Final Mission Creek Habitat Restoration and Mitigation Plan

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1 Introduction

In December 2019, Southern California Edison (SCE) performed maintenance operations that consisted of road grading and vegetation management along Spyglass Ridge Road in the Mission Canyon area of Santa Barbara County, California (the "December 2019 work"). The purpose of the maintenance was to widen the road and reduce the risk of rock falls in order to maintain access to existing infrastructure, such as transmission towers and associated transmission lines located in the foothills along the access road. During grading activities, rock and spoils were discharged beyond the road prism and downslope, into regulatory areas within Mission Creek and two unnamed tributaries (Road Areas 1 and 2) to Mission Creek. The disposal caused impacts to the slopes below the road, Mission Creek streambed, trees, sensitive plants, sensitive wildlife, and native habitats. While smaller rocks and fine sediment material have settled on the slopes above the creek, larger rocks and additional fine material have settled in the creek and tributary bottoms. The objectives of the Stream Restoration Project are the full removal of all sidecast material[1] and restoration of impacted habitat within the Project area, including Mission Creek stream habitat, such that it may support native fish use to levels that existed prior to the December 2019 work.

The purpose of this Mission Creek Habitat Restoration and Mitigation Plan (Creek HRMP) is to present sidecast removal methods, restoration strategies, installation, maintenance and success monitoring methods, and five-year performance metrics to remediate all areas, including streambed and surrounding native habitats. The restoration scope that comprises this Creek HRMP is also herein referred to as the "Project." The Creek HRMP covers both stream and upland areas impacted as a result of the December 2019 work. This Creek HRMP provides specific details regarding impacts from the December 2019 work and remediation methodologies to regulatory areas within Mission Creek, methodologies for the removal of all sidecast material on-site, and restoration of all impacted upland areas, native trees, and sensitive plants on the Project site such as Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*), Plummers baccharis (*Baccharis plummerae* ssp. *plummerae*), Coastal sage scrub oak (*Quercus dumosa*). SCE recognizes that fish habitat exists within the Project area, which was also impacted as a result of the December 2019 work. Full restoration of this habitat to conditions existing prior to the December 2019 work, including habitat features within the stream, is a primary goal of the Project.

The extent of areas covered under this Creek HRMP includes repair and revegetation measures associated with California Department of Fish and Wildlife (CDFW)[2], U.S. Army Corps of Engineers (USACE), Central Coast Regional Water Quality Control Board (CCRWQCB) regulated areas, including waters of the U.S. and waters of the State, as well as areas regulated by the County of Santa Barbara. In addition to the regulatory areas within Mission Creek, this Creek HRMP includes the full removal of all sidecast materials and restoration within all upland areas on the Project site. Initial restoration activities

[1] For purposes of this assessment, "sidecast materials" excludes materials repurposed as building materials (e.g., for berms).

[2] Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code (CFGC), the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife. CDFW does not have a specific definition of what constitutes a stream as it relates to regulation under Sections 1600-1603 of the CFGC. In practice, CDFW lake and streambed boundaries were determined based on the presence of riparian vegetation or regular surface flow. Riparian habitat extending outside the limits of stream channels is delineated as CDFW regulatory areas to the outermost edge.

(e.g., weed removal, tree remediation) in upland sidecast areas were completed in fall 2020 as a component of the Road Repair Project as specified in the Road Repair Project Habitat Restoration Plan (Road HRP, HELIX 2020a).

This Creek HRMP addresses the habitat restoration and remediation of resource impacts to native habitats, trees, sensitive plants, sensitive wildlife, and waters of Mission Creek and adjacent areas. The restoration goals include full sidecast removal, to restore stream flows, stabilize soils of the creek bank, repair habitat features such as pools within the stream bed, remediate and mitigate impacts to trees and sensitive plants, and restore all impacted woodland/forest and chaparral habitats.

Specifically, the goals of this Creek HRMP include the following:

- Full removal of all sidecast material[3]
- Restore stream hydrology (e.g., pools and riffles) and habitat
- Remediate impacted trees within Mission Creek
- Stabilize creek banks and slopes
- Restore impacted woodland/forest and chaparral habitats
- Rehabilitation of sensitive plant species within the Project area

1.1 Project Location

The Project site is located along portions of Mission Creek within Mission Canyon, Santa Barbara County, California (Figure 1, *Regional Location*). The site access coordinates are Latitude: 34.465018, Longitude: -119.712531. The Project is in the Mission Canyon Watershed.

The total Project site encompasses 2.88 acres of Mission Creek and adjacent upland sidecast areas and includes several locations where rock and sediment have slid into Mission Creek's bed and bank (Figure 2, *Site Overview*). The Project site in this Creek HRMP includes CDFW, CCRWQCB, USACE, and County of Santa Barbara regulatory areas (Rincon 2020, MBI 2021). Of the 2.88-acre Project site, 1.34 acres of sidecast occurs within woodland and forest habitats, while 1.5 acres of sidecast occurs in upland habitats. The balance of 0.04 acre of sidecast occurs within developed/disturbed areas.

The Project area is in the Mission Creek – Frontal Santa Barbara Channel hydrologic unit (HUC12: 180600130203). Mission Creek flows for 16 miles from its headwaters directly to the Pacific Ocean and is an intermittent stream that is mapped as Freshwater Forested/Shrub Wetland and Riverine in the U.S. Fish and Wildlife Service National Wetland Inventory. Mission Creek and its tributaries are considered waters of the United States and waters of the State. Mission Creek in the Project area is an intermittent waterway that has been impacted by current land use practices and drought.

The Project site is in an unincorporated area of Santa Barbara County on two distinct parcels: a majority of the Project site lies within Assessor's Parcel Number (APN) 153-270-009 (owned by the City of Santa Barbara), while a small portion (approximately 120 linear feet of road and 0.028 acre of sidecast area) at

[3] Full removal of sidecast material within the Project site at the time of Project construction, with noted constraints identified in Section 3.2 Constraints to Sidecast Removal.

the northeast corner of the Project site occurs within APN 153-270-028 (under private ownership). The Project area is in Sections 33 and 34 of Township 5 North, Range 27 West, San Bernardino meridian, and is depicted on the U.S. Geological Survey's (USGS) "Santa Barbara, CA" 7.5-minute quadrangle map. The Project area is on the southern slopes of the Santa Ynez Mountains, between 900 and 1,500 feet above mean sea level. Aspects are mostly southwest or east, and slopes average 40 to 65 percent.

1.2 Environmental Setting

Determination of natural communities was assessed throughout 2020, using field-based surveys and mapping for determining dominant species, percent cover, and community boundaries; communities were refined using ArcGIS post-survey (SWCA 2021). Vegetation community names correspond to the Manual of California Vegetation online (CNPS 2020), with the sensitivities compared to the current list of sensitive natural communities (CDFW 2019). Communities were mapped to the alliance; however, state sensitive communities were mapped to association when their overarching alliance was not state sensitive. Vegetation in the study area is composed of a matrix of eight different plant communities, five of which are deemed sensitive (Figures 3a-e, *Vegetation and Sensitive Species Within the Study Area*).

The non-sensitive communities found within the Project area include:

- *Ceanothus megacarpus* Shrubland Alliance (Big pod ceanothus chaparral)
- Holly leaf cherry – toyon – greenbark ceanothus chaparral with *Ceanothus spinosus* – *Ceanothus megacarpus* Association
- *Quercus agrifolia* Forest and Woodland Alliance (Coast live oak woodland and forest)

The sensitive communities found within the Project area include:

- Big pod ceanothus chaparral with *Ceanothus megacarpus* – *Salvia mellifera* Association
- *Ceanothus (oliganthus, tomentosus)* Shrubland Alliance (Hairy leaf – woolly leaf ceanothus chaparral Alliance) with *Ceanothus oliganthus* Association
- Coast live oak woodland and forest with *Quercus agrifolia* – *Umbellularia californica* Association
- *Quercus dumosa* – *Quercus pacifica* Shrubland Alliance (Coastal sage and Island scrub oak chaparral)
- *Umbellularia californica* Forest and Woodland Alliance (California bay woodland and forest)

1.2.1 Woodland Alliances

***Quercus agrifolia* Forest and Woodland Alliance (Coast live oak woodland and forest)**

Coast live oak woodland and forest is dominated by coast live oak and occurs on-site primarily within the ravines and along Mission Creek and the drainages that feed it. Coast live oak is an evergreen tree in the Oak Family (Fagaceae). This community is common throughout southern California from the coast to the inland foothills and mountains and is typically associated with waterways or the upper reaches of drainages. Occasional California sycamore and black cottonwood (*Populus trichocarpa*) trees were

present in a few locations. Shrub species within the understory include buckthorns (*Ceanothus* spp.), bush monkeyflower, toyon, laurel sumac (*Malosma laurina*), holly-leaved cherry (*Prunus ilicifolia* ssp. *ilicifolia*), chaparral currant (*Ribes malvaceum*), blue elderberry, and poison oak. Conspicuous herbaceous species include bittercress (*Cardamine californica*), pipestems (*Clematis lasiantha*), wood fern, California fuchsia, spotted eucrypta (*Eucrypta chrysanthemifolia*), California melic, hummingbird sage, California figwort (*Scrophularia californica*), and canyon sunflower. Plummer's baccharis, a California sensitive plant with a rank (CRPR) 4.3 occurs in the coast live oak woodland that is present within Creek Sites 2, 3, and 4; Santa Barbara honeysuckle, a CRPR 1B.2; and coastal sage scrub oak, a CRPR 1B.1, occur within the upland portions of coast live oak woodland and forest community and outside of the creek restoration areas.

Coast live oak woodlands and forest is not considered to be a state sensitive alliance (G5 S4); however, one association (*Quercus agrifolia-Umbellularia californica* Association) observed on-site is state sensitive (G3 S3). The *Quercus agrifolia-Umbellularia californica* Association occurs in Mission Creek, near the crossing of an unnamed tributary west of Mission Creek and several other drainages associated with the Mission Creek watershed. In these areas, California bay is co-dominant with coast live oak in the tree canopy layer. Both *Quercus agrifolia-Umbellularia californica* Association and *Quercus agrifolia* Forest and Woodland Alliance lie within regulatory woodland/forest habitats and upland areas, depending upon their topographic position within the watershed.

***Umbellularia californica* Forest and Woodland Alliance (California bay woodland and forest)**

California bay woodland and forest are co-dominated by California bay and coast live oak; however, the bay has relative cover greater than 30 percent and can be classified as California bay woodland and forest. It occurs on-site only within a small area of Mission Creek; the areas adjacent to this community fall within the previously described *Quercus agrifolia-Umbellularia californica* Association. California bay is an evergreen tree in the Laurel Family (Lauraceae). Some California sycamores are present in a few locations. Shrub species within the understory include greenbark ceanothus, toyon, and poison oak. Conspicuous herbaceous species include wood fern and creeping snowberry (*Symphoricarpos mollis*).

California bay woodland and forest is a state sensitive alliance (G4 S3). It is also a semi-riparian vegetation community that occupies the woodland/forest habitat zone on-site.

1.2.2 Shrubland Alliances

***Ceanothus megacarpus* Shrubland Alliance (Big pod ceanothus chaparral)**

Big pod ceanothus chaparral is dominated by Big pod ceanothus (*Ceanothus megacarpus* var. *megacarpus*) and codominant with chamise, laurel sumac, and greenbark ceanothus. It occurs on-site, primarily on the south-facing slopes in well-drained soils. It was the most common vegetation community encountered during the vegetation mapping surveys. Big pod ceanothus is an evergreen shrub in the Buckthorn Family (Rhamnaceae). Other species that occur in the shrub canopy include birch-leaved mountain mahogany, toyon, holly-leaved cherry, redberry (*Rhamnus crocea*), and black sage (*Salvia mellifera*). Conspicuous herbaceous species include coast morning glory (*Calystegia macrostegia* ssp. *cyclostegia*), common sandaster (*Corethrogyne filaginifolia*), blue dicks, lance-leaved liveforever (*Dudleya lanceolata*), and southern hedge nettle (*Stachys bullata*). The low-growing chaparral yucca also occupies the herbaceous canopy layer below the more prominent shrubs. Santa Barbara honeysuckle, Plummer's baccharis, and coastal sage scrub oak also occur within the Big pod ceanothus community.

Big pod ceanothus chaparral is not considered to be a state sensitive alliance (G4 S4); however, one association (*Ceanothus megacarpus-Salvia mellifera* Association) observed on-site is considered to be state sensitive (G3 S3). The *Ceanothus megacarpus-Salvia mellifera* Association occurs in several, small, discrete locations adjacent to the road, where the plants are primarily Big pod ceanothus and black sage and little to no other shrub species. It is an upland community.

Ceanothus (oliganthus, tomentosus) Shrubland Alliance (Hairy leaf – woolly leaf ceanothus chaparral Alliance)

Hairy leaf – woolly leaf ceanothus chaparral is dominated by hairy-leaf ceanothus (*Ceanothus oliganthus*) and occurs in a few discrete areas on-site, typically at the margins of coast live oak woodlands before transitioning to the drier Big pod ceanothus chaparral. Woolly leaf ceanothus is absent on-site, meaning all associations fall under the hairy leafed ceanothus category. Hairy-leafed ceanothus is an evergreen shrub in the Buckthorn Family (Rhamnaceae). Other species which occur in the shrub canopy include chamise, Big pod ceanothus, toyon, laurel sumac, black sage, and poison oak. Emergent coast live oaks were often found in this community. Given the high shrub density inhibiting herbaceous growth, only a few species were observed; the most prominent species include pipestems and spotted eucrypta.

Hairy leaf – woolly leaf ceanothus chaparral is a state sensitive alliance (G3 S3). It is also typically associated with upland communities.

***Ceanothus spinosus* Shrubland Alliance (Holly leaf cherry – toyon – greenbark ceanothus chaparral)**

Holly leaf cherry – toyon – greenbark ceanothus chaparral is co-dominated by holly-leaved cherry, toyon, greenbark ceanothus, and Big pod ceanothus, and is the second most common alliance documented on-site. It was often found in more sheltered ravines in transitional zones between coast live oak woodlands and the drier Big pod ceanothus chaparral. All three species are evergreen shrubs belonging to the Rose Family (Rosaceae) or Buckthorn Family (Rhamnaceae). Other species that occur in the shrub canopy include birch-leaved mountain mahogany, laurel sumac, heart-leaved keckiella (*Keckiella cordifolia*), black sage, and blue elderberry. Conspicuous herbaceous species include pipestems, blue dicks, golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), and California melic. Plummer's baccharis and Santa Barbara honeysuckle also occur within this community.

Holly leaf cherry – toyon – greenbark ceanothus chaparral is not considered to be a state sensitive alliance (G5 S4) and is typically associated with upland communities.

***Quercus dumosa - Quercus pacifica* Shrubland Alliance (Coastal sage and Island scrub oak chaparral)**

Given that island scrub oak (*Quercus pacifica*) occur only on the Channel Islands, the chaparral community on-site is coastal sage scrub oak chaparral and dominated by a stand of coastal sage scrub oak. It occurs on-site only near the gate entrance, where approximately five to seven individuals are present. Coastal sage scrub oak is an evergreen shrub in the Oak Family (Fagaceae) and it is a sensitive plant (CRPR 1B.1). Shrub species associated with the community (primarily at the edges) include deerweed (*Acmispon glaber*), California brittlebush, California buckwheat, laurel sumac, lemonade berry (*Rhus integrifolia*), and black sage.

Coastal sage scrub oak chaparral is a state sensitive alliance (G2 S2). It is also typically associated with upland communities.

1.2.3 Unvegetated Areas

Developed

Developed areas refer only to the road/trail and bridge.

1.2.4 Plants

SWCA conducted botanical surveys related to the Project in 2020. Initial site assessments relating to the December 2019 work occurred on December 27, 2019, January 8, 9, and 31, and February 2 through 5, 2020. Surveys for late-blooming species were conducted from June 23 to 24, 2020 (SWCA 2021). Vegetation mapping occurred on March 30 through April 1, 2020, and sensitive plant surveys occurred on April 20 and 21, June 23 and 24, and July 21, 2020. A delineation was conducted on July 20 and 21, 2020 (Rincon 2020) and then updated in November 2021 (MBI 2021). New resource observations during the delineation surveys were used to supplement the botanical inventory.

The spring 2020 field surveys yielded 193 plant species and confirmed that four sensitive plant species occur within the study area that possess a California Sensitive Plant Rank (CRPR): Santa Barbara honeysuckle (CRPR 1B.2), Plummer's baccharis (CRPR 4.3), Hubby's phacelia (*Phacelia hubbyi*) (CRPR 4.2), and coastal sage scrub oak (CRPR1B.1).

The 2020 late-blooming field survey confirmed the absence of the late-flowered mariposa lily (CRPR 1B.3) and the white-veined monardella (*Monardella hypoleuca* ssp. *hypoleuca*, CRPR 1B.3) from the Project area. In addition, the location of the historic population of the Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*, CRPR 2B.2) was also found to be outside of the Project area. Surveys from the creek bed allowed SWCA to identify additional Plummer's baccharis and Santa Barbara honeysuckle located on the mid and lower slopes where the rockslides occurred and within the Project area. One individual of the sensitive species—ocellated Humboldt lily (*Lilium humboldtii* ssp*. ocellatum*) (CRPR 4.2) was also found just outside the Project area. Sensitive species and tree locations, including critical root zones *(defined by the County of Santa Barbara as the dripline plus 6 feet*, County of Santa Barbara 2020*)* within the study area, are presented in Figures 4a-e, *Environmentally Sensitive Area*s.

A description of these species is included below.

Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*) (CRPR 1B.2) is a perennial evergreen shrub that blooms between May and August. The shrub is known mostly from the Western Transverse Range in Ventura and Santa Barbara Counties. There is also a population known from Santa Catalina Island. This species generally occurs in chaparral, coastal sage scrub, and cismontane woodland at less than 3,280 feet in elevation. This species is threatened by development, road construction, and vehicles. The nearest CNDDB record is from 1944 and overlaps the Project area. More recent records, from 2007, show this species located approximately 2.8 miles southwest of the Project.

The species was determined to occur within the Project area along road fringes in the sidecast areas and within coast live oak woodlands and chaparral (Figures 3a-e). Further, individuals were observed growing through areas where rockslides have occurred. These individuals seem to be recolonizing the slope and/or were individuals previously covered by debris but have been able to continue to survive and grow through the debris.

Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*) (CRPR 4.3): Plummer's baccharis is a perennial deciduous shrub that blooms from August through November. The shrub has a distribution that includes the Western Transverse Ranges of the California Floristic Province and can be found in cismontane woodland, coastal scrub, and chaparral. Its microhabitat tends to be brushy canyons, usually shaded north-facing slopes, and rocky substrates at elevations of 15 to 1,400 feet. There are several Consortium of California Herbaria occurrences within the immediate vicinity of the Project area, albeit from the 1940s and earlier. Although the survey occurred before the blooming period, plants could be distinguished from other co-occurring *Baccharis* species by the fine hairs along the stem, according to the Jepson eFlora treatment (Bogler 2012).

The species was determined to occur within the Project area. An individual was observed in each of the following areas: Creek Site 2, Creek Site 3, and Creek Site 4 (Figures 3a-e). Further, individuals were observed growing along the edges of the rockslide area and may potentially recolonize the debris by next spring.

Hubby's phacelia (*Phacelia hubbyi*) (CRPR 4.2) is an annual herb that blooms from April through July. This annual herb has a distribution that includes the Western Transverse Range of the California Floristic Province and can be found on generally open gravelly or rocky slopes in chaparral, coastal scrub, valley, and foothill grassland at less than 3,280 feet in elevation. The nearest record is from 1956 and is located 1.1 miles south of the Project area.

The species was determined to occur within the Project area. During the spring surveys, approximately 34 individuals were observed, typically on the gravelly areas along the road cuts of Spyglass Ridge Road and Mission Canyon Catway (Figures 3a-e). The species was determined to occur within the Project area, often growing on berms and within the edge of rockslide areas.

Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) (CRPR 2B.2): The impacts of rockslides were evident approximately 200 feet downstream from the Mission Creek Bridge. However, the fern habitat was identified approximately 200 plus feet farther downstream beyond the rockslide. The first individual found closest to the impact area was over 450 feet east of the Project (downstream or south of the bridge), well outside of the impact areas. No impacts were observed within its habitat.

Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*) (CRPR 4.2) is a perennial bulbiferous herb that blooms between May and August and can be found throughout the central and southern coast of California. Its large, orange showy flowers lends itself well to gardens, and it is threatened by horticultural collecting on the mainland, as well as by feral herbivores on the islands off the coast. It is typically found in openings within chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, or riparian forest.

This species was determined to occur within the Project vicinity. One individual was observed approximately 30 feet east of the Project area (the 100-foot buffer of the roadbed) during the June 24, 2020 survey downstream of Creek Site 4 (SWCA 2021).

Late-flowered mariposa lily (*Calochortus fimbriatus*) (CRPR 1B.3) is a perennial bulbiferous herb that blooms between June and August. It is known from the Coast Range within Monterey and San Luis Obispo Counties, and the Western Transverse Range within Santa Barbara and Ventura Counties. The species often occurs in dry, open coastal woodland habitat or chaparral between 890 and 5,400 feet in elevation. The species is threatened by grazing, development, road maintenance, and fire

suppression. The nearest CNDDB record is from 1944 and was located approximately 0.25 mile northwest of the Project area. The nearest recent record, from 2011, is located approximately 1.7 miles to the north near East Camino Cielo.

Approximately 350 individuals of the species were recorded well outside of the Project area in an open, sunny area on a hilltop 1.36 miles away during the 2020 sensitive plant survey. Habitat within the Project area is not optimal; protocol rare plant surveys determine this species is absent from the Project area, with the nearest occurring 1.36 miles away.

Coastal sage scrub oak (*Quercus dumosa*) (CRPR 1B.1) is a perennial evergreen shrub that blooms between February and April, possibly into August. The shrub has a coastal distribution from Santa Barbara to San Diego County. The species occurs in sandy or clay loam soils in chaparral and coastal sage scrub at elevations of 50 to 2,100 feet. The species is threatened by development, fire suppression, and vegetation management. It is possibly threatened by hybridization with scrub oak (*Quercus berberidifolia*). The nearest CNDDB record, from 1944, is located approximately 0.7 mile south of the Project area, near the Santa Barbara Botanic Garden. A more recent record from 2015 shows this species located approximately 1.1 miles southeast of the Project near Rattlesnake Canyon Trail.

The species was determined to occur within the Project area. Approximately 20 individuals were observed, mostly on Spyglass Ridge Road.

1.2.5 Wildlife

Wildlife surveys included a special status wildlife assessment, nesting bird surveys and monitoring, protocol red-legged frog surveys, and a fisheries stream survey. As a result, eight special-status wildlife species were determined to have the potential to occur in the Project area and were analyzed further (SWCA 2021). There is no USFWS-designated critical habitat within the Project area. High-quality nesting bird habitat exists throughout the Project area. April field surveys confirmed two of the special-status wildlife species occur within the Project area: coast range newt and two-striped gartersnake. In addition, coastal whiptail was also confirmed to be present.

Southern California Steelhead (*Oncorhynchus mykiss*) Distinct Population Segment 10 (DPS); (Federally Endangered, State Candidate as Endangered): Southern California steelhead trout are found along the coast from San Diego County to Santa Barbara County and exhibit two distinct life patterns: resident inland trout (resident *O. mykiss*) and anadromous steelhead (steelhead trout, CalFish 2018). Steelhead trout occur in cool, clear, well-oxygenated water, with spawning occurring in gravel-bottomed substrates, which are usually riffles or pool tails (National Oceanic and Atmospheric Administration Fisheries 2020; University of California, Davis 2020). Lower Mission Creek is considered the most viable stream for steelhead trout restoration within Santa Barbara County, and although they are frequently spotted in the creek, they are unable to migrate upstream and spawn due to significant anthropogenic barriers to migration (City of Santa Barbara 2021). Adult steelhead trout have been observed to enter the Mission Creek Estuary (documented in 2001 and 2008) and migrate approximately 0.7 mile northwest upstream and become restricted at the Cota Street and Bath Street bridges as the channel becomes fully concrete-lined.

Should steelhead trout migrate upstream of the artificial barriers, there are additional in-stream boulders located downstream of the Project area, which are too large to allow steelhead trout passage.

The upper portions of the stream surveyed in April 2020 confirmed the presence of several existing natural and unnatural barriers (CDFW 2017) and can be categorized as follows:

(1) Old Mission Dam to the Stone Dam (Passage ID 7922 - 7925), approximately 0.4 mile. Prior to this project, anadromous steelhead were blocked from migrating upstream by the Old Mission Dam, which has prevented migration into the upper stream for more than 200 years. Upstream of the Old Mission Dam are several other human-made structures that have created a complete blockage, including the debris dam with a culvert (Passage ID 7923) and a small stone dam. Although Stoecker (2002) identified the culverts as partially impassable, they may be completely impassable because when the water level would be high enough for fish to pass through the culvert, the water velocity would be too great. These three human-made barriers prevent any migration of steelhead.

(2) Stone dam to bedrock waterfall (Passage ID 7925 - 7927), approximately 0.3 mile. Just upstream of the stone dam is a completely impassable natural barrier, a waterfall. However, upstream of this barrier is an approximately 0.3-mile stretch with pools or potential habitat. It is within this stretch of creek that two resident *O. mykiss* have been observed as recently as July and August 2021 (CDFW 2021). It is also the best possible spawning location for any re-introduction efforts. It is possible that there is a remnant resident population of *O. mykiss* inhabiting this part of the creek that have been isolated from ocean access for 200 or more years due to the historic construction of the Old Mission Dam. No fish were observed upstream of Rattlesnake Creek during a complete snorkel and foot survey of upper Mission Creek in 2001 and 2002 (Stoecker 2002). During a survey of the creek in April 2020 by HELIX Environmental Planning, an unknown species of three- to five-inch-long fish was observed approximately 225 feet downstream of the location of a previous (unknown year) *O. mykiss* observation reported to CDFW.

(3) Bedrock waterfall to Mission Creek bridge (Passage ID 7927 - 7631), approximately 0.4 mile. At least three impassable barriers (i.e., natural waterfalls) and fishless pools are between the December 2019 impact areas and the previous downstream fish observations. The impassable natural barriers in this stretch would further prevent steelhead from occurring in the impact areas. Even if re-introduction and spawning could occur upstream of the stone dam, these natural waterfalls present significant impediments for fish to utilize these areas upstream. Upstream of the Mission Creek bridge was identified as non-habitat by Stoecker 2002.

Although Mission Creek has fish habitat, it will remain unoccupied by anadromous steelhead without overcoming the impassable natural and human-made barriers. If fish are present in the upper reaches of Mission Creek, they may pass through the Project area to access downstream habitat and could potentially use the Project area, but do not occupy habitat within the Project area year-round.

CDFW monitoring and surveys (summer 2022 and July/August 2021) confirmed the presence of a resident population of *O. mykiss* downstream of the Project site, above the Santa Barbara Botanic Garden Dam, as described below. Surveys suggest these fish have existed historically in this watershed and are able to persist through the expression of a resident life history. CDFW surveys concluded the following:

> *At the time these assessments were conducted, several areas of suitable O. mykiss habitat provided by perennial spring fed streamflow were present within various portions of Mission Creek. This suitable O. mykiss refugia habitat is one of the various factors that led NMFS to*

designate Mission Creek the highest level of priority (Core 1) for O. mykiss recovery within the southern California DPS (NMFS, 2011). Continued documented presence of O. mykiss within the watershed by CDFW, NMFS, and others demonstrates that Mission Creek continues to contain suitable O. mykiss habitat despite prolonged drought conditions. Returning anadromous steelhead have also been documented within Mission Creek as recently as 2016 (Capelli, 2016). In recent years, a single O. mykiss was observed within the portion of Mission Creek located directly below the location of the SCE incident on Spyglass Ridge Road during snorkel and spawning surveys conducted in 2019 and 2020 (Evans, 2021). Additionally, two O. mykiss were observed on Mission Creek during snorkel surveys conducted between July 15 and August 2, 2021 (Evans, 2021). In Rattlesnake Creek, the primary tributary to Mission Creek, 16 O. mykiss were observed during a redd survey conducted on April 29, 2020 (Evans, 2021). Snorkel surveys conducted during the same time period in 2020 observed 18 O. mykiss in Rattlesnake Creek (Evans, 2021), (CDFW 2022a).

Resident population(s) of *O. mykiss* are a conservation priority of CDFW and, therefore, have been considered in planning upstream activities of the Project.

Coast Range Newt (*Taricha torosa*) (California Species of Special Concern [SSC]): Coast Range newt is a semi-aquatic amphibian endemic to California, typically found along the coast from Mendocino County to San Diego County. In Southern California, they are often found in drier habitats, including chaparral, oak woodland, and grassland. Throughout much of the year, terrestrial adults are generally inactive in subterranean refuges, typically rodent burrows, or beneath rocks and logs. Adults emerge during the wet weather and become aquatic during the breeding season, often remaining near the breeding habitat for several weeks. Breeding habitat for this species includes slow-moving streams, ponds, and reservoirs (Morey 2000, Nafis 2020).

Habitat was found to be suitable for coast range newt within the Project area, which has an overlapping CNDDB occurrence from 1986. Coast range newt has been confirmed as present within Mission Creek. At least 15 individuals, including one gravid female, seven egg masses, and an active copulation, were encountered on April 21, 2020, during a resident *O. mykiss* survey downstream of Mission Creek Bridge.

Coastal Whiptail (*Aspidoscelis tigris stejnegeri*) (SSC) Coastal whiptail is found in a wide range of ecosystems, including chaparral, woodland, and riparian areas. This species is diurnal, often observed actively moving and foraging through heavy brush. Coastal whiptail generally prefers open areas with sparse foliage but will often use heavy brush or burrows for cover when threatened (Nafis 2020).

There is suitable habitat for coastal whiptail throughout the Project area, especially near Jesusita Trail, where there is a mixture of open space and ample vegetation cover. This species was observed on-site by SCE's Felicia Nancarrow on July 21, 2020.

Coast (Blainville's) Horned Lizard (*Phrynosoma blainvillii*) (SSC) Coast horned lizard is a diurnal, flat-bodied lizard found in grasslands, coniferous forests, woodlands, and chaparral. This species is most often found in open areas, with loose soil, often near ant hills or along roadways (Nafis 2020). Like all horned lizards, the coast horned lizard has a specialist diet, mostly consisting of native ants, which is often an indicator for the presence of horned lizards.

Although no anthills were observed during the field surveys, the roadways and trails are generally suitable for this species. Records for this species are as close as 2.5 miles to the southeast of the Project

but are relatively old, with the most recent from 1993. Coast horned lizard is rarely encountered due to its behavior and cryptic coloration. This species is unlikely to occur along the fragmented suitable habitat located on the flatter, less vegetated areas, and the roadway and trails frequented by pedestrians.

Two-striped Gartersnake (*Thamnophis hammondii*) (SSC): Two-striped gartersnake is a highly aquatic species occurring in ponds, creeks, and cattle tanks, especially in rocky habitats. Vegetation communities associated with this species range from oak woodland, willow, sparse coniferous forest, chaparral, and coastal sage scrub. The diet of two-striped gartersnake includes aquatic organisms, such as fish and their eggs, amphibians and their larvae, leeches, and earthworms (Nafis 2020). This species overwinters in small mammal burrows, crevices, or under rotting logs, and emerges in the spring to breed (Kucera 2000).

Habitat within Mission Creek is ideal for this species, and CNDDB records show observations in 2013 within the creek. Two-striped gartersnake has been confirmed as present within Mission Creek. Two individuals were observed during a resident *O. mykiss* survey downstream of Mission Creek Bridge on April 21, 2020.

California Red-legged Frog (*Rana draytonii*) (Federally Threatened and SSC) The area surveyed did not contain the vegetation or water requirements needed to support California red-legged frog in the watershed. Habitat suitability for California red-legged frog consists of dense, shrubby riparian vegetation associated with deep, still, or slow-moving water (Jennings 1988; Nafis 2020). The vegetation most suited to California red-legged frogs is arroyo willow, cattails, and bulrushes (Jennings and Hayes 1989, 1994).

Ventura USFWS biologist Dou Yang was consulted to determine whether a protocol-level survey was necessary. His conclusion was that a focused survey was not appropriate as the Project area was too high in the watershed with no suitable habitat present, supporting SWCA's habitat assessment. California red-legged frog was determined to be absent within the Project area because the vegetation community that would provide habitat is the wrong type and too sparse; connectivity is poor, as the nearest occurrence is 3.5 miles away; and the USFWS concurs that there is a lack of habitat.

Western Pond Turtle (*Actinemys marmorata*) (Under Review by the USFWS for Listing as an Endangered or Threatened Species and SSC) Western pond turtle ranges from northern Baja California into Oregon, Washington, and British Columbia (mostly west of the Sierra Nevada-Cascade crest). Western pond turtle is typically found at elevations ranging from sea level to approximately 4,980 feet (Stebbins 2003). The western pond turtle utilizes a wide variety of permanent and ephemeral aquatic habitats and may spend a significant amount of time in upland terrestrial habitats as well. Western pond turtle aquatic habitats typically include permanent freshwater ponds, lakes, marshes, streams, and rivers (Bury and Holland 1993; Rathbun et al. 1992; Bury and Germano 2008). It favors sites containing deep pools, with an abundance of basking sites, such as partially submerged logs or rocks, matted emergent vegetation, floating aquatic vegetation, or exposed shorelines. Undercut banks, root masses, and boulder piles provide underwater escape cover, especially for small hatchlings and smaller turtles that behave more cryptically and are more susceptible to predation (Bury and Holland 1993).

Terrestrial habitat requirements are variable throughout the range but must include basking sites and nesting habitat. While emergent basking sites are preferred because they offer some protection from terrestrial predators and quick escapes to deep water, terrestrial basking sites are also utilized.

Terrestrial basking sites include mud banks, rocks, logs, and root wads on the bank, and are never far from water. Nesting occurs terrestrially, usually in open low-slope areas, with sparse vegetation consisting of grass and forbs, a few meters to over a hundred meters from the watercourse. The nest site typically has good exposure to the sun and compact soil (Holland 1994, Reese 1996). Suitable nest habitat near aquatic environments may often be limited (Holland 1994).

In most areas, terrestrial overwintering habitat is also required (Reese 1996). However, overwintering can be aquatic or terrestrial (Holland 1994). Terrestrial overwintering site characteristics are highly variable, but the microsite usually includes a thick duff layer (Holland 1994). Terrestrial overwintering sites include a much broader array of vegetation structures than nest sites. Shrubby, open, and forested environments have all been used by western pond turtles for overwintering (Rathbun et al. 1992, Holland 1994, Rathbun et al. 2002). Overwinter sites typically include terrestrial refugia (typically buried under 5 to 10 centimeters of leaf litter), burial in the substrate of aquatic habitats, or in undercut banks along streams (Rathbun et al. 1992, Holland 1994, Rathbun et al. 2002). Throughout their range, hatchling western pond turtles overwinter in their natal nests (Holland 1994, Bury and Germano 2008). Western pond turtles often emerge from their terrestrial refugia to bask and/or move to other locations during the winter (Holland 1994, Rathbun et al. 2002, Bury and Germano 2008).

Western pond turtle is known to occur in suitable habitat throughout Santa Barbara County. Suitable open nesting habitat is not present in the Project area. However, although western pond turtle has not been observed in the Project area incidentally or during previous Project surveys, suitable aquatic habitat for dispersal and overwintering is present within the drainages in the Project area. As a result, this species is considered likely to occur in Mission Creek, primarily downstream of Mission Creek Bridge.

Ring-tailed Cat (*Bassariscus astutus*) (Fully Protected Species). Ring-tailed cat is a medium-sized nocturnal carnivore found in the raccoon family (Procyonidae). It ranges from the southern portion of Oregon to Mexico, and as far east as Kansas and Oklahoma in a wide range of habitats, including desert, chaparral, forest, and riparian habitats, often near rocky outcrops (Goldberg 2003). Ring-tailed cat generally uses hollow trees, logs, snags, and cavities in rocky areas for cover and is typically found no further than 0.6-mile from a permanent water source (Ahlborn 2005). Mission Creek appears to have some small permanent water features within 0.6-mile of the Project area. This species is highly elusive and rarely observed throughout its range, likely because of its nocturnal habits and solitary nature.

Data on population density and relative abundance among habitats are very limited and were last studied in California in the 1980s. The data suggest that ring-tailed cat populations are relatively low in Santa Barbara County (Orloff 1980). According to the Lower Mission Creek Interim Report (U.S. Army Corps of Engineers 1987), ring-tailed cat has historically been recorded along Mission Creek prior to 1977. However, the report also shows negative results for the species during surveys in 1983 and 1987. Occurrence data for ring-tailed cat are not tracked in CNDDB; therefore, there are no records for the species within the project vicinity. Other publicly available online resources, such as iNaturalist (2020), show sporadic observations throughout Southern California, but none are within Santa Barbara County.

In addition, the lack of observations may be due to existing disturbance in the area. Much of the Project is adjacent to developed areas, while the furthest portions are within one mile of development. The roads and trails within the Project area are subject to heavy pedestrian traffic on a daily basis. Recent research on ring-tailed cat and other carnivores in the southwest indicates that there is generally a negative association with roads and edge habitat (Baker 2016). The forest and other woodland habitat

within the project area are suitable for the species to move through the area, and portions of Mission Creek are isolated from disturbance and may provide appropriate refuge, but they are assumed unlikely to occur or be encountered within the Project site based on their elusive behavior relatively small and scattered permanent water sources in the vicinity, and historic population data. The species is also strictly nocturnal and not encountered during daytime hours.

1.2.6 Soils

According to the NRCS Web Soil Survey of Santa Barbara County, California, South Coastal Part, one soil map unit was mapped within the Project area, Maymen-Rock outcrop (USDA, NRCS 2020a). Maymen-Rock outcrop complex, 50 to 75 percent slopes (MbH), primarily consists of somewhat excessively drained soils derived from shale and sandstone. Maymen soils are exclusively found on mountains with slopes ranging from 5 to 100 percent at elevations from 400 to 4,250 feet. A typical soil profile consists of brown gravelly sandy clay loam topsoil to approximately 10 inches. Below this, hard bedrock extends to approximately 15 inches in depth. This soil map unit is not included on the *National Hydric Soils List* (USDA, NRCS 2020b). No soil was collected from the site due to the access restrictions (safety concerns) down into the creek channel. Soils are anticipated to be similar to those identified in the soil survey.

1.2.7 Hydrology

The Project area is located within the Mission Creek-Frontal Santa Barbara Channel watershed (Hydrologic Unit Code 180600130203), defined by Mission Creek and its tributaries. Mission Creek flows south along Tunnel Trail, parallel to Spyglass Ridge Road, and eventually flows to the Ocean at Stearns Wharf.

Within the Project site, Mission Creek is classified as both Riverine habitat (R4SBA[4]) and Freshwater Forested/Shrub Wetland (PFOC[5]) by the NWI (USFWS 2020). Several unnamed tributaries to Mission Creek located along Road Areas 1-9 were found to be regulatory areas and are classified as Riverine habitat (R4SBA[1], Figures 4a-e).

However, during a delineation field survey (Rincon 2020), there were additional ephemeral drainages occurring throughout the Project area, and these were investigated for regulatory waters/wetland characteristics; however, many of these drainages did not have indicators that met the definition for wetland hydrology, the predominance of hydrophytic vegetation, or hydric soils. These drainages also did not provide indicators of defined regulatory waters, lacking an ordinary high-water mark, presence of a bed and bank, benching, break in slope, or other characteristic waters features. Primarily, these drainages were erosional features that drain water from the steep hillsides during periods of rain and develop into a defined stream.

1.3 Mission Canyon in the Project Area

The slopes of Mission Canyon in this upper mountainous portion of the drainage are steep, and the width of the creek is relatively narrow. Vegetation occurs where the terrain allows and is composed of a shrub/herbaceous understory and an upper canopy dominated by California bay and sycamore. Much of the canyon along the Project area is steep, with portions composed of vertical exposed rockface escarpments. Where soil has deposited along some slopes, it is mostly loosely compacted and contains

[4] R4SBA: Riverine, Intermittent, Streambed, Temporary Flooded.
[5] PFOC: Palustrine, Forested, Seasonally Flooded.

fractured rock material. The exposed rock face of the canyon is highly weathered, fractured, and unstable due to steep slopes and natural erosive processes that provide the creek with its boulder, cobble, and gravel structure. The steepness of the drainage, the unstable condition of slope material, along with the continual erosional and hydrological forces, create an environment of steep, unstable mountainous terrain (J. Burton, personal communication September 30, 2021).

Mission Creek in the Project area is an intermittent waterway that has been impacted by current land use practices and drought and generally consists of a riffle-pool habitat sequence with occasional boulder cascades and waterfalls. Riffle-pool sequences are commonly found in mountain streams and provide particularly valuable habitat for fish and other wildlife (CWA 404(b)(1) Guidelines (40 CFR 230.45)). The rapid movement of water over a coarse substrate in riffles results in a rough flow, turbulent surface, and high dissolved oxygen levels in the water. The rocky creek bed in riffles provides protection from predators, sources of food deposition, and shelter. Riffles also provide bank (lateral) and/or bed (vertical) stability. The stability of bed and banks provided by a riffle habitat is important to reduce the potential for channel degradation following sidecast material removal. Once sidecast material is removed from areas where the deposition may have displaced native creek material, any impacted portions of the creek bed lacking cobbles and boulders could become vulnerable to erosional forces during creek flows and may benefit from the reestablishment of native creek material.

Pools are deeper areas of the creek associated with riffles and are an important component of Mission Creek, particularly in the upper reaches where creek flow is ephemeral. Pools are generally created by the vertical force of water falling over bedrock, boulders, or woody debris and forming a deeper indentation by scouring the creek bed, often to bedrock. Pools are characterized by a slower stream velocity, deeper water depths, a smooth water surface, and a finer substrate. The water holding capacity of pools is often enhanced by the accumulation of large cobbles, boulders, woody material, and other streambed material along the downstream edges of the pools. With deeper water and slower flow velocity than other creek habitats, pools play an important role along Mission Creek as they retain organic matter, provide shelter and protection from predators, provide areas of cooler water conditions, and retain water in ephemeral creeks after the flow has ceased. Pools retain water longer than other stream habitats and are an important source of water for native species in this reach of the stream.

2 Project Background

The December 2019 work caused impacts to native vegetation communities, sensitive plant populations, native trees, sensitive wildlife, streambed, and regulatory resources, and additional indirect impacts to the Mission Canyon ecosystem. During grading activities, rock and spoils were displaced from hillside sections upslope and discharged beyond the road prism and downslope, into regulatory areas within Mission Creek and two unnamed tributaries (Road Areas 1 and 2) to Mission Creek. While smaller rocks and fine sediment material have settled on the slopes above the creek, larger rocks and additional fine material have settled in the creek and tributary bottoms (Attachment A, *Photos of Mission Creek Sidecast Areas*). Initial emergency actions for site stabilization were taken by SCE in December 2019 and January 2020 followed by more extensive emergency stabilization measures in February through March 2020. SCE subsequently implemented the Road Repair Project (August through November 2020), which reduced and reconfigured roadside berms in Road Areas 1 through 4, completed rock scaling to remove loose materials from exposed rock surfaces, and installed a rock drapery over the exposed rock wall located down the road from the bridge in Road Area 4 (“rock wall”). Impacted native trees in upland areas, and Road Areas 1 and 2, were remediated, and soil/rock material that had accumulated around

the base of the trees was redistributed (Road HRP, Helix 2020). The Stream Restoration Project, as described in this Creek HRMP, serves to address the environmental restoration of Mission Canyon through full sidecast removal and restoration of Mission Creek, Road Areas 1 and 2, and adjacent upland habitats.

Environmental assessments were not conducted prior to the December 2019 work; however, as described in this section, SCE conducted surveys in 2019, 2020, and 2021, to document impacts to biological resources and the surrounding environment from that work. The following sections describe estimated rock and sediment quantities, impacts to native habitats, sensitive plants, native trees, wildlife, and streams/regulatory resources resulting from the December 2019 work.

2.1 Estimated Rock and Sediment Quantities

Project engineers conducted remote surveys following the December 2019 work to provide a rough estimate of the quantity of material that was sidecast down the canyon slopes and into Mission Creek (MBI 2020a, Attachment B.1a). The estimated volumes of sidecast material were calculated using post-construction LiDAR survey (MBI, 2020b, Attachment B.1b) data collected between January and April 2020. The remotely collected data was used to determine two-dimensional surface areas of the sidecast deposits. Pre-construction topography data was not available to compare to post-construction topography, so the depths of sidecast deposits were estimated using photographs and visual observations of the site. Preliminary volume estimates of the sidecast deposits were calculated by multiplying the surface areas by the corresponding estimated depths.

To plan for the removal of sidecast deposits as part of this Creek HRMP, SCE retained an environmental contractor specializing in environmental remediation. The contractor conducted a field verification in November 2020 to refine the volume estimates and evaluate the composition (proportion of rock and soil) of the sidecast deposits for increased accuracy within regulatory areas of Mission Creek and Road Areas 1 and 2 (American Integrated Services [AIS] 2020). The contractor verified each of the deposit areas within regulatory areas using maps and data provided by the previously conducted studies using remote detection methods (MBI 2020). Once the contractor identified the deposit areas within regulatory areas, the contractor directly inspected each of the deposits by accessing them on foot to observe and determine the existing grade and adjacent contours. The contractor then used a combination of a standard grading rod, engineers' tape, and laser to directly measure the dimensions of each deposit, based on the measured depths of the deposit materials and the surface areas. Once the dimensions of the deposits were established, the contractor's technicians used a small hand shovel to observe and determine the make-up of the sidecast materials present within each deposit. The technicians determined that the deposited materials were primarily made up of rock and loose soils that were sidecast downslope from the existing adjacent roadways in 2019. The contractor's field investigators estimated the composition of rock and soil for each deposit area within the regulatory areas of Mission Creek and Road Areas 1 and 2 based on the field observations. Upon verifying the field measurements and composite information for each deposit, the contractor used the field data to calculate the volume of each deposit (in cubic yards) to determine the volume of sidecast material that would need to be removed to match the adjacent existing grades. A detailed summary of the contractor's data collection method and volume calculations are included as Attachment B.2, *Sidecast Volume Estimates Update, November 2020* (AIS 2020). A third field survey was conducted in September 2021, using the same methodology, to collect sidecast volume and location data for the Sidecast 3 (SC 3) Rock Outliers location that was identified in late 2021 (EcoKai, personal communication, September 28, 2021).

Finally, on August 9-10, 2022, a supplemental sidecast survey was performed to collect detailed data on the distribution and composition of sidecast deposits in all upland areas (HELIX 2022). In this survey, depth measurements of the sidecast deposits were collected from 39 sample points across all sidecast areas. This data was instrumental in scoping sidecast removal methodologies (Section 3.1). SCE's environmental contractor used this data to calculate revised sidecast volume estimates in September 2022 following similar methods, as described above (AIS 2022).

Collectively, the refined volume estimates from November 2020, September 2021, and September 2022 are provided in Table 1, *Sidecast Rock, Boulders, and Sediments within Mission Canyon,* below. The data in Table 1 represents the best approximation, after multiple field visits, individual site inspections, and detailed data collection, of the volumes of sidecast material deposited by SCE's December 2019 work. The total estimated volume of sidecast material (rock, sediment, and debris) deposited within RWQCB and CDFW regulatory areas was approximately 1,413.0 cubic yards, inclusive of the total estimated 135.4 cubic yards of sidecast material within USACE regulatory areas (Section 2.6). The total estimated volume of sidecast material (rock, sediment, and debris) deposited within upland areas was approximately 1,521.85 cubic yards (Section 2.2). Separately, approximately 600 cubic yards were subsequently used to construct roadside berms from the Gate Area through Road Area 9.

Due to major rainstorm events that impacted the Project site in 2023, the total volumes of sidecast material remaining on the Project site at the time of Project construction will likely be less than the estimated volumes recorded in Table 1 (Attachment C, Photographs of Mission Creek and the Project Area following January 2023 rainstorm event). Sidecast material lost from the Project site is no longer recoverable and will not be collected or removed by the Project. The estimated volume of sidecast material lost from the Project site will be calculated by subtracting the total actual volume of sidecast material removed from the Project site during construction from the total estimated volume of sidecast material recorded in Table 1 (2,331.8 cu.yds.), i.e.:

2,331.8 cu.yds. – actual sidecast removed (cu.yds.) = estimated unrecovered sidecast (cu.yds.)

SCE will provide compensation for unrecovered sidecast material as described in Attachment D *Compensatory Mitigation Plan*.

Table 1. Sidecast[1] Rock, Boulders, and Sediments within Mission Canyon

Site Location	Surface Area (sq. ft.) [2]	Estimated Depth (ft)[3]	Total Sidecast Volume (yd³) [3]	Volume within USACE regulatory (yd³) [2,3]	Volume within RWQCB/CDFW regulatory (yd³) [2,3]
Creek Site 1	1,447.50	1.65	88.6	17.6	88.6
Creek Site 2	3,554.00	1.95	257.2	30.9	257.2
Creek Site 3	4,344.00	2.15	346.6	24.9	346.6
Creek Site 4	10,303.20	1.15	439.8	51.7	439.8
Creek Site 5	0.0	0.0	0.0	0.0	0.0
Creek Site 6	0.0	0.0	0.0	0.0	0.0
Creek Site 7	6,543.10	Variable	8.4[5]	8.4[5]	8.4[5]
Road Area 1	17,029.00	0.29	184.9	0.9	184.9
Road Area 2	4,044.50	0.47	70.5	0	70.5
SC 1	1,315.20	0.50	24.4	0.0	0.0
SC 2	4,439.40	0.43	71.1	0.0	0.0

Site Location	Surface Area (sq. ft.) [2]	Estimated Depth (ft)[3]	Total Sidecast Volume (yd³) [3]	Volume within USACE regulatory (yd³) [2,3]	Volume within RWQCB/CDFW regulatory (yd³) [2,3]
SC 3	7,868.53	0.60	176.1	0.0	0.0
SC 3 Rock Outliers[4]	3,308.80	*Variable*	17.0[5]	<1.0[5]	17.0[5]
SC 4	5,062.60	0.36	67.5	0.0	0.0
SC 5	6,303.50	0.69	161.2	0.0	0.0
SC 6	1,224.00	0.31	14.2	0.0	0.0
SC 7	2,112.80	0.40	31.4	0.0	0.0
SC 8	141.7	0.15	0.8	0.0	0.0
SC 9	414.7	0.14	2.1	0.0	0.0
SC 10	2,036.10	0.19	14.3	0.0	0.0
SC 11	4,891.50	0.25	44.8	0.0	0.0
SC 12	7,424.70	0.39	107.8	0.0	0.0
SC 13	2,809.10	0.49	51.2	0.0	0.0
SC 14	5,921.60	0.47	102.1	0.0	0.0
SC 15	353.6	0.50	6.6	0.0	0.0
SC 16	911.5	0.41	14.0	0.0	0.0
SC 17	474.4	0.48	8.4	0.0	0.0
SC 18	2,738.20	0.15	15.2	0.0	0.0
SC 19	2,446.20	0.06	5.6	0.0	0.0
Sidecast Total	**109,463.43**		**2,331.8**	**135.4**	**1,413.0**
Berms			**600**	**0.0**	**0.0**
Grand Total (with Berms)			**2,931.8**	**135.4**	**1,413.0**

[1] For purposes of this assessment, "sidecast materials" excludes materials repurposed as building materials (e.g., for berms).

[2] MBI 2020b

[3] AIS 2022

[4] SC 3 Rock Outliers was formerly referred to as Road Area 1 Rock Outliers in previous versions of this HRMP but has been relabeled since this area is an extension of previously mapped Sidecast Area 3

[5] Areas SC 3 and Creek Site 7 were refined following ground-truthing surveys to define sidecast more accurately in this area. While the square footage of impacts changed, there was no change to overall sidecast volume. Updated estimate, EcoKai, personal communication, September 28, 2021, and HELIX 2022.

Sidecast accumulation in Creek Sites 1 through 4 accounts for the majority of impacts to regulatory areas, particularly within the bed of the creek. A detailed description of the sidecast material in each of these locations is provided in the sections below.

2.1.1 Roadside Sidecast Areas

Roadside sidecast deposits are generally consistent and primarily support upland vegetation communities with woodland/ forest habitats in north-facing slopes or natural drainage channels (see Section 2.2). Sidecast deposits, occurring along Road Areas 1 through 4, consist of thin layers of finer soil material intermixed with rocks and scattered boulders accumulated along the base of vegetation. In these locations, the roadside berm has already been reconstructed and consists of compacted fines within the road prism. Sidecast deposits lie beyond the reconstructed berm and downslope. Sidecast deposits occurring along the roadside slopes of Road Areas 5 through 9 consist of rocks and boulders intermixed with the roadside berms and include sidecast deposits immediately downslope of the road.

The total volume of roadside sidecast deposits within upland areas is estimated to be 918.8 cubic yards (Table 1)[6].

2.1.2 Road Areas 1 and 2

Road Areas 1 and 2 are both located within unnamed drainages west of Mission Creek and are ephemeral drainages that provide flows to Mission Creek during periods of rain. Vegetation associated with the riparian corridor in this area includes coast live oak and shrub species, such as laurel sumac, bush mallow (*Malacothamnus fasciculatus*), and ceanothus species (*Ceanothus* spp.). The majority of sidecast deposits occurring within Mission Creek and in the tributaries located at Road Areas 1 and 2 consist of a mixture of small and moderately sized rocks with finer soil material and scattered boulders and contain an estimated 255.4 cubic yards of sidecast material (Table 1).

2.1.3 Creek Site 1

Creek Site 1 occurs entirely upstream of the Spyglass Ridge Road bridge over Mission Creek and contains an estimated 88.6 cubic yards of sidecast material (Table 1). Sidecast material occurs along the slopes on both sides of the creek, covering most of the slopes and creek banks from the bridge footings to approximately 15 feet (left bank) and approximately 70 feet (right bank) upstream. Some sidecast material has spilled over the banks and settled into the creek bed, where it is mixed with existing creek cobbles and boulders on both sides of the creek. The creek in this location consists of a series of channel pools separated by higher elevation areas of the creek bed containing exposed bedrock and/or large boulders. A bedrock sheet cascade occurs along the upper portion of Creek Site 1 and is followed by two channel pools.

2.1.4 Creek Site 2

Creek Site 2 begins immediately downstream of the Spyglass Ridge Road bridge, with sidecast material covering most of the western slope of the canyon (right bank) from the bridge footing to approximately 60 feet downstream. Sidecast volume in this creek site is estimated at 257.2 cubic yards (Table 1). When the stream is flowing under the bridge, the water plunges approximately 13 feet over a waterfall immediately downstream of the bridge, creating a scour pool at the upstream portion of Creek Site 2.

The creek along Creek Site 2 contains native creek gravels, a mixture of pre-impact rock with sidecast rock, and bedrock rockface along the entire left bank through the impact site. The natural creek morphology along the right bank through Creek Site 2 is mostly unknown due to the depth of sidecast material and the lack of pre-impact data or photographs.

2.1.5 Creek Site 3

The creek between Creek Sites 2 and 3 flows relatively straight in a southeasterly direction and curves slightly towards the south through Creek Site 3. The creek bed through this area is relatively flat and wider than through the other creek sites. The sidecast deposition area of Creek Site 3 extends from the top of the road downslope to the right bank of the creek and fans out laterally as it slides downhill so that the sidecast is more than twice the width at the creek as it is at the top of the slide. The sidecast volume at Creek Site 3 is estimated to be 346.6 cubic yards, with material covering the entirety of the creek's right bank but, with the exception of a few outliers, does not spill into the creek bed (Table 1).

[6] This value includes a nominal volume of sidecast in roadside features within CDFW regulatory areas.

The creek bed through this site contains native gravels, cobbles, and boulders, with a few scattered sidecast rock outliers.

2.1.6 Creek Site 4

Creek Site 4 contains the highest estimated volume of sidecast material (439.8 cubic yards, Table 1) and includes a steep slope of sidecast deposit that extends from the road to the left bank of the creek. Creek Site 4 is the furthest downstream of the four sites, and the creek in this area consists of flatwater habitat along the upstream portion and cascade habitat along the downstream portion of the site. The majority of the sidecast occurs along the western slope (right bank), with a portion of the slide having spilled over the creek bank and into the creek, with large boulders covering much of the cascade habitat.

2.1.7 Creek Site 7

Creek Site 7 occurs approximately 800 feet upstream of Creek Site 1 and the Spyglass Ridge Road bridge over Mission Creek. This section of the creek can be defined as steep and rocky, with complex habitat units such as pools and riffles. Sidecast in this location can be defined as a few dozen scattered boulders, with a total volume of approximately 8.4 cubic yards (Table 1). Although most sidecast boulders are scattered outside and above the main creek channel along canyon slopes within the upland chaparral habitat, four individual boulder outliers (< 24") were located within the creek channel. The limited nature of sidecast deposits in this area avoided complex habitat unit features within the creek, as noted above.

2.1.8 Sidecast 3 Rock Outliers

On September 28, 2021, SCE's fluvial geomorphologist and environmental remediation team conducted a survey of previously unmapped rock outliers at the terminus of a sidecast area 3 (SC 3) identified as Sidecast 3 Rock Outliers (Table 1). During the survey, the team identified sidecast rock outliers consisting of scattered boulders located at the base of a slope and an individual boulder settled immediately adjacent to Mission Creek, approximately 0.5 mile downstream of Creek Site 4. Because these rocks are not contiguous with the main sidecast and are mostly individual rocks, they have been included within a contingency buffer at the terminal end of previously mapped sidecast area 3, and their total volume does not exceed 17 cubic yards of sidecast (Table 1). The area is located down a steep portion of the canyon, approximately 400 linear feet and 200 vertical feet downslope and east of the road, having an average slope of 77 percent. Sidecast 3 Rock Outliers occur at two primary locations: (1) within an upland terrace (16 cubic yards), presumably outside of large creek flood events, and (2) within the floodplain terrace (less than 1.0 cubic yard), which only conveys creek flow during large storm events. No material was observed within the low-flow creek bed itself. In addition, a single coast live oak tree was damaged, presumably by the sidecast rockfall (Tree #254, Figure 4a). The tree was given a health assessment of moderate damage rating by an ISA-certified arborist who identified damage in several locations and a secondary trunk, which was broken from the main trunk (see Table 3a).

2.2 Vegetation Communities

Biological survey data published in the Mission Creek Revised Biological Impact Assessment Report was used to estimate permanent and temporary impacts to vegetation communities resulting from the December 2019 work (SWCA 2021). Vegetation communities impacted as a result of the December 2019

work are described in Section 1.2, listed in Table 2, *Impacts to Vegetation Communities Resulting from the December 2019 Work* (SWCA 2021).

In total, the December 2019 work impacted 3.48 acres of vegetation. The most prevalent, and thus most impacted, vegetation community within the Project area was Big pod ceanothus chaparral, with Holly leaf cherry – toyon – greenbark ceanothus chaparral Alliance, *Ceanothus spinosus* – *Ceanothus megacarpus* Association as the second most prevalent and second most impacted. Of the nine vegetation communities impacted, five are state sensitive natural communities.

Table 2. Impacts to Vegetation Communities Resulting from December 2019 Work

Vegetation Community	Permanent Berms	Rock Wall	Sidecast	Total (acres)
Big pod ceanothus chaparral Alliance	0.15	0.31	0.84	1.30
Big pod ceanothus chaparral Alliance, *Ceanothus megacarpus* - *Salvia mellifera* Association[1]	0.03	0.02	0.08	0.13
California bay forest and woodland Alliance[1]	0.01	0.00	0.08	0.09
Coast live oak woodland Alliance, *Quercus agrifolia* - *Umbellularia californica* Association[1]	0.03	0.00	0.56	0.59
Coast live oak woodland and forest Alliance	0.13	0.08	0.36	0.57
Coastal sage and Island scrub oak chaparral Alliance[1]	0.00	0.00	0.00	0.00
Developed	0.00	0.00	0.004	0.004
Hairy leaf - woolly leaf ceanothus chaparral Alliance, *Ceanothus oliganthus* Association[1]	0.03	0.00	0.02	0.05
Holly leaf cherry - toyon - greenbark ceanothus chaparral Alliance, *Ceanothus spinosus* Association	0.01	0.00	0.02	0.03
Holly leaf cherry - toyon - greenbark ceanothus chaparral Alliance, *Ceanothus spinosus* - *Ceanothus megacarpus* Association	0.11	0.12	0.48	0.72
Grand Total	**0.50**	**0.53**	**2.44**	**3.48**

[1] denotes a state sensitive natural community
DATA SOURCE: SWCA 2021, HELIX 2021.

2.3 Sensitive Plants

Each section below outlines the direct effects on each special-status plant and its habitat known or suspected to be present in the Project areas described in the SWCA Mission Creek Revised Biological Impact Assessment Report (SWCA 2021).

Santa Barbara honeysuckle: Some individuals, and suitable habitat, of Santa Barbara honeysuckle were likely displaced along the western bank of Mission Creek, south of the bridge. Because these plants were located directly adjacent to the side-casts, one can reasonably assume these plants were located within the side-cast areas along the western bank of Mission Creek prior to the road maintenance activities (SWCA 2021).

Plummer's baccharis: Given the large number of individuals growing on the rock walls within the Project area, it can be assumed that some individuals were removed as a result of the rock wall scraping (SWCA 2021). There are also individuals located on the downslope in areas where side-casts affected the vegetation communities, likely crushing the shrubs. In some areas, there are locations where the rock face was cut away and the plant's root system was damaged, or parts of the plant were cut away. Similar to the Santa Barbara honeysuckle, some individuals and suitable habitat of Plummer's baccharis were likely displaced along the western bank of Mission Creek, south of the bridge (immediately upstream of Creek Site 1). Because these plants were located directly adjacent to the side-casts, one can reasonably assume these plants were located within the side-cast areas along the western bank of Mission Creek prior to the road maintenance activities (SWCA 2021).

Hubby's phacelia: Hubby's phacelia was primarily found in areas that were not directly impacted by the road activities. However, several individuals were located adjacent to Road Areas 1 and 2 (SWCA 2021). Notably, it prefers the exposed margins of the historical roadcut, similar to Plummer's baccharis and Santa Barbara honeysuckle. Because this species is an annual herb, individuals had not yet germinated in December, at the time of the impacts. However, the seed bank and suitable habitat were directly impacted during the scraping and side-cast events. In one case, an individual was documented during the summer survey growing out of a portion of the bank affected by the sidecast within Creek Site 4.

Coastal sage scrub oak: In some areas above the road where the rock was removed, this action directly damaged the root system of the plants that had established above and along the rock face and left them vulnerable to desiccation and imminent erosion (SWCA 2021).

Sonoran maiden fern: The impacts of rockslides were evident approximately 200 feet downstream from the Mission Creek Bridge. However, the fern habitat was identified approximately 200 plus feet farther downstream beyond the rockslide. The first individual found closest to the impact area was over 450 feet east of the Project (downstream or south of the bridge), well outside of the impact areas (SWCA 2021). No impacts were observed within its habitat.

White-veined monardella: This species was determined to be absent from the study area; thus, the road maintenance activities had no direct impacts on the species (SWCA 2021).

Ocellated Humboldt lily: The ocellated Humboldt lily is a summer-deciduous perennial bulbiferous herb, meaning that, for a large part of its life cycle during the winter, it is entirely below ground in a sub-rhizomatous bulb form. When the road maintenance activities occurred, the lily would have been in this dormant stage without aboveground growth. However, it is likely some of these underground bulbs were displaced or damaged during the side-casts adjacent to where the one individual was observed. Suitable habitat for this species may also have been affected by road grading activities (SWCA 2021).

2.4 Native Trees

A comprehensive tree impact assessment was performed by an International Society of Arboriculture (ISA)-certified arborist to identify all trees impacted by the December 2019 work within the Project area (HELIX 2020b*,* HELIX 2020c). The summary tables below represent the results of this tree impact assessment by species, severity, and type of impact. Species and severity, both overall and specifically for trees only within CDFW regulatory areas, are represented in Table 3a, *Summary of Trees Impacted by Species and Severity*, and Table 3b, *Summary of Trees Impacted within Mission Creek CDFW Regulatory Areas by Species and Severity),* respectively. The severity of impacts to native trees ranges from minor to major damage, using the following severity classification, as observed by the monitoring arborist:

- **Minor impacts** are not expected to affect the health or viability of the tree in the short term (i.e., one to three years).

- **Moderate impacts** were more severe than minor impacts and may cause some reduction in the health or viability of the affected tree in less than one year, especially in the absence of remediation.

- **Major impacts** included complete loss of the tree, or loss of the tree's above-ground parts, while still allowing for the potential to resprout from the root crown.

The types of impacts to trees range from soil and rocks accumulated at the trunk and root zone to mechanical damage to limbs and trunk from machinery. Impact type by species is summarized, overall and specifically, for trees only within CDFW jurisdiction (Table 4a, *Summary of Impacts from the December 2019 Work within Mission Creek by Impact Type,* Table 4b*, Summary of Impacted Trees within CDFW Regulatory Areas by Species and Impact Type*). Because most trees experienced more than one type of impact, the number of impacts is greater than the total number of trees shown in Table 3a. No trees were determined to be a safety risk to the public or property.

Remediation of native trees in the upland areas and within Road Areas 1 and 2 are described in the Road HRP (HELIX 2020a), with individual tree details listed in Attachment E.1, *Trees Remediated in November 2020*. Remediation of native trees within CDFW regulatory areas of Mission Creek (Creek Sites 1 through 4) is included in this Creek HRMP, with individual tree details listed in Attachment E.2, CDFW *Trees to be Remediated as Part of the Creek HRMP*.

Table 3a. Summary of Impacted Trees by Species and Severity

Species	Minor	Moderate	Major	Total
Coast Live Oak	81	19[1]	5	105[1]
Bay Laurel	5	6	6	17
Western Sycamore	3	4	1	8
California Buckeye	0	1	0	1
TOTAL	**89**	**30**[1]	**12**	**131**[1]

[1] One additional Coast live oak tree was discovered in October 2021 with moderate impacts as a result of the sidecast in the Sidecast 3 Rock Outliers location, which is reflected in this table.

Table 3b. Summary of Impacted Trees within CDFW Regulatory Areas by Species and Severity

Species	Minor	Moderate	Major	Total
Coast Live Oak	12	4[1]	2	18[1]
Bay Laurel	4	6	4	14
Western Sycamore	2	4	1	7
TOTAL	**18**	**14**[1]	**7**	**39**[1]

NOTE: Table 3b is a subset of the trees listed in Table 3a.

[1] One additional Coast live oak tree was discovered in October 2021 with moderate impacts as a result of the sidecast in the Sidecast 3 Rock Outliers location, which is reflected in this table.

Table 4a. Summary of Impacted Trees by Species and Impact Type

Species	Soil Impacts[1]	Mechanical Damage[2]	Rocks and Boulders[3]	Undermined[4]	Total
Coast live oak	71[4]	36	44[4]	11	**162**[4]
Bay laurel	13	7	15	2	**37**
Western sycamore	5	1	7	0	**13**
California Buckeye	0	0	0	1	**1**
TOTAL	**89**[4]	**44**	**66**[4]	**14**	**213**[4]

NOTE: Trees may have more than one impact type, and table totals will not equal the total number of trees impacted.

[1] Includes impacts to trunk, root crown, and root zone.

[2] Includes pruning and damage by equipment.

[3] Includes rocks and boulders on roots, root crown, or against trunk, as well as physical damage by falling rocks/boulders. Soil has been removed or has eroded out from around supporting roots.

[4] One additional Coast live oak tree was discovered in October 2021 with soil and rock impacts as a result of the sidecast in the Sidecast 3 Rock Outliers location, which is reflected in this table.

Table 4b. Summary of Impacted Trees within CDFW Regulatory Areas by Species and Impact Type

Species	Soil Impacts[1]	Mechanical Damage[2]	Rocks and Boulders[3]	Undermined[4]	Total
Coast live oak	12[4]	7	15[4]	0	**34**[4]
Bay laurel	11	6	12	1	**29**
Western sycamore	4	1	6	0	**11**
TOTAL	**27**[4]	**14**	**33**[4]	**1**	**75**[4]

NOTE: Table 4b is a subset of Table 4a. Trees may have more than one impact type, and table totals will not equal the total number of trees impacted.

[1] Includes impacts to trunk, root crown, and root zone.

[2] Includes pruning and damage by equipment.

[3] Includes rocks and boulders on roots, root crown, or against trunk, as well as physical damage by falling rocks/boulders Soil has been removed or has eroded out from around supporting roots.

[4] One additional Coast live oak tree was discovered in October 2021 with soil and rock impacts as a result of the sidecast in the Sidecast 3 Rock Outliers location, which is reflected in this table.

2.5 Sensitive Wildlife

Each section below outlines the direct effects on each sensitive wildlife species with habitat known or suspected present in the study area based on known species occurrences and daytime surveys. The descriptions that follow are verbatim of the studies by a biologist conducting the surveys and documentation of observations and findings. These findings are also summarized in the biological

impacts report (SWCA 2021). Night surveys for sensitive species have not been conducted within the study area since species occurrences in the night do not directly correlate with their presence within the worksite during the day.

Steelhead (Federally Endangered, State Candidate as Endangered): In April 2022, the California Fish and Game Commission accepted for consideration a petition to list the southern California steelhead (O. mykiss) as endangered under the California Endangered Species Act (CESA). This action commenced a one-year status review to be completed by CDFW, during which Southern California steelhead is protected as a candidate species (CDFW 2023). The candidate status for Southern California steelhead was not in effect at the time of the December 2019 work.

There were no significant impacts to anadromous steelhead given the lack of habitat contiguous with other pools, lack of connectivity to the ocean, and the existing conditions present prior to the road activity impacts. The upper portions of the stream that were surveyed in April 2020 confirmed the presence of several existing natural and unnatural barriers (CDFW 2017, SWCA 2020). The Mission Creek Habitat Assessment Report prepared by CDFW concludes that the continued presence of resident *O. mykiss* within the watershed documented by CDFW, NMFS, and others demonstrates that Mission Creek continues to contain suitable habitat for resident *O. mykiss* despite prolonged drought conditions (CDFW 2022a). Contemporary surveys of upper portions of the stream confirmed the presence of several existing natural and unnatural fish passage barriers (CDFW 2022a, CDFW 2017, SWCA 2020). However, fish habitat exists within the Project area and was impacted as a result of the December 2019 work. For these reasons, there is potential for a resident *O. mykiss* population to have been impacted by the December 2019 work; however, fish surveys within the 2019 impact area have been inconclusive. Full restoration of fish habitat on the Project site, including habitat features within the stream, is a primary goal of the Project.

Coast Range Newt (SSC): Due to the location and size of the population of coast range newts observed near the study area, direct impacts likely occurred in the form of mortality or injury by the crushing of individuals by the side-cast materials. This species incurred additional direct impacts by the loss of habitat due to the debris slides from the side-castings covering spans of stream habitat and preventing surface flow for 50 to 60 feet.

Western Pond Turtle (Under Review by the USFWS for Listing as an Endangered or Threatened Species and California SSC): Western pond turtle in the area are not expected to occur on the roads but would stay within drainages; therefore, direct impacts in the form of mortality or injury from the roadwork are unlikely to have occurred. Western pond turtle would be impacted by direct impacts by loss of dispersal and overwintering habitat due to the debris slides from the side-castings covering the spans of stream habitat and preventing surface flow (as discussed above for coast range newt).

Coastal Whiptail and Coast Horned Lizard (SSC): Widening of the roads and the creation of open spaces directly increased the foraging habitat for both species, and insignificantly reduced protective coverage where vegetation was impacted along the road areas. Road activities along the loose soils or the road edges may have had a low possibility of direct loss of the horned lizard if it was unable to move away in time due to its cryptic defensive behavior.

Two-striped Gartersnake (SSC): While the number of two-striped gartersnakes observed near the study area was low, there is a possibility the species would have been crushed as well. This species incurred additional direct impacts by the loss of habitat due to the debris slides from the side-castings, covering

spans of stream habitat and preventing surface flow for 50 to 60 feet. The grading, scraping, and movement of materials over the side of the canyon likely buried moderate- to high-quality natural habitat in the creek for two-striped gartersnakes, coast range newts, western pond turtle, and other non-sensitive amphibians, if habitat conditions were similar.

Ring-tailed Cat (Fully Protected Species): There were no significant impacts to the species given the wide range and low density of the general species population and the unlikelihood of its frequent occurrence. If they were present within the study area at the time of the impacts, they would have experienced temporary noise disturbance and permanent impacts to foraging habitat due to the rock wall scraping and side-casts.

2.6 Impacts to Streams/Regulatory Resources

SCE conducted a regulatory delineation to determine the extent of road grading impacts to nearby regulated aquatic resources associated with Mission Creek in Santa Barbara County, California (Rincon 2020, MBI 2021). The delineation was conducted to evaluate impacts to regulatory waters and woodland/forest resources that may have resulted from the December 2019 work. Impacts to these regulatory waters are regulated by the USACE under Section 404 of the CWA and the CCRWQCB under Section 401 CWA and Porter-Cologne Water Quality Control Act, and by CDFW pursuant to Sections 1600 *et. seq.* of the California Fish and Game Code. Final regulatory areas are approved by the state and federal authorities.

Rincon conducted field visits on January 3 and March 27, 2020, within a defined Study Area, during which four sidecast areas were identified where rock from the December 2019 work had spilled over into potentially regulatory areas likely regulated by the USACE, CCRWQCB, and/or CDFW. Similarly, MBI conducted a field visit on September 28, 2021, to identify potentially regulatory areas within the Sidecast 3 Rock Outliers area, which had not been discovered until after the 2020 field visits.

Based on the regulatory delineations, and applying the volume estimate update, the deposits have resulted in impacts to approximately 2,221.4 square feet (0.06 acre) (135.4 cubic yards) of USACE regulatory areas and 44,233.8 square feet (1.02 acres) (1,413.0 cubic yards) regulated by the CCRWQCB and CDFW, within the study area (Rincon 2020; AIS 2020; MBI 2021; EcoKai, personal communication, September 28, 2021). At the time of the delineation, a large portion of the sidecast areas along Mission Creek had been treated with best management practices (BMPs), such as covering the slopes with jute netting or silt fencing installed at the toe of the slopes, to minimize additional sedimentation from further impacting nearby aquatic resources. The total footprint of impacts covers four main sidecast locations, which can be further subdivided into seven source point sidecast locations (Table 5, *Summary of Regulatory Impacts from the December 2019 Work*).

Table 5. Summary of Regulatory Impacts from the December 2019 Work

Project Site	State and Federal Regulatory Waters			
	USACE (non-wetland waters[1])		RWQCB/CDFW	
	Square Feet	Volume (Cubic Yards)	Square Feet	Volume (Cubic Yards)
Site 1				
Road Area 1	89.4 (22.0 linear feet)	0.9	16,903.0 (211.3 linear feet)	184.9

Project Site	State and Federal Regulatory Waters			
	USACE (non-wetland waters[1])		RWQCB/CDFW	
	Square Feet	Volume (Cubic Yards)	Square Feet	Volume (Cubic Yards)
Sidecast 3 Rock Outliers	39.2 (15.4 linear feet)	<1.0	3,174.7 (53.4 linear feet)	17
Subtotal	***128.6 (37.4 linear feet)***	***1.9***	***20,077.7 (264.7 linear feet)***	***201.9***
Site 3				
Road Area 2	0	0	4,010.1 (139.9 linear feet)	70.5
Subtotal	***0***	***0***	***4,010.1 (139.9 linear feet)***	***70.5***
Site 4				
Creek Site 1	245.5 (25.8 linear feet)	17.6	1,304.1 (47.6 linear feet)	88.6
Creek Site 2	388.2 (75.1 linear feet)	30.9	3,427.3 (155.8 linear feet)	257.2
Creek Site 3	296.0 (70.0 linear feet)	24.9	4,137.3 (97.2 linear feet)	346.6
Creek Site 4	1076.2 (91.5 linear feet)	51.7	10,267.8 (167.1 linear feet)	439.8
Subtotal	***2005.9 (262.4 linear feet)***	***125.1***	***19,136.5 (467.7 linear feet)***	***1,132.2***
Site 5				
Creek Site 7	86.9 (21.5 linear feet)	8.4	86.9 (21.5 linear feet)	8.4
Subtotal	***86.9 (21.5 linear feet)***	***8.4***	***86.5 (21.5 linear feet)***	***8.4***
Road Areas 5-9				
Road Areas 5-9	***0***	**-**	***923.0 (170.0 linear feet)***	**-**
TOTAL	2,221.4 (321.3 linear feet) (0.06 acre)	135.4	44,233.8 (1,063.8 linear feet) (1.02 acres)	1,413.0

[1] Volumes and linear feet of the USACE (non-wetland waters) impacts are a subset of the RWQCB/CDFW impacts. The total impacts are not additive.

Notes: USACE (U.S. Army Corps of Engineers; RWQCB (Regional Water Quality Control Board); CDFW (California Department of Fish and Wildlife). LiDAR surveys were not completed at Creek Site 5 – these site calculations are based on site visit and aerial drone footage.

Source: Rincon 2020; AIS 2022; EcoKai, personal communication, September 28, 2021.

2.7 Beneficial Uses

The beneficial uses of Mission Creek, as identified in the RWQCB Central Coast Basin Plan, and impacts resulting from the December 2019 work to those beneficial uses are summarized below:

Municipal and Domestic Supply (MUN): No impacts to MUN have been noted as a result of the December 2019 work. The Project site is located in the upper watershed, and no supply sources are within the area.

Ground Water Recharge (GWR): No impact to GWR is noted as a result of the December 2019 work. The Project site is located within an intermittent system near the headwaters of the watershed. Ground water recharge is limited in the Project site reaches due to lack of water as well as narrow drainage invert. The Project area is predominantly uplands.

Water Contact Recreation (REC-1): No impact to REC-1 uses is noted as a result of the December 2019 work. Although designated in the Project site reach, water direct contact is extremely limited due to the intermittent nature of the upstream reaches.

Non-contact Water Recreation (REC-2): The December 2019 work and associated side-cast materials temporarily impacted REC-2 beneficial uses. This includes impacts to predominately upland vegetation as well as visual impacts due to rock/soil deposition over plant species. These temporary impacts are visible along the unimproved road/trail that parallels the main Mission Creek drainage. Restoration activities described in this Creek HRMP shall reduce impacts to REC-2 beneficial uses.

Wildlife Habitat (WILD): The December 2019 work and associated side-cast materials temporarily impacted WILD beneficial uses. Within woodland/forest areas, these impacts include the loss of terrestrial plants growing along the waterway. There is a loss of stream surface flow for approximately 50 to 60 feet, thereby affecting habitat for coast range newt, two-striped gartersnake, other non-sensitive amphibians, as well as habitat for resident *O. mykiss*. Restoration activities described in this Creek HRMP shall reduce impacts to WILD beneficial uses.

Cold Freshwater Habitat (COLD): The December 2019 work and associated side-cast materials may temporarily have impacted COLD beneficial uses. Although the drainage feature is intermittent, such impacts include impacts to wet season flows associated with recent rain events. Despite sidecast materials preventing surface flow for approximately 50 to 60 feet, the stream continues to flow freely through and underneath the sidecast material. Despite the loss of cold habitat at the impact site, the material does not have observable impacts to cold freshwater habitat downstream. Restoration activities described in this HRMP shall reduce impacts to COLD beneficial uses.

Warm Freshwater Habitat (WARM): The December 2019 work and associated side-cast materials may temporarily have impacted WARM beneficial uses. Although the drainage feature is intermittent, such impacts include impacts to wet season flows associated with recent events. Despite sidecast materials preventing surface flow for approximately 50 to 60 feet, the stream continues to flow freely through and underneath the sidecast material. Despite the loss of warm habitat at the impact site, the material does not have observable impacts to warm freshwater habitat downstream. Restoration activities described in this Creek HRMP shall reduce impacts to WARM beneficial uses.

Migration of Aquatic Organisms (MIGR): No impacts to MIGR to anadromous fish are noted as a result of the December 2019 work. There is potential for resident *O. mykiss* to have been impacted by the December 2019 work, though fish surveys within the 2019 impact area have been inconclusive. Fish habitat does exist within the Project site and was impacted as a result of the December 2019 work. Full restoration of this habitat, including habitat features within the stream, is a primary goal of the Project. Temporary impacts from the December 2019 work to herpetofauna species may have impacted MIGR beneficial uses. The Project site is located within an intermittent system near the headwaters of the watershed; the drainage is not in a location where migration of aquatic species from fresh water to salt water exists. Steelhead are completely blocked off from entering the upper parts of Mission Creek (including the Project site) by the Old Mission dam, additional dams approximately one mile

downstream, and several natural waterfalls, boulders, and historically downed trees within 0.5 mile downstream. Localized movement of newt and gartersnake may be temporarily impeded, given the presence of sidecast material.

Spawning, Reproduction, and/or Early Development (SPWN): No impacts to SPWN are noted as a result of the December 2019 work. Although spawning habitat exists downstream, this habitat is unable to be utilized by anadromous steelhead without significant impacts to cultural resources, continual re-introductions, and/or artificial assistance. There is potential for resident *O. mykiss* to have been impacted by the December 2019 work, though fish surveys within the 2019 impact area have been inconclusive. Fish habitat does exist within the Project site and was impacted as a result of the December 2019 work. Full restoration of this habitat, including habitat features within the stream, is a primary goal of the Project.

Rare, Threatened, or Endangered Species (RARE): No federal or state listed species were impacted as a result of the December 2019 work (see Section 2.5 for species listing under CESA). The sidecast materials likely resulted in the direct loss of coast range newts (CDFW Species of Special Concern), given the large number of newts observed in the stream on April 21, 2020. It is likely the sidecast material may have crushed individuals. It is possible that the two-striped gartersnake (CDFW Species of Special Concern) could have also been crushed. Both species have lost habitat as a result of the sidecast material in the stream. In addition, two sensitive plants (Santa Barbara honeysuckle [CRPR 1B.2] and Plummer's baccharis [CRPR 4.3]) were directly impacted by the loss of individuals and habitat due to removal of loose and protruding material on slopes along the road. No sensitive, threatened, or endangered species associated with water-dependent habitats are present within the Project site.

Estuarine Habitat (EST): No impacts to EST are noted as a result of the December 2019 work. The Project site is located within an intermittent system near the headwaters of the watershed; no estuarine habitat is within or near the Project site.

Freshwater Replenishment (FRSH): No impacts to FRSH are noted as a result of the December 2019 work. The Project site is located within an intermittent system near the headwaters of the watershed; natural or artificial maintenance of surface water quantity or quality is not present.

Commercial and Sport Fishing (COMM): No impacts to COMM are noted as a result of the December 2019 work. Areas within the Project site are not used for commercial or recreational activities tied to COMM.

3 Project Description

This chapter describes the Project and identifies goals, strategies, and activities proposed by SCE to restore the resources impacted by the December 2019 work. The Project is specifically designed for the full removal[7] of sidecast rock and sediments deposited in regulatory and upland areas, to restore stream hydrology (e.g., pools and riffles) and habitat within the Project area to support native fish use to levels that existed prior to the December 2019 work, and to stabilize creek banks and slopes. The Project will also restore impacted native vegetation habitats and promote the regrowth of chaparral and woodland/ forest habitats, rehabilitate sensitive species populations within the Project site, and remediate impacted trees within Mission Creek. Pre-Project activities will include a stream hydrology survey, seed

[7] Full removal, with noted constraints identified in Section 3.2 Constraints to Sidecast Removal

collection, weed abatement, avoidance flagging of sensitive resources, and mobilizing equipment into approved staging and stockpiling locations. Restoration activities will begin with sidecast removal (Figures 6a-e, *Sidecast Removal Treatments*).

This chapter is divided into five main sections, which are all separate components of the Project: Section 3.1 details the methodologies for sidecast removal within different portions of the Project area; Section 3.2 identifies potential constraints which may be encountered during sidecast removal and how these constraints may be negotiated during installation to maximize removal and minimize environmental harm; Section 3.3 is an outline of the restoration and revegetation components that would follow sidecast removal; Section 3.4 details avoidance and minimization measures to be implemented during Project activities; and Section 3.5 lists responsible parties for Project activities.

3.1 Sidecast Removal Methods

SCE's sidecast removal methodologies for the Project were finalized through a comparative scoping analysis performed by SCE's Project team in August 2022 (HELIX 2022). Through this iterative process, four methods to extract sidecast materials deposited during the December 2019 work were selected to achieve maximum extraction of sidecast material without causing harm to sensitive environmental resources, while maintaining a safe working environment and protecting public safety long term. Once removed, sidecast material will be transferred to an approved location where soil will be temporarily stockpiled, then loaded into small-scale "bobtail" dump trucks, and transported along a designated route to be disposed of at a local landfill. Some material that had been deposited in upland areas may be processed and repurposed on-site to support berm reconstruction.

The primary method identified for sidecast removal is the combination of manual or hand removal, and removal using vacuum or guzzler trucks (Hand and Guzzler Removal technique). The benefits of this method include the low-level impact of using technicians to access steep slopes and environmentally sensitive areas and the high efficacy for extracting the sidecast using this methodology. The Hand and Guzzler Removal technique will be used in conjunction with machinery staged on the road to facilitate the removal of the larger rock. In addition to the Hand and Guzzler Removal technique, the Project comparative scoping analysis identified two additional low-impact removal techniques expected to result in the full removal of sidecast in locations away from the road where Guzzler Removal is not feasible. These removal techniques are Hand Removal and Helicopter Removal. A summary and map of the sidecast removal methods, and locations where those methods are employed, are listed in Table 6, *Project Sidecast Removal by Sidecast Deposit Location*, Figures 6a-e, and are also described below. Through the implementation of these combined removal methods, SCE believes that sidecast deposit removal will be maximized; therefore, SCE anticipates the full removal of all sidecast material remaining on the Project site, potentially excepting only minor areas where constraints to full removal may exist, as identified by SCE (see Section 3.2 below).

Table 6: Project Sidecast Removal by Sidecast Deposit Location

Sidecast Location	Method of Sidecast Removal
Roadside Sidecast Areas 1-2, 4-16	Excavator with Hand and Guzzler
Sidecast 3, Sidecast 3 Outliers	Helicopter Removal
Creek Sites 1-4, Road Areas 1-2	Forklift with Hand and Guzzler
Creek Site 7, Roadside Sidecast 17-19	Hand Rock Removal

Sidecast removal methods are described in the sections below, beginning at the Spyglass Ridge Road gate (Road Gate Area), upslope to Road Area 9, and then Trail Road Area 2 (Figures 6a-e).

3.1.1 Roadside Sidecast Areas 1-2 and 4-6 - Excavator with Hand and Guzzler Removal

Sidecast deposits, occurring along Road Area Gate and up to Road Area 3 (except for Sidecast Area (SC) 03 discussed in Section 3.1.2), consist of thin layers of finer soil material intermixed with rocks and scattered boulders accumulated along the base of vegetation. These materials will be removed manually by technicians in combination with vacuum or guzzler trucks and a small excavator. This method will be performed on approximately 0.421 acres of sidecast deposits in SC 01 and SC 02, and SC 04 through SC 06 (see Figures 6a-e) and is expected to result in the full removal of the sidecast material at these locations. All removed material will be transported to an approved staging location.

The Construction Contractor will use guzzler trucks (large vacuum trucks) staged from the existing access road/trail adjacent to work areas to remove fine materials and rock approximately three inches in diameter or smaller. Manual manipulation of the hose will remove materials within the reach extent of the hose.

Rocks greater than three inches would be carried out by hand or loaded into rock sacks and removed using the excavator. Large rocks and boulders, greater than 24 inches in diameter, may be broken up into manageable pieces using sledgehammers, pick axes, expansive rock breaking agent (e.g., expanding grout), or jackhammers and lifted by the excavator. The excavator may also be used to lift rocks bolted to a chain with shackles and position them onto the road for staging. All material will be transferred to an approved stockpile location where soils will be stockpiled and managed for load out into small-scale "bobtail" dump trucks, hauled off following a designated route, and disposed of at a local landfill.

As mentioned above, sidecast removal efforts will be staged on the road, supporting crews and guzzler operations downslope. As a result, there is potential for the work to damage the previously reconstructed berms in these areas. If the berms become damaged during these activities, berms will be repaired following the completion of the work as part of the implementation of this Creek HRMP. Berm repair will be conducted using standard heavy equipment to rebuild and stabilize berms to specifications approved by Santa Barbara County.

Upon completion of sidecast removal, the contractor will finish affected slopes utilizing hand tools on slope faces, and possibly by mechanized equipment at the accessible upper sections of the slope. Disturbed areas will then be hydroseeded with an approved mix, including tack, and wood fiber to promote growth, and planted with container stock and cuttings, as appropriate (see Sections 6.4 to 6.7). A biodegradable netting product (i.e., jute) may be applied, depending on final soil conditions once slope faces have been revealed, in accordance with the Project's Storm Water Pollution Prevention Plan (SWPPP). If used, netting will be installed in a way that does not trap or entangle wildlife.

3.1.2 Sidecast 03 and Sidecast 03 Outliers – Helicopter Removal

In one area of sidecast deposit, SC 03 and SC 03 Outliers, located within Road Area 1 and covering approximately 0.257 acre (see Figures 6a-b), large boulders and smaller rock and soil material are positioned approximately 300 feet from the roadside with no footpath or road access. Due to these limitations, SCE proposes to remove the material using the Helicopter Removal method to relocate the material to an approved staging area. Various methods were evaluated to extract the material from this

location. The Helicopter Removal method was selected as the least impactful to resources and is expected to remove all the sidecast material at this location.

This method includes the use of a helicopter, such as a light utility Bell 429, with a lift capacity of 1,500 to 2,000 pounds, fitted with enclosed steel baskets. The steel baskets can be covered with a safety net and lined to secure the rocks. Alternatively, the rocks can be placed into load bags and then loaded into the steel baskets. Rock will be manually broken using sledgehammers or, where necessary, may be drilled and injected with an expansive rock breaking agent (e.g., expandable grout) to allow the rock to break into manageable pieces overnight. Rock will be transferred into rock sacks by ground crews and staged for the aerial operation to minimize flight time. The helicopter will hover approximately 100 to 150 feet in the air while ground crews fill the basket with rock sacks. Once the basket is full, the pilot will relocate the material to an approved staging location within the Project area. A landing zone and refueling location, such as the Santa Barbara Airport, must be located within 10 to 15 minutes of flight time from the Project area.

3.1.3 Creek Sites 1-4 and Road Areas 1-2 – Forklift with Hand and Guzzler

The majority of sidecast deposits occurring within Mission Creek, and in tributaries located at Creek Sites 1-4 and Road Areas 1 and 2, and totaling approximately 0.935 acre, consist of a mixture of small and moderately sized rocks with finer soil material and scattered boulders. These materials will be removed using the Hand and Guzzler Removal method described above (see Section 3.1.1) and in combination with a long-reach forklift to extract material (see Figures 6a-c). For large materials, technicians will manually break rocks and boulders into manageable pieces using sledgehammers, pickaxes, or, where necessary, drill and inject an expansive rock breaking agent (e.g., expandable grout) to allow them to break into smaller pieces overnight. These rocks will then be manually loaded into baskets and lifted by a 12k reach forklift with a 24-foot length and 38-foot reach. The forklift would be positioned at designated staging areas or along existing access roads. The material will then be transported to an approved staging location, where it will be transferred to trucks and hauled off-site for disposal. This method is expected to result in the full removal of the sidecast material at these locations; however, potential constraints to the slopes within Creek Sites 2, 3, and 4 were noted by SCE, as described in Section 3.2 below.

Prior to sidecast removal in Creek Sites 1-4, K-rail barriers topped with chain-link fencing will be placed to prevent public access during construction. A guzzler truck will be staged in the roadbed with a flex hose connected to a six-inch hard pipe that will be anchored to the K-rail and placed along the slope face. The hard pipe will be connected by a cam-lock system to a second flex vacuum hose that will be deployed into the drainage and manually manipulated by operators. The full extent of the hard pipe is typically 25 to 30 feet, and the flex hose range from 20 to 125 feet, for a total range of approximately 45 to 155 feet. The fixed hard pipe will also provide tie-off points for operators to secure anchors for additional fall protection. The hard pipe assembly will then be broken down and reassembled to target another reach of the drainage. This process will continue until all material is removed.

3.1.3.1 Technical Implementation Plan

Prior to sidecast removal in Creek Sites 1-4, the fluvial morphology team will develop a Technical Implementation Plan (TIP). The purpose of the TIP is to provide an execution document to guide the process of sidecast removal and the restoration and repair of habitat features within impacted areas of

Creek Sites 1-4. The TIP will also present protocols to achieve the goals of this Creek HRMP while protecting and restoring the pre-impact natural stream topography, habitat, and function.

Within Creek Sites 1 through 4, several locations of heavy sediment deposition have been identified. Up to twelve transect locations within these areas are proposed for longitudinal and cross-section surveys, which would be conducted as part of the TIP. These transects are intended to provide a detailed accounting of pre-Project site conditions (see Section 8.3.1). These transects will be further studied as part of the information gathered to support the TIP.

The fluvial morphology team will follow the process and methods in the TIP to facilitate the removal of sidecast material in a manner that will minimize additional impacts to the creek bed and banks, minimize the unintentional removal of native creek material, and comply with all environmental regulatory permit requirements. Prior to sidecast removal, the fluvial morphology team will delineate the limits of each sidecast area, using flagging, or another eco-friendly method of demarcation, such as non-toxic, water-based paint, to assist in the removal activities of work crews. The fluvial morphology team will also identify and mark all cobble and boulder outliers that occur in contingency buffers beyond the limits of the main sidecast areas. Photo points will be determined prior to the work to provide pre- and post-removal photo documentation.

As sidecast removal begins, the construction operators will perform sidecast material removal under the direction and supervision of the fluvial morphology team to ensure that only sidecast material is removed. Particular attention will be given to areas where the sidecast meets pre-impact soils, such as along the edges of the sidecast, the interface where the sidecast meets native soil, and activities within the creek bed and banks. When removal activities approach pre-impact (original contour) surfaces, the fluvial morphology team will closely inspect the characteristics of the material before it is removed to ensure that it is not existing pre-impact material. The fluvial morphology team shall have the authority to stop work as needed to ensure that proper protocols are being implemented.

Current slope conditions at Creek Sites 1-4 range from approximately 3:1 to almost 1:1. When loose soils are removed, these stream bank slopes have the potential for additional slope sloughing. For these reasons, the construction approach described above may be adjusted to accommodate a change in site conditions in the interest of safety and efficacy. Upon the completion of restoration activities, all temporary facilities (i.e., K-rail barriers topped with chain-link fencing, etc.) will be removed and demobilized from the site.

Within Creek Sites 1-4, there are specific habitat design targets for pools and riffles, as described further in Section 3.3.2 (Stream Hydrology and Habitat Features).

3.1.4 Roadside Sidecast Areas 7-16 – Excavator with Hand and Guzzler Removal

Sidecast deposits occurring along the roadside slopes of Road Areas 5 through 9 consist of boulders and rocks intermixed with the roadside berms and deposits immediately downslope of the roadside. The sidecast in SC 07 through SC 16 (approximately 0.620 acre) located in Road Areas 5 through 9 (see Figures 6c and 6e) will be removed using a tracked excavator as described in Section 3.1.1. This method is expected for the full removal of the sidecast material at these locations, except as noted below.

In Road Areas 5-9, sidecast was deposited down slopes immediately adjacent to the road, as well as used to construct roadside berms. In these areas, sidecast materials will be removed, and roadside

berms will be reconstructed following the removal of sidecast in areas where the outer edges of the berms were built upon sidecast material. Using the Hand and Guzzler removal technique, small rocks and soil particles will be removed from slopes. For larger materials, the Project will use a tracked excavator staged in the road to pull sidecast from the berm and road shoulder into the roadbed. All material will be transported to an approved staging location. Sidecast materials will be sorted and processed using a rock crusher and other heavy equipment to generate suitable material to be repurposed for berm reconstruction. In Road Areas 5-9, where sidecast was not deposited down slopes and, therefore, no removal is necessary, berms will be adjusted to align with the specifications approved by Santa Barbara County and tamped down and stabilized.

Potential constraints to the removal of sidecast material in Road Areas 6 through 9 were identified by SCE and are described in Section 3.2 below..

3.1.5 Hand Rock Removal

Sidecast deposits at Creek Site 7 and SC 17-19, covering approximately 0.280 acre, are located on Trail Road Area 2 (see Figure 6d) and consist of scattered rocks intermixed with existing vegetation. The sidecast rocks are dispersed within the mapped area and distinguishable from other naturally present rocks. These areas are only accessible by foot; however, the low volume and manageable size of the rocks allow for manual removal using the Jesusita Trail to access the sidecast areas. The Hand Rock Removal method was selected as the least impactful to resources and is expected to remove all sidecast material at this location.

This method employs technicians, using high incline rigging for fall protection, who will manually remove the sidecast rock and transfer it up the slope by hand. Large rocks will be broken into smaller manageable pieces using hand tools before removal. Smaller rock or rock fragments may be transferred into rock sacks for easier removal and carried out utilizing frame packs and manual means. Rock will be staged on the side of the roadway, where it will be collected using a small loader or comparable equipment and transported to an approved staging area where the material can be hauled away for disposal.

3.2 Constraints to Sidecast Removal

SCE's Project goal is the full removal of all sidecast material on the Project site at the time of construction. The Project's comparative scoping analysis and supplemental engineering surveys revealed potential constraints that could preclude the removal of some material in discrete areas to avoid undesirable conditions. However, it is anticipated that even with these constraints, there still would be nearly 100 percent removal. The identified constraints implicate safety considerations associated with access road width and slope stability. Any sidecast material that is unrecoverable during Project construction will be accounted for using the calculation described in Section 2.1, and compensated for in accordance with the Compensatory Mitigation Plan (Attachment D).

In August 2022, SCE conducted a supplemental engineering assessment to review existing road conditions and distinct areas where the outer edges of the berms were built upon sidecast material that was placed at the edge of the roadway in 2019. The assessment was conducted to evaluate the potential impacts that could result from the full removal of sidecast materials. The assessment was based on information from the comparative scoping analysis and focused on Road Areas 5-9. A vehicle tracking analysis was performed using a model to determine the constraints (critical/pinch points) of the existing

access road on the turning radius of SCE utility maintenance vehicles. For this analysis, an SCE Transmission Bucket Truck was used in the vehicle tracking model. The sidecast removal areas identified on Figures 5a-e were overlayed onto the vehicle tracking model results to identify any constraints. Access road elevational cross-sections were sampled at larger sidecast removal areas and key critical points. The critical points were identified in areas where SCE maintenance vehicles require multiple point turns to maneuver safely, and areas where the full removal of the sidecast material has the potential to narrow the road beyond the minimum width necessary to provide safe access for maintenance vehicles. SCE conducted a site visit to field-verify measurements based on the vehicle tracking model results and cross-sections using sidecast removal depths collected during the comparative scoping analysis.

The areas of potential constraints related to access road width are along slopes adjacent to five road bends within Road Areas 6 through 9 within sidecast areas SC 10, SC 11, SC 12, SC 14, and SC 15 (see Constraint Areas shown on Figures 6c and 6e). If SCE conducts full removal of sidecast material in these areas, it could have the potential to narrow the road width to below the tolerance levels necessary to provide safe access for utility or emergency vehicles.

Roadway berms for vehicle safety were erected during the December 2019 work. The majority of berms were built directly upon the preexisting road surface, while, in a minority of areas, berms were built upon sidecast material that was placed at the edge of the roadway in 2019. In order to remove the sidecast material beneath and supporting the outer edge of the berms in these locations, the berms and sidecast would need to be removed, and the berms would need to be reconstructed within the preexisting road prism, thereby narrowing the current width of the roadway in these locations. Therefore, in these five potential areas of constraint, the focus will be on the maximum removal of all sidecast material from the December 2019 work while not compromising safe access to SCE facilities. The decisions to fully remove or leave discrete areas of sidecast material in place to maintain safe road width will be determined in the field by the Resource Specialists (Section 3.5.3) as subsurface conditions are revealed during sidecast excavation. Post-construction documentation of any sidecast material left in place will be recorded and provided to regulatory authorities, as warranted, and compensated for in accordance with the Compensatory Mitigation Plan (Attachment D). While these constraint circumstances pertain to a small scope of the overall removal work, SCE will implement the construction process to monitor road width and maximize removal, where safe and feasible[8].

SCE has also identified four areas with potential constraints related to slope stability within Creek Sites 2, 3, and 4 (see Constraint Areas shown on Figure 6c). These four areas occur along the upper slopes of the sidecast areas and outside of the streambanks of the creek. The steep slopes in these locations enhance the possibility that the complete removal of sidecast material could lead to localized surface instability and sloughing of the existing soils beneath, either during the removal process or during future rain events. Therefore, in these four potential areas of constraint, the focus will be on the maximum removal of all sidecast material from the December 2019 work while not creating an unstable slope. While constraint circumstances precluding full sidecast removal are not anticipated at these locations, SCE recognizes the possibility, and the fluvial morphology team will monitor the slopes during the construction process, and maximize removal, where safe and feasible (see Section 3.1.3.1).

[8] "Feasible" is defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." Cal. Code Regs. Tit. 14, § 15364.

3.3 Habitat Restoration Overview

This Chapter provides an overview of SCE's strategy to restore impacts to Mission Creek and associated tributaries, and meet the following goals:

- Full removal of all sidecast material[9] (Section 3.3.1)
- Restore stream hydrology (e.g., pools and riffles) and habitat (Section 3.3.2)
- Stabilize creek banks and slopes (Section 3.3.3)
- Remediate impacted trees within Mission Creek (Section 3.3.4)
- Restore impacted woodland/forest habitat and upland chaparral habitats (Section 3.3.5)
- Rehabilitation of sensitive species populations within the Project area (Section 3.3.6)

The habitat restoration described in this plan is intended to consist of three main phases: restoration planning and preparation (Sections 4 and 5), installation (Section 6), and the maintenance monitoring program (Sections 7 and 8). Figures 5a-e show areas subject to revegetation activities described in this Creek HRMP. The following sections outline the Project strategy and approach to address each of the Project goals listed above.

3.3.1 Sidecast Removal

To achieve the goal of full removal of all sidecast material, SCE will implement the least invasive methodology described in Section 3.1 and through the implementation of the TIP (Section 3.1.3.1) to remove all rocks, coarse woody debris, and fine sediments determined to be sidecast deposits from the December 2019 work. Prior to removal, the sidecast material will be differentiated from non-sidecast material through careful inspection of individual geologic features to distinguish it from the native creek material that needs to remain intact and by comparing bed and bank continuity with upstream and downstream characteristics. This process further expands on the geologic makeup of the sidecast material, including the natural erosive features of the in-situ sandstone.

Following sidecast removal, any material unable to be removed will be subject to post-construction monitoring and adaptive management procedures as presented in Sections 8.2.5 and 8.3.4 of this document. The volume of material estimated within the four areas of constraint along Creek Sites 1-4 constitutes approximately 10 percent of the total sidecast volume in regulated areas. Any materials left in place will be evaluated in the TIP (Section 3.1.3.1) and compensated for in accordance with the Compensatory Mitigation Plan (Attachment D).

To address the presence of outlying rocks that have fallen outside of the delineated sidecast areas, and to allow for foot trails for crews to access sidecast piles and conduct removal operations safely, a small contingency disturbance buffer of 0.34 acre has been added to the disturbance footprint within RWQCB, CDFW, and USACE regulatory areas, of which 0.04 acre falls within waters of the U.S. The contingency disturbance areas are identified for each Sidecast removal Area in Table 7, *Project Areas within RWQCB, CDFW, and USACE Regulatory Areas*, below. Disturbances within the contingency buffer will be

[9] Full removal, with noted constraints identified in Section 3.2 Constraints to Sidecast Removal

minimized, and sensitive resources will be flagged for avoidance. Following Project activities, disturbance within the contingency buffer will be mapped and restored in accordance with this Creek HRMP.

Table 7. Project Areas within RWQCB, CDFW, and USACE Regulatory Areas

Project Site	RWQCB/ CDFW (Acres)	USACE (Acres)
Road Area 1 Project Area	0.39	0.002
Road Area 1 Contingency	0.14	0.010
Sidecast 3 Rock Outliers Contingency	0.07	0.001
Road Area 2 Project Area	0.09	0.000
Road Area 2 Contingency	0.06	0.000
Mission Creek Project Area (Creek Sites 1-4)	0.44	0.042
Mission Creek Contingency (Creek Sites 1-4)	0.07	0.030
Mission Creek Site 7	0.002	0.002
Road Areas 5-9	0.02	0.000
Total Project Area	0.94	0.05
Total Contingency	0.34	0.04
Grand Total	1.28	0.09

3.3.2 Stream Hydrology and Habitat Features

SCE recognizes resident population of *O. mykiss* is a conservation priority of CDFW and was considered in planning upstream Project activities. One of the goals of the Project is to restore stream hydrology (e.g., pools and riffles) and habitat. To achieve this goal, the Project will remove sediment and debris from within the creek bed and impediments caused by sidecast and restore natural hydrology and in-stream habitat for fish passage within the Project site reach of the stream. Restoration of natural stream hydrology will also restore habitat for sensitive species such as two-striped gartersnake, coast range newt, and other amphibians and reptiles. Therefore, SCE will restore stream habitat within the Project site to support native fish use to levels that existed prior to the December 2019 work. Restoration of fish passage within the Project site would support potential creek-wide fish passage if off-site barriers are ever removed by other means.

Fish habitat, including riffles, runs, and pools within reference streams of the Mission Canyon watershed (Mission Creek and Rattlesnake Creek), were assessed by CDFW Fisheries biologists in November 2022 (CDFW 2022a,b). CDFW considers these streams to be comparable to the Project area in their support of fish habitat unit densities and dimensions with a particular focus on pool habitat (reference reach data). Pool units provide refugia and rearing habitat necessary for fish survival during dry summer months when streamflow diminishes and surface streamflow ceases within sections of the creek. Pools also tend to collect food sources for fish, and downstream portions of pools (tail-outs) typically support fish spawning as they collect gravel substrates (CDFW 2022a). Restoration efforts within the stream channel, extending from the upstream extent of Creek Site 1 to the downstream extent of Creek Site 4, will be informed by CDFW's reference reach data and guided by actual site conditions revealed as sidecast is removed during Project construction.

In addition, a TIP will be developed prior to Project installation to guide decisions made in the field regarding the restoration of in-stream habitat and removal of stream impediments created by sidecast. The information provided in the TIP, including longitudinal survey data and cross-sections taken at various intervals and through habitat units (Figure 8b), will be used to guide restoration activities.

Specifically, cross-sections through habitat units and topographical data from immediately upstream and downstream of the area to be restored will be used to design and implement restoration actions. If, restoration of habitat features (e.g., riffles, runs, or pools) is deemed necessary, habitat unit-specific cross-section plans for the feature repair will be prepared and submitted to CDFW for approval as part of the adaptive management process further described in Section 8.3.4. Included in the Creek HRMP Attachment F, *Conceptual Creek Profiles and Cross Sections* are example cross-section schematics for reference.

For the final stages of rock and sediment removal, the fluvial morphology team will be on-site to determine when sediment and rock removal activities have reached the natural stream channel bottom and identify the need for the use of non-sidecast material to restore in-stream habitat features. In addition, CDFW will have the opportunity to inspect these areas when sidecast removal is in the final stages, for concurrence.

3.3.3 Stabilize Stream Banks and Slopes

If it is determined that the creek banks have been collapsed and/or scoured by the sidecast deposits, it may be necessary to provide additional bank stabilization by hand-placing cobbles and boulders to secure the soil in place and prevent future occurrences of erosion. Bank stabilization features would be designed and submitted to CDFW for approval, consistent with the adaptive management process, and incorporated into the Monitoring and Reporting Program described in Section 8 of this Creek HRMP.

3.3.4 Native Tree Restoration/ Mitigation

The Project proposes to address native tree restoration/ mitigation by (1) completing remedial treatments to 30 impacted trees within Mission Creek; and (2) planting trees within Mission Creek and Road Areas 1 and 2 and acorns in upland habitat areas. Remedial treatments to impacted trees are necessary to prevent further damage and stimulate recovery. These remedial treatments include the removal of rocks/soil from the base of the tree, pruning, and cutting or trimming roots (Figures 5a-e). These activities are described in detail in Sections 6.1 and 6.2. Native tree remediation within the upland areas was completed in 2020, as a component of the Road Repair Project.

In addition to completing remedial treatments, the Project will mitigate impacted trees by planting a total of 90 trees or acorns. This planting quantity will achieve a mitigation ratio of 5:1 for impacts to trees whose impacts are considered “major” and a ratio of 1:1 for trees whose impacts are considered “moderate” as defined in Section 2.4 of this Creek HRMP. Within CDFW regulatory areas, the Project will plant 49 of the 90 trees or acorns to offset previous impacts to trees within CDFW regulatory areas (Table 3b). As a continuation of native tree restoration/ mitigation in upland areas outside CDFW jurisdiction, the Project will plant the remaining 41 acorns or trees within transitional woodland areas. Planting will be completed as a component of the native vegetation restoration described below. The number of trees planted as saplings or acorns may be adjusted based on the availability of materials; however, mitigation quantities will be retained. Between the planting in Creek and upland areas, a total of 90 trees will be established within the Project area. Overplanting may be implemented to ensure mitigation quantities are achieved. Planted trees and acorns will be subject to a five-year Success Criteria, as described in Section 8 of this Creek HRMP. No trees will be removed as part of this Project.

3.3.5 Native Vegetation Restoration

Temporary[10] impacts to native vegetation will be restored in both woodland/forest and upland chaparral habitats along Mission Creek. Coast live oak woodland and California bay forest habitats are the dominant habitats within Mission Creek and Road Areas 1 and 2, while upland habitats are dominated by ceanothus chaparral and associated native plant communities. These areas will be restored through the application of a native seed mix and the planting of shrubs, trees, and cuttings, as described in Section 6 (Figures 7a-e, *Restoration Areas*). Restoration of woodland and forest habitats will focus on controlling erosion and restoration of forest canopy structure. Overall, non-native species cover within the woodland and forest habitats is low; however, efforts to control non-native species will be a component of the maintenance program in these habitats. Creek Site 7 also supports woodland habitat; however, due to the steep and unstable slopes, efforts will focus on the application of seed mix and erosion control. Approximately 1.34 acres of woodland and forest habitats will be restored as part of the Project (Table 8, *Proposed Project Revegetation by Vegetation Community*).

Upland chaparral habitats within the Project area are largely dominated by various species of ceanothus, with the presence of occasional oak trees as the canyon transitions to woodland habitats. Upland habitats occur along Spyglass Road and will be restored through the application of a native seed mix, select use of container plantings, and planting of acorns in transitional woodland areas. Native vegetation restoration of the other upland chaparral habitats will focus on erosion control and non-native species control during the maintenance period, specifically targeting mustards and other non-native perennial species. Species diversity and shrub canopy are expected to naturally recover with the effective control of non-native species and erosion to minimize soil disturbance; however, this will be evaluated and addressed as part of Adaptive Management (Sections 8.2.5 and 8.3.4) if recovery is not observed. Approximately 1.50 acres of upland habitats will be restored as part of the Project (Table 8).

Woodland and upland revegetation activities are designed to meet the Project goal of restoring impacts to native vegetation (Figures 3a-e). Sensitive plants and native trees will be monitored for recovery as a component of the monitoring program for the respective habitats, as described in Section 8.1.5. Restored areas will be evaluated annually and compared to unimpacted native habitats in adjacent areas. Installation, materials, maintenance, monitoring, and reporting are described in the subsequent sections.

Table 8. Proposed Project Revegetation by Vegetation Community

Vegetation Community	Acres[1]
Big pod ceanothus (*Ceanothus megacarpus*) chaparral Alliance	0.85
Big pod ceanothus chaparral Alliance, *Ceanothus megacarpus – Salvia mellifera* Association[2]	0.08
California bay forest and woodland Alliance[2]	0.09
Coast live oak woodland Alliance, *Quercus agrifolia – Umbellularia californica* Association[2]	0.71
Coast live oak woodland and forest Alliance	0.54
Hairy leaf – woolly leaf ceanothus chaparral Alliance, *Ceanothus oliganthus* Association[2]	0.03
Holly leaf cherry – toyon – greenbark ceanothus chaparral Alliance, *Ceanothus spinosus* Association	0.03

[10] Any impact on vegetation or habitat that does not result in permanent vegetation or habitat removal, such as areas of impact that are substantially restored to pre-impact conditions by hydroseeding or other measures.

Vegetation Community	Acres[1]
Holly leaf cherry – toyon – greenbark ceanothus chaparral Alliance, *Ceanothus spinosus – Ceanothus megacarpus* Association	0.51
Developed / disturbed	0.04
Subtotal for Woodland and Forest Habitats	*1.34*
Subtotal for Upland Habitats (excludes developed/disturbed)	*1.50*
Grand Total	2.88

[1] Contingency buffers totaling 0.35-acre (Figures 7a-e) are included in these totals and may be reseeded if disturbances to vegetation occurs during sidecast removal.

[2] denotes a state sensitive natural community.

DATA SOURCE: SWCA 2021. These values are approximate, actual acreage by vegetation community may vary as sidecast deposits may have shifted over time.

3.3.6 Sensitive Species Rehabilitation

The Project will restore sensitive plants presumed to be directly impacted as a result of the December 2019 work. These sensitive species include Santa Barbara honeysuckle, Plummer's baccharis, and Hubby's phacelia (see Figures 3a-e). Seeds and cuttings from unimpacted sensitive plants will be collected as described in Section 4.8 and seeded/planted in plots within suitable habitat integrated into the Project site (Section 6.9). Plots will be monitored and maintained and subject to a five-year success criterion, as described in Section 8 of this Creek HRMP.

One individual of Oscillated Humboldt lily was identified outside of the Project site. There is no evidence of direct impacts to individuals, nor has habitat for the species within the Project site been confirmed. However, annual presence/absence surveys will be conducted as described in Section 8.1.5.

3.3.7 Staging and Storage Areas

Approximately 0.99 acre of developed/ disturbed areas have been identified for use as staging, parking, and material storage throughout the Project area. These areas are largely limited to compacted roadside and shoulders. However, if native vegetation was removed to support the Road Repair Project, completed by SCE in November 2020, or is removed to support the Project, these areas will be restored in accordance with this Creek HRMP and be subject to ongoing monitoring and maintenance (Figures 7a-e). Five of these staging areas, previously used for SCE's Road Repair Project completed in 2020, as well as an additional area located at the south end of the intersection of Tunnel Trail Road and Mission Canyon Catway within Road Area 5 between SC 7 and 8 previously disturbed by an unknown party (non-SCE related), will be restored to native habitats following Project construction.

3.4 Avoidance and Minimization Efforts

The applicant proposes Applicant Proposed Measures (APMs) that would be followed during Project-related activities and, in many instances, are phase-specific. The habitat restoration described in this Creek HRMP is intended to consist of three main phases: restoration planning and preparation (Sections 4 and 5), installation (Section 6), and maintenance and monitoring program (Sections 7 and 8). Each of the APMs will be implemented in a particular phase or phases, as indicated below. For simplicity, Phase 1 is the timeframe for restoration planning and site preparation; Phase 2 is the installation and construction of the restoration program; and Phase 3 is the maintenance and monitoring program.

3.4.1 General Environmental Requirements

APM-ENV-1 Tailboard Briefing*:* A tailboard briefing will be conducted every day prior to the start of work to communicate safety and environmental requirements for the planned work activities and stop workprotocols. (timing: Phases 2 and 3)

APM-ENV-2 Approved Work Areas: All ground disturbance, vehicles, and equipment must remain in approved work areas, including approved access routes and work areas defined in the Project scope. Approved work areas include the following: sediment and rock disposal removal areas; stream, bank and slope stabilization areas; upland sidecast removal areas; native tree restoration and mitigation areas; native vegetation restoration areas; berm stabilization areas; construction areas; staging and storage areas; and contingency buffer areas. (timing: Phases 2-3)

APM-ENV-3 Delineation of Work Areas**:** To minimize temporary impacts to native habitats adjacent to Project areas, flagging, and/or temporary fencing, will be installed prior to installation. GPS coordinates of the areas shall also be taken. The limits of disturbance, including the upstream, downstream, and lateral extents on either side of any stream adjacent to the Project impact footprint, will be clearly defined. Monitoring personnel (biological and wetlands) will review the limits of disturbance prior to the initiation of construction activities. Approved limits of staging and stockpiling areas will be clearly defined. Sensitive resources will be flagged for impact minimization and avoidance. (timing: Phase 2)

APM-ENV-4 Worker Environmental Awareness Program (WEAP): Prior to construction, a Worker Environmental Awareness Program (WEAP) will be developed. All workers on the Project site must receive WEAP training prior to beginning work on the Project. The WEAP training will identify the biological monitors who have stop-work authority and will describe how the action would be implemented in a situation where work must be halted. (timing: Phase 2-3). Inaddition, all construction personnel will receive the following:

- Instruction on the individual responsibilities under the Clean Water Act, the Project SWPPP, site-specific BMPs, and the location of Safety Data Sheets for the Project.

- Instructions to notify the supervisor and regional spill response coordinator if a hazardous materials spill or leak from equipment occurs, or upon the discovery of soil or groundwater contamination.

- Instruction on ensuring all food scraps, wrappers, food containers, cans, bottles, and other trash from the Project area will be deposited in closed trash containers. Trash containers will be removed from the Project area as required and will not be permitted to overflow.

- Instruction that non-compliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the Project.

APM-ENV-5 Material Management: Any refuse material that needs to be hauled off-site will be taken to an SCE-approved disposal facility. (timing: Phase 2).

APM-ENV-6 Secondary Containment: Vehicles/equipment/materials shall only be staged in approved areas located 100 feet away from drainage features unless work is actively being conducted within drainage features.Best Management Practices (e.g., oil drip pans, plastic sheeting) are required for any equipment or vehicles staged overnight. (timing: Phases 2-3).

APM-ENV-7 Spill Release/Prevention: Vehicles/equipment must be inspected for leaks (e.g., fuel, oil, hydraulic fluids,etc.) and repaired prior to work. Equipment fueling will be contained to the designated staging areas to contain spills, facilitate clean-up, and proper disposal. Spill kits/absorbent clean-up materials shall be available on-site and, if used, disposed of properly. Spill response procedures will be included in the Project SWPPP. (timing: Phase 2).

APM-ENV-8 Environmentally Sensitive Areas (ESA): Adhere to avoidance and/or monitoring requirements within established ESAs, as prescribed by agency permits and authorizations applicable to the Project. ESAs include regulatory areas, critical root zones, and areas containing sensitive plant species. (timing: Phases 2-3).

APM-ENV-9 Sensitive Species Awareness: Project personnel will be made aware during WEAP training and tailboard briefings (by the biological monitor or restoration ecologist) of sensitive species with the potential to occur within the work area and the steps that should be taken if encountered. (timing: Phases 2-3).

APM-ENV-10 Material and Equipment Storage**:** Project materials and equipment will only be stored on-site within staging and storage areas identified in the Project scope. (timing: Phases 2-3).

APM-ENV-11 Clean Work Areas: Construction-generated trash will be contained in vehicles or secured receptacles and removed from the work site daily. (timing: Phases 2-3).

3.4.2 Erosion and Sediment Control Measures

APM-EC-1 Erosion and Sediment Control: The Proposed Project will implement erosion and sedimentation controls, both during Project activities and during the establishment of the native vegetation, to reduce potential hydrological impacts regarding erosion. Temporary stabilization measures are methods and materials that are implemented in the short-term to stabilize soil and sediment flow prior to Project actions (e.g., filter fabric, silt fencing, straw wattles). Long-term stabilization measures are installed to promote the stabilization of stream banks and slopes, and may include approved soil binders, hydromulch, or rolled erosion control products (e.g., coir matting). Erosion control measures will be accompanied by sediment controls, typically burlap-wrapped fiber rolls or biodegradable gravel bags. All BMPs will be biodegradable, weed-free, and plastic-free, and will be made of material that prevents wildlife from becoming trapped. These temporary features include the application of stabilizing soil binders to disturbed areas, which will locally stabilize soils to impede point source erosion and sheet flow.

Temporary stabilization measures typically require intermittent maintenance to ensure proper functionality by removing accumulated sediments from behind the stabilization device. A SWPPP will be prepared and implemented to address the short-term stabilization of soils and water flows within the Proposed Project area. (timing: Phases 2).

3.4.3 Biological Resources Protection Measures

APM-BIO-1 Hydrologic Monitor: A qualified hydrologic monitor (hydrologic monitor from the fluvial morphology team identified in Section 3.5.3) will monitor work activity within the bankfull portions of the Project. The hydrologic monitor will have the capacity to help identify sidecast material versus native material and will work with the contractor to determine materials that may remain in place and not impact the overall hydrology of the system. (timing: Phase 2).

APM-BIO-2 Daily Preconstruction Clearance Survey*:*
Prior to work occurring, a qualified (and, if required by a Project permit, agency - approved) biologist will conduct a preconstruction survey of the work area and an appropriate buffer (based on the habitat and the nature of the proposed work). The purpose of the survey is to identify special - status species and other sensitive biological resources that may be impacted by the proposed work. If a sensitive resource is observed or determined to be likely to occur in the work area based on the results of the survey, the biologist will develop resource - and site - specific avoidance measures to avoid adverse effects. (timing: Phase 2).

APM-BIO-3 Injured/Trapped Wildlife**:** Prior to the start of work, crews will inspect their workspace for any injured ordead wildlife. In addition, crews will also inspect construction material and equipment for any trapped wildlife. The on-site biological monitor will be contacted if there are observed dead, injured, or trapped wildlife. All work areas will be secured and holes covered to prevent injury or wildlife entrapment. (timing: Phase 2).

APM-BIO-4 Avoid Drainages: All debris (i.e., spoils), vehicles and equipment, and construction materials will be kept from entering drainage features unless the drainage feature is actively being worked on or must be traversed to gain access to an active work area. (timing: Phases 2-3).

APM-BIO-5 Western Pond Turtle Pre-Construction Surveys**:** Pre-construction surveys for western pond turtle (WPT) shall be conducted by a qualified biologist 14 days before and 24 hours before the start of ground-disturbing activities where suitable habitat exists (e.g., along riparian areas and freshwater emergent wetlands). (timing: Phase 1).

- If WPT or their nests are observed during pre-construction surveys, a qualified biologist shall be on-site to monitor construction in suitable WPT habitat. WPT found within the construction area will be allowed to leave of its own volition, or it will be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat immediately upstream or downstream from the Project site.

- If WPT nests are identified in the work area during pre-construction surveys, a 300-foot, no-disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.

APM-BIO-6 Avian Monitoring*:* If work will be conducted between February 1 and August 31, a qualified wildlife biologist will conduct nesting bird surveys within five days prior to work, as well as daily before work activities begin. If an active nest is identified, the qualified wildlife biologist will establish a no-work buffer around the nest. (timing: Phase 2).

- If nests are detected, the avian monitor will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. The buffers around active nests will be determined by the ranges described in the Nesting Bird Management Plan and will be sufficient to avoid impacts to the respective species.

- Factors to be considered for determining buffer size will include the presence of natural buffers provided by vegetation or topography, nest height, locations of foraging territory, and baseline levels of noise and human activity. Buffers will be maintained until the young have fledged or the nests become inactive.

***APM-BIO-7 Tree Protection*:** A tree protection plan will be prepared by a certified arborist and implemented throughout this Project (HELIX 2020b). (timing: Phase 2). Specifically, tree protection measures include:

- A minimum four-foot-tall, brightly colored, synthetic fence shall be installed around the critical root zone (defined by the County of Santa Barbara as the dripline plus six feet; County of Santa Barbara 2020) to delineate the boundary of the ESA. Fencing shall remain in place until all construction activities have ceased.

- No digging, trenching, compaction, or other soil disturbance shall be allowed in thefenced area.

- The storage of construction equipment or hazardous materials such as gasoline, oil, orother toxic chemicals shall not be allowed in or adjacent to the fenced area.

- All stockpiled soil will be placed outside of any critical root zone unless specifically authorized by CDFW. Specific authorization will include locations of critical root zone encroachment, the volume of material, and the timing for stockpile storage.

- Grade changes shall be avoided near fenced areas.

- Designated roads and parking areas shall be established. All construction personnel shall be restricted to driving and parking in designated areas. Prolonged discharge (idling) of exhaust from construction vehicles and equipment shall not be allowed near the critical root zone.

- All work shall be performed under the direction of a Certified Arborist.

- A monitoring biologist will regularly inspect fencing and document any encroachments to native tree critical root zone, and corresponding corrective measures, for incorporation in the post-construction compliance report. Work around trees will be overseen by a qualified arborist to ensure trees are adequately protected and no additional impacts occur.

APM-BIO-8 Restoration of Disturbance to Native Vegetation or Sensitive Plants: Following project activities, any disturbance to native vegetation communities or sensitive plants as a result of Proposed Project activities, will be mapped and restored in accordance with the Creek HRMP. (timing: Phase 3).

APM-BIO-9 ESA Flagging and Monitoring: A jurisdictional delineation has been prepared for the Project footprint (MBI 2022). The Project involves the restoration of regulatory areas within CDFW, USACE, and

CCRWQCB jurisdictions, including waters of the U.S. and waters of the State. Prior to work activities, the monitor will flag regulated areas that will need to be avoided or monitored as part of the installation. Throughout work activities, the monitor will ensure adjacent regulatory resources are protected. (timing: Phase 2).

APM-BIO-10 Collection of Rare Plant Propagules: During the appropriate season, seed, bulbs, or cuttings of sensitive plant species within the footprint of construction that have the potential to be impacted or cannot be avoided, may be collected for restoration purposes in accordance with the Creek HRMP (Section 4.8). In this instance, SCE will notify CDFW prior to impacting rare plants to allow adequate time to salvage the plants. Species targeted for cutting collection include Plummer's baccharis, while seed of Santa Barbara honeysuckle may be collected. Collection practices will follow industry standards for extraction, potting, storage, and care prior to transplanting. (timing: Phases 1-3).

APM-BIO-11 Species-Specific Rehabilitation: Three sensitive plant species—Santa Barbara honeysuckle, Plummer's baccharis, and Hubby's phacelia—are known to occur within the project area and will be incorporated into the revegetation program of this Creek HRMP (Sections 6-9) as part of the project work. (timing: Phases 2-3).

APM-BIO-12 Adaptive Management Herbicide Use: Any use of herbicide will be prescriptive, targeted to control particularly noxious weeds such as carnation spurge (*Euphorbia terracina*), fountain grass (*Pennisetum setaceum*), and French broom (*Genista monspessulana*). Targeted herbicide application to mustard (*Brassica* spp., or *Hirschfeldia* spp.) in sidecast areas away from public access may also be considered as an adaptive management tool. Herbicide application would not be applied during wind conditions with gusts above 15 mph or within 24 hours of a rain event. All application would be completed in compliance with EPA, state and local regulations, by licensed applicators. The County and City will be consulted prior to herbicide use, and pesticide use reports will be submitted to CDFW and the California Department of Pesticide Regulation database. (timing: Phase 3).

3.4.4 Invasive Weed Species Control

APM-INV-1 Clean Vehicles and Equipment: All vehicles, and any ground- or vegetation-disturbing equipment/tools,must be cleaned and free of mud, soil, and plant material prior to entering the Project site. Cleaning can be done through car washes, compressed air, pressure washers, brushes, or similar equipment. All vehicles will be inspected prior to coming on-site, and a record of wash/inspection time, date, location of where the equipment was cleaned, and the distance to the work site, is maintained. (timing: Phases 2-3).

APM-INV-2 Weed Free Materials: All BMP materials will be weed-free, plastic-free, and fully biodegradable materials. All specifications in the Project SWPPP will be implemented on-site. (timing: Phase 2).

3.4.5 Cultural and Paleontological Resources

***APM-CUL-1 Archaeological Resources/Human Remains Discovered*:** If archaeological resources (Native American or historical artifacts), fossils, or human remains are encountered, work will be stopped, and the SCE cultural resource specialist will be contacted. (timing: Phase 2).

3.4.6 Recreation

APM-REC-1 Notification to Trail Users: The applicant shall prepare a fact sheet about the Project, including a construction schedule and safety information regarding trucks and other heavy equipment on local roads. The applicant shall post this fact sheet at trailhead kiosks in Mission Canyon. Additional locations may be determined by SCE in consultation with CDFW, Santa Barbara County, City of Santa Barbara, and the U.S. Forest Service – Los Padres Headquarters. (timing: Phase 2).

3.4.7 Air Quality and Fugitive Dust Control

APM-AQ-1 Air Quality and Fugitive Dust Control: During construction, standard BMPs would be implemented to minimize dust consistent with the dust control requirements of the County's Grading Ordinance (Section 14-23) and Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 345. These measures require maintenance of mobile and other construction equipment, watering exposed surfaces to prevent dust from leaving the site and to create a crust after each day's activities cease, covering stockpiles with tarps, watering of all haul roads daily, and limiting speeds on unpaved roads to 15 miles per hour. All temporary areas of ground disturbance would be treated (e.g., with water or dust suppressant) to prevent visible emissions of dust. (timing: Phase 2).

3.4.8 Noise

APM-NOI-1 Construction Hours: Project construction activities that generate noise will be limited to weekdays between 8:00 a.m. and 5:00 p.m. Night work will not be performed. Construction activities that do not generate noise or impact surrounding residents will be limited to weekdays between 7:00 a.m. and 6:00 p.m. (timing: Phase 2).

3.5 Habitat Restoration Plan Roles and Responsibilities

SCE will execute this Creek HRMP with the leadership of SCE's restoration experts supported by a Lead Restoration Ecologist, a team of resource specialists, a construction contractor, and a restoration installation/maintenance contractor. The roles and responsibilities of this team are outlined in detail below.

3.5.1 Responsible Parties

Southern California Edison is the owner/ operator and will be responsible for financing the installation and monitoring the mitigation effort.

3.5.2 Lead Restoration Ecologist

Overall supervision of the installation, maintenance, and monitoring of the mitigation effort will be the responsibility of a primary Lead Restoration ecologist (Restoration ecologist) with extensive stream restoration experience supported primarily by a hydrologic engineer and fisheries biologist. The Lead

Restoration ecologist, along with the hydrologic engineer, will be responsible for collecting stream information and developing typical plans as described in Section 4.3. The Restoration ecologist will monitor the efforts of the installation and maintenance contractors throughout the performance period, which is a minimum of five years. Specific tasks of this role include educating participants regarding mitigation goals and requirements through the WEAP, directly overseeing site preparation, seeding, weeding, and maintenance, conducting monitoring, and preparing reports. The Restoration ecologist will ensure that the installation and maintenance contractor does not inadvertently impact environmentally sensitive areas to be avoided. When necessary, the Restoration ecologist will provide SCE and contractors with a written monitoring memo, including a list of items in need of attention. The Restoration ecologist will prepare and submit annual reports to SCE, the City and County of Santa Barbara, and regulatory agencies each year to document the site trajectory toward achieving success criteria and performance standards.

3.5.3 Resource Specialists

Resource specialists will support the Project, and will be managed by the Restoration ecologist. These specialists and their areas of expertise may include, but are not limited to:

- Site Preparation – botanist, wildlife and nesting bird biologist, arborist, hydrologic engineer
- Tree Remediation – arborist
- In-stream habitat construction – hydrologic engineer, fisheries biologist, herpetologist, fluvial morphology team (consisting of stream restoration ecologists, fluvial morphologist, and stream hydrologist)
- Native planting and seeding – botanists
- Monitoring – fisheries biologist, botanist, Restoration ecologist, wetlands monitor, Qualified SWPPP practitioner

Resource specialists will be incorporated into project components as their area of specialty requires. For example, during the boulder and sediment removal phase of the Project, the Restoration ecologist and resource specialists will work closely with contractor personnel to determine the extent of material removal and proper reuse of material that has been deemed infeasible for removal. The Restoration ecologist will coordinate between disciplines to ensure that decisions made in the field reflect the goals of this Creek HRMP. Similarly, at critical points in the material removal process, the hydrologic engineer and the fisheries expert will support the Restoration ecologist. In this manner, the team will coordinate monitoring activities to produce a Project which most closely matches the intent of this Creek HRMP.

3.5.4 Construction Contractor

The construction contractor will be responsible for the initial removal of the sidecast material, stabilization of slopes and creek areas, and post-construction erosion control installation.

3.5.5 Installation / Maintenance Contractor

The installation contractor will be responsible for site preparation, initial non-native plant removal and treatment, and the installation of native plantings and seed under the direction of the Restoration ecologist. SCE will retain a maintenance contractor for the maintenance period. The maintenance contractor will have prior knowledge regarding the maintenance of native forest and oak woodland habitats and be familiar with native and non-native plants. The maintenance contractor will be responsible for implementing maintenance activities during the five-year maintenance and monitoring period. Maintenance activities may include: providing supplemental watering, weed control, plant replacement, supplemental seeding, and trash removal. These activities are described in further detail in Section 7 of this Creek HRMP. The maintenance contractor will perform checklist items in a timely manner, as directed by the Restoration ecologist.

4 Installation Planning

This Chapter provides an overview of the pre-Project planning efforts to restore impacts to Mission Creek and associated tributaries. SCE will lead these preparatory steps, and in coordination with permitting agencies, the City of Santa Barbara, and Santa Barbara County, throughout the permitting and CEQA process. Installation planning will include the following steps:

- CEQA and environmental permitting;
- Environmental surveys;
- Restoration plans;
- Installation schedule;
- Pre-construction meeting;
- Delineation limits of work;
- Plant/seed orders; and
- Collection of sensitive plant propagules.

The activities and sequencing associated with Project restoration are summarized in Table 9, *Restoration and Revegetation Sequence for Mission Creek HRMP*, below. Specifics of each activity are provided throughout this HRMP.

Table 9. Restoration and Revegetation Sequence for Mission Creek HRMP

Restoration/Revegetation Treatment	Timing
Environmental Surveys	Completed as prior to Project activities
Procure revegetation materials	Concurrent with Project activities
Sensitive plant/seed salvage/collection	Prior to Project activities
Rock, boulder, sediment removal/ stream restoration/ berm remediation	Project activities
Tree Damage Remediation	During site preparation / rock and sediment removal

Restoration/Revegetation Treatment	Timing
BMP Installation/ Stream bank stabilization	Prior to planting and seeding
Planting and seeding	Fall/ Winter
Monitoring	Spring/ Fall
Installation Photo Documentation and Reporting	Post-installation
Remedial measures (as necessary)	As needed

4.1 CEQA and Environmental Permitting

Activities discussed in this Creek HRMP will be subject to CEQA evaluation, as well as permitting through the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, CCRWQCB, County of Santa Barbara, and the City of Santa Barbara. Coordination with the regulatory agencies and stakeholders throughout the permitting and CEQA review period is an integral component of the installation planning process.

4.2 Environmental Surveys

Following the December 2019 work, SCE conducted a series of Environmental Impact Assessments. These data, reported in Section 1.2, included assessments of native vegetation communities, sensitive plants, wildlife, native trees, and regulatory boundaries. This data has been used to not only define the impacts associated with the December 2019 work but to define the extent to which restoration is needed. In addition, stream cross-section and hydrologic feature data were collected in fall 2020 and will be included in the restoration plans described in Section 4.3. This data set will further aid in the development of a detailed restoration strategy, which will fulfill the Project goals.

4.3 Restoration Plans

Figures 6a-e depict the sidecast removal areas. Figures 7a-e depict the restoration treatments. Additionally, prior to commencing restoration activities, SCE will prepare a TIP (Section 3.1.3.1). The purpose of the TIP is to provide an execution document to guide the process of sidecast removal and the restoration and repair of habitat features within impacted areas of Mission Creek (see Section 3.1). The TIP also presents protocols to achieve the Creek HRMP restoration goals while protecting and restoring the existing natural stream topography, habitat, and function. Protocols and restoration guidance will be based, in part, on information gathered during TIP creation. This information will include habitat unit-specific sidecast characterization, as well as longitudinal and cross-section transect data (Section 8.3.1). Transect data will illustrate current thalweg elevations extending upstream and downstream of the Project, beginning approximately 10 times the bankfull channel width upstream of Creek Site #1, and ending approximately three bankfull channel widths below Control Site #2. The longitudinal profile will record survey thalweg elevations at pre-established habitat units and other geomorphic features, which may be important to the restoration process.

4.4 Installation Schedule

It is anticipated that Project activities will begin following Project permitting and finalization of this Creek HRMP. The planned sequence of events is listed in Table 8 above. It is anticipated that work may begin as early as summer 2023. As Project work occurs within the creek and associated banks, it is essential that all removal, and associated revegetation and stabilization activities, occur under dry conditions to ensure work can be completed safely. Depending on the start date of specific Project

activities, appropriate biological surveys would be performed, with avoidance measures established for species that are detected. Avian surveys would be performed (February 1 through August 31), as necessary. Cutting installation and hydroseeding will be implemented prior to the rainfall season. If Project activities are completed in a season not suitable for planting and seeding (i.e., summer), installation of these components would be postponed until an appropriate season as determined by the Restoration ecologist. It is not anticipated that a hydromulch or tackifier is needed prior to hydroseeding for stabilization, except possibly in the upland sidecast areas.

4.5 Pre-Construction Meeting

Prior to the initiation of mitigation activities, a meeting will be held with SCE, the contractor, and the Restoration ecologist. Topics that will be addressed at this meeting include but are not limited to: (1) safety; (2) timing constraints for mitigation activities; (3) identification of sensitive areas and a strategy for avoidance; (4) defining site access routes and restrictions; (5) defining staging areas; (6) schedule of activities described in this Creek HRMP; and (7) the overall Project goal.

4.6 Delineating Limits of Work

To minimize temporary impacts to native habitats adjacent to mitigation areas, flagging and/or temporary fencing will be installed prior to mitigation installation. GPS coordinates of the areas shall also be taken. The Restoration ecologist will inspect the mitigation site boundaries to ensure they accurately reflect those approved by Project permits. Photographic monitoring stations will also be established by the Restoration ecologist within each mitigation area once the limits of work are delineated and prior to mitigation installation in order to document pre-installation, post-installation, and site progression during the maintenance and monitoring period.

4.7 Plant/ Seed Orders

It is critical that local native seed and local native coast live oak tree acorns be collected/ordered as early as possible to acquire enough revegetation material for installation. Native nursery-grown trees shall be propagated from acorns collected from nearby sources (e.g., the Mission Creek watershed or a regional floristic province). The Restoration ecologist must approve the source used for acorn collection, prior to propagation.

In addition to direct planting of oak trees, container stock (liners or one-gallon size) of bay laurel, willow species, mule fat, and Plummer's baccharis may be installed in appropriate locations to support restoration efforts. Plummer's baccharis, willows, and mule fat may be installed as cuttings if the hydrologic conditions of the planting locations support a cutting methodology (Sections 6.6 and 6.7).

While native vegetation restoration within upland habitats will focus on erosion and weed control through seeding and acorn and container stock planting, container species will consist of those verified to occur within restored habitats on-site, having seed origin consistent with the guidance below.

Seeding as a practice for restoring disturbed areas surrounded by high-quality habitat has been proven as an effective means for habitat recovery. For this reason, seeding is the preferred methodology for habitat recovery within this Project area. The Jepson Manual divides California into three separate Floristic Provinces, which are further subdivided into 35 ecologically distinct bioregions (Jepson Herbarium, U.C. Berkley 2020). Based on guidance from the Santa Barbara Botanic Garden (SBBG),

restoration seed shall be sourced from the same ecoregion as the impact area. Following this guidance, seed will be obtained from seed supply vendors with material sourced from the south coast (SCo) ecoregion. Seed is selected based on the availability of regionally appropriate sources based on the guidance above, as well as ecological function. Restoration "work horse" species such as early successional subshrubs and grasses are selected for the stabilization and weed suppression functions. Additional shrub species are also included to reintroduce diversity in the structure of the recovering habitat. The existing surrounding habitat is healthy, and a healthy seed bank is present. Seeding for restoration purposes is prescribed to support stabilization, weed suppression, and to stimulate recovery of the areas disturbed by the sidecast activities. A separate seed mix will be applied to wetland/woodland/forest habitat and upland sidecast areas that will be restored. Seed mixes for these two areas will be developed from species known to occur within Mission Canyon.

In consultation with SBBG, seed application mixes and application rates have been developed. While the Restoration ecologist will have the ability to adjust the seed mix based on material availability, the final mix will include no fewer than 10 species, with variation to support the successional phases of habitat development. Species in the final mix will include native species previously identified on-site and listed in Attachment G, *Mission Creek Floral Compendium* (Appendix A of the Biological Impact Assessment Report, SWCA 2021). Only native species will be used in revegetation efforts. The only exception to this stipulation that species on the final species list originate from Appendix C would be the addition of either California brome (*Bromus carinatus*) or plantain (*Plantago insularis*) for initial erosion control purposes. The final seed mix will be based on the number of Pure Live Seeds (PLS)/ft^2 with the application rate ranging from 20 to 60 PLS/ft^2, targeting the higher density of seed. Purity and germination rates will be provided by the seed supplier (e.g., all seed mixtures will be certified "weed-free"). A preliminary list of species to be seeded, their application rate, PLS data, and PLS/ft^2 for both riparian and upland habitats are proposed in Tables 10a, *Riparian Seed Mix and Application Rate;* and 10b, *Upland Seed Mix and Application Rate.* All seed will be furnished in sealed standard containers with industry labeling. Final seed mixes applied to each revegetation area will be documented in an as-built report (Section 8.4.1).

Seed that has become wet, moldy, or otherwise damaged in transit or in storage will not be used and will be rejected and removed from the site. If enough seed cannot be collected/obtained for a species or vegetation community, seed will be substituted with seed of a comparable species or applied later when seed becomes available. Nursery-grown container plants, including shrub and tree species, will also be propagated for planting in specific revegetation areas (Section 6.5). A list of species that may be propagated, and their associated habitat, is included in Table 11, *Container Plant Species for Revegetation Planting* Areas. All container plants will be furnished weed and pest-free, and the final planting of species and their locations will be documented in an as-built report (Section 8.4.1).

Changes to seed or plant lists will be submitted to SCE and their Restoration ecologist for approval prior to application.

Table 10a. Riparian Seed Mix and Application Rate

Botanical Name	**Common Name**	**PLS(%)**[1]	**Application Rate/acre (Lbs. PLS)**	**Live Seeds per square foot**[1]
Artemisia douglasiana	Mugwort	5%	0.25	1.15
Bromus carinatus	California brome	80%	10.00	13.77
Diplacus longiflorus	Bush monkeyflower	1%	0.20	0.46

Botanical Name	Common Name	PLS(%)[1]	Application Rate/acre (Lbs. PLS)	Live Seeds per square foot[1]
Elymus condensatus	Giant wild rye	53%	2.00	4.14
Eulobus californicus	California evening primrose	45%	0.25	4.91
Phacelia cicutaria	Caterpillar phacelia	76%	0.50	3.93
Plantago insularis	Plantain	75%	10.00	43.04
Salvia spathacea	Hummingbird sage	45%	0.25	0.26
Scrophularia californica	California figwort	71%	0.15	4.89
		TOTAL	**23.6**	**76.55**

[1] Information provided by S&S Seeds, Carpinteria, Ca.

Table 10b. Upland Seed Mix and Application Rate

Botanical Name	Common Name	PLS (%)[1]	Application Rate/acre (Lbs. PLS)	Live Seeds per square foot[1]
Artemisia californica	California sagebrush	8%	0.25	3.13
Bromus carinatus	California brome	80%	10.00	12.50
Eriodictyon crassifolium	Thick-leaved yerba santa	16%	0.50	3.13
Eriophyllum confertiflorum	Golden yarrow	15%	1.00	6.67
Eucrypta chrysanthemifolia	Common eucrypta	28%	0.25	0.89
Galium angustifolium	Narrow leaved bedstraw	12%	0.50	4.17
Keckiella cordifolia	Heart leaved keckiella	8%	0.15	1.88
Lupinus bicolor	Pygmy lupine	78%	6.00	7.69
Leymus condensatus	Giant wild rye	70%	1.50	5.85
Melica imperfecta	Coast range melic	54%	4.00	7.41
Phacelia cicutaria	Caterpillar phacelia	76%	0.50	0.66
Plantago insularis	Plantain	75%	10.00	13.33
Pseudognaphalium californicum	California everlasting	3%	0.15	5.00
Solanum xanti	Chaparral nightshade	27%	1.00	3.70
Venegasia carpesioides	Canyon-sunflower	9%	0.10	1.11
		TOTAL	35.9	77.12

[1] Information provided by S&S Seeds, Carpinteria, Ca.

Table 11. Container Plant Species for Revegetation Planting Areas

Botanical Name	Common Name	Associated Habitat
Arctostaphylos glandulosa	Eastwood manzanita	CC
Adenostoma fasciculatum	Chamise	CC
Baccharis pilularis	Coyote bush	CSW
Baccharis plummerae ssp. *plummerae*	Plummer's baccharis	CLOW,
Ceanothus megacarpus var. *megacarpus*	Big pod ceanothus	CC, HTCG
Ceanothus spinosus	Greenbark ceanothus	CLOW, CBW, HTCG
Cercocarpus betuloides	Birch-leaved mountain mahogany	CC
Eriodictyon crassifolium	Thick-leaved yerba santa	CC
Heteromeles arbutifolia	Toyon	CLOW, CBW, CC, HTCG
Leymus condensatus	Giant wild rye	CSW, CLOW, CSW, CC, HTGC
Lonicera subspicata var. *subspicata*	Santa Barbara honeysuckle	CLOW, CC, HTCG
Malosma laurina	Laurel sumac	CLOW, CC, HTCG

Botanical Name	Common Name	Associated Habitat
Platanus racemosa	Western sycamore	CSW, CLOW
Prunus ilicifolia ssp. *ilicifolia*	Holly-leaved cherry	CLOW, CC, HTCG
Quercus agrifolia	Coast live oak	CLOW, CSW
Ribes malvaceum	Chaparral currant	CLOW
Salvia spathacea	Hummingbird sage	CSW, CLOW
Sambucus nigra	Blue elderberry	CSW, CLOW, HTCG
Umbellularia californica	California bay laurel	CLOW, CSW
Venegasia carpesioides	Canyon sunflower	CSW, CLOW

Key to Habitat Codes
CSW – California Sycamore Woodlands
CLOW – Coast Live Oak Woodlands
CSW – California Bay Woodland
CC – Chamise Chaparral and Ceanothus Chaparral
HTGC – Holly leaf cherry – Toyon – Greenbark ceanothus Chaparral

4.8 Collection of Sensitive Plant Material

During the appropriate season, seed, bulbs, or cuttings of three sensitive plant species presumed to have been directly impacted by the December 2019 work will be collected for restoration purposes (Figures 3a-e). In this instance, SCE will notify CDFW prior to impacting sensitive plants to allow adequate time for salvaging the plants and/or seed. Species targeted for cutting collection include Plummer's baccharis, while seed of Plummer's baccharis, Santa Barbara honeysuckle, and Hubby's phacelia will be collected. Collection practices will follow industry standards for extraction, potting, storage, and care prior to transplanting. Species specific information for collections are included below.

Santa Barbara honeysuckle: Seed will be collected from localized individuals prioritizing collection from individuals not impacted by the December 2019 work. Seed collection shall occur at the time of seed maturity for the honeysuckle, generally during July through August, although timing may vary based on seasonal rainfall and the elevation of source plants. When Santa Barbara honeysuckle is fruiting, this species produces berries that will ripen during summer. When fruiting bodies are observed on plants, populations will be monitored since they can ripen quickly and be consumed by animals. When berries are ready to collect, they will become a translucent orange-to red-color. Upon collection, berries will be placed into paper bags and then dried, acid cleaned, and later seeded when conditions are favorable (fall). Collection volume will be approximately 0.25 lb., and no more than 20 percent of seed will be collected from a single plant. Once collected, seed shall be stored in a clean, dry environment, free from high humidity and excessive heat.

Plummer's baccharis: Plummer's baccharis can be spread vegetatively through cuttings and seed dispersal. Cutting collections should follow those methods described in Section 6.6, and the collection of propagules will be conducted with appropriate authorization from CDFW and the City of Santa Barbara. For seed harvesting, seed will be collected from localized individuals prioritizing the collection from individuals not impacted by the December 2019 work. *B. plummerae* is usually in bloom from mid-May to the first heat spell of July. Mature seeds have been observed and collected in early July (Stephen Steward, pers obs., 2000). Like all other Baccharis seeds, *B*. *plummerae* is short-lived, and viability decreases rapidly within a few days of ripening (Stephen Steward, pers obs., 2000). For this reason, hand broadcast of seeds into target locations should follow immediately after collection. Collection volume will be approximately one lb., and no more than 20 percent of seed will be collected from a single plant.

Hubby's phacelia: Hubby's phacelia is an annual herbaceous species from the Boraginaceae (Borage) family. This plant flowers from late March through May, with seeds that mature from late May into early July (S. Steward, pers. comm., October 7, 2021). The seeds appear hairy along a curled rachis, or cyme, with bell-shaped flowers. Although little information is available on Hubby's phacelia seed, species within the borage family are similar for seed collection and subsequent use. In general, phacelias have mature seeds when they are light to medium brown in color and have a hard consistency. All the seeds on a plant will mature within a relatively short timeframe, beginning with the flowers closest to the base of the inflorescence. Therefore, once the middle section of seeds has matured, the entire inflorescence can be collected. With this approach, it is possible that early maturing seeds will already have become dispersed before the seeds have been collected, while others have not fully matured (CSU Stanislaus 2021). Collection volume will be approximately 0.2 lb., and no more than 20 percent of seed will be collected from a single plant.

5 Site Preparation

Site preparation includes Project activities that will occur prior to the installation of restoration activities. Typically, these activities involve preparing a site for seeding or planting, removing weeds and trash, or installing devices to protect the surrounding areas from unintended damage during installation activities. This section describes Project activities, which are intended to occur just prior to the restoration installation (Section 6).

5.1 Staging Areas

Staging areas are needed to support Project activities, including but not limited to vehicle parking, equipment staging, or material processing and storage, etc. These areas, identified in Figures 5a-e, have been selected to coincide with existing road shoulders and pullouts or disturbed areas to eliminate impacts to native vegetation and trees. To minimize disturbance, SCE proposes to use staging areas previously approved for use for the Mission Canyon Road Repair Project in 2020. It is not anticipated that any staging area will require native brush removal or grading, and any non-native vegetation present will be removed prior to use.

Some staging areas may be used to temporarily stockpile sidecast material removed from the stream or tributaries as part of the Project. Woody debris may also temporarily be stockpiled and staged for chipping and subsequent removal from the site. All stockpiles associated with the Project are temporary in nature for the purposes of staging prior to transport and disposal. Stockpiles will be regularly loaded and transported to manage the material accumulation in the limited workspace. The stockpiled soil will be hauled off-site.

A SWPPP will be prepared and implemented to address the short-term stabilization of soils and include the management of stockpiles. Soil stockpiles will be maintained with appropriate BMPs and will be weeded during maintenance activities for the duration the stockpiles are in place. Stabilization measures may include approved soil binders, hydromulch, burlap-wrapped fiber rolls, or biodegradable gravel bags. Stockpiles will be managed to control fugitive dust. All BMPs shall be biodegradable, weed-free, and plastic-free.

Stockpile and staging areas will be rehabilitated back to pre-construction conditions. The staging locations are primarily limited to compacted road shoulder and turnouts and consist of the existing

roadbed. SCE will ensure all trash/ debris and materials are removed, and BMPs are removed upon close out of the SWPPP. If native vegetation was removed to support SCE's Road Repair Project completed in November 2020, or is removed to support the Project, SCE will restore these areas in accordance with the Creek HRMP.

5.2 Weed and Woody Debris Removal

Weeds and woody debris within the work areas will be removed prior to Project activities. Woody debris was generated during December 2019 work and has accumulated downslope and within regulatory areas. To remove materials and equipment, hand crews will haul the material up to the road where it can be chipped and hauled away.

In addition, weedy biomass will be removed from the Project areas, separate from the woody debris collection, and not commingled. As weedy biomass is cut, it will be bagged and hauled off-site with precaution to remove as many weed seed heads as possible.

5.3 Removal of Trash

All restoration and revegetation sites shall be free from trash and debris. SCE will remove all Project-related trash and debris from every restoration site prior to installation and throughout the maintenance and monitoring period. SCE shall not be responsible for non-SCE generated trash.

5.4 Soil Preparation

If necessary, revegetation areas outside of the creek will be prepared for seeding to establish a beneficial seeding and planting bed. If hydromulch, erosion blankets, or weeds are present, they will be removed or broken up prior to seeding to ensure good seed-to-soil contact. Soil loosening can be achieved by roughening the soil using hand tools such as rakes. The soil will be loosened generally to a depth of one to four inches, unless otherwise specified. The surface will be left rough-textured.

5.5 Erosion Control

Prior to Project remediation activities, a SWPPP will be prepared covering the entire Project footprint. The SWPPP is intended to provide a toolbox of erosion control devices and management practices, which will help to stabilize the impacted slopes and minimize erosion, sedimentation, and water turbidity downstream. Pursuant to the SWPPP, BMPs will be installed and will likely include, but not be limited to, fiber rolls, gravel bags, silt fences, a hydroseed tackifier, and other BMPs. The SWPPP will remain effective until the threat of erosion or sedimentation has subsided, and the Project area has stabilized.

SCE will maintain erosion control BMPs within restoration sites in compliance with SWPPP requirements. To prevent sediment from leaving the restoration areas or rills from forming on the creek banks, SCE will ensure that appropriate remedial measures are in place during restoration installation through SWPPP closeout. This may include hydroseeding and/or the installation of erosion control measures, such as silt fencing, straw or coir wattles, and jute netting. SCE will integrate SWPPP treatments with restoration site preparation.

6 Habitat Restoration Installation

Restoration installation will be carried out under the direction of the Restoration ecologist and supported by a stream fluvial morphology team (consisting of a stream restoration ecologist, a fluvial morphologist, and a stream hydrologist), as well as botanists, arborists, and wildlife biologists. Following site preparation described in Section 5, the installation will be completed in ten steps: (1) removal of sidecast from regulatory and upland areas; (2) tree remediation through the removal of sidecast material; (3) restoration of stream hydrology and function, (4) slope stabilization; (5) hydroseeding; (6) planting; (7) cutting collection; (8) cutting installation; (9) post-planting watering; and (10) Species-specific rehabilitation. While step 1 is described in detail in Section 3.1, steps 2 through 10 are described separately below.

6.1 Remedial Activities to Native Trees

Trees that were impacted as a result of the December 2019 work have been described in Section 2.4 and consist of trees occurring in both upland and CDFW regulatory areas. Remedial measures to impacted trees within the upland sidecast areas and Road Areas 1 and 2 were completed in November 2020, as prescribed in the Road HRP (Attachment E.1). The remaining previously impacted trees are within CDFW regulatory areas and will be remediated concurrently with other activities described in this Creek HRMP (Table 12, *Summary of Trees Remediated as a Result of December 2019 Work*, Attachment E.2).

Table 12. Summary of Trees Remediated as a Result of December 2019 Work

Description	Trees within CDFW Jurisdiction	Trees in Upland Habitats	Total Number of Trees
Trees Impacted in 2019	39[1]	92	131[1]
Trees Remediated in 2020 Road HRP	9	85[2]	94[2]
Trees Remediated in this Creek HRMP	30[1]	0	30[1]

[1] One additional Coast live oak tree was discovered in October 2021 within CDFW regulatory areas as a result of the sidecast in the Sidecast 3 Rock Outliers location that not reflected in this table.

[2] Four additional trees received remedial actions beyond what was originally planned and seven trees previously identified for remedial activities did not receive any treatments for various reasons; both items are omitted from this table.

The following prescriptions are for trees within Mission Creek's USACE, CDFW, and RWQCB regulatory areas that will be remediated through the implementation of this Creek HRMP. Remedial measures have been proposed in conjunction with the Tree Impact Assessment Report (HELIX 2020b, HELIX 2020c, Figures 5a-e). During the time of the tree assessment, corrective measures were noted for each tree, which would aid in the recovery and/or survival of that individual. The categories used for this assessment and their approximate criteria are defined below:

Remove Rocks/Soil: Tree has a buildup of rocks and/or soil around the base or root crown of the tree. Remove rocks and soil to allow the tree to recover under the direction of an arborist.

Prune: Tree has limb(s) and/or branches that are irregularly cut and have been removed. Prune limb(s) and/or branches to a clean-cut under the direction of an arborist.

Trim/Cover Roots: Activity has left exposed and damaged roots. Under the direction of an arborist, roots will be cleanly trimmed and/or soil replaced to ensure roots remain buried.

The most common recommended remediation for impacts was to remove soil and rocks from the root zone and root crown (Table 13, *Summary of Recommended Remediation to Trees within CDFW Regulatory Areas of Mission Creek).*

Table 13. Summary of Recommended Remediation to Trees within CDFW Regulatory Areas of Mission Creek

Species	Trees with Recommended Remedial Actions	Leave as Snag	Remove Rocks/Soil	Prune	Trim/Cover Roots
Coast live oak	18[1]	0	14[1]	8[1]	0
Bay laurel	14	2	13	3	1
Western sycamore	7	0	7	2	0
STREAM TOTAL	**39**[1]	**2**	**34**[1]	**13**[1]	**1**

Note: A single individual may receive more than one treatment.

[1] One additional Coast live oak tree was discovered in October 2021 within CDFW jurisdiction in the Sidecast 3 Outliers location and is included in this table.

No trees identified in the Level 1 survey within the Project area were determined to be a potential hazard to public users of the roads and trails in the Project area; therefore, no Level 2 tree risk assessment was conducted.

6.2 Stream Hydrologic Restoration

CDFW reference reach data suggest that restored habitat in the Project site may support a pool density of 9.33 per 500 ft. Reference pool structure was approximately 17 ft in length and 9.1 ft in width, with a mean depth of 1.2 ft. The maximum pool depth occurred within the main scour and reached a depth of at least 2 ft, while pool tail-outs had an overall tapering of depth until the downstream extent of the pool. Primary features of reference pools include a main scour point and pool tail-outs that consist of an overall tapering of depth toward the downstream extent of the pool; however, flatwater and riffle habitats provide biologically important habitat complexity throughout the channel. As inferred from the mean composition between both references reaches, the restored site may include approximately 9 flatwaters and 13 riffles. Reference reach data suggest boulders (substrate with a diameter greater than 10 inches) will be the primary substrate present throughout the restoration reach and be intermixed with gravel and cobble substrates (CDFW 2022b).

Based on detailed geomorphological data of the Project site collected in 2021, it is believed that the site currently contains stream features that could support fish, similar to the CDFW reference reach data. Restoration of stream habitat will be informed by CDFW's reference reach data and guided by actual site conditions revealed as sidecast is removed during Project construction.

Following the removal of sidecast materials, fish habitat units within the Project site will be manually restored to conditions existing prior to the December 2019 work, in dimensions allowable by the existing terrain while considering constraints specific to the Project site. Attempting to artificially create pool habitat, or other habitat type, where it did not previously exist, could potentially destabilize and disturb the creek bed and banks causing increased erosion and undercutting of bed materials.

After restoration activities are complete, SCE will collect data on the condition of restored pools, including pool dimensions, pool tail-out substrate, instream cover, and detailed geomorphological cross-sections. The results will be evaluated along with CDFW to verify acceptance of final condition. If

additional restoration to stream hydrology or habitat features is needed, plans would be developed for CDFW approval through the Adaptive Management Program process (Section 8.3.4). Upon approval, SCE will implement the plans under the direction of the fluvial morphology team.

6.3 Slope Stabilization

If necessary, temporary impact areas outside of the creek bed that are disturbed by Project activities may be compacted to stabilize the soil and restore the area to a natural appearance. Exceptions will be made to accommodate public safety, protection of property, and preservation of stream integrity. If necessary, compaction shall take place at the cessation of disposal removal activities as part of final stabilization. Any area recontoured that previously contained native plant materials would become part of this revegetation program, including seeding and maintenance activities (see Sections 6.4 and 7).

The natural bed and banks of the impacted portions of the creek will be recontoured to their pre-impact topography following the removal of materials. Prior to material removal, the banks of the creek within unimpacted areas upstream and downstream of the impacted areas will be delineated with flagging. By identifying the natural topography of the creek, both directly upstream and downstream of each impact area, along with identification of natural creek bed and bank features within the impacted areas, the pre-impact topography of each impacted creek section will be re-established and contoured to pre-impact conditions. Additional discussion of the identification of pre-impact creek bed and banks will be provided in the TIP.

As the rocks, boulders, and sediments are removed, the fluvial morphology team and other qualified resource experts will evaluate the long-term stability of the creek and adjacent slopes. Should long-term stream bank stabilization be determined necessary (beyond standard stormwater BMPs), the stream habitat adaptive management process described in Section 8.3.4, will be used to engage regulatory agencies in a prescribed repair or stabilization treatment. The purpose of bank stability measures would be to address potential erosion or scouring of the stream bank, and to preserve the stream hydrologic (habitat) features that existed prior to the December 2019 work.

6.4 Seeding Methods

A separate seed mix will be applied to wetland/woodland/forest and upland sidecast areas that will be restored (Tables 10a-b). Seeding will be completed following specific Project activities described in Sections 6.1 through 6.3. When the restoration seed mixture is applied, the soil surface will first be prepared by removing any weeds or mulch on the soil surface to ensure good seed-to-soil contact. Seeding will be conducted generally from September through February to take advantage of natural rainfall. An appropriate seed mix will be applied via hydroseeding (Section 6.4.1). More than one seeding event may be completed. If determined necessary, supplemental water may be added to the seeded areas to encourage germination and soil stabilization. Supplemental seeding may be hand-broadcast.

6.4.1 Hydroseeding

The Project areas will be seeded using a two-stage hydroseed application method completed in consecutive steps. In stage 1, the seed mix (25 pounds per acre) will be mixed with approximately 500 pounds per acre of long-strand wood fiber, a colorant, 150 pounds per acre of binder increased as necessary according to slope, and sufficient water to allow the mix to be applied evenly over the revegetation area (Figures 5a-e). All hydroseeding mixing will be performed in a clean tank free from

residual seed. The hydroseeder will be equipped with a continuous agitation and recirculation system to produce a uniform slurry and have the capacity to apply this slurry at a uniform and continuous rate.

For stage 2 of hydroseeding, an application of hydroslurry will comply with the manufacturer's recommendations. The designated areas will be sprayed with the slurry in a sweeping motion from multiple directions, and in an arced stream until a uniform coat is achieved, with no slumping or shadowing as the material is spread at the recommended rate. The seed slurry will be applied within one hour of preparation as the viability of the seed could be compromised. A typical rate of application in California is approximately 1,500 to 2,000 pounds per acre of wood fiber mulch and a plant-based tackifier for the hydromulch method (Newton and Claassen, 2003). As the seeding will function to stabilize soil in addition to revegetate natural habitats, the restoration contractor may adjust the specific rate of application on a site-by-site basis in consultation with the SWPPP consultant.

6.4.2 Oak Acorn Planting

Oak acorn planting will occur prior to or in conjunction with seeding activities whenever feasible. Acorns will be collected from local sources (collected from within Project and adjacent areas) and planted as freshly collected seeds. Acorn planting sites will be prepared by shoveling the top 10 to 12 inches of topsoil from a one-foot diameter planting site and breaking the soil, where necessary, into fine particles to prepare a seed bed. A total of four acorns will be turned on their sides and planted within each hole approximately six inches apart at a depth of two inches. The planting holes will be backfilled with native soil, and then covered with bark mulch, approximately three inches deep and no less than three feet in diameter. Following planting, an 18" tall and 12" diameter chicken wire cage will be secured around the planted acorns to discourage predation of the acorns and to protect seedlings once germinated. The cage will be secured on-grade using jute staples or stakes. Alternatively, acorns may be planted in tree tubes.

6.5 Plant Installation

Trees will be planted throughout the areas being revegetated. Tree species will include those species impacted by sidecast, including coast live oak, bay laurel, and California sycamore. Placement of the tree plantings will be determined by the Restoration ecologist, based on the hydrologic needs of the species, local soil and topographic conditions, existing canopy cover, and accessibility for maintenance purposes. In general, all tree plantings will occur in woodland and woodland transitional areas, as determined by the Restoration ecologist. All tree plantings will be monitored, with tree health assessments performed annually (Section 2.4).

Container planting will occur prior to seeding activities unless such material is unavailable at the appropriate time for seeding. Any plants supplied to the Project will be required to undergo screening for phytophthora pathogens prior to transportation to the site[11]. Upon arrival, a plant inspection will be completed, and any plants exhibiting visual evidence of weeds, pests, improperly sized, or in poor health, will be returned. Container plants will be installed in areas determined to be feasible and appropriate by the Restoration ecologist and SCE. During transport from the nursery or storage facility to the planting site, the plant material will be handled carefully, such as the plants shall not be dropped, tossed, or otherwise "roughly handled." Upon plant delivery, container plants shall be stored in a

[11] SCE will take necessary preventative steps but does not accept liability of plant disease (e.g., phytophthora) outbreaks as the source of pathogens is not reliably verifiable and can include numerous other sources not associated with SCE activity.

designated temporary storage location that is within a developed or disturbed area approved by SCE. The Restoration ecologist is responsible for recommendations relative to protection from herbivory, vandalism, or theft, as well as maintenance (watering) of the plants while they are in temporary storage.

Plants will typically be installed within openings of the restoration areas on eight-foot centers for shrub species, with closer spacing for bunch grasses, and wider spacing for larger shrubs or trees (although final spacing may vary upon container size used and species to be planted). The Restoration ecologist will supervise and approve the layout of all container plants so that spacing and composition are appropriate. All container and tree plants shall be planted in accordance with the following specifications:

- Plants shall be planted with the roots untangled, and sides scarified to promote new root development; roots shall be protected from weather exposure during planting.

- Planting holes shall be augured and be no more than 1.5 times the diameter and 2 times the depth of the container species to be planted.

- Planting holes shall be backfilled 25 percent with excavated native soil and filled with water, and allowed to drain completely prior to planting. Container plants must never be installed in planting holes with standing water; all water shall be allowed to settle and infiltrate through the soil prior to plant installation.

- Plantings shall be set in well-drained planting holes with the crown of the root ball approximately half an inch above the backfilled soil. The soil around the planting shall be tamped down sufficiently to eliminate any air pockets in the soil.

- A basin around the planting shall be constructed by creating a berm above the existing grade, approximately 24 inches in diameter around the planting. Planting basins may be smaller on steep slopes.

Native oak and container trees shall be deep-watered for a period of no less than 48 hours before transplanting. Watering basins shall be established around each tree, and soil slightly compacted by foot to ensure proper root/soil contact. No amendment is necessary for the installation, but the Restoration ecologist may choose to supply amendment containing B vitamins to help prevent transplant shock and promote root growth.

Some planted container stock and all native oak trees may require protection against herbivory. Herbivore barriers made of chicken wire, or similar material, will prevent herbivores from chewing through the barrier. Barriers will be a minimum of two feet above-ground. The herbivory cages shall be inspected during each maintenance visit and removed when it has been determined by the Restoration ecologist that herbivory will no longer compromise the health and establishment of the plantings. Herbivory caging will be removed before it hinders plant development and growth. If the Restoration ecologist determines that there is a potential threat of subterranean root damage by small mammals, wire cages constructed of chicken wire may be installed into planting holes prior to planting. If used, subterranean cages will not be removed.

Each planting shall be sufficiently watered after installation so that water reaches the lower roots. Planting of cuttings will occur prior to seeding activities when feasible. The Restoration ecologist will inspect and verify that all cuttings have been prepared properly prior to planting.

6.6 Cutting Collection

Cuttings of shrub and tree species may be prepared to assist with the revegetation of restoration areas. Cuttings will be collected locally and prepared according to the following specifications. Cuttings shall be harvested from the existing plants under the direction and supervision of the Restoration ecologist. Cuttings shall be harvested in the winter months once the plants have entered dormancy and deciduous species have dropped leaves. This harvesting time falls outside of the migratory bird nesting season (March through September, February through September for raptors). After harvesting, cuttings will be immediately soaked in water for select woodland/forest species (e.g., *Salix* spp.). Collection of sensitive plant propagules (i.e., Plummer's baccharis) will be conducted with appropriate authorization from CDFW and the City of Santa Barbara.

The assortment of cutting species will be adjusted in the field by the Restoration ecologist to replicate the existing adjacent habitat. These guidelines apply to the collection of cutting materials:

- Collect cuttings from healthy plants that are in a dormant state (woodland/forest species).
- Collection shall not exceed 25 percent in a single area, and no more than 25 percent of an individual plant shall be removed.
- Cuttings will be 36 to 48 inches in length and should range from 0.5 to 1.0 inch in diameter.
- Each cutting shall be cut one end square above a leaf bud (top) and then cut the other end at a 45-degree angle (bottom).
- Trim any stems or leaves flush with the cutting.

Cuttings soaked in water should be harvested and soaked for no less than seven days and no more than 14 days prior to planting.

6.7 Cutting Installation

Cuttings will be planted at the appropriate time for each species utilized. For example, cuttings from woodland/forest tree species will be obtained, prepared, and planted when trees are dormant. Cuttings may be provided with supplemental water following planting as specified by the Restoration ecologist until the cuttings show signs of growth and/or establishment. Cuttings will be planted with similar density and composition as the adjacent habitat. The Restoration ecologist will supervise the layout of all cuttings so that the spacing and composition are appropriate. After initial preparations as discussed above, cuttings shall be installed following these specifications:

- Cuttings shall be planted in holes approximately two inches in diameter; all planting holes shall have vertical sides.

- Each hole shall then be partially backfilled with excavated soil material and then saturated with water; this step shall be repeated until the hole is at least half backfilled.

- Once the water has been absorbed into the soil, a cutting shall be inserted into the hole with the angled end in the ground. The cutting shall be installed so two-thirds of the cutting length is below ground (minimum of 18-inch planted length), with at least three leaf bud scars above the surface of the soil.

- The hole shall then be backfilled completely with excavated material and distributed evenly around the cutting, the backfill shall then be tamped down sufficiently to eliminate air pockets.

- After installation, the cutting will be soaked at least twice to fully saturate the soil down to the base of the cutting and to assist with settling the cutting.

6.8 Post-Planting Watering

Upon completion of tree and shrub planting, each planting will be watered to saturate the soil and promote the settling of the soil and planting into the planting basin. It is expected that each plant will receive at least one to two gallons of water during this watering event, depending on the size of the container plant and soil conditions at the time of watering. Watering into each plant basing will ensure that water saturates the planted root zone and settles the soil around the plant. If the soil subsides within the planting basin substantially, more native soil may be added to the planting basin. All temporary irrigation systems will be designed to prevent entrapment by wildlife. Restoration watering methods will vary but will typically consist of one of the following:

- Hand watering: plants and cuttings may be watered by a water tank mounted in the back of a truck, water buffalo, or water truck, with each plant being hand-watered with a hose using a hose connected to a water truck or water storage tank. Water shall be applied using a shower head-type nozzle capable of providing low-pressure application to prevent erosion or damage to the plantings and planting basins.

- Seasonal planting: Some areas may be planted or seeded within a hydrologic zone and time of year to take advantage of seasonal rains and may not require regular watering.

- Above-ground irrigation system: Plants or cuttings may be watered using a temporary irrigation system connected to a water truck or water storage tank. The typical irrigation system may consist of a network of main and possibly lateral lines (PVC pipe or flexible drip tubing), if necessary, and will be removed at the completion of the restoration program.

- Deep pipe watering: Plants may be watered using a deep pipe irrigation system connected to a water truck or water storage tank. Vertical plastic pipes with holes drilled in them at different depths (typically 2 inches in width and 14 inches in depth) may be inserted next to container plants to allow irrigation water into the deep root zone. This improves water delivery to the plants' roots and minimizes water evaporation and weed growth. A cap or screen shall be placed over the top of the pipe to discourage wildlife and debris from entering.

6.9 Species Specific Rehabilitation

As described in Section 2.3 of this Creek HRMP, three sensitive plant species are presumed to have been directly impacted due to the December 2019 work. These species include Santa Barbara honeysuckle, Plummer's baccharis, and Hubby's phacelia. In addition, the Santa Barbara honeysuckle and Plummer's baccharis have the potential to occur within the sidecast areas subject to removal through the implementation of this Creek HRMP. Therefore, the collection of seed or cuttings of these species will be completed during the appropriate season for the target species as described in Section 4.8, and subsequently planted within suitable habitat nearby existing populations mapped within the Project area. Out-planted sensitive plant plots will be integrated within existing revegetation areas of the Project and recorded using sub-meter GPS data and discretely marked in the field for monitoring.

The number and size of plots will vary by species but will be a minimum of 4, one-square-meter plots per species. Species-specific methods for planting and seeding will follow revegetation practices suitable for these sensitive plants and that have been found to be previously successful. In addition, SCE will consult with the Santa Barbara Botanic Garden, or other botanical experts, when beneficial for propagation success.

Sewing of sensitive species seeds will be done by hand broadcasting seed into specific plots, as determined by the Restoration ecologist. The plots will first be cleared of senesced plant materials to ensure good sed-to-soil contact and then be lightly raked into the soil surface once applied. Specific measures for the application of each sensitive species are included below.

Santa Barbara honeysuckle: Seed will be collected as described in Section 4.8. At the onset of winter rains, seeds may be hand broadcast into plots located outside of the road prism, which are suitable for germination and establishment, as determined by the Restoration ecologist. Alternatively, seed may be used to propagate individuals for planting into plots. Individuals of Santa Barbara honeysuckle having the potential to be impacted or that cannot be successfully avoided, may be salvaged from within the construction areas prior to activities (Section 4.8). Transplanting of Santa Barbara honeysuckle that has been salvaged would follow methods described in Section 6.7.

Plummer's baccharis: Seed will be collected as described in Section 4.8. Like all other Baccharis seeds, *B. plummerae* is short-lived, and viability decreases rapidly within a few days of ripening (pers. obs. 2000 – ZSSD). For this reason, seeds will be hand broadcast into revegetation areas immediately following collection and into locations as determined by the Restoration ecologist. Cuttings from Plummer's baccharis may be installed similarly to the methods described in Section 6.9.

Hubby's phacelia: Seed will be collected as described in Section 4.8. At the onset of winter rains, seeds may be hand broadcast into plots located outside of the road prism, which are suitable for germination and establishment, as determined by the Restoration ecologist.

7 Maintenance Program

A maintenance program is necessary to identify and resolve maintenance issues in a timely manner to promote the successful establishment of the planted and seeded areas. This Section describes various maintenance activities that may be completed as part of the Maintenance Program. The Maintenance Program will be supplemented by the Monitoring and Reporting and Adaptive Management Programs discussed in Sections 8.2.5 and 8.3.4.

7.1 Maintenance Activities

The maintenance activities implemented during the program will include weed control, tree/shrub replacement, supplemental seeding, and any remedial measures deemed necessary for the success of the mitigation program. Maintenance activities will be performed by the maintenance contractor or Project proponent and directed by the Restoration ecologist. An anticipated maintenance and maintenance monitoring (Section 8.1.3) schedule is presented in Table 14, *Maintenance and Maintenance Monitoring Schedule*.

Table 14. Maintenance and Maintenance Monitoring Schedule[1]

Task	Years 1	Years 2-5
Weed Maintenance	As needed	Min. 2 visits
Maintenance Monitoring	Quarterly (March, June, Sept., Dec.)	Concurrent w/ weeding
Supplemental Watering	As needed (Yrs. 1 and 2)	NA
Shrub and Tree Replacement	Spring or Fall (Yrs. 1 and 2)	NA
Protection from Herbivory	As needed	NA
Trash Removal	Twice Annually	
Erosion Control[2]	Monthly	As needed
Opportunistic Supplemental Seeding	Spring or Fall	Spring or Fall

[1] This schedule is only a guideline; monitoring will be performed as necessary, as determined by the Restoration ecologist.

[2] Monthly Monitoring during Year 1 would only apply to the active rainy season (October through April). Monitoring may occur regardless of frequency following a significant rain event of 1 inch or more as measured within a 24-hour period.

7.2 Weed Maintenance

Following the removal of rocks, boulders, and sediments and installation activities, all treated areas (including both seeded regulatory areas and non-seeded upland sidecast areas, [Figures 7a-e]) will be weeded over a period of at least five years, with a minimum of two weeding events occurring each maintenance year. Upland sidecast stabilization areas will follow a similar schedule. Weed abatement within the sidecast areas of Mission Canyon occurs over slopes ranging from 1:1 to 3:1 and requires specialized crews skilled in fall protection. The work is considered hazardous and has a high safety risk. Weed abatement may be conducted more frequently as prescribed by the Restoration ecologist following careful evaluation of the safety risk associated with the weed abatement activities. Weeding activities will be timed appropriately to remove biomass and seed heads during the peak growing season and prior to seed maturity. Targeted weed species include weeds that are already present within the region, such as mustards (*Brassica* spp.), thistles (*Centaurea* spp.), and non-native grasses. The maintenance of non-native grasses will be secondary to the maintenance of more invasive forb species, and will only become a focus if grasses threaten to preclude the establishment of planned native habitat.

Prior to each weeding event, a biologist will delineate work areas and flag sensitive species and resources for avoidance. In most locations, weeds will be removed through the use of line trimmers, hula hoes, and rakes, while some areas may require hand removal where native and sensitive species are present. All weed biomass that is cut or pulled will be removed from the Project site.

7.3 Supplemental Watering

Watering may be conducted through the methods described in Section 6.8. The supplemental watering for oaks should include deep watering cycles to encourage deep root growth and facilitate oak tree establishment. All supplemental watering will be conducted under the direction of the Restoration ecologist and will be discontinued once it is determined that target shrubs and trees have successfully established. Planted oak acorns will be allowed to germinate under natural conditions and will not be provided with supplemental water until they germinate. Acorns that have germinated may be watered, as needed, if seasonal rainfall is insufficient to support their survival. While plantings from container stock or transplanted cuttings would be watered until the plants have become established, seeded areas and sensitive plant species seeded plots would not be subject to supplemental watering.

7.4 Shrub and Tree Replacement

Planted trees and shrubs may be replaced at the direction of the Restoration ecologist as needed to meet the goals of this Creek HRMP. The contractor will be responsible for replacing any dead or diseased plants. Timing of plant replacement will be at the discretion of the Lead Restoration ecologist, and usually be completed within 90 days, although it may be longer if the replacement would yield a higher success if completed during a specific time of year, as directed by the Lead Restoration ecologist.

7.5 Protection from Herbivory

Herbivory protection will be provided for acorn plantings and selected tree plantings. Plant protectors, such as tree tubes or herbivory cages, may be used with other plantings to minimize herbivory, as needed, at the Restoration ecologist's direction. Deer fencing may also be used to protect specific areas or patches of installed container stock, at the discretion of the Restoration ecologist.

7.6 Trash Removal

The restoration areas will be kept free of trash and debris and will be checked by maintenance personnel according to the maintenance schedule. Trash and debris are defined as any artificial material that is not natural to Mission Canyon.

7.7 Erosion Control

Straw wattles, compost socks, silt fencing, or similar materials will be installed on the slopes of the restoration areas, as needed, to minimize erosion and prevent sedimentation of the streambed. Erosion control will be removed after sufficient vegetation has established to prevent erosion. Within the Stream, monitoring would be completed monthly during the active rainy season of the first year (October through April). Monitoring may occur regardless of the frequency following a significant rain event of one inch or more, as measured within a 24-hour period.

7.8 Opportunistic Supplemental Seeding

Seed from native species that are ready for harvest at the time of maintenance visits will be collected by hand crews and opportunistically seeded into the revegetation areas. Focused seeding events may occur in underperforming areas and for sensitive species which occur within the Project area if they are not showing signs of a population that is recovering. The Restoration ecologist will oversee all opportunistic seeding events to ensure sensitive resources are avoided, and seeds are at a mature stage for collection and distribution.

8 Monitoring and Reporting Program

Monitoring of the Project will be conducted throughout the restoration process to ensure Project goals are met. Both stream and upland habitats will be monitored, and while many of the techniques and processes used for monitoring are consistent between different habitats, this report also includes stream-specific monitoring actions to provide data relative to the stability and physical health of Mission Creek. Generally, the Project's monitoring and reporting program is categorized as follows: 1) Project-wide monitoring activities, 2) upland habitat monitoring, and 3) stream habitat monitoring. Project-wide monitoring includes activities that will encompass the entirety of the Project work area, while the upland and stream monitoring activities will build upon the Project-wide activities to focus on attributes unique to those areas.

These categories are further distinguished between Success Monitoring and Qualitative / or Functional Monitoring. Data collected for "success" monitoring assessments will be used to determine whether the Project's success criteria and standards are met. "Qualitative"/ or "functional" monitoring assessments are for informational purposes and will not be used to measure success of the Project.

The various monitoring components, with their timing and frequency of occurrence, are listed in Table 15, *Mission Creek Monitoring Program*.

Table 15. Mission Creek Monitoring Program[1]

Category	Survey Description/ Section Reference	Frequency	Timeframe	Total Number of events[2]
Project-wide Qualitative Monitoring	Installation Monitoring/ 8.1.1	During installation only	Daily	TBD
	Photographic Monitoring/ 8.1.2	Pre, Post, LTM (Annually)	Spring	7
	Maintenance Monitoring/ 8.1.3	Refer to Table 13	As Needed	12
	LiDAR Imagery/ 8.1.4	LTM (Years 1- 5)	Anytime	2
Project-wide Success Monitoring	Sensitive plant Surveys/ 8.1.5 and 8.3.2.5	Post, LTM (Annually)	Spring	7
	Mitigation Tree Surveys/ 8.1.6 and 8.3.2.5	Post, LTM (Year 1 Quarterly, Years 2-5 Twice Annually)	Spring	13
Upland and Stream Habitat Success Monitoring	Vegetative Cover Surveys/ 8.2.1 and 8.3.2.1	Post, LTM (Annually)	Spring	6
Stream Functional Monitoring	CRAM/ 8.3.1.1	Pre, Post, LTM (Year 5)	Spring	3
	Stream Hydrology Surveys/ 8.3.1.2	Pre, Post, LTM (Years 3 and 5)[3]	Summer	4
	Fish Habitat Surveys/ 8.3.1.3	Pre, Post, LTM (Years 3 and 5) [3]	Summer	4
Stream Success Monitoring	Wildlife Use Surveys/ 8.3.2.2	Post, LTM (Annually)	Spring	6
	Integrity of Stream Bed and Fish Habitat/ 8.3.2.3	Pre, Post, LTM (Years 3 and 5) [3]	Summer	3
	Fish Passage Surveys/ 8.3.2.4	Pre, Post, LTM (Years 3 and 5) [3]	Summer	4

Pre – Pre-Project Data; Post – **Post** Project Installation; **LTM** – Long-Term Maintenance Period (Minimum of five years).

[1] This schedule may be adjusted by the Restoration ecologist where necessary to accommodate safety conditions of the Project site, or seasonal fluctuations and changes in optimal data collection windows.

[2] Total number estimates five years, however monitoring will be extended until success criteria is met for the resource evaluated.

[3] Surveys will be completed in year three and year five; however, measurements will be collected annually if there is evidence of physical changes to the creek bed more than what is occurring immediately upstream and downstream of the Project. More frequent sampling may also be completed following unusual site conditions, such as extreme weather events, or as a means of assessing the effects of adaptive management strategies.

8.1 Project Wide Monitoring

8.1.1 Installation Monitoring

A Restoration ecologist will monitor the installation process on a daily basis while activities are occurring, including site preparation, initial non-native plant removal and/or treatment, and the installation of coast live oak trees /container plants or cuttings and seed material. The Restoration ecologist will inspect and approve all plant/seed material to ensure it is healthy and meets Project specifications prior to installation. The Restoration ecologist shall inspect and authorize each phase of work before the next phase may begin. This information will be used later to track the changes in vegetation as a result of site revegetation.

8.1.2 Photographic Monitoring

Photographic documentation will be used to track the progression of the site restoration through documenting pre-Project, post-Project, and annual technical monitoring events. Pre-Project and post-Project photos will be reported in the As-Built Report to demonstrate “before” and “after” conditions following the implementation of the Project, and annually in the spring thereafter. Prior to initiating Project activities, permanent photo monitoring stations will be established. The photo locations will be permanently marked in the field using rebar or other markers, documented using GPS, and mapped on an aerial photo base. Photo direction of all photos will be noted, and photos from each photo point will be photographed in the same direction during each monitoring session.

8.1.3 Maintenance Monitoring

Regular maintenance monitoring is necessary to evaluate the need and effectiveness of maintenance activities. Maintenance monitoring may be scheduled separately and may also be conducted concurrently with scheduled maintenance activities (Section 7). Maintenance monitoring will include assessments of seed germination, the effectiveness of weed control, evidence of erosion, soil moisture, signs of plant stress, herbivory levels in planted or seeded areas, removal of trash, evidence of anthropogenic disturbance, and other factors that may adversely affect habitat restoration success. Maintenance monitoring assessments may prompt recommendations for maintenance activities that will be implemented on-site if possible, or otherwise be completed during a subsequent scheduled maintenance activity. The Restoration ecologist will monitor maintenance activities during the five-year maintenance period according to the schedule in Table 13. Maintenance monitoring visits will be conducted a minimum of quarterly (generally in March, June, September, and December) during Year 1, and twice annually in Years 2 through 5, or until success criteria are met.

More frequent inspections may be necessary as warranted to promote habitat development. Monitoring memos noting any issues will be provided, as necessary, to the installation/maintenance contractors and Project proponent.

8.1.4 LiDAR Imagery

Following Project implementation and after Year 5, LiDAR (Light Detection and Ranging) imagery will be collected from the entire Project site. LiDAR is a remote sensing method used to examine the ground surface topography and the vegetation height and densities across the Project site. By collecting LiDAR imagery at two separate occasions during the Long-term monitoring period (years 1-5), changes in surface topography and vegetation heights and densities may be compared and analyzed.

8.1.5 Sensitive Plant Species Monitoring

Sensitive plant monitoring of planted/seeded Santa Barbara honeysuckle, Plummer's baccharis, and Hubby's phacelia plots will be conducted annually, concurrent with ongoing monitoring events, and timed appropriately for positive identification of the sensitive plants. Assessments will include estimates of the number of individuals per location, and the approximate percentage of flowering individuals. Monitoring visits will also record any need for remedial seeding /planting or maintenance. Planted/ seeded sensitive plants will be considered successfully established and capable of natural reproduction by flowering at least once during the five-year monitoring period. Sensitive plant restoration will be considered fulfilled when at least 75 percent of planted plots for the respective species are observed flowering within the five-year monitoring period. Results of sensitive species monitoring will be included in the annual reports.

For the Ocellated Humboldt lily, annual presence/absence surveys will be conducted each year, for three consecutive years, following sidecast removal activities. These annual surveys may be terminated earlier than three years if the species is observed in the location previously observed, thereby indicating that the individual had not been adversely impacted by December 2019 work or sidecast removal activities. If additional individuals are observed, they will be mapped and included in the annual report.

8.1.6 Tree Monitoring

Tree health assessments of planted trees or acorns will be performed at a minimum of quarterly the first year, and twice annually each year thereafter for a minimum of five years. Health assessments will be conducted on each planted tree, will be conducted by an ISA-certified arborist, and will include an evaluation of overall tree health, including an inspection for disease, stress, or pest infection. Each tree will be rated using the Tree Health Rating System in Table 16, *Tree Health Rating System*, and reported in annual reports. These data will also be used to inform decisions and planning of maintenance actions as needed to address tree health concerns. During installation, native trees may be over planted in order to allow for a contingency loss of the total amount planted and still achieve the mitigation requirements.

A minimum of 90 trees (49 of which must be within CDFW regulatory areas) must be successfully established by showing three consecutive years of increased growth, with good or excellent health assessments and five-year survival, to result in the fulfillment of the replacement of impacted trees at the ratios specified in the Native Tree Restoration/Mitigation section (Section 3.3.4) of this Creek HRMP. When assessing the success of acorn plantings, Year 1 of the monitoring period would begin following

acorn germination, and monitoring may be extended for trees exhibiting a decline in health during the fifth year of monitoring.

Trees remediated as part of either the Road HRP or this Creek HRMP will also be monitored temporally, in conjunction with the assessment described above for newly planted individuals. Trees will be assessed according to the Tree Health Rating System. Results of the annual assessment will be compared to tree condition data collected immediately following impacts. If the assessment rating of remediated trees decreases from the initial assessments, corrective maintenance activities (watering, trimming) may be conducted. If a remediated tree dies as a result of factors attributable to December 2019 work, within the five-year monitoring period, additional planting will be conducted to mitigate the loss.

Table 16. Tree Health Rating System

Rating	Description
Excellent	A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease, or pest infestation.
Good	A healthy and vigorous tree with minor visible signs of stress, disease, or pest infestation.
Fair	Although healthy in overall appearance there is an abnormal amount of stress or disease and/or pest infestation.
Poor	This tree is characterized by exhibiting a greater degree of stress, disease and/or pest infestation than normal and appears to be in a state of rapid decline.
Dead	This tree exhibits no signs of life whatsoever.

Source: City of Santa Clarita (1990)

8.2 Upland Habitat Monitoring

8.2.1 Annual Technical Monitoring

Concurrent with maintenance monitoring visits (Section 8.3.1), the Restoration ecologist will conduct an annual technical monitoring visit for the upland revegetation areas in the spring of each year during the maintenance period. The purpose of the annual technical monitoring will be to gather qualitative monitoring data on the overall health of the Project site, identify maintenance needs and make observations of general growth trends; in conjunction, it will also include quantitative success surveys of vegetation cover, mitigation tree health and survivorship assessments and sensitive plant counts. The timing of these assessments shall correspond with the peak of the vegetation growth in the target habitat for that year. The exact timing of the visits will depend on the site and weather conditions. Technical monitoring of the upland areas will be both qualitative (visual) and quantitative (relevé data collection, Section 8.2.2) sampling within the Project site.

The qualitative monitoring of upland areas will include:

- a complete list of plant and animal species observed;
- plant health assessments;
- observations of general growth patterns and trends;
- tree health assessments;

- non-native weed growth;
- evaluation for evidence of erosion; and
- trash, or other issues maintenance needs.

The quantitative success surveys will consist of:

- relevé sampling of the Project sites;
- relevé sampling of reference sites;
- Sensitive plant counts and reproductive estimates; and
- survivorship of native tree and shrub plantings.

Quantitative monitoring methods are described in more detail below.

8.2.2 Vegetation Cover Surveys

The California Native Plant Society (CNPS) relevé sampling protocol will be used to quantitatively monitor native and non-native vegetation cover of the mitigation sites (CNPS 2000). The relevé method of sampling relies on ocular estimates of plant cover, rather than on counts of the "hits" of a particular species along a transect line. Relevé sampling is adaptable to unique site conditions and constraints and can be used on varying plant communities. At least one relevé sampling plot within each road area being restored will be sampled. Multiple relevé plots within each road area may occur when there are multiple adjacent reference vegetation communities, with at least one plot per adjacent vegetation community. Relevés with the same vegetation community will have the same plot size. Cover determinations will be made using ocular estimates over circular sample plots, with a 30-meter diameter placed within Sidecast areas in which restoration is implemented. Quantitative monitoring methods are based on the CNPS Vegetation Rapid Assessment Protocol, which indicates shrub plots should be 400 meter^2. For smaller sites, multiple plots of reduced size (15 or 20 meters in diameter) may be used, or the entire site may be sampled as an individual plot.

At the time of the first annual technical monitoring event, the reference sites will be monitored for comparative purposes using the same CNPS relevé sampling protocol. The reference sites sampled will be of similar vegetation community, slope, and aspect as the revegetation areas being restored. Each reference site will be a mature stand of vegetation. Each restored vegetation community association will have at least one reference site representing the target vegetation community and native and non-native species cover.

8.2.3 Success Criteria

Upland habitat restoration will be determined successful when the following Upland Habitat Restoration Success Criteria are attained at each upland habitat restoration site:

- Achieve 85 percent of native species cover, relative to the reference site with the same vegetation community association; and

- Show equal or less non-native cover than the reference site with the same vegetation community association.

Sensitive plant and mitigation tree restoration will be determined successful when the following Sensitive Plant and Mitigation Tree Restoration Success Criteria are attained:

- at least 75 percent of sensitive plant plots planted for each respective species are observed flowering within the five-year monitoring period (see Section 8.1.5); and

- a minimum of 90 trees Project-wide must be successfully established by showing two consecutive years of increased growth, with good or excellent health assessments and five-year survival (see Section 8.1.6).

If success is not achieved at the end of the five-year maintenance period, monitoring will continue until success criteria are achieved. The Restoration ecologist may recommend one or more upland adaptive management measures (Section 8.2.5) in order to meet success criteria.

8.2.4 Upland Habitat Adaptive Management

In addition to monitoring upland revegetation areas for erosion relative to the Project SWPPP, monitoring will focus on vegetation establishment, and non-native species cover, relative to a reference site. Upland adaptive management and contingency measures may be implemented if there are significant changes to the revegetated areas, if there is a failure to establish, or if goals presented in this Creek HRMP are not on-track to be met within the five-year maintenance period. As needed, SCE will implement adaptive management measures to facilitate the establishment of the native habitat. Where conditions do not reflect desired trends towards establishment or stabilization, revegetation areas may require remedial measures such as supplemental watering, reseeding, planting in select areas, controlling invasive plant species, additional stabilization measures (e.g., erosion control devices), and/or regulating human and/or wildlife access to the restoration site. Upland Habitat Adaptive Management will be implemented with ongoing and frequent engagement with relevant agencies. Agencies will be notified and consulted prior to the implementation of the Adaptive Management Activity listed in Table 17, *Upland Habitat Adaptive Management Triggers and Actions for Upland Habitats*, below.

SCE will evaluate the effectiveness of restoration treatments during the monitoring year. Findings and recommendations included in each Annual Report will be submitted to the regulatory agencies for review and comment prior to implementing adaptive measures.

Table 17. Upland Habitat Adaptive Management Triggers and Actions for Upland Habitats

Potential Challenge	Trigger	Adaptive Management Activity
Poor germination of applied seed	No germination in seeded area exceeds 100 square feet in a single location.	Area will be reseeded with alternate species or species that have been establishing successfully within adjacent areas. Consider planting container stock.

Potential Challenge	Trigger	Adaptive Management Activity
Poor germination oak acorns	loss of >20% of oak acorns after they have successfully germinated.	Arborist will determine reason(s) for planting failure and appropriate adjustments will be made. Replant with recommended remedial measures, as needed.
Slope erosion, formation of rills	Formation of rills and/or gullies along work area slopes where depth of rills is greater than four inches deep.	Monitor and identify if there is a point source of erosion. Make repairs to point source location(s) to prevent future rilling. Fill rills on slope to a natural contour. Hydroslurry and Replant/ reseed, as necessary.
Non-Native Invasive Species	Dominance of non-native species, or new non-native species, occur within work area is greater than ambient level of non-native species in surrounding undisturbed habitat.	If continuing invasions occur, efforts to find the source population shall be made. Increased application of weed control measures prior to flowering and seed set should aid in attaining control. New non-native species that do not occur in surrounding areas shall be eradicated. If continued manual weeding is not productive at abating problematic weeds, chemical spot treatment using a glyphosate-based or comparable herbicide, may be implemented as a component of an integrated weed management approach in addition to mechanical and manual removal. Chemical applications would be limited to non-public use areas (e.g., habitat areas along steep slopes), where mechanical or manual methods are found to be either ineffective or have potential to cause damage to recovering habitats.

Potential Challenge	Trigger	Adaptive Management Activity
Poor Soil Conditions	Planted vegetation and seeds not growing for unspecified reason. Non-native species not growing in same area.	If selected plants do not tolerate certain areas of soil, the seed palette shall be changed to include species that are more tolerant. Opportunistic seeding is recommended. Perform a soil test and remedy any soil deficiencies with amendments. If lack of vegetation does not lead to erosion or unstable conditions, consider cessation of planting and seeding.
Excessive Predation by Herbivores	Greater than 20 percent of planted vegetation is being heavily browsed by wildlife to the extent where browsed plants may not survive herbivory pressure.	Plant cages shall be added to establishing woody plants if herbivory is severe. Additional cuttings may give herbivores more to browse upon, lessening herbivory impacts to individual plants identified for restoration.
Anthropogenic disturbance	Repeated (documented over multiple maintenance assessments) foot, bicycle, or domestic animal disturbance, trash deposits, or disruption to recovering vegetation.	Installation of signs, fencing or other exclusion devises to discourage anthropogenic disturbance. If exclusion efforts are not successful and repeated disturbance occurs, consider excluding area from success criteria.
Wildfire	Wildfire burns through work area.	If a wildfire occurs, the restoration biologist will evaluate the extent of revegetation effort necessary for habitat recovery. Modification of the monitoring program and success criteria may be necessary and appropriate. Such modifications would be determined in consultation with relevant agencies.
Success Criteria	Non-attainment of success criteria despite evidence of continuous improvement and desirable Project site conditions.	Evaluation of suitability or effectiveness of success criteria may be adjusted if the site continues to indicate favorable conditions, however controls may not be suitable comparison. Data collection from alternative control sites may be expanded. Success criteria may be adjusted in consultation with regulatory agencies.

8.3 Stream Habitat Monitoring

Stream and fish habitat survey data from the Project area were collected in August 2020, following the December 2019 impacts, and prior to winter 2020/2021 storm events. Further data were collected during the summer of 2021, the totality of which will be presented in the TIP, as it applies to the reestablishment of creek habitat features. These data, as presented in the TIP, will be used to identify pre-Project conditions of the Project site and the non-impacted control sites downstream. Data collected from each control fish habitat unit are presented in Table 18, *Detail of Reference Pool Habitat Dimensions, Substrate Compositions, and Instream Cover in Mission Creek on August 25 and 26, 2020*.

Following Project installation, and during the long-term monitoring phase, a series of scientific surveys consistent with the methodologies of pre-Project surveys will be conducted and used to measure the

progress of the restored stream habitat. Data collection at these intervals (pre-Project, post-installation and during the long-term monitoring period), will provide comprehensive habitat-based data points that will be useful in deriving meaningful trends and evaluating the progress of habitat restoration and improvements in stream function (functional lift). These habitat-based data points will also be used to determine the attainment of specified success criteria (Section 8.3.3). Survey findings and trends analysis will be included in the Annual Monitoring Report (Section 8.4.2). A list of surveys and the frequency is presented in Table 15. The stream monitoring program is organized into two categories: (1) stream functional monitoring (informational), and (2) success monitoring.

(1) Stream functional monitoring includes collection of qualitative and quantitative data during the long-term monitoring program to identify and analyze trends of fish habitat restoration and functional lift. Stream functional monitoring data include California Rapid Assessment Method (CRAM) surveys (Section 8.3.1.2), stream hydrologic surveys (Section 8.3.1.3) and fish habitat surveys (Section 8.3.1.4). Stream functional monitoring data is collected for informational purposes and will not be used to determine the success of the Project.

(2) Success monitoring includes collection of quantitative and "semi-quantitative" data specifically targeted to measure restoration of temporary impacts and achievement of Project goals. Success monitoring data includes measurements of vegetation cover (Section 8.3.2.1), wildlife surveys (Section 8.3.2.2), measurements of the integrity of stream bed and habitat features (Section 8.3.2.3) and surveys to verify absence of fish passage impediments (Section 8.3.2.4). Surveys for sensitive plants and mitigation trees (Section 8.3.2.5) will also be conducted within the stream habitat restoration areas.

8.3.1 Stream Functional Monitoring

8.3.1.1 CRAM

CRAM is a scientifically defensible rapid assessment method for monitoring the conditions of wetlands and streams throughout California. This quantitative sampling method is designed for assessing ambient conditions within watersheds, regions, and throughout the State. The condition of the Project site will be assessed through evaluation of a series of attributes which include:

(1) Buffer and Landscape Context – examines the conditions surrounding the stream, including the conditions in the immediate buffer context as well as the stream corridor within distances up to 500 meters upstream and downstream of the Assessment Area (AA).

(2) Hydrology- assesses the water source, channel stability, and hydrologic connectivity of the stream.

(3) Physical Structure- examines the AA based on structural patch richness and topographic complexity. Structural patch richness defines the number and types of physical surfaces or features that provide habitat within the AA. Common patch types include organic debris, large woody debris, riffles and rapids, and standing snags, among many others.

(4) Biotic Structure- assesses the overall vegetative structural diversity of the AA, based on the presence of multiple plant layers, the number of co-dominant plant species within the defined plant layers, the percentage of co-dominant species that are native, the horizontal interspersion of plant zones, and the vertical overlap of plant layers.

CRAM will be conducted by trained practitioners and will provide CRAM scores for various areas associated with the stream restoration. Three sets of CRAM scores will be obtained at the pre-Project, post-installation, and long-term monitoring phases. Each set of CRAM assessments will include scores from four Assessment Areas (AAs), listed below and in Figure 8a, *CRAM Assessment Sites*:

- AA 1: Downstream Mission Creek
- AA 2: Control Site along Mission Creek, above AA 1
- AA 3: Adjoins Creek Site 3
- AA 4: Control Site downstream of AA 3

A discussion highlighting the CRAM score and observations will be added to the annual reports as these data will support evaluation of trends and functional lift of the stream system.

8.3.1.2 Stream Hydrology Survey Methods

Stream surveys will consist of two primary components to assess the conditions of the stream: (1) a series of cross sections in the stream and (2) a longitudinal profile survey. Within Creek Sites 1 through 4, several locations of heavy sediment deposition have been identified. Up to twelve transect locations within this area are proposed for the cross-section surveys, and a longitudinal profile survey will be performed along the thalweg through the creek sites. These transects are intended to provide a detailed description of pre-Project site conditions and will be repeated post-installation and during the long-term monitoring phases. Data collection will be conducted at the same survey locations each survey event (Figure 8a-b) and assessed, both within the Project site and control sites.

Both qualitative and quantitative metrics collected at each survey location will include:

- Evaluation and measurements of the physical stream properties, including bankfull and thalweg heights, and of the integrity of instream features to identify evidence of erosion, scouring, or sediment deposition;
- Assessment of changes to adjacent slope stability (erosional features such as rills, gullies, and slope-slip or loss of bank vegetation);
- Stream flow measurements (flow velocity at fixed monitoring stations); and
- Sediment level markers at fixed locations.

The longitudinal creek assessment and cross-sections will be completed in years three and five; however, measurements will be collected annually if there is evidence of physical changes to the creek bed more than what is occurring immediately upstream and downstream of the Project. More frequent sampling may also be completed following unusual site conditions, such as extreme weather events, or as a means of assessing the effects of adaptive management strategies.

8.3.1.3 Fish Habitat Surveys

When a disturbance to a stream occurs that involves sediment input and transport (e.g., erosion, sidecast input), pool habitats can be diminished by sediment aggradation (deposition), and spawning

gravels may become embedded. Fish habitat surveys provide a mechanism to analyze the restoration of fish habitat within the Project site. A fish habitat survey will be completed prior to Project installation to provide a detailed description of pre-Project site conditions and will be repeated post-installation and during the long-term monitoring phases. The fish habitat survey will focus on pool and riffle habitats, from which a series of measurements will be collected. These include measurements of length, width, and depth of all wetted areas within each pool habitat unit and an evaluation of the percentage of substrate types (silt, sand, gravel, cobble, boulder, and bedrock). Depositional data will be collected only from pool habitats. Channel bankfull (two-year storm event) will be determined, and pool depths will be measured at that point. Bankfull height will be determined using identifying characteristics such as water lines, changes in sediment composition, and locations of permanent vegetation and estimated by line-of-sight and by running a leveled measure tape to a stadia rod. Bankfull height will be used as a depth measurement for pools (it is expected that Mission Creek will be dry during the surveys. It will also be used to measure pools that are too deep to measure safely and accurately.

All fish habitat units within the Project site will be surveyed. In addition, two specific locations downstream have been identified for ongoing data collection; one data point includes a plunge pool approximately 2,600 linear feet downstream of the Project (Control Site #1), while the second includes a boulder-controlled scour pool occurring approximately 350 linear feet downstream of the Project (Control Site #2), (See Table 18, Figures 8b-c, *Mission Creek Transect Locations and Control Sites*). These locations were selected because of the potential similarity to habitat features that could occur in the Project site and that previous survey data showed these habitat features as unimpacted by the December 2019 work.

Both qualitative and quantitative metrics collected at each habitat unit will include:

- Habitat feature (e.g., pools, riffles) dimensions
- Substrate composition (including tail-out substrates); differentiate sidecast material where distinguishable
- Vegetation cover present over habitat units

Fish habitat units (e.g., pools and riffles) are a generally homogeneous length of stream that is classified by channel bed form, flow characteristics, and water surface slope. The surveys will follow California Department of Fish and Wildlife Salmonid Habitat Restoration Manual, Fourth Edition (CDFW 2010), which provides habitat unit typing protocols to distinguish stream habitats.

During the long-term monitoring period, fish habitat surveys will be completed in year three and year five; however, measurements will be collected annually if there is evidence of physical changes to the creek bed more than what is occurring immediately upstream and downstream of the Project. More frequent sampling may also be completed following unusual site conditions, such as extreme weather events, or as a means of assessing the effects of adaptive management strategies.

Table 18. Detail of Control Site Pool Habitat Dimensions, Substrate Compositions, and Instream Cover in Mission Creek on August 25 and 26, 2020

		Pool Dimensions						Sidecast sediment origin (%)					(% of total cover)				
				Max Depth (ft)													
Control Site	Level IV Habitat Type	Length (m)	Max Width (m)	Bank-full	Water Depth	1/2 L Water Depth (ft)	1/2 R Water Depth (ft)	Sand	Gravel	Cobble	Boulder	Bedrock/Concrete	Tree Canopy	OH Veg	Bedrock Boulder Edge	Under-cut Bank	Wood
1	PLP	5	5.5	3.04	2.12	Bedrock	Bedrock	5	75	2	3	15	50	40	10		
2	SPBo	8	4.5	2.4	0	Dry	Dry	30	40	10	5	20	70	2	5		

SPBo = Lateral Scour Pool – Boulder Formed
PLP = Plunge Pool

8.3.2 Stream Success Monitoring

8.3.2.1 Vegetation Cover Surveys

Vegetation cover (native and non-native) will be measured annually using the CNPS relevé sampling protocol described in Section 8.2.2. Vegetation cover data will be collected from the impacted sections of the stream in Creek Sites 1-4 (excluding bank full areas). Cover determinations will be made using ocular estimates over circular sample plots, with a 30-meter diameter placed within sidecast areas. For smaller sites, multiple plots of reduced size (15 or 20 meters in diameter) may be used, or the entire sidecast area may be sampled as an individual plot.

Reference sites for vegetation cover will be located on unimpacted stream banks within the Project area. Vegetation cover values for reference sites will be collected using the same protocols and be collected in the first year of sampling (Year 1). After each annual monitoring event, native and non-native cover values of the restored areas will be compared to reference site values to assess restoration progress. These survey data will be used to determine Project success through attainment of Stream Habitat Success Standards Category 1 (Section 8.3.3 below).

8.3.2.2 Wildlife Use Surveys

Restoration of wildlife habitat elements for impacted wildlife species (i.e., resident *O. mykiss*, two-striped gartersnake, and coast range newt) will be achieved through the successful installation of the Project. These actions include the removal of sidecast materials and restoration of fish habitat units, slope stabilization, and planting and seeding native vegetation. To evaluate wildlife use following Project installation, annual wildlife surveys will be conducted, and species observed will be documented and

reported in annual reports. These survey data will be used to determine Project success through attainment of Stream Habitat Success Standards Category 2 (Section 8.3.3 below).

8.3.2.3 Integrity of Stream Bed and Fish Habitat Features

Increases in thalweg depth (the lowest line of elevation within the stream) and changes in width/depth ratio (W/D) can be indications of erosion and scouring of the stream bed or changes in flow characteristics within a fish habitat feature. The W/D ratio is defined as the ratio of the bankfull surface width to the mean depth of the bankfull channel. The W/D ratio characterizes the distribution of energy within a channel and the ability of various discharges occurring within the channel to move sediment (Rosgen 1996).

The creek channel thalweg depth, channel width/depth ratio (W/D), and fish habitat unit measurements (e.g., pools, riffles) will be collected from detailed geomorphological cross-sections at established, repeatable locations in the Project site and at Control Sites (Figure 8 b-c). These data will be measured post-installation to establish a baseline, and again during the long-term monitoring period. After each long-term monitoring event, channel and fish habitat unit measurements will be compared to baseline conditions. These survey data will be used to determine Project success through attainment of Stream Habitat Success Standards Category 3 (Section 8.3.3 below).

8.3.2.4 Fish Passage Surveys

Fish passage through stream portions occurring within the Project site will be assessed in conjunction with stream hydrology and fish habitat surveys described above (Sections 8.3.1.3 and 8.3.1.4, respectively). Specifically, surveyors will evaluate the stream for the presence of impediments to fish passage resulting from the sidecast. Any sidecast material causing an impediment to fish passage noted during the surveys will be mapped, and plans for restoration actions will be developed for CDFW approval through the Adaptive Management process Section 8.3.4). Upon approval, SCE will implement the plans under the direction of the fluvial morphology team. These survey data will be used to determine Project success through attainment of Stream Habitat Success Standards Category 4 (Section 8.3.3 below).

8.3.2.5 Mitigation Tree and Sensitive Plant Surveys

Mitigation trees and sensitive plants will be planted and/ or seeded within Creek Sites 1-4 as a component of the stream habitat restoration. Surveys for sensitive plants and mitigation tree monitoring will be performed annually, as described in Sections 8.1.5 and 8.1.6 of this Creek HRMP. Results of sensitive plant surveys mitigation tree monitoring will be included in the annual reports. These survey data will be used to determine Project success through attainment of Stream Habitat Success Standards Category 5 and 6 respectively (Section 8.3.3 below).

8.3.3 Stream Habitat Success Standards

The objective of the Project is the full removal of all sidecast material[12] from the Project site and the restoration of impacted habitat within the Project site, including Mission Creek stream habitat, such that it may support native fish use to levels that existed prior to the December 2019 work. Successful restoration of the impacted sections of Mission Creek and achievement of this Project objective will be evaluated through the attainment of standards designed to measure the recovery of resources impacted

[12] For purposes of this assessment, "sidecast materials" excludes materials repurposed as building materials (e.g., for berms).

by the December 2019 work. The stream restoration component of the Project will be determined successful when all six of the following categories of Stream Habitat Success Standards are attained. Stream Habitat Success Standards are as follows:

Category 1 Vegetation Cover: vegetation cover within the restoration site will be determined successful when 85 percent of native species cover, relative to the reference site with the same vegetation community association, is achieved. The restoration sites must also show equal or less non-native cover than their reference site.

Category 2 Wildlife Use: a comprehensive list of overall use of wildlife species (common, or sensitive) observed during annual monitoring visits.

Category 3 Stream Erosion and Stream Hydrology: changes in mean thalweg depth or in mean channel W/D ratio as measured in cross-sections and fish habitat feature measurements do not differ from baseline conditions by greater than 20 percent (Figure 8a-b) as compared to changes in similar habitat types at established reference sites.

Category 4 Stream Flow and Fish Passage: stream flow within the stream is uninterrupted with the absence of stream impediments resulting from the sidecast.

Category 5 Mitigation Tree: Forty-nine mitigation trees to compensate for trees impacted within CDFW regulatory areas must show three consecutive years of increased growth, with good or excellent health assessments, and five years of survival (Table 13).

Category 6 Sensitive Plants: Sensitive plant restoration will be considered fulfilled when at least 75 percent of planted plots for the respective species are observed flowering within the five-year monitoring period.

8.3.4 Stream Habitat Adaptive Management

Adaptive management within the creek bed can be separated into two distinct phases: adaptive management during sidecast removal and adaptive management post-Project. Fluvial morphology team and fisheries biologists will be integral to the stream adaptive management process throughout the Project, beginning with sidecast removal, and continuing through the monitoring phase. Adaptive management during sidecast removal will allow for iterative decision-making, as the process described in Section 6.1 progresses. As described above, data has been collected on multiple occasions through LiDAR and physical surveys, to characterize the current condition of the creek bed as well as provide insight as to the pre-impact condition. The summary of this data has been used to guide typical cross-section figures (Attachment F), which will be presented more fully in the TIP, to guide any adaptive management activities following the sidecast removal. The process for approval of adaptive management during sidecast removal activities will be as follows:

(1) Sidecast is removed, and the habitat unit is assessed for structural stability and consistency with projected pre-impact conditions.

(2) If additional actions are needed beyond sidecast removal, such as repair to stream pool or riffle (habitat) features, or installation of bank stabilization armament, site specific cross-section plans

with details of the restoration/re-establishment of the instream geomorphological habitat units for this section will be compiled to describe additional activities.

(3) Cross-section plans will then be provided to CDFW for review and approval within 10 working days of submittal.

(4) CDFW approved adaptive management actions will be implemented, and post-Project conditions will be documented.

Post-Project adaptive management will focus on the extended period of monitoring, which spans from the completion of Project installation until such time as when success criteria have been met. The table below provides a list of potential Project challenges which may occur during this period, the point at which adaptive management considerations would be "triggered", as well as the potential adaptive management action(s) (Table 19, *Stream Habitat Adaptive Management Triggers and Actions*). The framework of this outline relies heavily on adaptive management assessment and incremental action at appropriate times during the five-year maintenance and monitoring period. The Stream Habitat Adaptive Management Program will be implemented with ongoing and frequent engagement with relevant agencies. Agencies will be notified and consulted prior to the implementation of the Adaptive Management Activity listed in Table 18 below.

Post-Project adaptive management will rely upon monitoring monthly during the wet season and following storm events to evaluate changes listed in the table below. It is important to note that some of the monitoring locations within the creek are remote and require foot access up the stream, creating potentially hazardous conditions for survey crews during wet conditions. In these instances, monitoring will be subject to a safety assessment and may be cancelled or postponed due to unsafe field conditions.

Table 19. Stream Habitat Adaptive Management Triggers and Actions

Potential Challenge	Trigger	Adaptive Management Activity
Loss of instream habitat features (i.e., riffles, runs, pools) that previously existed	In-stream (habitat) features such as pools no longer exist, runs are devoid of fines and cobble, stream is unstable and large scouring events occur within work area.	Redistribute in-stream habitat features to reduce feature loss. Monitor. Take corrective action again, if necessary, and repeat cycle. As feature loss is controlled, evaluate opportunities for further redistribution of in-stream habitat features to reestablish habitat features relative to type and frequency present immediately post-Project.
Excessive scouring, erosion, and sedimentation (stream hydrology)	More than 20 percent of the fines, cobble, and sediments are lost within a stream segment.	Redistribute in-stream habitat features to limit detrimental forces. Monitor. Take corrective action again, if necessary, and repeat cycle.
Bank erosion	Any portion of stream bank within the work area where greater than one cubic yard of surface soils is lost as a result of concentrated stream forces along the channel bank.	Monitor and determine cause of bank erosion. Reposition rock, boulders, or impediments to divert stream flow forces away from location of erosion. Monitor. Take corrective action again, if necessary, and repeat cycle.

Potential Challenge	Trigger	Adaptive Management Activity
Excessive scouring, erosion, and sedimentation (Vegetation management)	More than 20 percent of planted vegetation in any area is lost due to scour events.	Souring is a naturally occurring event within creek and riverbeds. If a scour event occurs, the area shall be managed for an influx of weed species and shall be monitored for new weed species. Supplemental seeding and cutting installation should be evaluated but may not be warranted following a large scour event.
Head cutting	Any erosion occurring within drainages of the work area that is greater than six inches in height perpendicular to the flow direction of Mission Creek.	Monitor and determine the cause of head cutting before repairs are made. Consider bioengineering solutions to stabilize head cut. Monitor. Take corrective action again, if necessary, and repeat cycle.
High Plant Mortality or Poor Germination	Mortality of more than 20 percent of planted vegetation in any area is lost for unspecified reasons not as a result of scour. Non-native species growing profusely in same area.	Unsuccessful cuttings or poorly germinating seeds will be replaced with additional cuttings and opportunistic seeding of species that have higher establishment rates in surrounding areas to meet specified performance standards.
Slope erosion, formation of rills	Formation of rills and/or gullies along work area slopes where depth of rills is greater than four inches deep.	Monitor and identify if there is a point source of erosion. Make repairs to point source location(s) to prevent future rilling. Fill rills on slope to a natural contour. Hydroslurry and Replant/ reseed, as necessary.
Non-Native Invasive Species	Dominance of non-native species within work area is greater than ambient level of non-native species in surrounding undisturbed habitat.	If continuing invasions occur, efforts to find the source population shall be made. Increased application of weed control measures prior to flowering and seed set should aid in attaining control.

Potential Challenge	Trigger	Adaptive Management Activity
Poor Soil Conditions	Planted vegetation and seeds not growing for unspecified reason. Non-native species not growing in same area.	If selected plants do not tolerate certain areas of soil, the seed palette shall be changed to include species that are more tolerant. Alternatively, soil tests may be performed to identify any localized soil deficiencies and then added as an amendment during future plantings. Opportunistic seeding is recommended. If lack of vegetation does not lead to erosion or unstable conditions, consider cessation of planting and seeding.
Excessive Predation by Herbivores	Greater than 20 percent of planted vegetation is being heavily browsed by wildlife to the extent where browsed plants may not survive herbivory pressure.	Plant cages shall be added to establishing woody plants if herbivory is severe. Additional cuttings may give herbivores more to browse upon, lessening herbivory impacts to individual plants identified for restoration.
Wildfire	Wildfire burns through work area.	If a wildfire occurs, the restoration biologist will evaluate the extent of revegetation effort necessary for habitat recovery. Modification of the monitoring program and success criteria may be necessary and appropriate. Such modifications would be determined in consultation with relevant agencies.
Water Flow	Blockage of water flow that would preclude species ability to move up and downstream outside of the stream habitat features which were present prior to sidecast.	Material causing blockage may be moved or redistributed to alleviate reduced water flow situation.
Success Criteria	Non-attainment of success criteria despite evidence of continuous improvement and desirable Project site conditions.	Evaluation of suitability or effectiveness of success criteria may be adjusted if the site continues to indicate favorable conditions, however controls may not be suitable comparison. Data collection from alternative control sites may be expanded. Success criteria may be adjusted in consultation with regulatory agencies.

8.4 Reporting

8.4.1 As-Built Reporting

Following the completion of all site preparation and installation activities described above, photographs will be taken at the established photo points (Section 8.1.2). High-resolution aerial imagery (drones) may also be used for photo documentation. In addition, the final planting/seeded areas and final configuration of the stream will be mapped, and removal materials and areas will be quantified. An As-Built Report will be prepared and submitted to the City and County of Santa Barbara and other regulatory agencies within 90 calendar days of completing installation. The As-Built Report will document the compliance of permits during Project activities and document the completed Project

activities, including the installation dates, quantities and locations of plant materials used, locations of bank stabilization and in-stream habitat features installed, post-construction stream habitat mapping, and a photographic record. The report will note any deviations from the proposed plan and the actions taken to address these deviations.

8.4.2 Annual Reporting

An annual assessment report will be prepared for the City and County of Santa Barbara and regulatory permitting agencies, as appropriate, each year to document the Project site's trajectory toward achieving success criteria and performance standards. These reports will be submitted annually for a minimum of five years, and are contingent upon meeting success criteria thereafter. The report will include documentation of all upland and stream monitoring and survey data described in this Creek HRMP, trends for the data collected, year-to-year comparisons, and any changes to tree health and sensitive plant populations as a result of Project activities. Remedial actions for both trees and sensitive plants, such as supplemental seeding, will be prescribed in the report.

9 Completion of Mitigation

9.1 Notification of Completion

Agency approval of the Project, or independent components of the Project, will be identified in the annual reports, as appropriate. SCE will submit close-out requests seeking agency approval pursuant to each agency's approval mechanism. For any Project component seeking agency approval, confirmation from the agencies will be requested.

9.2 Confirmation

When the Project meets success criteria, and after a minimum of five years, the Project will be considered a success. If success standards are not achieved, the maintenance and monitoring program will be extended one year at a time until the standards are met. Specific adaptive management measures (Sections 8.2.5 [upland] and 8.3.4 [stream]) will be used during any such extension as determined in coordination with the approving agencies, as appropriate. Monitoring extensions will be done only for areas that fail to meet the final success criteria. This process will continue until final success standards are attained or until the approving agencies determine that other mitigation measures are appropriate. Should the mitigation effort meet the goals prior to the end of the monitoring period, the approving agencies, at their discretion, may terminate the monitoring effort. If requested, a site visit may be conducted with the responsible agencies to verify site conditions, and Project closeout will include a sign-off process for each individual Project permit.

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Figures

HELIX Environmental Planning

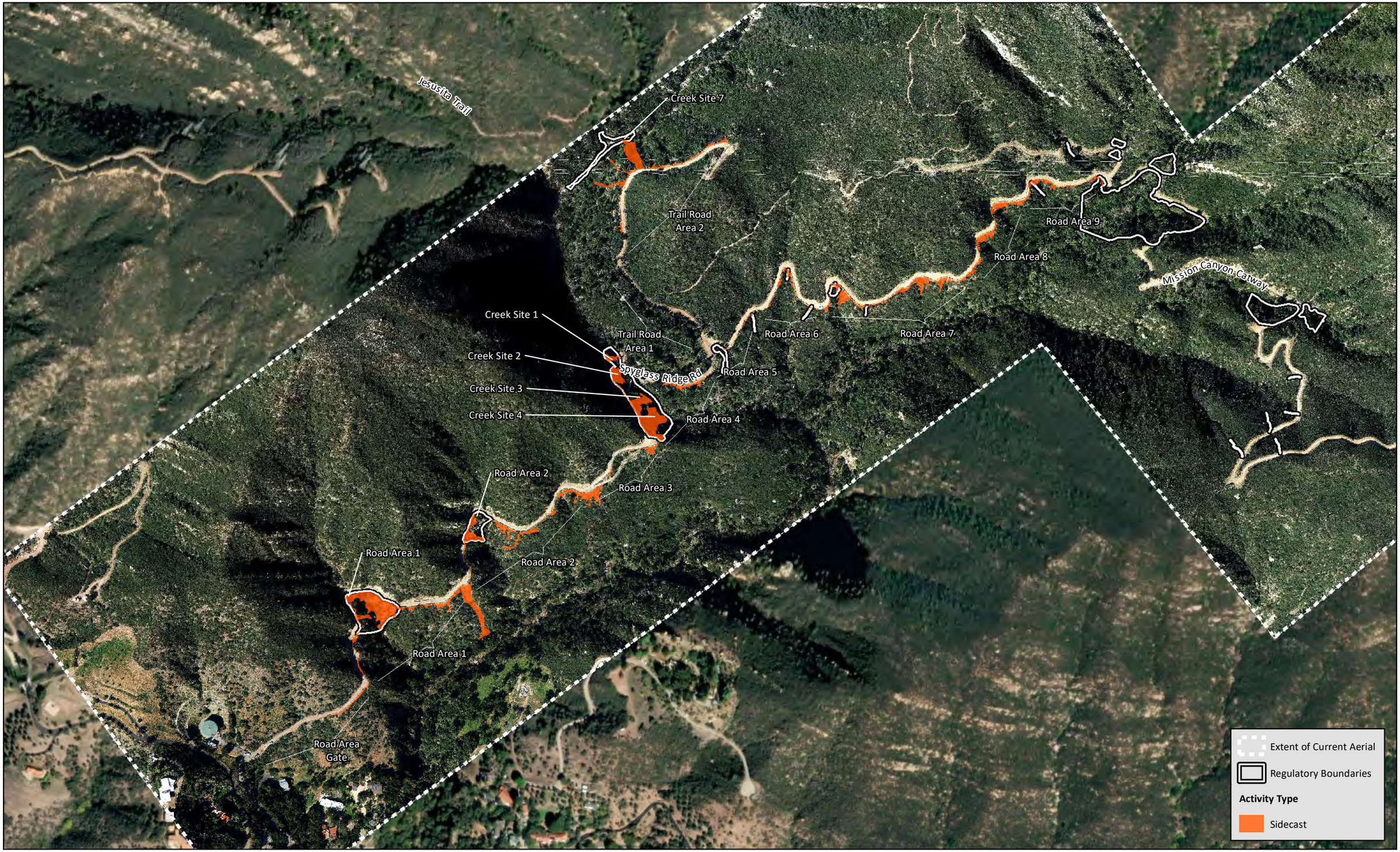
0 5 10 Miles

Source: Base Map Layers (ESRI, 2013)

MISSION CREEK HABITAT RESTORATION PLAN

Regional Location

Figure 1



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0 200 400 Feet

Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Site Overview

Figure 2

Existing Drain Within CDFW Jurisdiction

Sensitive Species

Hubby's Phacelia (*Phacelia hubbyi*)

Nuttall's Scrub Oak (*Quercus dumosa*)

Santa Barbara Honeysuckle (*Lonicera subspicata*)

Nuttall's Scrub Oak

Regulatory Boundaries

Extent of Current Aerial

Restoration Area

Contingency Buffer

Vegetation

Ceanothus megacarpus Shrubland Alliance

Ceanothus megacarpus Shrubland Alliance,
Ceanothus megacarpus - Salvia mellifera Association

Developed

Malosma laurina Shrubland Alliance

Prunus ilicifolia - Heteromeles arbutifolia - Ceanothus spinosus Shrubland Alliance,
Ceanothus spinosus - Ceanothus megacarpus Association

Prunus ilicifolia - Heteromeles arbutifolia - Ceanothus spinosus Shrubland Alliance,
Ceanothus spinosus Association

Quercus agrifolia Woodland Alliance

Quercus agrifolia Woodland Alliance,
Quercus agrifolia - Umbellularia californica Association

Quercus dumosa Chaparral Alliance

Road Area 1

Spyglass Ridge Rd

Road Area 1

Sidecast 3
Rock Outliers

Road Area
Gate

a

b

c

d

e

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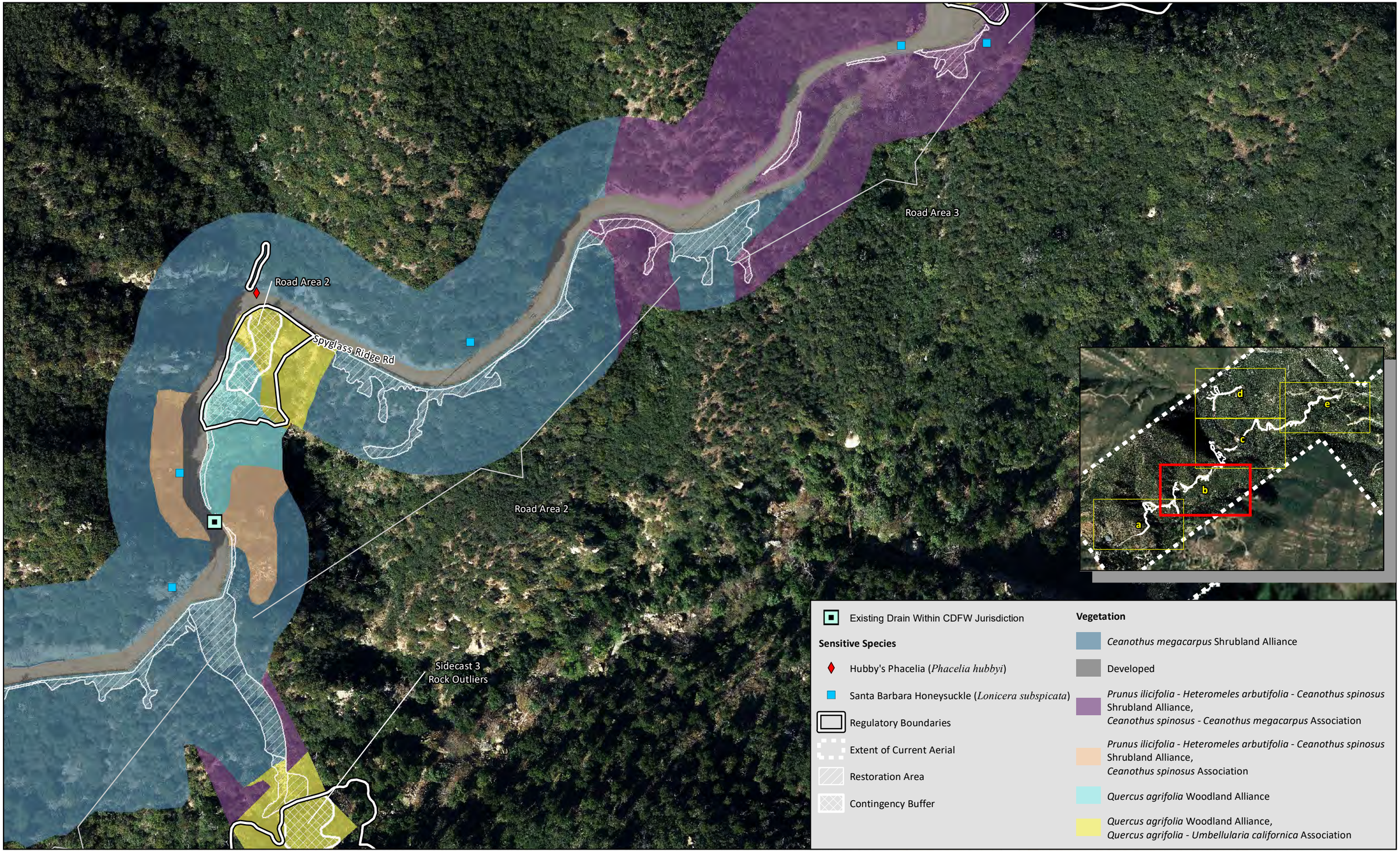
0 50 100 Feet

Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Vegetation and Sensitive Species within Study Area

Figure 3a



HELIX Environmental Planning

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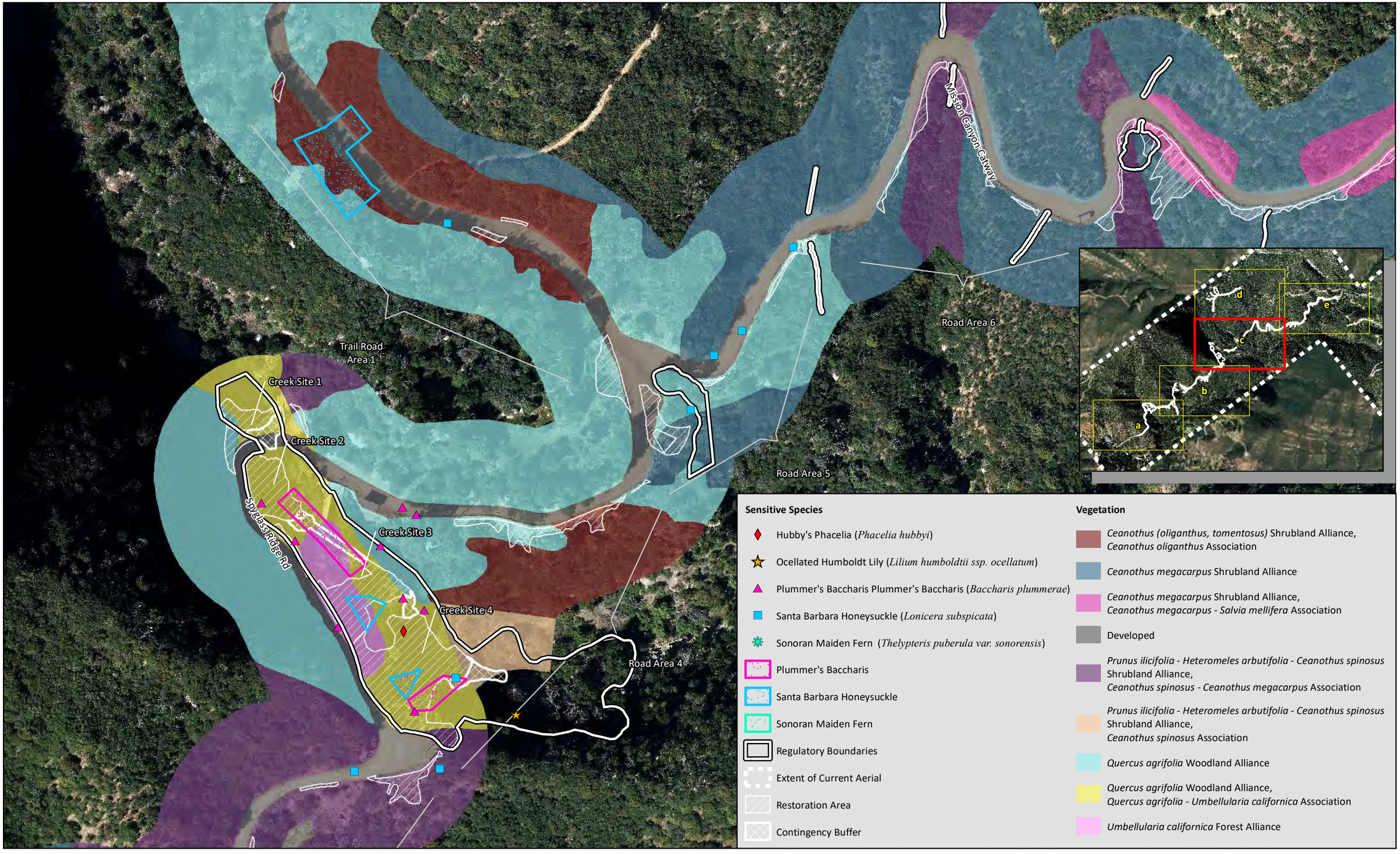
Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Vegetation and Sensitive Species within Study Area

Figure 3b



HELIX Environmental Planning

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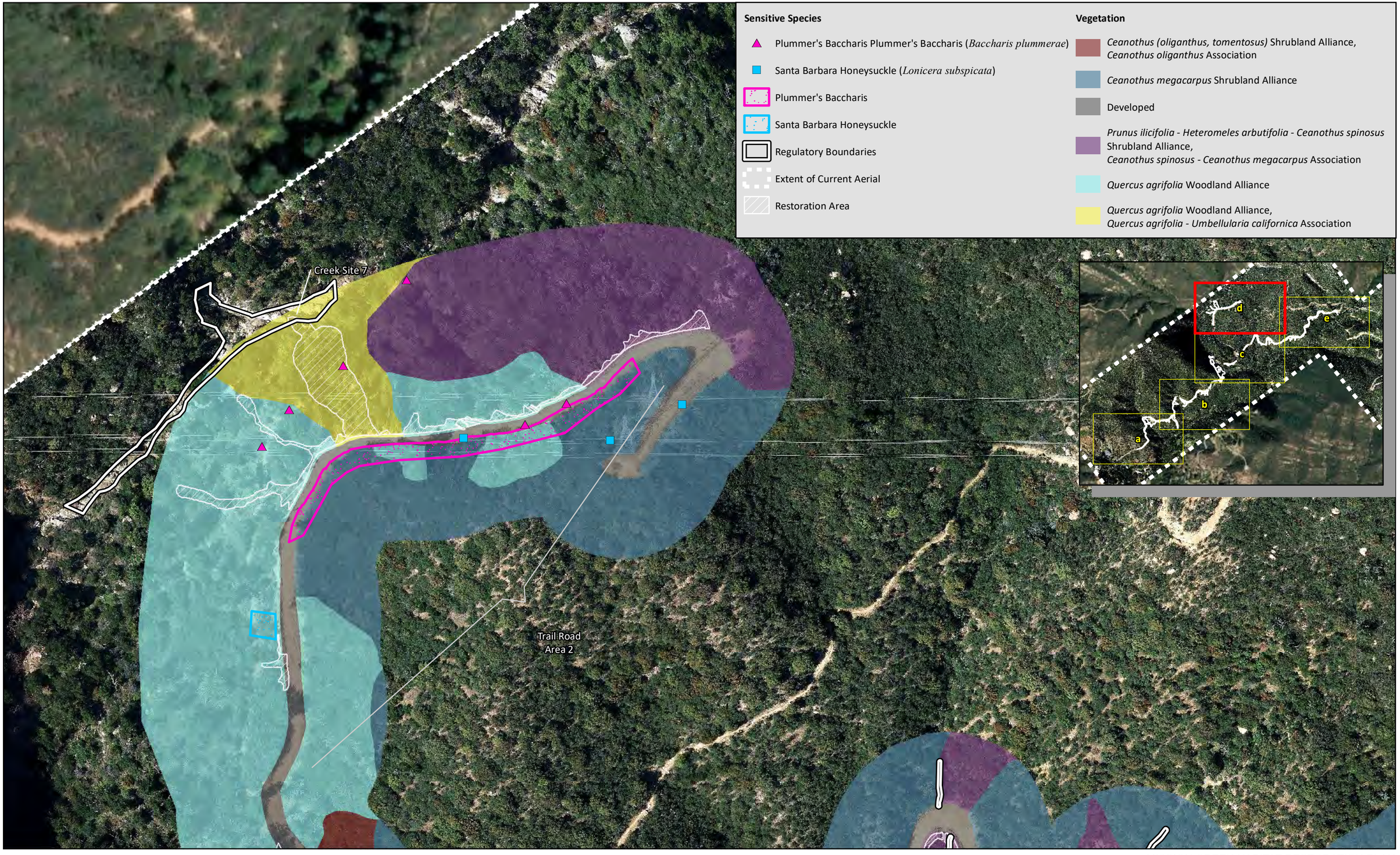
Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Vegetation and Sensitive Species within Study Area

Figure 3c



HELIX Environmental Planning

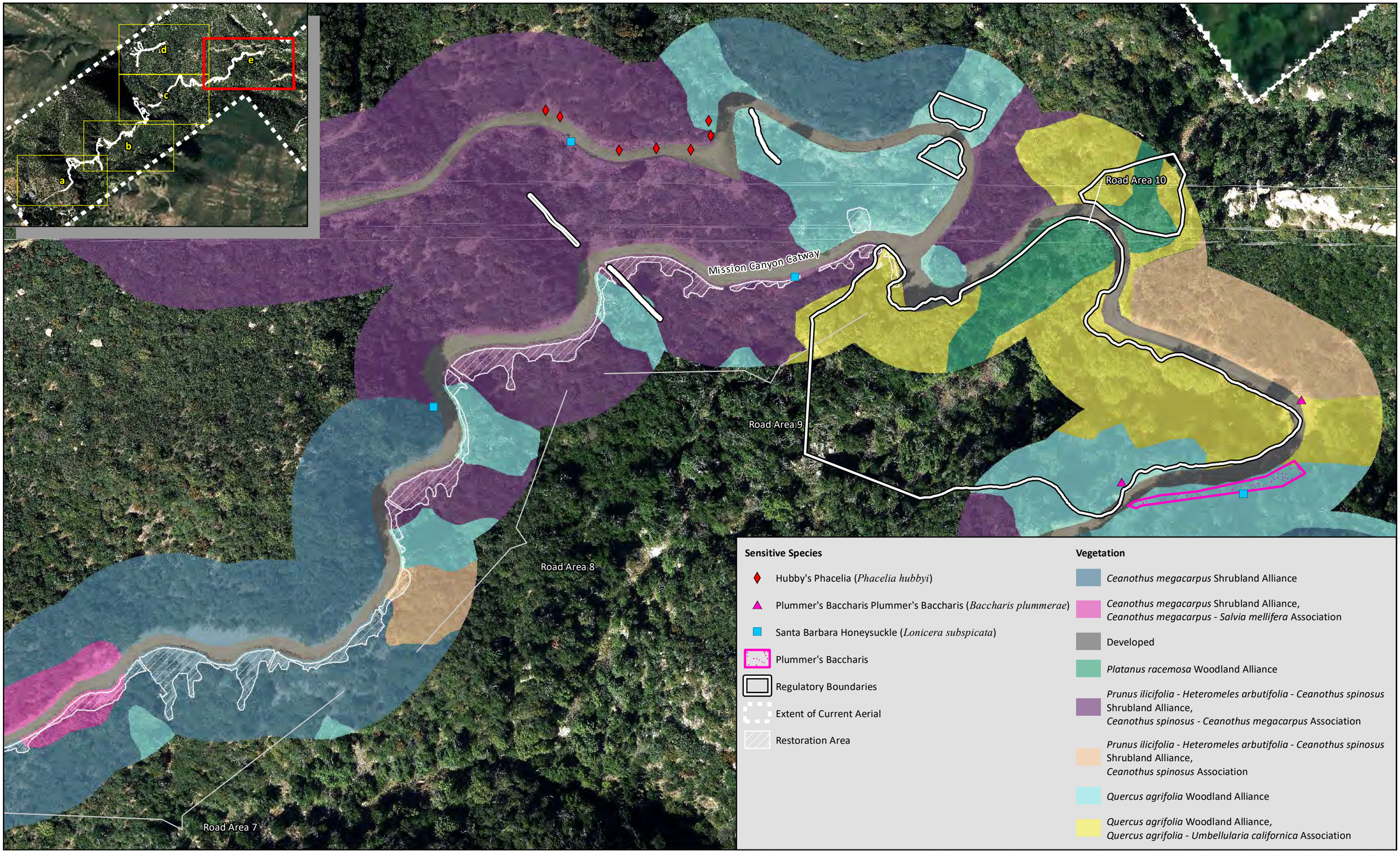
0 50 100 Feet

Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Vegetation and Sensitive Species within Study Area

Figure 3d



HELIX Environmental Planning

0 50 100 Feet

Source: Aerial (Maxar, 2018 and Michael Baker, 2020).

MISSION CREEK HABITAT RESTORATION PLAN

Vegetation and Sensitive Species within Study Area

Figure 3e

HELIX Environmental Planning

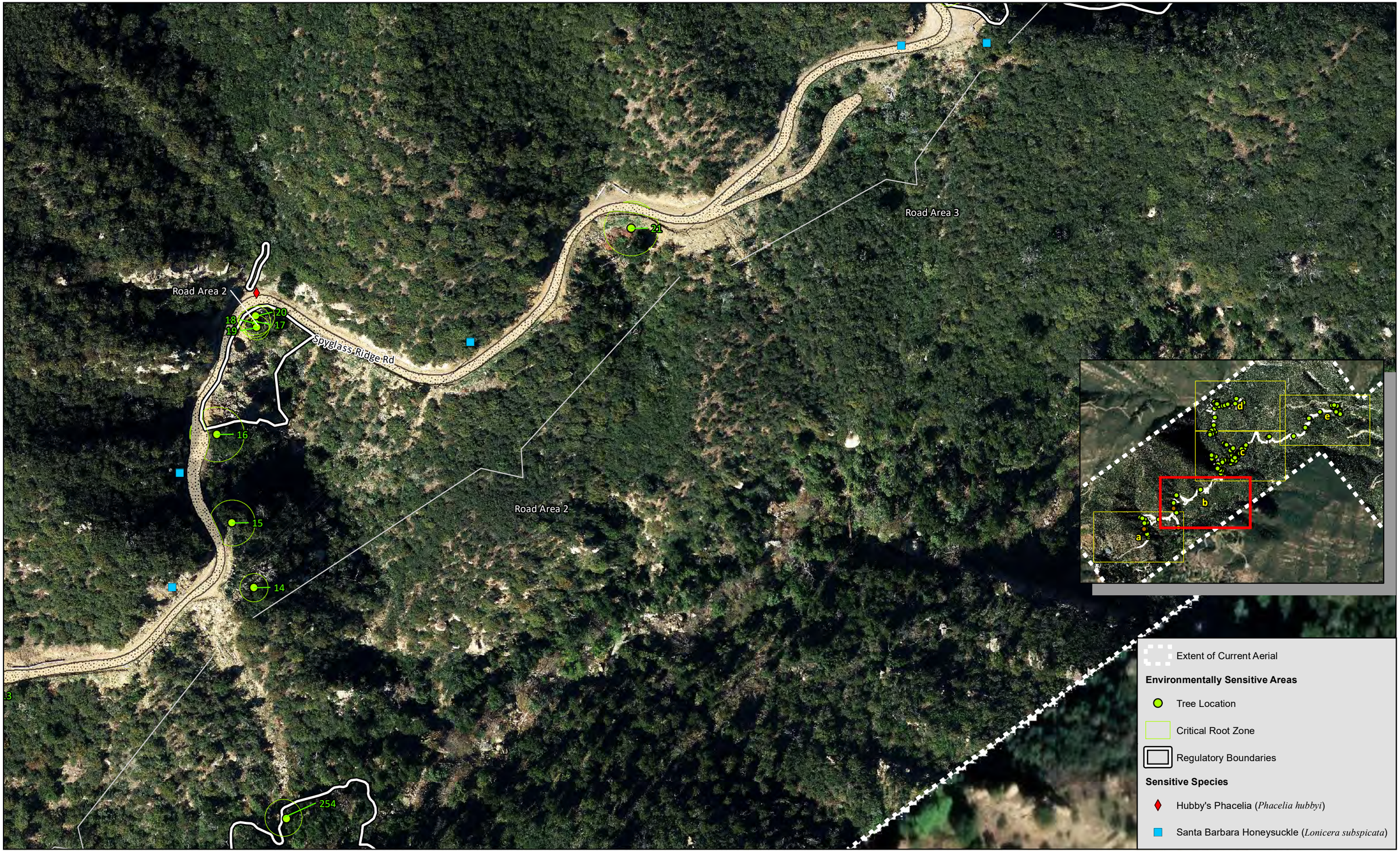
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Environmentally Sensitive Areas

Figure 4a



HELIX Environmental Planning

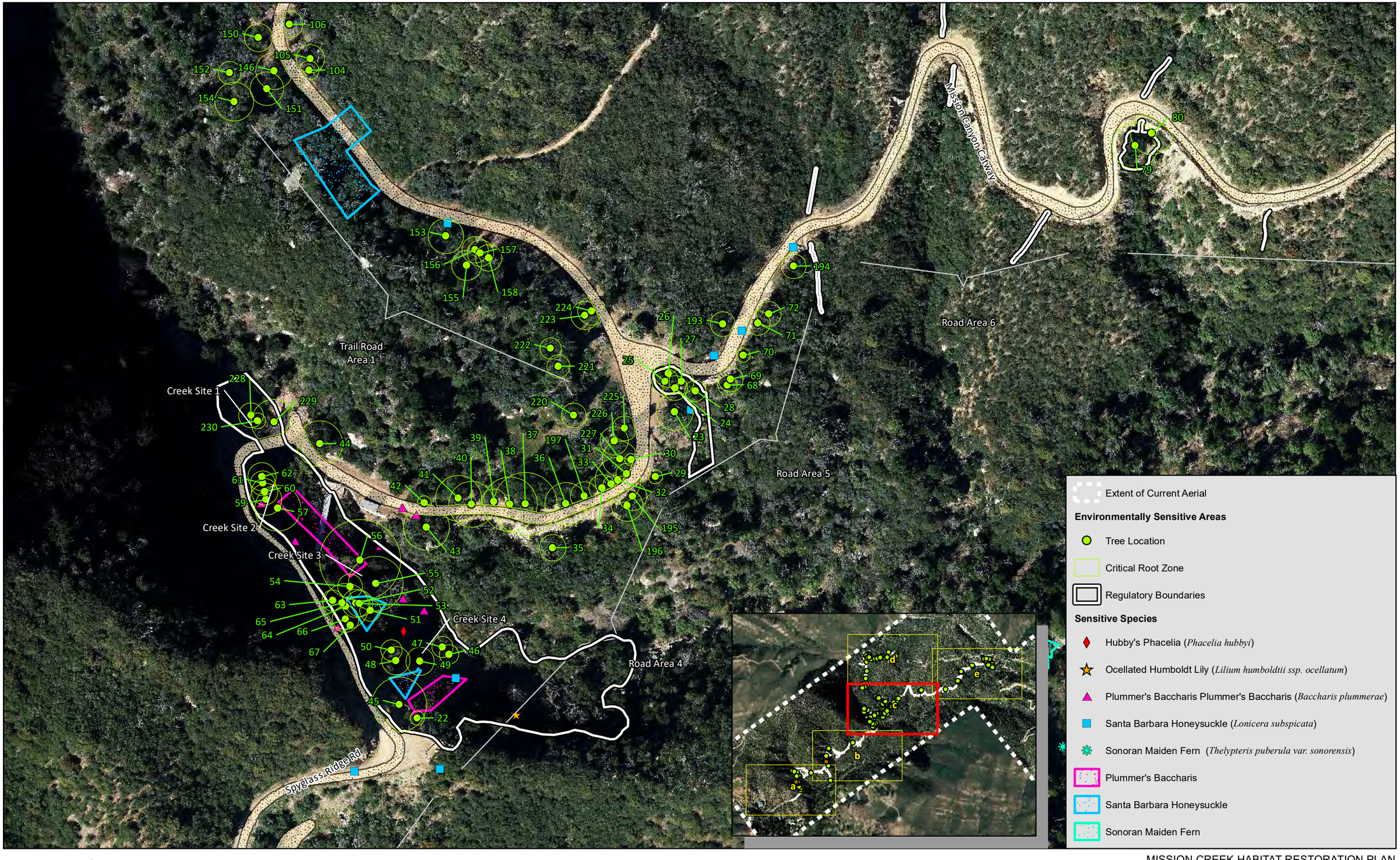
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Environmentally Sensitive Areas

Figure 4b



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MISSION CREEK HABITAT RESTORATION PLAN

Environmentally Sensitive Areas

Figure 4c

Extent of Current Aerial

Environmentally Sensitive Areas

Tree Location

Critical Root Zone

Regulatory Boundaries

Sensitive Species

Plummer's Baccharis Plummer's Baccharis (*Baccharis plummerae*)

Santa Barbara Honeysuckle (*Lonicera subspicata*)

Plummer's Baccharis

Santa Barbara Honeysuckle

Creek Site 7

Trail Road
Area 2

232 231 120 117 118 121 116 122 119 123 110 111 112 113 114 148 147 149 115 233 109 108 107 106 150 105 152 146 104

a b c d e

HELIX Environmental Planning

0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Environmentally Sensitive Areas

Figure 4d

HELIX Environmental Planning

0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Environmentally Sensitive Areas

Figure 4e

HELIX Environmental Planning

0 175 350 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas - Plan View

Figure 5

Creek/Drainage

Extent of Current Aerial

RWQCB/CDFW Regulatory Limit

Existing Access Road

Parking/Staging Area

Storage/Staging Area

Contingency Buffer

Restoration Activity

Restoration Area

Potential In-Stream Habitat Features

Proposed Tree Mitigation

Remove Rocks/Soil and Prune

Tree remediated in November 2020

a

b

c

d

e

Road Area 1

Spyglass Ridge Rd

202

11

10

9

8

13

14

6

5

4

3

2

1

254

Mission Creek

Sidecast 3
Rock Outliers

Road Area 1

Road Area
Gate

HELIX
Environmental Planning

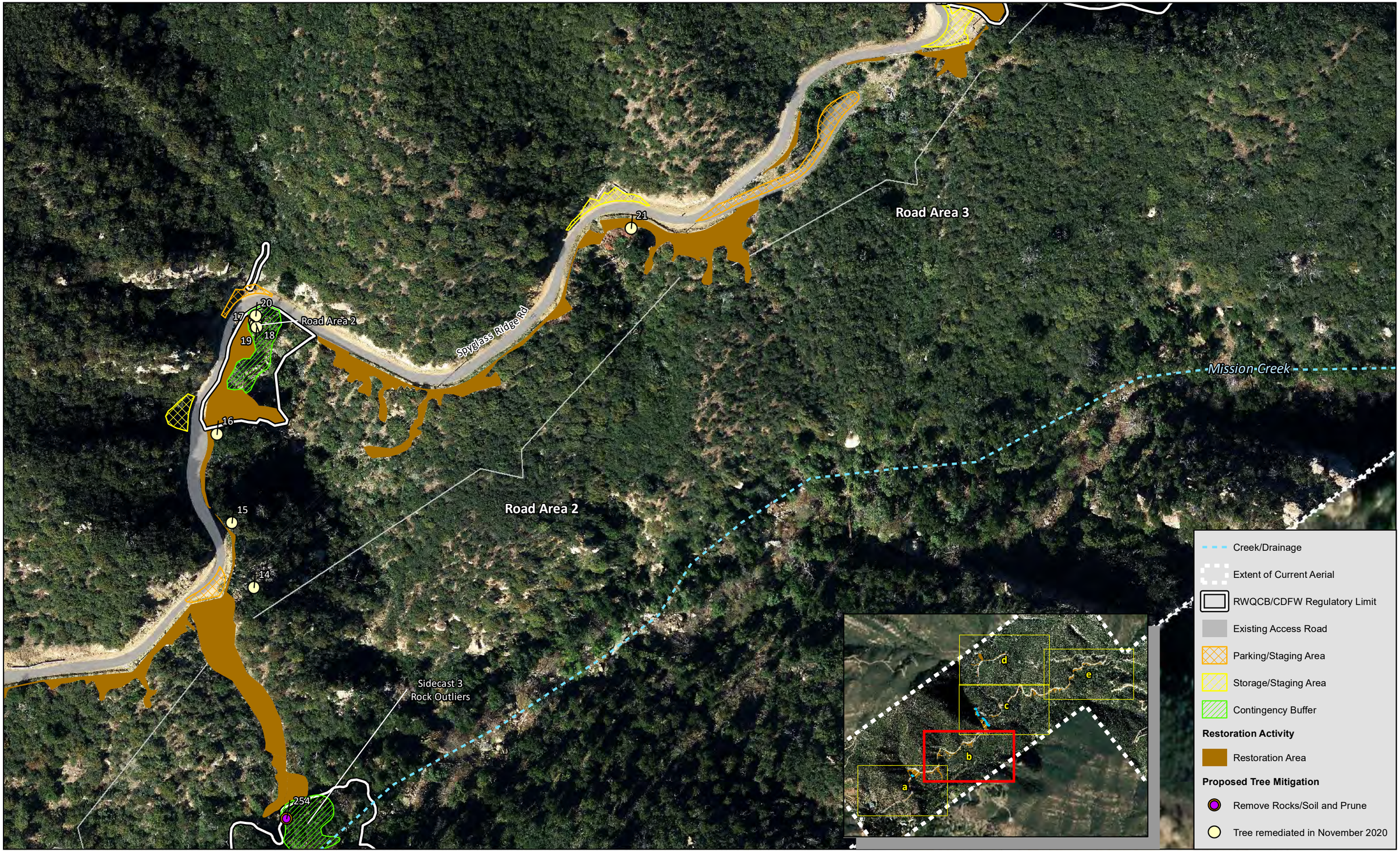
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas

Figure 5a



HELIX Environmental Planning

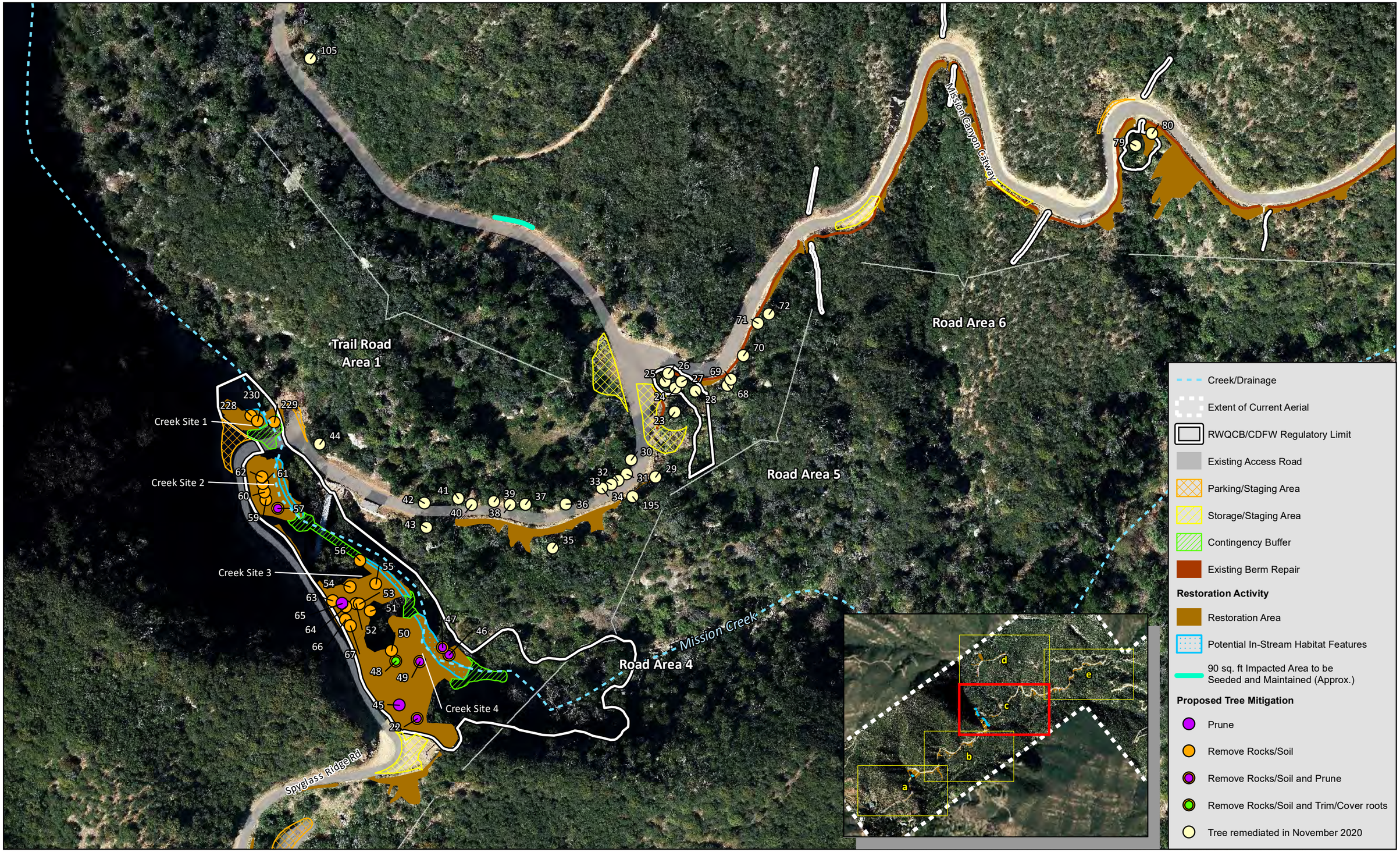
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas

Figure 5b



HELIX Environmental Planning

0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas

Figure 5c

HELIX Environmental Planning

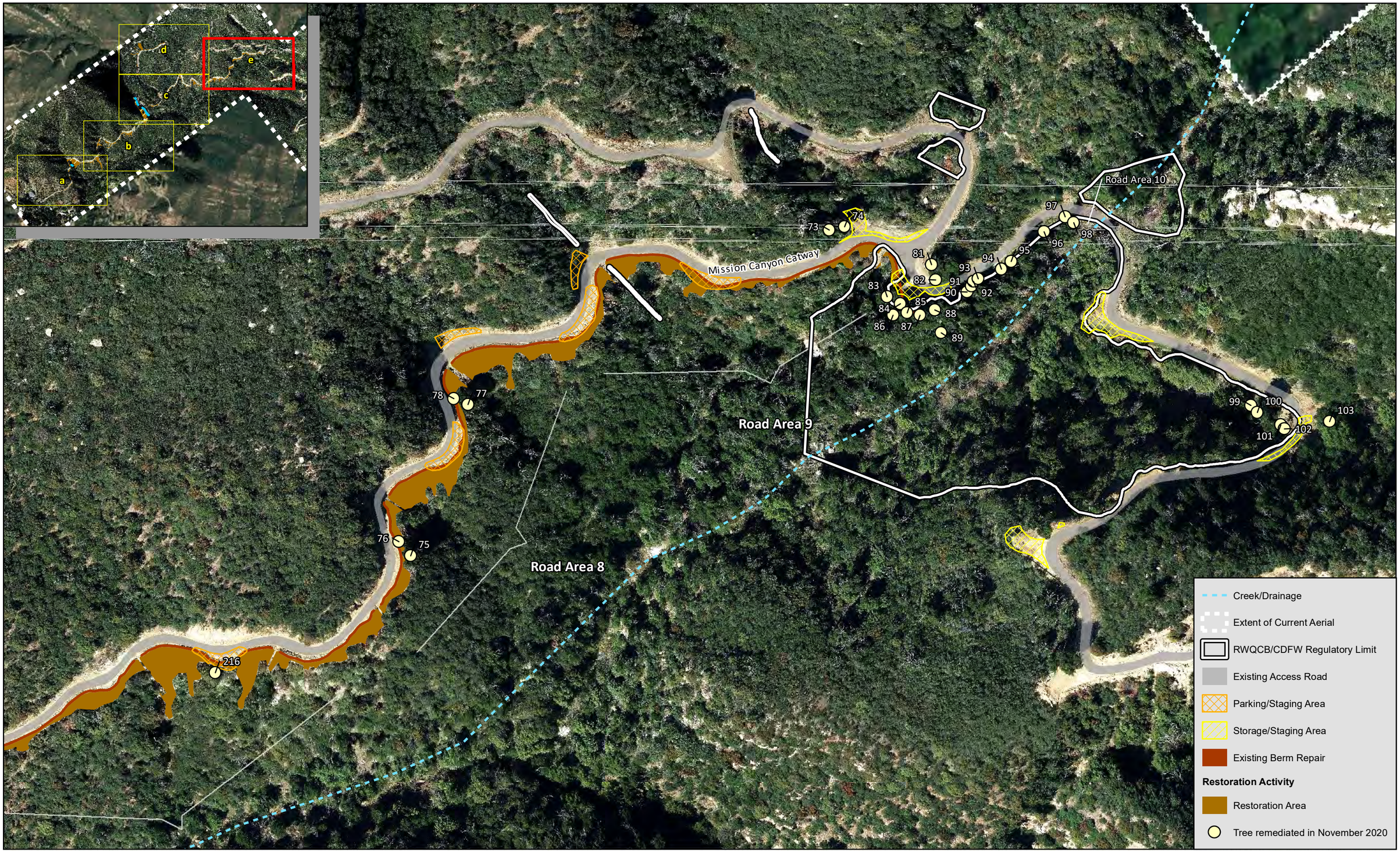
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas

Figure 5d



HELIX Environmental Planning

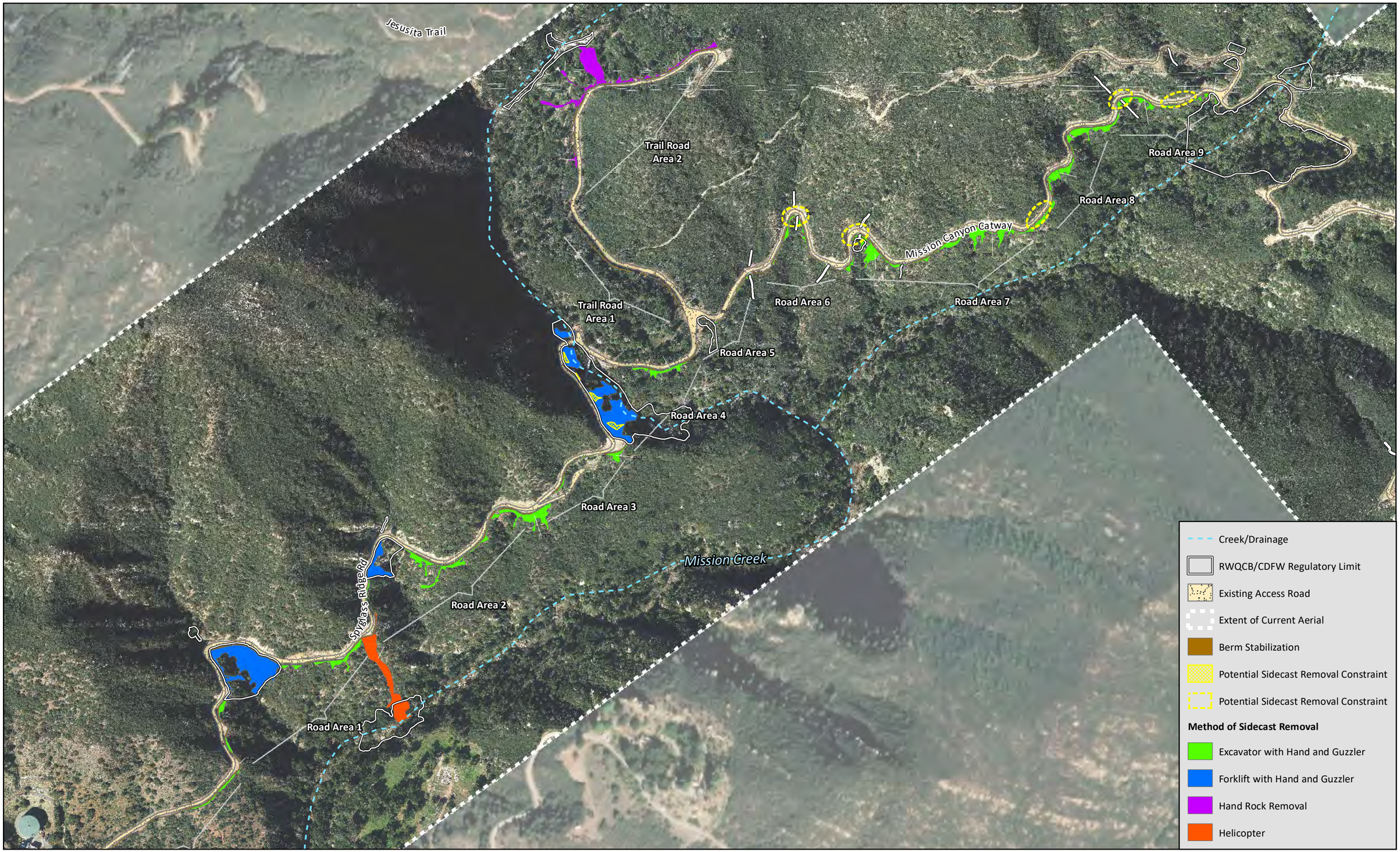
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Project Areas

Figure 5e



HELIX Environmental Planning

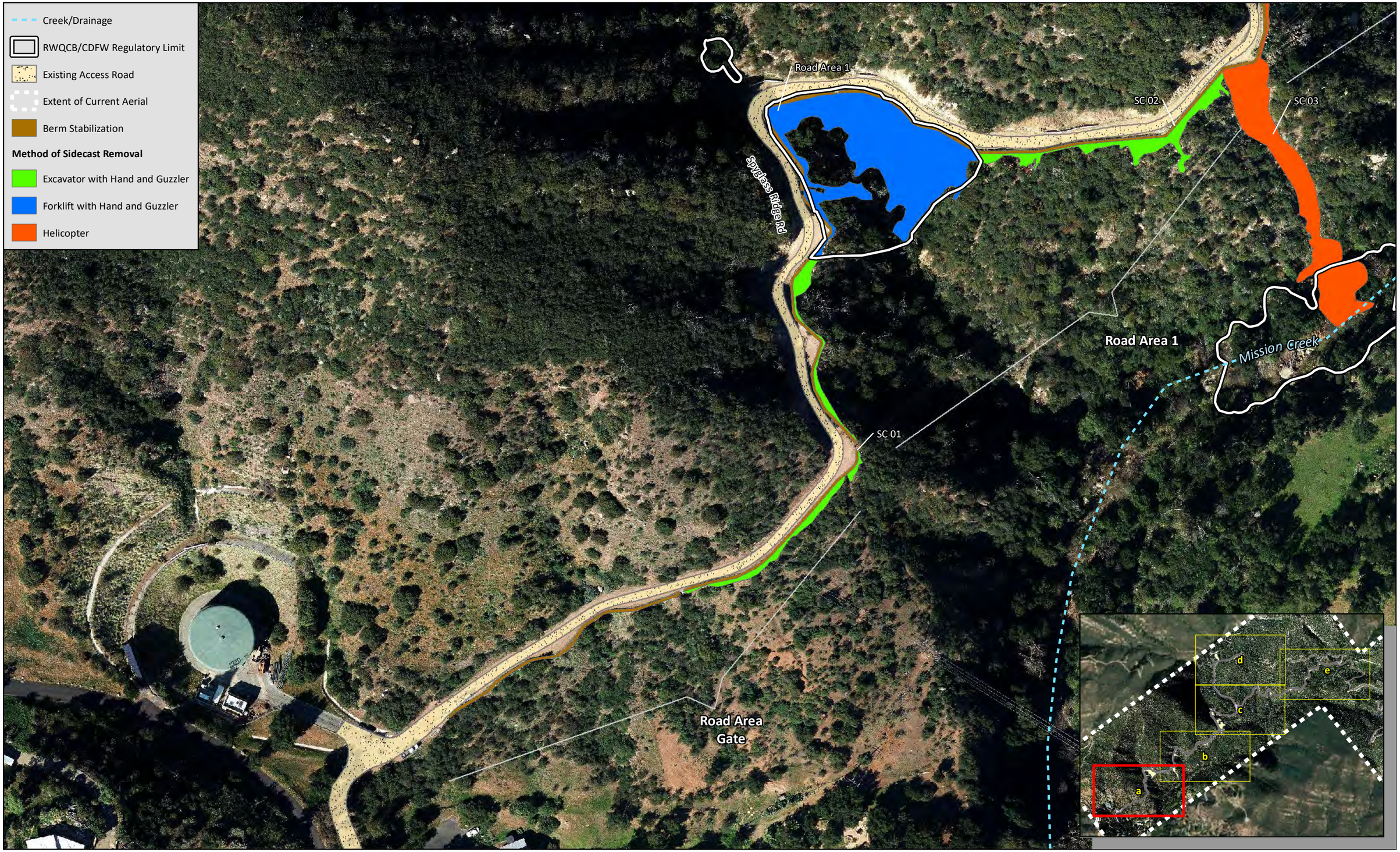
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Sidecast Removal Treatments - Overview

Figure 6



HELIX Environmental Planning

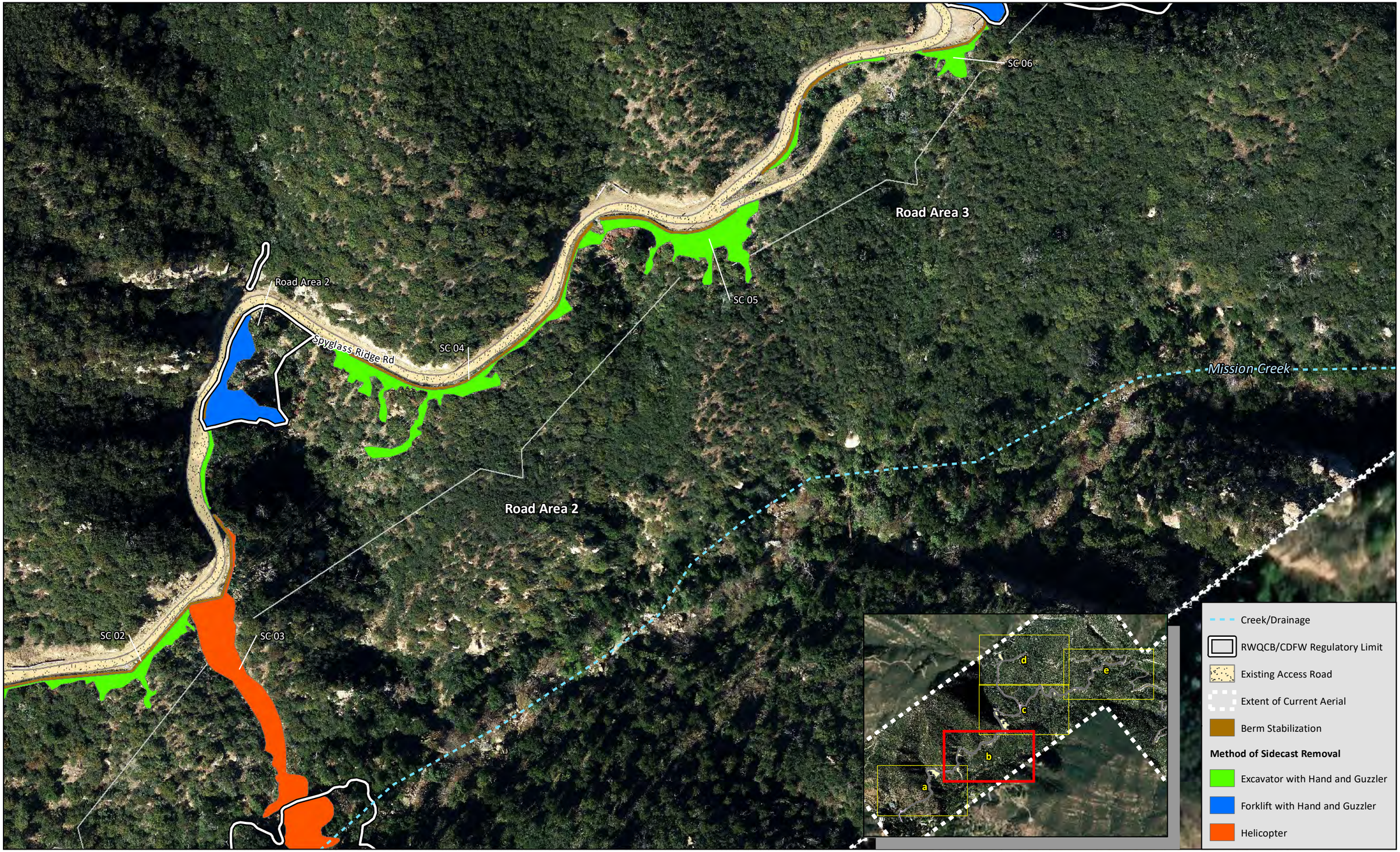
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Sidecast Removal Treatments

Figure 6a



HELIX Environmental Planning

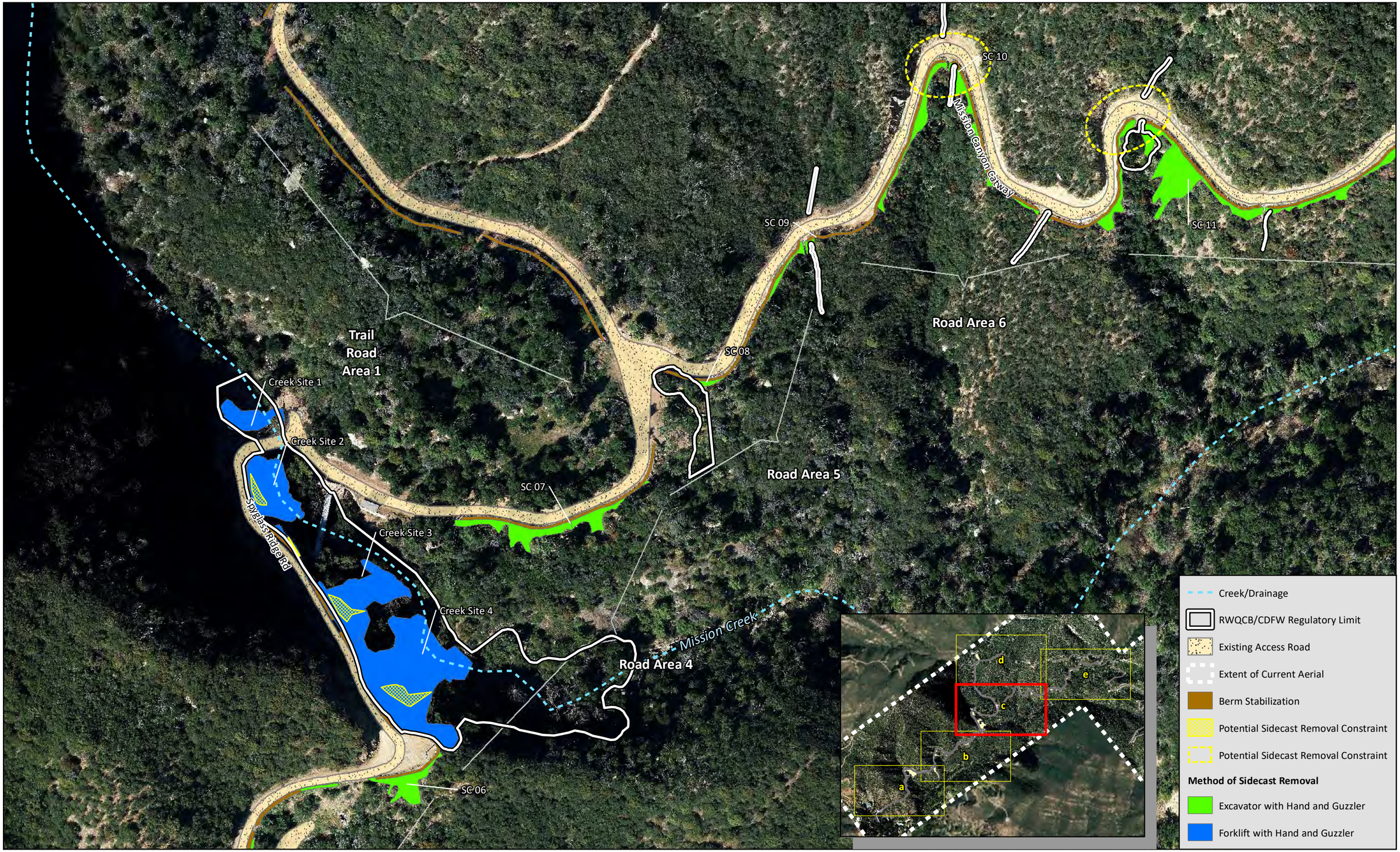
0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Sidecast Removal Treatments

Figure 6b



HELIX Environmental Planning

0 50 100 Feet

Source:

MISSION CREEK HABITAT RESTORATION PLAN

Sidecast Removal Treatments

Figure 6c