SFPUC Alameda Creek Watershed Calaveras Reservoir (Grazing Unit 23) Alameda and Santa Clara Counties, California

Hetch Hetchy
Regional Water System
Services of the San Francisco Public Utilities Commission

AECOM Imagine it. Delivered.

February 3, 2026

This page intentionally left blank

Table of Contents

Tables

Figures

Acronyms

AUMs	animal unit months
AUY	animal unit year
BMPs	Best Management Practices
BHR	Bioregional Habitat Restoration
Grazing Unit 23	Calaveras Reservoir
GU-23	Calaveras Reservoir
Cal-IPC	California Invasive Plant Council
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
EDRR	Early Detection and Rapid Response
GU	Grazing Unit
GUMP	grazing unit management plan
IPM	Integrated Pest Management
NRCS	Natural Resources Conservation Service
NNIP	non-native invasive plant
PG&E	Pacific Gas & Electric Company
RMP	Rangeland Management Plan
RDM	residual dry matter
SFPUC	San Francisco Public Utilities Commission
SCU	Santa Clara Unit
USFWS	United States Fish and Wildlife Service
WMP	Watershed Management Plan

1. Introduction

1.1 Purpose of Grazing Unit Management Plan

This grazing unit management plan (GUMP) outlines the existing conditions and rangeland management goals for the Calaveras Reservoir (Grazing Unit 23 [GU-23]) lease. This document establishes management expectations between the San Francisco Public Utilities Commission (SFPUC) and the tenant for the grazing unit and guides program operations and capital improvements to achieve the SFPUC's Rangeland Management Plan (RMP) goals. This GUMP is consistent with and informed by the watershed-wide RMP, the Alameda Watershed Management Plan (WMP) and the Water Enterprise Environmental Stewardship Policy in which the SFPUC commits to proactively managing the watersheds in a manner that maintains the integrity of natural resources, restores habitats for native species, and enhances ecosystem function.

1.2 Rangeland Management Program

The SFPUC developed the Alameda Creek Watershed RMP to document the rangeland management program for livestock grazing applied across the SFPUC-owned and -managed grazing units of the Alameda Creek Watershed. The RMP establishes a rangeland management program that is consistent with plans and policies that apply to management of SFPUC watershed lands, as well as with current best practices in rangeland management.

The goals of the SFPUC rangeland management program are to:

- Protect and improve water quality;
- Preserve and enhance the health of ecological systems;
- Reduce the threat of wildland fire by decreasing fuel densities;
- Adaptively manage the RMP lands based on new information and conditions;
- Provide a basis for consistent management of the RMP lands; and
- Support an economically and ecologically sustainable grazing operation.

1.3 Rangeland Management Plan Objectives

To achieve these goals, the RMP outlines broad management objectives to protect water quality and natural resources. These objectives include the following:

- Maintain sufficient vegetative residual dry matter (RDM) to protect soil and water quality.
- Minimize negative impacts to sensitive aquatic habitats such as riparian and spring systems.
- Implement rangeland management practices that preserve and protect special-status species and their habitats.
- Maintain or improve native species biodiversity.
- Monitor and control non-native invasive plant (NNIP) and wildlife populations.
- Reduce the risk of introduction or spread of plant diseases, particularly from human activities.

- Reduce sediment sources to riparian habitats associated with road systems and insufficient vegetative cover.
- Reduce risk of introducing livestock- and wildlife-related pathogens into waterways of the RMP lands.

The RMP also includes the following objectives to promote effective administration of the grazing units:

- Use the results of monitoring and routine inspections to adaptively manage the RMP lands.
- Effectively communicate and implement rangeland management goals and expectations with the RMP grazing tenant(s).
- Consult with SFPUC rangeland staff and RMP grazing tenant(s) during the development of any policies that would change the management of RMP lands.
- Implement cost-sharing rangeland improvement projects between the SFPUC and its grazing tenant(s) in the RMP lands.
- Use grazing to manage wildland fuel loads.

2. Lease Overview

2.1 Calaveras Reservoir Lease, Grazing Unit 23

The Calaveras Reservoir lease covers Grazing Unit 23 (GU-23), which consists of approximately 10,623 acres in the southern portion of the SFPUC Alameda Creek Watershed grazing lands, covering the largest area of all the SFPUC grazing leases (Figure 1). The lease includes a portion of Oak Ridge, all of Poverty Ridge, portions of Arroyo Hondo and Calaveras Creek, lands surrounding Calaveras Reservoir, and Calaveras Dam. GU-23 borders the Black Mountain grazing unit (GU-25) to the east, the Mission Peak grazing unit (GU-22) and Calaveras Road to the west, the Frog Pond (GU-21) and Sunol Park grazing units (GU-20) to the north, and private lands to the south and southwest. GU-23 also surrounds the 109-acre SFPUC Goldfish Pond Bioregional Habitat Restoration (BHR) mitigation site. A single-family home, owned by the current tenant but on SFPUC-owned land, is located at the end of the paved portion of Marsh Road. In 2022, the Poverty Ridge grazing unit (GU-27) was joined into the Calaveras Reservoir grazing unit. This addition is in the southeast corner of the Calaveras Reservoir grazing unit. Primary access to the former GU-27 area is via various private roads that continue approximately 2.9 miles east from the end of Felter Road. The access road passes through several private properties on both paved and unpaved sections of road with several unlocked gates. The SFPUC is not known to have a formal easement through private lands to access the area bordered by the former GU-27 area. The final gate to this area is locked with an SFPUC lock.

2.2 Environmental Conditions

The Calaveras Reservoir grazing unit (GU-23) consists of rolling to steep hills surrounding Calaveras Reservoir and Arroyo Hondo. It includes Calaveras Valley, the majority of which is filled by Calaveras Reservoir. Seasonal and perennial wetlands are commonly observed along the edge of Calaveras Reservoir where uplands meet the reservoir edge. Elevation in GU-23 ranges from 438 feet to 3,329 feet above sea level.

To the west of the valley and along the southwestern boundary of the reservoir, slopes are moderate to steep. This section of the grazing unit, called the Long Field, becomes steeper from south to north. Water features in the Long Field include ponds, seasonal wetlands, a few ephemeral and intermittent streams, and a perennial stream. The streams and surrounding land drain to the reservoir. Vegetation in this field includes mixed oak woodlands, non-native annual grassland, riparian, and oak savanna. The northern portion of the Long Field contains a high cover of native grasses and forbs in the understory of oak woodlands and is not typically grazed due to the steepness of its slopes.

The grazing unit's primary set of processing corrals is located at the southeast end of the reservoir. The southern end of the reservoir also includes the Carok Field, which is used as a holding field. This area is predominately flat and contains ponds as well as a number of ephemeral streams and the intermittent Calaveras Creek, all which drain to the reservoir. Vegetation in this area is composed of non-native annual grassland, oak woodlands, oak savanna, sycamore and oak riparian, and upland shrub.

There is also a modular home located to the south of Marsh Road on SFPUC land that is owned by the current tenant. The home is constructed on a concrete-pad with a sanitary sewer system, including a septic tank and leach field approved by the Santa Clara County Department of Public Health.

To the east of Calaveras Valley is Poverty Ridge, the northern section of which is called Cherry Knoll. Annual grassland is the dominant vegetation on the ridgelines, with oak woodland located in the drainages and on the north-aspect slope facing Arroyo Hondo. Blue oak (*Quercus douglasii*), valley oak (*Q. lobata*), and California bay (*Umbellularia californica*) are common in the drainages. Oak savanna is common in the mid-slope areas on the southern and western aspect slopes. Blue and valley oak and grey pine (*Pinus sabiniana*) are common species in the savanna. Blue oak, valley oak, coast live oak (*Q. agrifolia*), grey pine, and big-leaf maple (*Acer macrophyllum*) are common on the north aspect slope facing Arroyo Hondo. There are a few small shrub patches located mid-slope.

Several ponds are found along the ridge, as well as in drainages off the main ridge. Most ponds are spring-fed and have associated seasonal wetlands, though they dry up in the summer and fall. Located east of Poverty Ridge is the steep-sided Arroyo Hondo drainage. Slopes along the river, which drains an area of approximately 77 square miles, are steep to vertical. There are numerous ephemeral streams draining into Arroyo Hondo along the northern slopes of Poverty Ridge that support riparian vegetation as well as oak woodlands. The southern slopes of Poverty Ridge are more xeric, with a prevalence of upland shrub and annual grassland. Cherry Knoll supports ponds and several ephemeral streams that drain into Arroyo Hondo and Calaveras Reservoir. Canopy cover is sparse in the southern portion of this area; vegetation is predominantly non-native annual grassland and oak savanna with some riparian woodland along stream corridors. The north side of Cherry Knoll contains steep slopes covered in dense blue oak and mixed oak woodlands.

Oak Ridge is north of Poverty Ridge and the Arroyo Hondo drainage. Three spring-fed ponds are found along this ridge. Three steep canyons (>80% slope in some area) drain from the ridge into Arroyo Hondo. The southern portion of Oak Ridge is composed primarily of non-native annual grassland, with riparian and oak woodlands along the drainage slopes. The northern slopes of the area are predominantly woodlands draining to Alameda Creek.

The Wilson Field is in the western section of Oak Ridge, north of the confluence of Calaveras Reservoir with Arroyo Hondo. Several ponds and ephemeral streams run through the field. Topography is hilly and vegetation is predominantly composed of non-native annual grassland, and riparian vegetation along drainages.

The Binder Field is a small field just west of the Wilson Field along the northeast banks of Calaveras Reservoir. A pond and a few small ephemeral streams are located in the field. Vegetation is predominantly serpentine grassland and oak savanna with small pockets of oak woodland.

2.3 Easements

Santa Clara County road easements in GU-23 include Marsh Road, Felter Road, and Calaveras Road. The easements along Felter Road, Calaveras Road, and a portion of Marsh Road have little effect on the grazing unit since the perimeter fencing follows the roads. In most instances, the fence and grazing unit would not be disturbed unless road work requires a disturbance due to the fence falling within the road right-of-way. The unpaved portion of Marsh Road is entirely within the grazing unit and is periodically maintained by Santa Clara County Roads and Airports Department crews. Pacific Gas & Electric Company (PG&E) has several overhead transmission lines that cross through the grazing unit; these lines are frequently checked and maintained, but otherwise do not affect grazing operations.

There is an easement for the SFPUC-owned Calaveras Dam cottage that falls within the grazing unit boundary just south of the dam. The cottage is currently occupied by an SFPUC watershed keeper.

The SFPUC Goldfish Pond BHR site and associated conservation easement are in the southern portion of GU-23. The BHR site work included reconstructing the Goldfish Pond (PA120) embankment and reducing the capacity of the pond to less than 10 acre-feet. Cattle exclusion fencing surrounds the southern and northern end of the BHR site wetlands to protect native plantings and aquatic species, and to encourage enhancement of riparian habitat. Cattle have access to the middle portion of the pond, but access within the exclusion areas will only be allowed at the discretion of the SFPUC to meet management objectives for the BHR site.

The recently added former Poverty Ridge grazing unit (formerly known as GU-27) in the southeast corner of GU-23 has no recorded easements; however, the adjacent landowners with property north and south of the parcel may pass through the SFPUC-owned grazing unit to access their land.

2.4 Managed Riparian Areas

Portions of the lease are Managed Riparian Areas and are subject to use and access restrictions. One Managed Riparian Area is associated with Calaveras Creek, as shown in Figure 2. Originally adopted in the 1997 Grazing Resources Management Plan and the 2001 Alameda WMP, Managed Riparian Areas are buffers around streams that are restricted from grazing to protect water quality for both habitat and source water protection. The SFPUC's Watershed Resources Manager may approve seasonal prescribed grazing in Managed Riparian Areas to protect the watershed and natural resources, for example to reduce wildfire risk, control NNIPs, and support special status species.

2.5 Grazing Operation

Since 1994, GU-23 has been grazed as a year-round cow/calf operation with calving occurring from August through October. As of 2025, the available acreage was 10,184 acres. The current grazing tenant (2025), who has held the lease since 1993, utilizes roughly six fields. Cattle generally are moved/rotated starting in May from Oak Ridge (the Binder and Wilson fields) to Sections 28/34, then south to Poverty Ridge, and finally in June to the lower elevations at the southern end of the reservoir. Calves are shipped out in the middle of June; some older cows are moved to the Long Field and some are sold off. Around July 1, the remaining cows are moved to the Carok Field.[1]

Grazing use is heavier in the lower elevations of GU-23 at the southern end of Calaveras Reservoir, in particular in the Long Field, in the Carok Field, along the southern perimeter of the reservoir, and on Cherry Knoll. This pattern is due in part to (1) steep topography and lack of water and summer feed in the higher elevations of the grazing unit; (2) the location of well-utilized cattle processing and holding fields near the reservoir, which are often used for grazing year-round rather than seasonally; and (3) the lack of functional exclusion fencing along the southern boundary of the reservoir.

In the southeast parcel added in 2022 (formerly GU-27), as of 2014, the longtime tenant (40+/- years) could not access the grazing unit due to new ownership of lands previously traversed by the tenant to access the grazing unit. Before 2002, the tenant seasonally grazed cow/calf pairs in the grazing unit. Cattle were removed during the winter as the land of this grazing unit is steep and it is difficult to find and move cattle during the rainy season. Private landowners have trespassed by grazing the area since 2002/2003 (unknown timing, or type of cattle) from their adjacent lands to the west without an agreement with the SFPUC.

2.6 Stocking Rates

Recorded stocking rates for the lease from 1998 to 2025 averaged approximately 5,435 animal unit months (AUMs), or 1.9 acres per AUM (23.2 acres per animal unit year [AUY]). Estimated grazing capacity and stocking rates for the lease were determined using Natural Resources Conservation Service (NRCS) soil productivity rates adjusted by vegetative cover and a fall RDM target of 1,000 pounds per acre. The baseline grazing capacity for the Calaveras Reservoir grazing unit is 5,307 AUMs and will be adjusted annually by the SFPUC based on forage productivity, infrastructure updates, RDM levels, and vegetation condition.

3. Biological Conditions

3.1 Habitat Conditions

Within the Oak Ridge area, there are heritage oaks, valley oaks, sycamore drainages, elderberry (*Sambucus nigra* subsp. *caerulea*), serpentine grasslands, and undeveloped springs. More wetland resources were noted in Poverty Ridge; ponds had healthy emergent vegetation, but some springs and riparian corridors had signs of feral pig wallowing and damage. The Arroyo Hondo creek riparian corridor contains white alder and willow riparian forest.

There are specific areas of gully and hill-slope erosion. Valley oak seedlings are recruiting in riparian corridors. Stands of native plants, including wildflowers and serpentine grasslands, are

[1] Torres, Danny (Sparrowk Livestock), grazing tenant, SFPUC Calaveras Reservoir grazing unit, in-person communication with former URS Rangeland Ecologist Dina Robertson, 2013.

also notably prevalent along Poverty Ridge. South of Calaveras Reservoir contains the heaviest erosion and signs of cattle traffic within drainages and riparian corridors. Large heritage oaks were also noted as either dead or showing signs of heavy loafing in the area, particularly when located near water resources or salt and mineral resources. Oak seedlings are present near cattle water infrastructure. Some less common native plant communities were also present, including wild rose (*Rosa* sp.) and currants (*Ribes* sp.), as well as big-leaf maple and bay-dominated riparian with native sanicle, houndstongue, and California buttercup (*Sanicula* sp., *Adelinia grandis,* and *Ranunculus* sp.) in the understory of deeper ravines with less evidence of cattle use. Some of the strategies suggested to enhance and protect native vegetation resources within this grazing unit were implemented in specific locations.

The grazing unit has areas of serpentine bedrock and Franciscan mélange, which has the potential to include serpentine outcrops. These areas have the potential to support rare plants and plant communities and may have naturally occurring asbestos.

3.2 Special-Status Species

The species known to occur in the grazing unit that are subject to regulation by the State of California and the federal government are listed in Table 1. California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*) use ponds in the grazing unit for breeding and adjacent grassland habitat for dispersal and aestivation. Alameda whipsnake (*Masticophis lateralis euryxanthis*) habitat is extensive, as shrub habitat with scattered rock outcrops (core habitat) adjacent to annual grasslands and other suitable dispersal habitat is found throughout the eastern, northern, and southern portions of the grazing unit. The Calaveras Reservoir grazing unit contains a number of documented occurrences of California tiger salamander, California red-legged frog, Alameda whipsnake, and western burrowing owl (*Athene cunicularia*). As of 2016, comprehensive special-status species presence surveys have only been conducted for California red-legged frog, foothill yellow-legged frog (*Rana boylii*), and steelhead/rainbow trout (*Oncorhynchus mykiss irideus*). United States Fish and Wildlife Service (USFWS) designated critical habitat for California red-legged frog and California tiger salamander occurs within the grazing unit, and the grazing unit overlaps the proposed critical habitat for foothill yellow-legged frog. Calaveras Creek downstream of Calaveras Dam is within the limit of anadromy of the central California coast Distinct Population Segment of steelhead (*Oncorhynchus mykiss irideus*). Steelhead is federally listed as threatened, and therefore work in the stream would be subject to regulation.

Table 1 Special-Status Species Observed in Calaveras Reservoir (GU-23)

Common Name	Scientific Name	Listing Status[1]
Wildlife/Fisheries		
Alameda whipsnake	*Masticophis lateralis euryxanthis*	FT, ST
American badger	*Taxidea taxus*	SSC
Bald eagle	*Haliaeetus leucocephalus*	BGEPA, MBTA, FDR, SE, SP
California red-legged frog	*Rana draytonii*	FT, SSC, CH
California tiger salamander	*Ambystoma californiense*	FT, ST, CH
Foothill yellow-legged frog – west / central coast clade	*Rana boylii*	FT, SE, SSC, Proposed CH
Golden eagle	*Aquila chrysaetos*	BGEPA, SP, MBTA
Loggerhead shrike	*Lanius ludovicianus*	SSC, MBTA

Table 1 Special-Status Species Observed in Calaveras Reservoir (GU-23)

Common Name	Scientific Name	Listing Status[1]
Rainbow Trout / Central California Coast Steelhead Distinct Population Segment	*Oncorhynchus mykiss irideus*	FT
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	SSC
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC
Western burrowing owl	*Athene cunicularia*	MBTA, SC, SSC
Western pond turtle	*Actinemys marmorata*	FPT, SSC
White-tailed kite	*Elanus caeruleus*	SP, MBTA
Plants		
Chaparral harebell	*Campanula exigua*	CRPR 1B.2
Most beautiful jewelflower "Sunol form"	*Streptanthus albidus* ssp. *peramoenus*	CRPR 1B.2
Narrowleaf milkweed	*Asclepius fascicularis*	Host plant for the FPT Monarch butterfly

[1] Sources:
California Natural Diversity Database (CNDDB), "State and Federally Listed Endangered, Threatened, and Rare Plants of California" and "Special Animals List," California Department of Fish and Wildlife, July 2025;
Federal Status:
CH = Critical Habitat
FT = Federally listed as threatened
FPT = Federally proposed for listing as threatened
Western pond turtle is proposed to be listed as threatened as of October 2023; pending finalization (88 Federal Register [FR] 68370)
Monarchs are proposed to be listed as threatened as of December 2024; pending finalization (89 FR 100662)
FDR = Federally Delisted (Recovered)
BGEPA = Bald and Golden Eagle Protection Act
MBTA = Migratory Bird Treaty Act species
California (State) Status:
SE = Endangered. Species whose continued existence in California is in jeopardy.
ST = Threatened. Species likely to become endangered within the foreseeable future.
SC = State candidate for listing as endangered
SP = Fully protected. A fully protected species may not be taken or possessed at any time, except as specified in the Fish and Game Code.
SSC = California Species of Special Concern
California Rare Plant Rank (CRPR) and Threat Ranks:
1B = Plants that are rare, threatened or endangered in California, most of which are endemic
0.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

In addition to the species in Table 1, this grazing unit has occurrences of plant species identified by the East Bay Chapter of the California Native Plant Society (CNPS) as locally Rare, Unusual, and Significant[2] (Table 2). These species are significant because in Alameda County they are in decline; reach their range limit; and/or occur in habitats that are limited, isolated, or threatened. The table also includes California Department of Fish and Wildlife Watch List species, which need more information to clarify status. Plants and animals in Table 2 are within the purview of the Stewardship Policy[3] and may be monitored and managed by SFPUC staff. There was a historical great blue heron (*Ardea herodias*) rookery at the south end of Calaveras Reservoir. Suitable habitat is still present and monitoring for re-occupation is ongoing.

[2] Database of Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties: https://ebcnps.org/ebrare-plant-database/.
[3] San Francisco Public Utilities Commission, Water Enterprise Environmental Stewardship Policy, June 27, 2006.

Table 2 Locally Rare and Watch List Species Observed in Calaveras Reservoir (GU-23)

Common Name	Scientific Name	Listing Status[1,2]
Wildlife/Fisheries		
Cooper's hawk	*Accipiter cooperii*	WL
Horned lark	*Eremophila alpestris*	WL, MBTA
Prairie falcon	*Falco mexicanus*	WL, MBTA
American peregrine falcon	*Falco peregrinus anatum*	FDR, MBTA
Plants		
Bush senecio	*Senecio flaccidus* var. *douglasii*	CNPS A2
California helianthella	*Helianthella californica* var. *californica*	CNPS A2
California hemp	*Hoita macrostachya*	CNPS B
California loosestrife	*Lythrum californicum*	CNPS B
California yampah	*Perideridia californica*	CNPS C
Douglas' monardella	*Monardella douglasii*	CNPS A2
Evening snow	*Linanthus dichotomus*	CNPS A1
Leather oak	*Quercus durata* var. *durata*	CNPS B
Lindley's blazing star	*Mentzelia lindleyi*	CNPS B-PV
Purdy's foothill penstemon	*Penstemon heterophyllus* var. *purdyi*	CNPS A2
Red beardtongue	*Keckiella corymbosa*	CNPS C
Santa Clara red ribbons	*Clarkia concinna* subsp. *automixa*	CRPR 4.3, CNPS A2
Santa Clara thorn-mint	*Acanthomintha lanceolata*	CRPR 4.2, CNPS A2
Serpentine leptosiphon	*Leptosiphon ambiguus*	CRPR 4.2, CNPS A2
Small flowered tonella	*Tonella tenella*	CNPS B-PV
Stinging phacelia	*Phacelia malvifolia* var. *malvifolia*	CNPS A2
Torrent sedge	*Carex nudata*	CNPS B
Woodland madia	*Anisocarpus madioides*	CNPS B

[1] The locally rare listing status is specific to Alameda and Contra Costa Counties. Four species are included here despite only having documented occurrences within the Santa Clara County portion of the grazing unit: Douglas' monarella, Purdy's foothill penstemon, Santa Clara red ribbons, and woodland madia.

[2] Sources:

California Natural Diversity Database (CNDDB), "State and Federally Listed Endangered, Threatened, and Rare Plants of California" and "Special Animals List," California Department of Fish and Wildlife, July 2025;

Lake, Dianne, Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties (web application), Berkeley, California, 2025; East Bay Chapter of the California Native Plant Society (a nonprofit organization), https://ruspdb.ebcnps.org/cgi-bin/ebrare/ebrare.cgi, accessed July 2025.

Federal Status:

FDR = Federally Delisted (Recovered)
MBTA = Migratory Bird Treaty Act species

California (State) Status:

WL = taxa that were previously species of special concern (SSC) but do not currently meet SSC criteria, and for which there is concern and a need for additional information to clarify status.

California Rare Plant Rank (CRPR) and Threat Ranks:

4 = Plants of limited distribution, a watch list.
0.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

CNPS Locally Rare Status Codes (protected under CEQA):

A1 = Species currently known from two or less regions in Alameda and Contra Costa counties.
A2 = Species currently known from three to five regions in Alameda and Contra Costa counties, or, if more, meeting other criteria such as small populations, stressed/declining populations, small geographic range, limited/threatened habitat.
B = Species currently known from 7 to 12 populations in Alameda and Contra Costa Counties, or, assessed as potentially rare or vulnerable if certain conditions persist.
B-PV = Species currently plentiful in the East Bay but vulnerable due to various current threats or conditions.
C = Species currently known from 13 to 20 populations in Alameda and Contra Costa Counties, or, assessed as potentially rare or vulnerable if certain conditions persist.

3.3 Native Vegetation Objectives

The Alameda WMP outlines general native vegetation goals that include the following:

- Protect, conserve, and enhance wetlands and riparian communities.
- Protect and restore unique, local, and/or indigenous plant species to maintain biodiversity and specialized habitat values.
- Manage grasslands and rangelands to balance, wherever possible, wildlife habitat values, the restoration of native perennial species, and the reduction of fuel loads and noxious weeds.
- Manage shrub communities to reduce fuel loads, prevent soil erosion and sedimentation, improve wildlife habitat access and use, and control invasive plants.
- Manage woodlands and forests to maintain healthy, vigorous, and diverse stands with a multiplicity of age and size classes.

Specific native vegetation strategies that apply to this grazing unit include the following:

Table 3 Objectives and Strategies for Managing Native Vegetation

Objectives from the RMP	Grazing Unit Strategy
OBJECTIVE 1: Maintain sufficient RDM to protect soil and water quality.	• Evaluate erosional features or areas where vegetation has been severely impacted by grazing and soils are susceptible to erosion or slumping (within and adjacent to riparian areas or mature trees used by cattle for shade) or other impacts (e.g., compaction). Implement measures to protect soil and vegetation such as installing temporary and/or permanent cattle exclusion fencing. • Riparian corridors south of Calaveras Reservoir are particularly impacted by cattle traffic, with signs of bank erosion and downcutting. Erosional gullies along Poverty Ridge may be stabilized if shrub communities are protected and rooted in those areas. • Allow sufficient time for vegetation to recover prior to resuming grazing.
OBJECTIVE 2: Minimize negative impacts to sensitive aquatic habitats such as riparian and spring systems.	• Minimize negative impacts of herbivory and trampling on spring, wetland, and riparian systems by installing exclusions, water troughs, salt licks, and mineral supplements in uplands to attract cattle away from spring, wetland, and riparian areas and more evenly distribute grazing use within upland pastures. Some water troughs could be more widely distributed to the uplands; for example, there is a location with three troughs all adjacent to a tank. • Repair or redirect trough overflows to limit cattle trampling and pig wallowing causing erosion in wetted areas, particularly south of Calaveras Reservoir. • Repair or replace existing troughs to better distribute cattle to uplands.

Table 3 Objectives and Strategies for Managing Native Vegetation

Objectives from the RMP	Grazing Unit Strategy
	• Ensure that water withdrawals do not cause significant reductions in the extent or abundance of aquatic and riparian species. • Remove specific troughs to reduce dewatering of adjacent ponds, particularly at Poverty Ridge. • Relocate salt licks and mineral sources away from riparian corridors, cattle infrastructure, or heritage oaks. (Most salt licks are well placed on ridge tops)
OBJECTIVE 3: Implement rangeland management practices that preserve and protect special-status species and their habitats.	• Adapt rangeland management practices, as necessary, to support special-status species; incorporate the latest research and local expertise (ranchers, scientists, land managers); and monitor findings to guide adaptive management of the RMP lands. Special-status species and habitats include: – Approximately 67 acres of serpentine grassland containing most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*) (special-status) and serpentine leptosiphon (*Leptosiphon ambiguus*) (CNPS Rank 4) – Valley and blue oak woodland containing Santa Clara red ribbons (*Clarkia concinna* subsp. *automixa*) (CNPS Rank 4) – Areas with low levels of invasive plants, identified in 2020 [4]: Poverty Ridge, Arroyo Hondo, Oak Ridge, and Alameda Creek riparian corridor
OBJECTIVE 4: Maintain or improve native species biodiversity.	• Maintain a mosaic of habitats across the RMP lands, such as shrubland in steep erosional gullies. • Increase recruitment of oak and sycamore species, particularly near water infrastructure and riparian areas. • Protect mature native trees (e.g., leave downed limbs in place to protect roots and understory from loafing).
OBJECTIVE 5: Monitor and control non-native invasive plant and wildlife populations.	• Repair and manage water infrastructure to reduce wallowing and erosion, particularly south of Calaveras Reservoir. • Feral pigs are also concentrated in areas with cover (old barn) near water resources. Continue to implement feral pig depredation efforts using an approved program, e.g., trapping to comply with appropriate permits in the RMP lands.

CNPS = California Native Plant Society
RMP = Rangeland Management Plan

3.4 Non-Native Invasive Plants

SFPUC's Integrated Pest Management (IPM) program focuses on:

- Protecting rangeland productivity by reducing NNIPs that negatively impact forage quality; and
- Protecting high value habitat and ecosystem services by reducing the introduction or spread of NNIPs and plant pathogens.

A reconnaissance-level survey of NNIP species was conducted in 2009 and 2020 in the watershed.[4] This survey was spatially limited to select areas (along roads and other places more easily reached by foot) and not all species were identifiable at the time of the surveys. In 2025, SFPUC staff conducted a survey to update occurrences and priorities for management. Table 4 lists NNIP identified in the grazing unit during the 2009 and 2020 surveys, the 2025 staff survey, and discussions with the current tenant and SFPUC grazing manager. Species detections noted during periodic site visits may or may not have coincided with the optimal timing to identify certain NNIP species. The table also includes the California Invasive Plant Council (Cal-IPC) rating and the invasion curve level.[5] The SFPUC prioritizes NNIP management actions (i.e., prevention, eradication, or containment) based on invasion curve levels 1 through 4, which depict the area infested over time.

Table 4 Non-Native Invasive Plants Managed in Calaveras Reservoir (GU-23)

Common Name	Scientific Name	GU-23 Invasion Curve Level[1]	Cal-IPC Rating[2]
Artichoke thistle	*Cynara cardunculus* subsp. *flavescens*	2	Moderate
Barb goatgrass	*Aegilops triuncialis*	2	Moderate
Bermuda buttercup	*Oxalis pes-caprae*	1	High
Biennial sagewort[3]	*Artemisia biennis*	2	None
Brass buttons[3]	*Cotula coronopifolia*	1	Limited
Bull thistle[3]	*Cirsium vulgare*	2	Moderate
Cape ivy	*Delairea odorata*	2	Moderate
Caper spurge	*Euphorbia lathyris*	1	Watch
English ivy	*Hedera helix*	1	High
Eucalyptus	*Eucalyptus sp.*	3	Limited
False brome	*Brachypodium distachyon*	3	Moderate
Fennel	*Foeniculum vulgare*	3	High
French broom	*Genista monspessulana*	2	High
Fuller's teasel	*Dipsacus sativus*	3	Moderate
Giant reed	*Arundo donax*	1	High
Harding grass	*Phalaris aquatica*	1	High
Himalayan blackberry	*Rubus armeniacus*	2	High
Italian thistle[3]	*Carduus pycnocephalus*	4	Moderate
Mediterranean lineseed	*Bellardia trixago*	4	Limited
Medusahead	*Elymus caput-medusae*	4	Moderate
Pampas grass	*Cortaderia selloana*	2	High
Pennyroyal[3]	*Mentha pulegium*	2	Moderate
Poison hemlock	*Conium maculatum*	4	Moderate
Prickly lettuce[3]	*Lactuca serriola*	4	None
Purple starthistle	*Centaurea calcitrapa*	2	Moderate

[4] Nomad Ecology, Non-indigenous Plant Species Inventory and Mapping Alameda Watershed, Alameda and Santa Clara Counties, California, Prepared for the SFPUC, 2009; and Nomad Ecology, 2020 Alameda Watershed Invasive Plant Report, Prepared for the SFPUC, 2020.

[5] Department of Primary Industries, *Invasive plants and animals: policy framework*, Victoria Department of Primary Industries, Melbourne, Australia, 2010.

Table 4 Non-Native Invasive Plants Managed in Calaveras Reservoir (GU-23)

Common Name	Scientific Name	GU-23 Invasion Curve Level[1]	Cal-IPC Rating[2]
Rosy sandcrocus	*Romulea rosea*	1	High
Spiny cocklebur[3]	*Xanthium spinosum*	2	None
Stinkwort	*Dittrichia graveolens*	3	Moderate
Tocalote	*Centaurea melitensis*	3	High
Tree of heaven	*Ailanthus altissima*	1	Moderate
Tree tobacco	*Nicotiana glauca*	2	High
Vinca	*Vinca major*	2	High
Whitetop	*Lepidium latifolium/ L.draba*	2	Moderate / High
Woolly mullein	*Verbascum thapsus*	4	Limited
Yellow starthistle	*Centaurea solstitialis*	4	High

IPM = Integrated Pest Management
SFPUC = San Francisco Public Utilities Commission

[1] Non-Native Invasive Plants (NNIP) Management Approach by Level on Invasion Curve:
1. Prevention: SFPUC IPM will conduct Early Detection and Rapid Response (EDRR) surveys.
2. Eradication: SFPUC IPM will treat to eradicate.
3. Containment: SFPUC IPM will treat to protect high value resources or to eradicate isolated populations.
4. Widespread: SFPUC IPM will focus on long-term management and asset-based protection.

[2] California Invasive Plant Council (Cal-IPC) ratings (Cal-IPC 2024) rate NNIPs based on dispersal rate and environmental impact (https://www.cal-ipc.org/plants/inventory/).

[3]Species managed within the BHR conservation easement.

GU-23 has several species of NNIPs, the majority of which occur in disturbed areas such as on pond embankments, corrals, and holding and processing fields, as well as along roads, trails, and the reservoir edge. In particular, the grazing unit has localized infestations of fennel (*Foeniculum vulgare*), purple starthistle (*Centaurea calcitrapa*), stinkwort (*Dittrichia graveolens*), and tocalote (*Centaurea melitensis*), and more widespread occurrences of yellow starthistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), false brome (*Brachypodium distachyon*), and medusahead (*Elymus caput-medusae*) over many acres on Oak Ridge and Poverty Ridge. Poison hemlock (*Conium maculatum*) is common in riparian areas. Since GU-23 is used to access adjacent grazing units in the watershed, it is of particular concern that NNIP infestations be controlled along roadsides so that propagules of these plants are not inadvertently transported by vehicles passing through the grazing unit.

There is a BHR site under a long-term management plan that involves a higher level of monitoring and maintenance than other grazing units The Goldfish Pond BHR site contains dense patches of Mediterranean lineseed (*Bellardia trixago*) and prickly lettuce (*Lactuca serriola*) and scattered patches of pennyroyal (*Mentha pulegium*) and spiny cocklebur (*Xanthium spinosum*).

To reduce NNIPs, expectations of tenants include the following:

- Attend an annual SFPUC training regarding NNIP Best Management Practices (BMPs).
- Report to the SFPUC any new observations of artichoke thistle (*Cynara cardunculus subsp. flavescens*), barb goatgrass (*Aegilops triuncialis*), biennial sagewort (*Artemisia biennis*), bull thistle (*Cirsium vulgare*), cape ivy (*Delairea odorata*), French broom (*Genista monspessulana*), Himalayan blackberry (*Rubus armeniacus*), pampas grass

(*Cortaderia selloana*), pennyroyal, purple starthistle, spiny cocklebur, tree tobacco (*Nicotiana glauca*), vinca (*Vinca major*), or whitetop (*Lepidium latifolium/ L.draba*).

- When cattle are transported onto the grazing unit, notify the SFPUC and where feasible implement appropriate BMPs such as the following:
    - Provide weed-free forage or pelletized feed (approved by the SFPUC) to cattle for at least three days before transport onto the grazing unit
    - Utilize a transitional pasture within the grazing unit
    - Decontaminate vehicles and equipment entering the grazing unit according to the SFPUC's decontamination policy

3.5 Nuisance Wildlife

Wild pigs (*Sus scrofa*) are commonly observed in this grazing unit, but persistent trapping has reduced the numbers overall.

4. Existing Grazing Program

A detailed grazing infrastructure survey of the watershed was conducted from 2013 to 2015 (Figure 2). This survey was updated by rangeland staff in 2025. The number, condition, and location of various types of infrastructure such as barns, corrals, springs, and troughs were assessed and are summarized in this section. This section of the GUMP also outlines recommendations for rangeland improvements.

4.1 Roads

Roads – The Calaveras Reservoir grazing unit includes 1.9 miles of paved and 52.8 miles of unpaved roads. The primary access to the grazing unit is via Marsh Road (county road). Paved roads traverse and border GU-23, including Marsh Road, Felter Road, and access roads associated with Calaveras Dam. Additional unpaved roads occur throughout the grazing unit, including the ridge roads on Poverty Ridge and Oak Ridge, Carok Road in the southern part of the grazing unit, and roads leading from Calaveras Road to the western edge of the reservoir. A few spur roads lead from Oak Ridge and Poverty Ridge (including Cherry Knoll) into the surrounding rangelands; however, the roads are not regularly maintained by the SFPUC. In the southeast of the Poverty Ridge parcel added in 2022 (formerly GU-27), the road along the ridgeline is the most frequented road and used by adjacent landowners or tenants to access their property. The main road is not maintained often and as a consequence has rutted-out steep sections with gully erosion down the hillsides where concentrated flow runs off of the road. Two small less traveled and ungraded routes travel down the ridgelines to the southwest.

Recommendations – Existing access roads provide safe access to the ridge tops of Oak Ridge and Poverty Ridge, as well as into the lowlands of the Carok Field, processing fields, the Wilson Field, and the Long Field. These roads need regular grading, repair, and maintenance to ensure access.

4.2 Fences

Fences – GU-23 contains over 40 miles of perimeter and cross fencing. The majority of perimeter fence and interior pasture fencing was replaced following the 2020 Santa Clara Unit (SCU) Lightning Complex fire on Poverty Ridge, Cherry Knoll, and Oak Ridge. Perimeter fencing along the west/south boundary of the Carok Field is poor and perimeter fences along

the reservoir and Calaveras Road are very poor in the Long Field. Much of the cross fencing around Arroyo Hondo and fencing along the reservoir in the Binder Field was recently replaced following the fire.

Recommendations – A full assessment of fence locations and condition is needed for GU-23. Fence lines should be routinely checked prior to shipping in cattle or following significant rain/windstorms. Fence lines along public roads (Calaveras Road, Felter Road, and Marsh Road) should be regularly checked as above and repaired immediately if cattle are utilizing the pasture or prior to introducing cattle to the field. Ongoing routine maintenance is being performed by SFPUC staff and the grazing tenant.

4.3 Corrals and Barns

Corrals and Barns – There is one corral currently located on the grazing unit at the south end of the reservoir near the tenant residence. The SFPUC is in the process of constructing a new corral on the northern portion of the grazing unit in the Binder Field near the Watershed Keeper cottage to serve the Wilson Field and Binder Field. This corral will be replacing the old corral that was removed as part of the Calaveras Dam Replacement Project.

Recommendations – A new corral is planned for construction in 2026 on the eastern side of the dam to replace the one removed during the Calaveras Dam Replacement Project.

4.4 Water Sources

Water Sources – There are numerous developed and undeveloped springs in GU-23. Many springs are very productive and reliable sources of water. Figure 2 shows the locations of the existing water infrastructure.

There are 32 ponds in the GU-23 lease, many of which have water sources supplemented by springs (Table 5). Ponds in GU-23 contain headcuts below spillways, squirrel damage on embankments, and erosion and sedimentation issues in and around the ponds.

Table 5 2012-2015 Pond Assessment Results for Calaveras Reservoir (GU-23)

Pond ID	Pond Condition	Water Source
PA103	Moderate condition. Pond has high amount of sediment. Erosion is present along most of the pond perimeter.	Seep, surface runoff
PA105	Poor condition. Pond spillway has very deep headcut that has almost reached the pond. The pond embankment has cattle-related damage. Pond has high amount of sediment.	Seep (dry), surface runoff, stream flow
PA106	Moderate condition. Pond has high amount of sediment in the bottom; pond embankment contains many California ground squirrel burrows but overall is in good shape. Pond spillway has mild erosion but soils are rocky.	Surface runoff, stream flow
PA108	Moderate condition. There are many California ground squirrel burrows in the embankment causing soil piping, which is maintaining the pond at a lower level.	Spring, sheet flow and shallow concentrated flow
PA109	Moderate condition. Spillway embankment in good condition. Pond does not appear to spill much.	Seep (weak), runoff
PA111	Moderate condition. There is a lot of sediment accumulation in the pond. The spillway is eroding with a	Surface runoff, stream flow

Table 5 2012-2015 Pond Assessment Results for Calaveras Reservoir (GU-23)

Pond ID	Pond Condition	Water Source
	headcut present. The pond area has a high concentration of invasive plant species.	
PA112	Moderate condition. Sediment was recently removed from pond and embankment is new. Very deep gullies are present and erosion is causing sediment deposition into the pond due to Marsh Road above the pond.	Sheet flow, stream flow
PA115	Moderate condition. There is a lot of sediment on the pond bottom. The spillway has a lot of deep gully erosion with an active headcut 6 feet deep. The embankment is in good condition with numerous squirrel burrows.	Stream flow, surface runoff
PA116	Moderate condition. Embankment in good condition, but spillway has significant headcut. Bedrock is visible in and around the pond.	Surface runoff, stream flow
PA117	Poor condition. Embankment has failed. The pond holds much less water than when it was constructed.	Stream flow
PA118	Good condition. Pond has no graded spillway but has a low point on the embankment that rarely overflows. A revegetated soil slump is located adjacent to the pond.	Surface runoff
PA119	Moderate condition. Pond does not overflow down the graded spillway but over a low point in the embankment which has led to gully erosion down the hillslope. Pond area has a high concentration of invasive plant species.	Sheet flow, seep
PA120	Good condition. This pond is in the Goldfish Pond BHR site.	Stream flow, shallow concentrated flow, sheet flow
PA121	Good condition. Embankment is in good condition, but spillway has large headcut. This is a steep-sided pond without much sediment.	Surface runoff, some stream flow, seep
PA122	Moderate condition. Pond embankment is in good condition. There is much sediment in pond, coming from an adjacent slump with sufficient seepage to form a wetland.	Seep
PA123	Poor condition. Pond is heavily impacted by cattle. Embankment has many California ground squirrel burrows and appears that it will fail soon due to holes.	Seep
PA126	Good condition. The pond is currently at capacity. The embankment and spillway could be rebuilt so the pond would hold more water (easily supplied from a productive seep).	Seep (mostly), surface runoff, some stream flow
PA128	Moderate condition. Soil is slumping into the pond and on the embankment.	Shallow concentrated flow, sheet flow.
PA137	Good condition.	Stream flow, sheet flow
PA150	Good condition. This is a small, low-volume pond that dries up early in the year and has no spillway.	Surface runoff

Table 5 2012-2015 Pond Assessment Results for Calaveras Reservoir (GU-23)

Pond ID	Pond Condition	Water Source
PA172	Good condition. Spillway has small headcut, but many large boulders in it. Embankment has gopher activity but otherwise is in good condition. Pond has a rocky bottom.	Seep
PA191	Good condition. A spring upslope provides water to the pond and an adjacent trough. Pond area has a high concentration of invasive plant species.	Spring, Sheet flow, shallow concentrated flow
PA211	Poor condition. Pond embankment has failed. The pond is now a large wetland holding no water.	Spring located within pond footprint and sheet flow, possibly from nearby drainage
PA213	Moderate condition. There is a large California ground squirrel complex around the pond.	Surface sheet flow, but suspect there may be a seep
PA214	Moderate condition. Water is piping through California ground squirrel burrows in the embankment, maintaining the pond at a much reduced level.	Stream flow, sheet flow
PA215	Poor condition. Pond embankment has failed. The pond holds very little water.	Sheet flow
PA216	Good condition. Pond has some water seepage through the embankment.	Shallow concentrated flow, secondary sheet flow
PA219	Good condition. The spillway has minor erosion.	Shallow concentrated flow, surface/sheet flow, stream flow
PA220	Good condition. This is an instream pond with minor sediment input and some California ground squirrel burrows causing recent soil piping.	Stream flow, shallow concentrated flow, sheet flow
PA221	Poor condition. Failed embankment. Pond holds very little water.	Spring
PA224	Poor condition. Pond has a failed embankment and is half filled with sediment.	Shallow concentrated flow, surface runoff, seep/spring
PA229	Good condition.	Sheet flow. Minor subsurface seepage from recent rain; do not suspect it is a spring
PA245	New pond recently identified and not assessed.	-

ID = identification

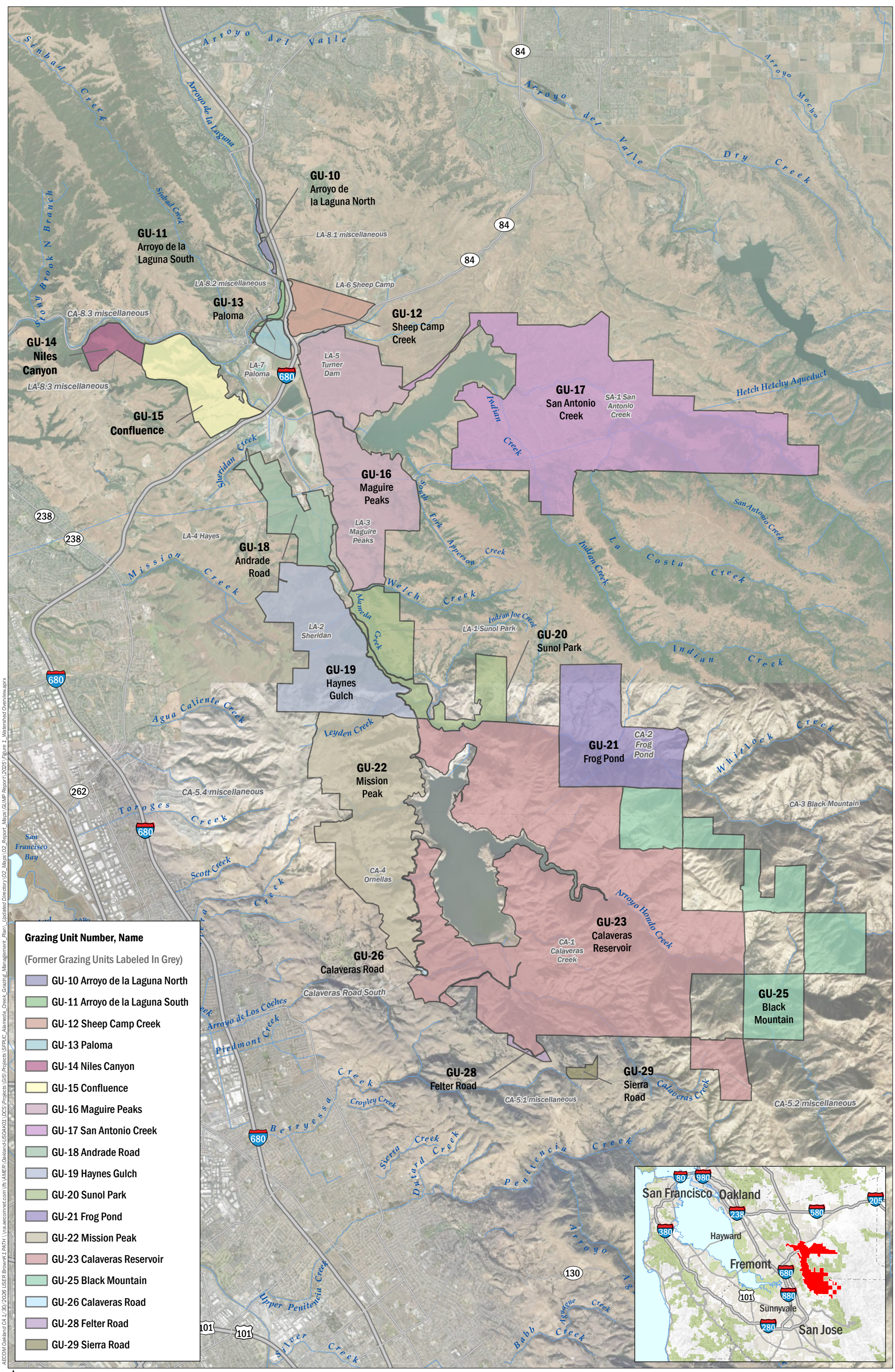
Recommendations – In order to maintain adequate water supply to cattle, the troughs and water developments (diversions and spring boxes) will need regular maintenance to ensure intakes and pipes are not clogged with sediment or debris. Infrastructure should be checked and maintained every year prior to shipping in cattle and checked for damage while in use. Several water sources near the dam could be improved to enhance cattle distribution.

5. Grazing Unit Management

This GUMP outlines the existing conditions and management goals for the lease to guide the long-term rangeland management of the grazing unit. Annual monitoring, inspections, and tenant meetings will be used to adapt the management based on seasonal variation and rangeland health. The SFPUC will conduct annual inspections of each grazing unit to evaluate infrastructure condition, rangeland health, and biological considerations relative to the goals of the RMP. In addition, the SFPUC will conduct rangeland monitoring, including periodic composition monitoring and RDM monitoring. The annual inspection and monitoring data will be summarized to share with the tenant and inform the Annual Operating Plan.

Each year, the SFPUC Rangeland Management Team will meet with the tenant to review the rangeland condition, document issues, and discuss goals for the grazing unit. The Rangeland Management Team includes the Rangeland Manager, the Watershed Resources Manager, the Senior Integrated Pest Management Specialist, the Senior Biologist, and the Watershed Forester. Based on this discussion, the SFPUC will develop an Annual Operating Plan that outlines specific management objectives for the following year. The Annual Operating Plan will document current monitoring and rangeland assessment data, outline stocking rates based on forage production and rangeland condition, and summarize annual management objectives for grazing infrastructure improvements, Managed Riparian Areas, NNIP management, and environmental stewardship. The SFPUC will prioritize investments in infrastructure and operations based the RMP goals and conditions in the grazing units across the watershed.

This page intentionally left blank



AECOM Oakland CA 1/30/2026 USER BrownK1.PATH \\na.aecomnet.com\fs\AMER\Oakland-USOAK01\DCS\Projects\GIS\Projects\SFPUC_Alameda_Creek_Grazing_Management_Plan_Updated Directory\02_Maps\02_Report_Maps\GUMP Report\2025\Figure 1_Watershed Overview.aprx

San Francisco Water Power Sewer

AECOM

Figure 1: SFPUC Alameda Creek Watershed Grazing Unit Overview

This page intentionally left blank

N

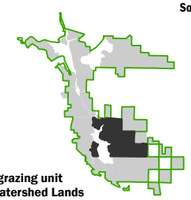
0 2,100 Feet

AECOM

- SFPUC Grazing Unit Boundary
- Managed Riparian Area
- East Bay Regional Parks District easement for road and public trail access
- Fence
- Secondary highway
- Paved road
- Unpaved road
- Trail
- Aqueduct
- Intermittent stream
- Perennial Stream
- Pond

Grazing Infrastructure

- Barn
- Corral
- Spring
- Tank (non-functioning or unknown)
- Tank (functioning)
- Trough (non-functioning or unknown)
- Trough (functioning)
- Well



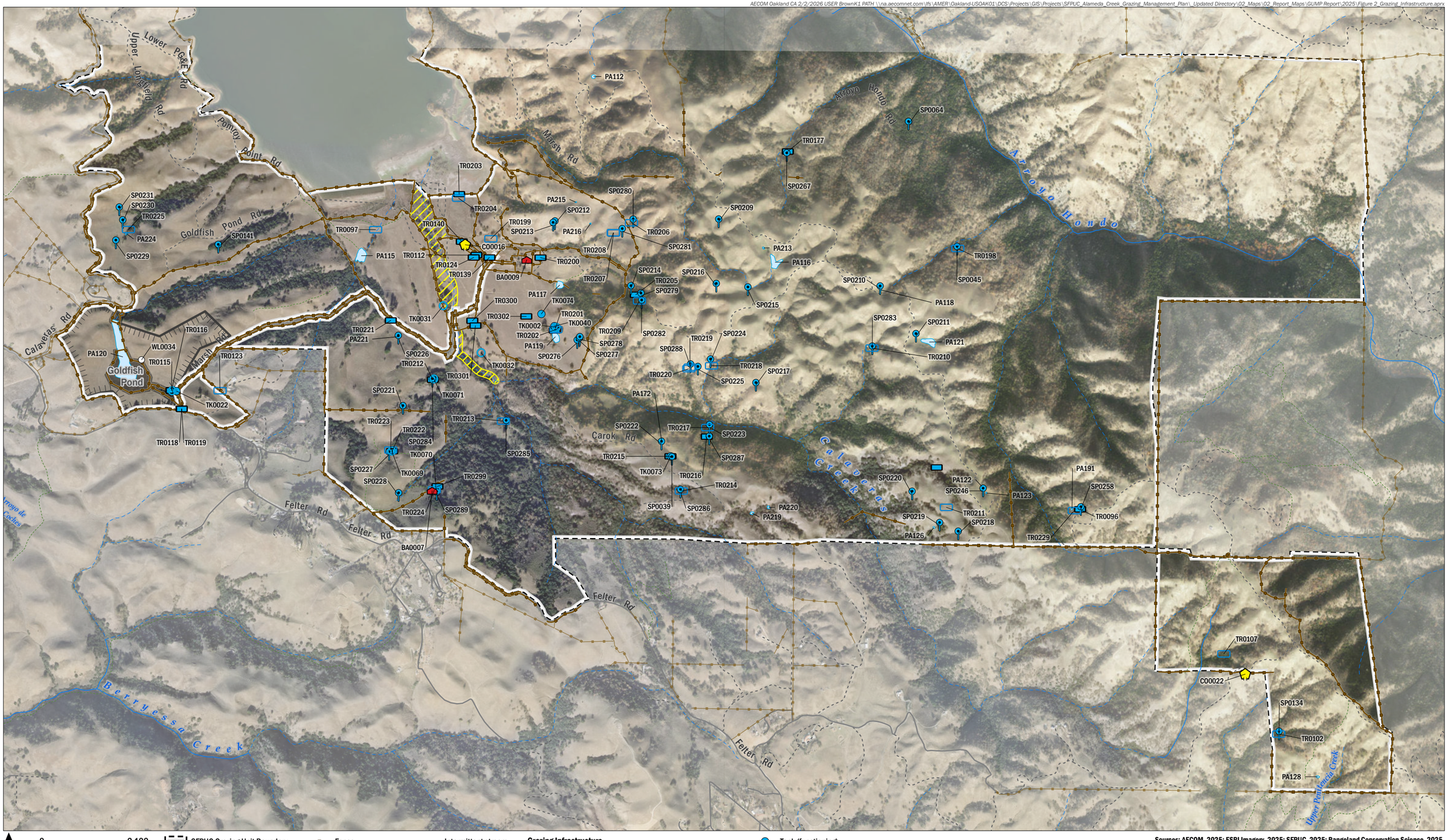
Location of grazing unit within SFPUC Watershed Lands

Sources: AECOM, 2025; ESRI Imagery, 2025; SFPUC, 2025; Rangeland Conservation Science, 2025.

Hetch Hetchy Regional Water System
Services of the San Francisco Public Utilities Commission

Figure 2: GRAZING UNIT 23 CALAVERAS RESERVOIR - PART 1

This page intentionally left blank



N

0 2,100
Feet

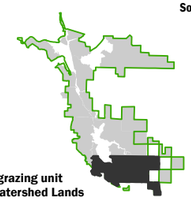
AECOM

- SFPUC Grazing Unit Boundary
- BHR Conservation Easement
- BHR Exclusion Area
- Managed Riparian Area
- Fence
- Secondary highway
- Paved road
- Unpaved road
- Trail
- Intermittent stream
- Perennial Stream
- Pond

Grazing Infrastructure

Calaveras Reservoir (GU-23): Corral C00016 is tenant-owned.

- Barn
- Corral
- Spring
- Tank (non-functioning or unknown)
- Tank (functioning)
- Trough (non-functioning or unknown)
- Trough (functioning)
- Well



Location of grazing unit within SFPUC Watershed Lands

Sources: AECOM, 2025; ESRI Imagery, 2025; SFPUC, 2025; Rangeland Conservation Science, 2025.

Hetch Hetchy Regional Water System
Services of the San Francisco Public Utilities Commission

Figure 2: GRAZING UNIT 23 CALAVERAS RESERVOIR - PART 2

This page intentionally left blank