



2023-2024 Alameda-Tesla Rare Plant Survey Report



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June 2024

PLANNING | DESIGN | COMMUNICATIONS | MANAGEMENT | SCIENCE | TECHNOLOGY

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1 Introduction

California State Parks is undertaking a phased effort to add approximately 3,100 acres of land in the Diablo Range, known as the Alameda-Tesla Property, to the California State Parks system. The Property is in southeast Alameda County and is situated in a rural area, approximately 15 miles east of Livermore and 6 miles south of Tracy (Appendix A, Figure 1). The Property is adjacent to the Carnegie State Vehicular Recreation Area (SVRA), a unit of the California Department of Parks and Recreation, which is an approximately 1,300-acre off-highway recreation area open primarily to motorcycles and all-terrain vehicles (ATVs). Additional surrounding land use is primarily open space ranch land used for cattle grazing as well as the 7,000-acre Lawrence Livermore National Laboratory Experimental Test Site to the north, which is mostly open space (Appendix A, Figure 2). The Alameda-Tesla Property is situated in the *Altamont*, *Cedar Mtn*, and *Midway* U.S. Geological Survey (USGS) 7.5-minute quadrangles.

Historic use of the Property included sheep and cattle ranching, as well as coal, sand, and clay mining. The topography consists of rolling hills with some areas of extremely steep terrain and ranges in elevation from approximately 750 to 2,150 feet North American Vertical Datum of 1988 NAVD88 (Google Inc. 2024). Corral Hollow Creek, a semi-perennial creek, which drains a portion of the Diablo Range east of Livermore into the San Joaquin River basin of the Central Valley, flows through the Property. Also, there are numerous stock ponds throughout the Property.

The region is classified as semi-arid with a Mediterranean climate, with most rain falling in the winter and spring. Mild cool temperatures are common in the winter. Hot to mild temperatures are common in the summer. Vegetation communities mapped within the Alameda-Tesla Property include *Blue Oak Woodland and Forest Alliance*, *California Sagebrush – Black sage Scrub Alliance*, *Fremont Cottonwood Forest and Woodland Alliance*, and *Wild Oats and Annual Brome Grasslands Semi-natural Alliance* (Carnegie SVRA 2015).

In support of the classification and general plan project for the Alameda-Tesla Property, a survey for special-status plants was conducted by MIG in 2023 and 2024. This report documents the results of surveys conducted in May and September 2023, and April and May 2024.

Since extensive surveys for special-status plants were conducted in 2021, the focus of the 2023 and 2024 surveys was to document the emergence of any new special-status plant populations after above-average precipitation over the 2022-2023 winter and 2023-2024 winter. Therefore, the surveys did not include walking transects of the entire Property but were more focused on smaller areas within the Property. Survey locations were informed from database records, the 2016 floristic survey conducted by MIG, the 2021 botanical surveys conducted by MIG, and from first-hand knowledge of the property (Ecosystems West 2004; Kramer 2016; MIG 2021; Calflora 2023, 2024; CNPS 2023, 2024).

2 Methods

MIG senior biologist and plant ecologist, David Gallagher, M.S conducted focused surveys in 2023 and 2024 for special-status plants within the Alameda-Tesla Property on 31 May and 22 September 2023; and 2-3 April and 9 May 2024. During the surveys, special-status plant populations were mapped using a tablet with an Arrow 100 submeter GPS receiver and a geo-spatial mobile-device application.

2.1 Identification of Target Species

MIG performed a background search and literature review to develop a list of special-status plant species known to occur or potentially occur in the Property prior to the start of surveys for special-status plants. A list of 15 special-status species that occur or may occur within the Property was compiled based upon the habitats and edaphic conditions present, database and literature records within the immediate vicinity of the area, and MIG's knowledge of sensitive plant species in the area (Ecosystems West 2004; Baldwin et al. 2012; Kramer 2016; MIG 2021; Calflora 2023, 2024; CNPS 2023, 2024). See Appendix B for a list of target species.

2.2 Precipitation and Survey Dates

The region is classified as semi-arid with a Mediterranean climate, with most rain falling in the winter and spring. Mild cool temperatures are common in the winter. Hot to mild temperatures are common in the summer. The average daily maximum temperatures are 89°F in summer and 38°F in winter and mean annual precipitation is 14.2 inches.

Relative to the 30-year climate normal, the Alameda-Tesla Property experienced *normal to wetter than normal* conditions prior to the May 2023 survey. The region was also experiencing a *mild drought to severe wetness* as estimated by the Palmer Drought Severity Index (PDSI). Total estimated precipitation at the Property from October 2022 to May 2023 was 24.3 inches, which was approximately 175 % of the 30-year average (1989-2018) for the same period (Deters 2024).

For the 2024 surveys, the Alameda-tesla Property experienced *drier than normal to normal* conditions prior to the April 2024 survey. The region was also experiencing a *moderate to incipient drought* as estimated by the Palmer Drought Severity Index (PDSI). Total estimated precipitation at the Property from October 2023 to March 2024 was 13.2 inches which was approximately 106% of the 30-year average (1989-2018) for the same period (Deters 2024).

The observed precipitation levels were not expected to have adversely affected the identification of the majority of the 15 special-status plants that may potentially occur in the Property. However, germination of some special-status species, particularly annuals and herbaceous perennials, may occur early or be delayed due to variability in conditions, or a species may germinate or return from rootstock in some areas of the Property but not in other areas due to microhabitat conditions.

Surveys were generally performed by conducting meandering transects with particular emphasis on microhabitats within the survey areas that could potentially support special-status plants. Some areas of the Property were not accessible for surveys due to steep, mountainous terrain and/or extremely dense and impenetrable vegetation.

3 Results

3.1 Special-status Plants

One special-status species plant was identified and mapped within the Alameda-Tesla Property during the 2023 and 2024 surveys, big tarweed (Appendix A, Figure 3). Big tarweed is described below, and photos are included in Appendix C (Photos 1 and 2).

Additionally, special-status plant occurrences from the 2016 floristic inventory and the 2021 rare plant survey are shown in Figures 4 to 11 in Appendix A.

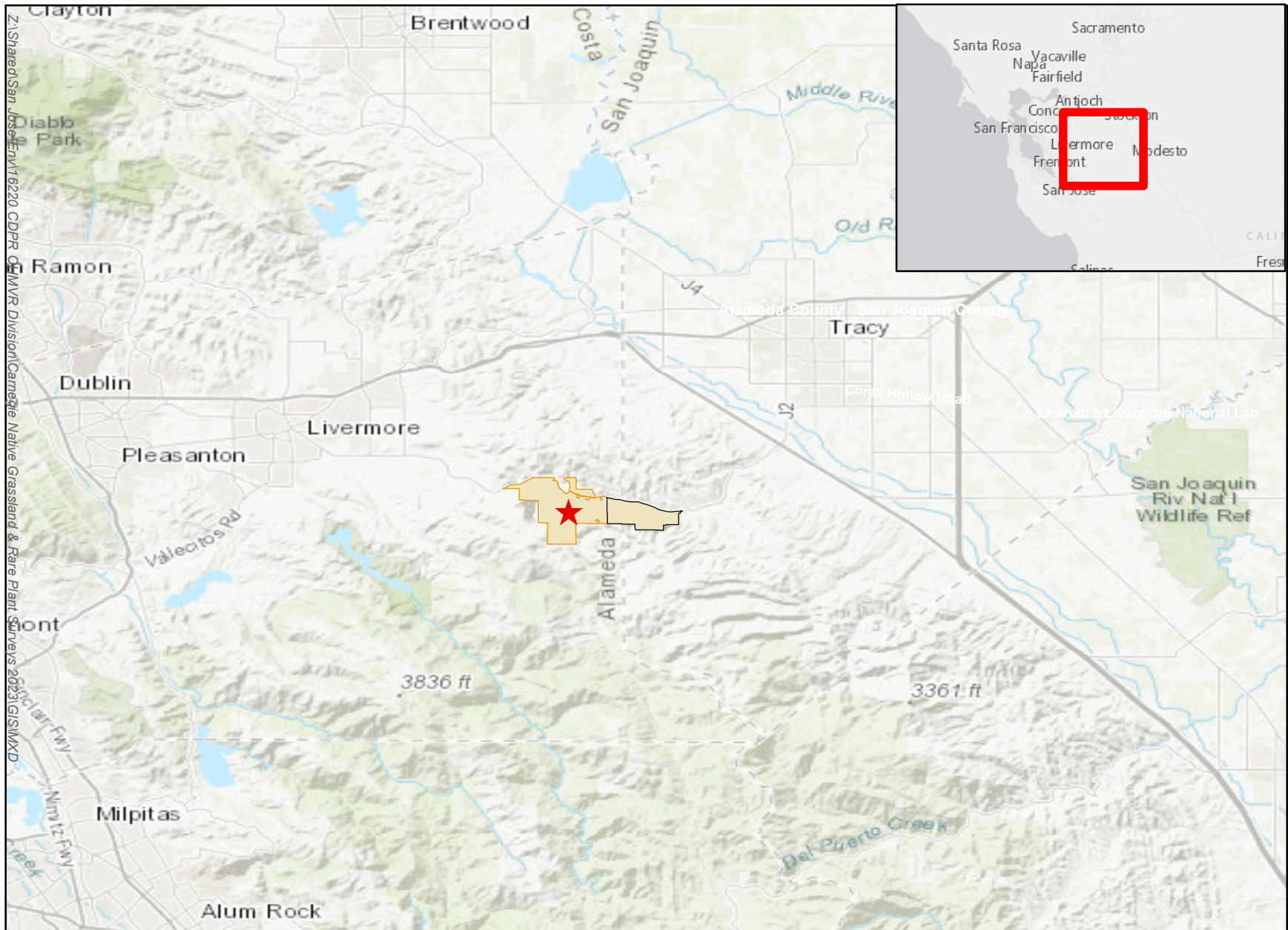
Big Tarweed (*Blepharizonia plumosa*). This species was observed growing in shrink-swell clay soil on north-facing slopes in a seasonally mesic *Wild Oats and Annual Brome Grasslands Semi-natural Alliance* vegetation community during the 22 September 2023 survey. An estimated 750 individuals were observed over approximately 1.13 acres at two sites approximately 800 feet apart. Other species present included slender oat (*Avena barbata*), foxtail brome (*Bromus madritensis*), Italian rye grass (*Festuca perennis*), one sided blue grass (*Poa secunda*), beardless wild rye (*Elymus triticoides*), common gumplant (*Grindelia camporum*), and San Joaquin tarweed (*Holocarpha obconica*).

Big tarplant is an annual herb in the sunflower family (Asteraceae) that blooms from July to October. This species grows on dry slopes, often in disturbed areas, in valley and foothill grassland. It has a CRPR of 1B.1 (i.e., plants that are rare, threatened, or endangered in California and elsewhere and is seriously threatened in California). It is endemic to California where it is mainly known from the Diablo Range. This species is seriously threatened by urbanization; also threatened by disking, residential development, and non-native plants (Calflora 2024; CNPS 2024).

4 Literature Cited

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- Kramer 2016. Carnegie Botanical Surveys 2016. Email correspondence from botanist Neal Kramer to Tara DeSilva reporting results of 2016 botanical surveys with plant lists, spreadsheet with new special-status (rare) plant data, and special-status plant CNDDDB forms for Carnegie SVRA 2016 botanical surveys.
- MIG 2021. Carnegie State Vehicular Recreation Area Rare Plant and Native Grassland Survey Report. Prepared for California State Parks Off-highway Motor Vehicle Recreation Division, Sacramento, California by MIG, Inc., San Jose, California October 2021.

Appendix A Figures



Source: Esri 2023

★ Survey Location

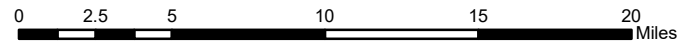
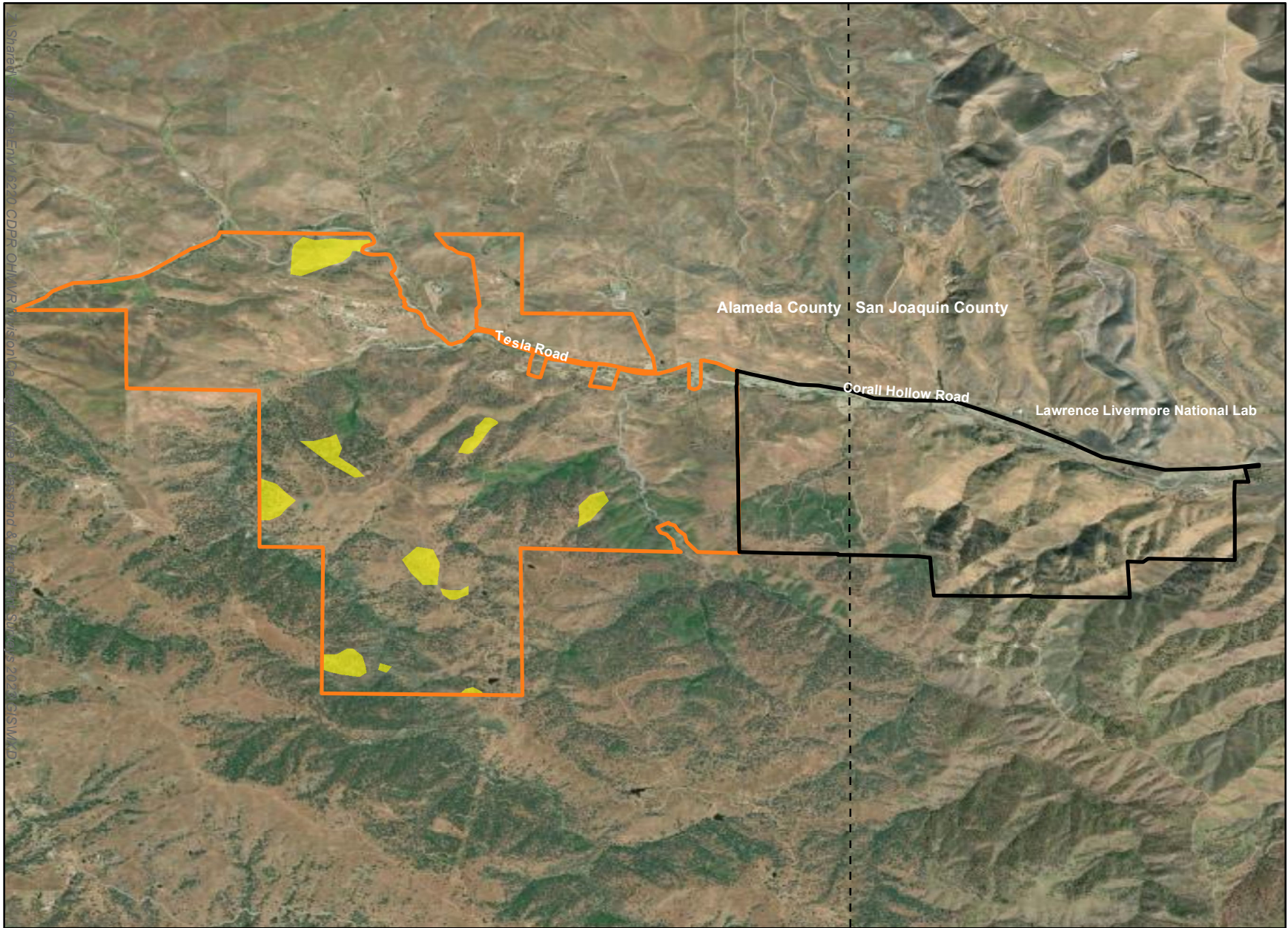


Figure 1 Regional Location

Alameda-Tesla Property Rare Plant Survey 2023-2024





Source: Esri 2023

- Alameda-Tesla Property
- Carnegie SVRA
- Botanical Survey Areas
- - - County Line

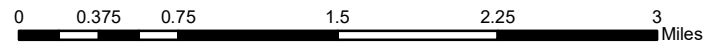
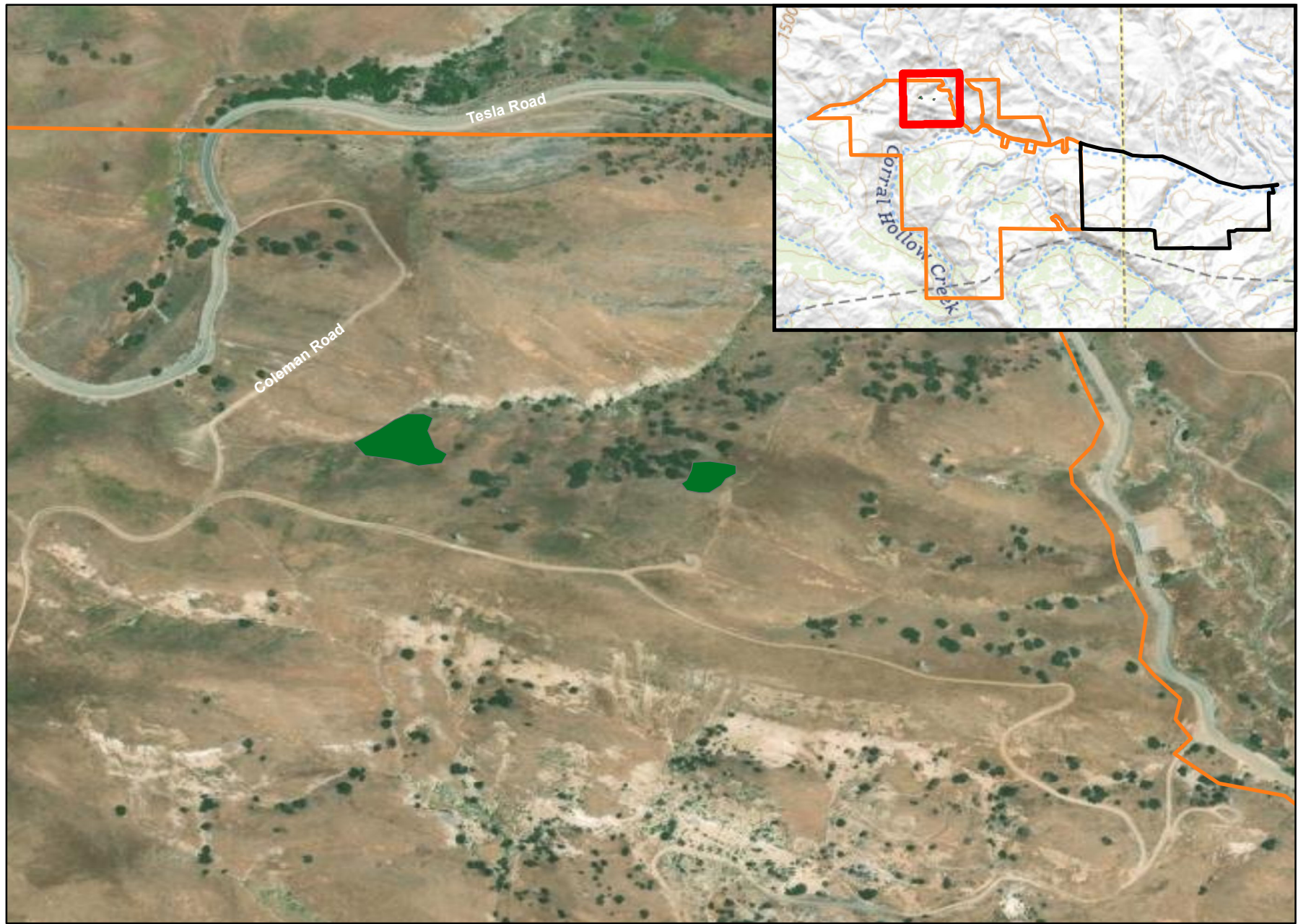


Figure 2. Alameda-Tesla Property Map

Alameda-Tesla Property Rare Plant Survey 2023-2024



Source: Esri 2024

- Big Tarweed
- Alameda-Tesla Property
- Carnegie SVRA

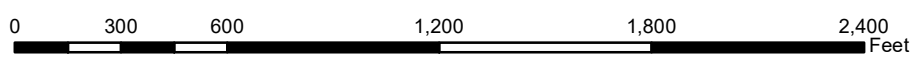
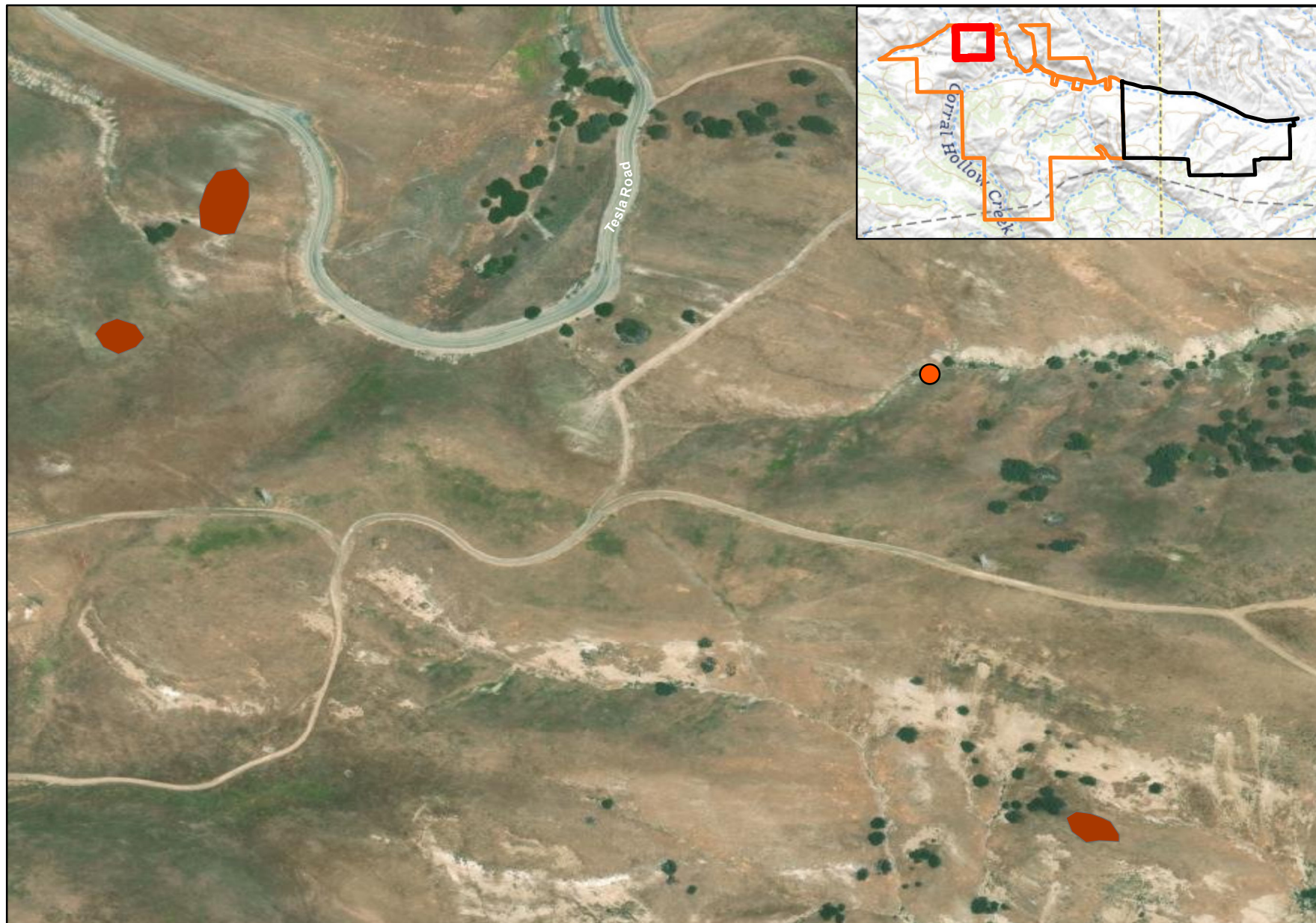


Figure 3 Rare Plant Occurrences-2023 and 2024 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Source: Esri 2024, Amigo Cloud 2023



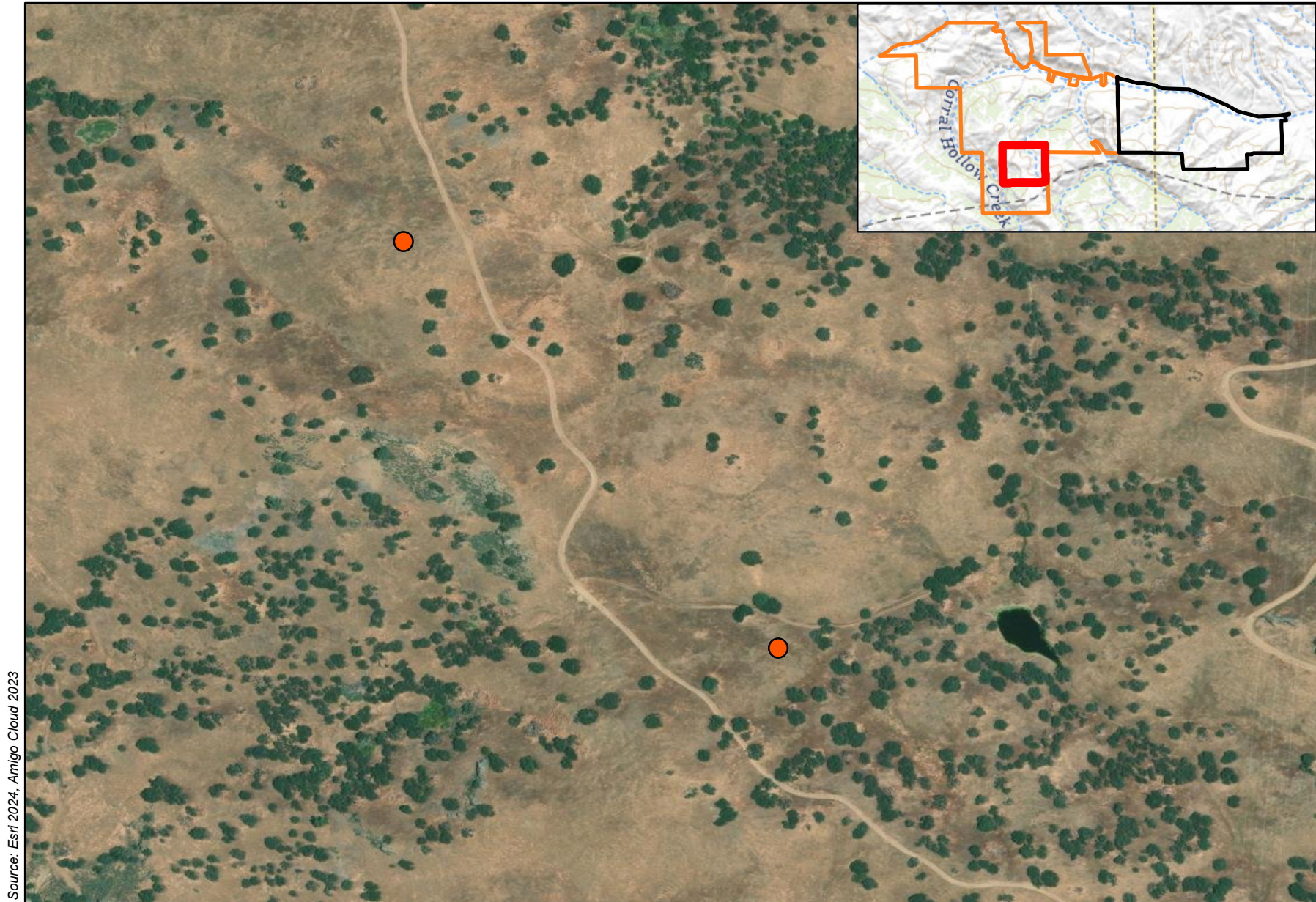
-  Stinkbells (2021 Survey)
-  Stinkbells (2016 Survey)
-  Alameda-Tesla Property
-  Carnegie SVRA

0 0.0325 0.065 0.13 0.195 0.26 Miles



Figure 4a Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024



Source: Esri 2024, Amigo Cloud 2023

- Stinkbells (2016 Survey)
- Alameda-Tesla Property
- Carnegie SVRA

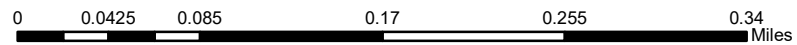
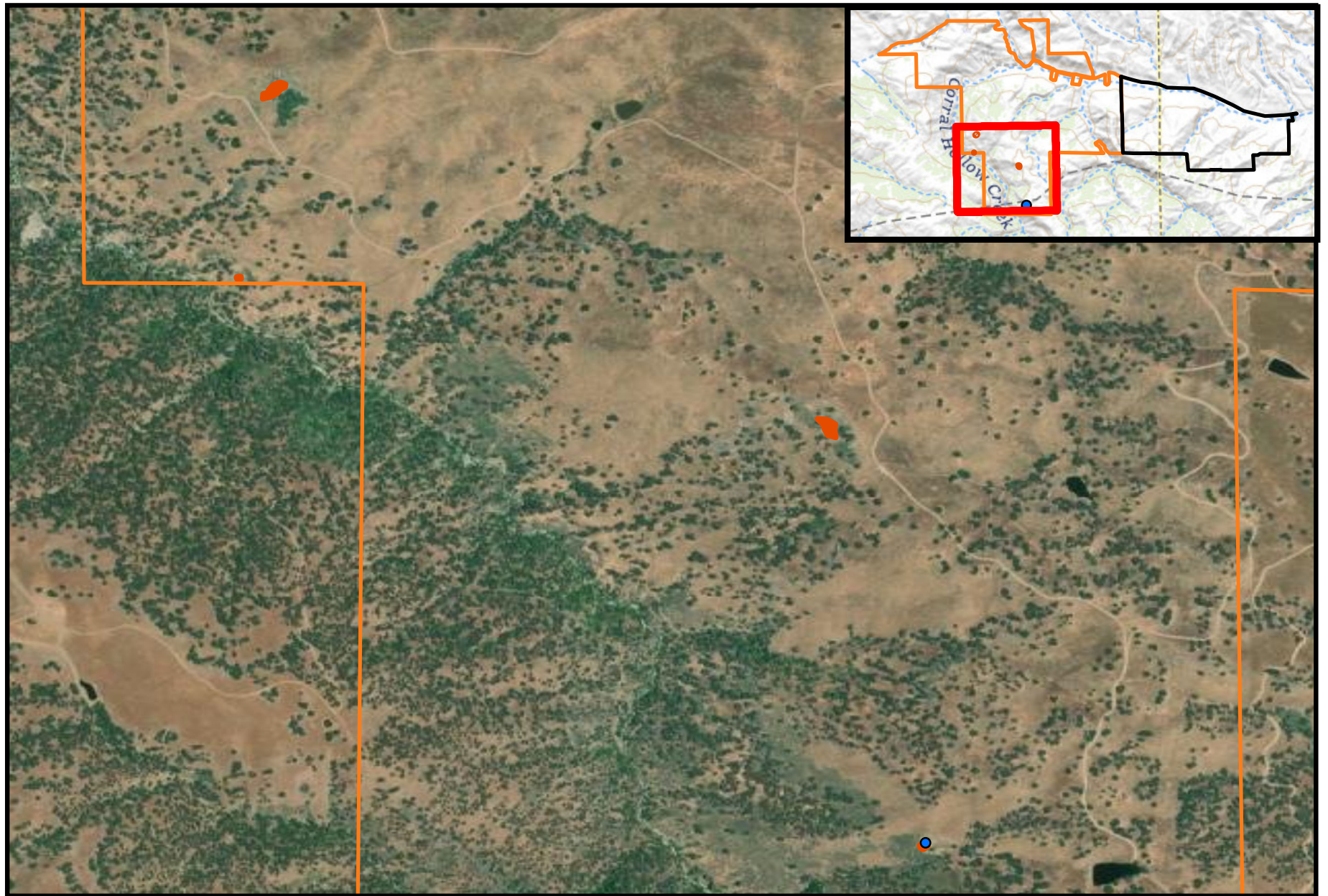


Figure 4b Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024



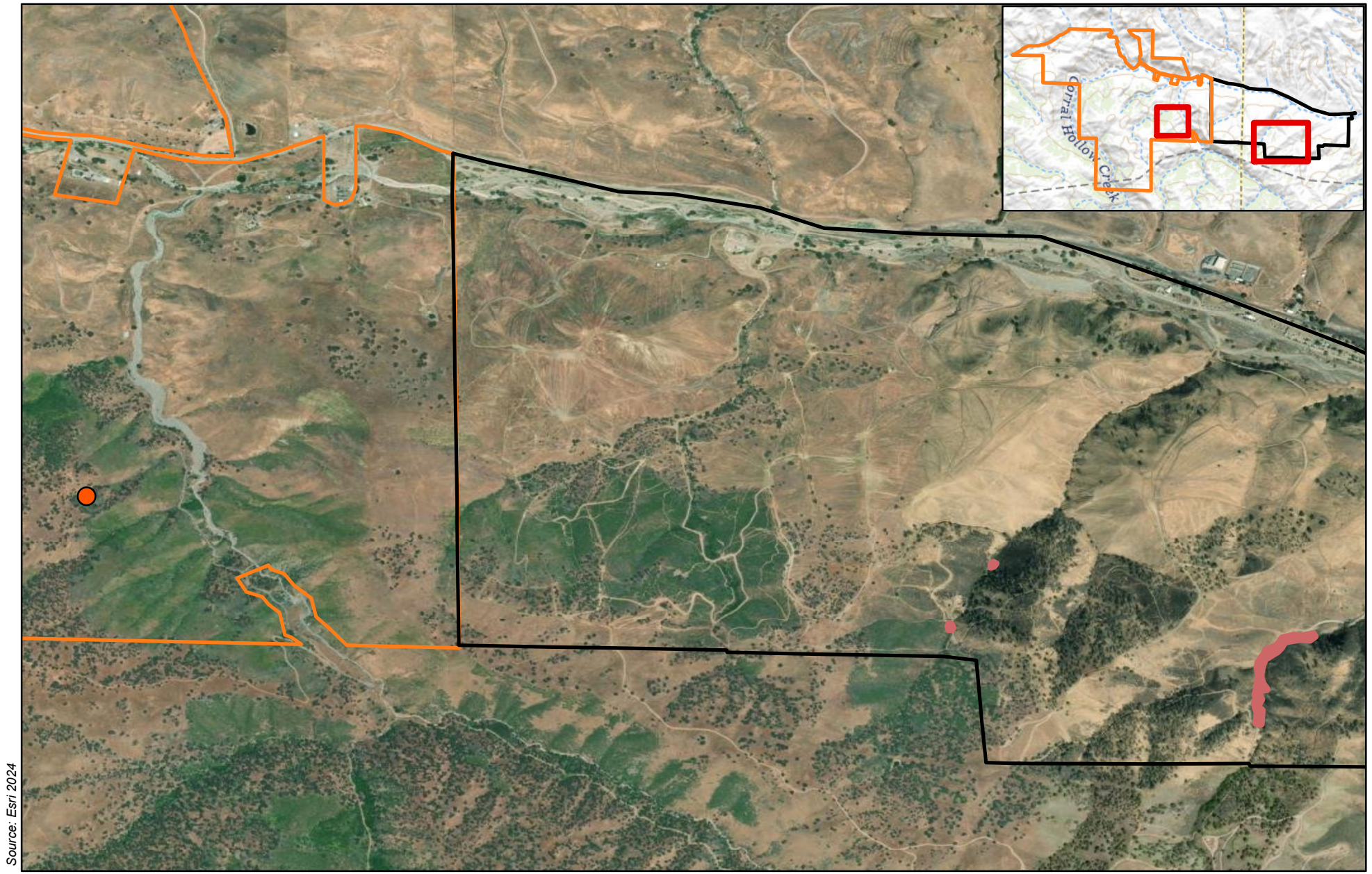
- Santa Clara Thorn Mint (2016 Survey)
- Santa Clara Thorn Mint (2021 Survey)
- Alameda-Tesla Property
- Carnegie SVRA

0 0.075 0.15 0.3 0.45 0.6 Miles



Figure 5 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024



Source: Esri 2024

- Hospital Canyon Larkspur (2021 Survey)
- Hospital Canyon Larkspur (2016 Survey)
- Alameda-Tesla Property
- Carnegie SVRA

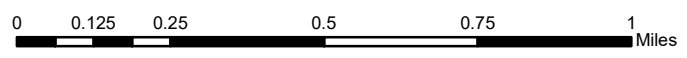
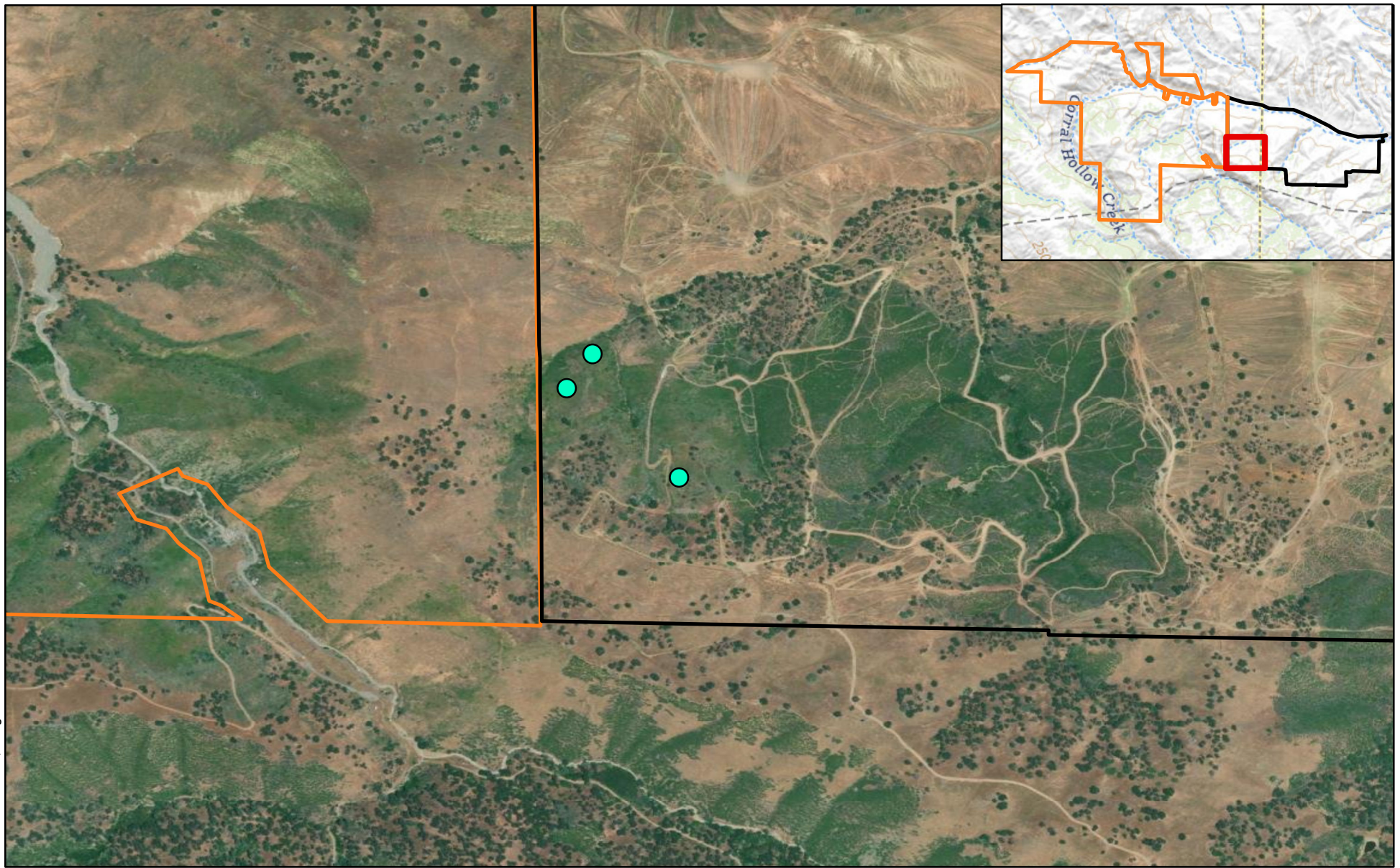





Figure 6 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Source: Esri 2024, Amigo Cloud 2023



-  Chaparral Harebell (2016 Survey)
-  Alameda-Tesla Property
-  Carnegie SVRA

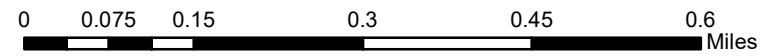
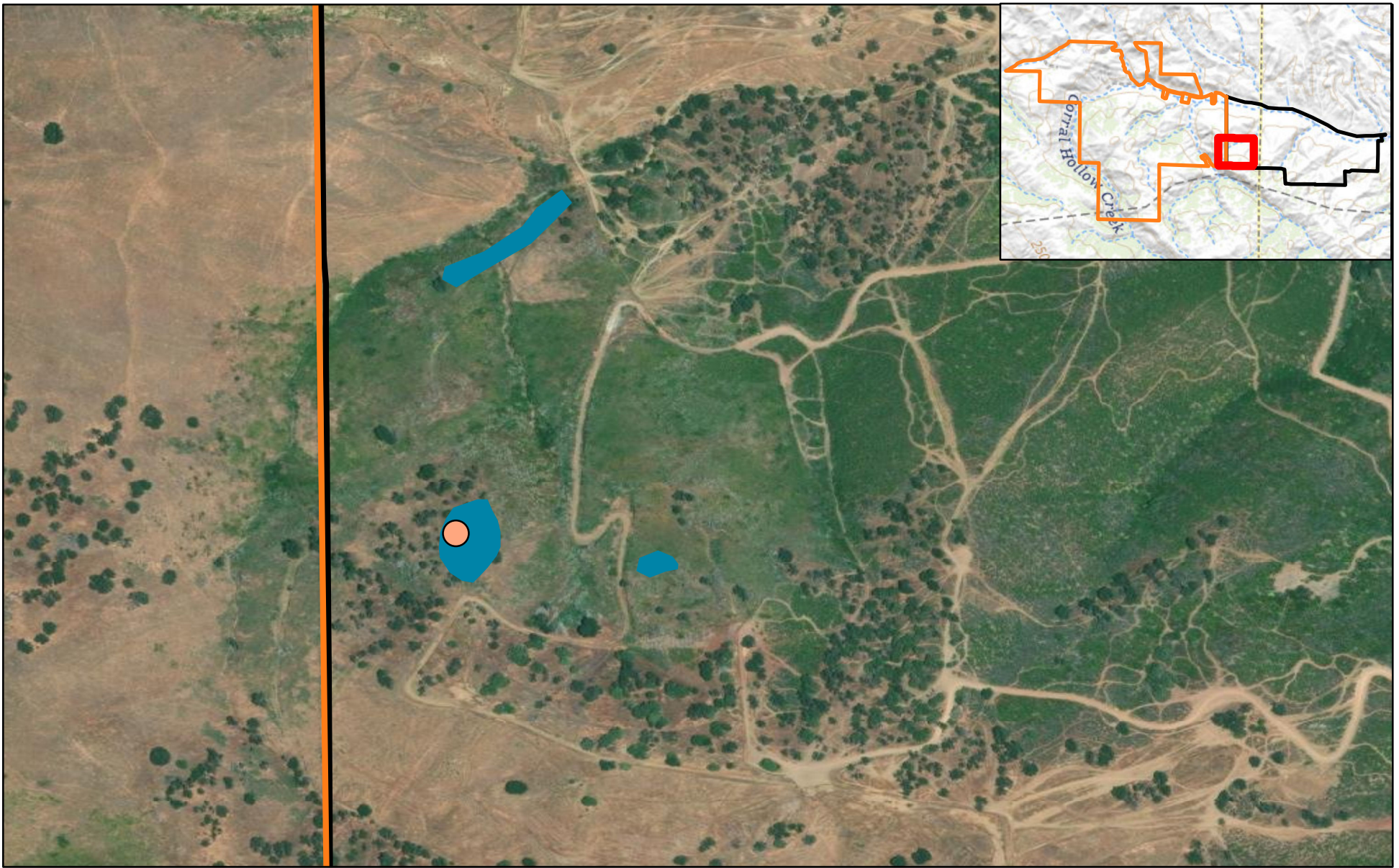






Figure 7 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Source: Esri 2024, Amigo Cloud 2023



-  Jepson's Woolly Sunflower (2016 Survey)
-  Jepson's Woolly Sunflower (2021 Survey)
-  Alameda-Tesla Property
-  Carnegie SVRA

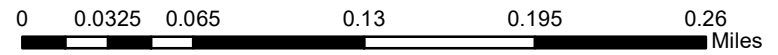
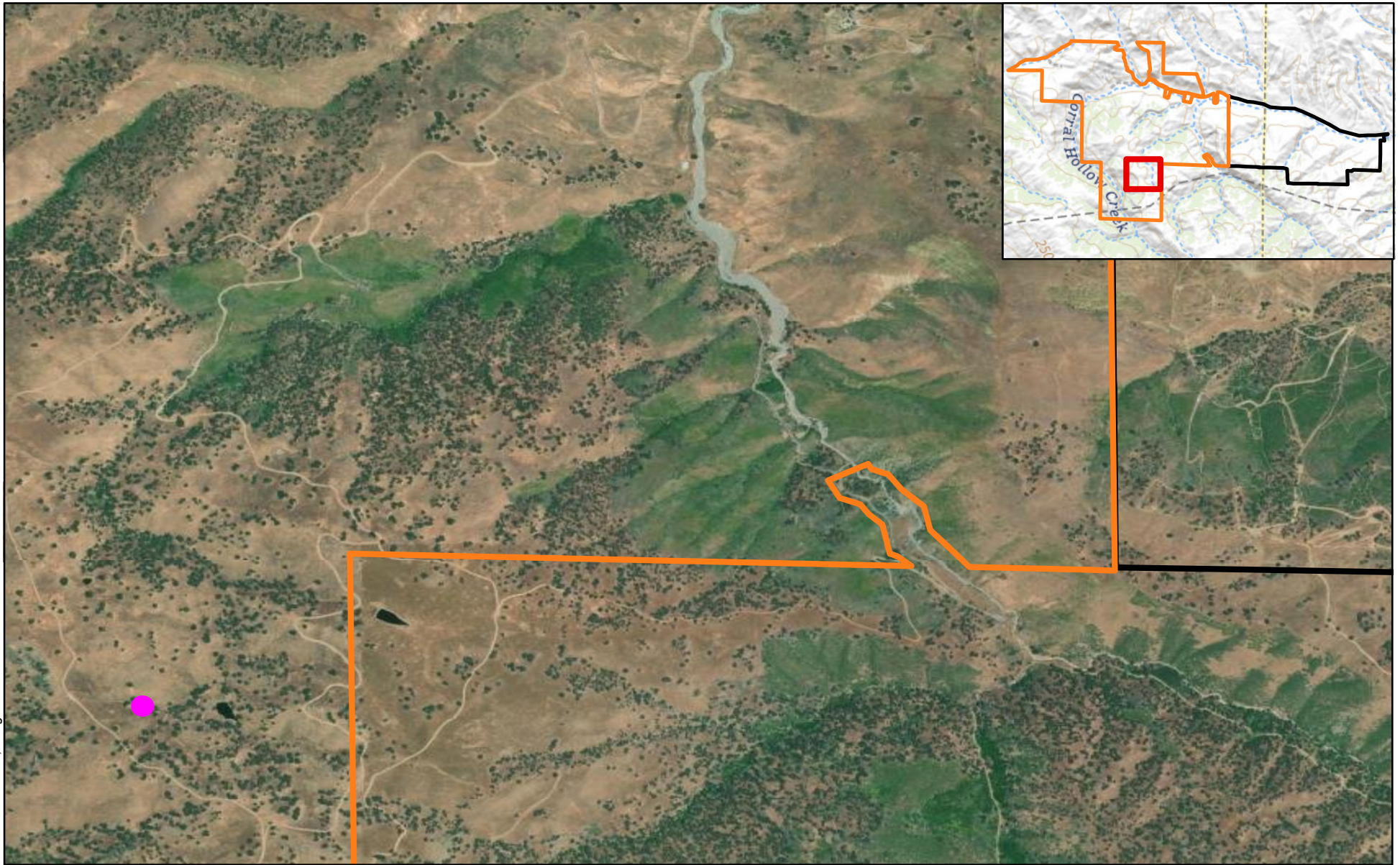





Figure 8 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Source: Esri 2024, Amigo Cloud 2023



-  Sylvan Scorzonella (2016 Survey)
-  Alameda-Tesla Property
-  Carnegie SVRA

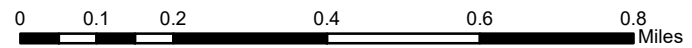
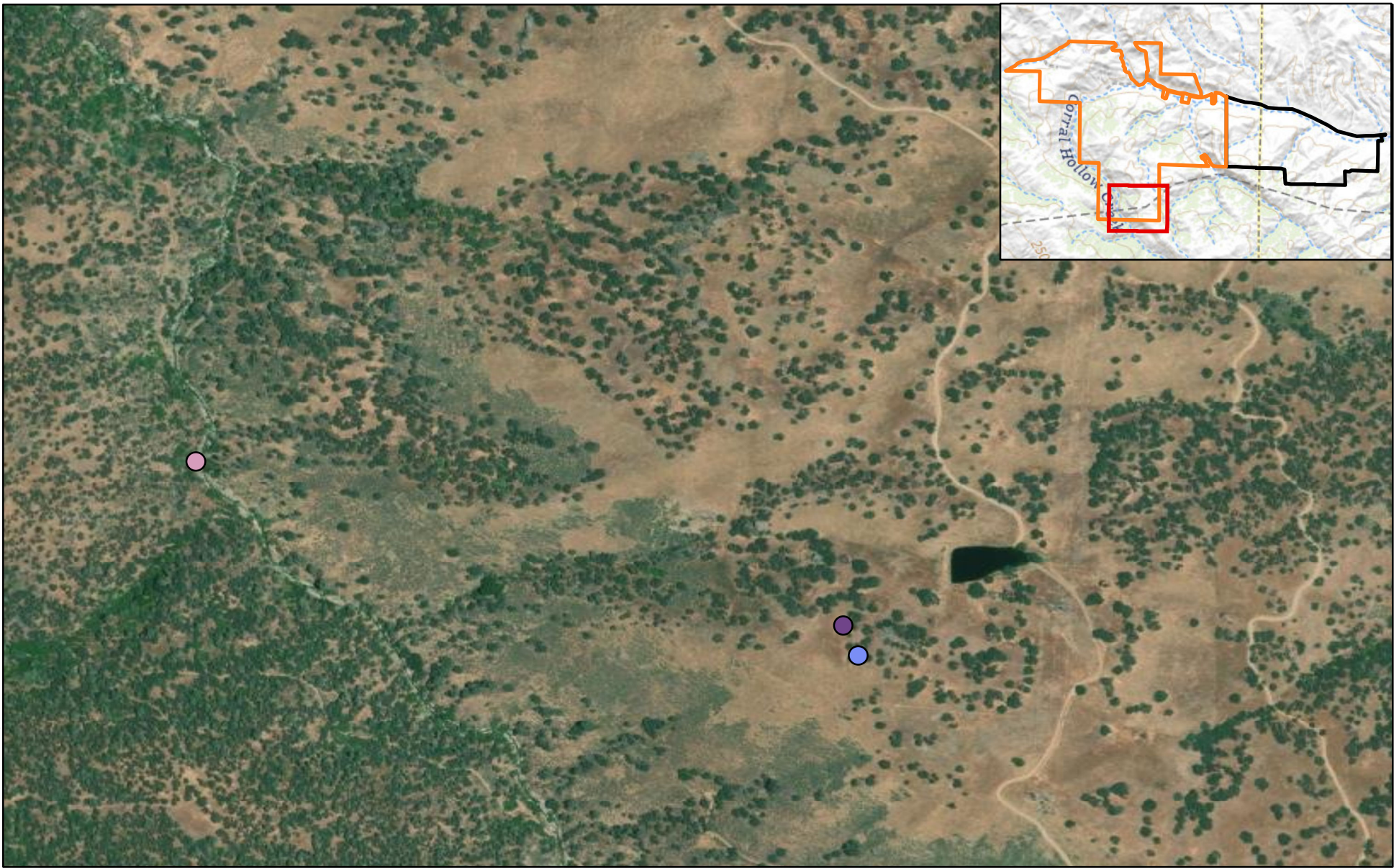


Figure 9 Rare Plant Occurrences 2016 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Source: Esri 2024, Amigo Cloud 2023



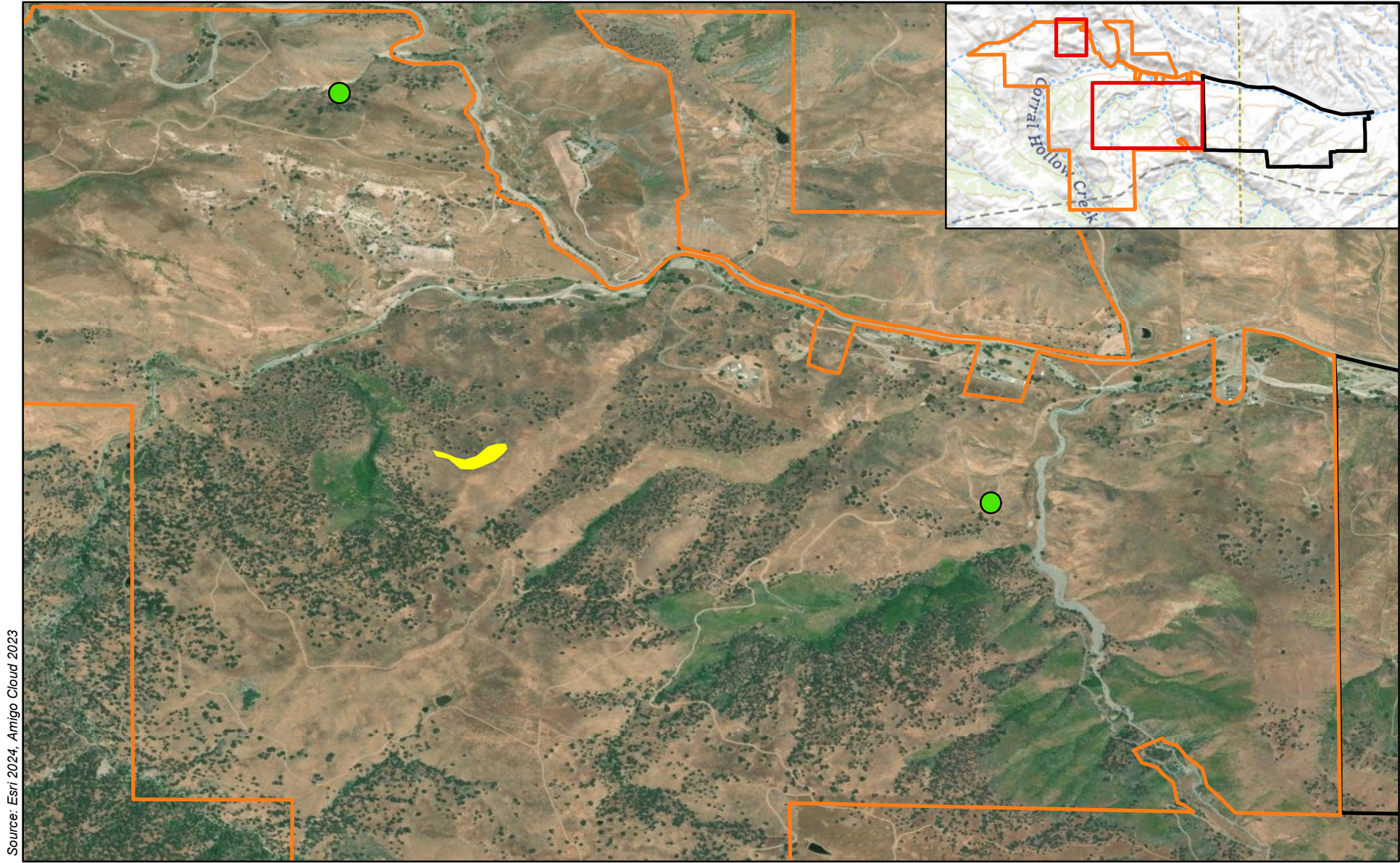
- California Androsace (2016 Survey)
- Michael's Rein Orchid (2016 Survey)
- Phloxleaf Bedstraw (2016 Survey)

0 0.05 0.1 0.2 0.3 0.4 Miles



Figure 10 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024



Source: Esri 2024, Amigo Cloud 2023

- Big Tarweed (2021 Survey)
- Big Tarweed (2016 Survey)
- Alameda-Tesla Property
- Carnegie SVRA

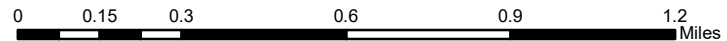


Figure 11 Rare Plant Occurrences 2016 and 2021 Surveys

Alameda-Tesla Property Rare Plant Survey 2023-2024

Appendix B Target Species List

Species	Listing Status	Habitat and Bloom Period	Comments
Santa Clara thorn mint (<i>Acanthomintha lanceolata</i>)	4.2	Annual herb that occurs in rocky outcrops on slopes, sometimes serpentine, in chaparral and cis-montane woodland plant communities. Blooms from March to June.	Present. There have been numerous documented occurrences since 2000. There are also 30 occurrences before 2000 for this species from Alameda and San Joaquin Counties with the most recent occurrence from 1998 (Calflora 2024). This species was documented in the Property during the 2016 floristic inventory and 2021 rare plant survey on steep southwest-facing slopes composed of decomposing hard shale substrate in the <i>California Sagebrush – Black sage Scrub Alliance, Blue Oak Woodland and Forest, and California Juniper Woodland</i> vegetation communities (Kramer 2016; MG 2021).
Large-flowered fiddleneck (<i>Amsinckia grandiflora</i>)	FE, SE, 1B.1	Annual herb that occurs on grassy slopes in cismontane woodland, and valley and foothill grassland. Blooms from March to May	May be Present. Within Alameda County there are two documented occurrences since 2000 and no occurrences since 2000 from San Joaquin County (Calflora 2024). There are at least four documented occurrences before 2000 for this species from Alameda and San Joaquin Counties with the most recent occurrence from 1995 at Site 300 near the Property (Calflora 2024). This species was not detected during the 2016 floristic inventory or the 2021 rare plant survey in the Property (Kramer 2016; MIG 2021).
California androsace (<i>Androsace elongata</i> ssp. <i>acuta</i>)	4.2	Annual herb that occurs on slopes in cismontane woodland, grassland, and chaparral, often on rocky substrate. Blooms from March to June.	Present. Within Alameda and San Joaquin counties, there are numerous documented occurrences since 2000 (Calflora 2024). This species was documented in the Property during the 2016 floristic inventory (Kramer 2016).
Big tarweed (<i>Blepharizonia plumosa</i>)	1B.1	Annual herb that occurs on dry slopes, often in disturbed areas, in valley and foothill grassland. Blooms from July to October.	Present. Within Alameda County, there are several documented occurrences since 2000 (Calflora 2024). There are no documented occurrences since 2000 in San Joaquin County (Calflora 2024). This species was documented growing in the <i>Wild Oats and Brome Grassland</i> vegetation community in 2016 and 2021 in the Property (Kramer 2016; MIG 2021).
Chaparral harebell (<i>Campanula exigua</i>)	1B.2	Annual herb that occurs on dry slopes, often in disturbed areas, in valley and foothill grassland. Blooms from February to May.	May be Present. Within Alameda County, there are three documented occurrences since 2000 and no documented occurrences from San Joaquin County (Calflora 2024). There are 12 occurrences before 2000 for this species from Alameda County with the most recent occurrence from 1995 at Los Mochos Boy Scout Camp, east of Ohlone Regional Wilderness (Calflora 2024).

Species	Listing Status	Habitat and Bloom Period	Comments
			<p>This species was observed at Carnegie SVRA at two locations near the upper Franciscan Loop Trail during the 2016 floristic inventory, growing in the <i>California Sagebrush – Black sage Scrub</i> vegetation community that had burned the previous year (Kramer 2016). It is not known whether this species is a strict fire follower, appearing only immediately after a fire for a few years or the species is always present, but is much more abundant after a fire. During the 2021 rare plant survey this species was not observed at the same locations (MIG 2021). Regardless, the seed bank is likely still present at both locations.</p>
<p>Hospital Canyon larkspur <i>(Delphinium californicum ssp. interius)</i></p>	<p>1B.2</p>	<p>Perennial herb that grows on slopes (sometimes in mesic areas) within chaparral, coast scrub, and cismontane woodlands. The blooming period for this species extends from April to June.</p>	<p>Present. Within Alameda County, there are four documented occurrences since 2000 from the Alameda Tesla Property, Carnegie SVRA, and the Ohlone Regional Wilderness (Ecosystems West 2004; Kramer 2016; Calflora 2024). This species was observed during the 2016 floristic inventory in the Property growing on a slope within <i>California Sagebrush – Black sage Scrub</i> (Kramer 2016). Also, this species was observed growing at Carnegie SVRA on the banks along drainages in Carrol Canyon and Kiln Canyon during the 2021 rare plant survey in the <i>California Sagebrush – Black sage Scrub</i> and <i>Bush Mallow Scrub</i> vegetation communities (MIG 2021).</p>
<p>Diamond petaled California poppy <i>(Eschscholzia rhombipetala)</i></p>	<p>1B.1</p>	<p>Annual herb that occurs in valley and foothill grassland plant communities in alkaline clay soils. The blooming period for this species extends from March to April.</p>	<p>May be Present. Within Alameda County, there have been two documented occurrences since 2000, both from Site 300 (Calflora 2024). There are no documented occurrences since 2000 in San Joaquin County (Calflora 2024). There are four occurrences before 2000 in Alameda and San Joaquin counties with the most recent occurrence from 1997 at Site 300 (Calflora 2024). This species was not detected during the 2016 floristic inventory or the 2021 rare plant survey in the Property (Kramer 2016; MIG 2021).</p>
<p>Jepson's woolly sunflower <i>(Eriophyllum jepsonii)</i></p>	<p>4.3</p>	<p>Perennial subshrub herb that occurs in oak woodland and chaparral plant communities, sometimes on serpentine substrate. The blooming period for this species extends from April to June.</p>	<p>May be Present. Within Alameda County, there have been numerous documented occurrences since 2000, including one 2003 occurrence from the Alameda-Tesla Property (Ecosystems West 2004; Calflora 2024). There are no documented occurrences in San Joaquin County (Calflora 2024). This species was not observed in the Property during the 2016 floristic inventory or the 2021 rare plant survey (Kramer 2016; MIG 2021). However, this species was observed growing in Carnegie SVRA during the 2016 floristic inventory and the 2021 rare plant survey on moderate to</p>

Species	Listing Status	Habitat and Bloom Period	Comments
			steep north-facing slopes in open grassy areas in <i>California Sagebrush – Black sage Scrub</i> and <i>Blue Oak Woodland and Forest</i> vegetation communities (Kramer 2016; MIG 2021).
Stinkbells (<i>Fritillaria agrestis</i>)	4.2	Perennial bulbiferous herb that occurs in clay and sometimes serpentine substrate in chaparral cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland plant communities. The blooming period for this species extends from March to June.	Present. Within Alameda County, there have been numerous documented occurrences since 2000, including recent occurrences from 2021, 2022 and 2023 from the Alameda-Tesla property (MIG 2021; Calflora 2024). There are no documented occurrences from San Joaquin County (Calflora 2024). This species was observed in the Property during the 2016 floristic inventory and the 2021 rare plant survey (Kramer 2016; MIG 2021).
Phloxleaf bedstraw (<i>Galium andrewsii</i> ssp. <i>gatense</i>)	4.2	Perennial herb that occurs in dry, rocky places, often in serpentine soil, in chaparral or open oak/pine woodland. The blooming period for this species extends from April to July.	Present. Within Alameda County there have been numerous documented occurrences since 2000, including a 2016 occurrence on the Alameda-Tesla property (Kramer 2016). There are no documented occurrences from San Joaquin County (Calflora 2024). This species was not detected in the Property during the 2021 rare plant survey (MIG 2021).
Brewer’s western flax (<i>Hesperolinon breweri</i>)	1B.2	Annual herb that occurs in foothill woodland, chaparral, valley grassland communities. The blooming period for this species extends from May to July.	Present. This species was documented in the Alameda- Tesla Property in 2014 but was not observed during the 2016 floristic inventory or the 2021 rare plant survey (Kramer 2016; MIG 2021; Calflora 2024). The species has not been documented in Alameda or San Joaquin counties, other than the one 2014 occurrence from the Alameda-Tesla Property.
Forked hareleaf (<i>Lagophylla dichotoma</i>)	1B.1	Annual herb that occurs in openings in foothill woodland, valley grassland communities. The blooming period for this species extends from April to June.	May be Present. There is one documented occurrence of this species from Alameda County and no documented occurrences from San Joaquin County (Calflora 2024). This species was observed in 2003 within Carnegie SVRA and the Alameda-Tesla Property (Ecosystems West 2004). This species was not detected during the 2016 floristic inventory or the 2021 rare plant survey in the Property (Kramer 2016; MIG 2021).
Sylvan scorzonella (<i>Microseris sylvatica</i>)	4.2	Perennial herb that occurs in open areas in chaparral; pinyon and juniper woodland; cismontane woodland; and valley and foothill grassland vegetation communities. The blooming period for this species extends from March to June.	Present. Within Alameda County there is one documented occurrence from 2003 in the Alameda-Tesla Property (Ecosystems West 2004; Calflora 2024). There are no documented occurrences from San Joaquin County (Calflora 2024). During the 2016 floristic inventory, at least 30 individuals were observed near Hidden Pond where they were growing in the <i>Wild Oats and Annual Brome Grassland semi-natural Alliance</i> vegetation community (Kramer 2016). Additionally, in 2019 an undocumented single individual

Species	Listing Status	Habitat and Bloom Period	Comments
			was observed in Carnegie SVRA growing in the open grassland understory of the <i>Blue Oak Woodland and Forest</i> vegetation community adjacent to the Franciscan Loop Trail (D. Gallagher, pers. observation).
Michael's rein orchid (<i>Piperia michaelii</i>)	4.2	Perennial herb that occurs in dry sites within foothill woodland; coastal shrub and prairie; and closed-cone coniferous and mixed evergreen forests. The blooming period for this species extends from April to August.	Present. Within Alameda County, there are three documented occurrences since 2000, including a 2016 occurrence from the Alameda-Tesla Property (Kramer 2016) and a 2023 occurrence southwest of Carnegie SVRA (Calflora 2024). There are seven occurrences before 2000 for this species from Alameda County with the most recent occurrence from 1999 in Albany Hill Park (Calflora 2024). A small population of five individuals was observed in the Alameda-Tesla Property, adjacent to upper Corral Hollow Creek during the 2016 floristic survey, growing in the <i>Fremont Cottonwood Forest and Woodland</i> vegetation community (Kramer 2016). This species was not detected during the 2021 rare plant survey in the Property (MIG 2021).
California groundsel (<i>Senecio aphanactis</i>)	2B.2	Annual herb that occurs on drying, alkaline flats and dry, open rocky areas in cismontane woodland and chaparral. The blooming period for this species extends from January to April.	May be Present. Within Alameda County there are two documented occurrences since 2000 and there are no documented occurrences since 2000 from San Joaquin County (Calflora 2024). There are five occurrences before 2000 for this species from Alameda and San Joaquin Counties with the most recent occurrence from 1998 at Alameda-Tesla Property (Calflora 2024). This species was also documented in 2003 in the Alameda-Tesla Property (Ecosystems West 2004). This species was not detected during the 2016 floristic inventory or the 2021 rare plant survey in the Property (Kramer 2016; MIG 2021).

Key to Listing Status Abbreviations: Federally Endangered (FE); Federally Threatened (FT); Federal Candidate for Listing (FC); Federal Proposed Threatened (FPT); State Endangered (SE); State Threatened (ST); State Candidate for listing (SC); State Fully Protected (FP); California Species of Special Concern (CSSC); California Rare Plant Rank (CRPR). CRPR 1A = Plants presumed extinct in California; CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere; CRPR 2B = Plants rare, threatened, or endangered in California, but more common elsewhere; CRPR 3 = Plants about which information is needed-a review list; CRPR 4 = Plants of limited distribution-a watch list; 0.1 = seriously threatened in California; 0.2 = moderately threatened in California; 0.3 = not very threatened in California

Appendix C Photographs



Photo 1. Big tarweed observed on 22 September 2023. The visible cracks are typical of shrink-swell clay soil.



Photo 2. Big tarweed within the *Wild Oats and Annual Brome Grasslands Semi-natural Alliance* vegetation community. Photo taken on 22 September 2023.