6

Biological Resources

This chapter was prepared to evaluate the Project's potential impacts on biological resources, in accordance with the criteria in CEQA Section 15064.5. The chapter presents the results of research conducted to identify and evaluate potential biological resources within the Project area, the results of a field survey and evaluation, and identifies mitigation measures that would reduce or avoid potential impacts to biological resources that may be adversely affected by the Project. This chapter also identifies the federal, state, and local regulations pertaining to biological resources within the Project vicinity.

Information used in the preparation of this chapter was obtained from:

- Biological site reconnaissance survey conducted by Zander Associates on January 12, 2016,
- Follow-up sensitive plant surveys conducted by Zander Associates on July 2016 (**Appendix C**)
- Follow-up field survey and analysis of the habitat value and potential for presence for Alameda whipsnake (Alameda striped racer) conducted by Bio-MaAS. Inc., October 2016 (**Appendix D**)
- Review of the following public information sources: the California Natural Diversity Database (California Department of Fish and Wildlife, 2016); California Native Plant Society, Electronic Inventory (California Native Plant Society, 2016); U.S. Fish and Wildlife Service National Wetland Inventory, accessed at http://www.fws.gov/wetlands/Data/mapper.html, and U.S. Fish and Wildlife Service Critical Habitat Portal, accessed at: http://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77,

Environmental Setting

The Project site is located along the western side of the East Bay Hills. The site is within the eastern edge of suburban Fairview development that has gradually occurred over the 20th Century, and west of the Five Canyons Open Space and housing development of the 1990s. The site is bordered by suburban residential development to the west, north and east. As shown in **Figure 6-1**, the area to the south is less developed, containing one undeveloped 4.4-acre parcel and the partly built-out Jelincic subdivision. The southern properties provide a relatively narrow corridor of open grasslands and pastures connecting the south portion of each of the Project's sites to the western portion of the Five Canyons Open Space, a 300-acre open space area of woods, meadows and trails owned and managed by the East Bay Regional Park District. This relatively narrow corridor also connects to three large privately-owned parcels (24 acres combined) on Old Quarry Road between the Project site and Five Canyons Open Space. These off-site separate private parcels are heavily wooded and mostly undeveloped, and are designated in the Fairview Area Specific Plan as R-1-B-E (single family residential, with a minimum one-acre building site area requirement).

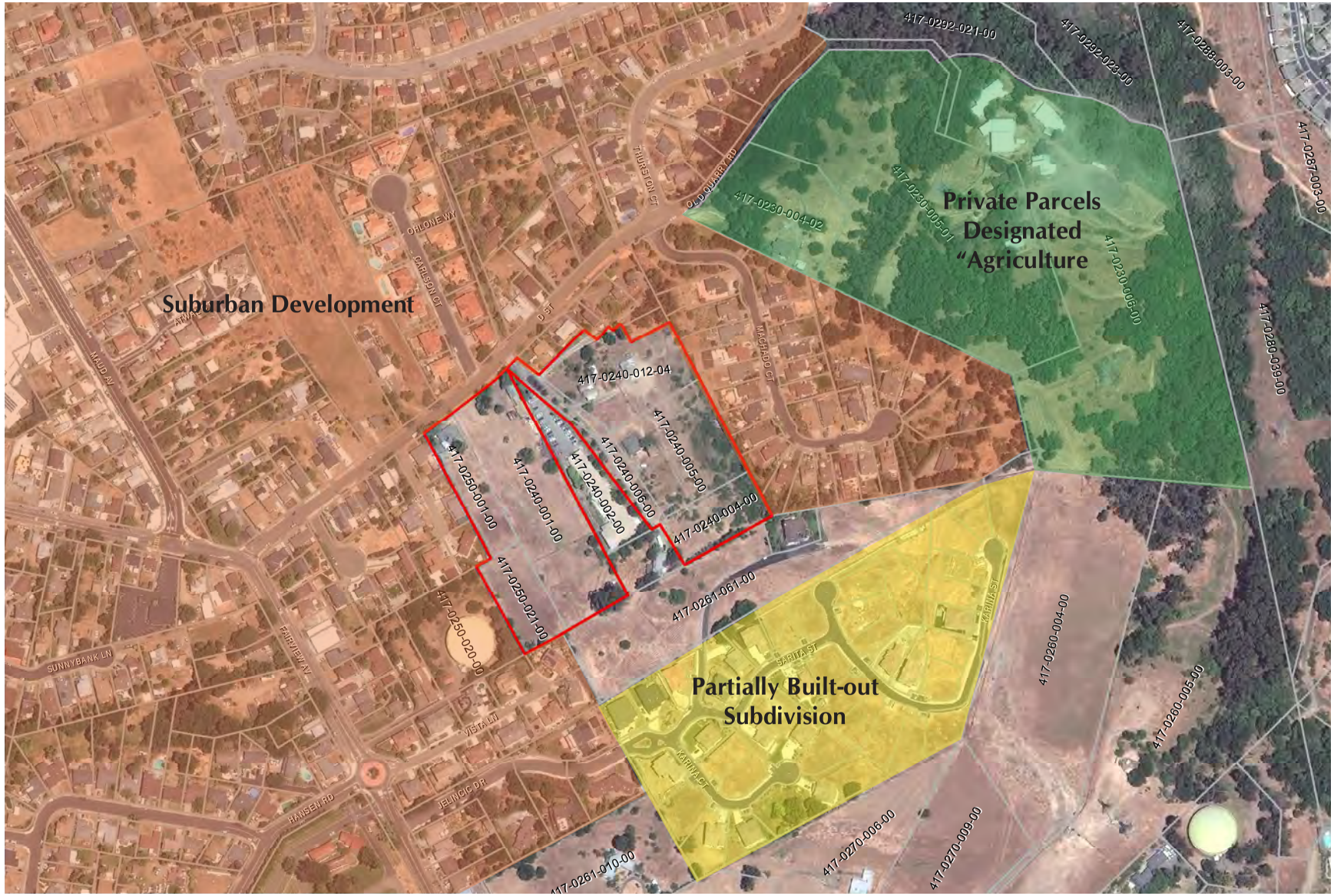

Figure 6-1
Project Site Setting

Habitat Types

Habitat types on the Project site are as shown on **Figure 6-2**. The Project sites are best described as rural residential parcels with houses, outbuildings, open fields and pastures. Each site is described separately below.

Eastern (Upper) Site (Tract No. 8297)

This Project site contains two abandoned residences with associated outbuildings and a horse pasture that encompasses most of the eastern and southern portions of the parcel. Around the buildings, vegetation consists of a mixture of non-native grassland and native and landscaped tree and shrub species. Ornamental plants include cypress (*Hesperocyparis* sp), pepper tree (*Schinus molle*), pyracantha (*Pyracantha* sp.) oleander (*Nerium oleander*), juniper and eucalyptus (*Eucalyptus* sp). Mixed in with the ornamentals are natives such as coast live oak (*Quercus agrifolia*), and coyote brush (*Baccharis pilularis*). A row of eucalyptus trees lines the north or northeastern parcel boundary and planted redwood trees follow the southern boundary and a portion of the eastern boundary. Several other trees are also located along the west side of the site, towards the care home property. The ground cover in the open areas consists of non-native annual grasses mixed with ruderal herbaceous species that include: red-stem filaree (*Erodium cicutarium*), black mustard (*Brassica nigra*), sour grass (*Oxalis pes-caprae*), and cheeseweed mallow (*Malva parviflora*).

The eastern and southern portions of the parcel that are currently used as a horse pasture are vegetated with coyote brush and scattered sapling oak trees. At the bottom, there is a dense stand of stinkwort (*Dittrichia graveolens*). Several elderberry bushes (*Sambucus nigra*) are mixed with the coyote brush along the eastern property boundary.

Evidence of mule deer (*Odocoileus hemionus*) and eastern fox squirrels (*Sciurus niger*) was abundant on the parcel during the Zander reconnaissance survey. Birds such as white-crowned sparrow (*Zonotrichia leucophrys*) and American goldfinch (*Spinus* [=*Carduelis*] *tristis*) were also observed in the trees and shrubs. Other wildlife expected to use the habitats on the parcel include non-native animal species typically found in disturbed areas, such as European starling (*Sturnus vulgaris*), rock dove *(Columba livia*), Virginia opossum (*Didelphis virginiana*), and Norway rat (*Rattus norvegicus*), as well as native species that have adapted to ruderal areas including red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*).

The scrub habitat in the southeastern portion of the parcel could also provide habitat for reptiles such as Pacific gopher snake (*Pituophis catenifer catenifer*), California king snake (*Lampropeltis getula californiae*), and western fence lizard (*Sceloporus occidentalis*).

Western (Lower) Site (Tract No 8296)

The western project site has two abandoned residences that are situated in the northern portion of the site, near D Street. The rest of the parcel consists of open grassland with scattered trees and shrubs. Typical grass species found within the grassland include wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum* var. *leporinum*), and scattered occurrences of native purple needlegrass (*Stipa pulchra*). Common herbaceous associates include red-stem filaree, sour grass, black mustard, and vetch (*Vicia* sp.). Within the grassland are scattered trees and shrubs that include native coast live oak (*Quercus agrifolia*), coyote brush, and coffeeberry (*Frangula californica*). Stands of horehound (*Marrubium vulgare*) occur under some of the trees along the eastern edge of the parcel. Several different ornamental trees are clustered around the buildings in the northern portion of the parcel. A few mature, very tall (over 100 feet) Eucalyptus trees lie in the southeastern corner, but the majority of this site and its periphery is generally spare of trees and shrubs, compared to the eastern site.

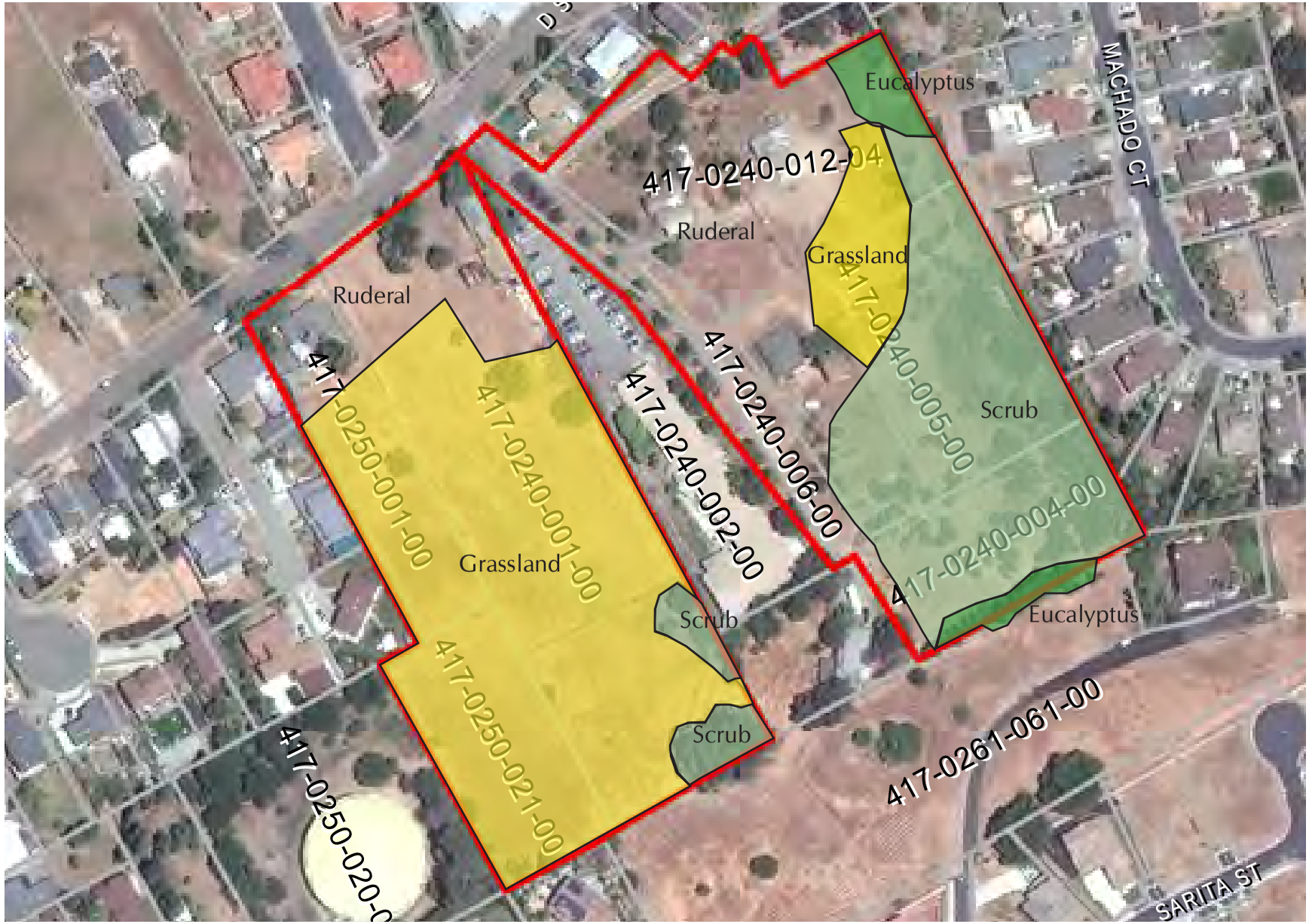

Figure 6-2
Habitat Types on the Project Site

Source: Zander Associates, 2015

Wildlife expected to use the habitat on this site would be substantially the same as described for the eastern site as described above.

Sensitive Natural Communities

Sensitive natural communities are designated as such by various resource agencies, such as the California Department of Fish and Wildlife (CDFW) or in local policies and regulations, and are generally considered to have important functions or values for wildlife or humans and/or are recognized as declining in extent or distribution, and are considered threatened enough to warrant protection. For example, many local agencies in California consider protection of oak woodlands important and federal, state, and most local agencies also consider wetlands and riparian habitats as sensitive communities.

The California Natural Diversity Data Base (CNDDB) tracks natural communities it believes to be of conservation concern and these communities are typically considered sensitive for the purposes of CEQA analysis. There are no sensitive natural communities occurring on, or in the immediate vicinity of the Project sites and no wetland or riparian areas are present on either Tract.

Special Status Plant Species

For this assessment, special status species are defined as those plants listed, proposed for listing or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (ESA); those listed or proposed for listing as rare, threatened, or endangered by CDFW under the California Endangered Species Act (CESA); and plants occurring on Lists 1B or 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016).

The CNDDB was queried for occurrences of special status plants in the vicinity of the Project site, generating a list of 23 species known to occur within ten miles. Most of these species are associated with specific habitat types that are not present on the site.

Zander's original biological site reconnaissance survey was conducted in January 2016, at a time when potential special status plant species are not in bloom and not easily detected. Therefore, Zander Associates completed a follow-up plant survey of the two parcels in July 2016. The purpose of the survey was to determine presence or absence of sensitive plant species identified as potentially occurring on the site. This survey targeted four species; Loma Prieta hoita (*Hoita strobilina*), Santa Cruz tarplant (*Holocarpha macradenia*), woodland woolythreads (*Monolopia gracilens*), and Oregon polemonium (*Polemonium carneum*). These species typically bloom and are identifiable later in the season (May to October). The survey was performed following protocol developed by the California Department of Fish and Wildlife (2009), and as such it was appropriately timed for the four targeted species, floristic in nature and conducted using systematic field techniques. Each parcel was systematically traversed and all plant species encountered were identified and recorded.

None of the four sensitive plant species targeted in this survey was found on the Project sites. Both sites are highly disturbed and the flora is dominated by non-native species. Horses were grazing in the eastern pasture at the time of the survey and the grassland around the existing abandoned buildings had been mowed, probably for fire abatement purposes. Grazing was also evident in the western pasture. Based on their assessment of habitat conditions onsite and knowledge of the habitat requirements for the four targeted species, the conclusions of this survey confidently conclude that Loma Prieta hoita, Santa Cruz tarplant, woodland woolythreads, and Oregon polemonium are not present on the Project sites.

There remains five special-status plant species that cannot be definitively dismissed from potential occurrence on the sites without further appropriately timed surveys. These species, their CNPS rank, and appropriate survey period are listed in **Table 6-1**. As indicated in this Table, these special status plant that have yet to be surveyed are rare, threatened or endangered, or in on case presumed extinct in California.

Table 6-1: Sensitive Plant Species Not Yet Surveyed that Could be Present on the Project Site

Scientific Name	Common Name	CNPS Rank1	Survey Period
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	March - June
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	March - June
Fritillaria liliacea	fragrant fritillary	1B.2	February - April
Helianthella castanea	Diablo helianthella	1B.2	March - June
Plagiobothrys glaber	hairless popcorn flower	1A	March – May

Definitions:

1A presumed extinct in California

1B rare, threatened or endangered in California and elsewhere

2B presumed extirpated in California but common elsewhere

Threat Rank: 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat); 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Sensitive Status Animals

For this assessment, special status species are defined as those animals listed, proposed for listing or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (ESA); those listed or proposed for listing as rare, threatened, or endangered by CDFW under the California Endangered Species Act (CESA); animals designated as "Species of Special Concern" by the CDFW; and birds protected under the Migratory Bird Treaty Act.

Several of the special status animals recorded to have occurred within a 10-mile radius of the Project site are associated with specific habitats not found on the site (e.g., coastal salt marsh, ponds or wetlands) and therefore are not expected to be present.

Alameda Whipsnake

The Alameda striped racer, also known as Alameda whipsnake (AWS; *Coluber [Masticophis] lateralis euryxanthus*) was listed by the California Fish and Game Commission as a threatened species under the California Endangered Species Act on June 27, 1971. The USFWS listed the species as threatened on December 5, 1997. Critical habitat for the Alameda striped racer was first proposed on March 8, 2000 and a final determination for Critical Habitat was issued on October 2, 2006. A draft Recovery Plan was prepared in 2002, and a 5-year review was completed in 2011.

The AWS is typically associated with scrub habitat - northern coastal sage scrub and coastal sage. Occupied areas usually support a prey base of at least two lizard species, especially the western fence lizard, and whipsnake populations thrive when lizards are abundant. Rock outcrops are particularly important foraging habitat for the AWS because they support many of the species' prey.

ASR Occurrence Data and Connectivity Modeling Data

The nearest occurrence for Alameda whipsnake (AWS #136) is approximately 0.55 mile to the southeast of Tract 8297, and the next nearest occurrence (AWS #41) is approximately 0.8 mile to the northeast of Tract 8297 (**Figure 6-3**). AWS 41 is from 1991, and is listed as "Possibly Extirpated", and AWS #136 is from 1984 and is listed as "Presumed Extant". The Project sites are not within the USFWS-designated Critical Habitat for this species. According to Connectivity Modeling data, the nearest core or patch habitat for AWS is approximately one mile to the east.

Site Survey and Conclusions

A reconnaissance survey of the Project area was conducted by BioMaAS.[1] The Project sites were surveyed on foot, and lands between the Project and nearest AWS occurrences were surveyed to the extent feasible. Based on the survey and other research, the potential for AWS to occur in the Project sites is unlikely. Vegetation, refugia and most likely prey base for AWS in the Project site is poor. In addition, nearby occurrence information is dated, and habitat has been removed or altered dramatically by development since then. However, presence of AWS cannot be entirely ruled out do to the dispersal capabilities of the species and the barrier-free connectivity to the open space (Five Canyons Open Space and Garin Regional Park) to the east and southeast. The specific components that lead to this conclusion include:

- The vegetation in both Tract sites has a history of agricultural use, mowing, grazing and residential use. Historical photo interpretation of the Project sites indicate that these Tract areas do not represent, and may never have represented suitable vegetation for ASR, at least as far back as 1946.
- Scrub/shrub communities with a mosaic of open and closed canopy is non-existent in Tract 8296, and is maintained only in an isolated patch in the southeast corner of Tract 8297. The habitat value of this stand is reduced due to adjacent development and its isolation from other scrub stands.
- The highest quality refugia observed consists of a pile of tree stumps and the basements/foundations of the unoccupied buildings. Fossorial mammal burrows were also present as refugia, but to a lesser degree. No rock outcrops or talus was observed. These habitat features appear marginal for shelter, hibernacula, foraging, dispersal, and prey population support functions.
- No lizard species were observed during the site visit, although conditions were adequate for lizard activity. This is not proof of absence, but may indicate this potential prey species is not abundant in the Project sites.
- Historic photo interpretation shows that due to agricultural use, grazing, mowing and development, the habitat in the Project sites did not contain the quality or quantity of habitat components for AWS in its recent history (since 1946).

[1] BioMaAS Biologist Bill Stagnaro, October 20, 2016. Mr. Stagnaro has extensive ASR trapping and monitoring experience and also possesses a USFWS Recovery Permit and CDFW Scientific Collecting Permit for AWS/ASR.

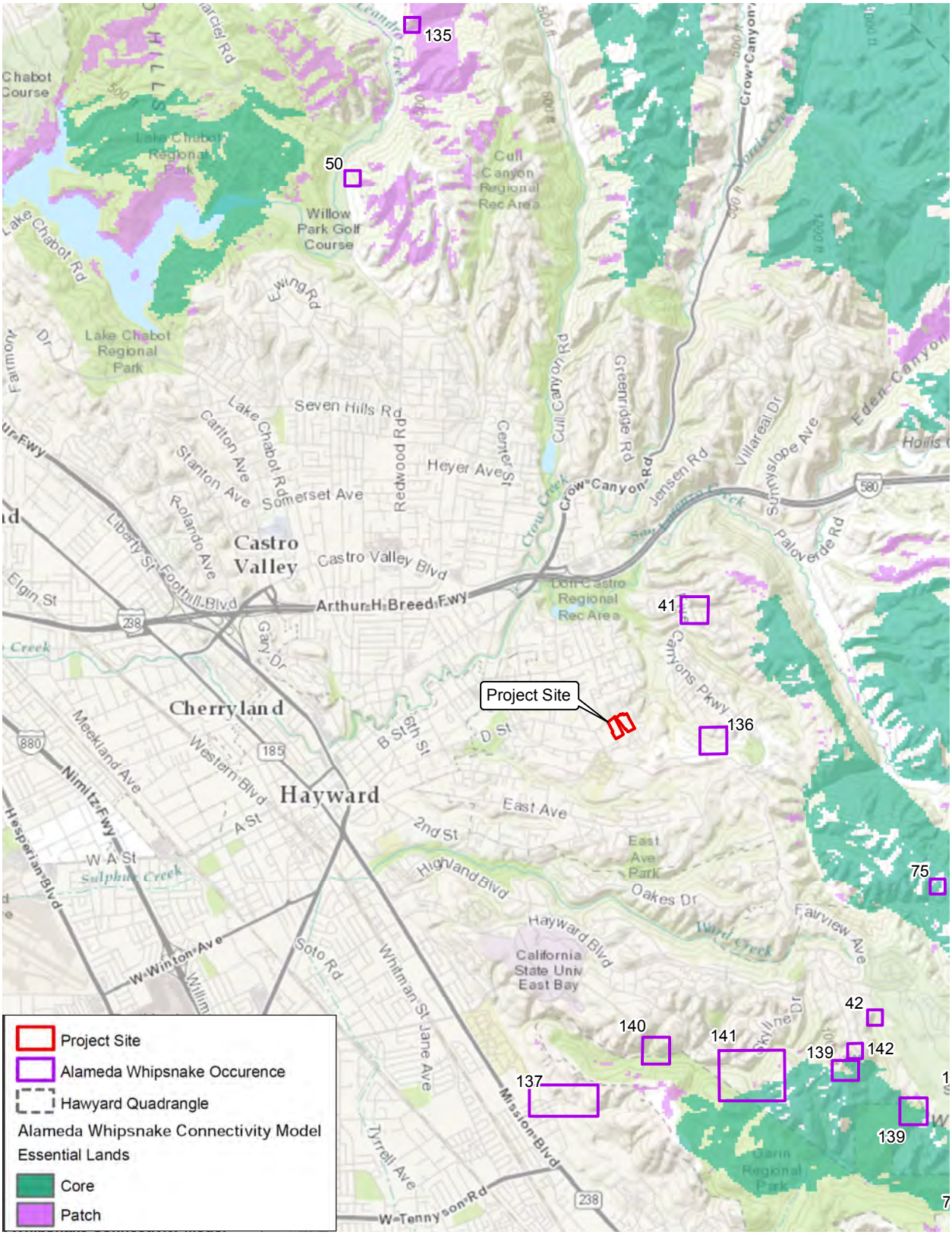

Figure 6-3
Known Occurrences of Alameda Whipsnake in the Vicinity

Source: BioMaAs 2016, CBG 2016, CNDDB 2016,

- The development along Five Canyons Parkway is a significant barrier to east-west AWS movement and has effectively removed the open grassland and scrub habitat in between Deer Canyon and Shady Canyon. AWS attempting to access habitat in the Project sites would have to disperse through a narrow band (200 feet) of grassland to the east, follow Deer Canyon to Quarry Road to D Street, or navigate the development barriers of Jelincic Drive to the south. AWS dispersing from the north and the west is highly unlikely due to development.

Other Potential Species

Other species such as the California burrowing owl (*Athene cunicularia*), white-tailed kite (*Elanus leucurus*), and loggerhead shrike (*Lanius ludovicianus*) could forage in the grasslands and potentially establish nests on the site.

- The American badger (*Taxidea taxus*) is known to occur within 10 miles of the Project site. The badger uses open grasslands for foraging and denning, but the habitat on the Project site is too small and too close to urban areas to provide suitable habitat for this species.
- Burrowing owls use rodent burrows (primarily ground squirrel) or other similar refugia for nesting. No ground squirrels or ground squirrel activity were observed on the parcels during the January 2016 field reconnaissance, reducing the likelihood that burrowing owls would use the site.
- White-tailed kites typically nest in trees along marsh or river margins but will use any suitable tree or shrub that is of moderate height, such as the Eucalyptus trees along the eastern edge of the eastern parcel.
- Loggerhead shrikes nest in trees and shrubs and could nest in the coyote brush scrub areas in the eastern parcel.

Regulatory Setting

Federal

Endangered Species Act

The ESA protects plant and wildlife species that are listed as threatened or endangered or proposed for such listing. As a fundamental element of this protection, Section 9 of the ESA prohibits killing, harming, or otherwise "taking" listed animal species. Taking includes such destruction or significant alteration of habitat that actually kills or injures listed animals. Sections 7 and 10 of the Act authorize the USFWS (or, in some instances the National Marine Fisheries) to allow limited take of listed species incidental to otherwise lawful activities (e.g. development of land) provided that the species is not jeopardized and the impacts of the take are mitigated. The ESA does not prohibit the taking of listed plants on private land, but does provide for penalties if such plants are destroyed or removed in violation of state law. With respect to species proposed for listing, the ESA calls on federal agencies to confer with the USFWS if their actions may affect any such species.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., §703, Supp. I, 1989) prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The trustee agency that addresses issues related to the MBTA is the USFWS. Migratory birds protected under this law include all native birds and certain game birds (*e.g.*, turkeys and pheasants; *Federal Register* 70(2):372-377). This act encompasses whole birds, parts of birds, and bird nests and

eggs. The MBTA protects active nests from destruction and all nests of species protected by the MBTA, whether active or not, cannot be possessed. An active nest under the MBTA, as described by the Department of the Interior in its 16 April 2003 Migratory Bird Permit Memorandum, is one having eggs or young. Nest starts, prior to egg laying, are not protected from destruction.

Nearly all local native bird species are protected by the MBTA.

Clean Water Act

The Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA now serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. CWA empowers EPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater run-off and sediment loading from upstream areas. CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is CWA's primary regulatory and enforcement mechanism.

Section 404 of the CWA regulates the discharge of dredged and fill material into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following:

- Areas within the ordinary high water mark of a stream, including non-perennial streams with a defined bed and bank.
- Any stream channel that conveys natural run-off, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity.

Section 401 of the CWA requires applicants for permits to discharge dredged or fill material into waters of the United States to obtain from the state a certification that the discharge does not violate state water quality standards. Therefore, certification that a proposed activity meets state water quality standards must be obtained before a USACE permit can be issued under Section 404, though some permits are issued on condition of receipt of said certification. States may choose to certify the USACE nationwide permits (NWPs) generally or retain jurisdiction to review them individually. California has not provided state certification for certain NWPs that were reissued in 1996 (see 33 CFR as noticed in 61 FR No.241). Therefore, these NWPs are not considered "in effect" in California unless they have been individually certified by the State Water Resources Control Board (SWRCB).

State

California Endangered Species Act

The CESA (Fish and Game Code of California, Chapter 1.5, Sections 2050-2116) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the CDFW has jurisdiction over state-listed species. The CDFW regulates activities that may result in "take" of individuals listed under the Act (*i.e.*, "hunt, pursue, catch, capture,

or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the Fish and Game Code. The CDFW, however, has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification."

California Fish and Game Code

The California Fish and Game Code includes regulations governing the use of, or impacts to, many of the state's fish, wildlife, and sensitive habitats.

Certain sections of the Fish and Game Code describe regulations pertaining to certain wildlife species. For example:

- Fish and Game Code §§3503, 2513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFW.
- Raptors (*i.e.,* eagles, falcons, hawks, and owls) and their nests are specifically protected in California under Fish and Game Code §3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."
- Non-game mammals are protected by Fish and Game Code §4150, and other sections of the Code protect other taxa.
- The California Endangered Species Act (CESA) allows for take incidental to otherwise lawful activity through section 2081(b) of the Fish and Game Code. For those state-listed species that are also listed under the federal Endangered Species Act, CESA allows for consistency determinations with federal incidental take statements under section 2080.1 of the Fish and Game Code.

Although this Project does not include any wetlands, it is important to note that the CDFW exercises specific authority over rivers, streams and lakes under California Fish and Game Code §1602. Under this section, development activities that will substantially divert, obstruct, or change the natural flow of a river, stream or lake, substantially change the bed, channel, or bank of a river, stream or lake, or use material from a streambed must first notify the CDFW and, if the CDFW identifies existing fish or wildlife resource that would be affected, then the project proponent must obtain (through negotiation or arbitration) a streambed alteration agreement from the CDFW. The type of activities regulated under §1602 include re-channeling and diverting streams, stabilizing banks, implementing flood control projects, crossings of rivers or streams (including bridges and culverted crossings), diverting water, damming streams, mining gravel, and logging operations.

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established the SWRCB and divided the state into nine basins, each with its own regional water quality control board (RWQCB). The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, while the RWQCBs are responsible for developing and enforcing water quality objectives and implementation plans.

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to enact state policies regarding water quality in accordance with Section 303 of the CWA. In addition, the act authorizes the SWRCB to issue Water Discharge Requirements for projects that would discharge to state waters.

With respect to biological resources, the SWRCB and RWQCBs have authority over any fill activities within state waters, including isolated waters or wetlands that may be outside the jurisdiction of the USACE.

Local

The Alameda County Tree Ordinance (Ordinance No: 0-2004-23)

According to the County Tree ordinance, preservation of trees within the County right-of-way enhances the natural scenic beauty, sustains the long term potential increase in property values, protects the surrounding area from soil erosion, moderates the effects of extreme weather conditions and temperatures, improves air quality including increasing the oxygen output of the area which is needed to combat air pollution, creates the identity and quality of the County's businesses and residences, and improves the attractiveness of the County to visitors. For these reasons, the County has enacted Ordinance No: 0-2004-23 to promote the public health, safety and general welfare, while at the same time recognizing individual rights to develop private property in a manner which will not be prejudicial to the public interest, by control the planting, maintenance and removal of those trees located within the County right-of-way.

Fairview Area Specific Plan

As indicated in the Land Use chapter of this EIR, the Fairview Area Specific Plan establishes a variety of policies, principles and guidelines that are intended to protect and preserve important environmental resources and significant natural features in the Fairview area, and promote development that is sensitive to variations in topography and the rural residential character of the area. The Project's consistency with these policies, principles and guidelines is assessed in the Land Use chapter. The Specific Plan also includes the following local policies regarding tree protection and riparian areas:

Large, mature, natural and introduced trees are to be preserved unless:

a. Alternative designs that would preserve the trees are found by the County to be infeasible or undesirable.

b. A certified arborist, as determined acceptable by the County Planning Director, recommends that the trees be pruned or removed because they are:

1) dead, dying, or in irreparable condition; or

2) will be a fire or safety hazard

Eucalyptus trees shall be thinned and pruned for safety reasons. Any eucalyptus trees removed shall be replaced with native trees as outlined below. In the event trees must be removed, the developer, builder, or owner shall reestablish at least five 15 gallon sized trees or one boxed, native, specimen tree for every large tree removed. The species, location, and method of installation shall be approved by the County Planning Director. Large, mature trees are those of the following sizes:

a. 20" diameter breast height (dbh) or greater in circumference measured 4.5 feet above ground level for trees native to this area of California.

b. 30" dbh or greater in circumference measured 4.5 feet above ground level for introduced tree species.

Natural riparian areas shall be preserved, except where life or property are endangered. In such areas, flood control improvements shall be as compatible with, and shall preserve the natural riparian character of the channel. Natural riparian corridors (as defined in the Alameda County

Specific Plan for Areas of Environmental Significance) are to be designated and protected through subdivision, planned development, building permit review, and the Alameda County Water Course Ordinance.

Impacts and Mitigation Measures

The following section describes potentially significant Project impacts to biological resources. Mitigation measures are recommended to avoid, minimize or mitigate such impacts, where feasible.

Significance Criteria

The Project would have a significant environmental impact if it were to:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
3. Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources; or
6. Conflict with any applicable habitat conservation plan or natural community conservation plan.

Special Status Plant Species

Bio-1: **Special Status Plants**. Although the Project Sites are highly disturbed and the flora is dominated by non-native species, there remains a possibility that the Project could have a substantial adverse direct effect on certain special status plant species for which site surveys have not yet been conducted and for which occurrence cannot be definitively determined. (**LTS with Mitigation**)

The Project will result in the permanent removal of approximately 4.2 acres of non-native annual grassland habitat, 2.1 acres of scrub, and 3.5 acres of ruderal areas. All of these plant communities are common throughout the region and their removal is not considered a significant impact, unless special status species are known to be present.

Although no special status plant species are known to be present on the Project site based on site surveys that have been conducted to date, appropriately-timed focused surveys for certain special status plants have not conducted, and the potential occurrence of these species cannot be definitively ruled out.

Mitigation Measures

Mitigation Measure Bio-1a: Presence/Absence Surveys. Conduct appropriately-timed surveys for the following special status plant species:

- Bent-flowered fiddleneck (*Amsinckia lunaris*), March - June
- Big-scale balsamroot (*Balsamorhiza macrolepis*), March - June
- Fragrant fritillary (*Fritillaria liliacea*), February - April
- Diablo helianthella (*Helianthella castanea*), March - June
- Hairless popcorn flower (*Plagiobothrys glaber*), March – May

If none of these species is found, no further measures are required.

Mitigation Measure Bio-1b: Salvage of Special Status Plants. If any special status plants are found on site during the presence/absence surveys per Mitigation Measure Bio-1a, any such special status plants shall be salvaged prior to construction. Salvage shall be conducted in consultation with CDFW, and may consist of seed collection and relocation or plant transplantation.

Resulting Level of Significance

Implementation of Mitigation Measures Bio-1a and -1b would reduce the Project's potential impacts on special status plants to a less than significant level.

Special Status Animals – Alameda Whipsnake

Bio-2: **Alameda Whipsnake.** The Project could have a substantial adverse effect, either directly or through habitat modifications, on Alameda whipsnake (AWS). The AWS is a federally and state listed species that is protected under the federal Endangered Species Act and the California Endangered Species Act. **(LTS with Mitigation)**

Given the poor habitat components at the Project sites (see Setting section, above) and the distance and separation form the home range of AWS, it is unlikely that the Project sites provide a source habitat for AWS. Rather, the Project sites can more accurately be described as sink habitat that would have difficulty sustaining a population of AWS. Although the habitat value on the Project sites is poor for AWS, there is a chance that a dispersing individual could enter the Project sites via the currently barrier free property line to the south. Although presence of AWS is unlikely, it is possible that an individual could use the property for forage and dispersal and there is a potential for take of individual snakes during Project construction.

Regulatory Compliance

Because of the potential for presence, it is recommended that the Project applicant consult with USFWS and CDFW in order to determine permitting options and appropriate mitigation, if necessary, for the Project. If this consultation process determines the proposed Project is not likely to affect AWS, the Project may move ahead. If this consultation indicates that the Project may affect AWS, then a Biological Assessment shall be prepared to determine the Project's effect on AWS, and identify appropriate mitigation. Additionally, because presence of AWS cannot be ruled out, consultation with CDFW may result in a recommendation for an Incidental Take Permit (Section 2081 process) to protect the Project applicant from unauthorized take of species, and insure potential impacts are minimized and fully mitigated.

Mitigation Measures

Mitigation Measure Bio-2: Minimize Potential Take of AWS. The Project applicant shall ensure that the following construction-period measures are implemented to minimize the potential take of AWS:

- In order to prevent AWS from entering construction areas during Project development, it is recommended a wildlife exclusion fence be placed at the property boundary at the southern end of the Project Area. The fence should be at least three feet high and should be entrenched three to six inches into the ground. It is recommended that exclusion funnels are included in the fence design so that terrestrial species are able to vacate the Project Area prior to disturbance.
- Monofilament netting, which is commonly used in straw wattle and other erosion preventatives, should not be used on the Project site in order to prevent possible entrapment of both common and special status terrestrial wildlife species.
- Trenches should be backfilled, covered or left with an escape ramp at the end of each work day. Trenches left open overnight should be inspected each morning for trapped wildlife species.
- Prior to initial ground disturbance, a qualified biologist should perform a pre-construction survey in order to insure no AWS are present. The biologist may remain on site for initial ground disturbance if suitable AWS refugia will be disturbed, e.g. small mammal burrows, foundations, large woody debris.

Resulting Level of Significance

Compliance with required regulatory consultation, and implementation of Mitigation Measure Bio-2, potential impacts related to take of Alameda whipsnake would be reduced to a level that is less than significant.

Migratory Birds

Bio-3: **Disturbance of Nesting Birds**. Project construction activities could interfere with migratory and nesting birds, but would not otherwise interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (**LTS with Mitigation**)

Construction activities, particularly tree removal, could adversely affect nesting birds protected by the Migratory Bird Treaty Act and/or Fish and Game Code of California. This is a potentially significant impact**.**

Mitigation Measures

Mitigation Measure Bio-3: Conduct a Pre-Construction Nesting Bird Survey. Pre-construction surveys for nesting birds protected by the Migratory Bird Treaty Act of 1918 and/or Fish and Game Code of California shall be conducted within 30 days prior to initiation of construction, grading or ground-disturbing activities.

- The survey area shall include the Project site and areas within 100 feet of the site, to the extent that access can be obtained.
- If active nests are found, the Project shall follow recommendations of a qualified biologist regarding the appropriate buffer in consideration of species, stage of nesting, location of the nest, and type of construction activity. The buffer shall be maintained until after the nestlings have fledged and left the nest.

- If there is a complete stoppage in construction activities for 30 days or more, a new nesting-survey shall be completed prior to re-initiation of construction activities.

Resulting Level of Significance

Implementation of Mitigation Measure Biological 6-3 would reduce the Project's potential impacts on migratory and nesting birds to a less than significant level.

Wetlands

Bio-4: **Wetlands**. The Project would not have a substantial adverse effect on federally protected wetlands or state protected wetlands through direct removal, filling, hydrological interruption, or other means. (**No Impact**)

During the site reconnaissance, no federally protected wetlands or riparian habitat were identified on the Project site. There are also no streams or creeks on or near the site that would be substantially altered or otherwise affected by the Project so as to require a streambed alteration agreement under California Fish and Game Code §1602.

Conflicts with Local Applicable Biological Plans, Policies or Ordinances

Bio-5: **Conflicts with Local Policies and Plans**. The Project does not pose any direct conflicts with local policies or ordinances protecting biological resources. (**LTS**)

As indicated in the Land Use chapter of this EIR, the Project is not consistent with several principles and guidelines of the Fairview Area Specific Plan. These inconsistencies with principles and guidelines of the Fairview Area Specific Plan would result in substantial regrading of the Project that would not retain natural topographic features, grading to create padded lots that do not retain a natural appearance, grading that does not complement and blend with natural landforms, and mass grading for flat building pads in areas currently exceeding 20% slope. However, none of these physical changes are expected to adversely affect any sensitive biological resources, as no sensitive biological resources have been confirmed to be present on the Project sites. Mitigation measures described above would be adequate to avoid adverse direct effects on biological resources that may be found on the Project sites.

The Project does not propose to remove any existing trees within the County right-of-way, but would remove a number of larger, mature trees for the site. Consistent with the policies of the Fairview Area Specific Plan, the Project would be required as a condition of approval to re-establish at least five new 15-gallon trees, or one boxed native specimen tree for every large tree removed. Large, mature trees requiring replacement include native trees at least 20" in diameter at breast height (dbh), or introduced tree species of at least 30" dbh. Introduced tree species include the several Eucalyptus trees on the site, several of which are greater than 30" dbh.

Habitat Conservation Plans / Natural Community Conservation Plans

Bio-6: **HCP/NCCP**. The Project would not conflict with any applicable habitat conservation plan or natural community conservation plan. (**No Impact**)

There are no approved habitat conservation plans or natural community conservation plans encompassing the Project site. Therefore, there would be no impact in relation to conflicts with any applicable habitat conservation plan or natural community conservation plan.

7

Cultural Resources

This chapter evaluates the Project's potential impacts on cultural and historic resources. It describes existing cultural and historic periods of significance in the Project area and region, and evaluates potential for changes to cultural or historic resources that may result from development of the Project. The analysis and discussion in this chapter is based primarily on the following technical report, which is incorporated by reference and included in the Appendix to this EIR:

- William Self Associates, Inc. (WSA), *Cultural Resources Assessment Report (CRAR) for the proposed Bassard Property Project* located at 3231, 3247, 3289 and 3291 D St. (Project) in Castro Valley, Alameda County, CA, dated November 2015. (**Appendix E**)

This CRAR was prepared in compliance with CEQA Section 15064.5 to evaluate the potential significance of cultural resources within the Project sites, to present the results of research conducted to identify and evaluate potential cultural resources, and to assess the Project's potential impacts on such resources. The CRAR presents the results of records searches and Native American consultations, as well as the results of a field survey and historic structure documentation and evaluation. It also provides recommendations for mitigation measures to reduce or avoid potential impacts to cultural resources that may be adversely affected by the Project area.

Project Location

The Project is located within Township 3 South, Range 2 West, Sections 11 and 14, as depicted on the 1993 Hayward U.S. Geological Survey 7.5 minute topographic quadrangle. The Project area is bordered by D Street along the northern boundary, residential properties on the eastern and western boundaries, and open, mostly undeveloped private property on the southern boundary.

The Project is located on two separate but nearby sites totaling 9.78 acres, which are made up of seven separate parcels in the unincorporated Fairview district of Alameda County in the Hayward Hills. The Project sites are on the south side of D Street, approximately 600 feet northeast of its intersection with Fairview Avenue. Access to the site is from D Street.

Cultural Setting

History of the Region

The following provides a relatively brief summary of the cultural setting of the region within which the Project site is located. More detailed information regarding this cultural setting can be found within the Cultural Resources Assessment Report (WSA, 2015) located in the Appendix to this document.

Prehistoric Archaeological Background

Several methodologies for describing the prehistoric cultures of the San Francisco Bay region have been developed. Given the expanse of central California, as well as the complex nature of cultural change

over space and time, any single classification system of prehistoric cultures is limited. Such classification systems adapt over time as new information is discovered and understandings about the past evolve. One such system that has evolved provides for the definition of three cultural patterns throughout the prehistoric period; the Windmiller, Berkeley and Augustine patterns. A pattern is defined as "[an] adaptive mode(s) extending across one or more regions, characterized by particular technological skills and devices, particular economic modes, including participation in trade networks and practices surrounding wealth, and by particular mortuary and ceremonial practices."[1]

Windmiller Pattern

The Windmiller Pattern sites are most often found in the Early Period (ca. 6000–500 B.C.). Windmiller Pattern sites are often situated in riverine, marshland, or valley floor settings, as well as atop small knolls above prehistoric seasonal floodplains, locations that provided a wide variety of plant and animal resources. Some scholars have suggested that Windmiller Pattern sites are associated with an influx of people from outside California who introduced subsistence strategies adapted for a riverine wetlands environment.[2] Artifacts found from this period often include large projectile points and a variety of fishing gear, as well as stone mortars and grindstones for seed and nut processing.

Berkeley Pattern

The Berkeley Pattern overlaps with the Windmiller Pattern, dating from at least 3000 B.C. through A.D. 1.[3] The people characterized by the Berkeley Pattern expanded eastward to the Central Valley after about 500 B.C. Berkeley Pattern sites are much more common and well documented, and therefore better understood, than Windmiller Pattern sites. Berkeley sites are scattered in more diverse environmental settings, but riverine settings are prevalent. Deeply stratified midden deposits that developed over generations of occupation are common to Berkeley Pattern sites. These middens contain numerous milling and grinding stones for food preparation. Projectile points in this pattern are larger in earlier times but become progressively smaller and lighter over time, culminating in the introduction of the bow and arrow. Shell beads, pendants and other ornaments are occasionally found.

Augustine Pattern

The Augustine Pattern ranges from as early as A.D. 700 to about A.D. 1750, and is typified by intensive fishing, hunting, and gathering (especially of acorns), a large population increase, expanded trade and exchange networks, and increased ceremonialism. Artifacts distinctive to this pattern include bone awls used in basketry, small notched and serrated projectile points that are indicative of bow-and-arrow usage, occasional pottery, clay effigies, bone whistles, and stone pipes.

During these prehistoric periods, the region was occupied by the Ohlone or Costanoan group of Native Americans. Although the term Costanoan is derived from the Spanish word Costaños, or "coast people," its application as a means of identifying this population is based in linguistics. The Costanoans spoke a language now considered one of the major subdivisions of the Miwok-Costanoan, which belonged to the Utian family within the Penutian language. Costanoan-speaking tribal groups occupied the area from the Pacific Coast to the Diablo Range, and from San Francisco to Point Sur. Modern descendants of the

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1 Fredrickson, David A., 1994 Spatial and Cultural Units in Central California Archaeology. *Toward a New Taxonomic Framework for Central California: Essays* by James A. Bennyhoff and David A. Fredrickson, R. Hughes editor, Contributions of the University of California Archaeological Research Facility 15. Berkeley.

2 Moratto, Michael J., 1984. *California Archaeology*. Academic Press, New York.

3 Ibid.

Costanoan prefer to be known as Ohlone. On the basis of linguistic evidence, it has been suggested that the ancestors of the Ohlone arrived in the San Francisco Bay area about A.D. 500, having moved south and west from the Sacramento-San Joaquin Delta. The vestiges of many village sites within the San Francisco Bay Area have been found in numerous locations around the Bay shoreline in the form of shell mounds - large accumulations of shell, ash, artifacts, and occasionally human remains.

Historic Periods

The historic periods within the region generally begin concurrent with European contact with the Ohlone peoples, beginning in the late 1700's. An overview of historic periods of the region is summarized below.

Spanish Exploration and Colonization

The Spanish Period in the Bay Area began in 1775 when Captain Juan Manuel Ayala's expedition entered the area and ventured up the Sacramento and San Joaquin rivers in search of a suitable mission site. The first mission in the region, Mission San Francisco de Assis (Mission Dolores), situated near the shores of San Francisco Bay, was established the following year. Mission San Jose, located in modern Fremont, was established approximately twenty years later. Mission lands were used primarily for the cultivation of crops, animal grazing, and garden and orchards. The missions relied on the Native American population both as their source of Christian converts and their primary source of labor. By the mid-1790s, traditional Ohlone lifeways had been significantly disrupted, and diseases introduced by the early expeditions and missionaries, and the contagions associated with the forced communal life at the missions, resulted in the death of a large number of local peoples.

Mexican Rule and Secularization of the Mission System

Following Mexican independence from Spain in 1821, control of Spain's North American colonial outposts was ceded to the Republic of Mexico. Alta California became a province of the new republic under Mexican rule. The numbers of Mexican and non-Mexican born immigrants continued to increase during this period. Secularization of the Spanish Mission system began in California in 1834, as former mission lands were parceled out in large land grants. The Project area is located within what was the Rancho San Lorenzo, granted to Don Guillermo Castro in 1841.

The Mexican-American War and the Gold Rush Lead to Statehood

In 1836, a revolution in Texas drove out the Mexican government and created an independent republic, and the following year Mexico and the United States were at war. California was officially annexed to the United States in 1848. Shortly after the end of the war, discovery of gold in the Sierra Nevada ignited a major population increase in the northern half of California as immigrants poured into the territory seeking gold or the opportunities inherent in producing goods or services for miners.

The Final Decades of the 19th Century

Miners returning from the goldfields and newly arrived immigrants began settling in southern Alameda County in the 1850s, purchasing property from Don Guillermo Castro's Rancho San Lorenzo. The area that would become Castro Valley served as a stopping point for travelers and grew into a small community. In 1854, Castro platted the town which he called San Lorenzo, establishing the basic layout of the modern city of Hayward. Hayward's location as a stage stop between Oakland and San Jose, as well as the development of a short-lived local rail line between Alameda and Hayward spurred early growth near the Project area. Maps from 1878 (Thompson & West) depict the Project's general area as one of many parcels owned by Faxon Dean Atherton, who amassed a fortune importing and exporting goods during the Gold Rush. By 1890, the Castro Valley area was described as ". . . one series of

vegetable gardens. From East Oakland to Niles, Sunol, and Livermore is an almost uninterrupted series of orchards of deciduous fruits, vineyards and berry gardens."[4] By the early 1900s, lands in the Project vicinity were one of the country's largest producers of peas, rhubarb, apricots and tomatoes[5].

20th Century Expansion

The turn-of-the-century ushered in a new era for Castro Valley farmers, as chicken ranches joined the Valley's orchards. The enterprise dominated local agriculture. Though the small community continued to grow, and thoroughfares like Castro Valley Boulevard began to fill with businesses, the area maintained its largely rural character during the early 20th-century.

Cultural Resources at the Project Site

Records Search

On September 17, 2015, WSA conducted a records search of the Project site at the Northwest Information Center at Sonoma State University (NWIC) (File No. 15-0404). The records search included a review of cultural resource and excavation reports and recorded cultural resources within a 1/4-mile radius of the Project site. The records search also included a review of the Office of Historic Preservation's Directory of Historic Property Data File for Alameda County, and the California Inventory of Historic Resources. A total of three cultural resources studies have been conducted within 1/4 mile of the Project site, but none within the Project site itself. These previous studies identify eight previously recorded resources located outside of but within ¼-mile of the Project site. Seven of these recorded resources are single-family homes dating from the 1920s to the 1950s, and one resource is a historic-era rock quarry. No archaeological resources have been recorded within 1/4 mile of the Project site.

Native American Consultation

WSA contacted the Native American Heritage Commission (NAHC) by email on September 14, 2015, requesting information on sacred lands and a contact list of local tribal representatives. A response was received from the NAHC on September 22, 2015 noting, "A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area." A list of Native American contacts was included in the response. WSA contacted the Native American representatives by letter on September 30, 2015, informing them of the Project. Follow-up phone calls to the Native American representatives were placed on October 14, 2015. No comments or recommendations were received. A record of the Native American consultation can be found in the Appendix.

Archaeological Reconnaissance Survey

A pedestrian archaeological reconnaissance survey was conducted by WSA Staff Archaeologist Thomas Young on October 14, 2015, using transect intervals of not more than 30 m (98 ft.). All exposed ground surface within the Project site was examined for the presence of identifiable prehistoric site indicators. Prehistoric site indicators include, but are not limited to areas of darker soil with concentrations of ash, charcoal, bits of animal bone (burned or unburned), shell, flaked stone, ground stone, or even human bone. No archaeological cultural resources were observed on the Project site during the survey. The archaeological survey of the Project site did not identify any evidence of previously unrecorded archae-

[4] Markham, Henry H., 1893 *Resources of California*. State Office, Sacramento, CA.

[5] Willard, Ruth Hendricks, 1988 Alameda *California Crossroads: An Illustrated History*. Windsor Publications, Inc. Northridge, CA.

ological resources, and a records search indicates that no previously recorded archaeological resources are located on the property.

Based on the records search, the attempted consultation with Native American representatives and the site survey, there is no known evidence of Native American/tribal cultural resources on the Project site.

Project Area History/Archival Research

At the time Thompson & West's 1878 atlas of Alameda County was published, the project area was part of an undeveloped and un-sectioned tract of hilly land owned by F. D. Atherton, bounded on the east by Palomares Creek and the north by San Lorenzo Creek. The nearest populated areas bordered Dublin Road, which loosely followed the channel of San Lorenzo Creek between about a quarter mile and a half mile to the north. By 1899, the USGS 15' topographic quadrangle for Hayward, Calif. included one building at the approximate location of the main house at 3289 D Street, at the time one of only three houses on the short stretch of road extending northeast from Fairview Avenue. Assessor's map books from 1898 and 1901, in the collection of the Hayward Area Historical Society, show that the undivided 20 acre parcel encompassing the project area, with its northwest corner at Quarry Street and Cemetery Avenue was owned by F. E. Garcia. The Garcia name was held by families in Eden Township who were first and second generation Portuguese immigrants from the Azores, and the landowner might have been among these residents.

The 1915 15' USGS topographic quadrangle shows the same arrangement of buildings, with only one structure depicted in the project area. Though street addresses for the area are not listed in the 1920 United States Census for the vicinity, as most residents are recorded as living on farms, it is possible to ascertain the character of settlement around the project area at this time. Resident families along Fairview Avenue between Maud Avenue and Cemetery Road and in the Fairview Precinct were headed by first-generation Californians or immigrants from the Azores, Norway, Germany, or Italy. Many operated fruit and poultry farms, while other residents had vocations including automobile mechanic, plumber, electrician, and one "inheritance law" attorney. The majority owned, rather than rented, their homes.

The 1930 census shows a similar general pattern of residents along Fairview Avenue, and includes a listing for Theodore W. and Delia Lakin at Box 438B. The Lakin family lived at what would become 3291 Quarry Road (Thomas Brothers 1938), or D Street between 1930 and 1948, and the Kansas-born Theodore's listed occupation changed from poultry farmer in 1930 to engineer beginning in 1936. A. 1956-1957 Assessor's parcel map shows that Theodore Lakin still owned the property at this time. The parcel included what is now Lot 5 and part of the narrow adjacent Lot 6, which provided the access road to his residence at 3291 D Street. The 1957 Southern Alameda County Telephone Directory lists a Priscilla O. Lakin at the address, now 3291 D Street rather than Quarry.

Poultry farmer Chancie E. Quinn and Chancie A. Quinn (likely father and son) registered to vote in 1934 as residents of 3247 Quarry Road. By 1940, Mrs. Alma and Ray Gish, both born in the United States, and their 6 year old daughter Patricia Ann lived at 3247 Quarry Road, neighboring the Lakins. Though poultry farms still populated Fairview Ave. in 1940, Ray Gish listed his occupation as Foundry Moulder. By 1942 the Gish family had left 3247 Quarry Road, and the property was occupied by the family of fire engine operator Joseph Frascisco and his wife, Winifred.

After the Second World War, increased demand for housing in the East Bay reached to the hills overlooking Hayward, and the 1947 USGS 7.5' quadrangle for Hayward and a 1947 aerial photo taken as part of a survey set for transit planning both show growing suburban housing developments encroaching on former orchard lands in the vicinity. The project area at this time was still more irregularly settled, with buildings at the current locations of the main houses at 3247, 3289, and 3291 D

Street. The aerial photo shows regular rows of an orchard stretching across the parcels of 3289 and 3291 from D Street.

A ca. 1956-1957 set of Assessor's maps assembled into a Real Estate Atlas of Alameda County lists Harry R. and Helen A. Pringle as the owners of the parcel at 3289 D Street, as well as the narrow property to the west including 3265-3269 D Street. Helen Pringle, who worked at a hair salon in Hayward, moved to 3289 Quarry/D Street around 1947, and lived there until at least 1965. J. P. and W. L. Frascisco owned the parcel at 3247 D Street (which at the time had the same dimensions as today). Seamstress Mrs. H.K. Fitzpatrick and Mary E. Card lived at 3231 Quarry Avenue in 1948, and Fitzpatrick is listed as the home's owner in a 1951 directory. The parcel was owned in the mid-1950s by Peter W. and Mary J. Diederich.

Architectural Survey and Assessment

WSA architectural historian Aimee Arrigoni conducted the architectural survey and assessment of the Project area on October 14, 2015. Potential historic site indicators include, but are not limited to foundations, fence lines, ditches, standing buildings, objects or structures such as sheds, or concentrations of materials at least 50 years in age, such as domestic refuse (glass bottles, ceramics, toys, buttons or leather shoes), or refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, etc.). That survey documents eight standing structures on four properties within the Project site that are 45 years of age or older. These include four main residences, a secondary unit, a barn, a garage and a shed (see **Figure 7-1**). Ms. Arrigoni evaluated the eligibility of these structures for listing in the CRHR, and those conclusions are presented below.

3289 D Street - Residence and Barn

The two-story residence at 3289 D Street was presumably built originally in the early 20th century. However, it has been so heavily modified since its date of construction by a variety of room additions, new roofline styles and alterations to its façade and exterior finish that the original building is virtually unrecognizable. The property also contains a barn to the northeast of the residence, accessed via the driveway that runs along the south side of the home. While they are located on the same parcel, the barn is separated from the residence by a chain link fence. A low, covered wood-frame shade structure, possibly used for chickens or rabbits (identified as a rabbit hutch in Figure 7-1), is located at the rear of the home and is no longer structurally sound. The rabbit hutch is assessed as a part of the residence.

WSA's architectural historian recommends the County find that neither the residence nor the barn at 3289 D Street is associated with events that have made a significant contribution to the broad patterns of California's history. They are loosely associated with the early 20th century development of Alameda County, but do not have an important association with this broad pattern. Neither the residence nor the barn is associated with the lives of people considered important to California's past. Neither the residence nor barn embodies the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of an important creative individual or possess high artistic values. The house has been expediently remodeled over time and the barn is simply constructed and lacks architectural detail. They do not reflect a specific aesthetic and the builder used available building materials.

The residence and barn at 3289 D Street do not meet any of the criteria to be eligible for listing in the CRHR.

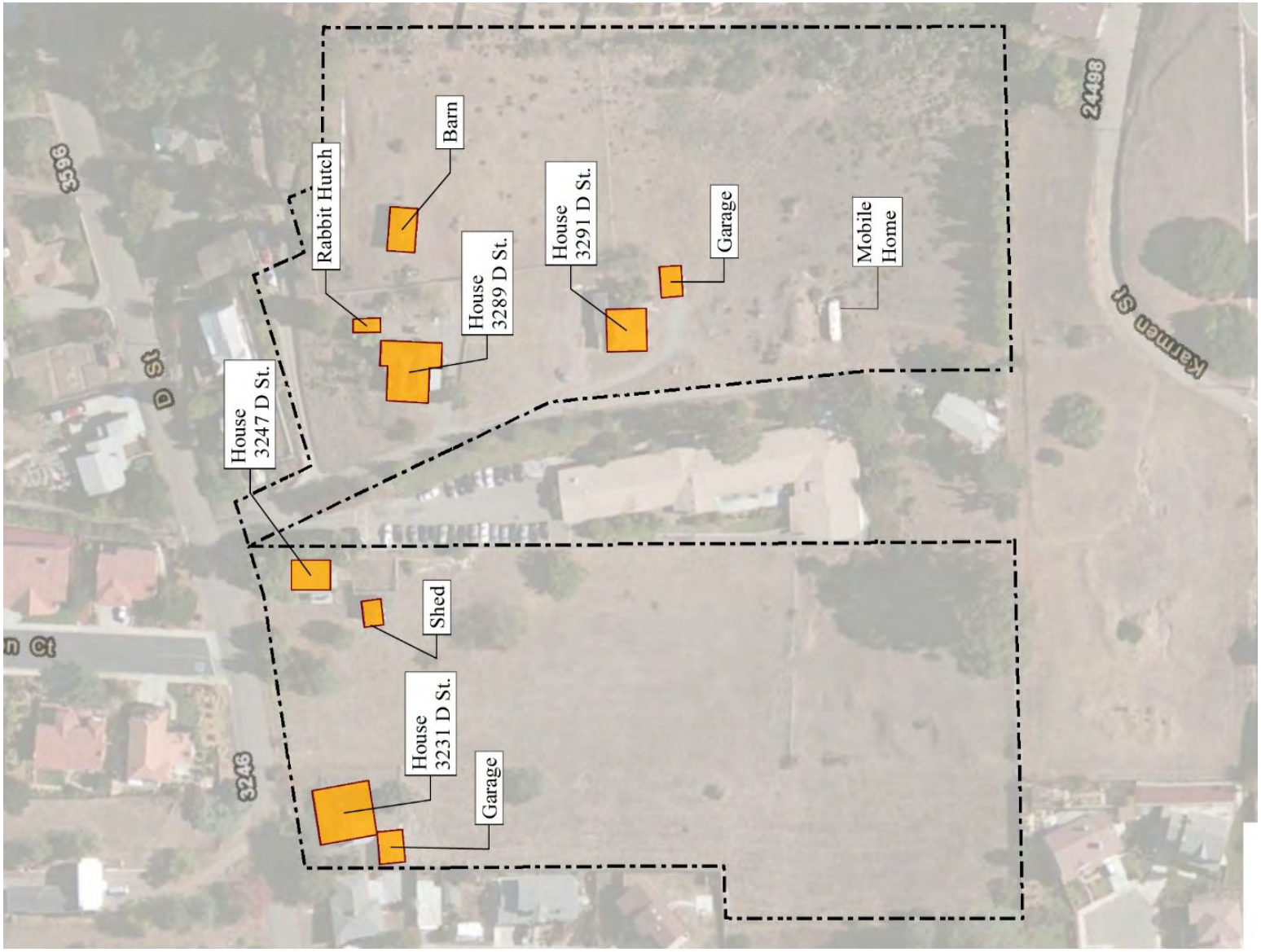


Figure 7-1
Cultural Resources Study Area

Source: WSA, 2016

3291 D Street - Residence and Garage Renovation

The original portion of the main residence at 3291 D Street was likely built in the early 20th century and appears to have been a single-story residence with a rectangular plan and a dormer on at least one side of the hipped roof (today only the dormer on the west side survives). Since that time, it has been heavily modified and no longer reflects its original form or design elements. A second structure has been constructed at the rear of the main residence. Originally permitted as a garage, it was ultimately finished as an expediently constructed rental unit. It is two-stories and finished in stucco (painted tan) with no trim around the window and door openings.

Neither the residence nor the rear unit at 3291 D Street is associated with events that have made a significant contribution to the broad patterns of California's history. The main residence is loosely associated with the early 20th century development of Alameda County, but does not have an important association with this broad pattern. Neither the residence nor the rear unit at 3291 D Street is associated with the lives of people considered important to California's past. Neither the residence nor the rear unit embodies the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of an important creative individual or possess high artistic values. The house has been expediently remodeled over time and the rear unit incorporates modern materials and lacks architectural detail.

The residence and rear unit at 3291 D Street do not meet any of the criteria to be eligible for listing in the CRHR.

3247 D Street - Residence and Shed

The single-story house at 3247 D Street was built in the California Bungalow style, a builder's simplification of the Craftsman bungalow that was popular between ca. 1905 and 1925. It embraced basic Craftsman forms like the covered porch and gently pitched broad gables, but was built with a simpler level of detail. The residence retains many original features, such as its rectangular plan, the gabled roof above the porch that mimics the primary roof, the square columns at the corners of the porch, the small porch railing, and the three-part windows that flank the front entry door. A wood-framed shed covered in corrugated metal has been built behind the residence. It has metal windows and the portion of the shed not supported by the sloping ground beneath it has been braced with modern pressure treated lumber.

Neither the residence nor shed at 3247 D Street is associated with events that have made a significant contribution to the broad patterns of California's history. The main residence is loosely associated with the early 20th century development of Alameda County, but does not have an important association with this broad pattern. Neither the residence nor the rear unit at 3247 D Street is associated with the lives of people considered important to California's past. Neither the residence nor the rear unit embodies the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of an important creative individual or possess high artistic values. The house has been expediently remodeled over time and the rear unit incorporates modern materials and lacks architectural detail.

Neither the residence nor the shed at 3247 D Street meet any of the criteria to be eligible for listing in the CRHR.

3231 D Street - Residence and Garage

The residence at 3231 D Street appears to have been built in the mid-20th century and has some of the characteristics of Ranch style architecture that was popular at the time, but in general lacks the design elements that really characterized the style. The single-story residence is built on a slope and has a

partial basement. A detached wood garage with a hipped roof is located at the end of the driveway located along the west edge of the residence. The garage has a large wood garage door and several small additions have been made on the east side.

Neither the residence nor garage at 3231 D Street is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. Neither the residence nor garage at 3231 D Street is associated with the lives of people considered important to California's past. Neither the residence nor the garage embodies the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of an important creative individual or possess high artistic values

The residence and garage at 3291 D Street do not meet any of the criteria to be eligible for listing in the CRHR.

Regulatory Setting

This section is consistent with both federal and state regulatory requirements for cultural resources pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended), its implementing regulations (36 Code of Federal Regulations [CFR] Part 800) and the CEQA. Cultural resources include prehistoric and historic archaeological sites, districts and objects; standing historic structures, buildings, districts and objects; and locations of important historic events or sites of traditional/cultural importance to various groups.

Federal

National Historic Preservation Act

The National Historic Places Act of 1966 (NHPA; as amended) established the federal government's policy on historic preservation and the programs, including the National Register of Historic Places (NRHP), through which that policy is implemented. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in" the NRHP (16 USC Section 470w (5)). For listing on the NRHP, an historical resource must be significant at the local, state or national level, under one of four criteria. A quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives or persons significant in our past; or

C. that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that may have yielded, or may be likely to yield, information important in prehistory or history.

The NHPA and its implementing regulations (16 USC Section 470 et seq., 36 CFR Part 800, 36 CFR Part 60 and 36 CFR Part 63) require the Lead Agency (Alameda County Planning Department, in this instance) to consider the effect of a proposed project on historic properties. NHPA also requires that the Lead Agency provide the Advisory Council on Historic Preservation and the State Historic Preservation Officer

with a reasonable opportunity to comment on any undertaking that could adversely affect cultural properties listed or eligible for listing on the NRHP.

State

Historic Resources

CEQA equates a substantial adverse change in the significance of a historic resource with a significant effect on the environment (Section 21084.1 of the Public Resources Code). It defines a substantial adverse change as any proposed demolition, destruction, relocation or alteration that would impair a resource's historic significance (Section 5020.1). Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the California Register is presumed to be historically or culturally significant.

The criteria for listing on the California Register are very similar to listing on the NRHP. The historic resource may be listed in the California Register if it meets one or more of the following criteria:

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

(2) It is associated with the lives of persons important to local, California or national history;

(3) It embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of a master or possesses high artistic values; or

(4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California or the nation.

Resources listed in a local historic register or deemed significant in an historic resource survey (as provided under Section 5024.1g) are presumed to be historically or culturally significant unless the preponderance of evidence demonstrates they are not. A resource that is not listed in or determined to be eligible for listing in the California Register, is not included in a local register of historic resources, or is not deemed significant in a historic resource survey may nonetheless be considered historically significant by the Lead Agency for purposes of CEQA (Section 21084.1; Section 21098.1), if there is substantial evidence or a fair argument for such a determination (Section 15384).

Archaeological Resources

CEQA requires a Lead Agency to identify and examine environmental effects that may result in significant adverse effects. Where a project may adversely affect a unique archaeological resource, Section 21083.2 requires the Lead Agency to treat that effect as a significant environmental effect. When an archaeological resource is listed in or is eligible to be listed in the California Register, Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Tribal Cultural Resources

The Native American Historic Resource Protection Act (Public Resources Code section 21083.09, added by Assembly Bill 52 or AB 52 [2014]) is intended to minimize conflict between Native American and development interests. AB 52 adds "tribal cultural resources" to the specific cultural resources protected under CEQA, and requires lead agencies to notify relevant tribes about development projects. It also mandates lead agencies to consult with tribes if requested, and sets the principles for conducting and

concluding the required consultation process. A tribal cultural resource is defined as a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American tribe. AB 52 applies to all projects that have a notice of preparation or notice of negative declaration/mitigated negative declaration filed on or after July 1, 2015. If an agency formally decides to undertake a project after July 1, 2015, AB 52 requirements need to be incorporated.

On August 8, 2016 the Secretary for the California Natural Resources Agency certified and adopted amendments to the CEQA Guidelines including new regulations relative to tribal cultural resources. The following language was adopted for the revised CEQA Guidelines:

e) Would the project cause a substantial adverse change in the significance of a tribal cultural resource defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that Is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   a) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

   b) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

The Notice of Preparation (NOP) for this EIR was issued on June 23, 2016, and therefore its provisions are applicable to this Project. As indicated in the Setting section above, a list of Native American contacts was provided by the NAHC, and these contacts were contacted by WSA by letter dated September 30, 2015 informing them of the Project. Follow-up phone calls to the Native American representatives were placed on October 14, 2015. No comments or requests for further consultation were received.

Other California Laws and Regulations

Other requirements for cultural resources management include Code Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites) of the California Public Resources Code.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code and falls within the jurisdiction of the NAHC. If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal.

Local

Alameda County

Alameda County's policies regarding archaeological and historic resources are that they should be preserved and maintained "to the maximum extent possible…including but not limited to those listed on official State and National Registers." When site preparation and construction activities are proposed, the County's policy follows the State laws that require "adequate identification" of the resources, and,

where appropriate, preserves them (Alameda County, 1981, 1985). To implement these policies, the County has created a Park, Historic, and Recreation Commission and has adopted an overlay zoning designation to allow creation of historic preservation districts (for the latter, see Chapter 17.20, Alameda County General Code).

Alameda County relies on information presented in a technical report prepared in 1976 entitled, "Archaeology in Alameda County: A Handbook for Planners." That document assesses the potential for archaeological resources throughout the County, using a 4-step sensitivity scale and map that identifies areas of the county that range from minimal to moderate to high to extreme sensitivity. The Project site is in an area that is designated as having "moderate" sensitivity to the potential for encountering archaeological resources.[6]

Impacts and Mitigation Measures

The following section describes potentially significant Project impacts to cultural resources. Mitigation recommendations are made to avoid, minimize, or mitigate such impacts where feasible.

Significance Criteria

The Project would have a significant environmental impact if it were to:

1. Cause a substantial adverse change in the significance of a historic resource as defined in Section 15064.5 of the Public Resources Code or of an historic property as defined by the National Historic Preservation Act.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the Public Resources Code.
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
4. Disturb any human remains, including those interred outside of dedicated cemeteries.
5. Cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

   b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

[6] Archaeological Sensitivity in Alameda County, in Archaeology in Alameda County: A Handbook for Planners. 1976.

Historic Resources

Cultural-1: Historic Resources. The Project would not cause a substantial adverse change in the significance of a historic resource or of an historic property. (**LTS**)

As concluded in the WSA Cultural Resource Assessment and summarized in the Setting section above, none of the existing structures on the Project site are eligible for listing on the CRHR or the NRHP, and none are listed on any local register of historic places. As such, none of these structures qualify as historic resources. Demolition of the existing structures on the Project site would have **no impact** on historic resources.

Archaeological Resources, Paleontological Resources, Tribal Cultural Resources, and/or Human Remains

Cultural-2: Archaeological Resources, Paleontological Resources, Tribal Cultural Resources, and/or Human Remains. It is possible that construction work associated with the Project could disturb as-yet unknown archaeological resources, paleontological resources, tribal cultural resources and/or human remains (**LTS with Mitigation**).

There are no unique geological features found on the Project site, consistent with the lack of such features in the surrounding area. Paleontological resources are not known to be located in the vicinity, therefore none would be expected to be found within the Project site boundaries during construction. The Castro Valley General Plan indicates that that there are no known paleontological resources within the study area as defined in that Plan, which is immediately adjacent to the Fairview Area. Therefore, it can be concluded that there are no known paleontological resources within the Fairview area or within the boundaries of the Project site. As indicated in the WSA CRAR, there are no known occurrences of archaeological resources, or known tribal cultural resources at the Project site.

However, construction at the Project will require grading and excavation to a depth of 15 to 20 feet in some locations. This grading work could potentially unearth and directly or indirectly damage previously unrecorded and currently unknown cultural resources. Although unlikely, disturbance of previously unrecorded archaeological resources, tribal cultural resources, paleontological resources and/or human remains represents a potentially significant environmental impact associated with the Project.

Mitigation Measures

Mitigation Measure Cultural -2: Halt Construction/Assess Significance of Find/Follow Treatment Plan. Prior to the initiation of ground-disturbing activities (including clearing vegetation and demolition procedures), the developer or contractor shall inform all supervisory personnel and all contractors whose activities may have subsurface soil impacts of the potential for discovering archaeological resources, paleontological resources, tribal cultural resources and/or human remains, and of the procedures to be followed if these previously unrecorded cultural resources are discovered. These procedures shall include:

- halting all ground-disturbing activities within 100 feet of the area where a potential cultural resource has been found;
- notifying a qualified archaeologist of the discovery; and
- following a treatment plan prescribed by the appropriate professional if the cultural resource is deemed significant, in accordance with federal or state law.

In the event cultural resources as defined above are encountered during ground disturbing activities, the developer shall, subject to approval by the County of Alameda, retain an on-call

archaeologist to review the excavation work, assess the significance of the potential cultural resource and prescribe a treatment plan. The archaeologist will consult with a paleontologist or tribal cultural resource specialist as required. The archaeologist shall report any finds in accordance with current professional protocols. The archaeologist shall meet the Professional Qualifications Standards mandated by the Secretary of the Interior and the California Office of Historic Preservation.

In the event that any human remains are uncovered at the Project site during construction, there shall be no further excavation or disturbance of the site or any nearby area until after the Alameda County Coroner has been informed and has determined that no investigation of the cause of death is required, and (if the remains are determined to be of Native American origin) the descendants from the deceased Native American(s) have made a recommendation to the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

Resulting Level of Significance

Implementation of Mitigation Measure Cultural 7-1 would reduce the Project's potential impact related to discovery and potential damage to as-yet unknown and unanticipated archaeological resources, tribal cultural resources, paleontological resources and/or human remains to a less than significant level by halting all ground work if a resource is discovered during grading, and implementing recommendations to be made by the proper cultural resources professional in accordance with state and federal law.

8

Hydrology and Water Quality

This chapter evaluates the Project's potential impacts on hydrology and water quality within its watersheds, which extend from the Project sites in both east- and westward directions and downhill westerly to San Francisco Bay. This chapter describes existing drainage conditions in the Project area, and evaluates potential changes to area hydrology and water quality that may result from development of the Project. The analysis and discussion in this chapter is based primarily on the following technical information, which is incorporated by reference and included in the Appendix to this EIR:

- Balance Hydrologics, Inc., *DRAFT - Summary of Preliminary Stormwater Infrastructure Sizing for the D Street Properties (Tracts 8296 and 8297)*, Alameda County, California, dated September 2015. (**Appendix F**)
- Carlson Barbee & Gibson, Inc., Vesting Tentative Map, *Preliminary Stormwater Management Plan for D Street Properties*, March 2016.

This technical information was prepared primarily to identify requirements for stormwater management infrastructure for the Project to meet a range of regulatory requirements that address the water quality of stormwater runoff from the site, flow controls to minimize impacts associated with increased stormwater flows from the site, and management of stormwater to avoid flooding.

Environmental Setting

Local Topography and Existing Drainage Patterns

The Fairview area is characterized by gentle hills and three main ridgelines that extend downward from the upper ridges of the East Bay Hills westward to central Hayward, and which divide the area into watersheds as shown in **Figure 8.1**. Each watershed drains to one of the three main creeks in the area that flow to San Francisco Bay, including San Lorenzo Creek, Sulphur Creek and Ward Creek.

Most of the Fairview area drains into San Lorenzo Creek, which begins where Palomares and Eden Canyon Creeks merge in the hills east of Castro Valley, about a mile and a half upstream from the Don Castro Reservoir. The Don Castro Reservoir captures and holds creek flows to avoid downstream flooding and also provides a regional recreation area with a swimming lagoon.

The Five Canyons area of Fairview is within a large watershed of approximately one and a half square miles that contains three unnamed "blue line" creeks (i.e., mapped by the United States Geological Survey, or USGS). These creeks flow into San Lorenzo Creek almost directly upstream from the Don Castro reservoir, one of which is referred to as Deer Canyon Creek.

The west side of the Five Canyons watershed is separated from the east side of the Sulphur Creek and lower San Lorenzo Creek watershed by a ridge that extends north from near the intersection of Fairview Avenue and Five Canyons Parkway, through the middle of the Project site, and northwesterly towards the Don Castro Reservoir.

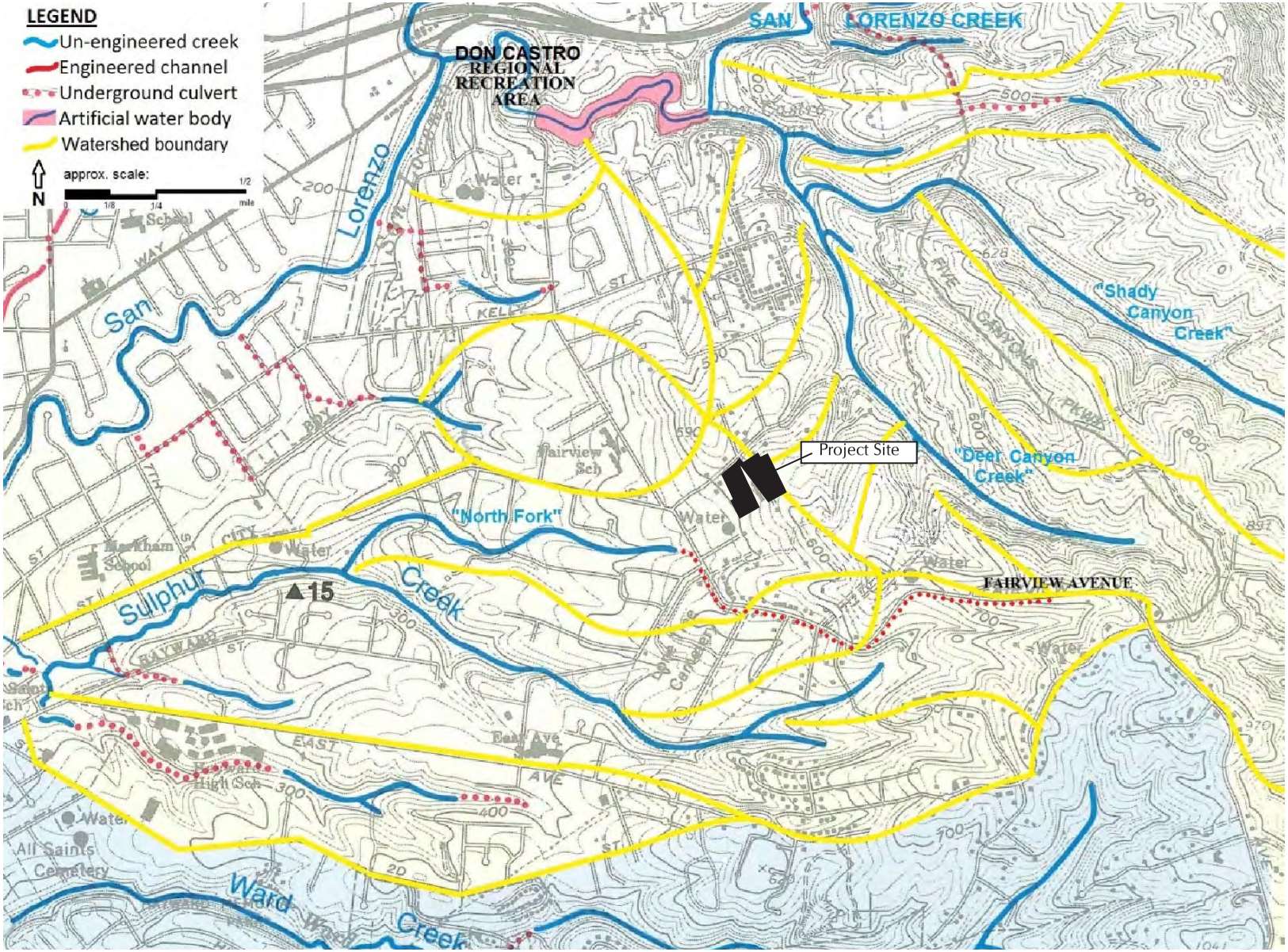


Figure 8-1
Watersheds, Creeks and Drainage Facilities in the Fairview Area

Source: Oakland Museum of California, 1997 – with Alameda County Planning Department annotations

Fairview Avenue and D Street follow another ridgeline that forms the northern side of the Sulphur Creek watershed. Second Street forms the northern boundary of the Ward Creek watershed. The Sulphur Creek watershed is further divided into northern and southern branches or forks.

In general, surface runoff begins when rainfall exceeds the saturation point of the soil and develops into overland flow. Surface runoff begins as overland flow across landscapes, pavements, compacted earth and other surfaces, and makes its way to existing storm drain facilities or open creeks. Streams and creeks emerge when the water table (groundwater) intersects with steep slopes, or where opposite slopes intersect to form valleys where surface flows continue downhill without percolating into the soil (i.e., when the amount of surface water exceeds the ability to be absorbed). Surface waters in the Fairview area flow through a mixture of natural creeks, open engineered channels, underground conduits (or stormwater drainage pipes) as well as many short conduits under roads and driveways.

Existing Drainage Patterns on the Project Site

Figure 8-2 shows the three separate sub-watersheds which capture stormwater drainage from the Project sites:

- The western Project site (Tract 8296) is mostly open ground (labeled Ex-W on **Figure 8-2**), and most stormwater infiltrates through the soil into shallow groundwater. Excess stormwater sheet-flows as surface runoff downslope to the west, into the existing adjacent residential neighborhoods or the East Bay Municipal Utility District water storage tank property. Some portion of this surface runoff flows to the existing storm drain system along Fairview Avenue that drains by an outfall into the north branch of Sulphur Creek, just west of Fairview Avenue and south of D Street.
- The eastern Project site (Tract 8297) is situated on a ridge. Under existing conditions, roughly half of the eastern site's surface runoff (labeled Ex-E1 on **Figure 8-2**), excluding infiltration to the subsurface, flows westward toward the Hilltop Convalescent Center property, and in turn drains toward D Street. Due to deteriorated pavement on the Center's parking lot, there is some degree of infiltration to the subsurface. Surface or sheet flow runoff from the Center and the northerly portion of the eastern site onto D Street drains easterly along the gutter into a drain near Machado Court and in turn to an outfall into a branch of Deer Canyon Creek.[1]
- Most of the remainder of the eastern site (Ex-E2 on **Figure 8-2**) flows to the east, toward a concrete V-ditch along a portion of the west side of the Machado Court subdivision. From the V-ditch, it is collected into an existing storm drain line that crosses Machado Court, with a separate outfall into another branch of Deer Canyon Creek. As such, all of the eastern site stormwater flows through the Five Canyons Open Space area and eventually joins San Lorenzo Creek at Don Castro Reservoir.
- The northeastern portion of the eastern site's surface runoff, with north and east-facing slopes behind the homes along D Street (an area not labeled on **Figure 8-2**), drains through the Machado Court neighborhood and through properties along the south side of D Street.

[1] Under existing conditions, a small portion of the Hilltop Convalescent Center is shown as being within sub-watershed Ex-E1 and draining to the northwest toward D Street. The hydrology analysis shows that, with changes in runoff directions due to the Project, this area will be channeled to a proposed new storm drain line in D Street that flows eastward. This is discussed in further detail and shown in Figure 8-6 later in this chapter.

Figure 8-2
Pre-Project Watershed Map

Source: Balance Hydrologics, Inc, 2015

Regulatory Setting

Construction of the proposed Project is subject to several regulatory programs, laws, and regulations that aim to protect surface water resources. In some cases, federal laws are administered and enforced by state and local government. In other cases, state and local regulations in California are stricter than those imposed by federal law. This section summarizes relevant regulatory programs, laws, and regulations with respect to hydrology and water quality and how they relate to the proposed Project.

Federal Regulations

Clean Water Act (CWA)

The CWA established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Army Corps of Engineers (USACE) has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

National Pollutant Discharge Elimination System

The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972, but 1987 amendments to the CWA added section 402(p) which established a framework for regulating non-point source (NPS) storm water discharge. The National Pollutant Discharge Elimination System (NPDES) permit program under the CWA controls water pollution by regulating point and nonpoint sources that discharge pollutants into "waters of the U.S." California has an approved state NPDES program. The USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay RWQCB regulates water quality in the Project area.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, requires the State Water Resources Control Board (SWRCB) to adopt water quality control plans. The purpose of these plans is to establish water quality objectives for specific water bodies. The act also authorizes the NPDES program under the CWA, which establishes water quality requirements for discharges to waters of the state. Most of the implementation of SWRCB's responsibilities is delegated to nine regional boards. The San Francisco Bay RWQCB has established the regional basin plan and the permit requirements for stormwater runoff for the Project site (see Regional Water Quality Control Board section below).

Regional Regulations

Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (RWQCB) is responsible for the protection of beneficial uses and the quality of water resources within the San Francisco Bay region, and has developed, adopted and implements the San Francisco Bay Water Quality Control Plan (Basin Plan) as the master policy document, which contains descriptions of the legal, technical and programmatic bases of water quality regulation in the San Francisco Bay Region. The San Francisco Bay RWQCB also administers the NPDES stormwater permitting program and regulates stormwater in the San Francisco Bay region.

Construction General Permit

Stormwater discharges from construction activities on one acre or more are regulated by the RWQCB and are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (Construction General Permit). The RWQCB established the Construction General Permit program to reduce surface water impacts from construction activities. Construction associated with the Project would be required to comply with the current NPDES permit requirements to control stormwater discharges from the construction site.

The Construction General Permit requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP must include specifications for best management practices (BMPs) that would need to be implemented during project construction. BMPs are measures that are undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. The SWPPP must describe measures to prevent or control runoff after construction is complete and identify procedures for inspecting and maintaining facilities or other project elements. Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. [2]

The California Stormwater Quality Association (CASQA) has also established BMPs for the State of California in the California Storm Water Best Management Practice Handbook in 2003.

It is the responsibility of property owners to obtain coverage under the Construction General Permit by submitting a Notice of Intent (NOI) with the SWRCB's Division of Water Quality, indicating their intention to be covered under the Construction General Permit and providing general information on the types of construction activities that will occur on the site.

NPDES C.3 Provisions

The NPDES Permit also includes performance standards for new development, also referred to as Provision C.3 requirements. The C.3 requirements include measures for permittees to use in planning appropriate source controls in site designs to include stormwater treatment measures in development projects to address both soluble and insoluble stormwater runoff pollutant discharges. An additional goal is to prevent increases in runoff flows primarily accomplished through implementation of low impact development (LID) techniques and "green" infrastructure (pavers, rain gardens, landscaping, and

[2] California EPA, State Water Resources Board, Construction General Permit Fact Sheet, September 2009, as modified. http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml

trees) to slow stormwater runoff, remove pollutants, and improve water quality. Provision C.3 requires that suitable and effective means of controlling volume and flow rates are applied to each water quality treatment method or system. These requirements are implemented through local regulations, discussed below.

A "significant redevelopment project" is defined as a project on a previously developed site that results in addition or replacement of total of 43,560 square feet (one acre) or more of impervious surface. According to the C.3 provision, projects of greater than 1 acre qualify as "significant redevelopment projects" and are required to comply with the C.3 provisions of the NPDES Permit.

Local

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program was established in 1991 and includes 17 member agencies (including the 14 cities of Alameda County, plus the Alameda County Flood Control District, Alameda County and the Zone 7 Water Agency) that work together to protect creeks, wetlands and San Francisco Bay, including jointly funding water quality related objectives. The member agencies have developed performance standards to clarify the requirements of a stormwater pollution prevention program, adopted stormwater management ordinances, conducted extensive education and training programs, and reduced stormwater pollutants from industrial areas and construction sites.

The Alameda County Flood Control & Water Conservation District (District) is a separate legal entity apart from the County of Alameda, created in 1949 to provide for the control of flood and storm waters, and conservation of water resources. The District provides administrative and contracting services for the Alameda Countywide Clean Water Program to help comply with federal and state requirements to improve water quality and better manage urban stormwater and runoff.

Municipal Regional Stormwater NPDES Permit

The Municipal Regional Stormwater NPDES Permit (MRP) issued by the RWQCB (Permit No. CAS612008), is designed to enable county-wide agencies to meet CWA requirements, and includes a comprehensive plan to reduce the discharge of pollutants to creeks, San Francisco Bay and the ocean, to the maximum extent possible. The MRP addresses the following major program areas: regulatory compliance, focused watershed management, public information/participation, municipal maintenance activities, new development and construction controls, illicit discharge controls, industrial and commercial discharge controls, monitoring and special studies, control of specific pollutants of concern, and performance standards.

The District's Clean Water Division represents unincorporated Alameda County as a co-permittee of this MRP and administers the stormwater program within unincorporated Alameda County, primarily by controlling pollution in the local storm drain sewer systems. Activities include commercial and industrial inspection, watershed assessment and monitoring, new development and construction site control, illicit discharge control, and public outreach. The District relies on the staff of the Alameda County Public Works Agency to carry out its mission.

Alameda County Regulations

Although staff is shared between the Alameda County Public Works Agency and the District, there is no legal link between the two. Alameda County, through the County Public Works Agency, regulates stormwater programs of the MRP through Chapter 13.08 of the County General Ordinance Code. Alameda County Public Works Agency's Development Services Department, Clean Water Division

implements programs mandated by the Clean Water Act and required by the California Water Quality Control Board. Its objective is to improve water quality by means of comprehensive watershed management strategies. The majority of the work in the Clean Water Division involves coordinating and supporting the work required to implement NPDES permits within the unincorporated area throughout Alameda County.

Stormwater Management and Discharge Control Ordinance

The Alameda Code Title 13, Chapter 13.08: Stormwater Management and Discharge Control is intended to ensure the future health, safety, and general welfare of county citizens by; a) eliminating non-storm-water discharges to the municipal separate storm drain; b) controlling the discharge to municipal separate storm drains from spills, dumping or disposal of materials other than stormwater; and c) reducing pollutants in stormwater discharges to the maximum extent practicable. The requirements of this Code chapter assure consistency with the requirements of the federal CWA and NPDES Permit, and enable the Director of Public Works to adopt regulations establishing controls on the volume and rate of stormwater runoff from new developments to minimize the discharge and transport of pollutants.

Engineering Design Guidelines

The 2008 Engineering Design Guidelines prepared by the County Public Works Department requires among other things that the design of storm drain facilities must conform to the requirements established in the current Alameda County Flood Control and Water Conservation District's "Hydrology and Hydraulics Criteria Summary." This Summary provides guidance on stormwater quality control measures including;

- Treatment controls – the removal of pollutants from stormwater prior to releasing the stormwater to the public stormwater system;
- Source controls – preventing contact between stormwater and potential sources of pollutants;
- Site design – reducing impacts to waterways by reducing the amount of impervious surface, or by reducing the flow of water from impervious surfaces; and
- Hydro-modification management – controlling increases in peak runoff flow and volume when these increases would likely have negative impacts, including erosion of creek banks and siltation, on creeks and other waterways. Such controls may include but are not limited to detention basins and site design methodologies. For certain projects, flow duration control facilities are required, which detain excess stormwater and release it at rates which match pre-development conditions.

Grading Ordinance

The Alameda Code Title 15, Chapter 15.36, Grading, Erosion and Sediment Control, is intended to control the construction of cuts and fills on private property, particularly with regard to limiting sedimentation of the County stormdrain and flood control systems. Pursuant to this ordinance, no grading activity may occur in such a manner that quantities of dirt, soil, rock, debris or other material substantially in excess of natural levels are washed, eroded or otherwise discharged into a watercourse, a flood control facility, or other drainage system. It is the intent of this ordinance that no grading will obstruct, impede or interfere with the natural flow of stormwater in such manner as to cause flooding, accelerated erosion or result in an illicit discharge. Any proposed grading that could impinge upon, restrict access to, or result in the discharge of stormwater into a watercourse or a flood control facility may require a separate permit under the provisions of the County Watercourse Protection Ordinance (Section 13.12) or the County's permit requirements under the Grading, Erosion and Sediment Control

ordinance. Any grading associated with the construction of landscaped-based stormwater control facilities intended to control the discharge of stormwater into a watercourses or flood control facility must be authorized by a separate permit issued under the provisions of the County Stormwater Management and Discharge Control Ordinance (see discussion of Chapter 13.08 above). Further, any proposal for grading work that will disturb more than one acre of soil is required by Chapter 15.36 to be referred to the RWQCB for review of a Storm Water Pollution Prevention Plan (SWPPP).

Subdivision Ordinance

The County Subdivision Ordinance (Title 16 of the General Ordinance) provides that the design of subdivisions within the county shall . . . conform to the land use and circulation policies of the County General Plan, and shall conform to . . . officially adopted standards for . . . erosion and siltation control and design standards adopted by the . . . flood control district in which the subdivision is located."

Impacts and Mitigation Measures

The following section describes potentially significant Project impacts to hydrology and water quality. Mitigation recommendations are made to avoid, minimize, or mitigate such impacts where feasible.

Significance Criteria

Based on CEQA Guidelines, the Project would have a significant environmental impact if it were to:

1. Violate any water quality standards, conflict with water quality objectives, fail to meet waste discharge requirements, significantly degrade any surface water body or groundwater, or adversely affect the beneficial uses of such waters, including public uses and aquatic, wetland and riparian habitat.
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site (i.e. within a watershed).
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff (e.g., due to increased impervious surfaces) in a manner which would result in flooding on- or off-site (i.e. within a watershed).
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems due to changes in runoff flow rates or volumes.
6. Significantly increase in pollutant discharges to receiving waters (marine, fresh, and/or wetlands) during or following construction (considering water quality parameters such as temperature, dissolved oxygen, turbidity, and typical stormwater pollutants such as heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash).
7. Increase any pollutant for which a water body is listed as impaired under Section 303(d) of the Clean Water Act.

8. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
9. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
10. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
11. Result in inundation by seiche, tsunami, or mudflow.

Construction-Period Water Quality

Hydro-1: **Construction Effects on Water Quality.** Construction of the proposed Project would involve grading activities that would disturb soils at the site. Such disturbance could present a threat of soil erosion by subjecting unprotected bare soil areas to runoff during construction, which could result in siltation and degradation of water quality in receiving waters. This is a potentially significant impact. **(LTS with Regulatory Compliance)**

Degradation of water quality and violation of water quality standards can occur as a result of typical construction activities. These include construction activities that may loosen soils and increase erosion and downstream siltation, or from the accidental spill or release of construction-related chemicals that may contact surface waters. Construction of the Project would involve excavation, soil stockpiling and substantial grading that would dislodge soil particles and therefore potentially cause soil erosion. The dislodged soil particles, if not properly managed, could be washed into waterways by rain or by water used during construction. Project construction would also involve use of motorized heavy equipment, including trucks and dozers that require fuel, lubricating grease, and other fluids. Accidental chemical release or spill from a vehicle or equipment could affect surface water. Such spills could get washed into the creek or could infiltrate into soil affecting groundwater quality.

Regulatory Compliance

Construction General Permit (NPDES)

The Project would disturb more than one acre and therefore the Project applicant is required to comply with the NPDES Construction General Permit issued by the SWRCB. The Project will be required to comply with these regulations and related state and federal laws, which the SWRCB and the County consider to be necessary to avoid substantial adverse water quality and stormwater flow impacts.

(1) **Construction General Permit**. The Project applicant shall submit a Notice of Intent to the SWRCB, indicating their intention to be covered under the Construction General Permit, and providing necessary information on the types of construction activities that are proposed to occur on the site.

Stormwater Pollution Prevention Plan

The Construction General Permit further requires the Project applicant to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP must include specifications for best management practices (BMPs) that would be implemented during project construction.

(2) **SWPPP**. As required by the NPDES General Construction Permit and prior to any grading activity on the site, the Project applicant shall prepare and implement a SWPPP. The SWPPP shall be consistent with the terms of the Construction General Permit, recommendations of the RWQCB staff, the Manual of Standards for Erosion and Sedimentation Control Measures by the Association of Bay

Area Governments, and local policies and regulations commendations of the County of Alameda (Chapter 13.08: Stormwater Management and Discharge Control, and Chapter Ch. 15.36, Grading, Erosion and Sediment Control).

Stormwater Quality Control BMPs

The Project applicant's required SWPPP must include specifications for best management practices (BMPs) to be implemented during project construction. The SWPPP must describe those BMPs to be implemented to control degradation of surface water by preventing soil erosion and the discharge of pollutants (e.g. paint, solvents, concrete, petroleum products, etc.) from the construction area and/or to downstream waters. Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non stormwater management measures include installing specific discharge controls during activities such as paving operations, vehicle and equipment washing and fueling.

(3) **Stormwater Quality Control Plan BMPs**. BMPs shall be utilized during construction to prevent excessive stormwater runoff, to prevent stormwater runoff from carrying materials onto adjacent properties, public streets or to creeks, and to minimize contamination of stormwater runoff. These detailed BMP shall be included as part of the SWPPP, and as part of a Stormwater Quality Control Plan (SWQCP) to be submitted to the County, and shall be implemented at the site during grading and construction. Typical BMPs may include, but are not limited to:

- Stormwater drainage connections and runoff controls shall be designed and constructed prior to beginning demolition and/or grading in order to control any stormwater runoff created during these activities. Connections and flow controls shall be established based on estimated natural or current runoff, if needed.
- Only clear land which will be actively under construction in the near term (e.g., within the next 6-12 months), minimize new land disturbance during the rainy season, and avoid clearing and disturbing sensitive areas (e.g., steep slopes and natural watercourses) and other areas where site improvements will not be constructed.
- Provide temporary stabilization of disturbed soils whenever active construction is not occurring on a portion of the site through water spraying or application of dust suppressants, and gravel covering of high traffic areas. Provide permanent stabilization during finish grade and landscape the Project site.
- Safely convey runoff from the top of the slope and stabilize disturbed slopes as quickly as possible.
- Delineate the Project site perimeter to prevent disturbing areas outside the Project limits. Divert upstream run-on safely around or through the construction.
- Sediment controls shall be provided at the edge of disturbed areas including such facilities as silt fences, inlet protections, sediment traps and check dams. Silt fences or straw wattles shall be installed prior to any grading at the project site and shall be operable during the rainy season (October 15 to April 15).
- Between October 15 and April 15, all paved areas shall be kept clear of earth materials and debris, and all sediment barriers shall be inspected and repaired at the end of each working day and, in addition, after each storm.

- Runoff from the Project site should be free of excessive sediment and other constituents.
- Control tracking at points of ingress to and egress from the Project site.
- Retain sediment laden waters from disturbed, active areas within the Project site.
- Perform construction activities in a manner to keep potential pollutants from coming into contact with stormwater or being transported off site to eliminate or avoid exposure.
- Store construction, building, and waste materials in designated areas, protected from rainfall and contact with stormwater runoff. Dispose of all construction waste in designated areas, and keep stormwater from flowing onto or off these areas. Prevent spills and clean up spilled materials.

Resulting Level of Significance

Compliance with all required regulations (as indicated above) would reduce the Project's potential impacts on stormwater quality and runoff related to construction activities to a less than significant level by requiring implementation of a SWPPP that includes BMPs for preventing construction period stormwater pollution, as well as monthly inspections of the construction site by the County pursuant to NPDES permit requirements.

Post-Construction Water Quality

Hydro-2: **Post-Construction Effects on Water Quality.** Future residents of the Project would increase the potential for discharge of residential and urban-related pollutants into stormwater runoff. Additionally, the construction of homes, roads and other infrastructure associated with Project would increase impervious surface area on the site, allowing stormwater flows across the site to serve as a vehicle for pollution entering the stormwater drainage system. This potential for polluted discharge is a potentially significant impact. **(LTS with Regulatory Compliance)**

Once the Project is constructed and occupied, future residents may generate water quality pollutants that can be washed by rainwater from roofs, landscape areas, and streets and parking areas into the drainage network. These nonpoint source (or NPS) pollutants typically include sediment, fuel, lubricating grease and other fluids from vehicles, as well as fertilizers, pesticides, and herbicides, but can also include bacteria and viruses, organics and trash. If not properly managed, these NPS pollutants could be washed into waterways by rain or irrigation systems, and could have adverse effects on wildlife, vegetation and human health. NPS pollutants could also infiltrate into groundwater and degrade the quality of potential groundwater resources.

Regulatory Compliance

Pursuant to the Municipal Regional Stormwater NPDES Permit (MRP), the Project is required to meet performance standards for new development as defined in the NPDES Provision C.3 requirements. These C.3 provisions require the Project to implement source controls and stormwater treatment measures in the Project's plans and designs to address soluble and insoluble stormwater runoff pollutant discharges.

(4) **Post-Construction BMPs**. The Project shall implement Tier 2 post-construction BMPs as defined in Table 2 of the Regional Board Staff Recommendations for New and Redevelopment Controls for Stormwater Programs section of Alameda County's Stormwater Management Plan. Under Tier 2 BMPs, drainage from all paved surfaces, including streets, parking lots, driveways and roofs should

be routed through an appropriate treatment mechanism before being discharged into the storm drain system. The BMPs are designed to meet the "maximum extent practicable" definition of treatment as specified in the federal Clean Water Act. Specific post-construction BMPs to be implemented at the Project site should include, but are not limited to the following:

- Minimize directly connected impervious area at residential lots. All rainfall from residential rooftops and in-lot impervious surfaces should be routed through lawn areas or other pervious surfaces within yards, where infiltration can filter pollutants through the soil before such runoff reaches the storm drain system. Although existing soils on the Project sites have been identified as having moderate to moderately slow infiltration rates, the upper layers of soils generally consist sandy and silty clays for which infiltration-based stormwater management solutions can be effective.
- Biofilters, also known as vegetated swales are vegetated slopes and channels that should be designed into the Project to transport shallow depths of runoff slowly over vegetation. Biofilters can be effective at the site if flows are slow and depths are shallow. This can generally be achieved by grading the site and sloping pavement in a way that promotes sheet flow of runoff. For biofilter systems, features that concentrate storm flows (such as curb and gutter, paved inverts, and long drainage pathways across pavement) must be minimized. The slow movement of runoff through the vegetation will provide an opportunity for sediments and particulates to be filtered and degraded through biological activity. A biofilter system may also provide an opportunity for stormwater infiltration which can further remove pollutants and reduce runoff volumes.
- Retention and detention systems should be designed primarily to store runoff for one to two days after a storm, prior to discharge into the storm drain system. A properly designed retention/detention system will release runoff slowly enough to reduce downstream peak flows, allow fine sediments to settle, and uptake dissolved nutrients from the runoff in wetland vegetation.

(5) **Post-Construction BMP Design Criteria**. The post-construction water quality treatment BMPs shall be designed and constructed to incorporate, at a minimum, the hydraulic sizing design criteria as published in the Alameda County Clean Water Program's *C.3 Technical Guidance Manual* for treatment of stormwater runoff.

Project's Proposed Stormwater Management Plan

The Project applicant has prepared a Preliminary Stormwater Management Plan for the Project that includes stormwater quality management BMPS intended to meet the regulatory requirements for water quality treatment, consistent with the MRP's NPDES C.3 requirements.[3] This Preliminary Storm-water Management Plan, to be constructed together with the features of the Project's proposed grading plan, utilizes a variety of means to capture and treat stormwater in a manner intended to be consistent with applicable Clean Water Act and local regulations, including the use of biofiltration areas and detention basins.

[3] Balance Hydrologics, Inc., *DRAFT - Summary of Preliminary Stormwater Infrastructure Sizing for the D Street Properties* (Tracts 8296 and 8297), Alameda County, California, September 2015 (see **Appendix x**), and Sheets 4 of the proposed Vesting Tentative Map, Preliminary Stormwater Management Plan for Tracts 8296 and 8297.

Water Quality Treatment for Residential Lots

Each residential lot within the Project is proposed to contain a biofiltration/bioretention basin to treat runoff from impervious surfaces within the lot boundary. Most of the individual lot treatment basins will be sized to treat the projected volume of stormwater originating from within the lot only (i.e. the roofs and driveways). The size of each treatment filter facility will vary depending on the final architectural plans for each lot, and the amount of impervious surfaces on that lot.

Portions of those residential lots on the westerly side of the western parcel (Tract 8296) and the easterly side of the eastern parcel (Tract 8297) will be graded as fill slopes. The sloped areas are not included in the Project's drainage area, will not contain any new impervious surfaces, and are thus considered self-treating.

Water Quality Treatment for Streets Sidewalks– Tract 8297

As indicated in **Figure 8-3**, runoff from the eastern parcel's street (Tract 8297) that originates from the lower, northern portion of this street (in front of Lot 15 and downhill to D Street), will be collected and drained toward a biofiltration basin (Basin B), proposed to be located within the northeast corner of the western parcel (in Tract 8296). This basin will filter stormwater from this portion of the street through soil and organic matter to capture contaminants from the street pavements as well as fertilizer and pesticides from treated landscaping. Runoff from the eastern parcel's street that originates from the middle segment of this street (the segment bordering Lots 1, 2, 3, 13, and 14) will be collected and drained to a similar biofiltration basin (Basin A) located on Parcel A of this Tract, where this stormwater will be similarly treated. Runoff from the eastern parcel's street that originates from the southern segment of this street (along the frontage of Lots 4 through 12) will be collected and treated by a series of biofiltration features located along the frontage of this street.

Water Quality Treatment for Streets Sidewalks– Tract 8296

As shown on **Figure 8-4**, runoff from the western parcel's street (Tract 8296) will be collected and drained to a biofiltration basin (B-E) located between Lots 8 and 9. This basin is also sized to treat runoff from impervious surfaces on Lots 8 and 9 as well.

Total Water Quality Treatment Sizing Calculation

The proposed bio-treatment facilities were sized for water quality treatment with the combination flow and volume method as described in the Alameda County Clean Water Program's C.3 Technical Guidance Manual. All sizing is based on a mean annual precipitation rate of 22.0 inches. Water quality parameters for these facilities are summarized below in **Table 8-1**, and detailed calculations and schematic designs for proposed bioretention basins are shown on **Figure 8-5**.

Resulting Level of Significance

Compliance with all required regulations (as indicated above) would ensure that the Project's potential impacts on stormwater quality related to post-construction activities remain at a less than significant level, by requiring stormwater quality treatment consistent with the MRP's NPDES C.3 requirements.

The Project includes a preliminary Stormwater Management Plan that proposes stormwater quality management BMPS intended to meet these regulatory requirements. However, that preliminary analysis was intended to demonstrate only that the proposed system can meet the regulatory requirements within the spatial constraints of the Project site, and recognizes that additional detailed analysis will need to demonstrate that the final proposed system meets all pertinent regulatory requirements.

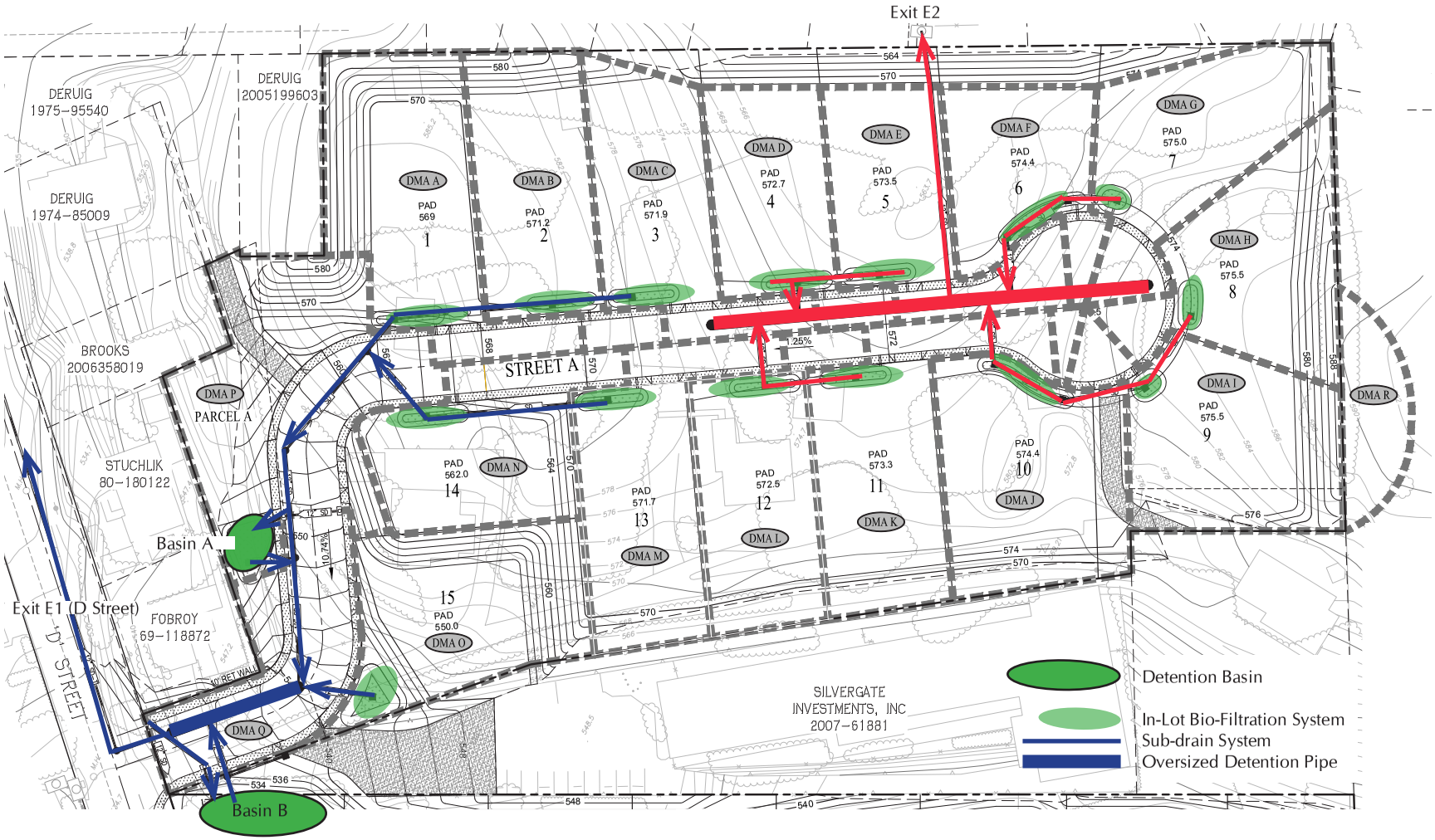


Figure 8-3
Preliminary Stormwater Management Plan, Tract 8297

Source: CBG, Inc., March 2016, VTM Sheet 4

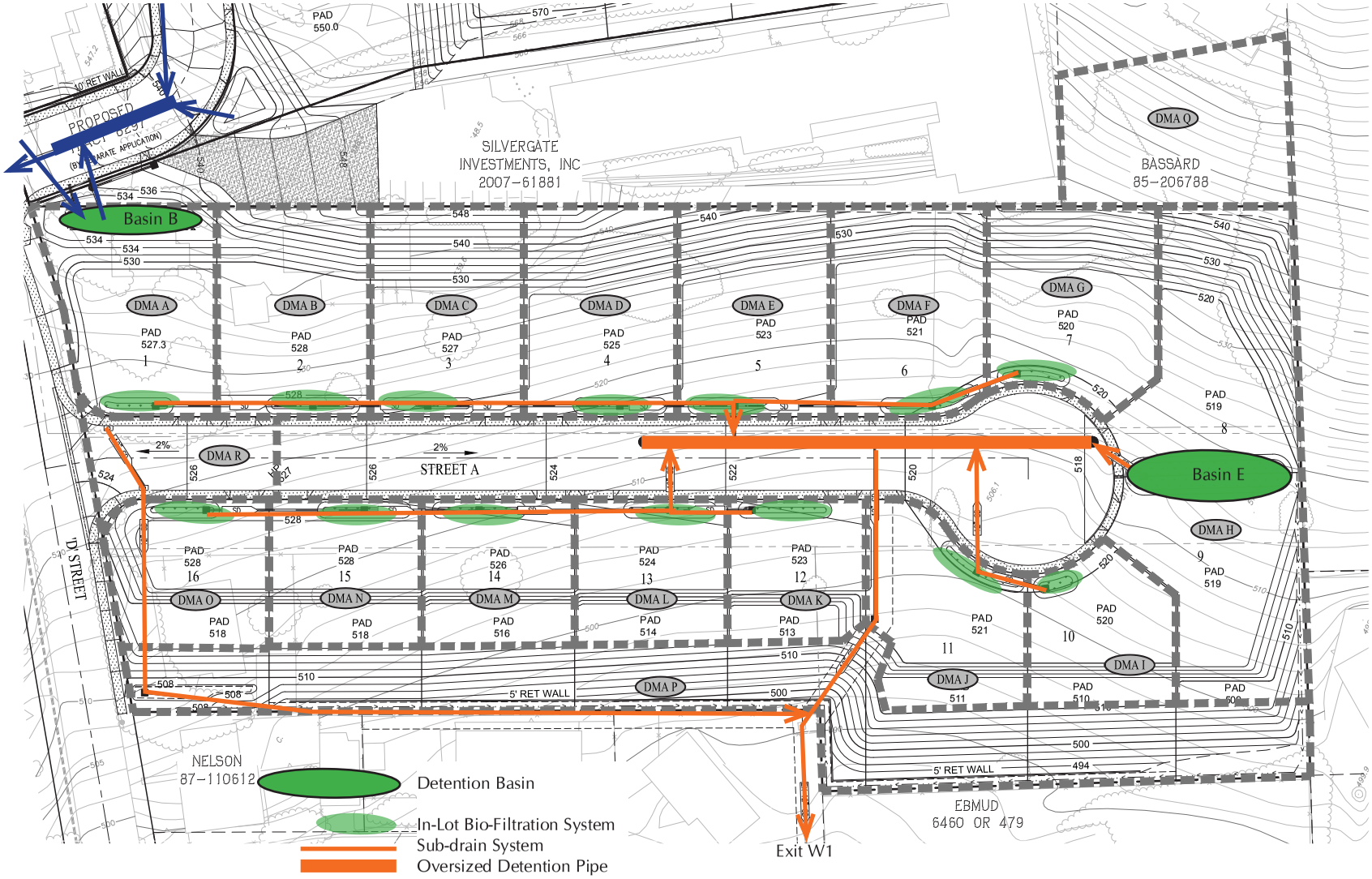


Figure 8-4
Preliminary Stormwater Management Plan, Tract 8296

Source: CBG, Inc., March 2016, VTM Sheet 4

Tract 8297

DMA	TREATMENT TYPE	TOTAL DMA AREA	IMPERVIOUS AREA	PROVIDED/REQUIRED BIO-RETENTION AREA
DMA A	BIO-RETENTION (BASIN A)	15,499 SF	4,625 SF	185 SF
DMA B	BIO-RETENTION (BASIN B)	12,196 SF	4,387 SF	175 SF
DMA C	BIO-RETENTION (BASIN C)	11,963 SF	4,907 SF	195 SF
DMA D	BIO-RETENTION (BASIN D)	9,837 SF	4,615 SF	185 SF
DMA E	BIO-RETENTION (BASIN E)	11,666 SF	6,837 SF	275 SF
DMA F	BIO-RETENTION (BASIN F)	9,069 SF	4,589 SF	185 SF
DMA G	BIO-RETENTION (BASIN G)	12,498 SF	5,229 SF	210 SF
DMA H	BIO-RETENTION (BASIN H)	12,656 SF	4,840 SF	195 SF
DMA I	BIO-RETENTION (BASIN I)	14,099 SF	4,716 SF	190 SF
DMA J	BIO-RETENTION (BASIN J)	14,790 SF	4,132 SF	165 SF
DMA K	BIO-RETENTION (BASIN K)	13,910 SF	6,462 SF	260 SF
DMA L	BIO-RETENTION (BASIN L)	11,666 SF	4,592 SF	185 SF
DMA M	BIO-RETENTION (BASIN M)	12,996 SF	4,823 SF	195 SF
DMA N	BIO-RETENTION (BASIN N)	11,594 SF	4,789 SF	195 SF
DMA O	BIO-RETENTION (BASIN O)	13,282 SF	4,735 SF	190 SF
DMA P	BIO-RETENTION (BASIN P)	15,090 SF	3,575 SF	145 SF
DMA Q	BIO-RETENTION (BASIN Q)	8,939 SF	6,551 SF	265 SF
DMA R	SELF TREATING AREA	4,824 SF	0 SF	0 SF

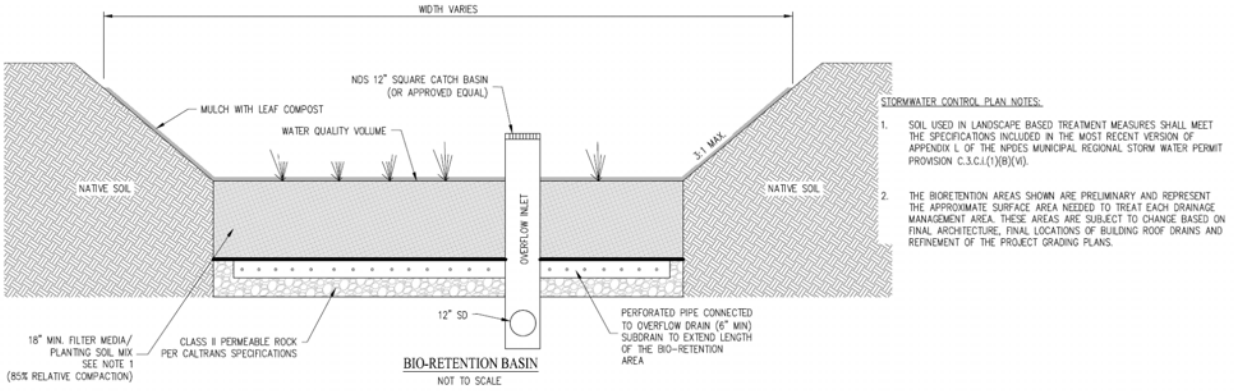
NOTES:
THIS SITE IS SUBJECT TO HYDROMODIFICATION CONTROLS. PRELIMINARY BIO-RETENTION SIZED TO BE 4% OF IMPERVIOUS SURFACE. FINAL DESIGN WILL INCLUDE A COMBINATION FLOW AND VOLUME BASED SIZING METHOD PER C.3.c OF THE MUNICIPAL REGIONAL PERMIT. OVERSIZED PIPE DETENTION TO BE SIZED BY BALANCE HYDROLOGICS, INC. AND WILL BE SUBJECT TO FINAL DESIGN.

Tract 8296

DMA	TREATMENT TYPE	TOTAL DMA AREA	IMPERVIOUS AREA	PROVIDED/REQUIRED BIO-RETENTION AREA
DMA A	BIO-RETENTION (BASIN A)	10,162 SF	3,313 SF	135 SF
DMA B	BIO-RETENTION (BASIN B)	10,021 SF	3,313 SF	135 SF
DMA C	BIO-RETENTION (BASIN C)	10,021 SF	3,313 SF	135 SF
DMA D	BIO-RETENTION (BASIN D)	10,021 SF	3,313 SF	135 SF
DMA E	BIO-RETENTION (BASIN E)	10,021 SF	3,313 SF	135 SF
DMA F	BIO-RETENTION (BASIN F)	10,044 SF	3,313 SF	135 SF
DMA G	BIO-RETENTION (BASIN G)	10,022 SF	3,313 SF	135 SF
DMA H	BIO-RETENTION (BASIN H)	49,395 SF	32,552 SF	1,302 SF
DMA I	BIO-RETENTION (BASIN I)	6,466 SF	3,313 SF	135 SF
DMA J	BIO-RETENTION (BASIN J)	8,388 SF	3,313 SF	135 SF
DMA K	BIO-RETENTION (BASIN K)	6,044 SF	3,313 SF	135 SF
DMA L	BIO-RETENTION (BASIN L)	6,873 SF	3,313 SF	135 SF
DMA M	BIO-RETENTION (BASIN M)	6,954 SF	3,313 SF	135 SF
DMA N	BIO-RETENTION (BASIN N)	6,968 SF	3,313 SF	135 SF
DMA O	BIO-RETENTION (BASIN O)	7,206 SF	3,313 SF	135 SF
DMA P	SELF TREATING AREA	27,451 SF	0 SF	0 SF
DMA Q	SELF TREATING AREA	12,438 SF	0 SF	0 SF
DMA R	BIO-RETENTION (BASIN R)	5,044 SF	5,044 SF	201 SF

NOTES:

1. THIS SITE IS SUBJECT TO HYDROMODIFICATION CONTROL AND IS BEING PROVIDED BY THE 72" STORM DRAIN
2. PRELIMINARY BIO-RETENTION AREA IS SIZED TO BE 4% OF THE IMPERVIOUS SURFACE. FINAL DESIGN WILL A COMBINATION FLOW AND VOLUME BASED SIZING METHOD PER C.3.c OF THE MUNICIPAL REGIONAL PERMIT.
3. OVERSIZED PIPE DETENTION TO BE SIZED BY BALANCE HYDROLOGICS, INC. AND WILL BE SUBJECT TO FINAL
4. ROOF DRAINAGE FROM THE REAR PORTION OF HOMES WITHIN DMA'S H-O, SHALL BE DIRECTED TO THE FRO OF THE LOT FOR TREATMENT IN THE BIO-RETENTION AREA ON THAT LOT.



Bio-Retention Basin

Figure 8-5
Bio-Retention Basin Calculations and Schematic Design

Source: CBG Inc.

Table 8-1: Bio-Treatment Area

	Effective Impervious Area (sf)	Required Capture Volume (cf)	Required Surface Area (sf)	Proposed Surface Area (sf)	Pond Depth (in.)
B-A	37,947	2,540	1,138	1,154	6.3
B-B	6,790	455	204	325	0
B-C (In lot basins in Tract 8297)[1]	25,870	1,732	776	933	2.2
B-D (In lot basins in Tract 8296)[1]	27,416	822	822	980	2.4
B-E[2]	39,446	2,640	1,183	1,202	6.3

Notes:

1. Modeled as one large basin for preliminary analysis
2. Sized to treat street and Lots 8 and 9 in Tract 8296

Source: Balance Hydrologics, September 2015

Subsequent design level engineering plans will need to be submitted to the Alameda County Public Works' Clean Water Program pursuant to Subdivision Map and improvement plan approvals, and similar design level plans will need to be submitted to the RWQCB pursuant to their permit approval process. These design level engineering plans must demonstrate how all Alameda County and RWQCB requirements for post-construction BMPs will be met, consistent with the County's NPDES permit for stormwater discharge. These plans must also demonstrate how a comprehensive approach to water quality BMPs is to be implemented for the Project. With final regulatory compliance and approvals of these design level plans, impacts related to post-construction water quality will be reduced to a level that is less than significant.

Increased Stormwater Runoff

Hydro-3: **Post-Construction Effects on Stormwater Runoff and Drainage System Capacity.** Development of the site would increase the amount of impervious surface due to construction of streets, sidewalks, driveways and single family homes, thereby potentially increasing stormwater runoff. Without controls, this increased runoff could substantially alter the existing drainage patterns from the site, or could contribute runoff water that would exceed the capacity of existing stormwater drainage systems. **(LTS with Regulatory Compliance)**

Western Parcel (Tract 8296)

The western parcel of the Project site (Tract 8296) is mostly open ground, with only approximately 0.22 acres of this 4.61-acre parcel (or 5%) covered in impervious surfaces associated with the existing residences. Stormwater from this parcel initially infiltrates through the soil into shallow groundwater, but once the soils reach their saturation point, stormwater sheet flows as surface runoff downslope to the west into existing residential neighborhoods or onto the East Bay Municipal Utility District's water storage tank property. This flow is eventually captured in the storm drain systems of these off site properties, conveyed in storm drain pipes under Fairview Avenue, which connect to an outfall into the northern branch of Sulphur Creek.

The Project's proposed grading plan would alter existing grades and surface runoff from the site, and new street pavement, new roofs, sidewalks and other features would result in a substantial increase in impervious surfaces. Under the Project, approximately 1.93 acres of this 4.61-acre parcel (or 42%) would be covered in impervious surfaces associated with new development. These Project changes could affect the direction and increase the volume of stormwater flows from the site, with potential adverse effects on downstream drainage facilities or neighboring properties.

Eastern Parcel (Tract 8297)

The eastern parcel of the Project site (Tract 8297) is also mostly open ground, with approximately 1.21 acres of this 5.17-acre parcel (or 23%) covered in impervious surfaces associated with the existing residences. Approximately half of the storm flow from this parcel sheet flows downslope to the west towards the Hilltop Convalescent Center property, where it then drains northward towards D Street and then eastward along the gutter. Most of the remaining storm flow from this parcel, as shown in Figure 8-2, flows downslope to the east, towards the Machado Court neighborhood. This flow is captured by a concrete V-ditch on a portion of the west side of the Machado Court subdivision, and enters into an underground storm drain line that drains to an outfall to an upper branch of Deer Canyon Creek and through the Five Canyons Open Space area towards San Lorenzo Creek at Don Castro Reservoir.

The Project's proposed grading plan would alter existing grades and surface runoff from the site, and new street pavement, new roofs, sidewalks and other features would result in a substantial increase in impervious surfaces. Under the Project, approximately 2.68 acres of this 5.17-acre parcel (or 52%) would be covered in impervious surfaces associated with new development. These Project changes could also affect the direction and increase the volume of stormwater flows from the site, with potential adverse effects on downstream drainage facilities or neighboring properties.

Regulatory Compliance

Pursuant to the Municipal Regional Stormwater NPDES Permit (MRP), the Project is required to meet performance standards for new development as defined in the NPDES Provision C.3 requirements. These C.3 provisions enable the County to use its planning authority to require appropriate flow controls to prevent increases in runoff flows from new development and redevelopment projects. Specifically, the 2008 Engineering Design Guidelines prepared by the County Public Works Department requires, among other things, that the design of storm drain facilities for certain projects that may adversely affect creeks or the capacity of storm drain system must control increases in peak runoff flow and volume by detaining excess stormwater and releasing it at rates which match pre-development conditions.

Because flows from the Project site ultimately drain to both Sulphur Creek and Deer Canyon Creek, and to storm drain facilities within D Street that have capacity limitations, the flow controls are required:

(6) **Detention of Increased Stormwater Flows**. The Project's storm drain system shall be designed to provide for oversized underground conduits (pipes) and/or detention basin that provide for the detention of increased storm water flows attributable to the Project. The amount of required detention storage shall be equal to the difference in volume of the increased runoff attributed to the Project, less the volume of existing runoff from the site(s). Assurances shall be provided for the continued maintenance of these storage facilities by the Project's homeowners association.

Project's Proposed Stormwater Management Plan

Flow Controls

The Project applicant has prepared a Preliminary Stormwater Management Plan for the Project that is intended to meet the County's NPDES C.3 flow control standards to limit post-construction stormwater flows to a level that would not be greater than the amount or rate of runoff flowing off the site under existing, pre-development conditions. As shown in Figures 8-3 and 8-4, this Preliminary Stormwater Management Plan includes the following water quality treatment and flow control features:

- The in-lot bioretention facilities within each Tract will drain treated runoff via under-drains that are connected in series, and routed to underground oversized pipes designed for flow control or detention.
- Runoff originating from the lower portion of the street in the eastern parcel (Tract 8296), between Lot 15 and D Street, will drain toward a combination water quality treatment/flow control basin (bioretention Basin B, on the northeast corner of Tract 8297). After passing through the basin, the runoff will combine with drainage from the existing Hilltop Care Center and be conveyed into an underground detention structure in the form of an oversized pipe (72" or 6' diameter, about 80' long) located under the new street directly south of D Street. A controlled valve release from the detention structure would drain off-site to a new stormwater main to be built along the south side of D Street for release towards Deer Canyon Creek.
- Runoff originating from the middle segment of the street on the eastern parcel will be directed along gutters into a bioretention basin (Basin A) and then, after treatment, into the same underground, oversized pipe for flow control adjacent to D Street, and in turn connects to the new storm drain system proposed along the south side of D Street. Runoff from the lots adjacent to this segment (lots 1, 2, 3, 13 and 14, and Parcel A) will pass through their individual bioretention areas and then directly to the oversized detention pipe.
- Runoff from the remainder of the street in the eastern parcel (Tract 8296) would flow first into the nearest adjacent individual lot bioretention areas, from which it is routed to a separate underground oversized pipe (260-foot long, 6-foot diameter) under the southern end of the new street, also outfitted with an outlet control structure to meet flow control requirements. From there, flow will be routed via a new storm drain line to the existing storm drain system line through the Machado Court neighborhood.
- Runoff from the street in the western parcel (tract 9297) will flow from the individual water quality treatment/flow control basins (bioretention areas) to Basin E, which will have an outlet control structure that would collect excess runoff and channel it to another underground, oversized pipe (250-foot long, 6-foot diameter) for detention and flow control. From there, runoff will exit the site through the existing storm drain to the west, located along the north side of the EBMUD water tank site.

The Project's flow control system is sized using the Bay Area Hydrology Model (BAHM) and the hydrologic data embedded in the BAHM software. Stage storage discharge tables were used to simulate the outlet control structure for the respective retention basins and/or detention pipes. All modeling was completed in conformance with the guidelines of the Alameda County Flood Control and Water Conservation District. Design storms for the 10-year event were estimated based on the mean annual precipitation rate for the site, and unit values developed by the County. The Alameda County Type I storm distribution was used to transform the storm depths to a 24-hour accumulated rainfall distribution. The design storms were input to HEC-HMS, and the pre- and post-Project sub-basins.

As indicated in **Table 8-2**, changes to the hydrology of the Project site were evaluated at three points that represent outfalls of the existing watersheds of the Project site (see **Figure 8-6**). As demonstrated in Table 8-2, peak flows and annual flow rates would be adequately handled by the proposed drainage and stormwater management system, and would result in equal or lesser amounts of stormwater leaving the site than occurs under pre-development conditions.

Table 8-2: Comparison of Pre- and Post-Project Runoff Volumes (cfs)

	Pre-Project Peak Runoff		Post-Project Peak Runoff	
Analysis Point	**10-Year**	**100-Year**	**10-Year**	**100-Year**
E1	2.4	3.9	2.4	3.6
E2	1.2	2.1	1.1	2.0
W1	2.8	5.0	2.7	5.0

Source: Balance Hydrologics, September 2015

No modification of the offsite stormdrain systems or creeks is proposed or required, as the modeling indicates that the rate of stormwater flows leaving the Project site would be no greater than the flows that currently enter these systems and creeks. The onsite stormwater protection plan for the Project would prevent erosion, siltation and on- or offsite flooding, including the flows in the North Fork of Sulphur Creek.

Resulting Level of Significance

Compliance with all required regulations (as indicated above) would reduce the Project's potential impacts related to increased stormwater flows off the Project sites to a less than significant level by managing and controlling stormwater such that future flows will be less than or equal to existing runoff conditions.

The Project's preliminary Stormwater Management Plan will require additional detailed analysis to demonstrate that the final proposed system meets all pertinent regulatory requirements. Subsequent design level engineering plans will need to be submitted to the Alameda County Public Works' Clean Water Program pursuant to Subdivision Map and improvement plan approvals, and similar design level plans will need to be submitted to the RWQCB pursuant to their permit approval process. These design level engineering plans must demonstrate how all Alameda County and RWQCB requirements for flow controls will be met. With final regulatory compliance and approvals of these design level plans, impacts related to post-construction increases in stormwater flow will be reduce to a level that is less than significant.

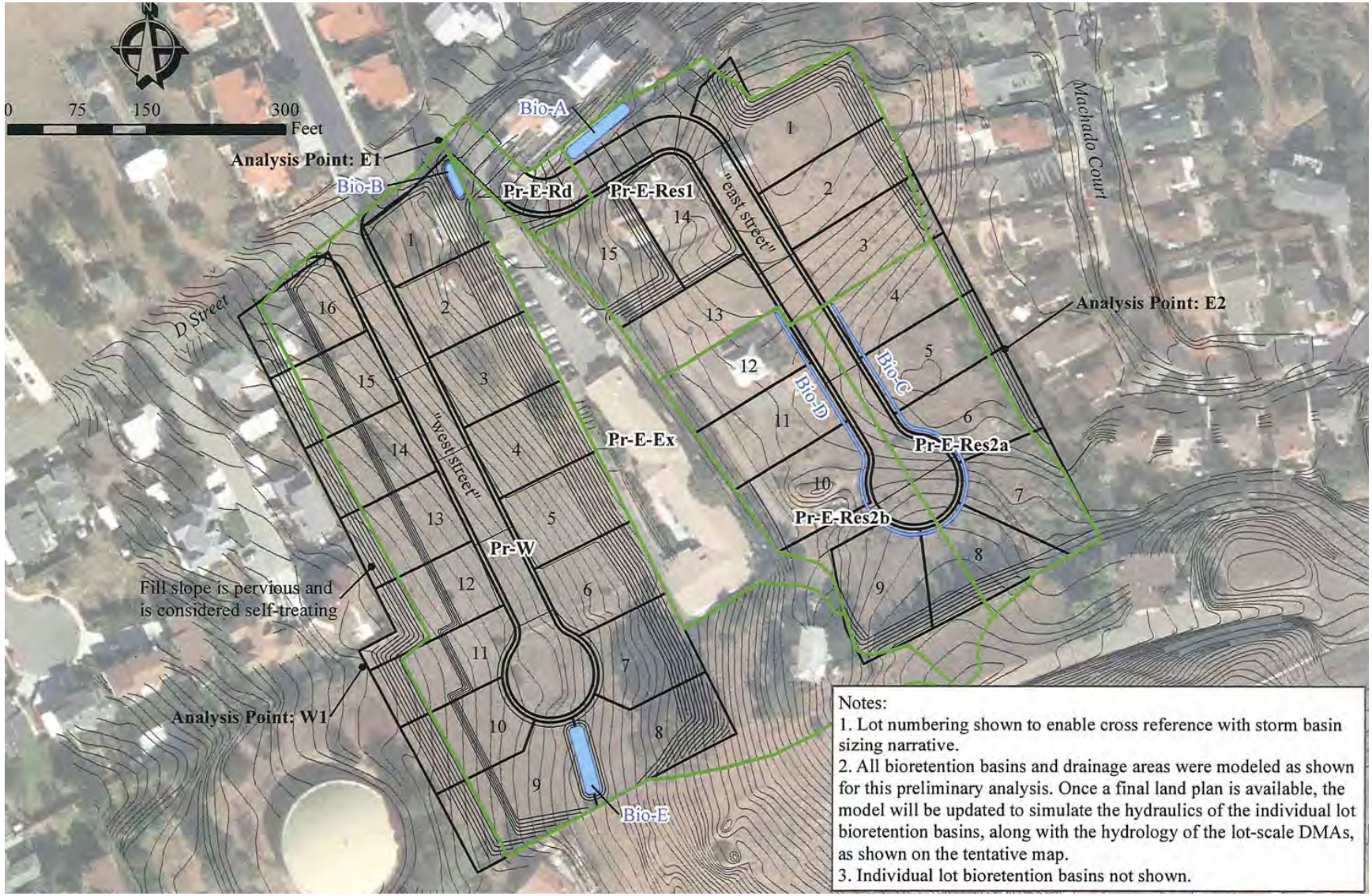


Figure 8-6
Post-Project Watershed Map

Source: Balance Hydrologics, Inc, 2015

Increased On-Site Flooding Potential (100-Year Storm Event)

Hydro4: **Flooding Potential.** The Project's increase in runoff flow rates and volumes during significant storm events could potentially exceed the capacity of existing or planned stormwater drainage systems in a manner that could result in flooding on- or offsite. (**LTS with Regulatory Compliance**)

As described above, development of the Project would result in a substantial increase in the amount of impervious surfaces (from approximately 1.43 acres to 4.61 acres, or more than three times the amount of impervious surface). These increased impervious surfaces will increase the amount of runoff from the site under typical (i.e., 10-year) storm conditions, but will also increase runoff associated with more severe storm events (i.e., 100-year storm).

Regulatory Compliance

The Municipal Regional Stormwater NPDES Permit (MRP) performance standards and the 2008 Engineering Design Guidelines prepared by the County Public Works Department also apply to required flow controls for the typical 10-year design storm described above under Impact Hydro-3, as well as for larger (i.e., 100-year) design storms.

Project's Proposed Stormwater Management Plan

As indicated in Table 8-2 above, peak runoff from the Project sites is managed and controlled by the proposed Stormwater Management Plan to maintain not only the typical 10-year storm event, but also store and gradually release the 100-year design storm as well. The Project's proposed stormwater protection facilities will reduce the rate of runoff and the potential for on-site flooding and flooding of adjacent privately owned homes during severe storms by designing for those storm flows that bypass the bioretention basins to be conveyed into underground oversized pipes, which will serve as storm-water storage and detention. Release of stormwater from these underground detention pipes would be controlled by the smaller sizing of their outlet pipe, which are sized similar to the offsite stormdrain systems.

The stage-storage discharge table used for flow control of the detention basin design was used to model flood control capabilities of the proposed stormwater plan for large storms. Iterations of the model were run with system configurations until all stormwater treatment, flow controls and flood control criteria were met. For the purposes of flood control modeling, the only surface storage areas included in the model are the bioretention basins (Basins A, B and E). There will be additional storage volume at the individual lot bioretention basins as well, and therefore the results are conservative from a peak flow control perspective.

Resulting Level of Significance

As indicated above, the Project's preliminary Stormwater Management Plan will require additional detailed analysis to demonstrate that the final proposed system meets all pertinent regulatory requirements, including appropriate flood control. Subsequent design level engineering plans will need to be submitted to the Alameda County's Public Works Agency pursuant to Subdivision Map and improvement plan approvals. These design level engineering plans must demonstrate how all Alameda County requirements for flood controls will be met. With final regulatory compliance and approvals of these design level plans, impacts related to post-construction increases in stormwater flow will be reduce to a level that is less than significant.

Groundwater Recharge

Hydro-5: **Groundwater Recharge**. The Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The Project would not cause the production rate of pre-existing nearby wells to drop to a level that could not support existing or planned land uses. (**LTS**)

The Project would be served by municipal water from the East Bay Municipal Utilities District (EBMUD) and would not directly utilize or deplete groundwater supplies. Most all surrounding land uses also obtain municipal water supply, and there are no groundwater wells in the immediate vicinity that rely on the groundwater underlying the site or that would be adversely affected by a reduction in the amount of groundwater percolation from the site.

The Project site does not represent a major groundwater or aquifer recharge source for the region due to the relatively small size of the Project site. Based on the geology report for the Project, the site is underlain by weak to moderately strong sandstone. Soils borings conducted on site were drilled to depths varying between 5 and 15 feet below ground surface, and none of the boring encountered groundwater. Storm water that percolates through the top layers of soil on the site encounter bedrock sandstone at depths of between 3 feet to 12 feet below surface, which directs underground flow offsite to the west toward Sulphur Creek.

The Project's proposed stormwater management plan will generally maintain the existing rate of stormwater flow leaving the site, and would not substantially change percolation rates in open creeks that are downstream of the site.

The Project's impacts on groundwater or groundwater recharge would be less than significant.

Mitigation Measures

None needed.

Flood Zone Hazards

The Project site is not within a FEMA-designated 100-year flood zone.[4] Since the Project site is not located near the coast, it is also outside the coastal flood zone. Accordingly, the Project would have no impact related to flood zone hazards. (**No Impact**)

Flooding (Levee or Dam Failure, Seiche, Tsunami, Mudflow, or Climate Change Induced Sea Level Rise)

The Project would not result in any impacts related to flooding as a result of a dam or levee failure, or inundation by seiche, tsunami, mudflow or sea level rise. (**No Impact**)

According to maps published by the Association of Bay Area Governments (ABAG), the Project is not located downstream of a dam, nor are there any levees near the Project site.[5]

The Project site is not susceptible to inundation by coastal hazards, such as tsunamis, extreme high tides, or sea level rise, due to the elevation of the area and the distance from the margin of the San Francisco Bay and Pacific Ocean. The Project site is not susceptible to mudflows (rainfall induced

[4] FEMA. Flood Insurance Rate Map (FIRM) Map No. 06001C0291G, August 2009

[5] ABAG Resilience Program Map 2016; http://gis.abag.ca.gov/website/Hazards/?hlyr=femaZones#nogo1

landslides).[6] The Project is not close enough to an enclosed large body of water to be susceptible to a seiche, and is not located at a lower elevation such that a dam or levee that could cause flooding of the Project site upon failure.[7]

[6] Ibid.

[7] Safety Element, Alameda County, pg. 42 Feb. 4 2014