

Sycamore Alluvial Woodland Presence and Distribution



BACKGROUND. Sycamore alluvial woodland (SAW) is a relatively rare habitat type dominated by the California sycamore (*Platanus racemosa*) and associated with wide alluvial braided streams. This habitat supports many sensitive wildlife species, including riparian birds, western pond turtle (*Actinemys marmorata*) and steelhead trout (*Oncorhynchus mykiss*). Native California sycamores affect and are affected by a stream's hydrology and geomorphology. Changes in stream flow and sediment regimes, land use, and climate change can disrupt these processes.

THIS STUDY. Habitat conservation planning in Alameda County seeks to incorporate SAW habitat into stream enhancement projects where suitable. However, little is known about how, where, and when SAW regenerates. This EPA grant-funded effort builds upon growing regional understanding of SAW distribution, character, and relationship to hydrologic and geomorphic processes. Data collected will be used to evaluate SAW reestablishment potential on Arroyo Mocho.

FIELD METHODS. This study includes intensive data gathering on all individual sycamore trees as well as reach-scale factors that contribute to suitable habitat conditions for sycamores. Field work was conducted in the fall of 2019, and consisted of documenting each sycamore tree's size, health, and geomorphic position. A brief summary of the collected data is presented here.

SELECTED SITES: Five sites were selected: four sites along Arroyo Mocho, and one along Arroyo Valle.

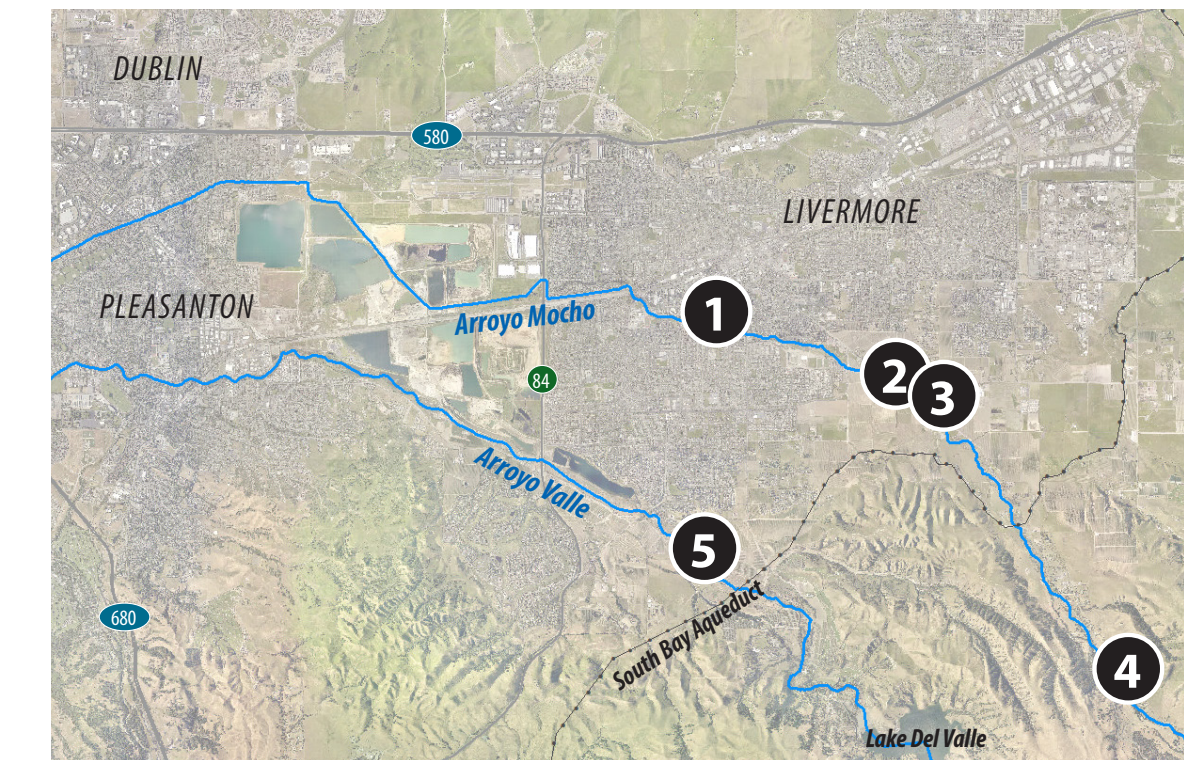
Hydrologic Conditions

- Streamflow on Arroyo Valle is regulated by the Del Valle Dam upstream.
- Arroyo Mocho is undammed but sections downstream of the South Bay Aqueduct receive periodic groundwater recharge releases.

SAW Presence

- The three "control" sites have existing stands of SAW [3,4,5].
- Two "suitability" sites are locations where SAW reestablishment potential will be evaluated [1,2].

LOCATION MAP



Arroyo Mocho and Arroyo Valle drain large portions of eastern Alameda County where Sycamore Alluvial Woodland historically occurred.

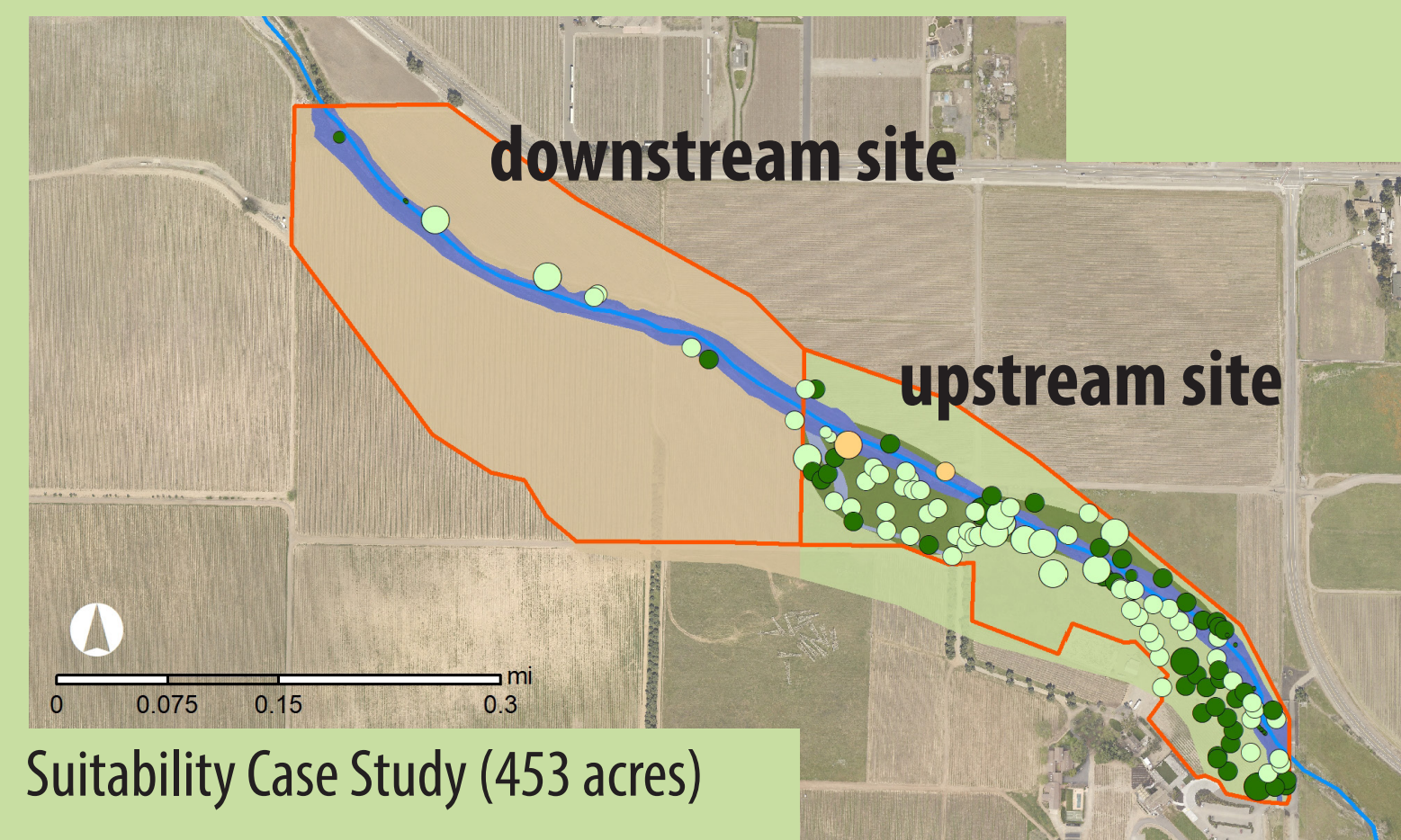
ARROYO MOCHO

1 MEDEIROS PARKWAY (482 acres)



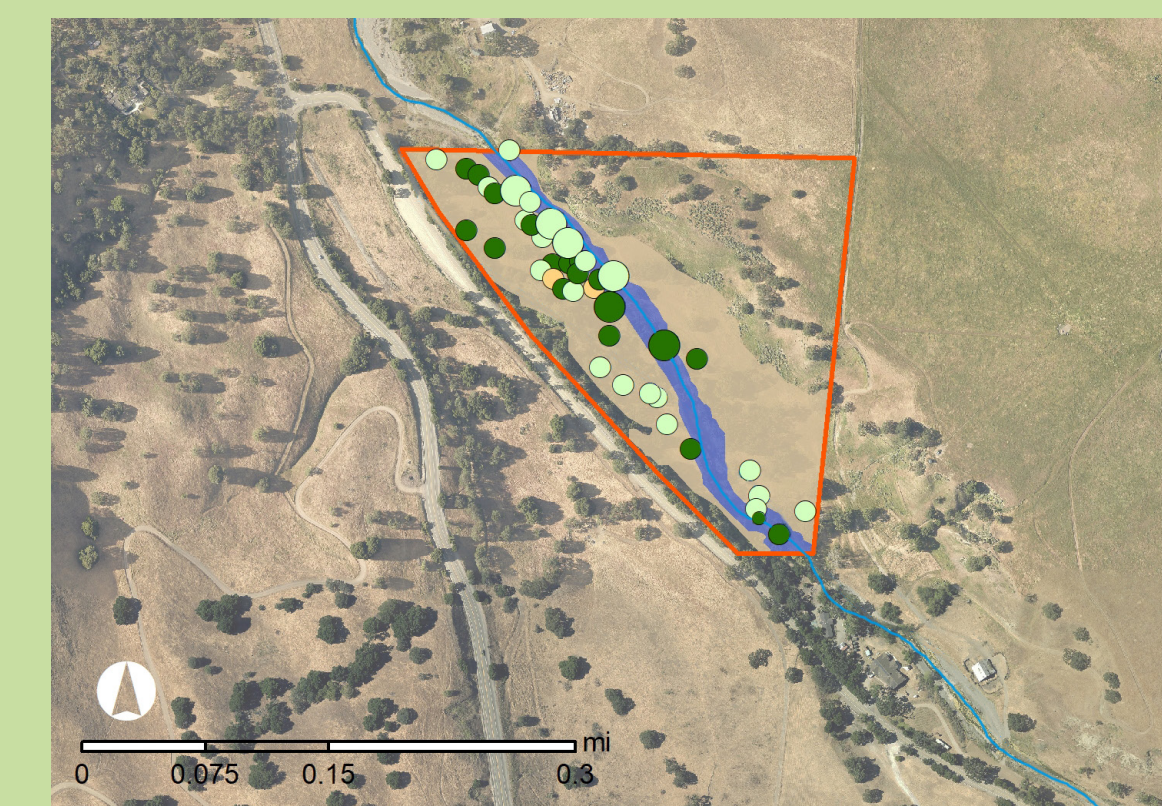
Suitability Case Study

2 3 WENTE VINEYARDS [two sites]



Suitability Case Study (453 acres)

4 MINES ROAD (284 acres)



Control Site

Not affected by groundwater recharge releases

ARROYO VALLE

5 SYCAMORE GROVE (644 acres)



Control Site

Flow is regulated by Del Valle Dam upstream

LEGEND

- Survey Boundary
- Channel Alignment

TREE SIZE

- Sucker/Seedling
- Sapling
- Medium
- Large

GEOMORPHIC ZONE

- Active Channel
- Side Channel
- Inner Floodplain
- Outer Floodplain
- Undefined Floodplain*

CONDITION

- Dead
- Poor
- Fair
- Good

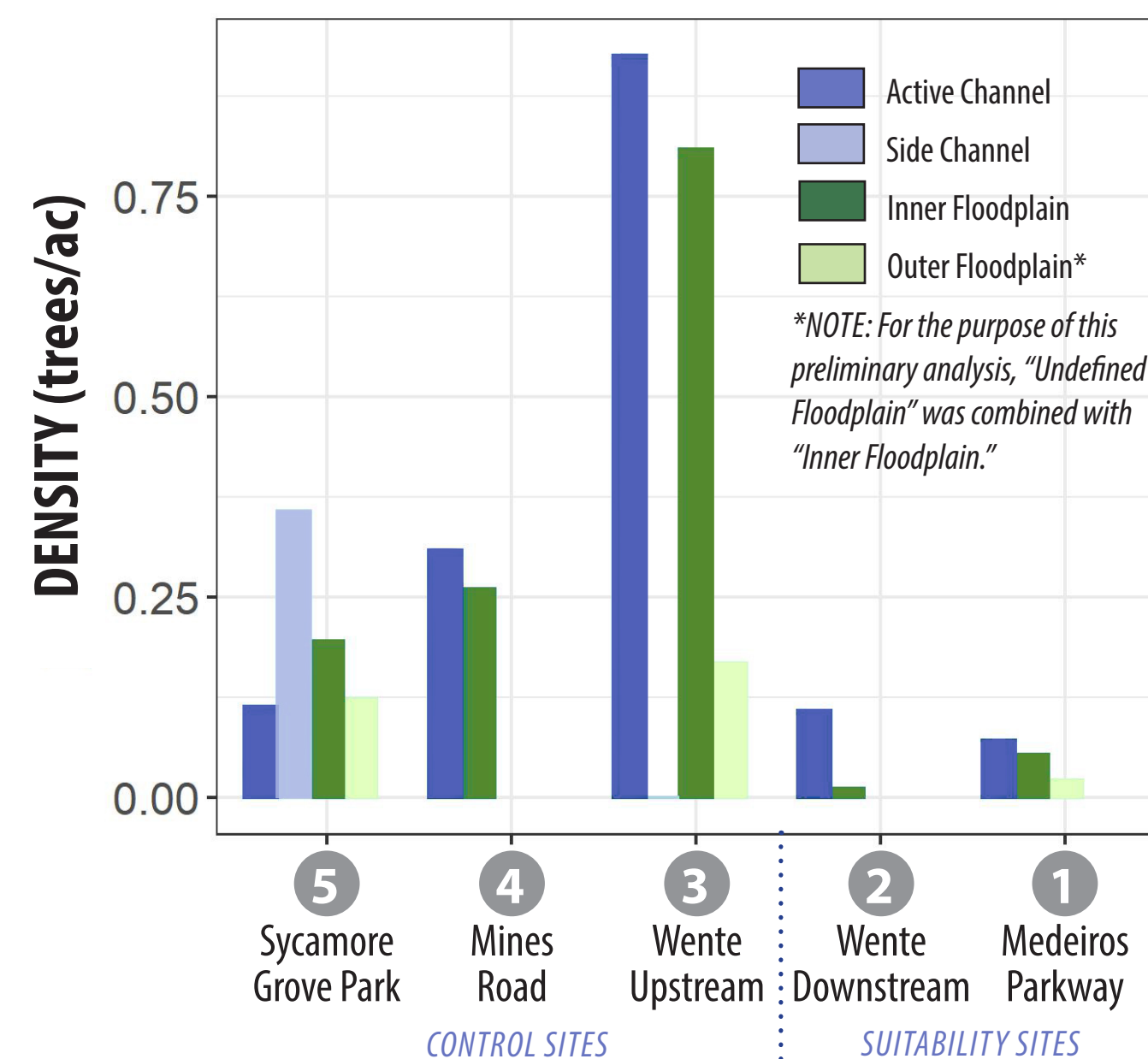
*NOTE: "Undefined Floodplain" areas are characterized by only one floodplain surface -- a distinct inner or outer floodplain could not be delineated.

SYCAMORE DENSITY BY SITE

- Wente upstream is the smallest site (248 acres) and has the overall highest density (0.48 trees/acre). This is due to high densities in the active channel and inner floodplain.
- Sycamore Grove Park is the biggest site (644 acres) with an overall density of 0.16 trees/acre.
- Mines Road, similar in size to Wente upstream, has the same density as Sycamore Grove Park (0.16 trees/acre).
- Wente downstream (453 acres) and Medeiros (482 acres) are the two potential restoration sites and, as expected have the lowest densities overall (0.02 and 0.07 trees/acre, respectively).

SYCAMORE DENSITY BY GEOMORPHIC ZONE

- The active channel was associated with the highest densities of sycamore trees for four of the five sites.
- Sycamore Grove Park's distinctive side channel was found to support relatively high tree density.
- The outer floodplain (where present) tends to have the lowest densities of all the geomorphic zones.



SYCAMORE SIZE AND CONDITION

- ~86% of all trees that were surveyed occur in the control sites.
- Overall, 76% of all trees were medium sized trees, 16% were large, and 7% were saplings or smaller.
- Distribution of tree sizes do not appear to follow distinct patterns within sites, though the smallest trees were found primarily in the active channels, and the majority of large trees were found on the inner floodplains on swales or the tops of banks, and along active channels.
- Wente upstream had the greatest proportion of trees that are saplings or smaller.
- Sycamore Grove Park had the greatest proportion of large trees.
- Overall, the majority of trees surveyed were in good or fair health, which do not appear to have distinct spatial patterns.
- Only four trees were dead and 11 trees were in poor condition, many of which were found in the active channels.

NEXT STEPS

This information and additional analyses will be used to develop a regional suitability analysis to inform SAW restoration design. Case studies will be used to examine whether SAW could be established and conceptually how it might be restored. This study will support regional planning, including design and implementation of flood protection, stream enhancement, and other projects along Arroyo Mocho.

Acknowledgments

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