4.1 BIOLOGICAL RESOURCES

4.1.1 INTRODUCTION

The Biological Resources chapter of the EIR evaluates the biological resources known to occur or potentially occur within the project site and surrounding area. The chapter describes the project's potential impacts to biological resources and identifies measures to eliminate or substantially reduce impacts to a less-than-significant level. Existing plant communities, wetlands, wildlife habitats, and potential for special-status species and communities are discussed for the project region. The information contained in the analysis is primarily based on a Biological Resources Assessment (BRA) (see Appendix C of this EIR)[1] prepared for the proposed project by Montrose Environmental. In addition, information from a Tree Protection and Removal Plan prepared by Urban Forestry Associates, Inc. has been incorporated into this chapter (see Appendix D of this EIR).[2] Further information was sourced from the City of Petaluma General Plan 2025,[3] and the associated City of Petaluma General Plan EIR.[4]

4.1.2 EXISTING ENVIRONMENTAL SETTING

The following sections describe the regional biological setting in which the project site is located, the biological setting of the project site, and the special-status species and Sensitive Natural Communities known to occur within the project site and vicinity.

Regional Setting

The City of Petaluma is within the northern sub-unit of the San Francisco Bay, where the regional climate is heavily influenced by the proximity to the coastline. According to the BRA, annual rainfall averages 26.7 inches, and annual temperatures range from an average high of 82 degrees Fahrenheit in August to an average low of 57 degrees Fahrenheit in January. The Sonoma Valley winemaking region stretches between Petaluma to the south and Healdsburg to the north and is surrounded by the Coastal Range Mountains to the northeast and southwest. The winemaking region encompasses a wide range of terrestrial and aquatic habitats, including grassland, oak savannah, fresh emergent wetlands, seasonal wetlands, riparian, northern coastal salt marsh, and brackish water marsh.

Within the Petaluma City limits, most of the land is developed, primarily with residential uses. Commercial and industrial uses also occur, primarily along U.S. 101 and State Route (SR) 116. The Petaluma River runs through the City in a northwest-southeast direction and flows directly into San Pablo Bay. Areas along the river and its tributaries provide valuable habitat for several special-status plant and wildlife species, as do grassland and oak savannah habitats primarily located along the western portion of the City limits. Oak woodlands are found to the south of the City along the streams, creeks, and rivers that comprise the watersheds to the south of the City and flow into the Petaluma River. The banks of the creeks, streams, and rivers in and around the

1 Montrose Environmental. *Biological Resources Assessment: Falcon Point Associates, LLC, Creekwood Housing Development Project*. May 2024.
2 Urban Forestry Associates, Inc. *Creekwood Development Tree Protection and Removal Plan*. December 19, 2023.
3 City of Petaluma. *City of Petaluma General Plan 2025.* Adopted May 19, 2008.
4 City of Petaluma. *City of Petaluma General Plan 2025 Environmental Impact Report*. February 2008.

City consist of riparian and riparian forest communities, which act as movement corridors for wildlife. Large swaths of vineyard and irrigated pasture also occur along Frates Road and South Ely Road to the east of the City limits.

Project Setting

The approximately 6.87-acre study area includes the project site, which consists of two parcels totaling approximately 5.2 acres that abut the eastern boundary of Casa Grande Road in the City of Petaluma and are identified by the following addresses: 270 Casa Grande Road and 280 Casa Grande Road. In addition, the study area includes approximately 1.67 off-site acres associated with Adobe Creek (Creek) and its riparian corridor, wherein the proposed pedestrian bridge would be located. Overall, the project site is primarily composed of agricultural fields classified as *Avena* spp. – *Bromus* spp. On-site grasses are routinely mowed and/or grazed to reduce fire hazards. Grazing of both parcels is conducted by several sheep owned and cared for by the current 270 Casa Grande Road property owner. Elevations at the site are approximately 49 feet above mean sea level (amsl).

In addition to the aforementioned on-site agricultural fields, the 280 Casa Grande Road parcel contains an existing residence. The 270 Casa Grande Road parcel contains an existing residence, several associated outbuildings, a landscaped backyard, and a small orchard in the northeast corner of the project site, within a depressed area. The Creek and its associated vegetation form the eastern boundary of the project site. The Creek is an ephemeral creek that flows in a north-south direction and is tributary to the Petaluma River to the south. A riparian corridor comprised of various plant species, which are discussed further in the Terrestrial Vegetation Communities subsection of this chapter, occurs along the banks of the Creek.

Terrestrial Vegetation Communities

Montrose Environmental identified three terrestrial habitat types within the study area, including developed/disturbed, riparian, and annual grassland.[5] The terrestrial land cover types, which are summarized in Table 4.1-1 and shown in Figure 4.1-1, are discussed further below.

Table 4.1-1
Terrestrial Land Cover Types Mapped Within the Study Area

Land Cover	Acreage
Developed/Disturbed	1.29
Annual Grassland	4.15
Riparian	1.22
Total	**6.66**

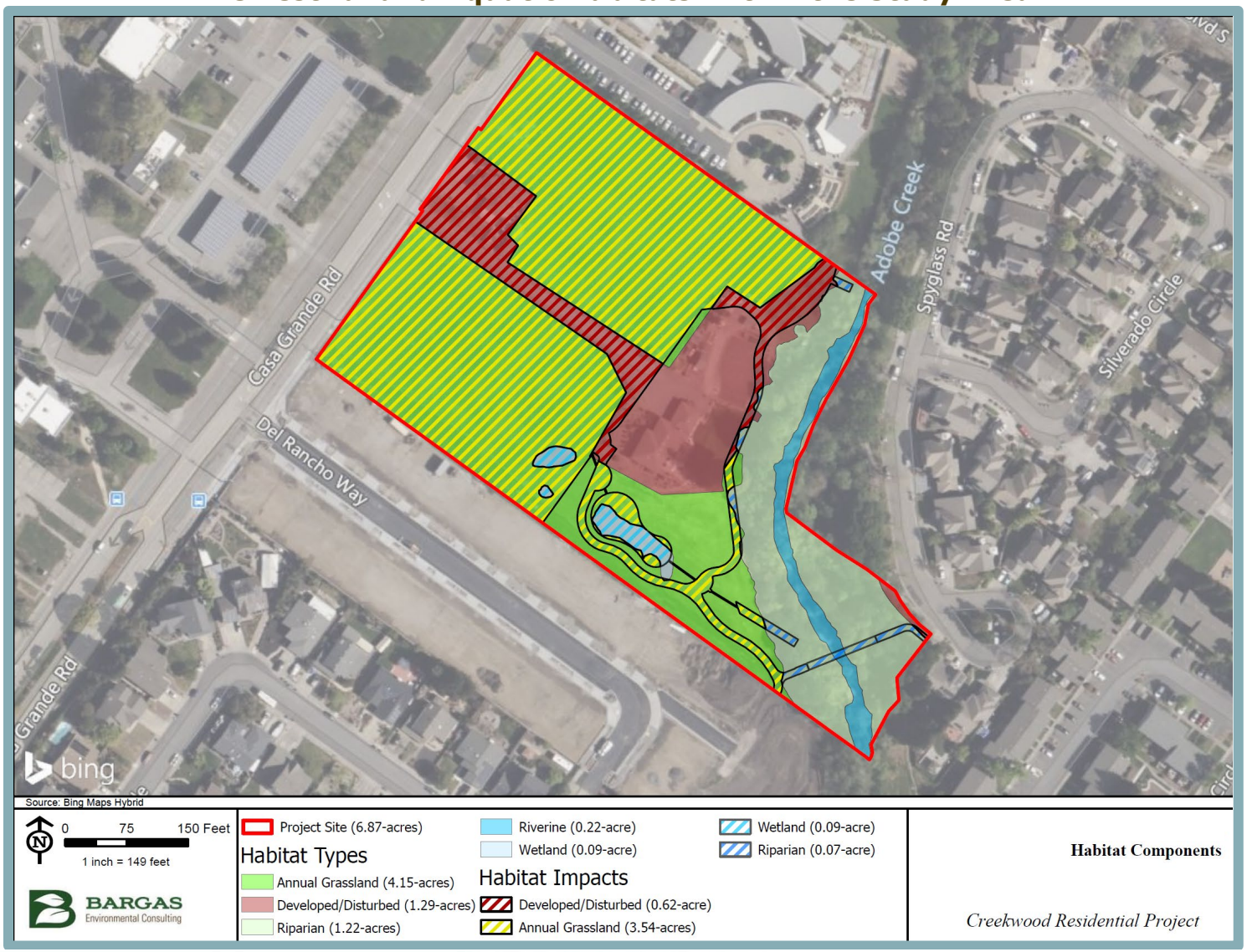
Source: Montrose Environmental, 2024.

Developed/Disturbed

A total of approximately 1.29 acres within the study area are classified as developed/disturbed. A gravel driveway off Casa Grande Road provides access to the existing residence and multiple outbuildings at 270 Casa Grande Road. An additional residence at 280 Casa Grande Road is located at the entrance to the project site.

[5] It should be noted that the study area, as evaluated by Montrose Environmental, includes a portion of the Adobe Creek riparian corridor located to the east of the project site where the public multi-use pathway and pedestrian bridge would be installed. The project site boundaries, as established in the Project Description chapter of this EIR, are entirely to the west of the Creek. As such, the total acreage of the terrestrial vegetation communities within the study area is larger than the overall acreage of the project site.

Figure 4.1-1
Terrestrial and Aquatic Habitats Within the Study Area



A large portion of the area surrounding the outbuildings and houses is characterized by bare ground with compressed gravel for vehicle driving and parking. Areas that are not graveled are planted with ornamental and garden vegetation species and are subject to regular landscaping maintenance activities. The developed/disturbed habitat type is not considered sensitive and is of low quality for accommodating plant and wildlife species.

Annual Grassland

Approximately 4.15 acres of annual grassland habitat occurs within the study area. The annual grasslands are classified as herbaceous semi-natural alliance (*Avena* spp. – *Bromus* spp.) and are disked and planted with mixed non-native grasses and forbs, which are used as forage crops for sheep grazing. Species within the habitat include oats (*Avena* spp.), soft brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), field bindweed (*convolvulus arvensis*), wall barley (*Hordeum murinum*), Bristly ox-tongue (*Helminthotheca echioides*), common stork's bill (*Erodium cicutarium*), and Italian ryegrass (*Festuca perennis*). This annual grassland habitat type is dominated by non-natives and is of low quality for accommodating plant and wildlife species.

Riparian

A total of approximately 1.22 acres of riparian habitat occurs within the riparian corridor along the Creek in the eastern portion of the study area. The riparian corridor includes species such as Himalayan blackberry (*Rubus armeniacus*), coast live oak (*Quercus argifolia*), valley oak (*Quercus latifolia*), arroyo willow (*Salix lasiolepis*), red willow (S*alix laevigata*), California buckeye (*Aesculus californica*), big leaf maple (*Acer macrophyllum*), fennel (*Foeniculum vulgare*), and flat top sedge (*Cyperus eragrostis*). The Creek flows downstream within the riparian corridor, where the Creek confluences with the Petaluma River. The riparian habitat is considered a Sensitive Natural Community protected under California Fish and Game Code (CFGC) Section 1600, et seq.

Aquatic Resources

Montrose Environmental conducted a protocol-level Preliminary Jurisdictional Delineation (PJD) of the study area as part of the BRA on April 15 and June 15, 2020 and November 24, 2021. A subsequent Aquatic Resources Delineation (ARD) was conducted by Bargas Environmental Consulting on March 5, 2024. Aquatic resources identified within the study area include three seasonal wetlands in the southwestern portion of the project site and the Creek, which flows adjacent to the eastern site boundary. Table 4.1-2 summarizes the aquatic resources within the study area, which are also discussed further below.

Table 4.1-2
Aquatic Resources Mapped Within the Study Area

Aquatic Resource	Acres
Seasonal Wetlands	0.09
Riverine	0.22
Source: Montrose Environmental, 2024.	

Seasonal Wetlands

Three separate seasonal wetlands totaling approximately 0.09-acre occur in the annual grassland in the southern portion of the project site, as shown in Figure 4.1-2. The wetlands include species such as clustered dock (*Rumex conglomeratus*), water pygmyweed (*Crassula aquatica*), hyssop loosestrife (*Lythrum cisopotholia*), and Italian ryegrass.

Figure 4.1-2
On-Site Seasonal Wetlands

Riverine

Approximately 621 linear feet of the Creek flows through the study area within 0.22-acre of riverine habitat, generally shown in blue hashing on Figure 4.1-2. The width of the Creek averages 25 feet, and the substrates vary from cobble to sand bars. The majority of the riverine habitat is covered by tree canopy with more openings in the canopy in the southern section. The Creek was assessed by the California Department of Fish and Wildlife (CDFW) and determined to provide suitable habitat for anadromous fishes. The Creek flows south to where the waterway confluences with the Petaluma River, thence the San Pablo Bay, thence the San Francisco Bay, and finally, the Pacific Ocean. The Creek is a second order stream and mapped as a blue line stream according to the U.S. Geological Survey (USGS) National Hydrography Dataset. The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory identifies the Creek as riverine habitat. According to the BRA, the Creek displays a clear ordinary high-water mark (OHWM), top of bank, and therefore, is a water of the U.S. and State subject to U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) jurisdiction, respectively. The riverine habitat is considered a Sensitive Natural Community protected under California Fish and Game Code (CFGC) Section 1600, et seq.

Special-Status Species

Special-status species are species that have been listed as threatened or endangered under the federal Endangered Species Act (FESA), California Endangered Species Act (CESA), or are of special concern to federal resource agencies, the State, or private conservation organizations. A species may be considered to have special status due to declining populations, vulnerability to habitat change, or restricted distributions. A general description of the criteria and laws pertaining to special-status classifications is described below. Special-status plant and wildlife species may meet one or more of the following criteria:

1. Listed as threatened or endangered, or proposed or candidates for listing by the USFWS or National Marine Fisheries Service (NMFS);
2. Listed as threatened or endangered and candidates for listing by the CDFW;
3. Identified as Fully Protected species, Species of Special Concern, or Watch List species by CDFW;
4. Identified as a Bird of Conservation Concern by the USFWS; and
5. Identified as Medium or High priority species by the Western Bat Working Group (WBWG);
6. Plant species considered to be rare, threatened, or endangered in California by the California Native Plant Society (CNPS) and CDFW (California Rare Plant Rank [CRPR] 1, 2, and 3):
    a. CRPR 1A: Plants presumed extinct.
    b. CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
    c. CRPR 2A: Plants extirpated in California, but common elsewhere.
    d. CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
    e. CRPR 3: Plants about which the CNPS needs more information – a review list.

Listed and Special-Status Plant Species

According to the records of the California Natural Diversity Database (CNDDB) maintained by the CDFW, 63 special-status plant species have the potential to occur in the vicinity of the study area.

Based on special-status plant surveys and literature review (detailed further in this chapter under the Method of Analysis subsection), three of the plant species were determined to have potential

to occur within the project site. These include congested-headed hayfield tarplant, Sanford's arrowhead, and Pacific Grove clover.

Further details on each of the plant species with potential to occur in the greater vicinity of the study area is provided in Appendix C of the BRA (see Appendix C of this EIR). The following discussions provide further details of the three special-status plant species with potential to occur within the project site.

Congested-Headed Hayfield Tarplant

Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*) is not listed pursuant to either the FESA or CESA; however, the species is a CRPR List 1B.2 plant. The species is an annual herb in the *Asteraceae* family and occurs in valley and foothill grasslands, as well as sometimes along roadsides, at elevations of 30 to 1,060 meters amsl. The bloom period for congested-headed hayfield tarplant occurs from April through November. The species' range extends through Mendocino, Marin, San Francisco, San Mateo, and Sonoma counties.

The agricultural habitat between the Creek and the project site's existing development, as well as the small patches of vegetation within the developed/disturbed habitat, may provide suitable habitat for congested-headed hayfield tarplant. Because the species can occur within roadsides and other disturbed areas, the possibility of the species occurring on-site cannot be completely ruled out. However, the species' potential to occur on-site is considered low, due to the project site's routine vegetation management. Biological surveys conducted during the bloom period for congested-headed hayfield tarplant did not observe any individuals.

Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to either the FESA or CESA; however, the species is a CRPR List 1B.2 plant. The species is an emergent rhizomatous herb in the water-plantain family (*Alismataceae*) and found in assorted shallow freshwater marshes and swamps, ditches, ponds, and slow-moving streams from sea level to 650 meters amsl.

The nearest occurrence of Sanford's arrowhead was documented approximately 14 miles south of the project site within Arroyo de San Jose growing in standing water or on low shelves adjacent to flowing water. Marginal habitat for the species can occur within riverine habitat during low flows or along the edge of riverine and riparian habitats where standing water may occur, creating saturated conditions for prolonged periods. Sanford's arrowhead plants were not observed during the biological surveys.

Pacific Grove Clover

Pacific Grove clover (*Trifolium polyodont*) is not listed pursuant to either the FESA or CESA; however, the species is a CRPR List 1B.1 plant. The species is an annual herb documented predominantly along the Central California coast and occurs predominantly in meadows or adjoining riparian habitat. Pacific Grove clover may also be found in meadows associated with coastal prairie or closed-cone pine forest and is typically found in wetland habitats, but can also occur outside of wetlands.

The nearest documented occurrence of Pacific Grove clover to the project site is 1.2 miles from the site. While the species may occur within the riparian corridor on the southeastern edge of the site, due to the regular disturbance around the corridor and the presence of invasive vegetation within the corridor, the likelihood of occurrence is low. In addition, although regular disturbance

does not occur within the riparian habitat, the surrounding upstream and downstream development and presence of invasive species has severely degraded the quality of the foregoing riparian habitat. Biological surveys conducted during the bloom period for Pacific Grove clover did not observe any individuals.

Listed and Special-Status Wildlife Species

According to the records search conducted as part of the BRA, 25 special-status wildlife species have the potential to occur within the vicinity of the study area, which are detailed in Table 4.1-3. Based on field observations and literature review (detailed further in this chapter under the Method of Analysis subsection), seven of the 25 wildlife species were determined to have potential to occur within the study area.

The species considered to have potential to occur in the study area include western bumble bee, steelhead, foothill yellow-legged frog (FYLF), California red-legged frog (CRLF), northwestern pond turtle, Swainson's hawk, and pallid bat. The following discussions provide further details of the foregoing special-status wildlife species.

Western Bumble Bee

The western bumble bee (*Bombus occidentalis*) is not federally listed, but is a candidate for listing as endangered under CESA. Western bumble bee is a generalist forager that will visit and pollinate a variety of flowering plants. The species is also a known pollinator of agricultural crop production plants. The current range for western bumble bee includes Alaska through the westernmost part of Canada and throughout the western U.S. Western bumble bee is found in open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows at elevations from sea level to above 2000 meters amsl. Nesting occurs underground in abandoned rodent burrows or other cavities.

The largest declines of the species are believed to have occurred within Central California and Western California, Oregon, and Washington. The western bumble bee is believed to be imperiled by invasive species and their associated foreign pathogens, as well as climate change. The nearest known occurrence is from 1965 and is located approximately 1.3 miles west of the project site. Burrows suitable for western bumble bee nesting habitat were not observed during surveys. However, the study area contains suitable foraging habitat within the annual grassland or in openings in the riparian and riverine habitats. As such, western bumble bee could occur within the study area.

Steelhead – Central California Coast DPS

Steelhead (*Oncorhynchus mykiss irideus*) is listed as a federally threatened species, pursuant to the FESA. The species is the anadromous form of rainbow trout. As such, steelhead spawn in the freshwater streams in which they were born. Juveniles remain in the freshwater environment for one to two years prior to their out-migration into the ocean. Unlike other types of salmonoids, steelhead are capable of spawning multiple times throughout their life and do not typically die immediately after spawning. The steelhead in the Central California Coast Evolutionary Significant Unit (ESU) are a winter-run species. Winter-run steelhead typically migrate from November through April and spawn shortly after they arrive to their natal spawning habitat. Although steelhead in the foregoing ESU are classified as a winter-run species, hydro-modification has fundamentally changed the life history strategies of the fish over time. As cold waters persist at predictable flow patterns from dams on an annual basis, the occurrence of the species can be outside the November-to-April migratory window.

Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
Invertebrates					
Bombus occidentalis Western bumble bee	--	CCE	Known to occur along the West Coast and Mountain West of North America, including Arizona, New Mexico, Mediterranean California, the Pacific Northwest, and Alaska.	Found in open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Found at elevations from sea level to above 2000 meters amsl. Nesting occurs underground in abandoned rodent burrows or other cavities.	**Yes.** Suitable habitat for the species is present on-site.
Danus plexippus Monarch butterfly	FC	--	Known to occur in Mexico and North America. Populations that occur where winter conditions are not suitable travel along well-established migratory routes to overwintering areas. Overwintering sites are known to occur in Mexico and Coastal California.	Migratory populations begin migration in the fall and can be found along established migratory routes where nectar sources are available. During breeding (typically February to March), monarch butterflies require milkweed upon which to lay their eggs. Overwintering monarchs require sites with sufficient roosts for the population (such as eucalyptus trees) that provide appropriate sunlight and shelter from the wind. Where climate is suitable for year-round habitation, monarchs are found in areas with nectar sources and milkweed as breeding can occur year-round.	**No.** Suitable habitat for the species is not present within the study area.
Fish					
Oncorhynchus mykiss irideus pop. 8 Steelhead-Central California Coast Distinct Population Segment (DPS)	FT	--	Spawns in drainages from the Russian River Basin, Sonoma and Mendocino counties, to Soquel Creek, Santa Cruz County (including the San Francisco Bay Basin, but not the Sacramento and San Joaquin rivers or their tributaries).	Found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover from riparian vegetation or overhanging banks. Spawning occurs in streams with pool and riffle complexes. For successful breeding, requires cold water and gravelly streambed.	**Yes.** The study area contains the Creek, which is designated by the National Oceanic and Atmospheric Administration (NOAA) Fisheries/NMFS as critical habitat

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Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
					for steelhead. The species has also been documented within the Creek in the CNDDB.
Pogonichthys macrolepidotus Sacramento splittail	--	CSC	Endemic to the Central Valley. Occurs below the Red Bluff Diversion Dam in Tehama County to the downstream reaches of the Sacramento and American rivers. Also occurs in the lower reaches of the Feather, Merced, and the San Joaquin rivers. The species is largely confined to the delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and Sacramento-San Joaquin estuary.	Found predominantly in freshwater estuarine systems. Prefers low-salinity, shallow-water habitats. Occurs in slow-moving sections of rivers, sloughs, and marshes. Abundance is strongly tied to outflows, because spawning occurs over flooded vegetation.	**No.** Suitable habitat for the species is not present within the study area.
Amphibians					
Ambystoma californiense California tiger salamander	FT	CT	Occurs in Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Stanislaus, Tulare, and Yolo counties.	Occurs in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stock ponds, in grassland and oak savannah plant communities. Elevations range from sea level to 460 meters amsl.	**No.** Suitable habitat for the species is not present within the study area.
Dicamptodon ensatus California giant salamander	--	CSC	Known to occur in Mendocino, Lake, Glenn, Sonoma, Marin, San Mateo, Santa Cruz, and historically Monterey counties.	Occurs in wet coastal forests near streams and seepages.	**No.** Suitable habitat for the species is not present within the study area.

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Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
Rana boylii Foothill yellow-legged frog North Coast DPS	--	CSC	Known to occur from California and Oregon.	Requires shallow, flowing water in moderate-sized streams with some cobble substrate.	**Yes.** Suitable habitat for the species is present in the Creek, which is within the study area.
Rana draytonii California red-legged frog	FT	CSC	Known to occur along the coast from Mendocino County to Baja California, and inland through the northern Sacramento Valley into foothills of the Sierra Nevada, south to eastern Tulare County, and possibly eastern Kern County. Current accepted range excludes the Central Valley.	Occurs in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation. Elevations range from sea level to 1,160 meters amsl.	**Yes.** Suitable habitat for the species is present in the Creek, which is within the study area.
Taricha rivularis Red-bellied newt	--	CSC	Known to occur in the Coast Range from Mendocino County to San Diego County. Also known in the Peninsular Ranges, south of Boulder Creek, and in the southern Sierra Nevada foothills.	Occurs primarily in valley-foothill hardwood, hardwood conifer, coastal scrub, and mixed chaparral, but may also occur in annual grassland and mixed conifer forests. Elevation ranges from sea level to 1,830 meters amsl.	**No.** Suitable habitat for the species is not present within the study area.
Reptiles					
Chelonia mydas Green sea turtle	FT	--	Globally distributed in tropical and subtropical waters along continental coasts and islands between 30 degrees north and 30 degrees south. In the eastern North Pacific, occurs from Baja California to Alaska.	Nests on oceanic beaches, feeds in benthic grounds in coastal areas, and frequents convergence zones in the open ocean.	**No.** Suitable habitat for the species is not present within the study area.

(Continues on next page)

Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
Actinemys marmorata Northwestern pond turtle	FPT	CSC	Distribution ranges from Washington to northern Baja California.	Inhabits rivers, streams, lakes, ponds, reservoirs, stock ponds, and permanent wetlands with basking sites.	**Yes.** Suitable habitat for the species is present within the study area.
Birds					
Aquila chrysaetos Golden eagle	--	FP, WL	Occurs in Alameda, Colusa, Contra Costa, El Dorado, Fresno, Humboldt, Kern, Lake, Lassen, Los Angeles , Madera, Merced, Modoc, Mono, Monterey, Napa, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Joaquin, San Luis Obispo, Santa Clara, Siskiyou, Solano, Stanislaus, Trinity, Tulare, and Ventura counties.	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions.	**No.** Suitable habitat for the species is not present within the study area.
Buteo swainsoni Swainson's hawk	--	CT	In California, breeds in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, Antelope Valley, and in eastern San Luis Obispo County.	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	**Yes.** Suitable habitat for the species is present within the study area.
Charadrius alexandrines nivosus Western snowy plover	FT	CSC	The Pacific Coast breeding population of the western snowy plover (*Charadrius alexandrinus nivosus*) currently extends from Damon Point, Washington, to Bahia Magdalena, Baja California, and Mexico. The	Snowy plovers (Pacific Coast population) breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, snowy plovers are found on many	**No.** Suitable habitat for the species is not present within the study area.

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Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
			snowy plover winters mainly in coastal areas from southern Washington to Central America.	of the beaches used for nesting as well as on beaches where they do not nest, in man-made salt ponds, and on estuarine sand and mud flats.	
Geothlypis trichas sinuosa Salt-marsh common yellowthroat	--	CSC	Breeding range bounded by Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz County to the south, with occurrences in the Bay Area during migration and winter.	Found in salt, brackish, and freshwater marshes. Nests just above ground or over water, in thick herbaceous vegetation, often at base of shrub or sapling, sometimes higher in weeds or shrubs up to about one meter.	**No.** Suitable habitat for the species is not present within the study area.
Laterallus jamaicensis coturniculus California black rail	--	CT, FP	In Coastal California during breeding season, the species is currently found at Bodega Bay, Tomales Bay, Bolinas Lagoon, San Francisco Bay estuary, and Morro Bay. Overwhelming majority of birds in San Francisco Bay (San Pablo Bay) at relatively few sites. Occurs irregularly south to Baja California and inland in small numbers in Salton Trough and on lower Colorado River from Bill Williams River (historically) to Laguna Dam.	Nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation. Uses sites with shallower water than other North American rails. Most breeding areas vegetated by fine-stemmed emergent plants, rushes, grasses, or sedges. Sites used in Coastal California characterized by taller vegetation, greater coverage and height of alkali heath (*Frankenia grandifolia*).	**No.** Suitable habitat for the species is not present within the study area.
Melospiza melodia samuelis San Pablo song sparrow	--	CSC	Distributed in marshes around San Pablo Bay continuously from Gallinas Creek in the west, along the northern San Pablo Bayshore, and throughout the extensive marshes along the Petaluma, Sonoma, and Napa rivers.	Commonly found in salt marsh, brackish marsh, salt marsh (altered), brackish marsh (altered), and fringe areas, where marsh vegetation is limited to edges of dikes, landfills, or other margins of high ground bordering salt or brackish water areas.	**No.** Suitable habitat for the species is not present within the study area.

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Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
Rallus obsoletus obsoletus California Ridgway's rail	FE	CE, FP	Locally common year-long in coastal wetlands and brackish areas around San Francisco Bay.	In saline emergent wetlands, nests mostly in lower zones with abundant cordgrass and near tidal sloughs. Builds platforms concealed by canopies of woven cordgrass stems or pickleweed and gumweed. Uses dead drift vegetation as platform. In fresh or brackish water, builds nest in dense cattail or bulrush. Forages in high marsh vegetation along vegetation and mudflat interface and along tidal creeks.	**No.** Suitable habitat for the species is not present within the study area.
Riparia riparia Bank swallow	--	CT	About 50 to 60 colonies remain along the middle Sacramento River and 15 to 25 colonies occur along lower Feather River. Other colonies persist along the Central Coast from Monterey to San Mateo counties, and Northeastern California in Shasta, Siskiyou, Lassen, Plumas, and Modoc counties.	Colonial nester; nests primarily in riparian scrub, riparian woodland, and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured, sandy soils near streams, rivers, lakes, and the ocean to dig nesting holes.	**No.** Suitable habitat for the species is not present within the study area.
Sternula antillarum browni California least tern	FE	CE, FP	Found along the Pacific Coast of California, from San Francisco southward to Baja.	Nests in colonies on relatively open beaches kept free of vegetation by natural scouring from tidal action.	**No.** Suitable habitat for the species is not present within the study area.
Strix occidentalis caurina Northern spotted owl	FT	CT	Geographic range extends from British Colombia to Northwestern California south to San Francisco. The breeding range includes the Cascade Range, North Coast Ranges, and the Sierra Nevada. Some breeding populations also occur in the	Resides in mixed conifer, redwood, and Douglas-fir habitats, from sea level to approximately 2,300 meters amsl. Prefers old-growth forests but use of managed (previously logged) lands is not uncommon. Does not use logged habitat until approximately 60 years after logging, unless larger trees or snags remain.	**No.** Suitable habitat for the species is not present within the study area.

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Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
			Transverse Ranges and Peninsular Ranges.	Nesting habitat is a tree or snag cavity, or the broken top of a large tree. Requires a nearby, permanent source of water. Foraging habitat consists of any forest habitat with sufficient prey.	
Mammals					
Antrozous pallidus Pallid bat	--	CSC	Locally common species at low elevations. The species occurs throughout California except for the high Sierra Nevada, from Shasta to Kern counties, and the northwestern corner of the State from Del Norte and western Siskiyou counties to northern Mendocino County.	Habitats occupied include grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests, generally below 2,000 meters amsl. The species is most common in open, dry habitats with rocky areas for roosting. Roosts also include cliffs, abandoned buildings, bird boxes, under exfoliating bark, and under bridges.	**Yes.** Suitable habitat for the species is present within the study area.
Corynorhinus townsendii Townsend's big-eared bat	--	CSC	Known to occur throughout California, excluding subalpine and alpine habitats. The species' range extends through Mexico to British Columbia and the Rocky Mountain states. Also occurs in several regions of the central Appalachians.	Requires caves, mines, tunnels, buildings, or other cave analog structures such as hollowed-out redwoods for roosting. Hibernation sites must be cold, but above freezing.	**No.** Suitable habitat for the species is not present within the study area.
Reithrodontomys raviventris Salt marsh harvest mouse	FE	CE, FP	Only found in the saline emergent wetlands of San Francisco Bay and its tributaries.	Critically dependent on dense cover and their preferred habitat is pickleweed (*Salicornia virginica*). Seldomly found in cordgrass or alkali bulrush. In marshes with an upper zone of peripheral halophytes (salt-tolerant plants), mice use the vegetation to escape the higher tides, and may even spend a considerable portion of their lives there. Mice also move into the adjoining grasslands during the highest winter tides.	**No.** Suitable habitat for the species is not present within the study area.

(Continues on next page)

Table 4.1-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	Distribution	Habitat Requirements	Potential to Occur On-Site
Taxidea taxus American badger	--	CSC	Found throughout most of California in suitable habitat.	Suitable habitat occurs in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas.	**No.** Suitable habitat for the species is not present within the study area.

Status Codes:
FE: Federally Endangered
FT: Federally Threatened
FPT: Federally Proposed Threatened
FPE: Federally Proposed Endangered
FC: Candidate for Federal Listing
CE: CDFW Endangered
CT: CDFW Threatened
CSC: California Species of Special Concern
CCE: California Candidate for State Endangered Listing
CCT: California Candidate for State Threatened Listing
CR: California Rare

FP: Fully Protected Species
WL: California Watch List
1A: Plants Presumed Extinct in California
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
3: Plants About Which We Need More Information – A Review List
4: Plants of Limited Distribution – A Watch List
0.1: Seriously Threatened in California
0.2: Fairly Threatened in California
0.3: Not Very Threatened in California

Source: Montrose Environmental, 2024.

Steelhead have an average lifespan of six to seven years. The Creek, which runs through the southeastern portion of the study area, provides suitable habitat for the species and is designated by the NOAA Fisheries/NMFS as critical habitat for steelhead. According to the BRA, a Stream Assessment completed by CDFW determined that the Creek along the eastern boundary of the project site provides suitable fish habitat for anadromous species. Steelhead have also been observed in the Creek, as recorded in CNDDB, as well as by the United Anglers of Casa Grande, Inc., a Petaluma nonprofit organization that restores habitat and supports the survival and recovery of federally threatened salmon species, including through specifically rescuing stranded steelhead within the Creek and other areas of the Petaluma River watershed. Fish passage barriers do not occur from the Pacific Ocean to the project site. As such, steelhead could occur within the study area.

Foothill Yellow-Legged Frog – North Coast DPS

FYLF (*Rana boylii*) is a California Species of Special Concern. FYLF is named for its abdomen and hindlegs, which are distinctively yellowish in color. The species occurs in partially shaded, rocky streams at low to moderate elevations in areas of chaparral, cismontane woodland, and broad-leafed upland forest habitats. Ideal habitat consists of open, slow-moving perennial streams with rocky or bedrock substrates and small deeper pools. The species can also occur in smaller perennial streams that have cobble-size rocks and riffles. FYLF breeds from March through May in pools within perennial streams and attaches its eggs to gravel or rocks at the edges or along the banks.

The Creek, which runs through the southeastern portion of the study area, may provide suitable habitat for FYLF species. According to the BRA, a Stream Assessment completed by CDFW on the Creek in 2008 noted multiple observations of FYLF within the vicinity of the project site, both upstream and immediately downstream of the project site. As such, FYLF could occur within the study area.

California Red-Legged Frog

CRLF (*Rana draytonii*) is listed as threatened, pursuant to the FESA, and a California Species of Special Concern. CRLF require a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites occur in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. CRLF also breed in artificial impoundments including stock ponds. The breeding period is from November to March. During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of the overland movements occur at night. CRLF may travel up to 1.6 kilometers throughout a wet season. CRLF rest and forage in riparian vegetation.

Summer habitats include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. CRLF require 11 to 30 weeks of permanent water for larval development. The Creek, which runs through the southeastern portion of the study area, may provide suitable habitat for the species. According to the BRA, a Stream Assessment completed by CDFW on the Creek in 2008 noted multiple observations CRLF within the vicinity of the project site, approximately 6.5 miles upstream of the project site. Thus, CRLF could occur within the study area.

Northwestern Pond Turtle

Northwestern pond turtle (*Actinemys marmorata*) has been proposed for listing as threatened under FESA and is a California Species of Special Concern. The species is found in Pacific-slope drainages to an elevation of approximately 1,450 meters. The turtles are found along ponds, marshes, rivers, streams, and irrigation ditches that typically have muddy or rocky bottoms and grow aquatic vegetation. Northwestern pond turtles require basking sites, such as logs or mats of submerged vegetation. The species prefers habitats with stable banks and open areas to bask in, as well as the underwater cover provided by logs, large rocks, bulrushes, or other vegetation.

Northwestern pond turtles generally leave their aquatic sites only to reproduce and to hibernate. Hibernation typically takes place from October or November to March or April. Egg-laying typically occurs in May and June and may take place up to 0.5-kilometer from water. The biological survey completed as part of the BRA observed marginal northwestern pond turtle habitat along the Creek. Although the project site lacks suitable hibernation and nesting habitat for northwestern pond turtles, the species has the potential to occur within the study area outside of breeding and hibernation. The nearest documented occurrence of the species is 0.7-mile from the vicinity of the Creek. Thus, northwestern pond turtle could occur within the study area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is listed as threatened, pursuant to the CESA. Swainson's hawks arrive at their breeding grounds in the Central Valley in early March. They often nest peripherally to valley riparian systems, as well as utilize lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood, walnut, and large willow trees, ranging in height from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Breeding pairs construct nests composed of sticks, leaves, and bark. Eggs are laid from mid- to late-April and are incubated into mid-May, when the young begin to hatch. The young remain near the nest and depend on the adults for approximately four weeks after fledging until they permanently leave the breeding territory.

Nesting occurs from March 1 to August 15. Swainson's hawks feed primarily on small mammals, birds, and insects. When not breeding, the Swainson's hawk is atypical, because the species is almost exclusively insectivorous. Typical foraging habitat includes annual grasslands, alfalfa, and other dry farm crops that provide suitable habitat for small mammals. Suitable foraging habitat nearby nesting sites is critical for fledgling success. A single known documented occurrence of the species has been reported within five miles of the project site. Given the high levels of disturbance, nesting is unlikely to occur on-site; however, marginally suitable foraging habitat for the species occurs in the on-site open grassy area. Thus, Swainson's hawk could occur within the study area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. Pallid bat is a medium-sized bat with large, wide ears that are clearly separated at the base. The species occurs in a wide variety of habitats including grasslands, shrublands and chaparrals, woodlands, and forests. Pallid bat is most abundant in open dry habitats that have abundant rocky areas for roosting, forages over open ground, and is mostly a nocturnal hunter. Pallid bat (like most bat species) is most active during the dawn and dusk hours. The species will establish daytime roosts in caves, crevices, mines, large hollow trees, and unoccupied buildings.

Pallid bats mate during the months of October through February and most young are born from April through July. The range for pallid bat includes most of California, with the exception of the high Sierra Nevada from Shasta to Kern counties and the northwesternmost corner of the State. Pallid bats may roost in riparian trees present within the study area and forage over the project site's open grassy area. Although habitat is marginal and individual trees were not evaluated for roost potential, three occurrences of the species have been documented within five miles of the project site. Thus, pallid bat could occur within the study area.

Critical Habitat

CRLF-designated critical habitat is present approximately 3.4 miles northeast and 3.2 miles southwest of the project site. The Creek, within the study area, is designated by NOAA Fisheries/NMFS as critical habitat for steelhead and as Essential Fish Habitat (EFH) for Pacific salmon.

Trees

According to the Tree Removal, Preservation, and Replacement Plan prepared for the proposed project, 72 trees are located within the on-site and off-site areas proposed for development (see Figure 4.1-4). Of the total, 56 qualify as protected trees, pursuant to Petaluma Implementing Zoning Ordinance (IZO) Section 17.040. Table 4.1-4 provides a summary of all existing trees within the study area.

Table 4.1-4
Tree Inventory

No.	Common Name	Botanical Name	Trunk Diameter (inches)	Health & Structure (0-5)
Proposed Residential Development Area and Creek Riparian Corridor				
1	Edible Fig	*Ficus carica*	7, 6.4, 6.2	5
2	Apple	*Malus domestica*	6	4
3	Plum sp.	*Prunus* sp.	14.5	4
4	Plum sp.	*Prunus* sp.	11.5	3
5	English Walnut	*Juglans regia*	8.5, 7.5, 5.5	5
6	Edible Fig	*Ficus carica*	8, 6.5	5
7	Edible Fig	*Ficus carica*	10	5
8	**Coast Redwood**	***Sequoia sempervirens***	**37**	**5**
9	**Coast Redwood**	***Sequoia sempervirens***	**38**	**4**
10	**Coast Redwood**	***Sequoia sempervirens***	**33**	**4**
11	Olive	*Olea europaea*	6, 6, 4	5
12	English Walnut	*Juglans regia*	7	5
13	Sweetgum	*Liquidambar styraciflua*	14	4
14	Photinia	*Photinia Fraseri*	7, 5, 4	4
15	Crape Myrtle	*Lagerstroemia* sp.	6	4
16	**Riparian Zone**	***Various Native Species***	**--**	**4**
17	Row of Upright English Oaks	*Quercus robur 'Fastigiata'*	4 to 12	5
18	**Coast Live Oak**	***Quercus agrifolia***	**19.5**	**5**
19	**Valley Oak**	***Quercus lobata***	**7.5**	**4**
20	**Coast Live Oak**	***Quercus agrifolia***	**21.5**	**4**
21	**Coast Live Oak**	***Quercus agrifolia***	**17**	**5**
22	**Coast Live Oak**	***Quercus agrifolia***	**16, 6.5**	**5**
23	**Coast Live Oak**	***Quercus agrifolia***	**12.5**	**5**

(Continues on next page)

Table 4.1-4
Tree Inventory

No.	Common Name	Botanical Name	Trunk Diameter (inches)	Health & Structure (0-5)
24	Coast Live Oak	*Quercus agrifolia*	8.5, 7.5	5
25	Coast Live Oak	*Quercus agrifolia*	12.5	5
26	Valley Oak	*Quercus lobata*	9	4
27	Valley Oak	*Quercus lobata*	6	5
28	Coast Live Oak	*Quercus agrifolia*	12.5	5
29	Valley Oak	*Quercus lobata*	10	4
30	California Buckeye	*Aesculus californica*	6, 6, 4	4
31	Red Willow	*Salix laevigata*	13.5, 10.5, 7.5	4
32	Oregon Ash	*Fraxinus latifolia*	7.5	5
33	Northern California Walnut	*Juglans hindsii*	6	5
34	Oregon Ash	*Fraxinus latifolia*	6	5
35	Red Willow	*Salix laevigata*	8.5	4
36	Red Willow	*Salix laevigata*	9.5	1
37	Red Willow	*Salix laevigata*	8	3
38	Red Willow	*Salix laevigata*	11	4
39	California Buckeye	*Aesculus californica*	6, 6, 5	4
40	Valley Oak	*Quercus lobata*	15	5
41	Red Willow	*Salix laevigata*	12.5	5
42	Red Willow	*Salix laevigata*	13	4
43	Coast Live Oak	*Quercus agrifolia*	23	5
44	Red Willow	*Salix laevigata*	17.5	2
45	Valley Oak	*Quercus lobata*	7	5
46	Oregon Ash	*Fraxinus latifolia*	1.5	4
47	Red Willow	*Salix laevigata*	3	2
48	Red Willow	*Salix laevigata*	3	4
49	Red Willow	*Salix laevigata*	4	3
50	Red Willow	*Salix laevigata*	5, 3.5, 3	2
51	Red Willow	*Salix laevigata*	3.5	3
52	California Buckeye	*Aesculus californica*	1.5	4
53	Red Willow	*Salix laevigata*	3	3
54	Red Willow	*Salix laevigata*	3	3
55	California Buckeye	*Aesculus californica*	3.5	4
56	California Buckeye	*Aesculus californica*	3, 2.5, 2.5	4
57	California Buckeye	*Aesculus californica*	5, 2.5	2
58	California Buckeye	*Aesculus californica*	2.5, 2.5, 1.5	4
59	Toyon	*Heteromeles arbutifolia*	3, 1.5	4
Southern Storm Drainage Outfall				
60	Coast Live Oak	*Quercus agrifolia*	2.5	4
61	Coast Live Oak	*Quercus agrifolia*	2	4
62	Coast Live Oak	*Quercus agrifolia*	2.5, 1	4
63	California Buckeye	*Aesculus californica*	6	4
64	California Buckeye	*Aesculus californica*	10 stems 4 to 8 inches	4
65	California Buckeye	*Aesculus californica*	6, 3	4
66	California Buckeye	*Aesculus californica*	2	3
67	California Buckeye	*Aesculus californica*	6, 3	4
68	California Buckeye	*Aesculus californica*	4	4

(Continues on next page)

Table 4.1-4
Tree Inventory

No.	Common Name	Botanical Name	Trunk Diameter (inches)	Health & Structure (0-5)
Northern Storm Drainage Outfall				
69	**Coast Live Oak**	***Quercus agrifolia***	**4**	**4**
70	**Coast Live Oak**	***Quercus agrifolia***	**7**	**4**
71	Fruiting Pear	*Pyrus* spp.	3	2
72	**Oregon Ash**	***Fraxinus latifolia***	**8, 8, 7, 6**	**4**

Note: The Health & Structure column includes a rating for condition, based on The Guide for Plant Appraisal, 10th Edition. The numeric scale ranges from 5 (being the highest) to 0 (the worst condition, dead). Rating 1 (Very Poor) indicates the tree appears to be dying and in the last stages of life, with little live foliage. Rating 2 (Poor) indicates the tree has a single or multiple serious structural defects and is unhealthy and declining in appearance. Rating 3 (Fair) indicates the tree has a single serious structural defect or multiple moderate defects and reduced vigor. Rating 4 (Good) indicates the tree has minor structural defects that can be corrected and normal vigor. Rating 5 (Excellent) indicates the tree is free of structural defects and has nearly perfect health.

Trees designated as protected pursuant to IZO Section 17.040 are **bolded**.

Source: Urban Forestry Associates, Inc., 2023.

4.1.3 REGULATORY CONTEXT

A number of federal, State, and local policies provide the regulatory framework that guides the protection of biological resources. The following discussion summarizes those laws that are most relevant to biological resources in the vicinity of the project site.

Federal Regulations

The following are the federal environmental laws and policies relevant to biological resources.

Federal Endangered Species Act

The U.S. Congress passed the FESA in 1973 to protect species that are endangered or threatened with extinction. FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend. Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 U.S. Code [USC] Section 1533[c]). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the NOAA Fisheries/NMFS has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with the USFWS and NOAA Fisheries/NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

FESA prohibits the “take” of endangered or threatened wildlife species. “Take” is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (FESA Section 3 [3], [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 Code of Federal Regulations [CFR] Section 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR

Section 17.3). Actions that result in take can result in civil or criminal penalties. Section 10 requires the issuance of an "incidental take" permit before any public or private action may be taken that could take an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan (HCP) that would offset the take of individuals that may occur, incidental to implementation of a proposed project, by providing for the protection of the affected species.

Pursuant to the requirements of the FESA, a federal agency reviewing a project within the jurisdiction of the agency must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed project would have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]).

In addition, critical habitat is defined under FESA as specific geographic areas within a listed species range that contain features considered essential for the conservation of the listed species. Designated critical habitat for a given species has been determined by USFWS or NOAA Fisheries/NMFS to be important for the recovery of the species. Under FESA, critical habitat loss is considered an impact to the species.

Magnuson-Stevens Act

Under the Magnuson-Stevens Act, EFH is defined as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is designated for those fish species with a federal Fisheries Management Plan, as determined by the Magnuson-Stevens Act and NOAA Fisheries/NMFS. Projects that have the potential to adversely affect EFH must initiate consultation with the NOAA Fisheries/NMFS. Adverse impacts include actions that reduce the quality and/or quantity of EFH and can include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), and site-specific or habitat-wide impacts. Impacts are considered adverse at the level of the individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of State and federal laws. The federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior.

Clean Water Act

The USACE regulates discharge of dredged or fill material into waters of the U.S. under Section 404 of the Clean Water Act (CWA). "Discharge of fill material" is defined as the addition of fill material into waters of the U.S., including, but not limited to, the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for the construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 CFR Section 328.2[f]). In addition, Section 401 of the CWA (Title 33 USC, Section 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge would comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b]).

Furthermore, jurisdictional waters of the U.S. can be defined by exhibiting a defined bed and bank and OHWM. The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

In May 2023, the U.S. Supreme Court interpreted the term "waters of the U.S." as understood in wetland permitting in its decision in *Sackett v. Environmental Protection Agency*, 598 U.S. 651, 143 S.Ct. 1322 (2023). The Court's decision has been generally understood to contract the legal jurisdiction previously asserted by the USACE. In its opinion, the Court held that the "waters" protected under the CWA are limited to "geographic[al] features that are described in ordinary parlance as 'streams, oceans, rivers, and lakes'" and to adjacent wetlands that are "indistinguishable" from those bodies of water due to a continuous surface connection, though "temporary interruptions in surface connection may sometimes occur because of phenomena like low tides or dry spells."

On August 29, 2023, in response to the *Sackett* decision, USACE and the U.S. Environmental Protection Agency (USEPA) issued a final rulemaking that revises the definition of waters of the U.S. within USACE and USEPA regulations. The adopted document is known as the "Waters of the U.S. Rule," which defines waters of the U.S. to include the following:

- Traditional navigable waters, the territorial seas, and interstate waters (jurisdictional waters);
- Impoundments of jurisdictional waters (jurisdictional impoundments);
- Relatively permanent, standing or continuously flowing tributaries to either jurisdictional waters or jurisdictional impoundments (jurisdictional tributaries);
- Wetlands having a continuous surface connection to either jurisdictional waters, jurisdictional impoundments, or jurisdictional tributaries (jurisdictional wetlands); and
- Relatively permanent, standing or continuously flowing intrastate lakes and ponds with a continuous surface connection to (but are not themselves) a jurisdictional water, jurisdictional impoundment, jurisdictional tributary, or jurisdictional wetland.

In addition to discharge of dredged or fill material into waters of the U.S. under Section 404, the CWA regulates municipal and industrial discharges to surface waters of the U.S through the National Pollutant Discharge Elimination System (NPDES) permit system, which is discussed in detail in Chapter 4.3, Hydrology and Water Quality, of this EIR.

State Regulations

The following are the State environmental laws and policies relevant to biological resources.

California Department of Fish and Wildlife

CDFW administers a number of laws and programs designed to protect fish and wildlife resources under the CFGC, such as CESA (CFGC Section 2050, et seq.), Fully Protected Species (CFGC

Section 3511) and the Lake or Streambed Alteration Agreement (LSAA) Program (CFGC Sections 1600 to 1616). Such regulations are summarized in the following sections.

California Endangered Species Act

The State of California enacted CESA in 1984. CESA is similar to the FESA but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with CDFW when preparing CEQA documents to ensure that the State lead agency actions do not jeopardize the existence of listed species. CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. Agencies can approve a project that affects a listed species if they determine that "overriding considerations" exist; however, the agencies are prohibited from approving projects that would result in the extinction of a listed species.

CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFW to authorize exceptions to the State's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (CFGC Section 2081).

California Fish and Game Codes

A number of species have been designated "fully protected" species under Sections 5515, 5050, 3511, and 4700 of the CFGC, but are not listed as endangered (Section 2062) or threatened (Section 2067) species under CESA. Except for take related to scientific research, all take of fully protected species is prohibited. The CFGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Birds of prey are protected in California under provisions of the CFGC Section 3503.5 (1992), which states, "it is unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by CDFW.

Lake or Streambed Alteration Program

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the CFGC Section 1602 requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, State or local government agency, or public utility that proposes an activity that would:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. In addition, impacts to riparian habitat are regulated under CFGC 1600 et seq. If notification is required and CDFW believes the proposed activity is likely to result in harm to the natural environment, the CDFW requires that the parties enter into a LSAA.

Because the on-site riparian and riverine habitats are designated as a Sensitive Natural Community, a project's potential impacts to the habitats would be regulated by CDFW. CDFW may choose to address potential impacts to and mitigation for the on-site riparian and riverine habitat areas during the LSAA approval process.

CDFW Species of Special Concern

In addition to formal listings under FESA and CESA, plant and wildlife species receive additional consideration during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern" developed by CDFW. Species whose numbers, reproductive success, or habitat may be threatened are tracked by CDFW in California.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. Currently, 64 species, subspecies, and varieties of plants are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations, emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

Regional Water Quality Control Board

Any action requiring a CWA Section 404 permit, or a Rivers and Harbors Act Section 10 permit, must also obtain a CWA Section 401 Water Quality Certification. The State of California Water Quality Certification (WQC) Program was formally initiated by the State Water Resources Control Board (SWRCB) in 1990 under the requirements stipulated by Section 401 of the federal CWA. Although the CWA is a federal law, Section 401 of the CWA recognizes that states have the primary authority and responsibility for setting water quality standards. In California, under Section 401, the SWRCB and RWQCBs are the authorities that certify that issuance of a federal license or permit does not violate California's water quality standards (i.e., that they do not violate the Porter Cologne Water Quality Control Act and the Water Code). The WQC Program currently issues the WQC for discharges requiring USACE's permits for fill and dredge discharges within waters of the U.S., and also implements the State's wetland protection and hydromodification regulation program under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, Water Code Section 13000, et seq.).

On April 2, 2019, the SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the State; (3) wetland delineation procedures; and (4) procedures for the submittal, review, and approval of applications for WQCs and Waste Discharge Requirements (WDR) for dredge or fill activities. The State Office of Administrative Law (OAL) approved the Procedures on August 28, 2019, and the Procedures became effective May 28, 2020.

Under the Procedures and the State Water Code (Water Code Section 13050[e]), "waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Unless excluded by the Procedures, any activity that could result in discharge of dredged or fill material to waters of the State, which includes waters of the U.S. and non-federal waters of the State, requires filing of an application under the Procedures.

The Porter-Cologne Act is California's statutory authority for the protection of water quality in conjunction with the federal CWA. The Porter-Cologne Act requires the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires dischargers of pollutants or dredged or fill material to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

Local Regulations

The following are the local environmental laws and policies relevant to biological resources.

City of Petaluma General Plan

The following goals and polices from the City of Petaluma General Plan related to biological resources are applicable to the proposed project.

Goal 4-G-1 Protect and enhance biological and natural resources within the UGB.[6]

Policy 4-P-1 Protect and enhance the Petaluma River and its tributaries through a comprehensive river management strategy of the following programs:

A. Fully adopt and incorporate the Goals, Objectives, Policies and Programs of the Petaluma River Access and Enhancement Plan as an integral part of the General Plan 2025. Implement the Petaluma River Access and Enhancement Plan including expanded improvements identified through project specific environmental assessment.
B. Institute and maintain public access to and along the entire length (on one or both sides), of the river while ensuring that natural resources and river dependent industry are protected.
C. Require design review to address the relationship and stewardship of that project to the river or creek for any development on sites with frontage along the river and creeks.
D. Create setbacks for all tributaries to the Petaluma River extending a minimum of 50 feet outward from the top of each bank, with extended buffers where significant habitat

6 "UGB" in Policy 4-P-1 refers to the City's Urban Growth Boundary.

areas, vernal pools, or wetlands exist. Development shall not occur within this setback, except as part of greenway enhancement (for example, trails and bikeways). Where there is degradation within the zone, restoration of the natural creek channels and riparian vegetation is mandatory at time of adjacent development.

E. Facilitate compliance with Phase II standards of the National Pollutant Discharge Elimination System (NPDES) to improve the water quality and aesthetics of the river and creeks.
F. Work with the State Lands Commission, State Department of Fish and Game, the Sonoma County Water Agency, and other jurisdictional agencies on preservation/enhancement of the Petaluma River as a component of reviewing major development along the River.
G. Expand the planting and retention of trees along the upper banks of the river and creeks to reduce ambient water temperature and shade out invasive, non-native species.
H. Revise the Development Code to include:

- Standards for the four management zones that run the entire length of the river: 1) Restoration Zone, 2) Buffer Zone, 3) Preservation Zone, and 4) River Oriented Development Zone. These standards shall be based on the River Plan's text and sections A-A through O-O as augmented by the cross-section needs identified through the XP-SWMM analyses;
- Design review requirements as articulated in the River Plan for any development on sites with frontage along the river or within 300 ft. of the river;
- The use of transfer of development rights (TDR) from portions adjacent to the river to elsewhere on the parcel by allowing property owners an increase in residential densities or in allowable Floor-to-Area Ratio (FAR) and/or smaller/clustered lots to compensate for the loss of development opportunity on land within the Restoration, Buffer, or Preservation zones of the River Plan. The overall development potential on a site shall be consistent with the General Plan. TDRs shall not be applied to lands within the Floodway as there is no development potential within the Floodway.

I. Develop a consistent design for site furniture, a wayfinding system, and educational signage in the PRC and along the creeks and tributaries leading to it to heighten the recognition and value of the river and its ecosystem.
J. Utilize the Parks and Recreation, Water Resources & Conservation, Public Works departments, property owners

(e.g. Landscape Assessment Districts) and/or other appropriate public agencies (e.g. Sonoma County Water Agency) to manage the long term operations, maintenance responsibilities, and stormwater capacity associated with the river and tributary greenways.

K. Prohibit placement of impervious surfaces in the Floodway (i.e. Parking lots, roadways, etc.) with the exception of pathways and emergency access improvements.
L. Continue to implement, where appropriate, flood terrace improvements to reduce localized flooding in concert with habitat enhancement projects.
M. Cooperate with State and Federal agencies to address and/or eradicate issues and environmental problems associated with possible infestation of the midden crab into the Petaluma River and adjacent tributaries.

Policy 4-P-2 Conserve wildlife ecosystems and sensitive habitat areas in the following order of protection preference: 1) avoidance, 2) on-site mitigation, and 3) off-site mitigation.

A. Utilize Technical Memorandum 3: Biological Resources Review as a baseline document, expanding to address project specific impacts.

Policy 4-P-3 Protect special status species and supporting habitats within Petaluma, including species that are State or Federal listed as endangered, threatened, or rare.

A. As part of the development review process, site-specific biological resource assessments may be required to consider the impacts on riparian and aquatic resources and the habitats they provide for invertebrates, fish, amphibians, reptiles, birds, mammals, and plants. If development is located outside these ecologically sensitive regions, no site-specific assessment of biological resources may be necessary. Appropriate mitigation measures to reduce impacts to sensitive habitats and special status species shall be imposed on a project-by-project basis according to Petaluma's environmental review process.
B. Permit mitigation banking as a conditional use in all land use designations along the Petaluma River and its tributaries.

Goal 4-G-2 Promote resource protection within the Petaluma Watershed to conserve grassland habitats, oak woodlands, and other natural resources that are found in areas between the UGB and the Planning Area boundary.

Policy 4-P-4 Continue to support rural land use designations and Agricultural Best Management Practices within the Sonoma County General Plan.

A. Coordinate with Sonoma County's Agricultural Preservation and Open Space District, Permit and Resource Management Department, and Water Agency to protect riparian corridors and critical biological habitats as well as to reduce cumulative impacts on sensitive watershed areas outside of the city limits.
B. Work with County, State and federal agencies to ensure that development within the Planning Referral Area does not substantially affect State or federally listed rare, endangered, or threatened species or their habitats. Require assessments of biological resources prior to approval of any development in or within 300 feet of ecologically sensitive areas.

Policy 4-P-5 Support wetland mitigation and oak woodlands restoration in the unincorporated areas outside the UGB.

Petaluma Implementing Zoning Ordinance

Petaluma IZO Section 17.040 identifies various tree species as being protected, including the following:

- Various oak species in which the diameter at breast height (DBH) is four inches or greater;
- California buckeye with six-inch DBH or greater;
- California bay with 12-inch DBH or greater;
- California or coast redwood 18-inch DBH or greater;
- Heritage trees as defined by Petaluma Municipal Code (PMC) Title 8;
- Significant groves or stands of trees;
- Trees located in riparian corridors;
- Any tree required to be planted or preserved as environmental mitigation or condition of approval for a discretionary development application or other development permit; and
- Trees in the public rights-of-way (ROW).

Pursuant to IZO Section 17.060, the removal, cutting down, or otherwise destruction of a protected tree requires a Tree Removal Permit issued by the City of Petaluma Community Development Department. All replacement trees must be the same native species as those removed, unless specific approval has been granted by the Community Development Director or the appropriate approval authority. Appraisal value is by using the most recent edition of the "Guide for Plant Appraisal", published by the Council of Tree and Landscape Appraisers. Trees must be replaced on the development site or in reasonable proximity, as required by the approving authority through the development review process or as approved by the Community Development Director during the review process for obtaining a Development Permit.

4.1.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to biological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if the proposed project would result in the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

Issues Not Discussed Further

The Initial Study prepared for the proposed project (see Appendix A of this EIR) determined that development of the proposed project would result in no impact related to the following:

- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

For the reasons cited in the Initial Study (Section IV, Biological Resources), the potential impact associated with the above is not analyzed further in this EIR.

Method of Analysis

The information presented in this chapter is primarily based on the BRA prepared for the proposed project by Montrose Environmental, as well as the Tree Protection and Removal Plan prepared by Urban Forestry Associates, Inc., which are discussed further below.

Biological Resources Assessment

The analysis within the BRA (see Appendix C of this EIR) is based on a preliminary data review, field surveys of the study area, and a PJD and ARD, which are detailed further below.

Literature Review

A list of special-status plant and wildlife species with potential to occur within the study area was developed as part of the BRA through queries of the following sources (see Attachments A and B of the BRA):

- USFWS list of special-status species with the potential to occur on and near the project site;
- USFWS Critical Habitat Mapper;

- NOAA Critical Habitat Mapper;
- NOAA Fisheries/NMFS Essential Fish Habitat Mapper;
- CNDDB query of special-status species with the potential to occur within a five-mile radius of the project site;
- CNPS query of special-status species known to occur in the Petaluma River, Petaluma, Sears Point, San Geronimo, Novato, Cotati, Sonoma, Petaluma Point, and Glen Ellen 7.5-minute USGS topographical quadrangles;
- USFWS National Wetlands Inventory mapper for the project site;
- California Aquatic Resources Inventory;
- Custom Soil Resource Report of the project site from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS);
- Figure 3.8-1 (Habitat Areas and Special Status Species) of the Petaluma General Plan (see Figure 4.1-3); and
- Aerial photography of the project site and surrounding area through Google Earth and Environmental Data Resources, Inc.

Field Surveys

Montrose Environmental conducted biological resource surveys of the project site on April 15, June 15, July 31, 2020, April 29, 2022, and May 17, 2023. Surveys were conducted by walking meandering transects throughout and around the project site. Data was collected through a Trimble GeoXH handheld global positioning system (GPS) receiver. Survey goals consisted of identifying habitat types, sensitive habitats, potential wetlands and waters of the U.S., plant and wildlife species, special-status species, and wildlife corridors. Sensitive habitats included those that are designated by CDFW, considered by the appropriate agency to be communities of limited distribution, or are considered waters of the U.S. or State by regulatory agencies.

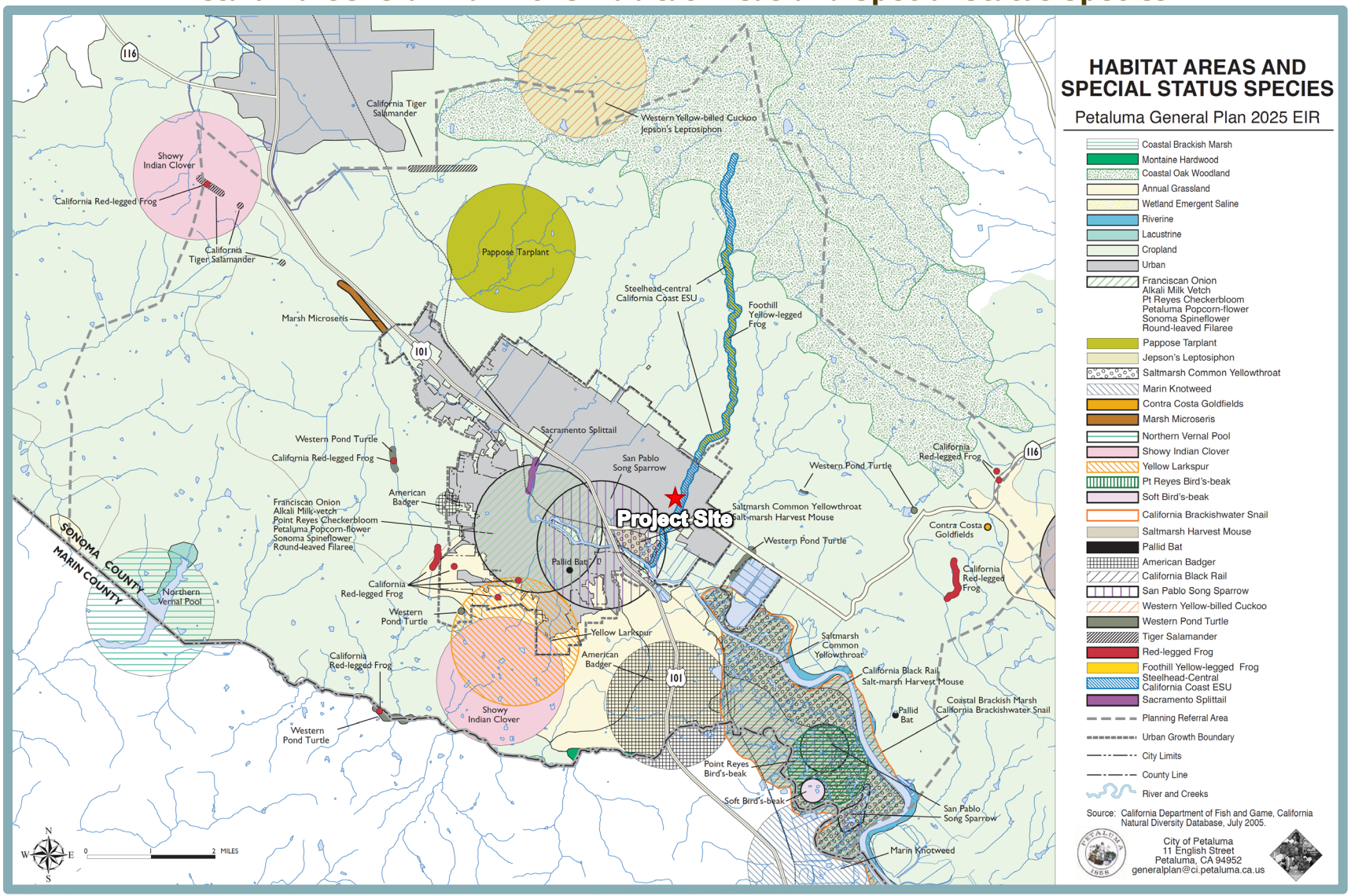
As part of the biological resources surveys, habitat requirements of special-status species were compared to habitats present on and adjacent to the project site based on survey observations, desktop research data, and aerial photographs. Wildlife species were identified to the lowest taxonomic level possible. Evidence of wildlife dens, nests, or burrows, if present, were assessed to identify potentially occurring wildlife species on the project site. Species and habitat types encountered were classified using CDFW's Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities, the Botanical Survey Guidelines of the California Native Plant Society, and The Jepson Manual.

Aerial photographs were also reviewed to assess habitats surrounding the project site for potential wildlife movement or wildlife corridors. Field methodology for identifying corridors for movement included searching for game trails or habitat that would favor movement of wildlife or potential gene flow. Potential barriers were also reviewed to determine if they could prevent or direct movement to particular areas.

Preliminary Jurisdictional Delineation and Aquatic Resources Delineation

A protocol-level aquatic resources survey was conducted as part of the BRA by Montrose Environmental on April 15, 2020 (see Appendix C of this EIR). An additional survey was conducted by Montrose Environmental on June 15, 2020 and November 23, 2021.

Figure 4.1-3
Petaluma General Plan 2025 Habitat Areas and Special Status Species



The aquatic resources delineation report was conducted in accordance with the USACE Minimum Standards for Acceptance of Aquatic Resources Delineation Reports, Corps of Engineers Wetland Delineation Manual, Field Guide to Wetland Delineation, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook, A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, and the Classification of Wetlands and Deepwater Habitats of the United States.

The boundaries of wetlands and other potential waters of the U.S. were delineated through aerial photograph interpretation and standard field methodologies (i.e., paired data set analyses), and all wetland data were recorded on Wetland Determination Data Forms – Arid West Region. A color aerial photograph was used in the field to assist with delineating the limits of aquatic resources. Munsell Soil Color Charts were used in the field to identify hydric soil features.

Prior to the surveys, a background records search was conducted using the following sources:

- Color aerial photography of the study area and vicinity, including map of the potential inundation area;
- Soil survey maps and unit descriptions from the NRCS;
- Hydric soil information; and
- USFWS National Wetlands Inventory

During the 2020 and 2021 field surveys, Montrose Environmental walked meandering transects throughout the study area to determine locations of potential wetlands and waters of the U.S. The Creek was examined to determine whether diagnostic characteristics of streams, including OHWMs, bed and bank, and evidence of ongoing water-driven erosion and deposition were evident at locations. A GPS handheld unit (Trimble GeoXH) with submeter accuracy was used in the field to collect sample points and demarcate wetlands and other water features.

Locations of wetlands within the study area were determined based on the following three parameter criteria, as described in the USACE Arid West Regional Guide:

- The majority of dominant plant species are wetland associated species;
- Hydric soils are present; and
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season.

The aforementioned three criteria are used as evidence that an area experiences saturated conditions during the growing season for a minimum of two weeks in an average year. Other evidence may be used to support the conclusion in the professional judgement of the delineators. For identification of water bodies other than wetlands that are subject to federal jurisdiction, two principle field characteristics were evaluated: 1) the presence of a bed and bank; and 2) the presence of an OHWM. Other characteristics that were noted, where possible, included a description of the hydrologic feature type and length. USACE regulations (33 CFR Part 328) were consulted to determine if identified water bodies constitute waters of the U.S.

Subsequent to the analysis completed by Montrose, an ARD was conducted by Bargas Environmental Consulting on March 5, 2024 (see Figure 4.1-2) (included as Appendix F to the BRA). The ARD was conducted in accordance with the USACE Minimum Standards for Acceptance of Aquatic Resources Delineation Reports, A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, and the Classification of Wetlands and Deepwater Habitats of the United States. The boundaries of wetlands and other potential waters of the U.S. were delineated through aerial photograph interpretation and queries of the USDA NRCS Web Soil Survey and USFWS National Wetlands Inventory. Wetland boundaries within the study area were surveyed and mapped using GPS technology. Wetlands were mapped by walking along the outer edges of wetted areas. Data was overlain on an aerial photograph provided by Esri ArcGIS World Imagery. The Esri data and GIS software were used to calculate the acreage of the polygon. Mapping requirements, as set forth by USACE Updated Map and Drawing Standards for the South Pacific Division Regulatory Program and the USACE Minimum Standards for Acceptance of Aquatic Resources Delineation Reports, were followed.

Tree Protection and Removal Plan

Urban Forestry Associates, Inc. conducted site visits on March 4 and October 14, 2021; April 6, 2022; and May 17 and October 25, 2023 to evaluate trees in the project site, along the riparian zone near the Creek, and trees on adjacent properties with driplines extending into the project site (see Appendix D of this EIR). In response to requests provided at a site visit with several resource agencies, the October 2023 fieldwork included a more-involved survey of trees one inch in diameter or larger near the proposed bridge connection that would cross the Creek and proposed outfall locations.

Consistent with Petaluma IZO Section 17.070, trees in/near the development footprint with a DBH measuring four inches or larger were evaluated and identified with metal numbered tags corresponding to the inventory. Trees one inch in diameter or larger in the Creek riparian zone were also assessed. The health, structure and form of the trees were assessed and adapted to conform with a numerical rating system which combines those ratings into a single condition rating. Condition ratings were assessed on a scale of 1 to 5, with 1 representing poor condition and 5 representing good condition.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to biological resources is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.1-1 Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

According to the records search conducted as part of the BRA, 63 special-status plant species have the potential to occur in the greater vicinity of the study area. However, based on literature review and biological resources plant surveys conducted during the blooming periods of the foregoing species in 2020, 2022, and 2023, only three of the species have potential to occur within the project site (congested-headed hayfield tarplant, Sanford's arrowhead, and Pacific Grove clover), as the site lacks suitable

habitat to accommodate all other special-status plant species identified as having potential to occur within the greater project region. Existing on-site residential and agricultural land management practices and associated disturbance reduces the potential for congested-headed hayfield tarplant, Sanford's arrowhead, and Pacific Grove clover to occur on-site to a low level. Furthermore, the 2020, 2022, and 2023 field surveys did not identify occurrences of the three special-status plant species within the study area.

Special-status plants could become established within the vegetation communities proposed for disturbance in the interim between surveys/analysis and construction, which could result in potential impacts during construction of the proposed project, including to congested-headed hayfield tarplant, Sanford's arrowhead, and Pacific Grove clover.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measure 4.1-1 shall be required, which necessitates that preconstruction special-status plant surveys be conducted during the blooming season by a qualified biologist. In the event that special-status plants are identified within the study area, the mitigation measure requires implementation of additional protective measures. With implementation of Mitigation Measure 4.1-1, the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-1 *Prior to initial ground-disturbing activities, special-status plant surveys shall be conducted by a qualified biologist in areas proposed for disturbance during the blooming season in accordance with the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants, the CNPS Botanical Survey Guidelines of the California Native Plant Society, and CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. A report summarizing the results of the special-status plant surveys shall be submitted for review and approval to the City of Petaluma Community Development Department. If special-status plant species are not found, further mitigation shall not be required.*

If special-status perennial species are found within the proposed impact area, such as Sanford's arrowhead, the plants shall be dug up and transplanted into a suitable avoided area on-site (or elsewhere as appropriate to facilitate greatest success of transplanting) prior to construction. If the plant found is an annual, such as Pacific Grove clover, then mitigation shall consist of collecting seed-bearing soil and spreading

it into a suitable constructed wetland at a mitigation site. If special-status plants would be impacted, as determined by a qualified biologist, a mitigation plan shall be developed and submitted for review and approval to the City of Petaluma and California Department of Fish and Wildlife (CDFW). Mitigation for the transplantation and/or establishment of rare plants shall result in no net loss of individual plants after a five-year monitoring period.

4.1-2 Have a substantial adverse effect, either directly or through habitat modifications, on western bumble bee. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As previously discussed, western bumble bee is a generalist forager that will visit and pollinate a variety of flowering plants, including agricultural crop production plants. The species also nests underground in abandoned rodent burrows or other cavities. The project site contains suitable foraging habitat within the annual grassland and in openings in the riparian and riverine habitats. In addition, although burrows suitable for western bumble bee nesting were not observed on-site during the biological resources surveys conducted as part of the BRA, in the event that rodents colonize the project site in the interim between the ceasing of existing residential and agricultural land management practices and commencement of project construction, burrows suitable to accommodate nesting western bumble bees could occur on-site.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (western bumble bee), which is identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Therefore, a ***significant*** impact could occur. In order to address the potentially significant direct impact to the western bumble bee, Mitigation Measure 4.1-2(a) shall be required, which necessitates completion of preconstruction surveys by a qualified biologist and additional protective measures if western bumble bees are identified. Additionally, to address indirect impacts resulting from habitat modification if western bumble bees are identified on-site, Mitigation Measure 4.1-2(b) shall also be required, which necessitates submittal of a revised landscaping plan that include species known to benefit the western bumble bee. With implementation of Mitigation Measures 4.1-2(a) and 4.1-2(b), the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-2(a) *If feasible, initial ground-disturbing activities associated with the proposed project (e.g., grading, vegetation removal, staging) shall take place between September 1 and March 31 (i.e., outside the colony active period) to avoid potential impacts on western bumble bee. If completing all initial ground-disturbing activities between September 1 and March 31 is not feasible, then at a maximum of 14 days prior to the commencement of construction activities, a qualified biologist with 10*

or more years of experience conducting biological resource surveys within California shall conduct a preconstruction survey for western bumble bees in the area(s) proposed for impact.

The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65 degrees Fahrenheit and 90 degrees Fahrenheit, with low wind and zero rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day forecast and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact, and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources. Suitable floral resources for western bumble bee include species in the following families: Asteraceae, Fabaceae, Rhamnaceae, and Rosaceae, as well as plants in the genera Eriogonum and Penstemon.

At a minimum, preconstruction survey methods shall include the following:

- *Search areas with floral resources for foraging western bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging western bumble bees are present;*
- *If western bumble bees are observed, watch any special-status western bumble bees present and observe their flight patterns. Attempt to track their movements between foraging areas and the nest;*
- *Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat;*
- *If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of a minimum of four inches to assist with locating the nest;*
- *Look for concentrated western bumble bee activity;*
- *Listen for the humming of a nest colony; and*
- *If western bumble bees are observed, attempt to photograph the individual and identify it to species.*

The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed western bumble bee activity, a description of any vegetation removed to facilitate the survey,

and their determination of if survey observations suggest a western bumble bee nest(s) may be present or if construction activities could result in take of western bumble bee. The report shall be submitted to the City of Petaluma Community Development Department prior to the commencement of construction activities.

If western bumble bees are not located during the preconstruction survey, then further mitigation or coordination with the CDFW is not required.

If any sign(s) of a bumble bee nest is observed, and if the species present cannot be established as a common bumble bee, then construction shall not commence until either (1) the bumble bees present are positively identified as common (i.e., not a western bumble bee), or (2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include, but not be limited to, waiting until the colony active season ends, establishment of nest buffers, or obtaining an Incidental Take Permit (ITP) from CDFW.

If western bumble bees are located, and after coordination with CDFW take of western bumble bees cannot be avoided, the project applicant shall obtain an ITP from CDFW, and the applicant shall implement all conditions identified in the ITP. Mitigation required by the ITP may include, but not be limited to, the project applicant translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.

4.1-2(b) *If western bumble bees are identified on-site by a qualified biologist, the following provisions shall be implemented to offset the loss or disturbance of foraging habitat (native forbs and shrubs): plant species that are known nectar sources of the western bumble bee shall be replaced at a 2:1 ratio, or as otherwise recommended by a qualified biologist and CDFW, and shall be included in a revised landscaping plan. The revised landscaping plan shall be submitted to the City of Petaluma Community Development Department for review and approval prior to commencement of construction activities. Plant species shall be sited in concentrated locations selected in consultation with a qualified biologist and CDFW, as necessary, to ensure the long-term survival of such plants and to limit disturbance throughout project operation. Plant species known to benefit the western bumble bee include, but are not limited to, Asteraceae, Fabaceae, Rhamnaceae, and Rosaceae, as well as plants in the genera Eriogonum and Penstemon. If western bumble bee are not identified on-site, the requirements of this measure shall be limited to the inclusion of native plant species in the aforementioned taxonomic families within the project landscaping plan, to the satisfaction of the City of Petaluma Community Development Department.*

4.1-3 Have a substantial adverse effect, either directly or through habitat modifications, on anadromous fish. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

According to the BRA, a CDFW Stream Assessment found that the Creek provides suitable fish habitat for anadromous species. In addition, steelhead have been observed in the Creek, as recorded in CNDDB, as well as by the United Anglers of Casa Grande, Inc. Furthermore, the Creek, which runs through the southeastern portion of the study area, is designated by the NOAA Fisheries/NMFS as critical habitat for steelhead. It should be noted that the Creek is also designated by NOAA Fisheries/NMFS as EFH for Pacific salmon; although, the species was not observed during the course of the surveys conducted as part of the BRA.

The proposed project would include only limited construction within 50 feet of the Creek channel, which would be restricted to installation of the proposed off-site pedestrian bridge, access to the bridge, and stormwater outfall structures. Consistent with General Plan Policy 4-P-1, which prohibits development from occurring within 50 feet of any tributary of the Petaluma River, all new dwellings would be located beyond the 50-foot setback from the top of the Creek bank. Nevertheless, as discussed further in the Project Description chapter of this EIR, the proposed pedestrian bridge would include installation of bridge abutments, steel framing, wood decking, and 90 cubic yards (CY) of net fill for the abutment fill slopes. Thus, in the event that project-related disturbance occurs within the Creek or construction activities proximate to the Creek result in discharges of erosion/sedimentation to the Creek waters, project construction activities conducted during the known salmonid winter and fall runs (i.e., the months of November to April for the project region) could impact migrating steelhead. Additionally, depending on the water level within the Creek, project construction activities could indirectly result in downstream impacts related to erosion and sedimentation. Thus, the BRA concluded that the proposed project could have a substantial adverse effect on steelhead.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (steelhead) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and a ***significant*** impact could occur. In order to address the potentially significant impact to steelhead, Mitigation Measures 4.1-3(a) through 4.1-3(c) shall be required, which necessitate that construction activities within 50 feet of the Creek occur outside the known salmonid winter and fall runs and incorporation of standard erosion-control best management practices (BMPs), and compliance with CFGC Section 1600 et seq. and the CWA. With implementation of Mitigation Measures 4.1-3(a) through 4.1-3(c), the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.1-3(a) *Construction activities within 50 feet of Adobe Creek (Creek) shall be conducted outside of the known salmonid winter and fall runs (known to occur from November to April for the project region). Prior to issuance of grading permit, the foregoing provision shall be noted on the final improvement plans, which shall be subject to review and approval by the City of Petaluma Community Development Department. The City shall also coordinate with the National Oceanic and Atmospheric Administration (NOAA) Fisheries/West Coast Region to obtain its concurrence that the language is acceptable, prior to approval of final improvement plans.*

4.1-3(b) *Prior to the commencement of construction, standard erosion-control best management practices (BMPs) shall be implemented around the proposed disturbance areas. A qualified biologist shall be present during installation of the BMPs to ensure special-status wildlife species are not harmed during installation or become entrapped within the disturbance area. The BMPs shall be included in the final improvement plans and subject to review and approval by the City of Petaluma Community Development Department. The City shall also coordinate with the NOAA Fisheries/West Coast Region to obtain its concurrence that the BMPs are acceptable, prior to approval of final improvement plans.*

4.1-3(c) *Implement Mitigation Measures 4.1-7(a) and 4.1-7(b) and Mitigation Measures 4.1-8(a) through 4.1-8(c).*

4.1-4 Have a substantial adverse effect, either directly or through habitat modifications, on foothill yellow-legged frog, California red-legged frog, and northwestern pond turtle. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The Creek, which flows through the southeastern portion of the study area, provides suitable habitat for FYLF and CRLF, as ideal FYLF habitat consists of open, slow-moving perennial streams with rocky or bedrock substrates and small deeper pools, and CRLF breeding sites occur in aquatic habitats such as pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. In addition, a Stream Assessment completed by CDFW on the Creek in 2008 noted multiple observations of FYLF and CRLF within the project vicinity. Northwestern pond turtle could also occur within the Creek, as the species is found along ponds, marshes, rivers, streams, and irrigation ditches that typically have muddy or rocky bottoms and grow aquatic vegetation. Furthermore, the biological surveys completed as part of the BRA observed potential northwestern pond turtle habitat along the Creek.

Although direct work is not anticipated to occur within the Creek channel as part of the proposed project, as previously discussed, the proposed bridge connection would include installation of bridge abutments, steel framing, wood decking, and 90 CY of net fill. In addition, the proposed storm drain system would include installation of two

stormwater outfall structures along the Creek bank. As such, the limited disturbance within the riparian corridor as part of installation of the bridge connection could result in potential impacts to FYLF, CRLF, and northwestern pond turtle, if the foregoing species are present.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (FYLF, CRLF, and northwestern pond turtle) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measures 4.1-4(a) through 4.1-4(g) shall be required, which necessitate preconstruction surveys for FYLF, CRLF, and northwestern pond turtle, Section 7 consultation with the USFWS if construction would occur within the OHWM, environmental awareness training, and other measures to prevent adverse effects to the foregoing species. With implementation of Mitigation Measures 4.1-4(a) through 4.1-4(g), the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.1-4(a) *Within 14 days prior to the commencement of construction (including tree trimming and removal), a qualified biologist approved by the U.S. Fish and Wildlife Service (USFWS) and/or CDFW shall conduct preconstruction surveys of all areas proposed for ground disturbance within suitable habitats for special-status species, including foothill yellow-legged frog (FYLF), California red-legged frog (CRLF), and northwestern pond turtle. The preconstruction surveys shall occur in areas within and adjacent to the project site to determine if the foregoing special-status species are present and shall not be completed more than five days prior to the initiation of grading activities in habitats where FYLF, CRLF, and northwestern pond turtle have potential to occur. A report summarizing the results of the preconstruction surveys shall be submitted for review and approval to the City of Petaluma Community Development Department.*

If any special-status species are found, the qualified biologist shall contact the CDFW (and USFWS) to determine whether relocation and/or additional exclusion buffers are appropriate. If CDFW approves relocating the animal(s), the qualified biologist shall be given sufficient time to move the animal(s) from the work site before work construction activities begin.

Following construction activities, results from any sensitive species surveys shall be documented in a memorandum and provided to the City of Petaluma Community Development Department within 30 days following the end of construction activities, or sooner, if requested by City staff.

4.1-4(b) *If disturbance is to occur within the ordinary high-water mark (OHWM) of the Creek, the project applicant shall complete Section 7 consultation with the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries/National Marine Fisheries Service (NMFS) for potential impacts to federally listed species, prior to the commencement of construction. Proof of compliance with the foregoing provisions shall be documented and submitted for review and approval to the City of Petaluma Community Development Department.*

4.1-4(c) *Within 14 days prior to the commencement of construction activities, exclusionary fencing shall be installed along the work area boundary, as determined by a qualified biologist. Exclusionary fencing shall act as a barrier to keep special-status species from entering the work area. An Exclusionary Fence Plan shall be prepared by a qualified biologist and subject to review and approval by USFWS/CDFW and the City of Petaluma Community Development Department. The Exclusionary Fence Plan shall include, but not necessarily be limited to, the following components:*

a. *Areas approved for grading and clearing shall be delineated with suitable fencing materials and dimensions (such as temporary high-visibility orange-colored fence or silt fence at least four feet in height, flagging, or other barriers and buried to a depth of at least four inches) to act as a barrier to keep special-status species from entering the project site. Signs shall be posted that clearly state that construction personnel and equipment are excluded from the marked area. The fencing shall be inspected and approved by a qualified biologist and maintained daily until all construction activities are complete. The fencing shall be removed only when all construction equipment is not on-site any longer. Construction activities shall not take place outside the delineated project site.*
b. *To avoid attracting predators, food-related trash shall be kept in closed containers and removed daily from the exclusion zone.*
c. *At the end of each day, all construction-related holes or trenches deeper than one foot shall be covered to prevent entrapment of special-status species.*
d. *Prior to the commencement of daily construction activities, all conduits and pipes shall be inspected for the presence of animals. Removal of any animals shall be done in consultation with the approved qualified biologist.*
e. *Prior to the commencement of construction, any vegetation removed prior to the start of construction activities shall be placed away from sensitive species exclusion areas so that cut vegetation does not remain once exclusionary fencing is installed. All removed non-native, invasive vegetation shall be discarded off-site and away from aquatic resources to prevent reseeding.*

4.1-4(d) *Within 14 days prior to the commencement of construction, a qualified biologist shall conduct an Environmental Awareness Training session to familiarize all construction personnel with identification of special-status species and associated habitats, general provisions and protections afforded by the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA), measures implemented to protect such species, actions to be taken if protected species are observed on-site, and a review of project site boundaries and job site maintenance protocols (i.e., worker-generated trash, worker vehicle and construction equipment parking, and disposal of construction wastes). All personnel shall sign an affidavit acknowledging participation in the training and understanding species legal status, penalties for violations, and all protective measures. A wallet-sized card or fact sheet handout shall be distributed to all crews on-site. Proof of completion of the training for all on-site personnel shall be kept on-site and submitted for review and approval to the City of Petaluma Community Development Department.*

4.1-4(e) *During project construction, grading activities shall cease a half-hour before sunset and shall not commence prior to a half-hour before sunrise. Grading activities shall be prohibited during rain events that meet the following conditions: within 24 hours of events predicted to deliver more than 0.2-inch of rain and within 24 hours after rain events exceeding 0.2-inch in measurable precipitation. Grading shall not occur after 0.5-inch of rain has occurred after November 1 in the year construction grading work is occurring unless a one-week extension based on fair weather is approved by the City of Petaluma, CDFW, and the Regional Water Quality Control Board (RWQCB). The foregoing provisions shall be noted on the final improvement plans, which shall be verified by the City of Petaluma Community Development Department.*

4.1-4(f) *Prior to the commencement of any effort to advertise or promote the sale of any of the proposed dwelling units, all promotional materials, deeds/rental agreements, etc., shall include information that informs all tenants that dogs are to be leashed at all times within development boundaries, including within 50 feet of the riparian habitat within the study area, in order to ensure that sensitive resources and riparian habitat are preserved. Proof of compliance with the foregoing provision shall be submitted for review and approval to the City of Petaluma Community Development Department.*

4.1-4(g) *Prior to the commencement of construction, the project applicant shall include a design sheet of the proposed trash enclosure and receptacles as part of the improvement plan submittal. The design sheet shall note that trash receptacles must be secured within enclosures that exclude mesopredators (e.g., racoons and coyotes) to avoid attracting and subsidizing such predators. On-site trash enclosures and receptacles shall also be routinely maintained. Inclusion of the design sheet shall*

be subject to review and approval by the City of Petaluma Community Development Department.

4.1-5 Have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk and other nesting birds and raptors protected under the MBTA and CFGC. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As previously discussed, marginally suitable foraging habitat for Swainson's hawk, a State threatened species, occurs in the on-site open grassy area. Swainson's hawk feed primarily on small mammals, birds, and insects, and typical foraging habitat includes annual grasslands, alfalfa, and other dry farm crops that provide suitable habitat for small mammals. While the 5.2-acre project site includes approximately 4.15 acres of annual grassland, according to the 1994 Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California, CDFW does not recommend mitigation to address the loss of Swainson's hawk foraging habitat for projects in areas that have less than five acres of foraging habitat and are surrounded by existing urban development. Although the City of Petaluma is not located in the Central Valley, the CDFW 1994 Staff Report provides biologically based guidance for use by other jurisdictions, when determining implications of land development projects on Swainson's hawk. Given that the site's annual grassland is less than five acres, and the project site is substantially surrounded by urban development, it is reasonable to conclude, based on CDFW's guidance, that the project site should be considered a small disjunct parcel of foraging habitat that does not warrant mitigation to address loss of Swainson's hawk foraging habitat. In addition, methodology developed by CDFW in 2006 recognizes that Swainson's hawk foraging habitat value is greater in large expansive open spaces and agricultural areas than in areas that have been fragmented by agricultural-residential or urban development. Given the project site's location adjacent to Casa Grande Road and existing urban uses to the north and south, the site's Swainson's hawk foraging habitat value is low. Additionally, as previously discussed, the project site currently includes routine residential and agricultural land management practices, which further reduces the potential for Swainson's hawk to forage on-site. With respect to nesting, given the high levels of disturbance within the project site, Swainson's hawks are unlikely to nest on-site and nests were not observed during the reconnaissance surveys. However, the possibility of nesting Swainson's hawks occurring on-site cannot be entirely ruled out.

Similarly, the vegetation communities within the project site and proposed off-site areas provide suitable nesting habitat to accommodate nesting songbirds and other raptors protected under the MBTA and CGFC. As previously discussed, 72 trees are located within the study area and nest(s) could potentially be established prior to project construction. Should construction activities occur during the nesting season, the possibility remains that such activities could result in potential impacts to protected nesting songbirds and raptors if construction activities were to cause nest abandonment and/or loss of reproductive efforts, or direct mortality if active nests occur within the trees in the study area proposed for removal. Therefore, without the completion of preconstruction surveys to confirm the absence of nesting Swainson's

hawk and other nesting songbirds and raptors, the proposed project could result in a substantial adverse effect on the foregoing species.

Based on the above, the project could have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk and other nesting songbirds and raptor species protected under the MBTA and CFGC. Thus, a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measure 4.1-5 shall be required, which recommends that site preparation activities take place outside of the nesting season and necessitates preconstruction surveys and additional protective measures if such activities do occur within the nesting season. With implementation of Mitigation Measure 4.1-5, the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.1-5 *During project construction, site preparation activities, including tree trimming and removal, should occur between September 1 and January 31, outside of the bird nesting season. If vegetation removal or construction begins between February 1 and August 31, preconstruction nesting bird surveys shall be conducted by a qualified biologist within seven days prior to vegetation removal or ground-disturbing activities to determine the presence or absence and location of nesting bird species. A report summarizing the results of the preconstruction nesting bird surveys shall be submitted for review and approval to the City of Petaluma Community Development Department. If a lapse in construction activity occurs for more than seven consecutive days or if construction activity is phased at the work site, preconstruction and nesting bird surveys shall be repeated.*

If active nests are present within 500 feet of construction areas, temporary protective construction exclusion zones shall be established by a qualified biologist in order to avoid direct or indirect mortality or disruption of the birds, nests, or young. The appropriate buffer distance shall be dependent on the species, surrounding vegetation, and topography and shall be determined by a qualified biologist, but shall be a minimum of 500 feet for raptors and 100 feet for songbirds. Exclusion zones shall remain in place until all young have fledged or until the nest has been naturally abandoned or predated. Work may proceed if active nests are not found during surveys or once nests are determined by a qualified biologist to be inactive.

The non-disturbance buffers may be reduced if a smaller, sufficiently protective buffer is approved by the City after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, and nest concealment (i.e., whether visual or acoustic barriers occur between the proposed activity and the nest). A qualified

biologist may visit the nest, as needed, to determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season. If the nest buffer is reduced but construction activities cause a nesting bird to vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the agitated behavior. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the City.

Cleared vegetation during the nesting season shall be collected and transported off-site during each week to prevent birds from nesting in vegetative debris.

Results from any survey for nesting birds shall be documented in a memorandum and provided to the City of Petaluma Community Development Department within 30 days following the end of construction activities.

4.1-6 Have a substantial adverse effect, either directly or through habitat modifications, on pallid bat. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Pallid bat occurs in a wide variety of habitats including grasslands, shrublands and chaparrals, woodlands, and forests, and will establish daytime roosts in caves, crevices, mines, large hollow trees, and unoccupied buildings. Although on-site habitat to support pallid bat is marginal, three occurrences of the species have been documented within five miles of the project site. In addition, pallid bats may roost in riparian trees present on-site and within the proposed off-site improvement areas and forage over the open grassy area. Furthermore, individual trees with appropriately sized cavities may provide suitable habitat for roosting. Although no sign of pallid bat roosts was observed during the field surveys conducted as part of the BRA, individual trees have not been evaluated for roost potential. Thus, should pallid bat be roosting in trees or structures proposed for removal as part of the proposed project, the foregoing species could be injured or killed during project construction.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (pallid bat) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measure 4.1-6 shall be required, which necessitates completion of a preconstruction survey of suitable habitat for special-status bats, and if warranted, additional protective measures for identified special-status bats. With implementation of Mitigation Measure 4.1-6, the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-6 *Prior to the commencement of construction, a qualified biologist shall conduct a preconstruction survey of suitable habitat for special-status bats, including existing structures proposed for demolition or removal, that could support special-status bats, at most, 14 days prior to initiation of ground disturbance, including tree trimming and removal. A report summarizing the results of the preconstruction survey shall be submitted for review and approval to the City of Petaluma Community Development Department. If a lapse in construction activity occurs for more than seven consecutive days or if construction activity is phased at the work site, preconstruction bat surveys shall be repeated.*

If special-status bat roosts are observed, ground disturbance within 50 feet of roosts shall be restricted to between August 31 and October 15 and between March 1 and April 15 to avoid hibernation and rearing periods. Removal of potential suitable bat roost trees shall occur over a two-day phased process with a qualified biologist present.

In addition, if bats or evidence of bat roosting are observed, exclusionary fencing and/or construction activity avoidance limits shall be put in place. Exclusion devices may include features such as one-way exits from roost habitat and shall be installed by a qualified biologist, in consultation with CDFW, and shall not occur outside of the date ranges listed above to avoid hibernation or rearing periods.

Following construction activities, results from any sensitive bat species survey shall be documented in a memorandum, written by the qualified biologist, and provided to the City of Petaluma Community Development Department within 30 days following the end of construction activities.

4.1-7 Have a substantial adverse effect on any riparian habitat or other Sensitive Natural Community identified in local or regional plans, policies, regulations or by the CDFW or USFWS. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Riparian habitats are lands that occur along watercourses and water bodies, with typical examples including streambanks and floodplains. Riparian habitats are distinctly different from surrounding lands, due to a riparian habitat's unique soil and vegetation characteristics, which are strongly influenced by the presence of water. The project site does not include riparian land cover. However, as previously discussed, the study area contains 1.22 acres of riparian habitat and 0.22-acre of riverine habitat, associated with the Creek, both of which are designated as Sensitive Natural Communities.

As previously discussed, the proposed off-site bridge connection over the Creek would include installation of bridge abutments, steel framing, wood decking, and 90 CY of net fill for the abutment fill slopes, including approximately 78 CY placed below the estimated 100-year floodplain base flood elevation. In addition, the proposed project includes an off-site public multi-use pathway that would connect to the bridge and would be 10 feet in width and installed along the project site's eastern boundary, west of the Creek. On the east side of the Creek, an access connection from the bridge to the existing informal pathway would also be installed. Furthermore, the proposed storm drain system would include installation of two off-site stormwater outfall structures along the Creek bank. Installation of the off-site bridge, bridge connections, off-site public multi-use pathway, and outfall structures could potentially impact the riparian and riverine habitat areas within the study area. As summarized in Table 4.1-5, according to the BRA, the proposed project is anticipated to impact approximately 0.07-acre of riparian habitat, with no direct modification to the Riverine habitat.

Table 4.1-5
Summary of Impacted Habitat Acres in Study Area

Habitat Type	Total Acres in Study Area	Impacted Acres
Developed/Disturbed	1.29	0.62
Annual Grassland	4.15	3.54
Riparian	1.22	0.07
Riverine	0.22	0.00
Seasonal Wetland	0.09	0.09

Source: Montrose Environmental, 2024.

Impacts to riparian habitat are regulated under CFGC 1600 et seq. Specifically, CFGC Section 1602 requires notification to CDFW before a project commences "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW then reviews the proposed action(s). If CDFW determines that the proposed activity would substantially affect fish and wildlife resources, an LSAA containing measures to protect affected fish and wildlife resources should be required. The LSAA would be comprised of the final mitigation measure(s) and condition(s) mutually agreed upon by CDFW and the project applicant. Additionally, projects that require a LSAA often additionally require a permit from the USACE under Section 404 of the CWA, and/or a water quality certification from the RWQCB under Section 401 of the CWA. In such instances, the conditions of the Section 404 permit, Section 401 Certification, and the LSAA may overlap. Because the proposed project could result in disturbances to the riparian habitat within the study area, the project would be required to comply with the provisions of CFGC Section 1600, et seq. Without compliance, a significant impact could occur.

Based on the above, without compliance with the provisions of CFGC Section 1600, et seq. and Sections 404 and 401 of the CWA (addressed under Impact 4.1-8), the proposed project could have a substantial adverse effect on riparian habitat or other Sensitive Natural Community identified in local or regional plans, policies, regulations or by the CDFW or USFWS, and a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measures 4.1-7(a) through 4.1-7(c) shall be required, which necessitate compliance with CFGC Section 1600, establishment of a 50-foot setback from the study area's riparian vegetation, and compliance with the

CWA. With implementation of Mitigation Measures 4.1-7(a) through 4.1-7(c), the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.1-7(a) *Prior to the commencement of construction, the project applicant shall implement minimization and avoidance measures that may include, but not necessarily be limited to, preconstruction species surveys and reporting, protective fencing around avoided biological resources, worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific stormwater BMPs. Mitigation for impacts to riparian habitat may include, but not be limited to, restoration or enhancement of resources on- or off-site, purchase of habitat credits from an agency-approved mitigation/conservation bank, working with a local land trust to preserve land, or any other method acceptable to CDFW. Mitigation shall result in no net loss of riparian habitat. Prior to the commencement of construction, the project applicant shall apply for a Section 1600 Lake or Streambed Alteration Agreement (LSAA) from CDFW. The project applicant shall comply with any terms and conditions contained within the final LSAA for the proposed project, which may differ from the above. Written verification of the Section 1600 LSAA shall be submitted to the City of Petaluma Community Development Department.*

4.1-7(b) *A 50-foot setback from riparian vegetation shall be established prior to the commencement of grading activities, except for construction of the stormwater outfall facilities, pedestrian bridge connection, and the off-site public multi-use pathway, where a lesser setback shall be established in consultation with a qualified biologist. Construction and staging of vehicles and equipment shall not occur within 50 feet of riparian vegetation and shall be parked only in designated staging areas. Silt fencing shall be installed along the outer edge of the project's disturbance footprint and shall remain during grading activities associated with the proposed project. The foregoing provisions shall be based on recommendations by a qualified biologist, comply with agency approval, and noted on the final improvement plans, which shall be subject to review and approval by the City of Petaluma Community Development Department.*

4.1-7(c) *Implement Mitigation Measures 4.1-8(b) and 4.1-10.*

4.1-8 Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a local, regional, and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. In addition, waters of the U.S. are the oceans, rivers, streams, lakes, creeks, marshes, and wetlands considered jurisdictional under the CWA.

As previously discussed, three seasonal wetlands totaling approximately 0.09-acre occur in the annual grassland in the southern portion of the project site (see Figure 4.1-2). All of the foregoing wetlands would be impacted in their entirety through development of the proposed residences and Basin Retention Area 5. In addition, approximately 621 linear feet of the Creek flows through the study area within 0.22-acre of riverine habitat. While the proposed project is not anticipated to include direct work in the Creek channel or below the OHWM, the ARD has not yet been verified by the USACE, and thus, the OHWM for the Creek has not been definitively established. Project construction activities associated with the proposed bridge connection and stormwater outfall structures could also indirectly result in impacts to the Creek related to erosion and sedimentation.

The USACE, RWQCB, and CDFW have jurisdiction over modifications to stream channels, riverbanks, lakes, and other wetland features. The USACE's jurisdiction is established through the provisions of Section 404 of the CWA, and the jurisdictional authority of the RWQCB is established pursuant to Section 401 of the CWA, which typically requires a WQC when an individual or nationwide permit is issued by the USACE. The RWQCB also has jurisdiction over waters of the State under the Porter-Cologne Water Quality Control Act. As such, the proposed project could be required to obtain a Section 404 permit from the USACE and a Section 401 permit from the RWQCB and could be subject to all the conditions set forth by said permits. Additionally, as discussed further under Impact 4.1-7, the proposed project would be subject to the regulations set forth through CFGC Section 1600, et seq.

Based on the above, without compliance with the CWA and RWQCB, the proposed project could have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means, including indirect impacts. Therefore, a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measures 4.1-8(a) through 4.1-8(c) shall be required, which necessitate a 50-foot setback from the OHWM of the Creek and compliance with Sections 404 and 401 of the CWA. With implementation of Mitigation Measures 4.1-8(a) through 4.1-8(c), the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.1-8(a) *Prior to the commencement of grading activities, a 50-foot setback from the OHWM of the Creek shall be established and noted on the*

improvement plans, except for construction of the stormwater outfall facilities and the off-site public multi-use pathway and bridge, where a lesser setback shall be established in consultation with a qualified biologist and applicable regulatory agencies. Construction and staging of vehicles and equipment shall not occur within the Creek channel. Silt fencing shall be installed along the outer edge of the project's disturbance footprint and shall remain during grading activities. Inclusion of the 50-foot setback from the OHWM of the Creek on the improvement plans shall be subject to review and approval by the City of Petaluma Community Development Department.

4.1-8(b) *Prior to initiation of any ground-disturbing activities, the project proponent shall submit a formal Aquatic Resources Delineation to the USACE for verification purposes and determination as to whether the project activities will require a Clean Water Act (CWA) Section 404 permit. A copy of the USACE's determination shall be submitted to the City of Petaluma Community Development Department. If a Section 404 permit is not required, further mitigation shall not be required. If a Section 404 permit is required, the project proponent shall apply for a Clean Water Act (CWA) Section 404 permit from the USACE. Waters that would be lost or disturbed shall be restored, replaced, or rehabilitated on a "no-net-loss" basis. Habitat restoration, rehabilitation, and/or replacement shall be at a location and by methods acceptable to the USACE. If a Section 404 permit is required, the project applicant shall also apply for a Section 401 water quality certification from the RWQCB prior to the issuance of grading permits and adhere to the certification conditions. A copy of the Section 404 and 401 permits detailing the provisions with which the proposed project must comply shall be submitted to the City of Petaluma Community Development Department.*

4.1-9 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Based on the analysis below, the impact is *less than significant*.

Wildlife corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. Fragmentation also occurs when a portion of one or more habitats is converted into another habitat, such as when woodland or scrub habitat is altered or converted into grasslands after a disturbance, such as fire, mudslide, or grading activities. Wildlife corridors mitigate the effects of fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thereby reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for

individual animals as they move within their home ranges in search of food, water, mates, and other needs.

The project site is bounded to the west by Casa Grande Road, beyond which is the Casa Grande High School. The project site's northern boundary abuts the Casa Grande Senior Apartments, and the southern boundary abuts the Casa Grande Subdivision. The foregoing uses preclude east-west and north-south movement through the project site by migratory terrestrial species. Additionally, fencing occurs along the riparian corridor associated with the Creek and the Casa Grande Subdivision immediately to the southwest, which further prevents use of the site as a migratory corridor. Furthermore, the existing on-site residential and agricultural land management practices and associated disturbance reduces the potential of the project site being used as a native wildlife nursery site.

Although the Creek provides suitable habitat for steelhead and other anadromous species, the proposed project would not result in direct modifications to the Creek channel. While the project would include tree removal and limited disturbance associated with installation of the off-site pedestrian bridge, with incorporation of Mitigation Measures 4.1-7(b) and 4.1-8(a), the project would be required to include a 50-foot setback from the riparian habitat within the study area and the OHWM of the Creek,[7] respectively, which would restrict the staging of vehicles and equipment from occurring within the Creek channel and would ensure construction activities associated with the on-site project components do not occur within the 50-foot setback. Introduction of the pedestrian bridge would introduce associated lighting and facilitate public pedestrian and bicycle crossings over the Creek, which could introduce new noise and lighting effects on special-status fish species. However, the vast majority of public use of the bridge is anticipated to occur primarily during daytime and/or evening hours, ensuring public use of the bridge does not discourage wildlife migration through the riparian corridor during nighttime hours. Because the bridge would not block terrestrial or aquatic wildlife from migrating through the Creek's riparian corridor and through compliance with standard operating hours for use and standard conditions of approval related to light and glare, substantial adverse effects would not occur. Thus, the proposed project would not impede use of the Creek as a migratory corridor for aquatic species.

Based on the above, the proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Thus, the proposed project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

[7] The OHWM would be confirmed through formal delineation required by USACE.

4.1-10 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

A total of 72 trees are located within the on-site and off-site areas proposed for development (see Table 4.1-4). As detailed in Table 4.1-6 and shown in Figure 4.1-4, Figure 4.1-5, and Figure 4.1-6, the proposed project would require permanent removal of 31 trees, including seven unprotected trees outside the riparian dripline and 24 trees within the riparian dripline that are designated as protected by Petaluma IZO Section 17.040.

The 24 protected trees that would require removal are located within the riparian habitat associated with the Creek. With the exception of one protected tree (a California buckeye), which would require removal due to the proposed southerly storm drain, all other protected trees would be removed during construction of the off-site bridge within the City-owned parcel.

In addition, the five protected trees listed below are located in proximity to the off-site bridge and not proposed for removal, but would be subject to pruning as part of installation of the bridge connection and outfall structures.

- Tree #30, California buckeye: The tree would be preserved and protected, but also pruned to create clearance for the bridge connection;
- Tree #31, red willow: The tree would be preserved and protected, but also pruned to create clearance for the bridge connection;
- Tree #53, red willow: The tree would be preserved and protected, but also pruned to create clearance for the bridge connection;
- Tree #64, California buckeye: The tree would be preserved and protected, but also pruned to create clearance for the proposed southern outfall structure.
- Tree #72, Oregon ash: The tree would be preserved and protected, but also pruned to create clearance for the proposed northern outfall structure.

Although the proposed project would include the planting of 73 new trees on-site, which includes trees planted for the purposes of mitigating project impacts to protected trees, pursuant to Petaluma IZO Section 17.060 (see Table 4.1-7), the removal, cutting down, or otherwise destruction of a protected tree requires a Tree Removal Permit issued by the City of Petaluma Community Development Department. In addition, protected trees located in proximity to the off-site bridge and not proposed for removal could be subject to pruning, which would be determined at the time of construction by the project arborist.

Based on the above, without compliance with requirements set forth by Petaluma IZO Section 17.060 to address tree impacts, the proposed project could conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance.

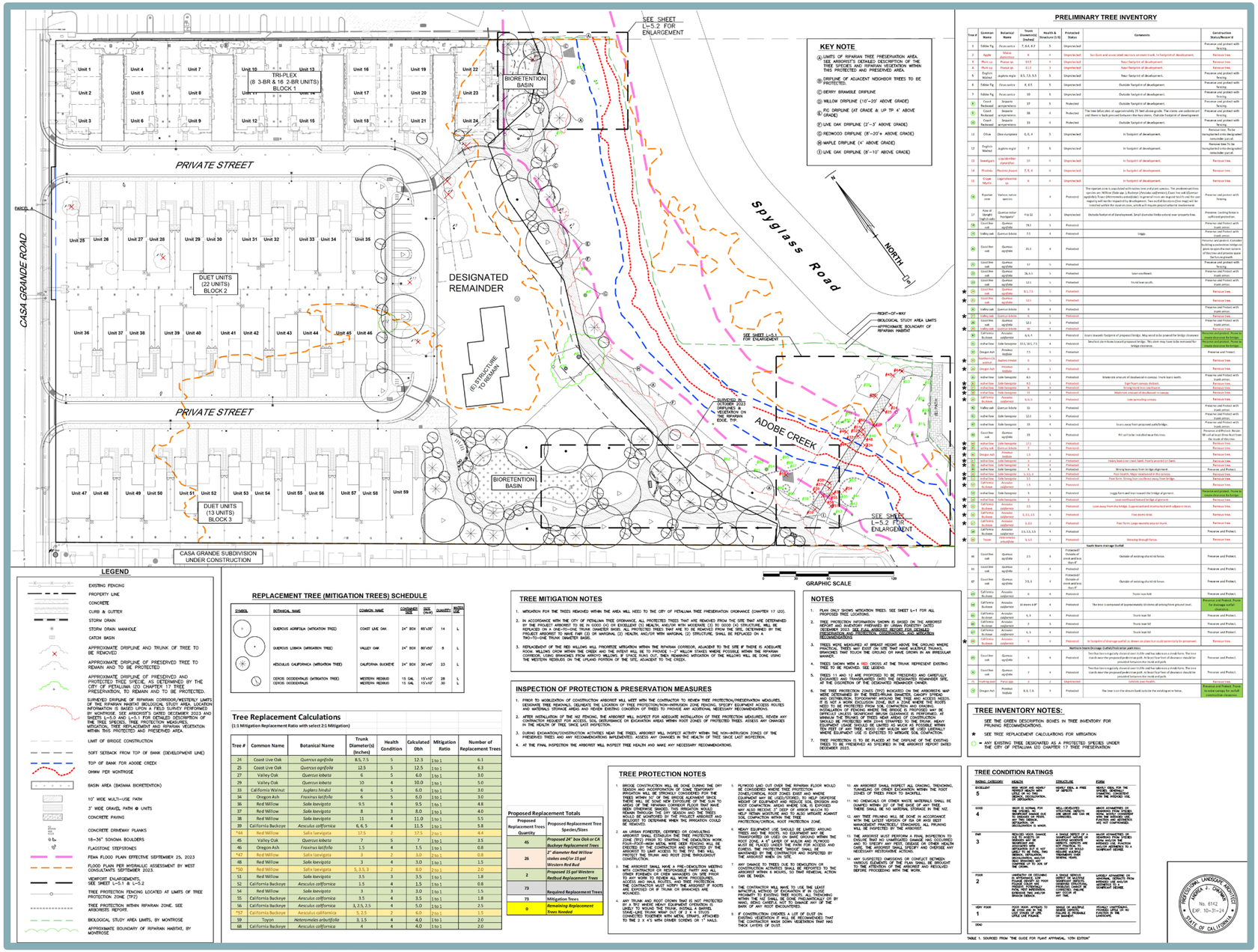
Table 4.1-6
Trees Proposed for Permanent Removal

No.	Common Name	Botanical Name	Trunk Diameter (inches)	Health and Structure (0-5)[1]
Proposed Residential Development Area and Creek Riparian Corridor				
2	Apple	*Malus domestica*	6	4
3	Plum sp.	*Prunus* sp.	14.5	4
4	Plum sp.	*Prunus* sp.	11.5	3
13	Sweetgum	*Liquidambar styraciflua*	14	4
14	Photinia	*Photinia Fraseri*	7, 5, 4	4
15	Crape Myrtle	*Lagerstroemia* sp.	6	4
24	**Coast Live Oak**	***Quercus agrifolia***	**8.5, 7.5**	**5**
25	**Coast Live Oak**	***Quercus agrifolia***	**12.5**	**5**
27	**Valley Oak**	***Quercus lobata***	**6**	**5**
29	**Valley Oak**	***Quercus lobata***	**10**	**4**
33	**Northern California Walnut**	***Juglans hindsii***	**6**	**5**
34	**Oregon Ash**	***Fraxinus latifolia***	**6**	**5**
36	**Red Willow**	***Salix laevigata***	**9.5**	**1**
37	**Red Willow**	***Salix laevigata***	**8**	**3**
38	**Red Willow**	***Salix laevigata***	**11**	**4**
39	**California Buckeye**	***Aesculus californica***	**6, 6, 5**	**4**
44	**Red Willow**	***Salix laevigata***	**17.5**	**2**
45	**Valley Oak**	***Quercus lobata***	**7**	**5**
46	**Oregon Ash**	***Fraxinus latifolia***	**1.5**	**4**
47	**Red Willow**	***Salix laevigata***	**3**	**2**
48	**Red Willow**	***Salix laevigata***	**3**	**4**
50	**Red Willow**	***Salix laevigata***	**5, 3.5, 3**	**2**
51	**Red Willow**	***Salix laevigata***	**3.5**	**3**
52	**California Buckeye**	***Aesculus californica***	**1.5**	**4**
54	**Red Willow**	***Salix laevigata***	**3**	**3**
55	**California Buckeye**	***Aesculus californica***	**3.5**	**4**
56	**California Buckeye**	***Aesculus californica***	**3, 2.5, 2.5**	**4**
57	**California Buckeye**	***Aesculus californica***	**5, 2.5**	**2**
59	**Toyon**	***Heteromeles arbutifolia***	**3, 1.5**	**4**
Southern Storm Drainage Outfall				
68	**California Buckeye**	***Aesculus californica***	**4**	**4**
Northern Storm Drainage Outfall				
71	Fruiting Pear	*Pyrus* spp.	3	2

Note: The Health & Structure column includes a rating for condition, based on The Guide for Plant Appraisal, 10th Edition. The numeric scale ranges from 5 (being the highest) to 0 (the worst condition, dead). Rating 2 (Poor) indicates the tree has a single or multiple serious structural defects and is unhealthy and declining in appearance. Rating 3 (Fair) indicates the tree has a single serious structural defect or multiple moderate defects and reduced vigor. Rating 4 (Good) indicates the tree has minor structural defects that can be corrected and normal vigor. Rating 5 (Excellent) indicates the tree is free of structural defects and has nearly perfect health.

Trees designated as protected pursuant to IZO Section 17.040 are **bolded**.

Figure 4.1-4
Tree Removal and Preservation Plan



PRELIMINARY TREE INVENTORY

Tree #	Common Name	Botanical Name	Trunk Diameter(s) (inches)	Health & Structure (1-5)	Protected Status	Comments	Construction Status/Recom'd
1	Edible Fig	Ficus carica	7, 6.4, 4.7	5	Unprotected		Preserve and protect with fencing.
2	Apple	Malus domestica	6	4	Unprotected	Sun burn and associated necrosis on main trunk, to footprint of development.	Remove tree.
3	Plum sp.	Prunus sp.	10.5	4	Unprotected	Near footprint of development.	Remove tree.
4	Plum sp.	Prunus sp.	11.5	3	Unprotected	Near footprint of development.	Remove tree.
5	English Walnut	Juglans regia	8.5, 7.5, 5.5	5	Unprotected	Near footprint of development,	Preserve and protect with fencing.
6	Edible Fig	Ficus carica	8, 4.5	5	Unprotected	Outside footprint of development.	Preserve and protect with fencing.
7	Edible Fig	Ficus carica	10	5	Unprotected	Outside footprint of development.	Preserve and protect with fencing.
A	Coast Redwood	Sequoia sempervirens	37	5	Protected	Outside footprint of development.	Preserve and protect with fencing.
8	Coast Redwood	Sequoia sempervirens	38	4	Protected	The tree bifurcates at approximately 75 feet above grade. The stems are codominant and there is bark ingrown between the two stems. Outside footprint of development.	Preserve and protect with fencing.
9	Coast Redwood	Sequoia sempervirens	33	4	Protected	Outside footprint of development.	Preserve and protect with fencing.
11	Olive	Olea europaea	6, 6, 4	5	Unprotected	In footprint of development.	Remove tree. To be transplanted onto designated remainder parcel.
12	English Walnut	Juglans regia	7	5	Unprotected	In footprint of development.	Remove tree. To be transplanted onto designated remainder parcel.
13	Sweetgum	Liquidambar styraciflua	14	4	Unprotected	In footprint of development.	Remove tree.
14	Privitola	Ligustrum lucidum	7, 5, 4	4	Unprotected	In footprint of development.	Remove tree.
15	Crape Myrtle	Lagerstroemia sp.	6	4	Unprotected	In footprint of development.	Remove tree.
16	Riparian zone	Various native species		4	Protected	The riparian zone is populated with native tree and plant species. The predominant tree species are Coast Live Oak, Valley Oak, California Buckeye, Red Willow, and Arroyo Willow (Salix lasiolepis). Trees (diameters-at-breast-height) that are 24-inches or greater in diameter and the vegetation majority will not be impacted by development. Two outfall locations (See map) will be installed within the riparian zone, which will require pinpoint arborist involvement.	Preserve and protect with fencing.
17	Row of Eucalyptus (Windrow)	Eucalyptus robur "Eucalyptus"	4 to 12	3	Unprotected	Outside footprint of development. Small diameter limbs extend over property line.	Preserve. Limbing-Prune is sufficient protection.
18	Coast live oak	Quercus agrifolia	18.5	5	Protected		Preserve and Protect with tripod sensor.
19	Valley oak	Quercus lobata	7.5	4	Protected	Leggy.	Preserve and Protect with tripod sensor.
20	Coast live oak	Quercus agrifolia	25.5	4	Protected		Preserve and protect. Consider removing lower branch to improve form. Prune to ajacent tree system to direct new and promote space for future growth.
21	Coast live oak	Quercus agrifolia	17	5	Protected		Preserve and protect with tripod sensor.
22	Coast live oak	Quercus agrifolia	36.5.5	5	Protected	Lean southeast.	Preserve and Protect with tripod sensor.
23	Coast live oak	Quercus agrifolia	12.5	5	Protected	Ivy in lower canopy.	Preserve and Protect with tripod sensor.
24	Coast live oak	Quercus agrifolia	8.5, 7.5	5	Protected		Remove tree.
25	Coast live oak	Quercus agrifolia	12.5	5	Protected		Remove tree.
26	Valley oak	Quercus lobata	9	4	Protected		Preserve and Protect with tripod sensor.
27	Valley oak	Quercus lobata	6	5	Protected		Remove tree.
28	Coast live oak	Quercus agrifolia	22.5	5	Protected		Preserve and Protect with tripod sensor.
29	Coast live oak	Quercus agrifolia	30	4	Protected		Remove tree.
30	California Buckeye	Aesculus californica	6, 6, 5	4	Protected	Scars towards footprint of proposed bridge. May need to be pruned for bridge clearance.	Preserve and protect. Prune to create clearance for bridge.
31	Arborvitae	Thuja Sempervirens	3.5, 3.5, 7.5	4	Protected	Semi-Dust rain is know to send a proposed bridge. May cover may have to be removed for bridge clearance.	Remove tree. Relocate on-site.
32	Oregon Ash	Fraxinus latifolia	7.5	5	Protected		Preserve and Protect
33	Northern Holly	Ilex aquifolium	6	5	Protected		Remove tree.
34	Oregon Ash	Fraxinus latifolia	6	5	Protected		Remove tree.
35	Arborvitae	Thuja Sempervirens	8.5	4	Protected	Moderate amount of deadwood in canopy. Trunk leans north.	Preserve and Protect with tripod sensor.
36	Arborvitae	Thuja Sempervirens	9.5	1	Protected	Sight Dust canopy dieback.	Remove tree.
37	Arborvitae	Thuja Sempervirens	8	2	Protected	Moderate amount of deadwood in canopy.	Remove tree.
38	Arborvitae	Thuja Sempervirens	8	2	Protected	Moderate amount of deadwood in canopy.	Remove tree.
39	California Buckeye	Aesculus californica	6, 6.5	4	Protected	Low sprouting canopy.	Remove tree.
40	Valley oak	Quercus lobata	15	5	Protected		Preserve and Protect with tripod sensor.
41	Arborvitae	Thuja Sempervirens	12.5	5	Protected		Preserve and Protect with tripod sensor.
42	Arborvitae	Thuja Sempervirens	10	4	Protected	Scars away from proposed path/bridge.	Preserve and Protect with tripod sensor.
43	Coast live oak	Quercus agrifolia	19	5	Protected	Pit rot to be mulched near this tree.	Preserve and Protect. Retain fill soil 6 inches back from the trunk of this tree.
44	Arborvitae	Thuja Sempervirens	17.5	2	Protected		Remove tree.
45	Valley oak	Quercus lobata	7	5	Protected		Remove tree.
46	Arborvitae	Thuja Sempervirens	4	5	Protected		Remove tree.
47	Arborvitae	Thuja Sempervirens	4	2	Protected	Heavy lean over creek bank. Poorly anchored on bank.	Remove tree.
48	Arborvitae	Thuja Sempervirens	4	2	Protected	Heavy lean over creek bank.	Remove tree.
49	Arborvitae	Thuja Sempervirens	4	3	Protected	Strong lean away from bridge alignment.	Preserve and Protect.
50	Arborvitae	Thuja Sempervirens	5.55.5	2	Protected	Poor health. Heavy deadwood in the canopy.	Remove tree.
51	Arborvitae	Thuja Sempervirens	5.5	3	Protected	Poor form. Strong lean southeast away from bridge.	Remove tree.
52	California Buckeye	Aesculus californica	3.5	4	Protected		Remove tree.
53	Arborvitae	Thuja Sempervirens	5	5	Protected	Large form and lean toward the bridge alignment.	Preserve and protect. Prune to create clearance for bridge.
54	Arborvitae	Thuja Sempervirens	3	3	Protected	Lean northeast toward bridge alignment.	Remove tree.
55	California Buckeye	Aesculus californica	3.5	4	Protected	Lean away from the bridge. Suppressed and intertwined with adjacent trees.	Remove tree.
56	California Buckeye	Aesculus californica	3, 2.5, 2.5	4	Protected	Five stems total.	Remove tree.
57	California Buckeye	Aesculus californica	5, 3.5	2	Protected	Poor form. Large exposed area on trunk.	Remove tree.
58	California Buckeye	Aesculus californica	3.5, 2.5, 3.5	4	Protected		Preserve and Protect.
59	Toyon	Heteromeles arbutifolia	3, 1.5	4	Protected	Growing through fence.	Remove tree.
60	South Storm drainage Outfall						
61	Coast live oak	Quercus agrifolia	2.5	4	Protected? Outside of trunk and is in the dripline	Outside of existing chainlink fence.	Preserve and Protect.
62	Coast live oak	Quercus agrifolia	2	4	Protected		Preserve and Protect.
63	Coast live oak	Quercus agrifolia	3.5, 3	4	Protected? Outside of trunk and is in the dripline	Outside of existing chainlink fence.	Preserve and Protect.
64	California Buckeye	Aesculus californica	6	4	Protected	Trunk lean fail	Preserve and Protect.
65	California Buckeye	Aesculus californica	10 stems @ 4"	4	Protected	The tree is composed of approximately 10 stems all arising from ground level.	Preserve and Protect. Prune for drainage outlet clearance.
66	California Buckeye	Aesculus californica	6, 4	4	Protected	Trunk lean fail	Preserve and Protect.
67	California Buckeye	Aesculus californica	7	5	Protected	Trunk lean fail	Preserve and Protect.
68	California Buckeye	Aesculus californica	6, 6	4	Protected	Trunk lean fail	Preserve and Protect.
69	California Buckeye	Aesculus californica	4	4	Protected	Is footprint of drainage outfall as shown on plans but could potentially be preserved.	Remove tree.
70	Riparian/Swale/Drainage Outfall/Pedestrian path Area						
71	Coast live oak	Quercus agrifolia	4	4	Protected	Tree has been originally cleaved over to life and has subsequent stands/forms. The tree stands near the proposed pedestrian path. At least four feet of clearance should be provided between the trunk and path.	Preserve and Protect.
72	Coast live oak	Quercus agrifolia	7	4	Protected	Tree has been originally cleaved over to life and has subsequent stands/forms. The tree stands near the proposed pedestrian path. At least four feet of clearance should be provided between the trunk and path.	Preserve and Protect.
73	Privet/Ivy plant	Ficus spp.	2	2	Unprotected	Vine/ivy plant/bushes	Remove tree.
74	Oregon Ash	Fraxinus latifolia	4.5, 2, 1.5	4	Protected	The stem is on the stream bank outside the existing wire fence.	Preserve and protect. Prune to raise canopy for outfall construction clearance.

LEGEND

- EXISTING FENCING
- PROPERTY LINE
- CONCRETE
- CURB & GUTTER
- STORM DRAIN
- STORM DRAIN MANHOLE
- CATCH BASIN
- APPROXIMATE DRIPLINE AND TRUNK OF TREE TO BE REMOVED
- APPROXIMATE DRIPLINE OF PRESERVED TREE TO REMAIN AND TO BE PROTECTED
- APPROXIMATE DRIPLINE OF PRESERVED AND PROTECTED TREE SPECIE, AS DETERMINED BY THE CITY OF PETALUMA (ZO CHAPTER 17 TREE PRESERVATION), TO REMAIN AND TO BE PROTECTED.
- SURVEYED DRIPLINE OF RIPARIAN CORRIDOR/WESTERLY LIMITS OF THE RIPARIAN HABITAT BIOLOGICAL STUDY AREA. LOCATION INFORMATION IS BASED UPON A FIELD SURVEY PERFORMED BY MONTROSE SEE ARBORIST REPORT DATED DECEMBER 2023 AND MONTROSE SEE ARBORIST REPORT DETAILED DESCRIPTION OF THE TREE SPECIES, TREE PROTECTION MEASURES, MITIGATION, TREE REPLACEMENT AND RIPARIAN VEGETATION WITHIN THIS PROTECTED AND PRESERVED AREA.
- LIMIT OF BRIDGE CONSTRUCTION
- SOFT SETBACK FROM TOP OF BANK (DEVELOPMENT LINE)
- TOP OF BANK FOR ADOBE CREEK
- OHWM PER MONTROSE
- BASIN AREA (BASMAA BIORETENTION)
- 10' WIDE MULTI-USE PATH
- 3' WIDE GRAVEL PATH ⊕ UNITS
- CONCRETE PAVING
- CONCRETE DRIVEWAY PLANKS
- 18–36" SONOMA BOULDERS
- FLAGSTONE STEPSTONES
- FEMA FLOOD PLAIN EFFECTIVE SEPTEMBER 25, 2023
- FLOOD PLAIN PER HYDRAULIC ASSESSMENT BY WEST CONSULTANTS SEPTEMBER 2023.
- VIEWPORT ENLARGEMENTS. SEE SHEET L-5.1 & L-5.2
- TREE PROTECTION FENCING LOCATED AT LIMITS OF TREE PROTECTION ZONE (TPZ)
- TREE PROTECTION WITHIN RIPARIAN ZONE. SEE ARBORISTS REPORT.
- BIOLOGICAL STUDY AREA LIMITS, BY MONTROSE
- APPROXIMATE BOUNDARY OF RIPARIAN HABITAT, BY MONTROSE

REPLACEMENT TREE (MITIGATION TREES) SCHEDULE

SYMBOL	BOTANICAL NAME	COMMON NAME	CONTAINER SIZE	SIZE (H x W)	QUANTITY	WATER USE
	QUERCUS AGRIFOLIA (MITIGATION TREE)	COAST LIVE OAK	24" BOX	65'x35'	14	L
	QUERCUS LOBATA (MITIGATION TREE)	VALLEY OAK	24" BOX	80'x50'	8	L
	AESCULUS CALIFORNICA (MITIGATION TREE)	CALIFORNIA BUCKEYE	24" BOX	30'x40'	23	L
	CERCIS OCCIDENTALIS (MITIGATION TREE) CERCIS OCCIDENTALIS	WESTERN REDBUD WESTERN REDBUD	15 GAL 15 GAL	15'x10' 15'x10'	28 30	L L

Tree Replacement Calculations

(1:1 Mitigation Replacement Ratio with select 2:1 Mitigation)

Tree #	Common Name	Botanical Name	Trunk Diameter(s) (inches)	Health Condition	Calculated Dbh	Mitigation Ratio	Number of Replacement Trees
24	Coast Live Oak	Quercus agrifolia	8.5, 7.5	5	12.3	1 to 1	6.1
25	Coast Live Oak	Quercus agrifolia	12.5	5	12.5	1 to 1	6.3
27	Valley Oak	Quercus lobata	6	5	6.0	1 to 1	3.0
29	Valley Oak	Quercus lobata	10	4	10.0	1 to 1	5.0
33	California Walnut	Juglans hindsii	6	5	6.0	1 to 1	3.0
34	Oregon Ash	Fraxinus latifolia	6	5	6.0	1 to 1	3.0
36	Red Willow	Salix laevigata	9.5	4	9.5	1 to 1	4.8
37	Red Willow	Salix laevigata	8	3	8.0	1 to 1	4.0
38	Red Willow	Salix laevigata	11	4	11.0	1 to 1	5.5
39	California Buckeye	Aesculus californica	6, 6, 5	4	11.5	1 to 1	5.8
*44	Red Willow	Salix laevigata	17.5	2	17.5	2 to 1	4.4
45	Valley Oak	Quercus lobata	7	5	7	1 to 1	3.5
46	Oregon Ash	Fraxinus latifolia	1.5	4	1.5	1 to 1	0.8
*47	Red Willow	Salix laevigata	3	4	3.0	2 to 1	0.8
48	Red Willow	Salix laevigata	3	4	3.0	1 to 1	1.5
*50	Red Willow	Salix laevigata	5, 3.5, 3	2	8.0	2 to 1	2.0
51	Red Willow	Salix laevigata	3.5	3	3.5	1 to 1	1.8
52	California Buckeye	Aesculus californica	1.5	4	1.5	1 to 1	0.8
54	Red Willow	Salix laevigata	3	3	3.0	1 to 1	1.5
55	California Buckeye	Aesculus californica	3.5	4	3.5	1 to 1	1.8
56	California Buckeye	Aesculus californica	3, 2.5, 2.5	4	5.0	1 to 1	2.5
*57	California Buckeye	Aesculus californica	5, 3.5	2	6.0	2 to 1	1.5
59	Toyon	Heteromeles arbutifolia	3, 1.5	4	4.0	1 to 1	2.0
68	California Buckeye	Aesculus californica	4	4	4.0	1 to 1	2.0

Proposed Replacement Totals

Proposed Replacement Trees Quantity	Proposed Replacement Tree Species/Sizes
45	*Proposed 24" box Oak or CA Buckeye Replacement Trees*
26	*24" diameter Red Willow stakes and/or 15 gal Western Red Bud*
2	*Proposed 15 gal Western Redbud Replacement Trees*
73	Required Replacement Trees
73	Mitigation Trees
0	*Remaining Replacement Trees Needed*

TREE MITIGATION NOTES

1. MITIGATION FOR THE TREES REMOVED WITHIN THE AREA WILL NEED TO THE CITY OF PETALUMA TREE PRESERVATION ORDINANCE (CHAPTER 17 (ZO).
2. IN ACCORDANCE WITH THE CITY OF PETALUMA TREE ORDINANCE, ALL PROTECTED TREES THAT ARE REMOVED FROM THE SITE THAT ARE DETERMINED BY THE PROJECT ARBORIST TO BE IN GOOD (X) OR EXCELLENT (5) HEALTH, AND/OR WITH MODERATE (3) TO GOOD (4) STRUCTURE, WILL BE REPLACED ON A ONE-TO-ONE TRUNK DIAMETER BASIS. ALL PROTECTED TREES THAT ARE TO BE REMOVED FROM THE SITE, DETERMINED BY THE PROJECT ARBORIST TO HAVE FAIR (3) OR MARGINAL (2) HEALTH, AND/OR WITH MARGINAL (2) STRUCTURE, SHALL BE REPLACED ON A TWO-TO-ONE TRUNK DIAMETER BASIS.
3. REPLACEMENT OF THE RED WILLOWS WILL PRIORITIZE MITIGATION WITHIN THE RIPARIAN CORRIDOR, ADJACENT TO THE SITE IF THERE IS ADEQUATE ROOM. WILLOWS GROW WITHIN THE CREEK AND THE INTENT WILL BE TO PROVIDE 1~2" WILLOW STAKES WHERE POSSIBLE WITHIN THE RIPARIAN CORRIDOR. USING BRANCHES FROM ARROYO WILLOWS. IF SPACE RUNS OUT, THEN REMAINING MITIGATION OF THE WILLOWS WILL BE DONE USING THE WESTERN REDBUDS ON THE UPLAND PORTION OF THE SITE, ADJACENT TO THE CREEK.

INSPECTION OF PROTECTION & PRESERVATION MEASURES

1. PRIOR TO MOBILIZATION OF CONSTRUCTION ARBORIST WILL MEET WITH THE CONTRACTOR TO REVIEW TREE PROTECTION/PRESERVATION MEASURES, DESIGNATE TREE REMOVALS, DELINEATE THE LOCATIONS OF TREE PROTECTION/NON-DISTURBANCE ZONE FENCING, SPECIFY EQUIPMENT ACCESS ROUTES AND MATERIALS STORAGE AREAS AND REVIEW EXISTING CONDITION OF TREES TO PROVIDE ANY ADDITIONAL NECESSARY RECOMMENDATIONS.
2. AFTER INSTALLATION OF THE NSZ FENCING, THE ARBORIST WILL INSPECT FOR ADEQUATE INSTALLATION OF TREE PROTECTION MEASURES. REVIEW ANY CONTRACTOR REQUEST FOR ACCESS, SOIL DISTURBANCE OR EXCAVATION AREAS WITHIN ROOT ZONES OF PROTECTED TREES. ASSESS ANY CHANGES IN THE HEALTH OF TREE SINCE LAST INSPECTION.
3. DURING EXCAVATION/CONSTRUCTION ACTIVITIES NEAR THE TREES, ARBORIST WILL INSPECT ACTIVITY WITHIN THE NON-INTRUSION ZONES OF THE PRESERVED TREES AND ANY RECOMMENDATIONS IMPLEMENTED. ASSESS ANY CHANGES IN THE HEALTH OF TREE SINCE LAST INSPECTION.
4. AT THE FINAL INSPECTION THE ARBORIST WILL INSPECT TREE HEALTH AND MAKE ANY NECESSARY RECOMMENDATIONS.

TREE PROTECTION NOTES

1. BRIDGE CONSTRUCTION WILL BE DONE DURING THE DRY SEASON AND INCORPORATION OF ZONE TEMPORARY IRRIGATION WILL BE STRONGLY CONSIDERED FOR THE TREES. THE TREES WILL BE MONITORED FOR THE HEALTH OF THESE TREES WILL BE DONE WITH PROVISIONS OF THE PLAN TO AREAS OF THE RIPARIAN CORRIDOR FLOOR THAT HAVE BEEN OTHERWISE SHADED. THIS IRRIGATION WOULD REMAIN THROUGH THE DRY SEASON AND THE TREES WOULD BE MONITORED FOR THE HEALTH OF THESE TREES AND BIOLOGIST TO DETERMINE WHEN THIS IRRIGATION COULD BE REMOVED.
2. AN URBAN FORESTER, CERTIFIED OR CONSULTING ARBORIST SHALL ESTABLISH THE TREE PROTECTION ZONE (TPZ) PRIOR TO STARTING THE DEMOLITION WORK. THE TPZ SHALL BE FENCED WITH 6' CHAIN LINK FENCE TO BE ERECTED BY THE CONTRACTOR AND INSPECTED BY THE ARBORIST TO LIMIT ACCESS TO THE TPZ THEY WILL PROTECT THE TRUNK AND ROOT ZONE THROUGHOUT CONSTRUCTION.
3. THE ARBORIST SHALL HAVE A PRE-/DEMOLITION MEETING WITH CONTRACTOR TO DISCUSS WORK PROCEDURES AND ANY OTHER POTENTIALLY OF CHEM MANAGERS ON SITE PRIOR TO ANY WORK TO REVIEW ALL WORK PROCEDURES, ACCESS AND HAUL ROUTES, THAT TREE PROTECTION. THE CONTRACTOR MUST NOTIFY THE ARBORIST IF ROOTS ARE EXPOSED OR IF TRUNK OR BRANCHES ARE WOUNDED.
4. ANY TRUNK AND ROOT CROWN THAT IS NOT PROTECTED BY A TPZ WHERE HEAVY EQUIPMENT OPERATION IS LIKELY TO WOUND THE TRUNK, INSTALL A BARREL OF 6' HIGH ORANGE FENCING AT 6" FROM THE TRUNK CONNECTED TOGETHER WITH METAL STRAPS, ATTACHED TO THE 2 X 4'S WITH DRIVEN SCREWS OR 1" NAILS.
5. PLYWOOD LAID OUT OVER THE RIPARIAN FLOOR WOULD SERVE AS PROTECTION FOR THE ROOT ZONES/CRITICAL ROOT ZONES EXIST AND WHERE EQUIPMENT OPERATION IS REQUIRED. TO HELP DISPERSE EQUIPMENT WEIGHT AND PROTECT THE SOIL, COMPACTION AND ROOT COMPROMISE AREAS WHERE SOIL IS EXPOSED MAY ALSO RECEIVE 5" DEPTH OF WOOD MULCH TO HELP RETAIN MOISTURE AND TO ALSO MITIGATE AGAINST SOIL COMPACTION WITHIN THE TREE PROTECTION/CRITICAL ROOT PROTECTION ZONE.
6. HEAVY EQUIPMENT USE SHOULD BE LIMITED AROUND TREES AND THE ROOTS. NO EQUIPMENT MAY BE TRANSPORTED OR USED ON BARE GROUND WITHIN THE DRIPLINE. A 6" LAYER OF WOOD CHIPS OR PLYWOOD MUST BE PLACED UNDER THE PATH FOR ACCESS AND HAUL ROUTES. ANY DAMAGE TO TREES SHALL BE IMMEDIATELY REPORTED TO THE CONTRACTOR AND INSPECTED BY THE ARBORIST WHEN ON SITE.
7. ANY DAMAGE TO TREES DUE TO DEMOLITION OR CONSTRUCTION ACTIVITIES SHALL BE REPORTED TO THE ARBORIST WITHIN 6 HOURS, SO THAT REMEDIAL ACTION CAN BE TAKEN.
8. THE CONTRACTOR WILL HAVE TO USE THE LEAST DAMAGING METHOD POSSIBLE FOR ANY WORK PERFORMED IN EXISTING TREE ROOTS, ALL TRENCHING WITHIN THE NSZ SHALL BE DONE PNEUMATICALLY OR BY HAND. BEING CAREFUL NOT TO DAMAGE ANY OF THE BARK OF ANY ROOT ENCOUNTERED.
9. IF CONSTRUCTION CREATES A LOT OF DUST ON EXISTING VEGETATION IT WILL BE RECOMMENDED THAT THE CONTRACTOR HOSE DOWN VEGETATION THAT HAS THICK LAYERS OF DUST.
10. AN ARBORIST SHALL INSPECT ALL GRADING, TRENCHING, EXCAVATION OR CUTTING OCCURRING WITHIN THE ROOT ZONES OF TREES PRIOR TO BACKFILL.
11. NO CHEMICALS OR CEMENT OR MATERIALS SHALL BE DUMPED WITHIN 20' OF THE BASE OF ANY TREE. THERE SHALL BE NO MATERIAL STORAGE IN THE NSZ.
12. ANY TREE PRUNING WILL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF ISA OR ANSI BEST MANAGEMENT PRACTICES / STANDARDS. ALL PRUNING WILL BE INSPECTED BY THE ARBORIST.
13. THE ARBORIST MUST PERFORM A FINAL INSPECTION TO CHECK THAT NO UNANTICIPATED DAMAGE HAS OCCURRED DURING THE PROJECT. ANY DAMAGE OR DYING OR DOWN HEALTH CARE. THE ARBORIST SHALL SPECIFY AND OVERSEE ANY NECESSARY RESTORATIVE ACTIONS.
14. ANY SUSPECTED OMISSIONS OR CONFLICT BETWEEN VARIOUS ELEMENTS OF THE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE ARBORIST AND RESOLVED BEFORE PROCEEDING WITH THE WORK.

NOTES

1. PLAN ONLY SHOWS MITIGATION TREES. SEE SHEET L-1 FOR ALL PROPOSED TREE LOCATIONS.
2. TREE PROTECTION INFORMATION SHOWN IS BASED ON THE ARBORIST REPORT AND INVENTORY PREPARED BY URBAN FORESTRY DATED DECEMBER 2023. SEE FULL ARBORIST REPORT FOR DETAILED DESCRIPTIONS OF TREE PROTECTION MEASURES AND ARBORIST RECOMMENDATIONS.
3. TREES WERE MEASURED AT BREAST HEIGHT ABOVE THE GROUND. WHERE PRACTICAL, TREES MAY EXIST ON SITE THAT HAVE MULTIPLE TRUNKS, BRANCHES THAT FOLIOW THE GROUND OR HAVE GROWN IN AN IRREGULAR MANNER.
4. TREES SHOWN WITH A RED CROSS AT THE TRUNK REPRESENT EXISTING TREE TO BE REMOVED. SEE LEGEND.
5. TREES 11 AND 12 ARE PROPOSED TO BE PRESERVED AND CAREFULLY EXCAVATED AND TRANSPLANTED ONTO THE DESIGNATED REMAINDER SITE, AT THE DISCRETION OF THE DESIGNATED TREE OWNER.
6. THE TREE PROTECTION ZONES (TPZ) INDICATED ON THE ARBORISTS MAP WERE DETERMINED BY THE TREES' PRUNK DIAMETER, CANOPY SPREAD AND DISTRIBUTION, TOPOGRAPHY AROUND THE TREE AND ACCESS NEEDS. THE TPZ IS THE AREA AROUND THE TREE WHERE THE ROOTS AND SOIL NEED TO BE PROTECTED FROM SOIL COMPACTION AND GROUND DISTURBANCE. INSTALLATION OF FENCING WHERE THE BRIDGE IS PROPOSED MAY BE MODIFIED TO ALLOW FOR CONSTRUCTION ACCESS AND WORK AREAS. IF IMPACTS ARE NECESSARY OUTSIDE OF THESE AREAS OF CONSTRUCTION, SHOULD BE PROTECTED WITH 23+6 STRAPPED TO THE TRUNK. HEAVY EQUIPMENT USAGE SHOULD BE LIMITED AS MUCH AS POSSIBLE WITHIN TEN FEET OF ANY TREE. WOOD CHIP MULCH MAY BE USED LIBERALLY WHERE EQUIPMENT USE IS EXPECTED TO MINIMIZE SOIL COMPACTION.
7. TREE PROTECTION IS TO BE PLACED AT THE DRIPLINE OF THE EXISTING TREES TO BE PRESERVED AS SPECIFIED IN THE ARBORIST REPORT DATED DECEMBER 2023.

TREE INVENTORY NOTES:

SEE THE GREEN DESCRIPTION BOXES IN TREE INVENTORY FOR PRUNING RECOMMENDATIONS.

★ SEE TREE REPLACEMENT CALCULATIONS FOR MITIGATION

○ = ANY EXISTING TREE DESIGNATED AS A PROTECTED SPECIES UNDER THE CITY OF PETALUMA (ZO CHAPTER 17 TREE PRESERVATION

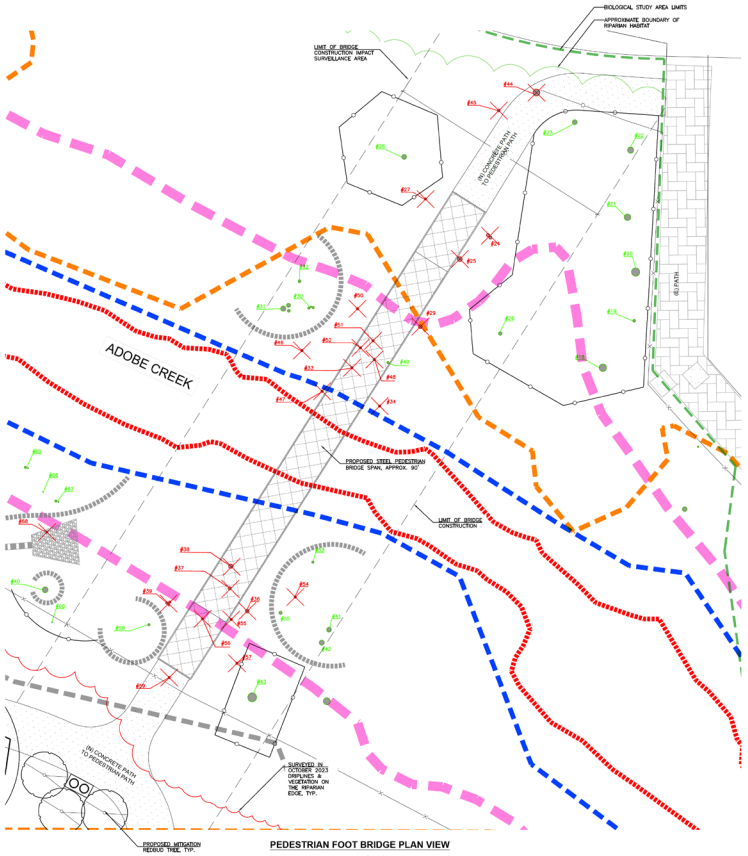
TREE CONDITION RATINGS

RATING / CATEGORY	HEALTH	STRUCTURE	FORM
EXCELLENT 5	NEAR-PRIME AND HIGHLY VIGOROUS WITH NO APPARENT LOSS OF NO TIME-DEPENDENT DETERIORATION.	VERTICALLY IDEAL & FREE OF DEFECTS	NEARLY IDEAL FOR THE SPECIES, GENERALLY CONSISTENT WITH THE INTENDED USE.
GOOD 4	MORE IS NORMAL FOR THE SPECIES, IN A LANDSCAPE SETTING DUE TO MINOR INSECT, DISEASE OR MECHANICAL DAMAGE, RECUPERATION IS MINOR.	WELL-DEVELOPED STRUCTURAL DEFECTS ARE MINOR AND CAN BE CORRECTED.	MINOR ASYMMETRIES OR DEVIATIONS FROM INTENDED FORM. MINOR DEFECTS CAN BE CORRECTED THROUGH PRUNING AND ASYMMETRIES ARE NOT CONFORMED.
FAIR 3	REDUCED VIGOR. CHANGE IN APPEARANCE IS OBVIOUS. SPECIES IS ADAPTED TO THE SITE BUT ASSOCIATED WITH SOME STRESS. MAY BE NOT LIKELY TO BE KILLED, DEFOLIATION, DISCOLORATION, AND DIEBACK EXCEEDING 15% BUT LESS THAN 30% OF THE CROWN.	A SINGLE DEFECT OF A MODERATE NATURE OR A GREATER NUMBER OF MINOR DEFECTS. THE TREE MAY NOT FUNCTION AS WELL AS A TREE WITH GOOD STRUCTURE, BUT IT CAN BE EXPECTED TO PERFORM OVER THE TERM.	MAJOR ASYMMETRIES OR DEVIATIONS FROM INTENDED FORM. MAJOR DEFECTS CAN BE CORRECTED THROUGH PRUNING AND ASYMMETRIES ARE NOT CONFORMED.
POOR 2	UNFAVORABLE OR UNUSUAL GROWTH CHARACTERISTICS, OR OBVIOUS SIGNS OF INSECT OR DISEASE ATTACK ARE PRESENT. POTENTIALLY LIVABLE FOR SEVERAL YEARS BUT NOT WORTH PRESERVING.	A SINGLE SERIOUS DEFECT OF NEGATIVE NATURE OR MULTIPLE MODERATE DEFECTS. STRUCTURAL FAILURE CANNOT BE PREDICTED BUT IS LIKELY AT ANY TIME.	LARGELY ASYMMETRIC OR DEVIATIONS FROM INTENDED FORM. MAJOR DEFECTS CANNOT BE CORRECTED TO A SIGNIFICANT DEGREE.
VERY POOR 1	DEAD OR DECLINE TO THE POINT THAT THE TREE IS LIKELY DYING.	SINGLE OR MULTIPLE DEFECTS THAT CAUSE IMMINENT FAILURE OF SECTIONS OF THE TREE.	HIGHLY UNDESIRABLE FORM DUE TO THE SEVERITY OF THE LANDSCAPE.
DEAD			

TABLE 1. SOURCED FROM 'THE GUIDE FOR PLANT APPRAISAL, 10TH EDITION'

ANDREA J. OWENS
No. 6142
EXP. 10-31-24
STATE OF CALIFORNIA
PROFESSIONAL LANDSCAPE ARCHITECT

Figure 4.1-5
Tree Removal and Preservation Plan – Bridge Connection



TREE INVENTORY - PROPOSED PEDESTRIAN BRIDGE

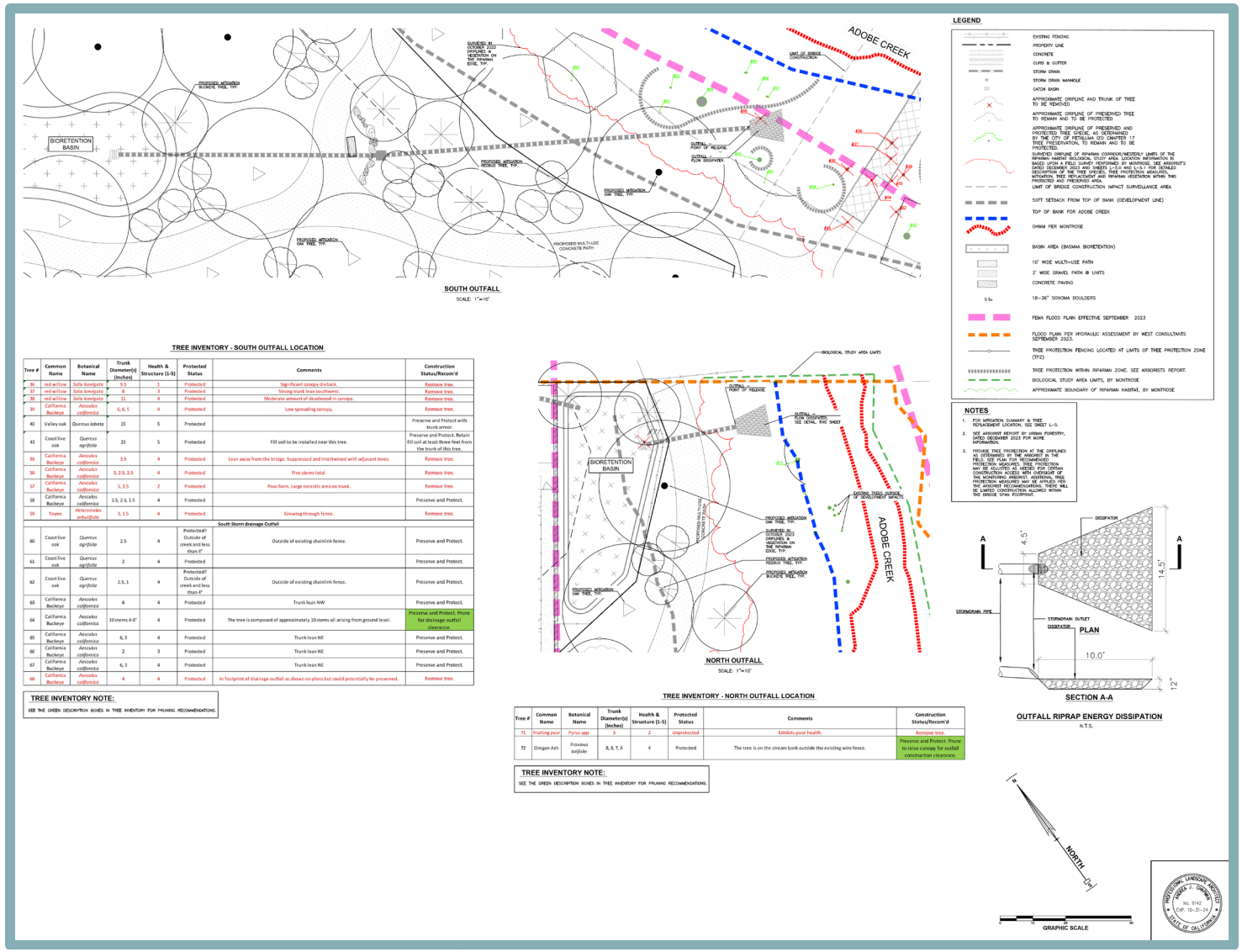
Tree #	Common Name	Botanical Name	Trunk Diameter(s) (Inches)	Health & Structure (1-5)	Protected Status	Comments	Construction Status/Recom'd
18	Coast live oak	*Quercus agrifolia*	19.5	5	Protected		Preserve and Protect with trunk armor.
19	Valley oak	*Quercus lobata*	7.5	4	Protected	Leggy.	Preserve and Protect with trunk armor.
20	Coast live oak	*Quercus agrifolia*	21.5	4	Protected		Preserve and protect. Consider building a pedestrian bridge on piers to span the root system of this tree and provide space for future growth.
21	Coast live oak	*Quercus agrifolia*	17	5	Protected		Preserve and protect with fencing.
22	Coast live oak	*Quercus agrifolia*	16, 6.5	5	Protected	Lean southeast.	Preserve and Protect with trunk armor.
23	Coast live oak	*Quercus agrifolia*	12.5	5	Protected	Trunk lean south.	Preserve and Protect with trunk armor.
24	Coast live oak	*Quercus agrifolia*	8.5, 7.5	5	Protected		Remove tree.
25	Coast live oak	*Quercus agrifolia*	12.5	5	Protected		Remove tree.
26	Valley oak	*Quercus lobata*	9	4	Protected		Preserve and Protect with trunk armor.
27	Valley oak	*Quercus lobata*	6	5	Protected		Remove tree.
28	Coast live oak	*Quercus agrifolia*	12.5	5	Protected		Preserve and Protect with trunk armor.
29	Valley oak	*Quercus lobata*	10	4	Protected		Remove tree.
30	California Buckeye	*Aesculus californica*	6, 6, 4	4	Protected	Leans towards footprint of proposed bridge. May need to be pruned for bridge clearance.	Preserve and protect. Prune to create clearance for bridge.
31	red willow	*Salix laevigata*	13.5, 10.5, 7.5	4	Protected	Smallest stem leans toward proposed bridge. This stem may have to be removed for bridge clearance.	Preserve and protect. Prune to create clearance for bridge.
32	Oregon Ash	*Fraxinus latifolia*	7.5	5	Protected		Preserve and Protect.
33	Northern CA walnut	*Juglans hindsii*	6	5	Protected		Remove tree.
34	Oregon Ash	*Fraxinus latifolia*	6	5	Protected		Remove tree.
35	red willow	*Salix laevigata*	8.5	4	Protected	Moderate amount of deadwood in canopy. Trunk leans north.	Preserve and Protect with trunk armor.
36	red willow	*Salix laevigata*	9.5	1	Protected	Significant canopy dieback.	Remove tree.
37	red willow	*Salix laevigata*	8	3	Protected	Strong trunk lean southwest.	Remove tree.
38	red willow	*Salix laevigata*	11	4	Protected	Moderate amount of deadwood in canopy.	Remove tree.
39	California Buckeye	*Aesculus californica*	6, 6, 5	4	Protected	Low spreading canopy.	Remove tree.
41	red willow	*Salix laevigata*	12.5	5	Protected		Preserve and Protect with trunk armor.
42	red willow	*Salix laevigata*	13	4	Protected	Leans away from proposed path/bridge.	Preserve and Protect with trunk armor.
43	Coast live oak	*Quercus agrifolia*	23	5	Protected	Fill soil to be installed near this tree.	Preserve and Protect. Retain fill soil at least three feet from the trunk of this tree.
44	red willow	*Salix laevigata*	17.5	2	Protected		Remove tree.
45	valley oak	*Quercus lobata*	7	5	Protected		Remove tree.
46	Oregon Ash	*Fraxinus latifolia*	1.5	4	Protected		Remove tree.
47	red willow	*Salix laevigata*	3	2	Protected	Heavy lean over creek bank. Poorly ancored on bank.	Remove tree.
48	red willow	*Salix laevigata*	3	4	Protected		Remove tree.
49	red willow	*Salix laevigata*	4	3	Protected	Strong lean away from bridge alignment.	Preserve and Protect.
50	red willow	*Salix laevigata*	5, 3.5, 3	2	Protected	Poor health. Major deadwood in the canopy.	Remove tree.
51	red willow	*Salix laevigata*	3.5	3	Protected	Poor form. Strong lean southeast away from bridge.	Remove tree.
52	California Buckeye	*Aesculus californica*	1.5	4	Protected		Remove tree.
53	red willow	*Salix laevigata*	3	3	Protected	Leggy form and lean toward the bridge alignment.	Preserve and protect. Prune to create clearance for bridge.
54	red willow	*Salix laevigata*	3	3	Protected	Lean northwest toward bridge alignment.	Remove tree.
55	California Buckeye	*Aesculus californica*	3.5	4	Protected	Lean away from the bridge. Suppressed and intertwined with adjacent trees.	Remove tree.
56	California Buckeye	*Aesculus californica*	3, 2.5, 2.5	4	Protected	Five stems total.	Remove tree.
57	California Buckeye	*Aesculus californica*	5, 2.5	2	Protected	Poor form. Large necrotic area on trunk.	Remove tree.
58	California Buckeye	*Aesculus californica*	2.5, 2.5, 1.5	4	Protected		Preserve and Protect.
59	Toyon	*Heteromeles arbutifolia*	3, 1.5	4	Protected	Growing through fence.	Remove tree.
60	Coast live oak	*Quercus agrifolia*	2.5	4	Protected? Outside of creek and less than 4"	Outside of existing chainlink fence.	Preserve and Protect.
65	California Buckeye	*Aesculus californica*	6, 3	4	Protected	Trunk lean NE	Preserve and Protect.
66	California Buckeye	*Aesculus californica*	2	3	Protected	Trunk lean NE	Preserve and Protect.
67	California Buckeye	*Aesculus californica*	6, 3	4	Protected	Trunk lean NE	Preserve and Protect.
68	California Buckeye	*Aesculus californica*	4	4	Protected	In footprint of drainage outfall as shown on plans but could potentially be preserved.	Remove tree.

TREE INVENTORY NOTE:
SEE THE GREEN DESCRIPTION BOXES IN TREE INVENTORY FOR PRUNING RECOMMENDATIONS

LEGEND
EXISTING FENCING
PROPERTY LINE
CONCRETE
CURB & GUTTER
STORM DRAIN
STORM DRAIN MANHOLE
CATCH BASIN
APPROXIMATE DRIPLINE AND TRUNK OF TREE TO BE REMOVED
APPROXIMATE DRIPLINE OF PRESERVED TREE TO REMAIN AND TO BE PROTECTED
APPROXIMATE DRIPLINE OF PRESERVED AND PROTECTED TREE SPECIE, AS DETERMINED BY THE CITY OF PETALUMA (CH CHAPTER 17 TREE PRESERVATION, TO REMAIN AND TO BE PROTECTED.
SURVEYED DRIPLINE OF RIPARIAN CORRIDOR/WESTERLY LIMITS OF THE RIPARIAN HABITAT BIOLOGICAL STUDY AREA. LOCATION INFORMATION IS BASED UPON A FIELD SURVEY PERFORMED BY MONTROSE. SEE ARBORIST'S DATED DECEMBER 2023 AND SHEETS L-5.0 AND L-5.1 FOR DETAILED DESCRIPTION OF THE TREE SPECIES, TREE PROTECTION MEASURES, MITIGATION, TREE REPLACEMENT AND RIPARIAN VEGETATION WITHIN THIS PROTECTED AND PRESERVED AREA.
LIMIT OF BRIDGE CONSTRUCTION IMPACT SURVEILLANCE AREA
SOFT SETBACK FROM TOP OF BANK (DEVELOPMENT LINE)
TOP OF BANK FOR ADOBE CREEK
OHWM PER MONTROSE
BASIN AREA (BASMAA BIORETENTION)
10' WIDE MULTI-USE PATH
3' WIDE GRAVEL PATH @ UNITS
CONCRETE PAVING
FEMA FLOOD PLAIN EFFECTIVE SEPTEMBER 2023
FLOOD PLAIN PER HYDRAULIC ASSESSMENT BY WEST CONSULTANTS SEPTEMBER 2023.
TREE PROTECTION FENCING LOCATED AT LIMITS OF TREE PROTECTION ZONE (TPZ)
TREE PROTECTION WITHIN RIPARIAN ZONE, SEE ARBORISTS REPORT.
BIOLOGICAL STUDY AREA LIMITS, BY MONTROSE
APPROXIMATE BOUNDARY OF RIPARIAN HABITAT, BY MONTROSE

NOTES
1. FOR MITIGATION SUMMARY & TREE REPLACEMENT LOCATION, SEE SHEET L-5.
2. SEE ARBORIST REPORT BY URBAN FORESTRY, DATED DECEMBER 2023 FOR MORE INFORMATION.
3. PROVIDE TREE PROTECTION AT THE DRIPLINES AS DETERMINED BY THE ARBORIST IN THE FIELD. SEE PLAN FOR RECOMMENDED PROTECTION MEASURES. TREE PROTECTION MAY BE ADJUSTED AS NEEDED FOR CERTAIN CONSTRUCTION ACCESS WITH OVERSIGHT OF THE MONITORING ARBORIST. ADDITIONAL TREE PROTECTION MEASURES MAY BE APPLIED PER THE ARBORIST RECOMMENDATIONS. THERE WILL BE LIMITED CONSTRUCTION ALLOWED WITHIN THE BRIDGE SPAN FOOTPRINT.

Figure 4.1-6
Tree Removal and Preservation Plan – Outfalls



TREE INVENTORY - SOUTH OUTFALL LOCATION

Tree #	Common Name	Botanical Name	Trunk Diameter(s) (inches)	Health & Structure (1-5)	Protected Status	Comments	Construction Status/Recom'd
36	red willow	Salix laevigata	9.5	1	Protected	Significant canopy dieback.	Remove tree.
37	red willow	Salix laevigata	8	3	Protected	Strong trunk lean southwest.	Remove tree.
38	red willow	Salix laevigata	11	4	Protected	Moderate amount of deadwood in canopy.	Remove tree.
39	California Buckeye	Aesculus californica	6, 6, 5	4	Protected	Low spreading canopy.	Remove tree.
40	Valley oak	Quercus lobata	15	5	Protected		Preserve and Protect with trunk armor.
43	Coast live oak	Quercus agrifolia	23	5	Protected	Fill soil to be installed near this tree.	Preserve and Protect. Retain fill soil at least three feet from the trunk of this tree.
55	California Buckeye	Aesculus californica	3.5	4	Protected	Lean away from the bridge. Suppressed and intertwined with adjacent trees.	Remove tree.
56	California Buckeye	Aesculus californica	3, 2.5, 2.5	4	Protected	Five stems total.	Remove tree.
57	California Buckeye	Aesculus californica	5, 2.5	2	Protected	Poor form. Large necrotic area on trunk.	Remove tree.
58	California Buckeye	Aesculus californica	2.5, 2.5, 1.5	4	Protected		Preserve and Protect.
59	Toyon	Heteromeles arbutifolia	3, 1.5	4	Protected	Growing through fence.	Remove tree.
					South Storm drainage Outfall		
60	Coast live oak	Quercus agrifolia	2.5	4	Protected? Outside of creek and less than 6"	Outside of existing chainlink fence.	Preserve and Protect.
61	Coast live oak	Quercus agrifolia	2	4	Protected		Preserve and Protect.
62	Coast live oak	Quercus agrifolia	2.5, 1	4	Protected? Outside of creek and less than 6"	Outside of existing chainlink fence.	Preserve and Protect.
63	California Buckeye	Aesculus californica	6	4	Protected	Trunk lean NW	Preserve and Protect.
64	California Buckeye	Aesculus californica	10 stems 4-8"	4	Protected	The tree is composed of approximately 10 stems all arising from ground level.	Preserve and Protect. Prune for drainage outfall clearance.
65	California Buckeye	Aesculus californica	6, 3	4	Protected	Trunk lean NE	Preserve and Protect.
66	California Buckeye	Aesculus californica	2	3	Protected	Trunk lean NE	Preserve and Protect.
67	California Buckeye	Aesculus californica	6, 3	4	Protected	Trunk lean NE	Preserve and Protect.
68	California Buckeye	Aesculus californica	4	4	Protected	In footprint of drainage outfall as shown on plans but could potentially be preserved.	Remove tree.

TREE INVENTORY NOTE:
SEE THE GREEN DESCRIPTION BOXES IN TREE INVENTORY FOR PRUNING RECOMMENDATIONS.

TREE INVENTORY - NORTH OUTFALL LOCATION

Tree #	Common Name	Botanical Name	Trunk Diameter(s) (inches)	Health & Structure (1-5)	Protected Status	Comments	Construction Status/Recom'd
71	Fruiting pear	Pyrus spp.	3	2	Unprotected	Exhibits poor health.	Remove tree.
72	Oregon Ash	Fraxinus latifolia	8, 8, 7, 6	4	Protected	The tree is on the stream bank outside the existing wire fence.	Preserve and Protect. Prune to raise canopy for outfall construction clearance.

TREE INVENTORY NOTE:
SEE THE GREEN DESCRIPTION BOXES IN TREE INVENTORY FOR PRUNING RECOMMENDATIONS.

Table 4.1-7
Tree Replacement Calculations

No.	Common Name	Botanical Name	Trunk Diameter (inches)	Health Condition (0-5)	Calculated DBH	Mitigation Ratio	Number of Replacement Trees
Proposed Residential Development Area and Creek Riparian Corridor							
24	Coast Live Oak	*Quercus agrifolia*	8.5, 7.5	5	12.3	1:1	6.1
25	Coast Live Oak	*Quercus agrifolia*	12.5	5	12.5	1:1	6.3
27	Valley Oak	*Quercus lobata*	6	5	6.0	1:1	3.0
29	Valley Oak	*Quercus lobata*	10	4	10.0	1:1	5.0
33	Northern California Walnut	*Juglans hindsii*	6	5	6.0	1:1	3.0
34	Oregon Ash	*Fraxinus latifolia*	6	5	6.0	1:1	3.0
36	Red Willow	*Salix laevigata*	9.5	1	9.5	1:1	4.8
37	Red Willow	*Salix laevigata*	8	3	8.0	1:1	4.0
38	Red Willow	*Salix laevigata*	11	4	11.0	1:1	5.5
39	California Buckeye	*Aesculus californica*	6, 6, 5	4	11.5	1:1	5.8
44	Red Willow	*Salix laevigata*	17.5	2	17.5	2:1	4.4
45	Valley Oak	*Quercus lobata*	7	5	7.0	1:1	3.5
46	Oregon Ash	*Fraxinus latifolia*	1.5	4	1.5	1:1	0.8
47	Red Willow	*Salix laevigata*	3	2	3.0	2:1	0.8
48	Red Willow	*Salix laevigata*	3	4	3.0	1:1	1.5
50	Red Willow	*Salix laevigata*	5, 3.5, 3	2	8.0	2:1	2.0
51	Red Willow	*Salix laevigata*	3.5	3	3.5	1:1	1.8
52	California Buckeye	*Aesculus californica*	1.5	4	1.5	1:1	0.8
54	Red Willow	*Salix laevigata*	3	3	3.0	1:1	1.5
55	California Buckeye	*Aesculus californica*	3.5	4	3.5	1:1	1.8
56	California Buckeye	*Aesculus californica*	3, 2.5, 2.5	4	5.0	1:1	2.5
57	California Buckeye	*Aesculus californica*	5, 2.5	2	6.0	2:1	1.5
59	Toyon	*Heteromeles arbutifolia*	3, 1.5	4	4.0	1:1	2.0
Southern Storm Drainage Outfall							
68	California Buckeye	*Aesculus californica*	4	4	4.0	1:1	2.0

Therefore, a ***significant*** impact could occur. In order to address the potentially significant impact, Mitigation Measure 4.1-10 shall be required, which necessitates that the project applicant obtain a Tree Removal Permit and complies with the tree replacement and preservation recommendations contained in the Tree Protection and Removal Plan. With implementation of Mitigation Measure 4.1-10, the potential impact would be reduced to a less-than-significant level.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.1-10 *Prior to approval of the final improvement plans, the project applicant shall obtain a Tree Removal Permit from the City of Petaluma Community Development Department. In addition, all protected trees to be removed, as identified in the Tree Protection and Removal Plan prepared by Urban Forestry Associates, Inc. for the proposed project, shall be replaced in accordance with the ratios established in the Tree Replacement Calculations table in the Tree Protection and Removal Plan. All trees to be preserved and protected, as detailed in Table 2 of the Tree Protection and Removal Plan shall be preserved in accordance with the recommendations established therein. Proof of compliance with the foregoing provisions shall be submitted for review and approval to the City of Petaluma Community Development Department.*

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections, of this EIR.

4.1-11 Cumulative loss of habitat for special-status species. Based on the analysis below, the cumulative impact is *less than cumulatively considerable*.

The City of Petaluma's Planning Referral Area (planning area) comprises the cumulative setting for the proposed project. Within the City's planning area, the Urban Growth Boundary (UGB) area encompasses a total of 10,300 acres. In addition, the planning area includes the 113-square-mile Petaluma River watershed within Sonoma County and the City's Sphere of Influence (SOI) area. Within the City's UGB, most of the land in the lower reaches is developed and urbanized; however, areas along the Petaluma River and its tributaries provide valuable habitat for several special-status plant and animal species, as do grassland and oak savannah habitats along the western portion of the UGB. The planning area consists of the following eight

vegetation types: urban, rural/agricultural, grassland/oak savannah, fresh emergent wetlands, vernal pools/seasonal wetlands, riparian, northern coastal salt marsh, and brackish water marsh.

The City's General Plan EIR evaluated potential impacts that could occur through development facilitated by buildout of the General Plan planning area to a variety of special-status plant and wildlife species and other biological resources (see analyses under Impacts 3.8-1 through 3.8-12) and concluded that without compliance with applicable General Plan policies and federal, State, and local regulations, a significant impact could occur to various protected species and habitat. For example, the General Plan EIR evaluated potential impacts to special-status fish species under Impact 3.8-1 and found that if impacts on wetlands and other waters of the U.S. cannot be avoided, future developers of land within the planning area would be required to obtain Section 404 and 401 permits from the USACE and RWQCB, respectively, and comply with the provisions set forth therein. Developers whose projects could result in disturbance to stream corridors would also be required to obtain a Section 1600 LSAA from CDFW and comply with the provisions established therein. Thus, the City's General Plan EIR acknowledges that compliance with the foregoing requirements, as well as applicable General Plan policies (discussed above in the Regulatory Context section) would be necessary to ensure potential impacts to special-status fish species do not occur. Similarly, the General Plan EIR evaluated potential impacts to other species and biological resources (California brackishwater snail, salt marsh harvest mouse, special-status bat species, American badger, northwestern pond turtle, California tiger salamander, FYLF, CRLF, nesting raptor species, various bird species, oak woodlands and special-status plants, wetlands and other waters of the U.S., migratory corridors) and found that compliance with applicable policies and regulations would be necessary to prevent potential impacts from occurring. Thus, the General Plan EIR found that given the loss of existing habitat to accommodate protected species within the planning area, the potential cumulative impact would be significant without compliance with applicable policies and regulations.

With respect to the proposed project, as discussed above, the study area contains a variety of habitat types, including developed/disturbed, annual grassland, riparian, and seasonal wetlands. In addition, approximately 621 linear feet of the Creek flows through the study area within 0.22-acre of riverine habitat. Development of the proposed project could result in potential impacts to the foregoing areas. As discussed throughout this chapter, the above areas represent potential habitat for various special-status species listed in Table 4.1-2.

This chapter identifies mitigation to minimize potential adverse effects to habitat for special-status species. The mitigation measures ensure that preconstruction surveys are conducted for western bumble bee, FYLF, CRLF, northwestern pond turtle, nesting bird and raptor species protected under the MBTA and CFGC, and pallid bat; applicable agency notifications are completed and permits obtained in accordance with Section 1600 of the CFGC and Sections 404 and 401 of the CWA; and a Tree Removal Permit is obtained in accordance with Petaluma IZO Section 17.060 and mitigation trees are planted as specified in the Tree Protection and Removal Plan. Overall, with incorporation of the mitigation measures set forth herein, potential impact to biological resources would be reduced to a less-than-significant level. As such, the

proposed project would not result in substantial adverse effects to biological resources protected by CEQA.

The above discussion provides substantial evidence that, while the combined effects on biological resources resulting from approved/planned development throughout the City of Petaluma would be considered significant, the proposed project's incremental contribution to the significant cumulative effect would be reduced to a less-than-significant level with implementation of the mitigation measures required in this EIR.

Based on the above, although cumulative buildout of the City of Petaluma would result in a significant cumulative impact related to the loss of special-status species habitat, the proposed project, through the mitigation measures identified herein, would be required to comply with applicable policies and regulations to reduce the project's contribution to the significant impact to a ***less than cumulatively considerable*** level.

Mitigation Measure(s)

None required.