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# Least Bell's Vireo (*Vireo bellii pusillus*) and Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Surveys in the Hansen Dam Basin, Los Angeles County, California—2018 Data Summary

## Data Series 1103

U.S. Department of the Interior
U.S. Geological Survey

**COVER:** Photograph showing the Hansen Dam basin. Photograph by Ryan Pottinger, U.S. Geological Survey, April 2018.

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**U.S. Department of the Interior**
DAVID BERNHARDT, Acting Secretary

**U.S. Geological Survey**
James F. Reilly II, Director

U.S. Geological Survey, Reston, Virginia: 2019

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Suggested citation:
Pottinger, R.E., and Kus, B.E., 2019, Least Bell's Vireo (*Vireo bellii pusillus*) and Southwestern Willow Flycatcher (*Empidonax traillii extimus*) surveys in the Hansen Dam Basin, Los Angeles County, California—2018 data summary: U.S. Geological Survey Data Series 1103, 11 p., https://doi.org/10.3133/ds1103.

ISSN 2327-638X (online)

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## Conversion Factors

International System of Units to U.S. customary units

| Multiply | By | To obtain |
|---|---|---|
| | Length | |
| kilometer (km) | 0.6214 | mile (mi) |
| meter (m) | 3.281 | foot (ft) |
| meter (m) | 1.094 | yard (yd) |

## Datum

Horizontal coordinate information is referenced to the World Geodetic System of 1984 (WGS 84).

## Abbreviations

| | |
|---|---|
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |

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## Executive Summary

We surveyed for Least Bell's Vireos (*Vireo bellii pusillus*; vireo) and Southwestern Willow Flycatchers (*Empidonax traillii extimus*; flycatcher) in cooperation with the U.S. Army Corps of Engineers along Big Tujunga Creek in the Hansen Dam Basin in Los Angeles County, California, in 2018. Four vireo surveys were conducted between April 25 and July 17, 2018, and three flycatcher surveys were conducted between May 22 and July 17, 2018. We found 77 territorial male vireos, 54 of which were confirmed as paired. Seventy-seven percent of vireos were detected in habitat characterized as mixed willow, and 84 percent of vireos were detected in habitat with greater than 50 percent native plant cover. One transient Willow Flycatcher of unknown subspecies was observed in the survey area in 2018.

## Introduction

The Least Bell's Vireo (*Vireo bellii pusillus*; vireo) is a small, migratory songbird that breeds in southern California and northwestern Baja California, Mexico, from April through July (Kus and others, 2010). Historically abundant within lowland riparian ecosystems, vireo populations began declining in the late 1900s as a result of multiple anthropogenic factors, including habitat loss and alteration associated with urbanization and agricultural conversion of land adjacent to rivers, the expansion in range of the brood-parasitic Brown-headed Cowbird (*Molothrus ater*; cowbird), and the introduction of invasive exotic plant species such as giant reed (*Arundo donax*) into riparian systems (U.S. Fish and Wildlife Service, 1986, 1998; Franzreb, 1989; Kus, 1998, 1999; Riparian Habitat Joint Venture, 2004). By 1986, the vireo population in California numbered just 300 territorial males (U.S. Fish and Wildlife Service, 1986).

In response to the considerable decline in numbers of vireo in California, the California Fish and Game Commission listed the species as endangered in 1980, and the U.S. Fish and Wildlife Service (USFWS) followed suit in 1986. Since listing, the vireo population in southern California has rebounded, largely in response to cowbird control and habitat restoration and preservation (Kus and Whitfield, 2005). As of 2006, the statewide vireo population was estimated to be approximately 2,500–3,000 territories (U.S. Fish and Wildlife Service, 2006).

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*; flycatcher) is one of four subspecies of Willow Flycatcher in the United States, with a breeding range including southern California, Arizona, New Mexico, extreme southern parts of Nevada and Utah, and western Texas (Hubbard, 1987; Unitt, 1987). Restricted to riparian habitat for breeding, the flycatcher has declined in recent decades in response to widespread habitat loss throughout its range and, possibly, brood-parasitism by cowbirds (Wheelock, 1912; Willett, 1912, 1933; Grinnell and Miller, 1944; Remsen, 1978; Garrett and Dunn, 1981; Unitt, 1984, 1987; Gaines, 1988; Schlorff, 1990; Whitfield and Sogge, 1999). By 1993, the species was believed to number approximately 70 pairs in California (U.S. Fish and Wildlife Service, 1993) in small, disjunct populations. The flycatcher was listed as endangered by the State of California in 1992 and by the USFWS in 1995.

Flycatchers in southern California co-occur with vireos. However, unlike the vireo, which has increased 10-fold since the mid-1980s in response to management practices alleviating these threats (U.S. Fish and Wildlife Service, 2006), the number of flycatchers has remained low. Currently, most flycatchers in California are concentrated in two sites—the Owens River Valley in Inyo County (Lacey Greene, California Department of Fish and Wildlife, written commun., 2015) and the Upper San Luis Rey River, including a part of the Cleveland National Forest in San Diego County (Clark and others, 2014). Outside of these sites, flycatchers occur as small, isolated populations of one to six pairs. Data on the distribution and demography of the flycatcher, as well as identification of factors limiting the species, are critical information needs during the current stage of recovery planning (Kus and others, 2003; Kus and Whitfield, 2005).

The purpose of this study, in cooperation with the U.S. Army Corps of Engineers, was to document the status of vireos and flycatchers along a 4-kilometer stretch of the Big Tujunga Creek upstream of Hansen Dam (Hansen Dam Basin) in Los Angeles County, California (fig. 1). The goal was to determine the abundance and distribution of vireos and flycatchers in the Hansen Dam Basin.

# Methods

Biologists from the U.S. Geological Survey (USGS) surveyed for vireos and flycatchers along the Big Tujunga Creek, following standard survey techniques (U.S. Fish and Wildlife Service, 2001; Sogge and others, 2010). Four vireo surveys were conducted between April 25 and July 17, 2018, and three flycatcher surveys were conducted between May 22 and July 17, 2018. Observers walked slowly through or adjacent to suitable riparian habitat, listening and searching for vireos and flycatchers, systematically playing a recording of a vireo or flycatcher song to elicit a territorial response. Surveys typically began at sunrise and were completed by early afternoon, depending on wind and weather conditions. For each vireo or flycatcher encountered, observers recorded age (adult or juvenile), sex, breeding status (paired or undetermined), and whether the bird was banded. Vireo and flycatcher locations were recorded using ESRI Collector (ESRI, 2018) on an Android phone with 1- to 15-meter positioning accuracy to determine geographic coordinates (WGS 84). Dominant native and exotic plants were recorded, and percent cover of exotic vegetation was estimated using categories of less than 5 percent, 5–50 percent, 51–95 percent, and greater than 95 percent. The overall habitat type within the territory was specified according to the following categories:

***Mixed willow riparian***: Habitat dominated by one or more willow species including Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), and red willow (*Salix laevigata*), with mule fat (*Baccharis salicifolia*) as a frequent co-dominant.

***Willow-cottonwood***: Willow riparian habitat in which cottonwood (*Populus fremontii*) is a co-dominant.

***Willow-sycamore***: Willow riparian habitat in which California sycamore (*Platanus racemosa*) is a co-dominant.

***Sycamore-oak***: Woodlands in which California sycamore and coast live oak (*Quercus agrifolia*) occur as co-dominants.

***Riparian scrub***: Dry and (or) sandy habitat dominated by sandbar willow (*Salix exigua*) or mule fat, with few other woody species.

***Upland scrub***: Coastal sage scrub adjacent to riparian habitat.

***Non-native***: Sites vegetated exclusively with non-native species such as giant reed (*Arundo donax*) and salt cedar (*Tamarix ramosissima*).

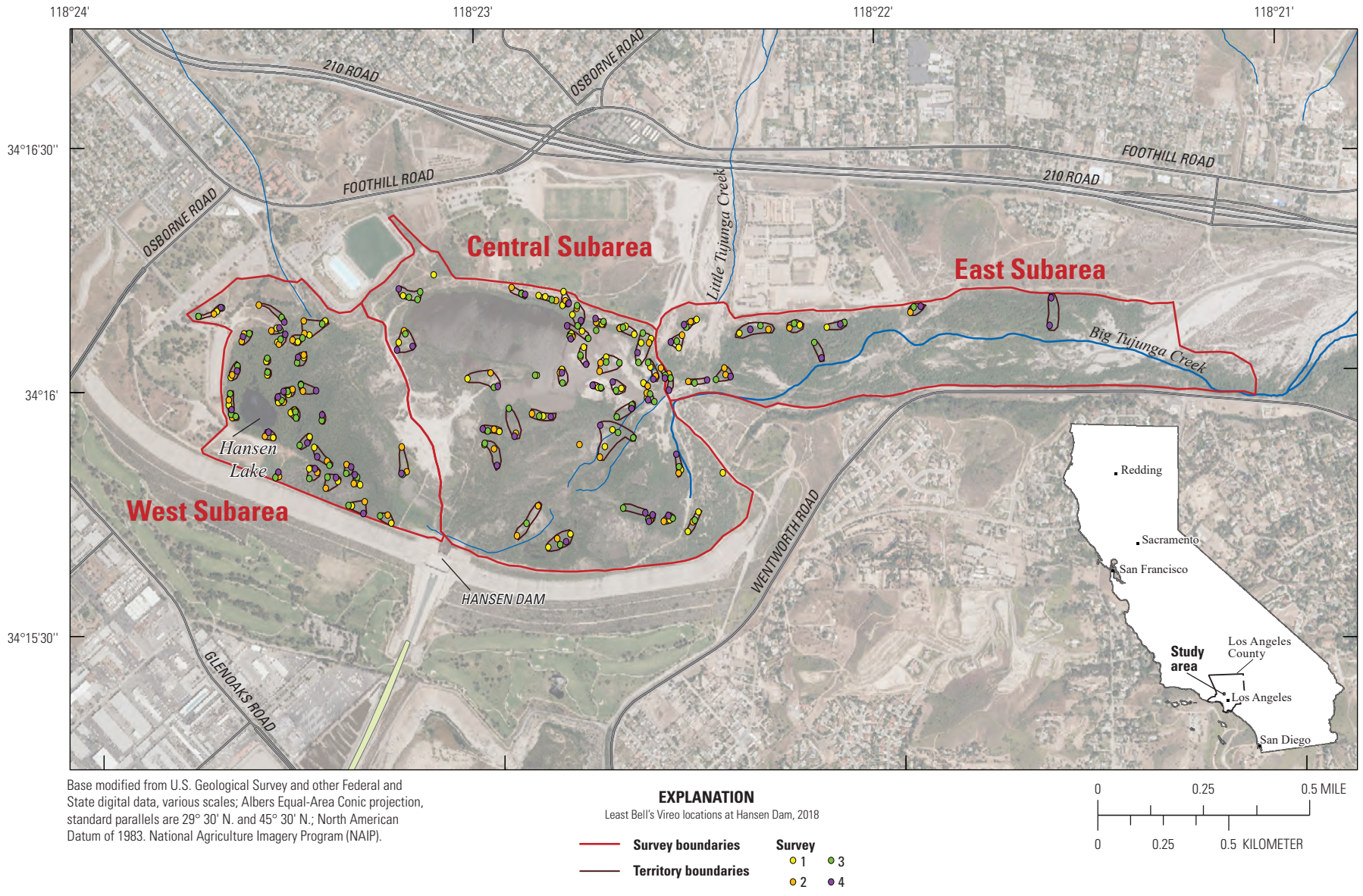


**Figure 1.** Locations of Least Bell's Vireo (*Vireo bellii pusillus*) survey sites at Hansen Dam Basin, Los Angeles County, California, 2018.

# Results

A total of 77 territorial male vireos were detected in 2018 (table 1, figs. 2–4). Fifty-four males were confirmed as paired, and 23 males were of unknown status. No banded birds were detected.

Least Bell's Vireos were found in four different habitat types with 76 percent of vireo locations occurring in mixed willow riparian habitat (table 2). Twenty percent of vireos were detected in riparian scrub, 3 percent were located in upland scrub, and 1 percent were located in non-native habitat. Eighty-four percent of vireo territories were detected in habitat comprised of greater than 50 percent native plant cover. Seventy-seven percent of vireo territories had a willow as the dominant species (table 3). Several willow species were dominant at the site level (table 4).

One Willow Flycatcher of unknown subspecies was detected on May 23, 2018 (fig. 5). The transient Willow Flycatcher occupied riparian scrub habitat comprised of 5–50 percent native plant cover.

**Table 1.** Total number of Least Bell's Vireo (*Vireo bellii pusillus*) territories detected and breeding status in the Hansen Dam Basin, Los Angeles County, California, 2018.

| Subarea | Total number of territorial males | Number of pairs | Number of birds with undetermined status | Number of fledglings |
|---|---|---|---|---|
| East | 11 | 6 | 5 | 5 |
| Central | 37 | 29 | 8 | 20 |
| West | 29 | 19 | 10 | 15 |
| Total | 77 | 54 | 23 | 40 |

**Table 2.** Habitat types used by Least Bell's Vireo (*Vireo bellii pusillus*) in the Hansen Dam Basin, Los Angeles County, California, 2018.

[**Habitat type**: ***Mixed willow riparian***: Habitat dominated by one or more willow species, including black willow, arroyo willow, and red willow, with mule fat as frequent co-dominant. ***Riparian scrub***: Dry and (or) sandy habitat dominated by sandbar willow or mule fat, with few other woody species. ***Upland scrub***: Coastal sage scrub adjacent to riparian habitat. **Abbreviations**: <, less than; >, greater than]

| Habitat type | Number of territories | | | | |
|---|---|---|---|---|---|
| | <5 percent exotic vegetation | 5–50 percent exotic vegetation | 51–95 percent exotic vegetation | >95 percent exotic vegetation | Total |
| Mixed willow riparian | 15 | 43 | 0 | 1 | 59 |
| Riparian scrub | 0 | 7 | 1 | 7 | 15 |
| Upland scrub | 0 | 0 | 0 | 2 | 2 |
| Non-native | 0 | 0 | 1 | 0 | 1 |
| Total | 15 | 50 | 2 | 10 | 77 |

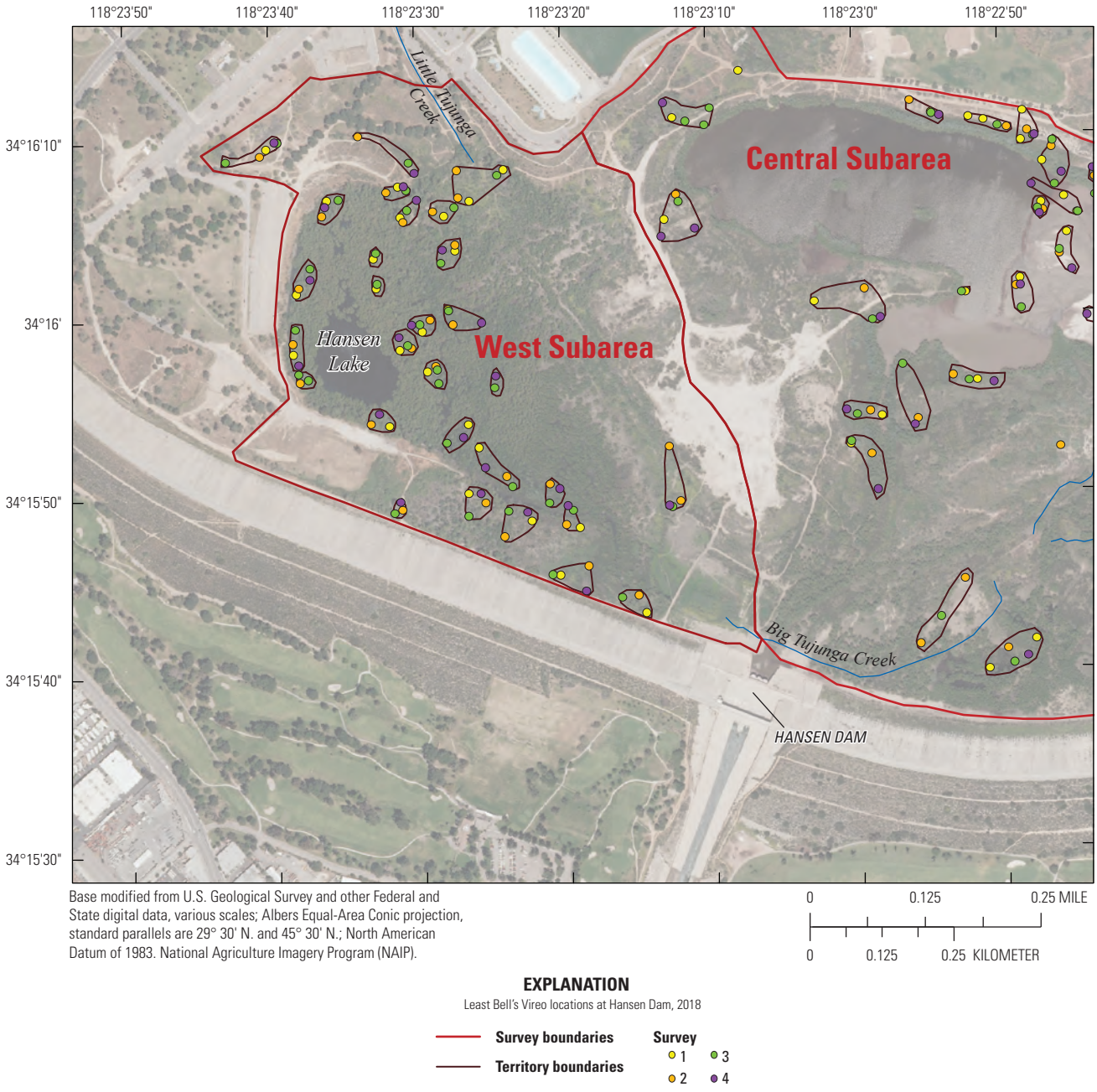


**Figure 2.** Locations of Least Bell's Vireo (*Vireo bellii pusillus*) territories at West Subarea, Hansen Dam Basin, Los Angeles County, California, 2018.

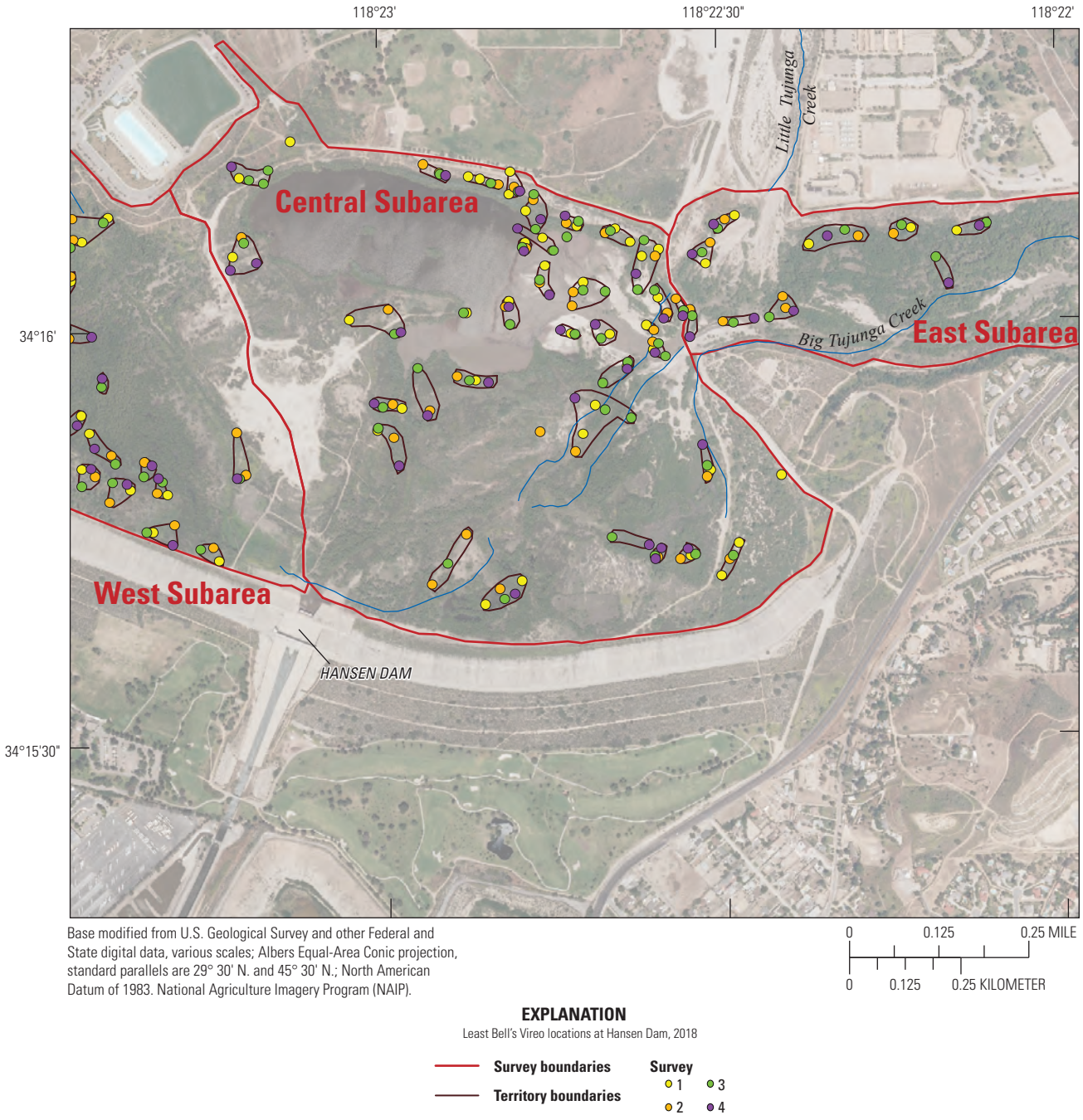


**Figure 3.** Locations of Least Bell's Vireo (*Vireo bellii pusillus*) territories at Central Subarea, Hansen Dam Basin, Los Angeles County, California, 2018.

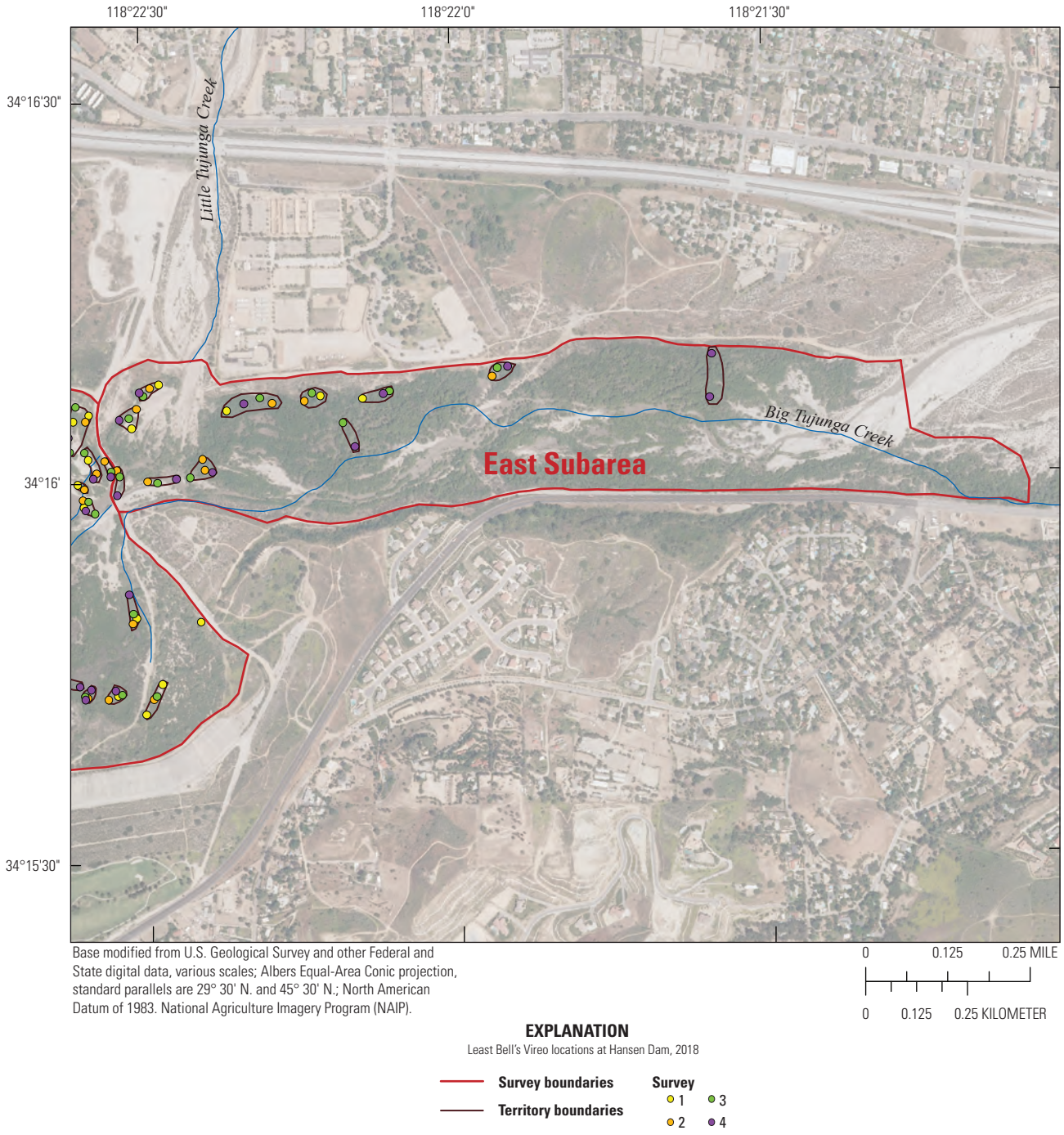


**Figure 4.** Locations of Least Bell's Vireo (*Vireo bellii pusillus*) territories at East Subarea, Hansen Dam Basin, Los Angeles County, California, 2018.

**Table 3.** Least Bell's Vireo (*Vireo bellii pusillus*) vegetation composition at the territory level in the Hansen Dam Basin, Los Angeles County, California, 2018.

[—, not applicable]

| Territory | Habitat quality | Habitat type | Dominant plant species | Exotic plant species composition[1] | Dominant exotic plant species |
|---|---|---|---|---|---|
| HA01 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 1 | *Brassica nigra* |
| HA02 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA03 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA04 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA05 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA06 | Good | Mixed willow | *Salix gooddingii* | 1 | — |
| HA07 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA08 | Good | Mixed willow | *Salix gooddingii* | 2 | *Silybum marianum* |
| HA09 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA10 | Fair | Riparian scrub | *Sambucus nigra* | 4 | *Brassica nigra* |
| HA100 | Excellent | Mixed willow | *Salix gooddingii* | 1 | *Brassica nigra* |
| HA101 | Fair | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Silybum marianum* |
| HA102 | Good | Mixed willow | *Salix gooddingii* | 1 | — |
| HA103 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA104 | Fair | Non-native | *Tamarix* sp., *Arundo donax* | 3 | *Tamarix* sp., *Arundo donax* |
| HA105 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA106 | Good | Mixed willow | *Tamarix* sp., *Salix gooddingii* | 2 | *Brassica nigra, Tamarix* sp. |
| HA107 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA108 | Excellent | Mixed willow | *Salix gooddingii* | 2 | *Tamarix* sp. |
| HA109 | Good | Mixed willow | *Salix gooddingii* | 2 | *Brassica nigra* |
| HA11 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA111 | Good | Mixed willow | *Salix gooddingii* | 2 | *Brassica nigra* |
| HA113 | Fair | Upland scrub | *Baccharis salicifolia* | 4 | *Brassica nigra* |
| HA115 | Poor | Upland scrub | *Conium maculatum* | 4 | *Conium maculatum* |
| HA117 | Fair | Riparian scrub | *Baccharis salicifolia* | 4 | *Brassica nigra* |
| HA12 | Good | Mixed willow | *Salix gooddingii* | 1 | — |
| HA121 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA123 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA13 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA14 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA15 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA150 | Good | Riparian scrub | *Arundo donax* | 4 | *Arundo donax* |
| HA16 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA17 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA18 | Good | Mixed willow | *Salix gooddingii* | 2 | *Brassica nigra* |
| HA19 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA20 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA21 | Excellent | Riparian scrub | *Baccharis salicifolia* | 2 | *Brassica nigra* |
| HA22 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA23 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA25 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Silybum marianum* |
| HA26 | Fair | Riparian scrub | *Baccharis salicifolia* | 3 | *Brassica nigra* |
| HA27 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Grass* spp. |
| HA29 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA31 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |

**Table 3.** Least Bell's Vireo (*Vireo bellii pusillus*) vegetation composition at the territory level in the Hansen Dam Basin, Los Angeles County, California, 2018.—Continued

[—, not applicable]

| Territory | Habitat quality | Habitat type | Dominant plant species | Exotic plant species composition[1] | Dominant exotic plant species |
|---|---|---|---|---|---|
| HA33 | Poor | Mixed willow | *Salix lasiolepis/laevigata* | 4 | *Lepidium latifolium* |
| HA35 | Poor | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA37 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA39 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Grass* spp. |
| HA41 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA43 | Fair | Riparian scrub | *Sambucus nigra* | 2 | *Brassica nigra* |
| HA45 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA47 | Poor | Riparian scrub | *Sambucus nigra* | 2 | *Brassica nigra* |
| HA49 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Grass* spp. |
| HA51 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Grass* spp. |
| HA53 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Grass* spp. |
| HA55 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA57 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Silybum marianum* |
| HA59 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Silybum marianum* |
| HA61 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA63 | Excellent | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Arundo donax* |
| HA65 | Good | Riparian scrub | *Baccharis salicifolia* | 2 | *Brassica nigra* |
| HA67 | Good | Riparian scrub | *Baccharis salicifolia* | 2 | *Brassica nigra* |
| HA69 | Good | Riparian scrub | *Baccharis salicifolia* | 2 | *Brassica nigra* |
| HA71 | Good | Riparian scrub | *Baccharis salicifolia* | 2 | *Brassica nigra* |
| HA73 | Fair | Riparian scrub | *Tamarix* sp. | 4 | *Tamarix* sp. |
| HA77 | Poor | Upland scrub | *Conium maculatum* | 4 | *Conium maculatum* |
| HA79 | Fair | Riparian scrub | *Baccharis salicifolia* | 4 | *Brassica nigra* |
| HA81 | Fair | Riparian scrub | *Baccharis salicifolia* | 4 | *Brassica nigra* |
| HA83 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Conium maculatum* |
| HA85 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |
| HA87 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA89 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA91 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA93 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA95 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 1 | — |
| HA97 | Good | Mixed willow | *Salix lasiolepis/laevigata* | 2 | *Brassica nigra* |

[1]Exotic plant species composition: 1 = <5 percent exotic vegetation, 2 = 5–50 percent exotic vegetation, 3 = 51–95 percent exotic vegetation, 4 = >95 percent exotic vegetation.

**Table 4.** Hansen Dam Basin vegetation composition at the site level, Los Angeles County, California, 2018.

| Dominant plant species | Exotic plant species composition | Dominant exotic plant species | Surrounding land use | Site disturbance | Notes |
|---|---|---|---|---|---|
| *Salix laevigata, Salix lasiolepis* | 2 | *Brassica nigra* | Golf courses, roads, recreational trails, recreational multipurpose fields | Homeless encampments | A large fire burned sections of the Central and East subareas in 2017. |

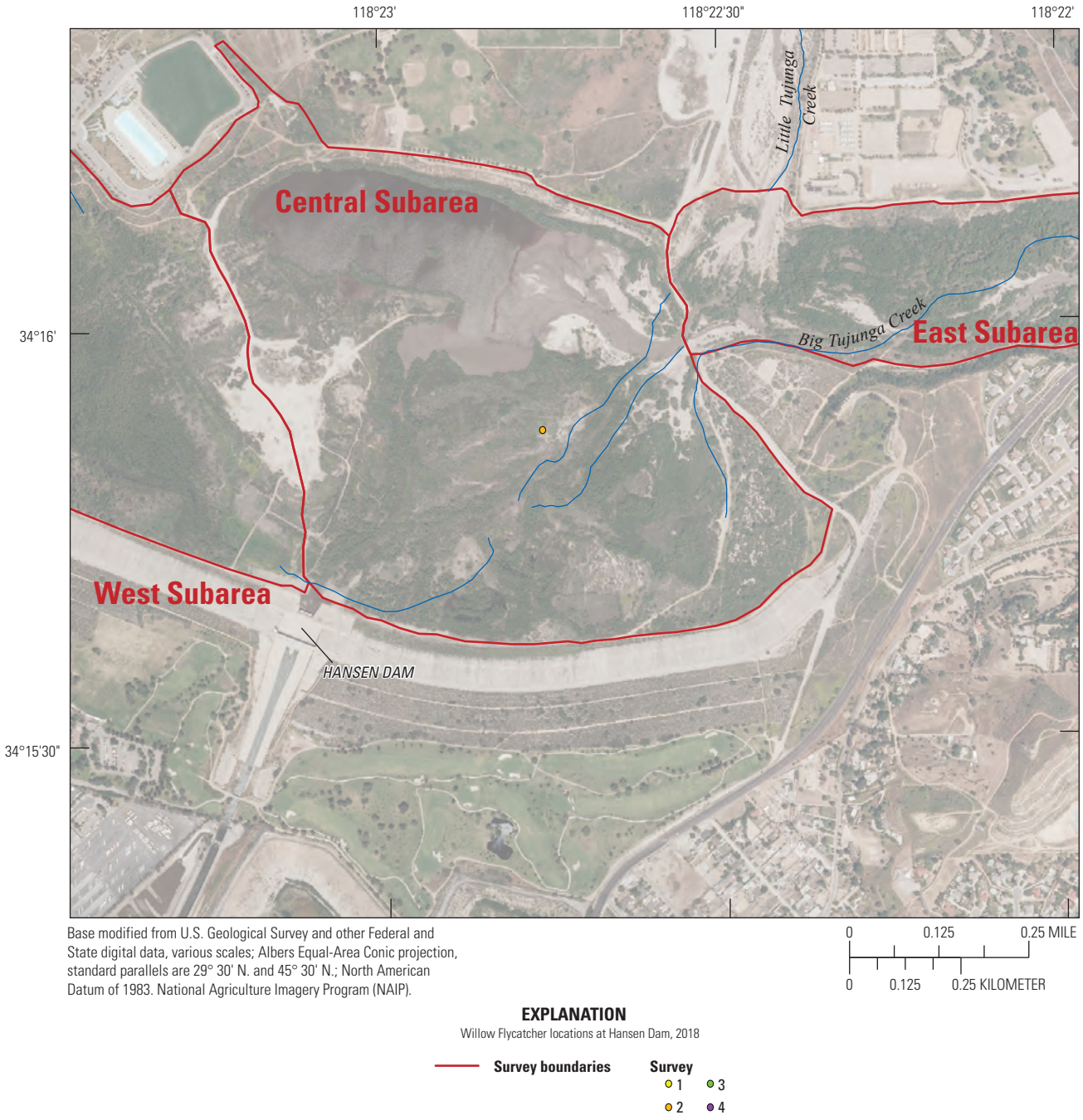


**Figure 5.** Locations of Willow Flycatcher (*Empidonax traillii extimus*) detections at Central Subarea, Hansen Dam Basin, Los Angeles County, California, 2018.

## Acknowledgments

The authors would like to thank the biologists who assisted in the data collection for this project: Lisa Allen and Alexandra Houston.

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ISSN 2327-638X (online)
https://doi.org/10.3133/ds1103

Publishing support provided by the U.S. Geological Survey
Science Publishing Network, Sacramento Publishing Service Center

For more information concerning the research in this report, contact the
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Sacramento, California 95819
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