

The Mexican free-tailed bat is not considered a species of special concern by CDFW (CDFW 2020) and is not listed under California or federal endangered species legislation.

The Mexican free-tailed bat most commonly uses natural roosts such as caves and rock crevices on cliff faces. This species also roosts in abandoned mines and tunnels, highway bridges and large culverts, buildings, and bat houses. Maternity roosts are usually warmer and larger than bachelor or non-reproductive female roosts. Mexican free-tailed bats will, during spring cold snaps, take refuge in cliff swallow nests. They often fly more than 30 miles to reach foraging areas. Such flight is rapid, direct, and often involves gliding. This species consumes a large variety of agricultural pests, mostly moths, but also flying ants, weevils, stinkbugs and ground beetles. They are primarily migratory, with large numbers of females returning to large, warm caves in Texas, New Mexico, Arizona, and Oklahoma each spring. Large aggregations (i.e., greater than 1,000) of non-hibernating Mexican free-tailed bats overwinter in bridges along the coast and portions of the Central Valley (Johnston 2004). Pups are usually born between mid-June and mid-July.



Chapter 4 Methodology

4.1 Background Research

To determine the distribution of special status bat species within the vicinity of the ESL, a search was conducted of the California Natural Diversity Database (CNDDDB 2021) for occurrences of each species described above within five miles of the ESL (Figure 1). If no bat species accounts were returned in the initial five-mile CNDDDB search, the search was expanded to include at least one occurrence for each special status species. In this case, a 20-mile search area was used to include at least one species of special concern record. In addition to the CNDDDB search, habitat within a one-mile radius of the project also was evaluated for potentially suitable bat habitat (e.g., bridges, concrete box culverts) using aerial imagery and United States Geological Survey 7.5-minute quadrangle maps of the area. Areas within the ESL (Appendix B: Figures 1-7) containing features such as bridges, culverts, or trees that could provide suitable bat roosting habitat were identified on maps and aerial imagery to be included in the field surveys (Google Earth Pro and ESRI World Imagery).

Bat habitat type and potential for bats, both special-status and other bat species (e.g., Mexican free-tailed bats and/or Yuma myotis [*Myotis yumanensis*]) that occur in the Central Valley, to occur was broken into the following locational categories: Bridge or Culvert roosts and Tree roosts. For each of these categories an assessment of the type of habitat was made and included items such as: if the habitat is thought to be suitable for or has signs of Maternity roosting, if the habitat is thought to be suitable for or has signs of Night roosting, and if there was potentially suitable foraging habitat present. Lastly, an assessment was made of the overall potential for bats to use the location/potential bat habitat for any life history stage (e.g., Maternity roost, winter/hibernacula, Night roost). Factors influencing suitable versus unsuitable bat roost habitat include sun exposure, airflow, construction material, assumed temperature regime within the potential roost habitat needed to promote bat roosting (e.g., above 85 degrees Fahrenheit for maternity roosting), presence of dense clusters of leaves (i.e., foliage roost), presence of crevices in anthropomorphic structures and trees (i.e., crevice roost), and presence of dark cavernous/cavity-type areas within the ESL. The first category labeled as Bridge or Culvert roost describes the potential roost type and overall quality of the roost. This category includes potential for bats to use the habitat for all roost types throughout the year including winter/hibernacula, maternity, and stopover roosts during migration. Tree Roosting Potential describes the potential for bats to use tree foliage (e.g., western red bat) or crevices (e.g., pallid bat) within the ESL. Foraging describes the potential to encounter any bat species foraging at or near the location within the ESL. Maternity

roosting describes the potential for any bat species to use the location for maternity roost habitat. Night Roosting describes the potential for any bat species to use the location for night roosting. Each of these categories was further assessed for potential for any bat species to use each location, and is defined as follows:

- High: bats were observed using habitat for roosting during the time of the survey, due to sign (e.g., large amounts of guano, urine staining, etc.) observed, or characteristics of the location makes it highly likely to be used by bats during a particular season or throughout the year.
- Moderate: suitable habitat is present; however, no bats or sign of bat use was observed during the survey (assuming sign/bats are available to be detected by the surveyor).
- Low: bats are unlikely to use the habitat as the potential bat roost habitat is of poor quality (e.g., a bridge with a uniform flat deck with no crevices for bats to find shelter), and no sign of bat use was observed.

4.2 Field Surveys

Field surveys were conducted on December 18, 21, and 22, 2020 by biologists Ryan Byrnes and Jessica Gonzalez. An additional survey of the updated proposed work areas was conducted on June 29, 2022, by biologist Ryan Byrnes. The purpose of the field surveys was to assess the suitability of potential bat roost habitat at the identified locations within the ESL and which bat species were then using those habitats for winter roosting. Additionally, the survey focused on whether suitable Townsend's big-eared bat, pallid bat, western red bat, and other bat species roost habitat were present at or immediately adjacent to the ESL. Habitat features associated with Townsend's big-eared bat, pallid bat, western red, and other bat species presence were recorded within the ESL and at accessible habitats immediately adjacent to the ESL. Weather conditions were suitable to promote detection of all special status bats during the winter season. In total, 47 different bridge and culvert locations were assessed to determine their suitability as potential roosting habitat and were surveyed for winter roosting bats.

The biologists walked the survey locations looking for suitable bat roost habitat, signs of bat use, and presence of bats. In most cases, at least one side of the bridge, culvert, or other potentially suitable bat roost habitat was inspected with a high-power flashlight and binoculars for bats and signs of bat roosting (Appendix C, Photos 1- 26).

All observed potential roost habitat was categorized into one of three different types:

- crevices (e.g., cracks and crevices within bridge expansion joints, bridge abutments, exfoliating bark, cracks in tree branches, rotting trees with cracks along the tree stem) which could be used by pallid bats, and Mexican free-tailed bats;
- cavernous/cavity (e.g., concrete box girder bridge, concrete I-beam girder bridge) which could potentially be used by Townsend's big-eared bats; or
- foliage (e.g., dense clusters of leaves, palm tree [*Syagrus* spp., and *Washingtonia* spp.] skirts made of dead palm leaves) which could be used by western red bats, and Mexican free-tailed bats.

Each potential roost type within the ESL was inspected to the greatest extent practicable for bat use and sign. Day roost was defined as locations where bats were observed roosting during the day. Depending on the season the survey is conducted, observations of day roosting bats or signs of bat use may help to identify and assess suitability of potential winter and/or maternity (April 15 – August 31) day roost habitat. Number of bats were estimated by counting the number of bats within each roost. For the Yolo Bypass Wildlife Area, the number of bats observed were estimated by counting the number of bats in one crevice and multiplied by the number of crevices observed to have bats (15 total, not all crevices had bats). This estimation method was used for the Yolo Bypass Wildlife Area to minimize the time the surveyors were present. Not all the Yolo Bypass Wildlife Area was surveyed due to access limitations, time needed to complete a full survey of this large feature, and budget constraints. Because this survey was conducted during the winter, all bats observed are assumed to be in their winter/hibernacula roost. Therefore, results of this survey can be used to confirm winter roost habitat currently in use by bats. Night roost habitat was defined as potential bat roost habitat used for social bat interactions, resting, and digestion between foraging bouts.



Chapter 5 Results

5.1 CNDDDB Records of Species of Special Concern within Five Miles of the ESL

Townsend's Big-Eared Bat

No records of Townsend's big-eared bat were identified within five miles of the ESL (Figure 1). The nearest record was an individual Townsend's big-eared bat observed approximately 17 miles from the ESL in 2011. The individual was found roosting in a box culvert undercrossing on Laurel Creek, approximately 1.9 miles northwest of Dickson Hill 1052 Dam (CNDDDB 2021).

Pallid Bat

One record of pallid bat was identified within five miles of the ESL (CNDDDB 2021). The record is from 1964 of a, individual female collected in the City of Davis area just north of the ESL (Figure 1).

Western Red Bat

No records of western red-eared bat were identified within five miles of the ESL (CNDDDB 2021). The nearest record is of a lactating/post lactating female western red-eared bat captured along the Putah Creek south of the City of Winters California, approximately nine miles northwest of the ESL.

5.2 Bat Habitat Survey Results

Multiple bridges and one culvert located below I-80 had signs of bat use, including staining and guano (see Table 1 in Appendix A). In addition, multiple day roosting bats were observed within expansion joints in multiple bridge structures. However, no special status bat species were observed during the survey.

Due to vehicle traffic on I-80, and some areas lacking safe pedestrian access, not all areas of the project ESL were fully surveyed. Bridges that were surveyed within the ESL varied in construction type, and included pedestrian concrete box bridges, concrete girder bridges, steel box bridges, steel girder bridges, and concrete box bridges. Culverts surveyed were made of corrugated metal pipe and concrete box culverts with varying diameters. The suitability of bat roost habitat identified during the field surveys varied depending on the

bridge construction type. Suitable roosting habitat features included expansion joints, weep holes, gaps along the bridge decks, corners of girder intersections along the bridge decks, manhole service entryways, and other crevices found on the bridge decks. Table 1 in Appendix A indicates the numbers of bats observed at each location during the survey, ranks the suitability of the bat roost habitat identified as Low, Moderate, or High (as defined above in the methods). The suitability of the habitat focuses on the three special status species but can be applied to any of the regionally occurring bat species. The table also includes a description of the surrounding habitat, and pertinent observations made during the survey. The figures in Appendix B show locations surveyed, and areas identified as potential roosting habitat, which includes potential tree roost habitat (e.g., foliage and crevice roost habitat) identified during the survey.

Suitable bat tree roost habitat of varying quality also was observed throughout the ESL. Suitable bat tree roost habitat consisted of dense clusters of tree leaves suitable for foliage roosting bats (e.g., western red bat), cracks and crevices habitat for crevice roosting bats created from rotting tree limbs and trunks, and crevices created from exfoliating bark (e.g., pallid bats and other crevice roosting bats). No large cavities were observed in any tree providing potentially suitable cavernous/cavity-type habitat for cavernous/cavity-type roosting bats (e.g., Townsend's big-eared bat). No bats were observed in any potentially suitable tree roost habitat.

Townsend's Big-Eared Bat

Although Townsend's big-eared bat roost habitat is present within the ESL, it is unlikely that any of the features within the ESL would support a colony of this species. Overall, the bridge and other habitats surveyed provide little to no cavity roost habitat, and large tree cavities were absent from the ESL. A few of the bridges surveyed have closed box girder construction with weep holes that could provide marginally suitable Townsend's big-eared bat roost habitat, and some cavern-like habitats between girders on the bridge underside also may be used on occasion by bats moving through the area.

Pallid Bat

Highly suitable maternity and winter roost habitat for pallid bats was observed in multiple locations within the ESL and areas immediately adjacent. Exfoliating bark, cracks, and other crevices observed on trees within the ESL provide suitable roost habitat for pallid bat. In addition, expansion joints, bridge abutments, and crevices within bridges located within the ESL provide suitable maternity roost habitat.

Western Red Bat

Trees that provide suitable foliage roost habitat for the western red bat were present throughout the ESL, though the majority of habitat surveyed consisted of trees with sparse foliage that were only moderately suitable. The riparian habitats found along the Putah Creek and the South Fork Putah Creek in the City of Davis contain dense leaf cluster which provide suitable roosting habitat for western red bat (Appendix B: Figures 1-8).

Mexican Free-Tailed Bats

Large colonies of wintering Mexican free-tailed bats were observed within bridge expansion joints at three locations in the ESL (see Table 1 in Appendix A). Numbers of Mexican free-tailed bats ranged from a few hundred (Locations 7 and 22) to approximately 3,000 individuals in the Yolo Bypass Wildlife Area (Location 29 and 30). Because of this, not all the habitat was surveyed, therefore this is almost certainly an underestimate of the total number of bats using the Yolo Bypass Wildlife Area for roosting during the winter season. During the maternity season, the Yolo Bypass Wildlife Area is home to an estimated 250,000 Mexican free-tailed bats, one of the largest colonies in California (Taylor 2013 and Ryan Byrnes personal observations). The two other locations had day roosting Mexican free-tailed bats. A total of 540 Mexican free-tailed bats were observed occupying I-80 bridge expansion joints spanning the South Fork of the Putah Creek just west of the City of Davis (Location 7, Appendix A), and 318 Mexican free-tailed bats were observed occupying expansion joints on the north side of the Pole Line Road I-80 overpass in the City of Davis (Location 22, Appendix A).



Chapter 6 Conclusions

Although no special-status bat species were observed during the field surveys, the results of this assessment indicate that suitable roost habitat for Townsend's big-eared bat, pallid bat, and western red-eared bat is present in various locations throughout the ESL. Suitable roosting habitat features consisted of bridges, culverts, and trees providing potentially suitable crevice and potentially cavernous/cavity-type habitat, cavernous/cavity-type habitat, and foliage/crevice/cavernous habitat, respectively. Other bat species, including large numbers of Mexican free-tailed bats, are present in portions of the surveyed ESL, namely the Yolo Bypass Wildlife Area.

Suitable maternity roost habitat for pallid bats was observed throughout the ESL. Pallid bats are most likely to occur onsite in bridges and/or potentially suitable crevice tree roost habitat.

Suitable foliage roost habitat for western red bats was observed within tree roost habitat found throughout the ESL consisting of dense clusters of leaves and a few palm trees along the perimeter of the survey area. The riparian area along the Sacramento River, Putah Creek, and South Fork of the Putah Creek consists of suitable willows (*Salix* sp.) and cottonwood (*Populus* sp.) that could be used by western red bats for roosting during the maternity season, migration, and winter hibernation.

Potentially suitable Townsend's big-eared bat habitat was observed in the form of concrete and steel girder and box bridges which provides open/cavernous habitat suitable for use by the species. However, the absence of dark, protected cavernous/cavity-type habitat with low levels of disturbance greatly reduces the potential for Townsend's big-eared bat to use these habitats as winter and maternity roosts. Therefore, Townsend's big-eared bats may occur within the ESL, especially during spring (February 1 – March 31) and fall migration (September 1 – November 30) but are unlikely to establish maternity roosting colonies in the bridges observed due to the absence of suitable roost characteristics and maternity roost habitat.

Mexican free-tailed bats were observed using Locations 7, 22, 29, and 30 as winter roosts during the field surveys (Table 1, Appendix A). Based on the amount of sign (e.g., large amounts of guano below crevice roosts, staining observed within crevices surveyed) observed at some locations, it is likely some bridge expansion joints are occupied by bats during the maternity season (April 15 – August 31). Further, Locations 7, 22, 29, and 30 are likely occupied by bats throughout the year since Mexican free-tailed bats are found at the Yolo Bypass Wildlife Area during the maternity season (Ryan Byrnes, personal observation).

Therefore, the bridge habitat in the ESL should be considered a unique habitat feature on the landscape since the geomorphology (physical features) of the Central Valley does not provide commensurate/similar roosting habitat. In addition, this unique biological feature/resource is publicly known and recognized by special interest groups (e.g., NorCalBats, SonoBat™ Café – Sacramento Chapter, California Bat Working Group, etc.) and the general public. The Yolo Basin Foundation frequently facilitates bat outreach programs, including Bat Talks and Walks during the summer where community members come and watch an estimated 250,000 Mexican free-tailed bats emerge each night (Quirk, 2011; Taylor, 2013). These community out-flight events are well known in the City of Sacramento and City of Davis areas, and the Yolo Basin Foundation has done a lot of outreach to involve the community in conserving one of California’s largest estimated populations of Mexican free-tailed bats, as seen in articles in Bay Nature and San Francisco Chronical (Richards 2014; Taylor 2013; Quirk 2011). Therefore, given the amount of public knowledge and involvement, Mexican free-tailed bats that inhabit/roost under I-80 are considered a regionally important species and potential effects on the population will need to be considered during project planning.

Although conditions within the ESL are generally unsuitable or provide only marginally suitable habitat for Townsend’s big-eared bat, pallid bat, and western red-eared bat, there are some areas currently occupied by bats or that have a high potential to provide roosting habitat for bats (Appendix A). In addition, there is potential for individuals to occur at various locations within the ESL, possibly originating/dispersing from more suitable roost sites in nearby areas.

6.1 Recommended Surveys

Based on the results of this bat habitat assessment, it is recommended that focused bat surveys be conducted to determine the species of bats using the ESL throughout the year, and the ways that bats are using the habitat within the ESL. Surveys should be consistent with the Level 3 focused surveys outlined in the *Caltrans Bat Mitigation Guide* (Johnston et. al. 2019) and include all areas described in this report, focusing on areas where disturbance to potential bat roost habitat is anticipated. The *Caltrans Bat Mitigation Guide* includes multiple surveys conducted during all seasons of the year including day roost counts, emergence surveys, and acoustic surveys to determine bat species, bat activity, and how bats are using these locations throughout the year. Based on those results a monitoring plan can be established to monitor bat populations identified during the survey phase. Monitoring should be used to identify a baseline disturbance and activity level. Results of these monitoring efforts will establish a baseline from which mitigation measures can be evaluated and will help determine whether

any adaptive measures need to be implemented such as moving or modifying replacement bat roost habitat (e.g., bat boxes, Oregon wedge, etc.) if bat boxes are not occupied by bats within 5 years.



Chapter 7 References

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Appendix A Table of Surveyed Locations and Potential for Bats to Occur



Table 1. Summary of Surveyed Project Locations for Bat Roosting Habitat

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
1	Corrugated steel culverts running below I-80 0.2 miles southwest of the Pedrick Road I-80 Overpass.	No	None	<ul style="list-style-type: none"> • Culvert roost: Low • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: Low 	Habitat consists of small, corrugated steel pipes. Habitat surrounding the culvert consists of perennial grasslands, and orchard trees. No bats or sign detected. Trees near the bridge are small with some potential foliage roost habitat but marginal overall.
2	Pedrick Road I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of perennial grasslands, and orchard trees. Low bat roost potential within the steel girder bridge, no expansion joints observed. Though no bats or sign detected, the habitat could be used for night roosting by bats. Trees surrounding the bridge are small with some potential foliage roost habitat but marginal overall.
3	Corrugated steel culvert running below I-80	No	None	<ul style="list-style-type: none"> • Culvert roost: None • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: Low 	Habitat consists of small, corrugated steel pipes. Habitat surrounding the culvert consists of perennial grasslands, and orchard trees. No bats or sign detected. Trees near the bridge are small with some potential foliage roost habitat but marginal overall.
4	Kidwell Road I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of perennial grasslands, orchard trees, and a small stand of trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed.

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
5	Corrugated steel culverts running below I-80 and adjacent I-80 on and off ramp and I-80 frontage roads northeast of Kidwell Road.	No	None	<ul style="list-style-type: none"> • Culvert roost: High • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: High 	Potential bat roost habitat is made up of multiple, large diameter corrugated steel culverts running below I-80 and adjacent frontage roads. The culverts below I-80 had signs of bat use, likely night roosting. Habitat surrounding the bridge consists of perennial grasslands, orchard trees, and a small stand of trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge.
6	Corrugated steel culverts running below I-80 0.5 miles northeast of the Kidwell Road overpass	No	None	<ul style="list-style-type: none"> • Culvert roost: None • Tree roosting: None • Foraging: None • Maternity roosting: Low • Night roosting: Low 	Habitat consists of small, corrugated steel pipes. Habitat surrounding the culvert consists of perennial grasslands, and orchard trees. No bats or sign detected. Trees near the bridge are small with some potential foliage roost habitat but marginal overall.
7	I-80 South Fork of the Putah Creek Bridge	Yes	540 Mexican free-tailed bats	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: High • Foraging: High • Maternity roosting: High • Night roosting: High 	Habitat surrounding the bridge consists of riparian vegetation surrounding South Fork of the Putah Creek, croplands, and orchard trees. Multiple expansion joints along the I-80 bridges spanning the South Fork of the Putah Creek were occupied by Mexican free-tailed bats. Willow and cottonwood trees along the South Fork of the Putah Creek provide suitable foliage roost habitat for western red bat.
8	I-80 / State Highway 113 Interchange South	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: High 	Habitat surrounding the bridge consists of riparian vegetation surrounding South Fork of the Putah Creek, croplands, and orchard trees. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
	Fork of the Putah Creek Bridge			<ul style="list-style-type: none"> • Foraging: High • Maternity roosting: Low • Night roosting: High 	guano was observed within any weepholes surveyed. Though no bats were observed, some sign of night roosting bats was observed below the bridge piers. Willow and cottonwood trees along the South Fork of the Putah Creek provide suitable foliage roost habitat for western red bat.
9	I-80 / State Highway 113 Interchange Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: High • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of mowed highway median, orchard trees, and trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed. A pond/wetland area was observed north of the bridge and provides suitable foraging habitat for bats using the area.
10	I-80 / State Highway 113 Interchange Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: High • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of mowed highway median, orchard trees, and trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed. A pond/wetland area was observed south of the bridge and provides suitable foraging habitat for bats using the area.

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
11	I-80 / State Highway 113 Interchange Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: High • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of mowed highway median, orchard trees, and trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed. A pond/wetland area was observed west of the bridge and provides suitable foraging habitat for bats using the area.
12	Pedestrian I-80 Offramp Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of roadside trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the bridge structure due to the absence of crevice roost habitat, pedestrian lights lining the underside of the bridge and no signs of bat use were observed.
13	Old Davis Road I-80 Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of roadside trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any weepholes surveyed.
14	Old Davis Road I-80 Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Moderate • Night roosting: Low 	Habitat surrounding the bridge consists of roadside trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any weepholes surveyed.

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15	Pedestrian I-80 Onramp Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of roadside trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the bridge structure due to the absence of crevice roost habitat, pedestrian lights lining the underside of the bridge and no signs of bat use were observed.
16	Union Pacific Railroad I-80 Bridge east of Old Davis Road	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Low 	Habitat surrounding the bridge consists of agricultural fields, trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge, and University of California at Davis school buildings. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed.
17	Concrete Box Culvert running below I-80 adjacent to Putah Creek bike / pedestrian path	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: High • Maternity roosting: Moderate • Night roosting: High 	Habitat surrounding the culvert consists of agricultural fields, trees along the roadside and green space along the Putah Creek with dense clusters of leaves and crevices for roosting bats adjacent to the culvert. Bat roost potential was determined to be highly suitable due to the presence of joint crevices within the culvert and some small amounts of guano observed on the ground within the culvert. The culverts were gated so entry was not possible. Guano was observed using a flashlight and binoculars just outside the culvert.

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
18	I-80 Putah Creek Bridge	No	None	<ul style="list-style-type: none"> • Culvert roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of agricultural fields, trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge, and University of California at Davis school buildings. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed.
19	West Chiles Road Putah Creek Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of agricultural fields, trees along the roadside and green space along the Putah Creek with dense clusters of leaves and crevices for roosting bats adjacent to the bridge. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed.
20	Richards Boulevard I-80 Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Low • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of buildings, trees along the roadside with dense clusters of leaves and crevices for roosting bats adjacent to the bridge, and mowed highway median. Bat roost potential was determined to be low within the concrete box bridge, weep holes are present, but no guano was observed within any surveyed.
21	Unidentified Concrete Box Culvert	No	None	<ul style="list-style-type: none"> • Culvert roost: Unknown • Tree roosting: Unknown 	Habitat surrounding the culvert consists of a wetland and pond adjacent to the work area with a concrete culvert leading to the pond. The area was not surveyed due to locked gates and a tall fence.

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				<ul style="list-style-type: none"> • Foraging: High • Maternity roosting: Unknown • Night roosting: Unknown 	This location is noted here as it appeared to travel under I-80 and could be affected by project activities. If it is determined that this feature will be impacted, internal surveys should be considered to determine if the culvert is suitable for bats.
22	Pole Line Road 2 nd Street portion of the I-80 Overpass	Yes	318 Mexican free-tailed	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: High • Maternity roosting: High • Night roosting: High 	Habitat surrounding the bridge consists of a wetland and pond adjacent to the work area with trees surrounding the pond providing foraging habitat and potential tree roost habitat with dense clusters of leaves and crevices, respectively. Three-hundred and eighteen Mexican free-tailed bats were observed roosting in the northern expansion joint of the Pole Line Road overpass.
23	Pole Line Road I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Low • Night roosting: High 	Habitat surrounding the bridge consists of a wetland and pond adjacent to the work area with trees surrounding the pond providing foraging habitat and potential tree roost habitat with dense clusters of leaves and crevices, respectively. The southern portion of the Pole Line Road overpass consists of a concrete box bridge construction providing some potential night roost habitat, but little day or maternity roost habitat compared to the northern portion of the bridge (Location 20).
24	Pedestrian I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: Moderate 	Habitat surrounding the bridge consists of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisting of two expansion joints were observed in

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
				<ul style="list-style-type: none"> • Maternity roosting: Moderate • Night roosting: Moderate 	the concrete box pedestrian bridge, however, no bats were observed. White-throated swifts were observed roosting in the northern expansion joint.
25	Mace Boulevard Union Pacific Railroad Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Moderate • Night roosting: Moderate 	Habitat surrounding the bridge consists of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of expansion joints, utility boxes, and bridge abutments in the concrete girder and steel box bridge spanning railroad tracks adjacent to the ESL. No bats or sign of bats using the bridge were observed.
26	Mace Boulevard I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisting of expansion joints steel girder and concrete deck bridge; however, no bats or sign of bats were observed.
27	Concrete Culvert below Road 32A 0.02 miles south of the Road 32A and Road 105 intersection.	No	None	<ul style="list-style-type: none"> • Culvert roost: Low • Tree roosting: None • Foraging: Low • Maternity roosting: Low • Night roosting: Low 	Habitat consists of medium sized, concrete pipe sections fitted together to create the culvert below Road 32A. The concrete sections created gaps in the culvert that could be used by bats on occasion. However, overall, due to the small diameter and absence of bats or signs of bat use, the bat roost habitat was determined to be marginal. Habitat surrounding the culvert consists of perennial grasslands, and orchard trees. Trees near the bridge are small with some potential foliage roost habitat but marginal overall.

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28	I-80 County Road 32A Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: High • Maternity roosting: Low • Night roosting: High 	Habitat surrounding the bridge consists of annual grass, agricultural fields (rice), and potential tree roost habitat with dense clusters of leaves and crevices within the Yolo Bypass Wildlife Area. Potentially suitable bat roost habitat consisted of concrete girder construction. Signs of bat night roosting were observed throughout the bridge, including guano and staining spots along the bridge deck.
29	Yolo Bypass Wildlife Area Bridge – Western Abutment	Yes	1,500 Mexican free-tailed bats	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: High • Foraging: High • Maternity roosting: High • Night roosting: High 	Habitat surrounding the bridge consists of annual grass, agricultural fields (rice), and potential tree roost habitat with dense clusters of leaves and crevices within the Yolo Bypass Wildlife Area. Potentially suitable bat roost habitat consisted of concrete girder bridge construction with gaps between girders providing highly suitable bat roost habitat. One thousand five hundred Mexican free-tailed bats were counted in one section of the bridge. Not all sections were visited to minimize disturbance to winter roosting bats.
30	Yolo Bypass Wildlife Area Bridge – Eastern Abutment	Yes	1,500 Mexican free-tailed bats	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: High • Foraging: High • Maternity roosting: High • Night roosting: High 	Habitat surrounding the bridge consists of annual grass, agricultural fields (rice), and potential tree roost habitat with dense clusters of leaves and crevices within the Yolo Bypass Wildlife Area. Potentially suitable bat roost habitat consisted of concrete girder bridge construction with gaps between girders providing highly suitable bat roost habitat. One thousand five hundred Mexican free-tailed bats were counted in one section of the bridge. Not all sections were visited to minimize disturbance to winter roosting bats.

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31	I-80 Enterprise Boulevard Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of annual grass, agricultural fields (rice), and potential tree roost habitat with dense clusters of leaves and crevices within the Yolo Bypass Wildlife Area. Potentially suitable bat roost habitat consisted of concrete girder bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. No bats or signs of bat roosting were observed.
32	Concrete Culvert below US 50 and I-80 Onramp	No	None	<ul style="list-style-type: none"> • Culvert roost: Moderate • Tree roosting: Moderate • Foraging: High • Maternity roosting: Moderate • Night roosting: Moderate 	Habitat surrounding the culvert consists of an irrigation ditch that widens to create a pond or lake, wetland and riparian areas along the pond/lake, landscaped lawns, mowed areas below the bridge, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Moderately suitable bat roost habitat consisted of a concrete box culvert with crevices formed by joints where the concrete sections were fitted together. Palms and willow trees surrounding the pond/lake west of the culverts, outside of the Environmental Study Limits, could provide suitable bat tree roost habitat. Using a flashlight and binoculars, no bat sign was observed, however, due to the presence of water, the culverts could not be surveyed internally, therefore, roosted bats and/or signs of bat use could have been missed.
33	US 50/I-80 Service Road Culvert	No	None	<ul style="list-style-type: none"> • Culvert roost: Moderately 	Habitat surrounding the culvert consists of an irrigation ditch that widens to create a pond or lake habitat, wetland and riparian areas along the

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
				<ul style="list-style-type: none"> • Tree roosting: Moderate • Foraging: High • Maternity roosting: Low • Night roosting: Moderate 	<p>pond/lake, landscaped lawns, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Moderately suitable bat roost habitat consisted of a concrete box culvert with crevices formed by joints where the concrete sections were fitted together. Palms and willow trees surrounding the pond/lake west of the culverts, outside of the Environmental Study Limits, could provide suitable bat tree roost habitat. Using a flashlight and binoculars, no bat sign was observed, however, due to the presence of water, the crevices within the culvert could not be surveyed, therefore, bats and sign could have been missed.</p>
34	Harbor Boulevard US-50/ Business I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Moderate • Night roosting: Moderate 	<p>Habitat surrounding the bridge consists of landscaped lawns, mowed highway median, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of concrete girder bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. Bat guano was observed in crevices along the bridge abutments; however, no bats were observed during the survey.</p>
35	US-50/Business I-80 Westacre Road Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Moderate • Tree roosting: Moderate • Foraging: Moderate 	<p>Habitat surrounding the bridge consists of landscaped lawns, mowed highway median, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of concrete girder bridge construction with multiple</p>

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
				<ul style="list-style-type: none"> • Maternity roosting: Moderate • Night roosting: Moderate 	expansion joints and some crevices observed along the bridge abutments. Bat guano was observed in crevices along the bridge abutments; however, no bats were observed during the survey.
36	US-50/Business I-80 Jefferson Boulevard Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: High • Night roosting: High 	Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of steel girder bridge construction with multiple expansion joints and some crevices observed along the length of the bridge and at the bridge abutments. The bridge was difficult to survey due to its overall distance from the surveyors. Access to the bridge deck catwalk would help survey the expansion joints observed. No bat sign was observed in crevices along the length of the bridge below multiple expansion joints.
37	California State Route 275 Jefferson Boulevard Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: High 	Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of steel girder bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. Bridge was difficult to survey due to its overall distance from the surveyors. Access to the bridge deck catwalk would help survey the expansion joints observed. Bat guano was observed in crevices along the length of the below multiple expansion joints. Based on the

Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
				<ul style="list-style-type: none"> Night roosting: High 	amount of guano observed, the expansion joint could be occupied by a maternity colony during maternity season.
38	California State Route 275 Jefferson Boulevard Bridge	No	None	<ul style="list-style-type: none"> Bridge roost: Low Tree roosting: Moderate Foraging: Moderate Maternity roosting: Low Night roosting: Moderate 	Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of concrete slab bridge construction with multiple sealed expansion joints and crevices observed at the bridge abutments. No bat sign was observed in crevices along the bridge abutments.
39	Concrete Box Culvert passing below Jefferson Boulevard	No	None	<ul style="list-style-type: none"> Culvert roost: Low Tree roosting: Moderate Foraging: Moderate Maternity roosting: Low Night roosting: Low 	Habitat surrounding the culvert consists of landscaped lawns, residential and industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. Bat roost habitat consists of small, concrete culvert with a box service entrance that could provide suitable roosting habitat. No bats or sign detected.
40	Corrugated steel culvert passing below South River Road	No	None	<ul style="list-style-type: none"> Culvert roost: None Tree roosting: Moderate Foraging: High Maternity roosting: Low Night roosting: Low 	Habitat consists of small, corrugated steel pipes. Habitat surrounding the culvert consists of industrial buildings, apartment buildings, construction yards, and riparian habitats associated with the Sacramento River. No bats or sign detected. Some larger trees near the culvert may provide suitable bat tree roost habitat consisting of dense clusters of leaves and crevices.

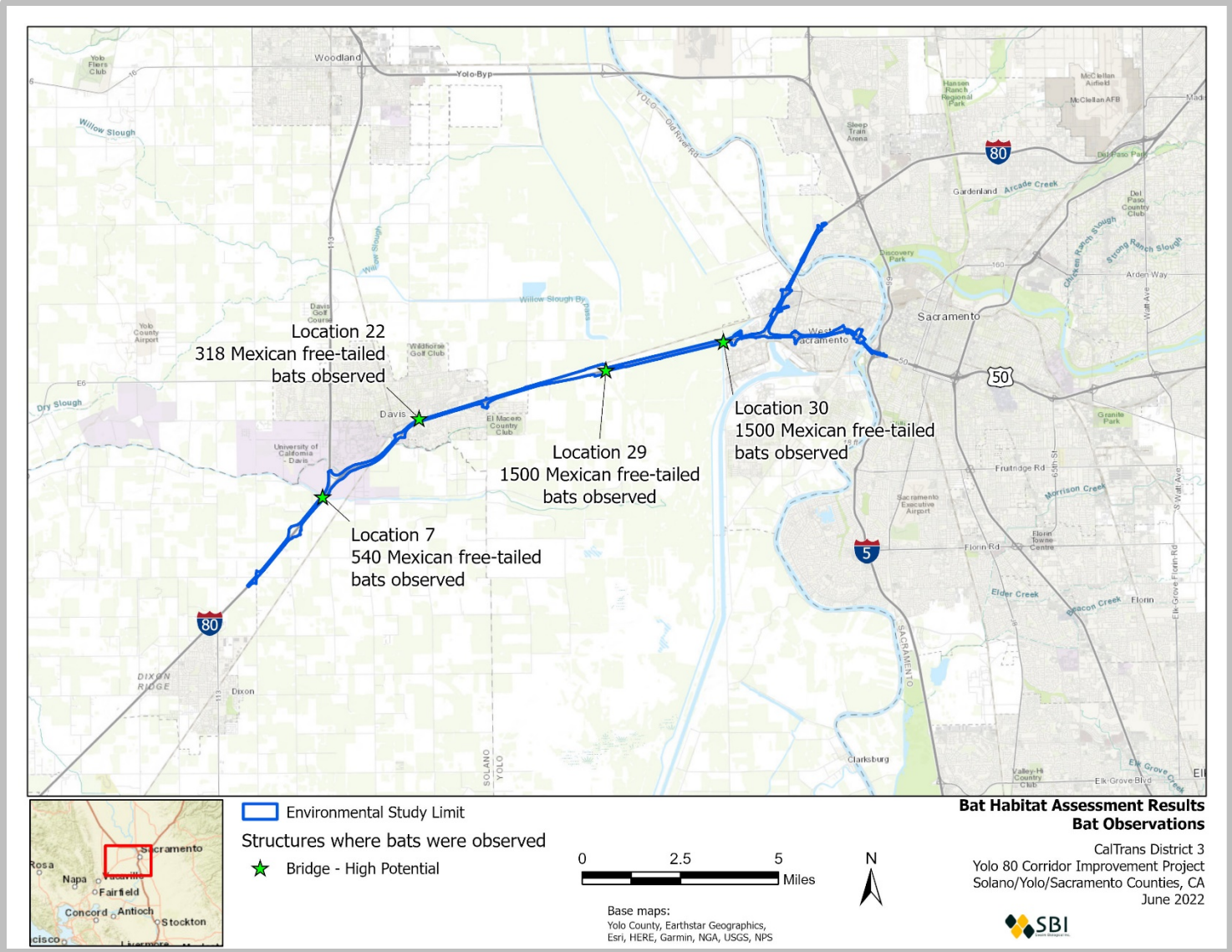
Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
41	US-50/Business I-80 Sacramento River Bridge including all Bridge On- and Off-Ramps	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: High • Maternity roosting: High • Night roosting: High 	This location spans the Sacramento River and leads to a developed and disturbed area in Sacramento. Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, homeless encampments, and potential tree roost habitat along the Sacramento River and urban street trees with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of steel girder bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. Bridge was difficult to survey due to its overall distance from the surveyors. Access to the bridge deck catwalk would help survey the expansion joints observed. Bat guano was observed in crevices along the length of multiple expansion joints. Based on the amount of guano observed, the expansion joint could be occupied by a maternity colony during maternity season.
42	US-50/ Business I-80 Interchange Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: High • Night roosting: Moderate 	Habitat surrounding the bridge consists of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and some crevices, though most trees were small and unlikely to be occupied by bats, including some palm trees adjacent to the work area. Potentially suitable bat roost habitat consisting of expansion joints within the multiple concrete box bridges, however, no bats were observed.
43		No	None	<ul style="list-style-type: none"> • Bridge roost: Low 	Habitat surrounding the bridge consists of mowed highway median, wetlands along the southern

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	West Capitol Avenue I-80 Bridge			<ul style="list-style-type: none"> • Tree roosting: High • Foraging: High • Maternity roosting: Low • Night roosting: High 	portion of the survey area, and potential tree roost habitat with dense clusters of leaves and crevices, including some palm trees. Potentially suitable bat roost habitat consisted of concrete box bridge construction, with weep holes, though no signs of bat roosting were observed in the weep holes surveyed. Signs of bat night roosting were observed along the bridge piers within the West Capitol Avenue median, including guano and staining spots along the pier and bridge deck intersection.
44	Union Pacific Railroad I-80 Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of mixed annual grasslands, mowed highway shoulder, seasonal wetlands, and marginal tree roost habitat on the northeast side of the bridge. Potentially suitable bat roost habitat consisted of concrete box bridge construction, with weep holes, though no signs of bat roosting were observed in the weep holes surveyed. No bats or signs of bat roosting were observed during the survey.
45	Reed Avenue I-80 Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Moderate • Foraging: Moderate • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of mixed annual grasslands, mowed highway shoulder, and potential tree roost habitat along the north side of the bridge extending to the Sacramento River including urban street trees with dense clusters of leaves and crevices. Potentially suitable bat roost habitat within the bridge structure consisted of concrete box bridge construction, with weep holes. No bats or signs of bat roosting were observed during the survey.

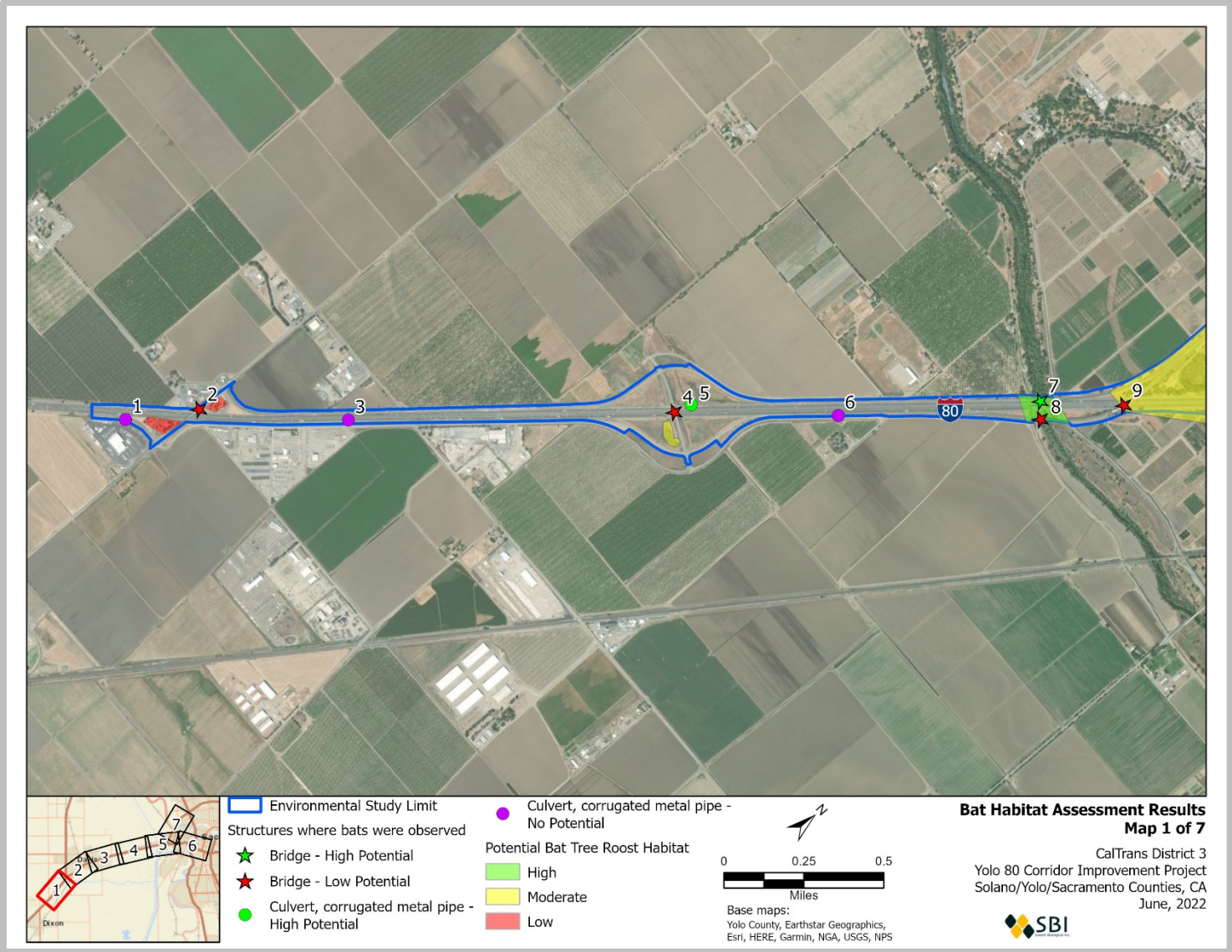
Location #	Location Description	Bats Detected	Species and Number of Bats Observed	Bat Roosting Habitat Type and Potential for Special Status Bats and Other Bats to Occur within the Surveyed Location	Notes on Habitat
46	I-80 Sacramento River Bridge	No	None	<ul style="list-style-type: none"> • Bridge roost: High • Tree roosting: Moderate • Foraging: High • Maternity roosting: High • Night roosting: High 	This location spans the Sacramento River along the I-80. Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, homeless encampments, and potential tree roost habitat along the Sacramento River and urban street trees with dense clusters of leaves and crevices. Potentially suitable bat roost habitat consisted of steel box bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. Bridge was difficult to survey due to its overall distance from the surveyors. Access to the bridge deck would help survey the expansion joints observed throughout the bridge structure. Bat guano was observed in crevices along the length of multiple expansion joints. Based on the amount of guano observed, the expansion joint could be occupied by a maternity colony during maternity season.
47	West El Camino I-80 Overpass	No	None	<ul style="list-style-type: none"> • Bridge roost: Low • Tree roosting: Low • Foraging: Moderate • Maternity roosting: Low • Night roosting: Moderate 	Habitat surrounding the bridge consists of mixed annual grasslands, mowed highway shoulder, agricultural fields, and marginal tree roost habitat on the east side of the bridge. Potentially suitable bat roost habitat consisted of concrete box bridge construction, with weep holes. No bats or signs of bat roosting were observed during the survey.

Appendix B Maps of Bat Assessment Survey Locations

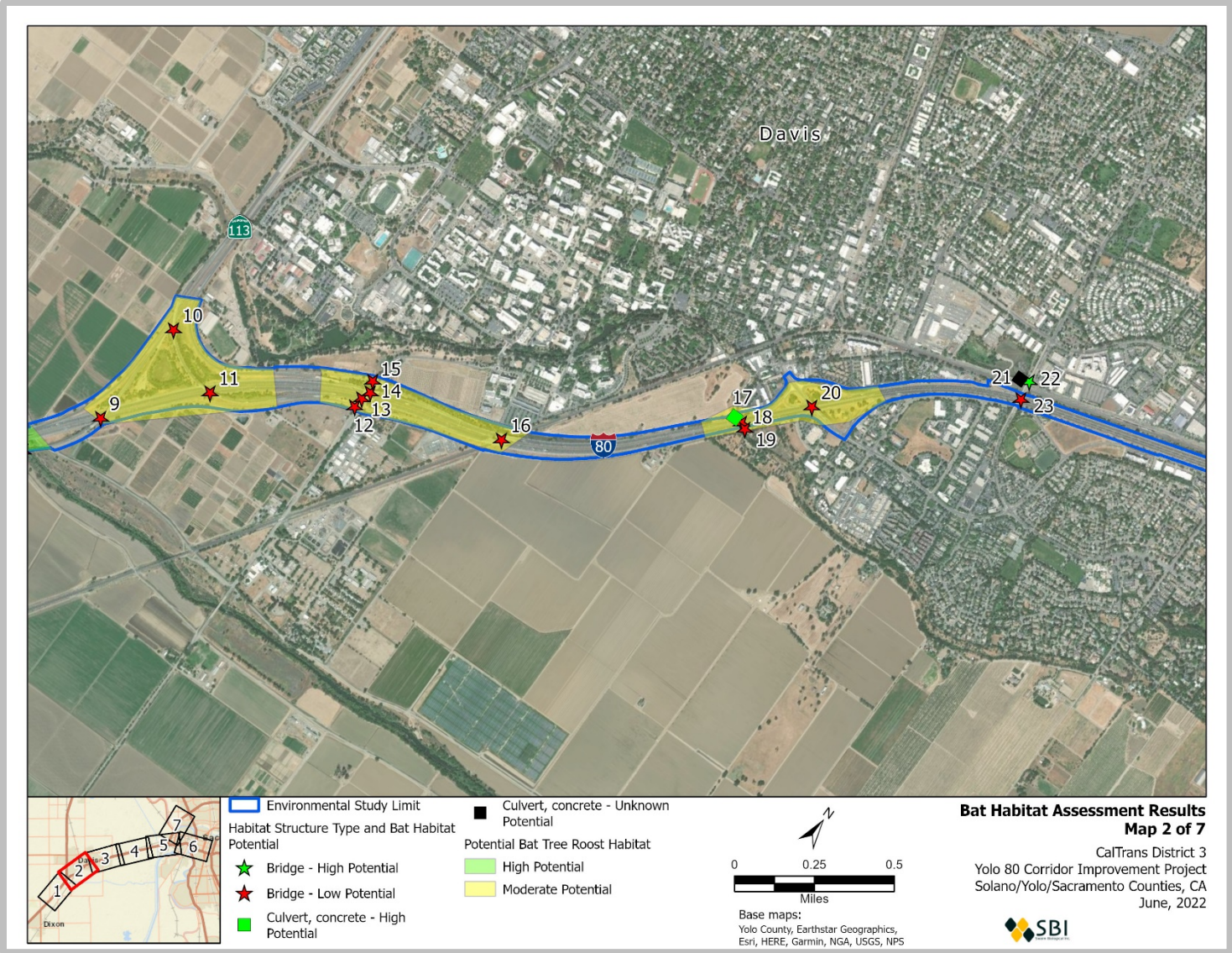




Appendix Figure 1. Survey location and number of bats observed during the bat habitat assessment.



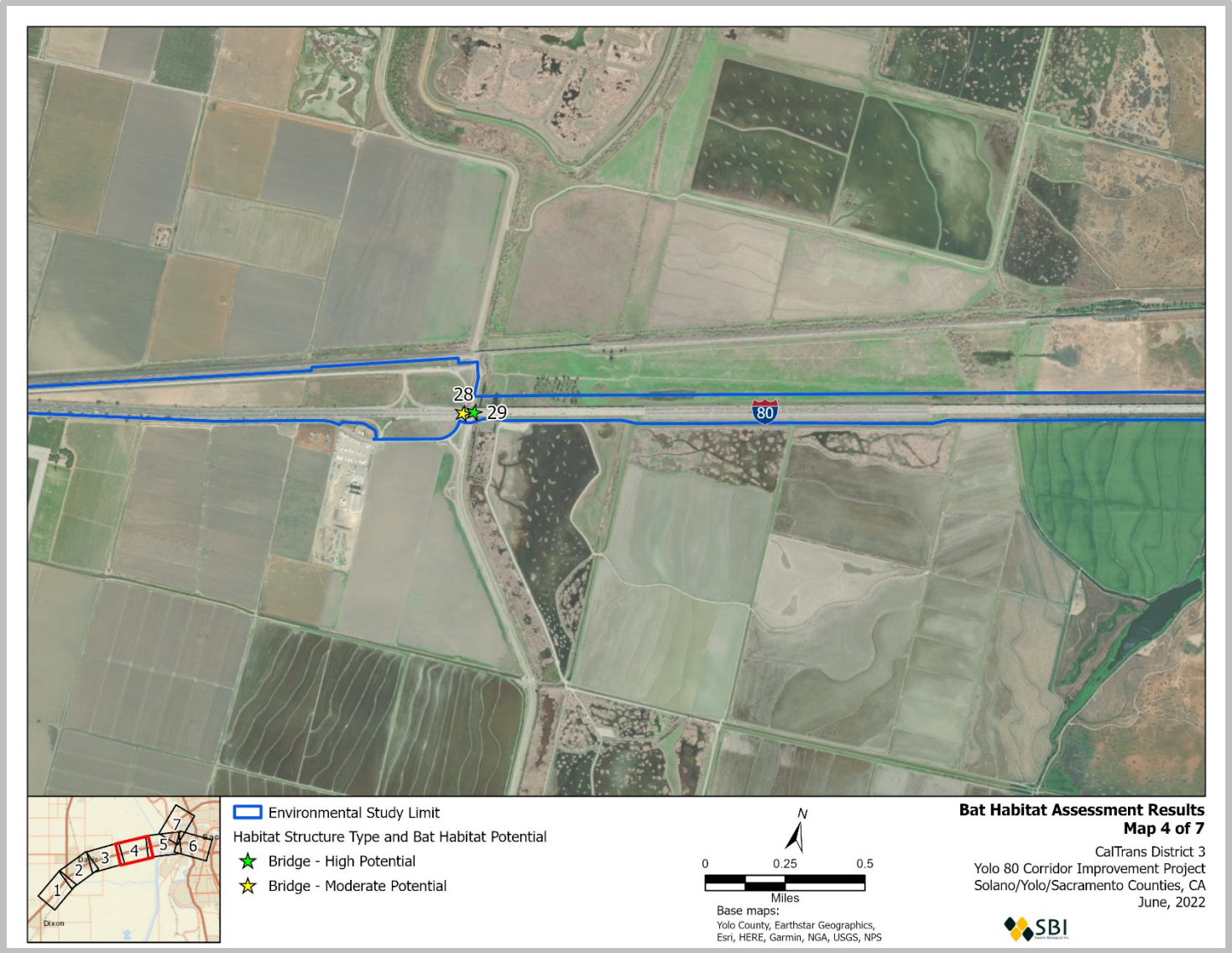
Appendix Figure 2. Western extent of the ESL showing the survey locations.



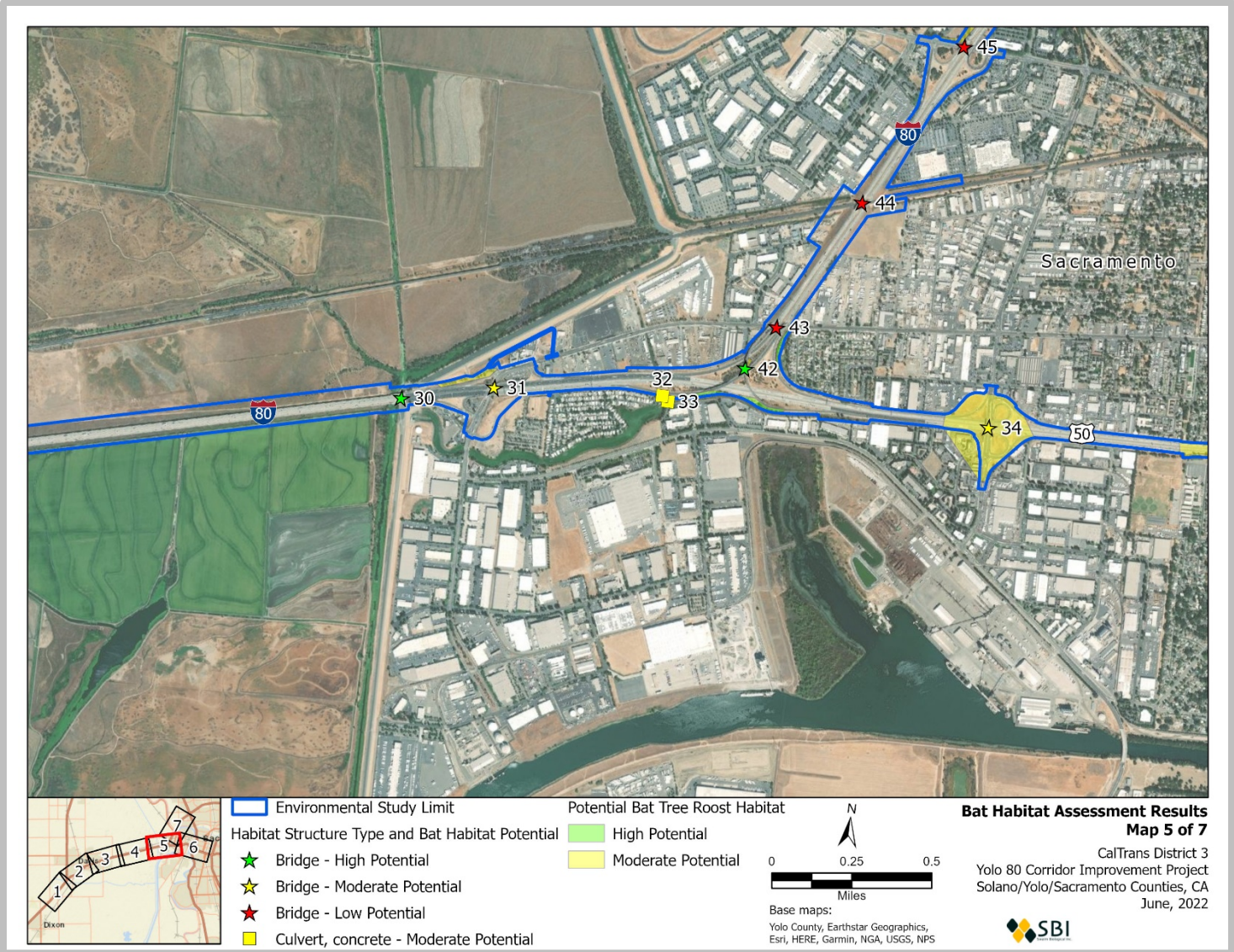
Appendix Figure 3. Extent of the ESL showing the survey locations including those in west Davis.



Appendix Figure 4. Extent of the ESL showing the survey locations in east Davis.



Appendix Figure 5. Extent of the ESL showing the survey locations including the Yolo Bypass Wildlife Area.



Appendix Figure 6. Extent of the ESL showing the survey locations including the eastern portion of the Yolo Bypass Wildlife Area.



Appendix Figure 7. Eastern extent of the ESL showing the survey locations including the Sacramento River Bridge.



Appendix Figure 8. Northern extent of the ESL showing the survey locations including the I-80 Sacramento River Bridge.

Appendix C Representative Site Photo







	 <p> Date & Time: Mon, Dec 21, 2020, 09:28:02 PST Position: 38.9288327° N / 121.7728113° W Altitude: 884.5m (2902) Datum: WGS-84 Azimuth/Heading: 88.3° (N) 38° (W) 88.3° (True) 121.77° Elevation/Angle: 0.55° Horizontal Scale: 4.37m Zoom: 11.0x </p>
<p>Photo 1. No expansion joints observed in steel girder bridge. Habitat surrounding bridge consists of perennial grasslands & orchards (Location #2). Taken facing south.</p>	<p>Photo 2. Habitat consists of small, corrugated steel pipes. Habitat surrounding corrugated steel pipes consists of perennial grasslands & orchards (Location #3). Taken facing northwest.</p>
 <p> Date & Time: Mon, Dec 21, 2020, 09:28:50 PST Position: 38.9288327° N / 121.7728113° W Altitude: 884.5m (2902) Datum: WGS-84 Azimuth/Heading: 88.3° (N) 38° (W) 88.3° (True) 121.77° Elevation/Angle: 0.55° Horizontal Scale: 4.37m Zoom: 11.0x </p>	
<p>Photo 3. Habitat consists of small, corrugated steel pipes, low roosting potential in culvert. Habitat surrounding bridge consists of perennial grasslands & orchards (Location #3). Taken facing northeast.</p>	<p>Photo 4. Concrete box bridge with weep holes present (Location #4). Taken facing northeast.</p>



Photo 5. Multiple, large diameter corrugated steel culverts running below I-80 and adjacent frontage roads. Culverts below I-80 had signs of bat use, likely night roosting. (Location #5). Taken facing east.



Photo 6. Multiple, large diameter corrugated steel culverts running below I-80 and adjacent frontage roads. Culverts below I-80 had signs of bat use, likely night roosting. Habitat surrounding bridge consists of perennial grasslands, orchards, and small stand of trees with clusters of dense leaf foliage and crevices for roosting bats (Location #5). Taken facing southeast.



Photo 7. Habitat surrounding bridge consists of riparian vegetation (willow and cottonwood) along south Fork of Putah Creek, croplands, and orchard trees (Location #7). Taken facing northwest.



Photo 8. Bridge with multiple expansion joints along I-80 spanning the South Fork of the Putah Creek were occupied by Mexican free-tailed bats. Willow and cottonwood trees along creek provide suitable foliage roost for western red bat (Location #7). Taken facing north.

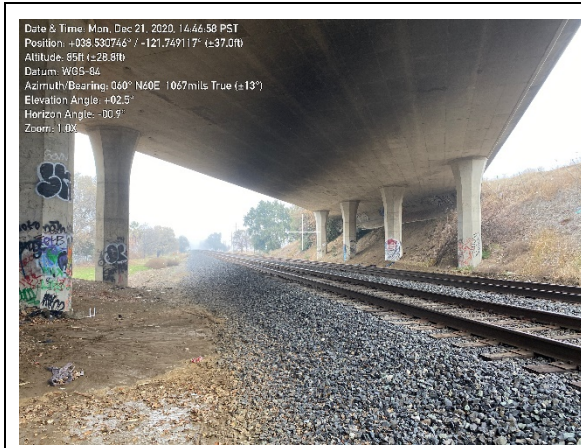


Photo 9. Habitat surrounding concrete box bridge with weep holes, consists of agricultural fields, roadside trees with dense clusters of leaves and crevices for roosting bats adjacent to the bridge, & UC Davis buildings (Location #16). Taken facing northeast.



Photo 10. Habitat surrounding concrete box bridge with weep holes, consists of agricultural fields, trees along the roadside and green space along the Putah Creek with dense clusters of leaves and crevices for roosting bats adjacent to the bridge (Location #19). Taken facing northwest.



Photo 11. 318 Mexican free-tailed bat were observed roosting in the northern expansion joint of the Pole Line Road overpass (Location #22). Taken facing southwest.



Photo 12. Habitat surrounding bridge consists of a wetland and pond, with trees surrounding the pond providing foraging habitat and potential tree roost habitat with dense clusters of leaves & crevices (Location #22). Taken facing southwest.



Photo 13. Habitat surrounding concrete girder/steel box bridge with expansion joints, utility boxes, bridge abutments (all potentially suitable bat roost habitat) consist of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. (Location #25). Taken facing northeast.

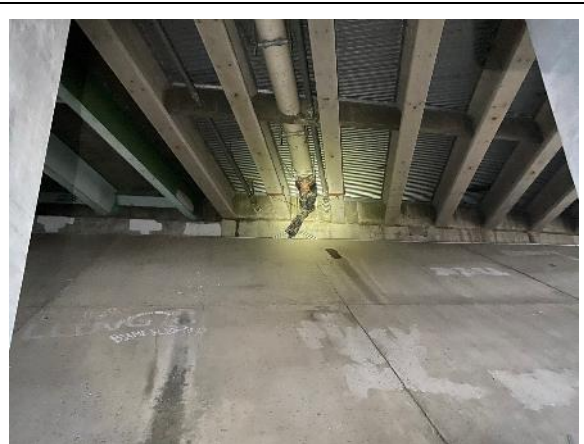


Photo 14. Habitat surrounding concrete girder/steel box bridge with expansion joints, utility boxes, bridge abutments (all potentially suitable bat roost habitat) consist of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and crevices. (Location #25). Taken facing north.



Photo 15. Signs of bat night roosting were observed throughout the bridge, including guano and staining spots along the bridge deck (Location #28). Taken facing east.



Photo 16. Habitat surrounding concrete girder bridge, and the gaps between girders (potentially suitable bat roost habitat), consists of annual grass, agricultural fields (rice) and potential tree roost habitat with dense clusters of leaves and crevices within Yolo Bypass (Location #29). One thousand five hundred Mexican free-tailed bats were counted in one section of the bridge. Taken facing up towards gaps in girders.

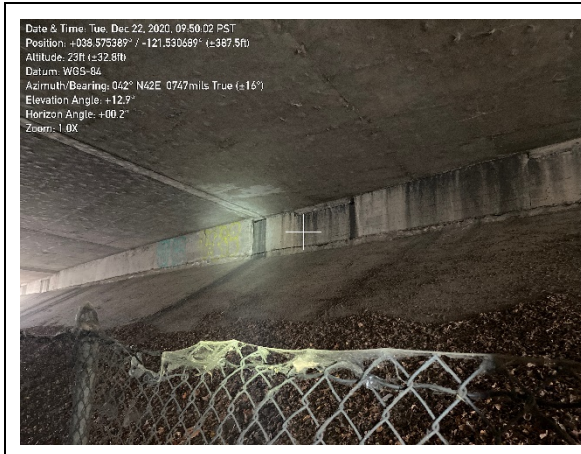


Photo 17. Habitat surrounding concrete girder bridge with multiple expansion joints, and crevices along abutments, consists of landscaped lawns, industrial buildings, and trees with clusters of dense leaf foliage and crevices for potential roost habitat (Location #35). Taken facing northeast.

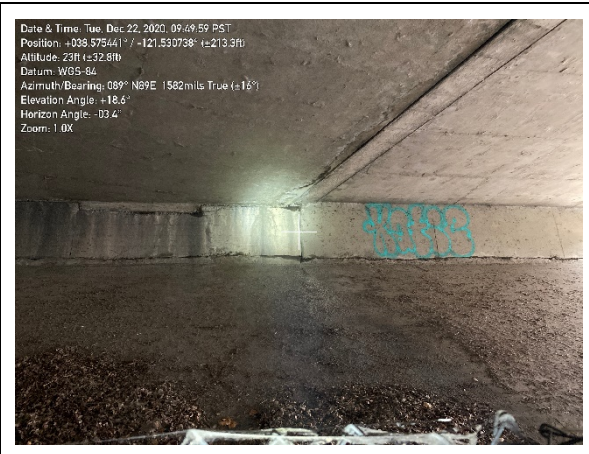


Photo 18. Potentially suitable bat roost habitat consists of concrete girder bridge construction with multiple expansion joints and some crevices observed along the bridge abutments. Bat guano was observed in crevices along the bridge abutment (Location #35). Taken facing northeast.



Photo 19. Habitat surrounding steel girder bridge with multiple expansion joints, and crevices along abutments, consists of landscaped lawns, mowed areas below bridge, residential/industrial buildings, and trees with clusters of dense leaf foliage and crevices for potential roost habitat (Location #37). Taken facing east.



Photo 20. Bat guano was observed in crevices along the length of multiple expansion joints. Based on the amount of guano observed, the expansion joint could be occupied by a maternity colony during maternity season (Location #37). Taken facing northeast.



Photo 21. Habitat consists of small, corrugated steel pipes. Habitat surrounding corrugated steel pipes consists of industrial buildings, apartment buildings, construction yards, riparian habitats associated with the Sacramento River, and trees with clusters of dense leaf foliage and crevices for potential roost habitat (Location #40). Taken facing east.



Photo 22. Steel girder bridge with multiple expansion joints, abutments with crevices spans the Sacramento River and leads to developed and disturbed area in Sacramento. Habitat surrounding the bridge consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, homeless encampments, and potential tree roost habitat along the Sacramento River and urban street trees with dense clusters of leaves and crevices (Location #41). Taken facing southeast.



Photo 23. Potentially suitable bat roost habitat consists of steel girder bridge with multiple expansion joints and some crevices observed along the bridge abutments. Bat guano was observed in crevices of multiple expansion joints. Based on the amount of guano observed, the expansion joint could be occupied by a maternity colony during maternity season (Location #41). Taken facing northwest.



Photo 24. Habitat along multiple concrete box bridges with expansion joints consists of mowed annual grasses, industrial buildings, and potential tree roost habitat with dense clusters of leaves and some crevices, though most trees were small and unlikely to be occupied by bats, including some palm trees in adjacent to the bridges (Location #42). Taken facing east.

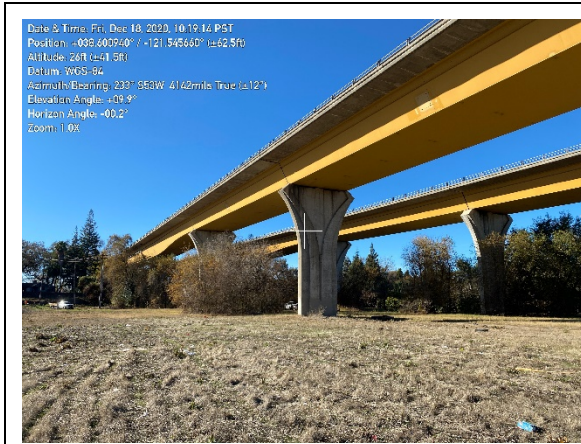


Photo 25. Habitat along steel box bridge with multiple expansion joints and crevices observed along the bridge abutment consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, homeless encampments, and potential tree roost habitat along the Sacramento River and urban street trees with dense clusters of leaves and crevice (Location #46). Taken facing southwest.



Photo 26. Habitat along steel box bridge with multiple expansion joints and crevices observed along the bridge abutment consists of landscaped lawns, mowed areas below the bridge, residential and industrial buildings, homeless encampments, and potential tree roost habitat along the Sacramento River and urban street trees with dense clusters of leaves and crevice (Location #46). Taken facing northeast.