City of Oakland

Draft Vegetation Management Plan

Draft Environmental Impact Report










CITY OF
Oakland

Oakland Public Works Department
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November 2020

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Draft Vegetation Management Plan

Draft Environmental Impact Report

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Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/m3	micrograms per cubic meter
A	
AAQS	ambient air quality standards
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC Transit	Alameda-Contra Costa Transit District
ACDEH	Alameda County Department of Environmental Health
ACEEE	American Council for an Energy Efficient Economy
ACHP	Advisory Council on Historic Preservation
AGR	agricultural supply
APE	area of potential effects
APEs	alkyphenol ethoxylates
ATCM	airborne toxic control measures
Ave	Avenue
B	
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BAU	"business as usual"
Bay	San Francisco Bay
Bay Area CAP	*Bay Area 2010 Clean Air Plan*
BE	built environment (building or structure)
BERD	Built Environment Resources Directory
BMPs	best management practices
Blvd	Boulevard
C	
C	Celsius
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAC	County Agricultural Commissioner
Cal. Code Regs.	California Code of Regulations
CalEEMod	California Emissions Estimate Model
Cal EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CAL-IPC	California Invasive Plant Council
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CalVTP	California Vegetation Treatment Program
CAP	Bay Area Clean Air Plan
CARB	California Air Resources Board

CASQA	California Stormwater Quality Association
CCAA	California Clean Air Act
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CDPR	California Department of Pesticide Regulation
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHL	California Historical Landmark
CH_4	Methane
City	City of Oakland
CMP	Alameda County Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CNPSEB	California Native Plant Society, East Bay Chapter
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
COLD	cold freshwater habitat;
COMM	commercial and sport fishing
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CSSC	Chabot Space and Science Center
CTC	County Transportation Commission
CTP	Countywide Transportation Plan
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
CWPP	Community Wildfire Protection Plan

D

D	District
dB	decibel
dBA	A-weighted decibel
DDT	dichlorodiphenyltrichloroethane
DEIR	Draft Environmental Impact Report
DPM	diesel particulate matter
DPR	California Department of Parks and Recreation
DPS	Distinct Population Segment
Dr	Drive
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources

E

E	Existing Beneficial Use
EBCE	East Bay Community Energy
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
ECAP	Equitable Climate Action Plan
EFH	Essential Fish Habitat
EIA	U.S. Energy Information Administration
EIR	environmental impact report
EIS	environmental impact statement
EO	Executive Order
ERPG	Emergency Response Planning Guidelines
ESA	Endangered Species Act
EST	estuarine habitat

F

F	Fahrenheit
F&G Code	California Fish and Game Code
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMP	fishery management plan
FRSH	freshwater replenishment
FTA	Federal Transit Administration

G

GHG	greenhouse gas
GIS	geographic information system
GSAs	Groundwater Sustainability Agencies
GSP	groundwater sustainability plan
GWP	global warming potential

H

H_2O	water
H_2S	hydrogen sulfide
HCP	habitat conservation plan
Hz	Hertz
Horizon	Horizon Water and Environment
HFCs	Hydrofluoro-carbons
HSAA	Hazardous Substance Account Act

I

I-	Interstate
IARC	International Agency for Research on Cancer
IEPR	Integrated Energy Policy Report

IND	industrial service supply
Intermix	wildland urban intermix
IPaC	Information for Planning and Conservation
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management

L

L	liter
LBNL	Lawrence Berkeley National Laboratory
L_{eq}	equivalent sound level
L_{dn}	day-night sound level
L_{max}	maximum sound level
L_{min}	minimum sound level

M

MAR	marine habitat
MBTA	Migratory Bird Treaty Act
mg	milligram
MIGR	fish migration
MLD	most likely descendant
MMT	million metric tons
MMWD	Marin Municipal Water District
msl	above mean sea level
MUN	municipal and domestic water supply

N

NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAV	navigation
NEHRP	National Earthquake Hazards Reduction Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOP	Notice of Preparation of an EIR
NO_X	nitrogen oxides
NP9E	nonylphenol 9 ethoxylate
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units
NWIC	Northwest Information Center

O

O_3	ozone

OakDOT	Oakland Department of Transportation
OBD	on-board diagnostic
OEHHA	California Office of Environmental Health Hazard Assessment
OFD	Oakland Fire Department
OHP	California Office of Historic Preservation
OHWM	Ordinary High Water Mark
OPR	California Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OWLS	Oakland Wildland Stewards

P

Pb	lead
PCBs	polychlorinated biphenyls
PDF	portable document format
PFCs	perfluoro-carbons
PFMC	Pacific Fisheries Management Council
PG&E	Pacific Gas and Electric Company
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PM0.1	particulate matter smaller than 0.1 micrometer in diameter
PM2.5	particulate matter smaller than 2.5 micrometers in diameter
PM10	particulate matter smaller than 10 micrometers in diameter
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PPV	peak particle velocity
Pub. Res. Code	Public Resources Code
PVC	polyvinyl chloride

R

RARE	preservation of rare and endangered species
RCRA	Resource Conservation and Recovery Act
Rd	Road
REC-1	water contact recreation
REC-2	noncontact water recreation
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board

S

S	Site
SAR	Second Assessment Report
SB	Senate Bill
SFBAAB	San Francisco Bay Area Air Basin
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SHELL	shellfish harvesting
SIP	state implementation plan

SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SOD	Sudden Oak Death
SPAWN	fish spawning
SR	State Route
SF_6	sulfur hexa-fluoride
SWRCB	State Water Resources Control Board

T

TAC	toxic air contaminant
TBEE	triclopyr, butoxyethyl ester
TCP	traditional cultural property
TCR	tribal cultural resource
TEA	triclopyr, triethylamine salt
TMDL	Total Maximum Daily Load

U

UC Berkeley	University of California at Berkeley
UCMP	University of California Museum of Paleontology
USA	Underground Service Alert
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

V

VdB	vibration velocity in decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMC	Vegetation Management Consortium
VMP	City of Oakland Vegetation Management Plan
VMT	vehicle miles traveled
VOC	volatile organic compound

W

WARM	warm freshwater habitat
WILD	wildlife habitat
WPA	Works Projects Administration
WPAD	Wildfire Prevention Assessment District
WUI	wildland urban interface

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Executive Summary

ES.1 INTRODUCTION

The City of Oakland (City) has developed a Draft Vegetation Management Plan (VMP) that describes the actions that the Oakland Fire Department (OFD) would continue to take over the plan's 10-year timeframe to reduce fire hazard on 1,924 acres of City-owned land and along 308 miles of roadways in the City's designated Very High Fire Hazard Severity Zone (VHFHSZ). The VMP has been developed to meet the City's stated goals of reducing wildfire hazard on City-owned land and along critical access/egress routes, reducing the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety, avoiding or minimizing impacts to natural resources, and contributing to regional efforts to reduce wildfire hazard in the Oakland Hills.

The California Environmental Quality Act (CEQA) requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before approving or carrying out those projects. As the lead agency for the VMP project under CEQA, the City has prepared this Draft Environmental Impact Report (DEIR) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of implementing the Draft VMP. This DEIR was prepared in compliance with the requirements of CEQA (as amended) and the CEQA Guidelines (California Code of Regulations [Cal. Code Regs.], tit. 14, Section 15000 et seq.).

This DEIR describes and summarizes the proposed actions of the VMP in Chapter 2, *Project Description*, and the environmental resource sections of Chapter 3. More detail is provided in the Draft VMP, which is provided in its entirety in **Appendix A** of this DEIR.

ES.2 VMP OVERVIEW

The Oakland Hills is the location of one of the state's most destructive historic wildfires, the 1991 Tunnel Fire, which destroyed 2,900 structures, injured more than 150 people, and killed 25 people. The Oakland Hills represents a complex wildfire environment that presents a significant risk to public and firefighter safety and to the built and natural environment due to local extreme wind and weather conditions (including Diablo wind events), steep and varied terrain, and a wide range of different vegetation types. Of the variables that comprise the wildland fire environment (weather, terrain, and fuels or vegetation), vegetation is the only variable that can be managed. Lessons learned from the 1991 Tunnel Fire and other more recent, devasting wildfires in Northern California highlight the importance of managing vegetation to reduce wildfire hazard.

The City, in close coordination with the Oakland Fire Department (OFD), developed the VMP to reduce fire hazards on City-owned land and critical access/egress routes in City-designated Very High Fire Hazard Severity Zone (VHFHSZ) areas, reduce the likelihood of ignitions and extreme

fire behavior to enhance public and firefighter safety, avoid or minimize impacts to natural resources, and contribute to regional efforts to reduce wildfire hazard in the Oakland Hills. The Draft VMP includes descriptions of City-owned parcels and roadsides located within the City's VHFHSZ, natural resources at these locations, vegetation management techniques to reduce fire hazards, maintenance standards for the different types of treatment areas, and practices to avoid and minimize potential environmental impacts when conducting vegetation management work. The City of Oakland Vegetation Management Plan is the project for this CEQA analysis.

ES.2.1 VMP Background

OFD has been actively managing vegetation on City-owned property since 2003 to minimize wildfire hazard in the VMP area, utilizing various techniques, including grazing, hand crews, and limited mechanical treatments. Goats have been used in large treatment areas, on City park land and open space where manual labor is cost prohibitive or areas are inaccessible to mowing equipment or too steep for hand crews. OFD has historically used hand labor to manage vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas. Mechanical equipment has also been used, typically to grade or disk fire trails, reduce ladder fuels (e.g., removing small trees), control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing grasses), chip and spread trimmings and down material, thin vegetation, and maintain reduced or target fuel loads.

Between 2004 and 2017, OFD conducted vegetation management activities throughout the Wildfire Prevention Assessment District (WPAD), a City-funded special assessment district that coincides with the City's VHFHSZ. This district financed the costs and expenses related to vegetation management, yard waste disposal, wildfire prevention education, and fire patrols in the Oakland Hills. The WPAD was disbanded in June 2017. Although OFD has continued to conduct vegetation management activities on City-owned properties and along roads since 2017, due to funding constraints, these have been conducted to a lesser degree than when the WPAD was in place.

ES.2.2 VMP Development Process

Development of the VMP included a detailed field assessment of wildfire hazard, which was used to identify and classify existing vegetation community and land cover types into fuel models, and map areas with high ignition potential or where extreme wildfire behavior would be expected given current terrain and fuel conditions. VMP development also included assessment and processing of geographic information system (GIS) datasets for variables influencing wildfire hazard in the VMP area, coordination with OFD personnel, fire behavior modeling, and significant public and stakeholder outreach to better understand current vegetation management activities in the VMP area.

Public and Stakeholder Input on Draft VMP

Several public and stakeholder engagement meetings were conducted to support development of the VMP. Six workshops/meetings were conducted during development of the Draft VMP. A status update was provided to the Oakland City Council, Public Safety Committee on July 17, 2018. As an outcome of that meeting and at the direction of the Public Safety Committee, two additional public meetings were held in November 2018.

Volunteers and stakeholder groups that provided input during the VMP development process are identified in Appendix K of the VMP. In addition to the identified stewardship groups in Appendix K, the Oakland Wildland Stewards (OWLS) is a coalition of stewardship groups operating in the VMP area, and individual members provided input during the stakeholder meetings.

Development of Vegetation Treatment Projects

Based on coordination with OFD personnel, fire behavior modeling, and public input received throughout the VMP development process, vegetation treatment projects were identified and prioritized based on proximity to structures, roads, ridgelines, and park access gates within the VMP area where fire behavior is anticipated to be extreme (high flame lengths and/or crown fires), and where continuation of the City's goat grazing program would effectively maintain lower fuel loads. Identified priority projects comprise 1,366 acres within the VMP area's 1,924 total acres. The VMP also prioritizes vegetation management along 30 miles of primary access/ egress routes in the VMP area. The vegetation treatment projects are provided in Section 9.2 of the VMP.

ES.3 PROPOSED PROJECT

ES.3.1 Project Goals and Objectives

The CEQA Guidelines call for the identification of objectives sought by a proposed project (CEQA Guidelines Section 15124[b]). A statement of objectives helps convey the reasons for considering approval of the VMP, including its intended benefits, and guides the development of a reasonable range of alternatives to evaluate in the EIR. The City has identified the following primary goals for the VMP:

- Reduce wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ;
- Reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety;
- Implement practices to avoid or minimize impacts to natural resources;
- Maintain an active role in regional efforts to reduce wildfire hazard in the Oakland hills.

The objectives of the VMP are as follows:

- Reduce the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuel loads, and modifying fuel arrangements on City-owned lands.
- Reduce the likelihood of extreme fire behavior within the VMP area.
- Identify and define vegetation management actions that consider site-specific vegetation type, fuel hazard, treatment effectiveness, and ongoing maintenance requirements.

- Identify and prioritize fuel treatment areas based on fuel loads and arrangements, terrain, topographic exposure, and proximity to roads and structures.
- Retain vegetation where feasible to reduce wind exposure, retain soil and surface fuel moisture, and reduce the potential for soil erosion.
- Develop management recommendations that enable OFD to make informed, adaptive decisions on an annual basis (or more often as necessary) regarding vegetation management within the VMP area, considering the benefits of treatment, potential environmental effects, and treatment costs.
- Avoid, minimize, and/or reduce potential adverse effects of vegetation management on sensitive biological resources, water resources, aesthetics, soils, and slope stability.
- Increase the ability of OFD and other responding agencies to suppress wildfire in the VMP area in order to minimize wildfire impacts to VMP area resources.
- Routinely evaluate the effectiveness and implementation frequency of vegetation management actions within the VMP area.

ES.3.2 VMP Area

The VMP area encompasses City-owned parcels and areas within 30 feet of the edge of roadsides located within the City's VHFHSZ, as designated by the California Department of Forestry and Fire Protection (CAL FIRE) and defined in Section 4904.3 of the Oakland Fire Code (Oakland Municipal Code Chapter 15.12). Specifically, as shown in **Figure ES-1**, the VMP area includes 419 City-owned parcels, ranging in size from <0.1 acre to 235 acres and totaling 1,924 acres. For VMP planning purposes, parcels have been divided into the following categories: urban and residential, canyon areas, ridgetop areas, City park lands and open space, other areas, and road medians. The VMP also includes roadside areas along 308 miles of road within the City's VHFHSZ, including surface and arterial streets, State Routes (SRs) 13 and 24, and Interstate 580 (I-580). **Table ES-1** summarizes the categories, sizes, and quantities of City-owned parcels in the VMP area.

Table ES-1. City-owned Parcels within the VMP Area

Parcel Category	Quantity	Total Acreage
Urban and Residential	152	51.2
Canyon Areas	89	188.7
Ridgetop Areas	11	130.2
City Park Lands and Open Space	91	1,552.9
Other Areas*	43	24.5
Medians	33	6.1
Total:	419	1,923.6

* Other areas are developed City-owned properties in the VMP area that include fire stations (nos. 6, 7, 21, 25, and 28), City facilities (parking lots, police stations), paved areas, and parks and playgrounds.

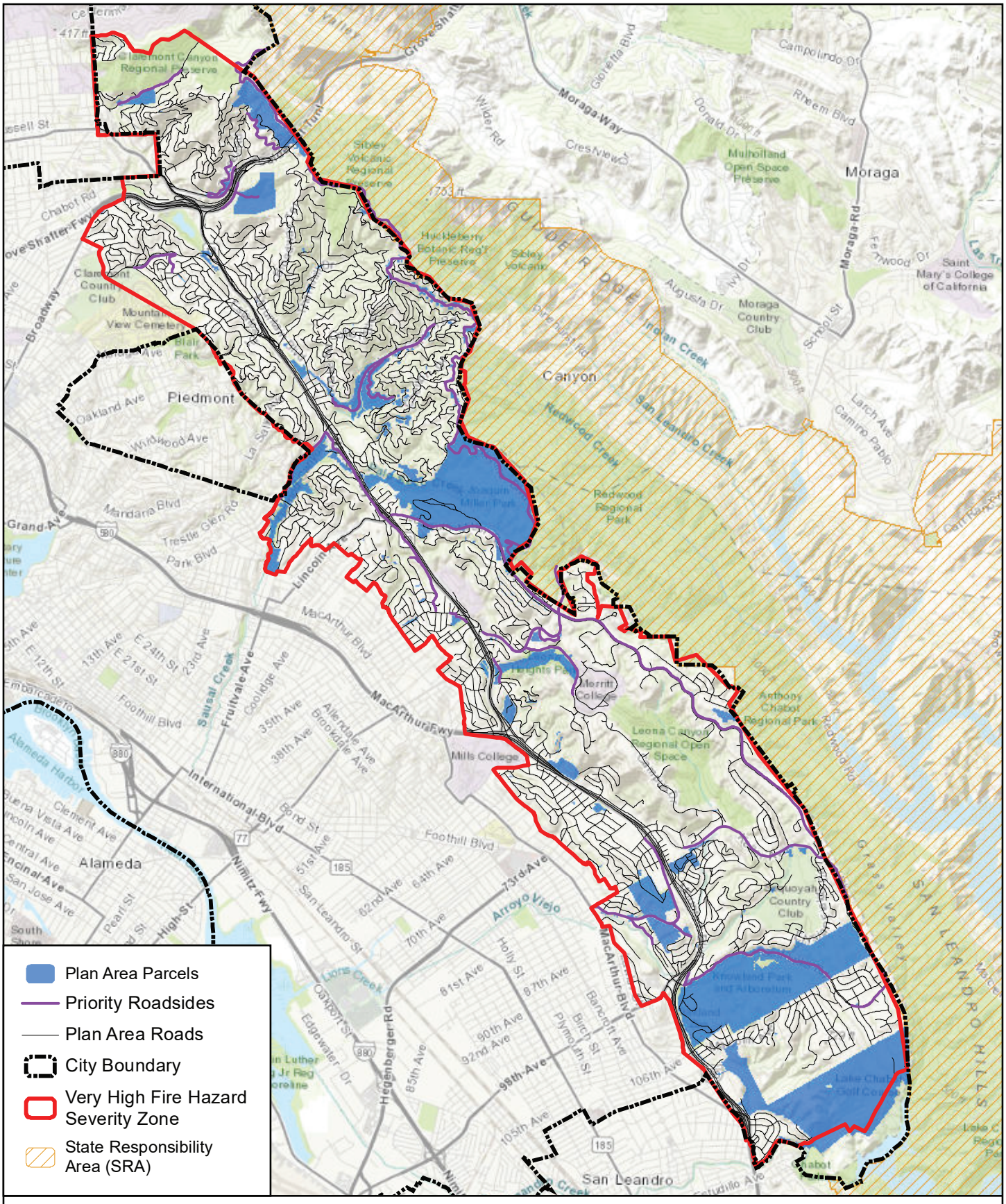


Figure ES-1.
Vegetation Management Plan Area

Vegetation Management Plan
Draft Environmental Impact Report

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ES.3.3 Vegetation Management Standards and Treatment Areas

Vegetation management for fire hazard reduction would vary by location and conditions and would change over time to reflect changing conditions on the ground. Thus, management and maintenance standards described in the VMP are targeted toward fire hazard reduction and are characterized by dominant vegetation community/land cover type: grassland/herbaceous, brush/scrub, tree/woodland/forest, and other combustible material. Specific standards for tree-dominated vegetation types, including eucalyptus, closed-cone pine-cypress, urban (acacia) and urban (mixed tree stands), oak woodland, redwood, and riparian vegetation communities, are described in Section 9.1 of the VMP.

ES.3.4 Priority Ranking of VMP Treatment Areas

In general, treatment areas are organized by urban/residential parcels, canyon areas, City parks and open space areas, roadside treatment areas and medians, and other areas (e.g., parking lots, playground, urban parks). The City would select and prioritize the ultimate treatment projects that will be included in the annual work plan. Section 9.2 of the VMP provides more detail about current management practices and proposed treatments for each treatment area.

The VMP prioritizes vegetation treatment areas and projects into three different categories (Priority 1, 2, and 3) based on proximity to structures, ridgelines, and park access gates; areas along critical access/egress routes; areas subject to increased ignition potential; and areas that exhibit the potential for extreme fire behavior. Priority 1 areas are intended to be accomplished first. Once all Priority 1 areas have been completed or scheduled and budget allows, Priority 2 areas will be completed. Once all Priority 1 and 2 areas have been completed or scheduled and budget allows, Priority 3 areas will be completed.

ES.4 PLAN DESCRIPTION

ES.4.1 Vegetation Management Techniques

Different vegetation management techniques may be more effective at reducing, removing, or altering vegetation, depending on vegetation type, location, condition, and configuration. Given the dynamic nature of vegetation, a single treatment technique or management approach may not be appropriate for one site over time; therefore, an adaptive approach that provides more flexibility to adjust and select management techniques based on conditions on the ground is the preferred long-term approach. The goal remains to maintain vegetation conditions in accordance with the desired vegetation management standards, but the specific methods may evolve over time.

Four categories of vegetation management techniques are proposed for use under the VMP:

- **Biological Techniques (Grazing)** – Grazing is the primary biological vegetation management technique that uses livestock (e.g., goats, cattle, sheep) to reduce the fuel loading of live herbaceous growth, shrubs, and new growth of trees and prevent the expansion of brush/scrub into grasslands. Grazing is an effective method in large treatment areas where manual labor would be cost-prohibitive as well as in areas that

are inaccessible to mowing equipment or in areas too steep for hand crews. Typically, grazing is conducted from late spring through the end of summer to reduce fine fuels prior to the onset of peak fire season. Grazing management plans consider site-specific conditions, specify management objectives and standards, and identify animal stocking rates and use levels (typically measured in pounds per acre of residual dry matter), grazing season, and monitoring requirements and performance criteria.

- **Hand Labor Techniques** – Hand labor techniques involve pruning, cutting, or removing trees, shrubs, and grasses by hand or using handheld equipment. Other hand labor treatments involve bark pulling, removing dead wood and litter, and mulching. Hand labor allows for selective management, pruning, thinning, or removal of targeted vegetation and is most effective for spot application on small areas or areas with difficult access or areas with sensitive species. The use of hand labor is focused on reducing ladder fuels, controlling highly flammable/rapidly spreading species (e.g., French broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Compared to other vegetation management techniques, hand labor techniques typically have a lower potential for adverse environmental effects because the work is specifically targeted and implemented, although heavy foot traffic associated with hand labor can result in surface soil compaction and increase erosion potential.

- **Mechanical Techniques** – Mechanical techniques include fuel reduction methods that use motorized heavy equipment to remove or alter grass/herbaceous material (e.g., mowers, diskers) or woody material (e.g., masticators, feller-bunches). Mechanical treatment techniques rearrange vegetation structures, compact or chip/shred material, reduce ladder fuels, control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing), and move material to staging areas for either reuse, off-site disposal, or composting; or burn piles. Constraints to mechanical equipment use include steep slopes, dense tree cover that prohibits access, saturated soils, and dry, high-fire hazard weather conditions where equipment use could result in ignition. Mechanical equipment is also typically not used for selective plant removal due to the large size of equipment. Typical mechanical equipment techniques to reduce fuel loads include grading, mowing, disking, mechanical cutting/crushing, chipping, tree removal, yarding, and creating fire and fuel breaks.

- **Chemical Techniques (Herbicide)** – Chemical techniques involve the use of herbicides to kill vegetation or prevent growth and are typically used in combination with other types of fuel reduction treatments, such as mowing, trimming, pruning, and grazing. Herbicides have a high kill rate and prevent treated plants from setting seed. They can be applied selectively, minimizing impacts to seeds of other species residing in the soil. Application of herbicides and other chemicals is typically performed by hand and can include sponging, spraying, or dusting chemicals onto unwanted vegetation. The cut-and-daub treatment is another method that is effective to control regrowth and kill the portion of the plant remaining belowground. This treatment method involves cutting the plant stalks or trunks and then directly applying the herbicide with a brush, sponge, or hand sprayer with a cloth tied around the nozzle to the cambium layer of the freshly cut stump or stem. Herbicides must be applied by a licensed and trained professional to ensure proper and safe use, handling, and storage of chemicals to treat vegetation. Only

specific types of herbicides are proposed for use in the VMP. While use of glyphosate is proposed, the Roundup formulation of glyphosate would not be used within the VMP.

ES.4.2 VMP Implementation

Vegetation management activities would occur year-round, as needed, subject to the limitations set forth in the mitigation monitoring and reporting program; however, given the variable nature of vegetation through changes in weather and season, the timing for certain treatments would be confined to specific months to achieve optimal effectiveness, reduce the fire danger, and avoid or minimize impacts to special-status species (e.g., nesting birds). For example, treatments in grasslands should occur when grass cures or dries out. Mechanical removal of vegetation should also be conducted when the weather is not too dry or windy as some mechanical equipment has potential to ignite fires.

Maximum Annual Vegetation Management Activities

For the purposes of this EIR, **Table ES-2** summarizes the estimated maximum annual amount of vegetation treatment activities that would occur in a given year (by acreage and technique type). These estimated values are based on vegetation management activities conducted by the City over the last 15 years. This EIR assumes the City may conduct goat grazing on up to 1,100 acres per year and that a combination of hand labor and mechanical treatment methods would be employed at roadside treatment areas for up to 500 acres. Roadside treatment acreages, such as manual removal of grasses, are included within the individual categories below.

Table ES-2. Estimated Maximum Areas for Vegetation Treatment Activities

Vegetation Treatment Activities	Maximum Estimated Annual Area (acres)
Manual removal of trees (using chainsaws, chippers)	20
Manual removal of shrubs (using chainsaws, rotary mower, chipper)	145
Manual grass removal (rotary mower)	375
Mechanical tree removal (e.g., using feller/buncher, chainsaw, masticator, loader, skidder, chipper)	5
Mechanical shrub removal (e.g., using tractor, excavator, rotary mower)	5
Mechanical grass removal (e.g., rotary mower, tractor)	5
Goat grazing	1,100
Herbicide treatment for trees	20
Herbicide treatment for shrubs	15
Herbicide treatment for grasses*	0

* Herbicide treatment for grasses is proposed only for spot treatment of pampas/jubata grass; this treatment is captured in the "Herbicide treatment for shrubs" category.

Annual Work Plan Development Process

As described in Section 12 of the VMP, OFD would assess vegetation conditions in the VMP area in the winter or early spring months. Under the VMP, the timing of field assessments would vary each year and would be dependent upon weather conditions such as annual rainfall, number of hot and dry days, and other factors that may affect site condition. Typically, treatments would begin in the spring and early summer months, but timing may be adjusted according to weather conditions (e.g., temperature, precipitation) or other site-specific factors. Vegetation treatments may also be conducted more than once annually, depending on the site conditions and results of the field assessment. Treatment method would be dependent upon the dominant vegetation type being treated and the condition of vegetation observed during field assessments.

After conducting field assessments, OFD would develop an annual work plan that identifies priority treatment areas, vegetation treatment techniques, implementation timing, resource needs and availability, funding sources, and monitoring and tracking needs. In addition to the priority ranking criteria described above, the order in which areas or properties are ranked would be dependent upon the level of hazardous conditions and availability of resources (e.g., areas exhibiting more hazardous conditions would be treated first).

The annual work plan is an internal, working document that may be modified throughout the year due to various factors including field conditions, weather, vegetation growth, contractor or crew completion rates, staff and resource availability, treatment techniques, permit acquisition needs and emergency conditions, among others. As part of the annual work plan development process, OFD would coordinate with local volunteer/park stewardship groups, other City departments, and other agencies or landowners, as appropriate.

Monitoring, Adaptive Management, and Stakeholder Coordination

The value of monitoring and adaptive management is the gathering of empirical information from treatment sites (before, during, and after treatment) that can help refine the approaches to vegetation treatment that better meet site-specific project objectives, provide effective wildfire risk reduction, and protect the environment. OFD would monitor and inspect vegetation conditions and treatment activities in the VMP area throughout the year and develop an Annual VMP Report summarizing the results of monitoring efforts and any pertinent issues identified and addressed during vegetation management activities. The Annual VMP Report would assess factors such as which vegetation management activities or techniques are effective or ineffective; whether treatment techniques should be changed or modified; and whether the timing, duration, or priority of treatments on a specific property or within the VMP area should be adjusted.

The VMP recommends continued and ongoing coordination between OFD and local volunteer and stewardship groups that are active in parklands or other portions of the VMP area. The VMP recognizes that effective communication and coordination is the responsibility of both OFD and local stewardship groups, with each making an effort to keep the other party informed and updated. Ongoing communication protocols are recommended in the VMP to maintain coordination between OFD and local stewardship efforts.

ES.5 PUBLIC INVOLVEMENT IN THE CEQA PROCESS

ES.5.1 Scoping Period

A Notice of Preparation of an EIR (NOP) for the VMP was prepared in accordance with the State CEQA Guidelines (CEQA Guidelines Section 15082) and was circulated to the Office of Planning and Research's State Clearinghouse on November 1, 2019. The original scoping period, which ended on December 2, 2019, was extended to December 12, 2019, for a total of 41 days. The NOP presented general background information on the VMP, the scoping process, and the environmental issues to be addressed in the DEIR. Copies of the NOP were distributed by mail and email to a broad range of stakeholders, including state, federal, and local regulatory agencies and jurisdictions, utilities, and interested individuals in the area. In addition, the NOP was published on the City's website. The NOP is included as an appendix to the DEIR.

To provide the public, as well as responsible and trustee agencies, an opportunity to ask questions and submit comments on the VMP and the scope of the DEIR, the City held a meeting on Wednesday, November 20, 2019. Notices of the meeting were mailed to interested parties; in addition, scoping meeting information was published on the City's VMP web page (oaklandca.gov/projects/oakland-vegetation-management-plan). The City accepted verbal and written comments at the meeting.

ES.5.2 DEIR Public Comment Period

The City has prepared this DEIR, as informed by public and agency input received during the VMP development period and public scoping period, to disclose environmental impacts associated with the VMP. Where any such impacts are significant, feasible mitigation measures and potentially feasible alternatives that would substantially lessen or avoid such effects are identified and discussed. The public review period allows the public an opportunity to provide input to the lead agency on the DEIR.

The DEIR is currently undergoing public review for 45 days. During this period, the City will hold one public meeting on December 16, 2020 at 3:00 p.m. The meeting will occur during the City of Oakland Planning Commission meeting and will be hosted on Zoom. For links to the meeting, please visit: www.oaklandca.gov/boards-commissions/planning-commission/meetings. The meeting(s) will include a brief overview of the proposed project and the analysis and conclusions set forth in the DEIR, followed by the opportunity for interested members of the public to provide comments regarding the VMP and the DEIR. Commenters may provide oral comments at the meeting or written/emailed comments to DEIR-comments@oaklandvegmanagement.org at any time during the comment period.

ES.5.3 Preparation of FEIR and Certification

Once the public review period is closed, the City will prepare a Final EIR (FEIR). The FEIR will incorporate this DEIR by reference. It will contain all comments submitted on this DEIR (including those made at public meetings), responses to those comments, and any revisions to the text of this DEIR. The FEIR will be reviewed by the City of Oakland Planning Commission and considered for approval by the City Council.

Written/emailed and oral comments received in response to the DEIR will be addressed in the "Responses to Comments" section of the FEIR. Together with the DEIR and any related changes to the substantive discussion in the DEIR, these responses will constitute the FEIR. The FEIR, in turn, will inform the City's exercise of its discretion as a lead agency under CEQA in deciding whether to approve the VMP.

ES.6 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123(b) requires that an Executive Summary identify "areas of controversy known to a lead agency including issues raised by agencies and the public." To date, while not considered controversial, the following questions or concerns have been raised regarding the Draft VMP during the scoping period:

- Potential use of herbicides
- Removal of trees
- Removal of non-native vegetation
- Minimization of impacts on sensitive species

ES.7 ALTERNATIVES CONSIDERED

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the proposed project that could feasibly attain most of the objectives of the proposed project while reducing or eliminating one or more of the proposed project's significant effects. The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

A "No Project Alternative" also must be considered. The No Project Alternative is "the existing conditions at the time the notice of preparation is published" as well as "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans" (14 Cal. Code Regs. §15126.6[e][2]). "When the project involves revision of an existing plan, policy, or ongoing operation, the no-project alternative should reflect continuation of the existing plan, policy, or operation." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) §15.19, citing CEQA Guidelines Section 15126.6(e)(3)(A).) "In such a situation, the no-project alternative should be described as a continuation of the existing operation." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) §15.20, citing *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 234 Cal.App.4th 214, 254.) The no-project analysis reflects whether failure to approve the project would preserve existing environmental conditions or instead would lead to other changes to the environment." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) Section 15.19, citing CEQA Guidelines Section 15126.6(e)(2).) The intent of the No Project Alternative is to allow decision makers to compare the impacts of approving the project against the impacts of not approving the project (CEQA Guidelines Section 15126[e][1]).

The alternatives described below have been evaluated for their feasibility and their ability to achieve most of the VMP's objectives while avoiding, reducing, or minimizing significant impacts identified for the VMP. The full analysis of alternatives is provided in Chapter 5 of the DEIR.

ES.7.1 Alternative 1 – No Project Alternative

Under the No Project Alternative, the City would not implement a VMP to guide and direct targeted vegetation management activities to minimize the potential for ignitions, crown fire, and extreme fire behavior on City-owned land and along access/egress routes. Instead, the City would continue to conduct vegetation management activities consistent with existing (2017 and 2018) operations. Under the No Project Alternative, the City would conduct approximately 1,100 acres of goat grazing and approximately 152 acres of roadside treatment and other activities each year, using a combination of hand labor and mechanical techniques. Similar to existing conditions, no chemical techniques (i.e., herbicides) would be used.

It is important to note that the underlying need for increased targeted vegetation management activities proposed under the VMP—to reduce wildfire risk in the City portions of the VHFHSZ—would remain unaddressed with implementation of the No Project Alternative. Without implementation of the VMP, the City would only be able to address a limited number of vegetation management activities annually based on the Public Works/OFD annual budget.

By reducing the acreage of treatment that occurs in a given year compared to annual treatment acreages under the VMP, the No Project Alternative would fail to meet VMP goals and objectives, particularly reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ. It would also fail to address the need for wildfire risk reduction identified by the City, OFD, stakeholders, and members of the public throughout the years-long VMP development process.

ES.7.2 Alternative 2 – Reduced Vegetation Management Activities Alternative

Alternative 2 is a modified version of the VMP with reduced annual treatment acreage. Under Alternative 2, the City would conduct approximately 1,100 acres of goat grazing and approximately 300 acres of roadside treatment and other activities using a combination of hand labor, mechanical treatments, and herbicide treatments. Additionally, no vegetation management activities would occur on urban and residential treatment areas, which total 47.5 acres. While vegetation treatment activities would still occur in close proximity to sensitive uses, the use of equipment generating noise of 85 dBA at 50 feet (such as chainsaws) would be prohibited within 90 feet of sensitive receptors, and the use of equipment generating noise of 88 dBA at 50 feet (such as a chipper or excavator) would be prohibited within 130 feet of sensitive receptors.

Alternative 2 was selected as an alternative to the VMP based on public input and because the restriction on equipment use near sensitive receptors would reduce significant and unavoidable noise impacts associated with mechanical treatment activities and the use of chainsaws during hand labor treatments.

Alternative 2, the Reduced Vegetation Management Activities Alternative, would meet some of the goals or objectives of the VMP; however, the reduced annual acreage of treatment would slow OFD's progress in addressing wildfire risk concerns. It would fail to fully address the need for wildfire risk reduction to the level identified by the City, OFD, stakeholders, and members of the public.

ES.7.3 Alternative 3 – No Herbicide Use Alternative

Alternative 3 is a modified version of the VMP that excludes the use of herbicides for vegetation management. Other vegetation management methods described in the VMP (i.e., grazing, hand labor techniques, and mechanical techniques) would be used in lieu of herbicides. Under Alternative 3, the City would conduct approximately 1,100 acres of goat grazing and approximately 555 acres of roadside treatment and other activities using a combination of hand labor and mechanical techniques. Under this alternative, no herbicides would be used (compared to an annual maximum of 35 acres of proposed herbicide treatment under the VMP). All other maintenance activities would be conducted as described in the VMP.

As background, in 2005, the City adopted Resolution 79133, which directed staff to evaluate the selective use of glyphosate and triclopyr for managing vegetation to reduce wildfire hazard in the City's Wildfire Prevention Assessment District. To date, herbicides have not been used for vegetation management on City-owned property or along roadsides in the VMP area. This VMP EIR process evaluates the potential environmental effects of herbicide use. However, the City also received feedback from the public during the VMP development and scoping process to consider a "no herbicide" alternative to address concerns about the potential impacts of herbicide use in the City. As such, Alternative 3 reflects public input on early drafts of the VMP.

Alternative 3, the No Herbicide Use Alternative, would meet some of the goals or objectives of the VMP; however, the elimination of herbicide use as an available vegetation management treatment would slow progress toward reducing fuel loads in the VMP area. This alternative would result in additional costs and staffing needs to conduct follow-up treatments in areas where mechanical and hand removal treatments are less effective than herbicide treatments.

ES.7.4 Alternative 4 – Reduced Herbicide Use Alternative

Alternative 4 is a modification of the VMP that would reduce, but not eliminate, herbicide application in the VMP area compared to the proposed VMP. Under Alternative 4, annual herbicide use would be reduced to a maximum of 10 acres of treatment for trees and 7.5 acres of treatment for shrubs (compared to the annual maximum of 20 acres of treatment for trees and 15 acres of treatment for shrubs under the VMP). Additionally, no herbicide application would occur within 100 feet of any creeks. Further, under this alternative, the City would use only non-Roundup™ formulations of glyphosate. In contrast, the VMP allows non-Roundup™ formulations of glyphosate as well as triclopyr and imazapyr. Alternative 4 would only allow application of herbicides using the cut-and-daub application method with a hand brush or sponge; no hand spraying would be conducted under this alternative. The City would conduct approximately 1,100 acres of goat grazing, as with the VMP, along with approximately 572.5 acres of roadside treatment and other activities (a reduction from 590 acres with the VMP) using a combination of hand labor, mechanical, and herbicide techniques.

As described above for Alternative 3, Alternative 4 reflects public input on early drafts of the VMP to consider a "reduced herbicide" alternative.

Alternative 4, the Reduced Herbicide Use Alternative, would meet some of the goals or objectives of the VMP; however, restrictions on the types and amounts of herbicide use as an available vegetation management treatment would slow progress toward improvement of fuel loads in the VMP area compared to the proposed VMP. This alternative would result in additional costs and staffing needs to conduct follow-up treatments in areas where mechanical and hand removal treatments are less effective than herbicide treatments.

ES.8 SUMMARY OF THE ENVIRONMENTAL IMPACT ANALYSIS

The environmental impacts of implementing the VMP are discussed in detail in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures.* The chapter also identifies significance conclusions for each impact (described in detail below) and describes mitigation measures that would reduce significant impacts to a less-than-significant level. **Table ES-3** (located at the end of this Executive Summary) provides an overview of the environmental impacts, mitigation measures, and levels of significance identified in this document. For the full impact analysis, refer to the resource sections of Chapter 3.

ES.8.1 Significance Thresholds and Impact Terminology

The CEQA statutes and guidelines require that, for each environmental resource topic, significance criteria are identified to determine whether implementation of the proposed project would result in a significant environmental impact when evaluated against the baseline condition, as described in the environmental setting. The significance criteria vary depending on the environmental resource topic. In general, effects can be either significant or potentially significant (exceed the threshold) or less than significant (do not exceed the threshold). In some cases, a significant impact will be identified as significant and unavoidable if no feasible mitigation measures are available that would reduce the impact to a less-than-significant level. If a project is subsequently adopted despite identified significant impacts that would result from the project, CEQA requires the lead agency to prepare and adopt a statement of overriding considerations describing the social, economic, and other reasons for moving forward with the project despite its significant impacts.

This DEIR uses the following terminology to describe environmental effects of the VMP:

- A finding of *no impact* is made when the analysis concludes that the VMP would not affect the particular environmental resource or issue.
- An impact is considered *less than significant* if the analysis concludes that there would be no substantial adverse change in the environment and that no mitigation is needed.
- An impact is considered *significant* or *potentially significant* if the analysis concludes that there would be, or could be, a substantial adverse effect on the environment.

- An impact is considered *less than significant with mitigation* if the analysis concludes that there would be no substantial adverse change in the environment with the inclusion of the mitigation measures described.

- An impact is considered *significant and unavoidable* if the analysis concludes that there could be a substantial adverse effect on the environment and that, even with the inclusion of feasible mitigation measures, the impact would not be reduced to a less-than-significant level.

- *Mitigation* refers to specific measures or activities adopted to avoid, minimize, rectify, reduce, eliminate, or compensate for an impact.

- A *cumulative impact* can result when a change in the environment results from the incremental impact of a project when added to other related past, present, or reasonably foreseeable future projects. Significant cumulative impacts may result from individually minor but collectively substantial projects. The cumulative impact analysis in this DEIR (provided in Section 4.2 of Chapter 4) focuses on whether the VMP's incremental contribution to significant cumulative impacts caused by past, present, or probable future projects is cumulatively considerable (i.e., significant).

Because the term "significant" has a specific usage in evaluating impacts under CEQA, it is used only to describe the level of significance of impacts and is not used in other contexts within this document. Synonyms such as "substantial" have been used when not discussing the significance of an environmental impact. Significant and Unavoidable Impact

CEQA requires that the Executive Summary to an EIR identify any environmental impacts that, even with mitigation, cannot be feasibly reduced to a less-than-significant level. As described in Section 3.10, "Noise and Vibration," and summarized in Table ES-3, the following significant and unavoidable impact would occur under the VMP:

- Impact NOI-1: Generate Substantial Temporary or Periodic Increase in Ambient Noise Levels; or Generate Noise in Violation of the City of Oakland Municipal Code, in Excess of General Plan Standards, California Noise Insulation Standards, or Applicable Standards Established by a Regulatory Agency

Table ES-3. Summary of Environmental Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Aesthetics			
AES-1: Substantial Adverse Effects on Public Scenic Vistas	S	**AES-1**: Conduct Visual Reconnaissance Prior to Implementing Tree Removal Activities to Determine if Vegetation Relocation or Thinning of Publicly Visible Treatment Areas is Necessary	LSM
AES-2: Substantial Damage to Scenic Views, Including Those within a State or Locally Designated Scenic Highway	S	**AES-1**: Conduct Visual Reconnaissance Prior to Implementing Tree Removal Activities to Determine if Vegetation Relocation or Thinning of Publicly Visible Treatment Areas is Necessary	LSM
AES-3: Short-term Degradation of Visual Character or Quality of Public Views	S		LSM
Grazing	LTS	None required	LTS
Mechanical and Hand Labor Treatments	S	**AES-2:** Staging (VMP BMP GEN-4)	LSM
Herbicides	LTS	None required	LTS
AES-4: Long-term Degradation of Visual Character or Quality of Public Views	S	**AES-1**: Conduct Visual Reconnaissance Prior to Implementing Tree Removal Activities to Determine if Vegetation Relocation or Thinning of Publicly Visible Treatment Areas is Necessary	LSM
Air Quality			
AQ-1: Conflict with or Obstruct Implementation of Applicable Air Quality Plans	LTS	None required	LTS

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation, or Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region Is in Nonattainment	S	**AQ-1:** Fugitive Dust BMPs **GEO-1:** Minimize Area of Disturbance (VMP BMP GEN-2) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	S		LSM
Mechanical and Hand Labor Treatments	S	**AQ-1:** Fugitive Dust BMPs **AQ-2:** Comply with Asbestos ATCM by Obtaining an Approved Asbestos Dust Mitigation Plan or Exemption **GEO-1:** Minimize Area of Disturbance (VMP BMP GEN-2)	LSM
Grazing	LTS	None required	LTS
Herbicides	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements	LSM
AQ-4: Result in Other Emissions Such as Odors Adversely Affecting a Substantial Number of People	LTS	None required	LTS
Biological Resources			
BIO-1: Potential Adverse Effects on Special-Status Plant Species	S		LSM
BIO-1A: State-Listed and/or Federally Listed Special-Status Plants	S		LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Mechanical and Hand Labor Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-2b:** Provide Compensatory Mitigation for Special-Status Plant Species **BIO-3:** Seeding with Native Species (VMP BMP BIO-10) **BIO-4:** Avoid Presidio Clarkia Sensitive Time Periods **GEO-1:** Minimize Area of Disturbance (VMP BMP GEN-2)	LSM
Grazing	S	**BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Herbicides	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
BIO-1B: CRPR 1B or 2 Plants	S		LSM
Mechanical and Hand Labor Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-2b:** Provide Compensatory Mitigation for Special-Status Plant Species **BIO-3:** Seeding with Native Species (VMP BMP BIO-10) **GEO-1:** Minimize Area of Disturbance (VMP BMP GEN-2)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Grazing	S	**BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Herbicides	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-2b:** Provide Compensatory Mitigation for Special-Status Plant Species **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	
BIO-1C: CRPR 3 or 4 Plants and Plants Listed in the CNPSEB Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database with an A rank	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-2b:** Provide Compensatory Mitigation for Special-Status Plant Species **BIO-3:** Seeding with Native Species (VMP BMP BIO-10) **BIO-5:** Grazing (revised from VMP BMP BIO-6) **GEO-1:** Minimize Area of Disturbance (VMP BMP GEN-2) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
BIO-2: Potential Adverse Effects on Special-Status Wildlife Species	S		LSM
BIO-2A: Potential Adverse Effects on Special-Status Amphibians and Reptiles	S		LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
All Treatments	S	**BIO-6:** Trash Removal (revised from VMP BMP BIO-7) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3)	LSM
Mechanical and Hand Labor Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-7:** Protection of Alameda Whipsnake (revised from VMP BMP BIO-5) **BIO-8:** Protection of California Red-legged Frogs and Western Pond Turtles (based on VMP BMP BIO-4)	LSM
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Herbicides	S	**BIO-9:** Protection of California Red-legged Frogs from Herbicide Use (VMP BMP BIO-2) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	LSM
BIO-2B: Potential Adverse Effects on Special-Status Birds and Other Protected Bird Nests			LSM
All Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-6:** Trash Removal (revised from VMP BMP BIO-7) **BIO-10:** Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1)	LSM
Mechanical and Hand Labor Treatments	S	**BIO-10:** Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Herbicides	S	**BIO-10:** Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1) **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
BIO-2C: Potential Adverse Effects on Special-Status Mammals and CEQA-relevant Bat Species	S		LSM
Mechanical and Hand Labor Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-11:** Protection of Bat Colonies (VMP BMP BIO-8) **BIO-12:** Protection of Dusky-footed Woodrats (VMP BMP BIO-9)	LMS
Grazing	LTS	None required	LTS
Herbicides	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	LMS
BIO-3: Potential Adverse Effects on Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations or by CDFW, USFWS, or NMFS	S		LSM
BIO-3A: Impacts on Riparian Habitat or Other Sensitive Natural Communities	S		LSM
All Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Mechanical and Hand Labor Treatments	S	**BIO-13:** Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat	LSM
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6) **BIO-13:** Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat	LSM
Herbicides	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
BIO-3B: Impacts Caused by Non-native and Invasive Species and Pathogens	S		LSM
Mechanical Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-3:** Seeding with Native Species (VMP BMP BIO-10) **BIO-14:** Prevent the Spread of Invasive Plants and Plant Pathogens **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8)	LSM
Hand Labor Treatments	S	**BIO-14:** Prevent the Spread of Invasive Plants and Plant Pathogens	LSM
Grazing	LTS	None required	LTS
Herbicides	S	**BIO-14:** Prevent the Spread of Invasive Plants and Plant Pathogens	LSM
BIO-4: Potential Adverse Effects on Federally Protected or State-Protected Wetlands	S		LSM
Mechanical Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		BIO-6: Trash Removal (revised from VMP BMP BIO-7) **BIO-15:** Avoid Impacts on Federally Protected and State-Protected Wetlands and Waters, as Feasible **BIO-16:** Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HAZ-6:** Spill Prevention and Response (VMP BMP GEN-7) **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	
Hand Labor Treatments	S	**BIO-15:** Avoid Impacts on Federally Protected and State-Protected Wetlands and Waters, as Feasible **BIO-16:** Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	LSM
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Herbicides	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	LSM
BIO-5: Potential Interference with Wildlife Movement, Established Wildlife Corridors, or the Use of Native Wildlife Nursery Sites	S		LSM
BIO-5A: Wildlife Movement	LTS	None required; further reduced with **BIO-5:** Grazing (revised from VMP BMP BIO-6)	LTS
BIO-5B: Potential Adverse Effects on Non-special-status Fish	S		LSM
All Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-13:** Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat	LSM
Mechanical Treatments	S	**BIO-15:** Avoid Impacts on Federally Protected and State-Protected Wetlands and Waters, as Feasible **BIO-16:** Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		HAZ-6: Spill Prevention and Response (VMP BMP GEN-7) **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	
Hand Labor Treatments	LTS	None required	LTS
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Herbicides	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
BIO-6: Conflict with Local Policies or Ordinances Protecting Biological Resources	S		LSM
All Treatments	S	**BIO-1:** Provide Biologist Review and Worker Training **BIO-2a:** Avoid Special-Status Plant Species (revised from VMP BMP BIO-3) **BIO-2b:** Provide Compensatory Mitigation for Special-Status Plant Species **BIO-3:** Seeding with Native Species (VMP BMP BIO-10) **BIO-4:** Avoid Presidio Clarkia Sensitive Time Periods **BIO-5:** Grazing (revised from VMP BMP BIO-6) **BIO-6:** Trash Removal (revised from VMP BMP BIO-7) **BIO-7:** Protection of Alameda Whipsnake (VMP BMP BIO-5) **BIO-8:** Protection of California Red-legged Frogs and Western Pond Turtles (revised from VMP BMP BIO-4) **BIO-9:** Protection of California Red-legged Frogs from Herbicide Use (VMP BMP BIO-2)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		BIO-10: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1) **BIO-11:** Protection of Bat Colonies (VMP BMP BIO-8) **BIO-12:** Protection of Dusky-footed Woodrats (VMP BMP BIO-9) **BIO-13:** Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat **BIO-14:** Prevent the Spread of Invasive Plants and Plant Pathogens **BIO-15:** Avoid Impacts on Federally Protected and State-Protected Wetlands and Waters, as Feasible **BIO-16:** Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HAZ-6:** Spill Prevention and Response (VMP BMP GEN-7) **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	
Herbicides	LTS	None required	LTS

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
BIO-7: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan	NI	None required	NI
Cultural Resources			
CUL-1: Adverse Change in Significance of Historical Resources of the Historic Era and Built Environment	LTS	None required	LTS
CUL-2: Adverse Change in Significance of Archaeological Sites that Are Historical Resources	S	**CUL-1:** Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity **CUL-2:** Avoid Use of Techniques that Cause Ground Disturbance within Known Archaeological Historical Resources **CUL-3:** Response Measures for Potential Unknown Archaeological Resources and Tribal Cultural Resources	LSM
CUL-3: Disturb Human Remains, Including Those Interred Outside of Dedicated Cemeteries	S	**CUL-4:** Stop Work if Human Remains Are Unearthed during Project Activities	LSM
Geology, Soils, and Seismicity			
GEO-1: Result in Substantial Erosion or Loss of Topsoil	S		LSM
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Mechanical Treatments	S	**AES-2:** Staging (VMP BMP GEN-4) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3) **GEO-3:** Geotechnical Evaluation **HYD/WQ-1:** Work Windows (VMP BMP GEN-1)	
Hand Labor Treatments	S	**GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3)	LSM
Herbicides	LTS	None required	LTS
GEO-2: Substantial Adverse Effects Involving Landslides	S		LSM
Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6)	LSM
Hand Labor Treatment	LTS	None required	LTS
Mechanical Treatments	S	**AES-2:** Staging (VMP BMP GEN-4) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **GEO-3:** Geotechnical Evaluation	LSM
Herbicides	LTS	None required	LTS
GEO-3: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature	S	**GEO-4:** Stop Work if Paleontological Resources Are Unearthed during VMP Treatment Activities	LSM
Greenhouse Gas Emissions			
GHG-1: Generate GHG Emissions	LTS	None required	LTS

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
GHG-2: Potential to Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs	LTS	None required	LTS
GHG-3: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy Resources or Conflict with a State or Local Plan for Renewable Energy or Energy Efficiency	S	**AQ-1:** Fugitive Dust BMPs	LSM
GHG-4: Reduction in Carbon Sequestration	LTS	None required	LTS
Hazards and Hazardous Materials			
HAZ-1: Create a Significant Hazard to the Public or the Environment from the Routine Transport, Use, or Disposal of Hazardous Materials	S		LSM
Grazing	S	**HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9)	LSM
Hand Labor Techniques	S	**HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9)	LSM
Mechanical Techniques	S	**HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5)	LSM
Herbicides	S	**HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	
HAZ-2: Create a Significant Hazard to the Public or the Environment through the Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	S	**HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-6:** Spill Prevention and Response (VMP BMP GEN-7)	LSM
HAZ-3: Create a Significant Hazard to the Public through the Storage or Use of Acutely Hazardous Materials near Sensitive Receptors	S	**HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
HAZ-4: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School	S	**HAZ-4:** Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2)	LSM
HAZ-5: Be Located on a Site that Is Included on a List of Hazardous Materials Sites Compiled Pursuant to California Government Code Section 65962.5, and as a Result, Create a Significant Hazard to the Public or the Environment	S	**HAZ-7:** Review Proximity of Proposed Treatment Sites to Known Hazardous Materials Clean-up Sites and Implement Safety Measures **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6) **HAZ-9:** Proper Handling and Disposal of Contaminated Soil and Groundwater	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
HAZ-6: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
Hydrology and Water Quality			
HYD/WQ-1: Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Water Quality or Conflict with or Obstruct the Implementation of a Water Quality Control Plan or Conflict with the City of Oakland Creek Protection Ordinance through Hand Labor, Herbicide Application, or Mechanical Techniques	S	**HYD/WQ-1:** Work Windows (VMP BMP GEN-1) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HAZ-6:** Spill Prevention and Response (VMP BMP GEN-7) **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6)	LSM
HYD/WQ-2: Violate Water Quality Standards or Waste Discharge Requirement or Otherwise Substantially Degrade Water Quality or Conflict with or Obstruct the Implementation of a Water Quality Control Plan or Conflict with the City of Oakland Creek Protection Ordinance through Grazing	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3)	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
HYD/WQ-3: Substantially Alter Existing Drainage Pattern of Site or Area, or Create or Contribute Runoff Water that Exceeds Capacity of Stormwater Systems, or Results in Substantial Erosion or Exposes People or Structures to a Substantial Risk of Loss, Injury, or Death as a Result of Flooding or Inundation by Mudflow	S	**BIO-5:** Grazing (revised from VMP BMP BIO-6) **HYD/WQ-1:** Work Windows (VMP BMP GEN-1) **GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **HAZ-2:** Vehicle and Equipment Fueling (VMP BMP GEN-9) **HAZ-3:** On-Site Hazardous Materials Management (VMP BMP GEN-5) **HAZ-5:** Standard Herbicide Use Requirements (VMP BMP VEG-2) **HAZ-6:** Spill Prevention and Response (VMP BMP GEN-7) **HAZ-8:** Existing Hazardous Materials (VMP BMP GEN-6)	LSM
HYD/WQ-4: Substantially Decrease Groundwater Supplies or Interfere with Groundwater Recharge Such That There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level	LTS	None required	LTS
Noise			
NOI-1: Generate Substantial Temporary or Periodic Increase in Ambient Noise Levels; or Generate Noise in Violation of the City of Oakland Municipal Code, in Excess of General Plan Standards, California Noise Insulation Standards, or Applicable Standards Established by a Regulatory Agency			

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Grazing and Herbicide Treatments	LTS	None required	LTS
Hand Labor Treatments	S	**NOI-1:** Limit Work Near Sensitive Receptors **NOI-2:** Notify Sensitive Receptors Near Treatment Areas	SU
Mechanical Treatments	S	**NOI-1:** Limit Work Near Sensitive Receptors **NOI-2:** Notify Sensitive Receptors Near Treatment Areas	SU
NOI-2: Generate Groundborne Vibration or Groundborne Vibration Levels that Exceed FTA Criteria	LTS	None required	LTS
Recreation			
REC-1: Increased Use of Recreational Facilities Such that Substantial Physical Deterioration Would Occur	LTS	None required	LTS
REC-2: Temporary Disruption of the Use of, or Access to, Recreational Facilities	S	**REC-1:** Provide Notification of Temporary Trail Closures	LSM
Transportation			
TRA-1: Conflict with a Program Applicable Plan, Ordinance or Policy Addressing the Circulation System, Including Transit, Roadway, Bicycle and Pedestrian Facilities			
Roadside Treatment Areas and Medians	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
Ridgetop Areas	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
Canyon Areas	S	**TRA-1:** Maintain Traffic Flow	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		TRA-2: Traffic Control and Public Safety	
City Parks and Open Space Areas	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
Urban and Residential Parcels	LTS	None required	LTS
Other Areas	LTS	None required	LTS
TRA-2: Result in Substantial Increase in Vehicle Miles Traveled	LTS	None required	LTS
TRA-3: Substantially Increase Hazards due to a Design Feature or Incompatible Uses	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
TRA-4: Result in Inadequate Emergency Access	S	**TRA-1:** Maintain Traffic Flow **TRA-2:** Traffic Control and Public Safety	LSM
Tribal Cultural Resources			
TCR-1: Substantial Adverse Change in the Significance of a Tribal Cultural Resource	S	**CUL-1:** Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity **CUL-2:** Avoid Use of Techniques that Cause Ground Disturbance within Known Archaeological Historical Resources **CUL-3:** Response Measures for Potential Unknown Archaeological Resources and Tribal Cultural Resources **CUL-4:** Stop Work if Human Remains Are Unearthed during Project Activities	LSM
Wildfire			
WLD-1: Substantially Exacerbate Wildfire Risk and Expose People to Uncontrolled Spread of a Wildfire	S	**HAZ-1:** Vehicle and Equipment Maintenance (VMP BMP GEN-8) **WLD-1:** Fire Prevention	LSM

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
WLD-2: Expose People or Structures to Substantial Risks Related to Post-Fire Landslides or Flooding			
Mechanical Treatments	S	**GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3) **GEO-3:** Geotechnical Evaluation	LSM
Hand Labor Treatments	S	**GEO-1:** Minimize Soil Disturbance (VMP BMP GEN-2) **GEO-2:** Erosion and Sediment Control Measures (VMP BMP GEN-3)	LSM
Grazing	LTS	None required	LTS
Herbicides	LTS	None required	LTS
Cumulative Impacts			
Cum-BIO-1: Cumulative Effects on Biological Resources	S	BIO-1 through BIO-16	LSM
Cum-NOI-1: Cumulative Effects Related to Noise	S	NOI-1 and NOI-2	SU

Notes: LSM = less than significant with mitigation; LTS = less than significant; NI = no impact; S = significant; SU = significant and unavoidable

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Chapter 1
Introduction

The City of Oakland (City) has developed a Draft Vegetation Management Plan (VMP) that describes the actions that the Oakland Fire Department (OFD) would continue to take over the plan's 10-year timeframe to reduce fire hazard on 1,924 acres of City-owned land and along 308 miles of roadways in the City's designated Very High Fire Hazard Severity Zone (VHFHSZ). The VMP has been developed to meet the City's stated goals of reducing wildfire hazard on City-owned land and along critical access/egress routes, reducing the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety, avoiding or minimizing impacts to natural resources, and contributing to regional efforts to reduce wildfire hazard in the Oakland Hills.

The California Environmental Quality Act (CEQA) requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before approving or carrying out those projects. As the lead agency for the VMP project under CEQA, the City has prepared this Draft Environmental Impact Report (DEIR) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of implementing the Draft VMP. This DEIR was prepared in compliance with the requirements of CEQA (as amended) and the CEQA Guidelines (California Code of Regulations [Cal. Code Regs.], tit. 14, Section 15000 et seq.).

This DEIR describes and summarizes the proposed actions of the VMP in Chapter 2, *Project Description*, and the environmental resource sections of Chapter 3. More detail is provided in the Draft VMP, which is provided in its entirety in **Appendix A**, *Draft Vegetation Management Plan,* of this DEIR.

1.1 OAKLAND FIRE DEPARTMENT

The Oakland Fire Department (OFD) has been actively managing vegetation on City-owned property since 2003 to minimize wildfire hazard in the VMP area, utilizing various techniques including grazing, hand crews, and limited mechanical treatments. Goats have been used in large treatment areas, on City park land and open space (e.g., King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Sheffield Village Open Space, Shepherd Canyon, and London Road) where manual labor is cost-prohibitive or areas are inaccessible to mowing equipment or too steep for hand crews. OFD has historically used hand labor to manage vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas. Mechanical equipment has also been used on an as-needed basis typically to grade or disk fire trails, reduce ladder fuels (e.g., removing small trees), control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing grasses), chip and spread trimmings and down material, thin vegetation, and maintain reduced or target fuel loads.

Between 2004 and 2017, OFD conducted vegetation management activities throughout the Wildfire Prevention Assessment District (WPAD), a City-funded special assessment district that coincides with the City's Very High Fire Hazard Severity Zone (VHFHSZ). This district financed the costs and expenses related to vegetation management, yard waste disposal, wildfire prevention education, and fire patrols in the Oakland Hills. The WPAD was disbanded in June 2017 due to funding constraints. Although OFD has continued to conduct vegetation management activities on City-owned properties and along roads since 2017, these activities have been conducted to a lesser degree than when the WPAD was in place.

1.2 PLAN BACKGROUND

The Oakland Hills is the location of one of the state's most destructive historic wildfires, the 1991 Tunnel Fire, which destroyed 2,900 structures, injured more than 150 people, and killed 25 people. The Oakland Hills represents a complex wildfire environment that presents a significant risk to public and firefighter safety and to the built and natural environment due to local extreme wind and weather conditions (including Diablo wind events), steep and varied terrain, and a wide range of different vegetation types. Of the variables that comprise the wildland fire environment (weather, terrain, and fuels or vegetation), vegetation is the only variable that can be managed. Lessons learned from the 1991 Tunnel Fire and other more recent, devasting wildfires in Northern California highlight the importance of managing vegetation to reduce wildfire hazard.

Many jurisdictions in the region have developed management plans and programs to improve vegetation management, reduce fire fuel loads, and minimize wildfire hazard. These efforts include the City's Local Hazard Mitigation Plan; plans developed by the WPAD; and management plans and environmental documents prepared by Chabot Space and Science Center, East Bay Regional Park District, University of California at Berkeley, U.S. Fish and Wildlife Service, Alameda County, California Department of Forestry and Fire Protection/Santa Clara Unit, and Federal Emergency Management Agency, among others. The City, in close coordination with OFD, regional partners described above, and a broad range of stakeholder groups, developed the VMP to reduce fire hazards on City-owned land and critical access/egress routes in City-designated VHFHSZ areas, reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety, avoid or minimize impacts to natural resources, and contribute to regional efforts to reduce wildfire hazard in the Oakland Hills. The Draft VMP (provided in Appendix A) includes descriptions of City-owned parcels and roadsides located within the City's VHFHSZ, natural resources at these locations, vegetation management techniques to reduce fire hazards, maintenance standards for the different types of treatment areas, and practices to avoid and minimize potential environmental impacts when conducting vegetation management work.

1.3 OVERVIEW OF CEQA REQUIREMENTS

As described in Public Resources Code Section 21000, CEQA has several basic purposes:

- Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities.
- Identify the ways in which environmental damage can be avoided or substantially reduced.
- Prevent significant, avoidable damage to the environment by requiring implementation of feasible mitigation measures or project alternatives that would substantially lessen any significant effects that a project would have on the environment.
- Disclose to the public the reasons why a governmental agency approved a project in the manner the agency chose if significant environmental effects are involved.

With certain, strictly limited exceptions, CEQA requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before approving or carrying out those projects. CEQA establishes procedural and substantive requirements that agencies must satisfy to meet CEQA's objectives. For example, the agency with principal responsibility for approving or carrying out a project (the lead agency) must first assess whether a proposed project would result in significant environmental impacts. If there is substantial evidence that the project would result in significant environmental impacts, CEQA requires that the agency prepare an environmental impact report (EIR) analyzing both the proposed project and a reasonable range of potentially feasible alternatives. The VMP is the project for this CEQA analysis and the City is the lead agency under CEQA.

As described in the CEQA Guidelines (Cal. Code Regs., tit. 14, Section 15121, subd. [a]), an EIR is an informational document that assesses potential environmental effects of a proposed project and identifies mitigation measures and alternatives to the project that could reduce or avoid potentially significant environmental impacts. Other key CEQA requirements include developing a plan to implement and monitor the success of the identified mitigation measures and carrying out specific public notice and distribution steps to facilitate public involvement in the environmental review process. As an informational document used in the planning and decision-making process, an EIR's purpose is not to recommend either approval or denial of a project. Note that an EIR does not expand or otherwise provide independent authority for the lead agency to impose mitigation measures or avoid project-related significant environmental impacts beyond the authority already within the lead agency's jurisdiction.

1.4 SCOPE AND INTENT OF THIS DOCUMENT

The City is the lead agency for the CEQA process and has discretionary review and approval authority for project activities that are subject to CEQA (CEQA Guidelines Section 15378). The City will use the analyses presented in this DEIR, and the public response to them, to evaluate the proposed program's environmental impacts. The City of Oakland Planning Commission will be responsible for considering the potential certification of this DEIR.

The intent of this DEIR is to evaluate in detail the vegetation management activities to be conducted under the VMP. The analysis in the DEIR has been prepared at a project level in accordance with CEQA Guidelines Section 15161. Accordingly, this DEIR focuses on the changes in the environment that could result during all phases of the project, including maintenance planning and implementation, such that the DEIR adequately satisfies all CEQA requirements to support project implementation without the need for further CEQA documentation.

1.5 CEQA PROCESS

The following discussion explains the steps in the CEQA process.

1.5.1 Notice of Preparation

A Notice of Preparation of an EIR (NOP) for the VMP was prepared in accordance with the State CEQA Guidelines (CEQA Guidelines Section 15082) and was circulated to the Office of Planning and Research's State Clearinghouse on November 1, 2019. The original scoping period started on November 1, 2019 for 31 days, ending on December 2, 2019. However, the scoping period was extended to December 12, 2019, to allow the public and interested parties additional time to comment on the scope of the DEIR and to correct the contact name and email address of Angela Robinson Piñon, the person receiving comments during the scoping period. Thus, the scoping period extended for a total of 41 days. The NOP presented general background information on the VMP, the scoping process, and the environmental issues to be addressed in the DEIR. Copies of the NOP were distributed by mail and email to a broad range of stakeholders, including state, federal, and local regulatory agencies and jurisdictions, utilities, and interested individuals in the area. In addition, the NOP was published on the City's website (oaklandca.gov/documents/oakland-vegetation-management-plan-comment-period-extension). The NOP is included in this DEIR in **Appendix B**, *Scoping Summary*.

1.5.2 Scoping Comments and Meeting

As described in more detail in Section 2.2.2, several public and stakeholder engagement meetings were conducted to support development of the VMP. Six workshops/meetings were conducted in 2017 and 2018 during development of the Draft VMP. In addition to the public meetings, a number of additional phone calls, meetings, and on-site field meetings were held with stakeholders interested in the VMP to collect additional public input. The Oakland City Council, Public Safety Committee further directed the VMP development team to conduct additional outreach to park volunteer/stewardship groups to receive information on current activities being conducted in City parks that occur in the VMP area with the intent of incorporating volunteer/stakeholder input into annual vegetation management planning efforts described in the VMP. In total, 11 additional group meetings were held in spring 2019 with stakeholders interested in the VMP.

To provide the public, as well as responsible and trustee agencies, an opportunity to ask questions and submit comments on the VMP and the scope of the DEIR, the City held a public scoping meeting during the public scoping period. As described above, notices of the meeting were mailed to interested parties; in addition, scoping meeting information was published

on the City's website prior to the event (oaklandca.gov/projects/oakland-vegetation-management-plan).

The scoping meeting was held before the Oakland Planning Commission on Wednesday, November 20, 2019, at 6:00 p.m. at Oakland City Hall, 1 Frank H. Ogawa Plaza, Oakland.

The City also presented an update on the VMP and DEIR as an item to the Oakland City Council, Public Safety Committee on Tuesday, December 3, 2019.

The City accepted verbal and written comments at the scoping meeting and the Public Safety Committee meeting, and accepted both written and electronic comments (via email) during the 41-day scoping period. During the scoping period, 41 comment letters were received. These comments were considered in this CEQA evaluation and are summarized in **Appendix B**.

1.5.3 DEIR Distribution and Meeting

The City has prepared this DEIR, as informed by public and agency input received during the scoping period, to disclose environmental impacts associated with the VMP. Where any such impacts are significant, feasible mitigation measures and potentially feasible alternatives that would substantially lessen or avoid such effects are identified and discussed. The public review period allows the public an opportunity to provide input to the lead agency on the DEIR.

The DEIR is currently undergoing public review for 45 days. During this period, the City will hold one public meeting to receive comments on the DEIR on December 16, 2020 at 3:00 p.m. The meeting will occur during the City of Oakland Planning Commission meeting and will be hosted on Zoom. For links to the meeting, please visit: https://www.oaklandca.gov/boards-commissions/planning-commission/meetings. The meeting will begin with a brief overview of the proposed project and the analysis and conclusions set forth in the DEIR. The introductory presentation will be followed by the opportunity for interested members of the public to provide comments to the City regarding the VMP and the DEIR. Commenters may provide oral comments at the meeting.

1.5.4 Certification of the Final EIR

Once the public review period is closed, the City will prepare a Final EIR (FEIR). The FEIR will incorporate this DEIR by reference. It will contain all comments submitted on this DEIR (including those made at public meetings), responses to those comments, and any revisions to the text of this DEIR. The FEIR will be reviewed by the City of Oakland Planning Commission and considered for approval by the City Council.

Written/emailed and oral comments received in response to the DEIR will be addressed in the "Responses to Comments" section of the FEIR. Together with the DEIR and any related changes to the substantive discussion in the DEIR, these responses will constitute the FEIR. The FEIR, in turn, will inform the City's exercise of its discretion as a lead agency under CEQA in deciding whether or how to approve the VMP.

1.6 ORGANIZATION OF THIS DEIR

This DEIR contains the following components:

Executive Summary. A summary of the VMP, the issues of concern, project alternatives, environmental impacts, and mitigation measures are provided in this chapter.

Chapter 1, *Introduction*. This chapter describes the purpose and organization of the DEIR and its preparation, review, and certification process.

Chapter 2, *Project* Description. This chapter summarizes the VMP, including a description of the background and development process, VMP Area, purpose and objectives, proposed actions that would be taken under the VMP, and related permits and approvals associated with implementing the VMP.

Chapter 3, *Environmental Setting, Impacts, and Mitigation* Measures. This chapter contains an introduction to the impact analysis conducted in this DEIR and identifies resource topic areas determined not to be affected by the VMP (Section 3.1). Sections 3.2 through 3.14 describe the environmental resources and potential environmental impacts of the VMP. Each of these sections describes the existing setting and background information for the particular resource topic. The purpose of providing this background is to give the reader an understanding of the resources that could be affected by the VMP. Each of these resource sections includes a discussion of the criteria used to determine the significance levels of the VMP's potential impacts. Each section also provides mitigation measures to reduce, where possible, any adverse effects from potentially significant impacts.

Chapter 4, *Other Statutory* Considerations. This chapter addresses the VMP's potential to have growth-inducing impacts or contribute to cumulative impacts, defined as the incremental impact of the VMP when added to other related impacts of past, present, and reasonably foreseeable future projects. Any impacts identified as significant and unavoidable are listed in this chapter.

Chapter 5, Alternatives. This chapter describes the process by which alternatives to the VMP were developed and screened. It also evaluates likely environmental impacts of the potential alternatives and identifies the environmentally superior alternative.

Chapter 6, References. This chapter provides a bibliography of printed references, websites, and personal communications used in preparing this DEIR.

Chapter 7, *Report Preparation*. This chapter identifies staff from the City of Oakland, OFD, Horizon Water and Environment, and Dudek who assisted in preparing this DEIR.

Appendices

- Appendix A, *Draft Vegetation Management Plan*
- Appendix B, *Scoping Summary*

- Appendix C, *Air Quality/Greenhouse Gas/Energy Calculations*
- Appendix D, *Biological Resources Information*
- Appendix E, *Cultural Resources Record Search Information*
- Appendix F, *Noise and Vibration*
- Appendix G, *Tribal Cultural Resources*

1.7 SUBMITTAL OF COMMENTS

The City is circulating this DEIR for a 45-day public review and the comment period will end on January 7, 2021. As discussed above, the City will host one public meeting during this period at which oral comments will be received. The meeting will be on December 16, 2020 at 3:00 p.m. and occur during the City of Oakland Planning Commission meeting. The meeting will be hosted on Zoom. For links to the meeting, please visit: www.oaklandca.gov/boards-commissions/planning-commission/meetings.The purpose of public circulation and the public meeting is to provide agencies and interested individuals with opportunities to comment on or express concerns regarding the contents of this DEIR.

Oral comments concerning this DEIR can be submitted at the public meeting described above or written/emailed comments may be submitted to DEIR-comments@oaklandvegmanagement.org at any time during the DEIR public review period. All comments must be received by 5:00 p.m. on January 7, 2021 and directed to the name and address listed below:

Contact Name: Ken Schwarz

Address: Horizon Water and Environment
266 Grand Avenue, Suite 210
Oakland, CA 94610

Phone Number: (510) 986-1851

Email: DEIR-comments@oaklandvegmanagement.org

Submittal of written comments by e-mail (Microsoft Word or portable document format [PDF]) would be greatly appreciated. Written comments received in response to this DEIR during the public review period will be addressed in the "Responses to Comments" section of the FEIR.

All documents mentioned herein or related to this project can be reviewed online at the City's website (www.oaklandca.gov/projects/oakland-vegetation-management-plan).

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Chapter 2
Project Description

2.1 INTRODUCTION

This chapter describes objectives and key components of the VMP, including specific treatment projects, vegetation techniques, necessary equipment, and the general timeline for implementing proposed treatment projects. The Executive Summary of the Draft VMP is provided in **Appendix A***, Draft Vegetation Management Plan,* of this DEIR; the complete Draft VMP can be viewed at the following link: www.oaklandvegmanagement.org/wp-content/uploads/2019/11/Oakland-VMP_Revised-Draft_NOV-1-2019.pdf.VMP Area

The VMP area encompasses City-owned parcels and areas within 30 feet of the edge of roadsides located within the City's Very High Fire Hazard Severity Zone (VHFHSZ), as designated by the California Department of Forestry and Fire Protection (CAL FIRE) and defined in Section 4904.3 of the Oakland Fire Code (Oakland Municipal Code Chapter 15.12). Specifically, as shown in **Figure 2-1**, the VMP area includes 419 City-owned parcels, ranging in size from <0.1 acre to 235 acres and totaling 1,924 acres. For VMP planning purposes, parcels have been divided into the following categories: urban and residential, canyon areas, ridgetop areas, City park lands and open space, other areas, and road medians. The VMP also includes roadside areas along 308 miles of road within the City's VHFHSZ, including surface and arterial streets, State Routes (SRs) 13 and 24, and Interstate 580 (I-580). Table 2-1 summarizes the categories, sizes, and quantities of City-owned parcels in the VMP area.

Table 2-1. City-owned Parcels within the VMP Area

Parcel Category	Quantity	Total Acreage
Urban and Residential	152	51.2
Canyon Areas	89	188.7
Ridgetop Areas	11	130.2
City Park Lands and Open Space	91	1,552.9
Other Areas*	43	24.5
Medians	33	6.1
Total:	419	1,923.6

* Other areas are developed City-owned properties in the VMP area that include fire stations (nos. 6, 7, 21, 25, and 28), City facilities (parking lots, police stations), paved areas, and parks and playgrounds.

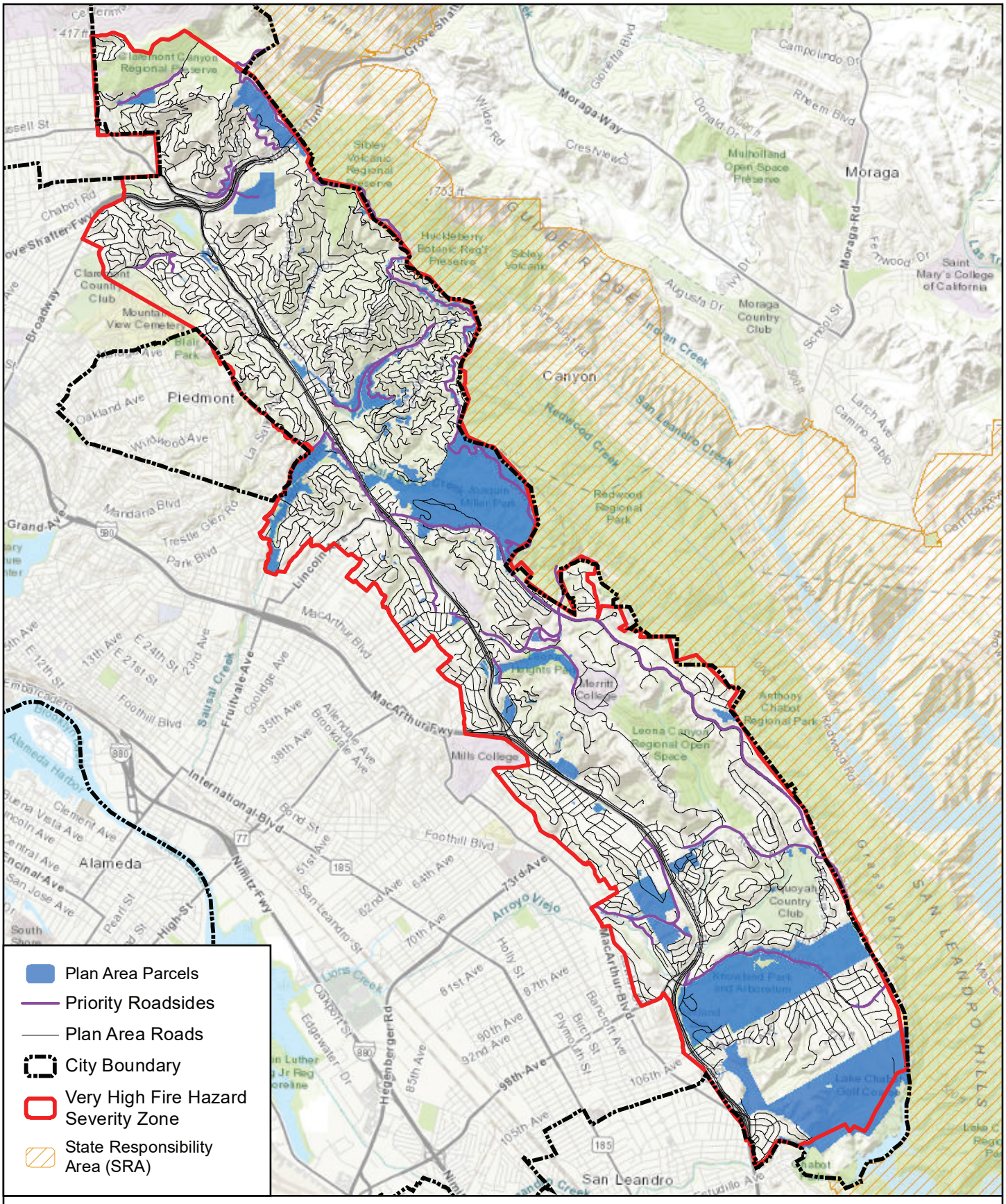


Figure 2-1.
Vegetation Management Plan Area

Vegetation Management Plan
Draft Environmental Impact Report

City parks, recreational and open space areas considered in the VMP include: Beaconsfield Canyon, Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Complex, Grizzly Peak Open Space, City Stables, Sheffield Village Open Space, Knowland Park and Arboretum, King Estate Open Space Park, Joaquin Miller Park, Tunnel Road Open Space, Marjorie Saunders Park, and Oak Knoll.

The pattern of development and land uses within the VMP area (and VHFHSZ) creates conditions that can be described as representing either a wildland urban interface or a wildland urban intermix. Areas where urban development abuts vegetative fuels are known as the wildland urban interface (WUI). This condition exists within the VMP area where structures abut City parklands and open space. Areas where the density of housing units and structures is lower and/or the space between structures consists of vegetative fuels capable of propagating fire are more typically characterized as a wildland urban intermix (Intermix). This condition exists throughout the VMP area, most commonly where smaller undeveloped lots covered by vegetative fuels are situated between structures.

2.2 BACKGROUND AND PLAN DEVELOPMENT PROCESS

2.2.1 Background

California has faced a dramatic increase in the number and severity of wildfires. Since 2000, 15 of the 20 most destructive wildfires in the state's history have occurred and ten of these have occurred since 2015. During development of the VMP, numerous significant, catastrophic wildfires have occurred in California, including several in Northern California. The 2017 Nuns, Tubbs, and Pocket Fires in Napa and Sonoma Counties collectively burned over 110,000 acres, destroyed over 6,800 structures, and resulted in 25 fatalities. The 2018 Carr Fire in Shasta County burned nearly 230,000 acres, destroyed over 1,600 structures, and resulted in 8 fatalities. Finally, the 2018 Camp Fire in Butte County burned over 153,000 acres, destroyed nearly 19,000 structures, and resulted in 85 fatalities. The 2018 wildfire season was the deadliest and most destructive wildfire season on record in California (CAL FIRE 2018). While these fires occurred under extreme climatic conditions, preliminary research indicates that proper planning and preemptive vegetation management can aid in wildfire resiliency[1].

The Oakland Hills present a complex wildfire environment that presents a significant risk to public and firefighter safety and to the built and natural environment. The region has been subject to numerous damaging wildland fires, is influenced by local extreme wind and weather conditions (including Diablo wind events), has steep and varied terrain, and encompasses a wide range of different vegetation types. This area is one of the highest risk areas in the country for devastating WUI fires. It is also the location of one of the state's most destructive historic wildfires, the 1991 Tunnel Fire which destroyed 2,900 structures, injured more than 150 people, and killed 25 people (CAL FIRE 2019). Most wildfires in Oakland have burned in the months of

[1] Wildfire resiliency generally includes adaptation strategies that can help wildfire-prone communities become more resilient to wildfire.

September, October, or November when vegetation has lower fuel moistures and Diablo winds return to the VMP area.

Of the variables that comprise the wildland fire environment (weather, terrain, and fuels or vegetation), vegetation is one variable that can be managed. As described further in Section 2.3.1, the goal of vegetation management in the VMP is not the wholesale removal of all vegetation. Instead, the VMP proposes targeted vegetation management activities to minimize the potential for ignitions, crown fires, and extreme fire behavior; create potential fire breaks; and help retain safe evacuation routes. This is accomplished by reducing and maintaining reduced fuel loads and altering the structure, composition, and spacing of retained vegetation.

Current and Recent Vegetation Management Activities led by Oakland Fire Department

OFD's Fire Prevention Bureau currently operates a vegetation inspection program that covers approximately 26,000 public and private property inspections annually in the VHFHSZ portion of the City. Inspections are mandated by City of Oakland Ordinance No. 11640. On an annual basis, fire companies and vegetation management inspectors inspect these properties to identify those that are out of compliance with the City's defensible space standards (refer to Fire Code Section 4907 of the Oakland Municipal Code Chapter 15.12). Repeat inspections are conducted until properties are brought to compliance.

OFD has been actively managing vegetation on City-owned property since 2003 to minimize wildfire hazard in the VMP area, utilizing various techniques including grazing, hand crews, and limited mechanical treatments. Approximately 3,000 goats have been utilized annually (typically between May and August) to manage fine fuels on approximately 600-1,100 acres of City-owned property, typically on larger City park land and open space (e.g., King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Sheffield Village Open Space, Shepherd Canyon, and London Road). Goats have been used in large treatment areas where manual labor is cost-prohibitive to treat vegetation in areas that are inaccessible to mowing equipment or in areas too steep for hand crews.

In addition, OFD has historically used hand labor for managing vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas. OFD annually contracts with private contractors to manage vegetation on urban and residential parcels. The use of hand labor is focused on reducing ladder fuels[2], controlling highly flammable/rapidly spreading species (e.g., broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Lastly, mechanical equipment is used on an as-needed basis to grade or disk fire trails, reduce ladder fuels (e.g., small tree removal), control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing grasses), chip and spread trimmings and down material, thin vegetation, and maintain reduced or target fuel loads.

Between 2004 and 2017, OFD conducted vegetation management activities throughout the WPAD, a City-funded special assessment district that coincides with the City's VHFHSZ, which

[2] Ladder fuel is fuel that can carry a fire burning in low-growing vegetation to taller vegetation.

financed the costs and expenses related to vegetation management, yard waste disposal, wildfire prevention education and fire patrols in the Oakland hills. The District was disbanded in June 2017. Since 2017, OFD has continued to conduct vegetation management activities on City properties and along roads, albeit at a lesser degree than when the WPAD was in place due to funding constraints. Absent approval of the VMP, those activities are intended to continue at current levels under the Public Works/OFD annual budget. Refer to Chapter 3, Table 3.1-1 for a more detailed breakdown of goat grazing and roadside treatment activities conducted over the last 15 years.

2.2.2 VMP Development Process

Development of the VMP included a detailed field assessment of wildfire hazard, which was used to identify and classify existing vegetation community and land cover types into fuel models, and map areas with high ignition potential or where extreme wildfire behavior would be expected given current terrain and fuel conditions. VMP development also included assessment and processing of geographic information system (GIS) datasets for variables influencing wildfire hazard in the VMP area, coordination with OFD personnel, fire behavior modeling, and significant public and stakeholder outreach to better understand current vegetation management activities in the VMP area.

Field Assessments

OFD's consultant team (Horizon Water and Environment [Horizon] and Dudek) conducted a series of field assessments in support of the VMP. Field assessments were conducted to map and classify the existing vegetation communities and land cover types present in the VMP area, which include coast oak woodland, redwood, valley/foothill riparian, closed-cone pine-cypress, eucalyptus, coastal scrub, mixed chaparral, freshwater emergent wetland, perennial grassland, annual grassland, and urban land covers. Figures 4.1 through 4.10 of the VMP (see Appendix A of this DEIR) show the distribution of these vegetation communities within the VMP area.

Field assessments were conducted between December 2016 and August 2017 to evaluate existing fuel load conditions and understand general fuel hazard conditions and current maintenance practices being conducted by OFD within the VMP area. In addition, field assessments were also used to identify and classify vegetation community types into fuel models. Table 3 of the VMP summarizes how vegetation community or land cover types present in the VMP area were assigned to specific fuel models; Appendix C of the VMP provides a more detailed discussion of fuel models. Collectively, the field assessment of existing vegetation and land cover types, assessment of fuel load conditions, and identification of how vegetation types aligned with existing fuel models served as the basis for the proposed vegetation management projects described in the VMP. A list of high fire hazard plant species is included in Appendix D of the VMP (provided in Appendix A of this DEIR) and is derived from plant lists developed by the City of Oakland (2017) and Moritz and Svihra (1998) and those identified as highly flammable/rapidly spreading plants in Section 2.3.1.4 of the VMP.

Fire Behavior Model

The FlamMap (version 5.0.3) software package was used to identify portions of the VMP area that may be subject to extreme fire behavior, considering weather, fuels, and terrain variables.

FlamMap is a GIS-driven computer program that incorporates fuels, weather, and topography data in generating static fire behavior outputs, including values associated with flame length and crown fire[3] activity, among others. The calculations that come from FlamMap are based on the BehavePlus fire modeling system algorithms but result in geographically distinct datasets based on GIS inputs. The FlamMap model outputs are intended to allow wildland managers to evaluate anticipated fire behavior and were used to model flame length and crown fire activity for a portion of the VMP area. A detailed discussion of the FlamMap modeling process and results are included in the VMP. This particular fire behavior modeling system was selected given its capabilities for mapping potential fire behavior using GIS. In addition, the BehavePlus software package (version 6.0.0) was used to highlight the difference in fire behavior characteristics for each of the different fuel models utilized for analyzing fire behavior for this VMP.

Public Engagement

Several public and stakeholder engagement meetings were conducted to support development of the VMP. Six workshops/meetings were conducted during development of the Draft VMP, as summarized in **Table 2-2**. A status update was provided to the Oakland City Council, Public Safety Committee on July 17, 2018. As an outcome of that meeting and at the direction of the Public Safety Committee, two additional public meetings were held in November 2018.

Table 2-2. Public and Stakeholder Engagement in the VMP Development Process

Date	Location/Group	Meeting Type
Initial Public Engagement (VMP Development)		
March 29, 2017	Dunsmuir Estate	Workshop to introduce the scope and purpose of the VMP and receive public input and feedback
March 30, 2017	Trudeau Center	Workshop to introduce the scope and purpose of the VMP and receive public input and feedback
June 29, 2017	Trudeau Center	Workshop to provide an update on the VMP development process and receive public input and feedback
May 23, 2018	Oakland City Hall	Workshop to present the First Draft VMP and receive public input and feedback
Additional Public Engagement (Public Safety Committee)		
November 15, 2018	Trudeau Center	Workshop to receive input from the public, targeted toward park stewardship and volunteer groups working on City-owned parcels
November 20, 2018	Oakland City Hall	Workshop to receive input from the public, focused on increased specificity of the VMP

[3] A crown fire is a forest fire that advances, often at great speed, from treetop to treetop.

Date	Location/Group	Meeting Type
Additional Stakeholder/Volunteer Input		
March 22, 2019	Friends of Dimond Park	Reviewed site conditions and management recommendations in Dimond Park
March 22, 2019	Knowland Park Adopt-a-Spot	Reviewed site conditions and management recommendations in the northeast portion of Knowland Park, and along the frontage road that parallels Skyline Boulevard
March 23, 2019	Oakland Landscape Committee	Reviewed site conditions and management recommendations at the North Oakland Regional Sports Field
March 29, 2019	Friends of Joaquin Miller Park and Friends of Sausal Creek	Reviewed site conditions and management recommendations at Beaconsfield Canyon and Joaquin Miller Park
April 5, 2019	Garber Park Stewards and Claremont Canyon Conservancy	Reviewed site conditions and management recommendations at Garber Park
April 6, 2019	Friends of Sausal Creek	Reviewed site conditions and management recommendations at Dimond Canyon and Dimond Park
April 12, 2019	Friends and Knowland Park and East Bay Native Plant Society	Reviewed site conditions and management recommendations at Knowland Park
April 18, 2019	Friends of Montclair Railroad Trail	Reviewed site conditions and management recommendations at the Montclair Railroad Trail in Shepherd Canyon
May 1, 2019	Oak Knoll Neighborhood Improvement Association	Reviewed site conditions and management recommendations at King Estate Open Space Park
May 3, 2019	Shepherd Canyon Homeowners Association	Reviewed site conditions and management recommendations at Shepherd Canyon Park
May 17, 2019	Coalition to Defend East Bay Forests, Forest Action Brigade, and Hills Conservation Network	Reviewed management recommendations throughout the VMP area

Volunteers and stakeholder groups that provided input during the VMP development process are identified in Appendix K of the VMP. In addition to the identified stewardship groups in Appendix K, the Oakland Wildland Stewards (OWLS) is a coalition of stewardship groups operating in the VMP area, and individual members provided input during the stakeholder meetings.

Development of Vegetation Treatment Projects

Based on coordination with OFD personnel, fire behavior modeling, and public input received throughout the VMP development process, vegetation treatment projects were identified and prioritized based on proximity to VMP area structures, roads, ridgelines, and park access gates where fire behavior is anticipated to be extreme (high flame lengths and/or crown fires), and

where continuation of the City's goat grazing program would effectively maintain lower fuel loads. Identified priority projects total 1,366 acres within the VMP area's 1,924 total acres. The VMP also prioritizes vegetation management along 30 miles of primary access/egress routes in the VMP area. The vegetation treatment projects are provided in Section 9.2 of the VMP (see Appendix A of this DEIR). VMP treatment areas and priority rankings are described in Sections 2.3.4 and 2.3.5, below.

2.3 PROPOSED PROJECT

2.3.1 Goals and Objectives

The CEQA Guidelines call for the identification of objectives sought by a proposed project (CEQA Guidelines Section 15124[b]). A statement of objectives helps convey the reasons for considering approval of the VMP, including its intended benefits, and guides the development of a reasonable range of alternatives to evaluate in the EIR. The City has identified the following primary goals for the VMP:

- Reduce wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ;
- Reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety;
- Implement practices to avoid or minimize impacts to natural resources;
- Maintain an active role in regional efforts to reduce wildfire hazard in the Oakland hills.

The objectives of the VMP are as follows:

- Reduce the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuel loads, and modifying fuel arrangements on City-owned lands.
- Reduce the likelihood of extreme fire behavior within the VMP area.
- Identify and define vegetation management actions that consider site-specific vegetation type, fuel hazard, treatment effectiveness, and ongoing maintenance requirements.
- Identify and prioritize fuel treatment areas based on fuel loads and arrangements, terrain, topographic exposure, and proximity to roads and structures.
- Retain vegetation where feasible to reduce wind exposure, retain soil and surface fuel moisture, and reduce the potential for soil erosion.
- Develop management recommendations that enable OFD to make informed, adaptive decisions on an annual basis (or more often as necessary) regarding vegetation management within the VMP area, considering the benefits of treatment, potential environmental effects, and treatment costs.

- Avoid, minimize, and/or reduce potential adverse effects of vegetation management on sensitive biological resources, water resources, aesthetics, soils, and slope stability.
- Increase the ability of OFD and other responding agencies to suppress wildfire in the VMP area in order to minimize wildfire impacts to VMP area resources.
- Routinely evaluate the effectiveness and implementation frequency of vegetation management actions within the VMP area.

2.3.2 VMP Structure and Contents

The VMP includes the following sections:

- **Section 1, *Introduction***. This section introduces the VMP by describing its need and purpose, defining the location of the VMP area, identifying the VMP's goals and objectives, and providing a summary of the various sections of the VMP.
- **Section 2, *VMP Area Description*.** This section provides a description of the VMP area, including the climate, topography, vegetation types, fire history, and fire hazard severity zoning and wildland urban interface/intermix designations. This section also provides detailed maps of the terrain and vegetation types located in the VMP area.
- **Section 3, *Wildfire Hazard Assessment*.** This section provides a description of the wildfire hazard assessment methodology used to develop the VMP and prioritize fuel treatment areas.
- **Section 4, *Codes and Standard*s.** This section describes existing City, County, and State codes and standards relevant to vegetation management activities in the VMP area or the City's VHFHSZ.
- **Section 5, *Management Plans and Programs***. This section describes the existing land or resource management plans and programs relevant to vegetation management activities in the VMP area or the City's VHFHSZ that were consulted during development of the VMP.
- **Section 6, *Public Engagement***. This section describes the public and stakeholder engagement efforts that were conducted during the development of the draft and revised draft VMP. This section also summarizes the key comments and recommendations that helped guide development of the revised draft VMP.
- **Section 7, *VMP Area Resources***. This section summarizes the biological, ecological, and community resources found in the VMP area, including vegetation communities, special-status species, streams and water resources, hillslopes and soils, and community resources (e.g., buildings, districts, and other features with significant interest or value).
- **Section 8, *Vegetation Management Techniques***. This section describes the four primary vegetation treatment techniques used to modify or remove vegetation (i.e., biological, hand labor, mechanical, and chemical) as well as best management practices (BMPs) for each technique.

- **Section 9, *Vegetation Management and Maintenance Standards***. This section outlines vegetation management and maintenance standards by dominant vegetation type and specifically describes the measurable guidelines to achieve the desired vegetation condition to reduce fire hazard. This section also describes OFD's current vegetation management practices and specific recommendations for key areas based on site-specific conditions and describes the procedures to be taken by OFD for evaluating, prioritizing, and planning annual vegetation management activities. This section also includes figures depicting the parcel types and priority treatment areas (ranked as Priority 1, 2, and 3) in the VMP area.

- **Section 10, *Practices to Avoid/Minimize Impacts***. This section includes additional BMPs intended to avoid or minimize potential impacts associated with vegetation treatment or removal.

- **Section 11, *Plan Coordination and Partnerships***. This section describes OFD's partnerships with other City departments, other large landowners and land managers, and stakeholder and volunteer groups that routinely treat vegetation for fire hazard reduction purposes. This section includes recommendations for improving coordination with other City departments that also have an interest or otherwise manage vegetation on City-owned properties in the VMP area and improving on-going coordination with local volunteer and stewardship groups that are active in parklands or other areas in the VMP area.

- **Section 12, *Plan Implementation***. This section outlines the methods for implementing the vegetation management recommendations included in the VMP over the 10-year VMP timeframe, including annual reporting and monitoring metrics, and documentation for VMP implementation performance. This section also includes an estimated range of implementation and maintenance costs associated with vegetation management techniques recommended in the VMP. Additionally, this section includes a table summarizing recommended projects by general priority (i.e., Priority, 1, 2, or 3).

2.3.3 Vegetation Management Standards

Vegetation management for fire hazard reduction would vary by location and conditions and would change over time to reflect changing conditions on the ground. Thus, management and maintenance standards described in the VMP are derived from principles of vegetation management for fire hazard reduction and are broken down by dominant vegetation community/land cover type, including grassland/herbaceous, brush/scrub, tree/woodland/ forest, other combustible material. **Table 2-3** summarizes the general vegetation management standards and goals for each dominant vegetation type. Specific standards for tree-dominated vegetation types including eucalyptus, closed-cone pine-cypress, urban (acacia) and urban (mixed tree stands), oak woodland, redwood, and riparian vegetation communities are described in Section 9.1 of the VMP.

Table 2-3. Vegetation Management Standards and Goals by Dominant Vegetation Type

Dominant Vegetation Type	Vegetation Management Standards	Vegetation Management Goals
Grassland/Herbaceous (annual and perennial grasslands)	▪ Heights of grasses, weeds and thistles shall not exceed 3 inches within 30 feet of habitable structures (within or outside of City-owned property). ▪ Heights of grasses, weeds and thistles shall not exceed 18 inches beyond 30 feet from a habitable structure (recommended height is below 6 inches). ▪ Leave cut grass on the ground to protect soil but must not exceed 6 inches in height. ▪ Remove or chip/spread on-site all dead or dying surface vegetation. ▪ Remove or treat/spread as mulch on site all dead branches, limbs, etc. from overstory. ▪ Spread all mulch or chipped material to a depth not to exceed 6 inches. ▪ Dispose of all removed material appropriately per City standards.	▪ Reduce vegetation height to create a shorter and more compact surface fuel layer that is less ignitable and less likely to sustain fire spread.
Brush/Shrub (mixed chaparral and coastal scrub)	▪ Remove all dead brush/shrub. ▪ Remove all dead and dying growth from brush/shrub. ▪ Separate individual shrub crowns/shrub groupings horizontally from adjacent shrubs, shrub groupings, or trees by at least two times the height of the shrub crown. ▪ Groupings of shrubs should not exceed 8 feet in diameter. ▪ Vertical separation between the top of the shrub and lowest tree branch will be at least 3 times the height of the shrub crown or 8 feet, whichever is greater in locations where brush/shrub is located within the dripline. ▪ Prioritize for removal individual, isolated highly flammable trees located within brush/shrub stands. ▪ Cut shrubs at or near the ground surface and leave root systems intact to minimize soil erosion. ▪ Remove or treat/spread on site all vegetative material from brush/shrub removal or trimming.	▪ Reduce surface fuel loading and flame lengths and slow fire spread by increasing the horizontal spacing between retained shrubs. ▪ Increase the vertical spacing between shrub and tree canopies to reduce crown fire transition potential.

Dominant Vegetation Type	Vegetation Management Standards	Vegetation Management Goals
	▪ Spread all chipped material to a depth no greater than 6 inches. ▪ Dispose of all removed material appropriately per City standards. ▪ Prioritize removal of highly flammable plants over fire resistant plants where brush/shrub removal is necessary.	
Tree/Woodland/Forest (coast oak woodland, closed-cone pine cypress, eucalyptus, redwood, valley/foothill riparian, urban (acacia), urban mixed tree stand)	▪ Remove all dead trees, consistent with the Oakland Fire Code. ▪ Remove all dead/dying growth and litter from trees. ▪ Prune tree crowns that extent within 10 feet of any structure or outlet of a chimney to maintain a minimum horizontal clearance of 10 feet. ▪ Prune tree crowns to maintain 13.5 feet vertical clearance above the road surface per Oakland Fire Code Section 4907.5. ▪ Prune tree limbs located less than 6 feet above the ground surface on trees located within 100 feet of habitable structures per Oakland Fire Code Section 4907.3.1.3. ▪ Vertical separation between the top of the retained shrub and lowest tree branch should be at least 3 times the height of the shrub crown or 8 feet, whichever is greater in locations where brush/shrub is located within the dripline of a tree. ▪ Leave stumps from removed trees that do not exceed 6 inches to minimize soil erosion. ▪ Remove or treat/spread all vegetative material from tree removal or trimming on site (logs no smaller than 8 inches in diameter may be retained on the soil surface). ▪ Spread all chipped material to a depth no greater than 6 inches. ▪ Maintain trail networks to facilitate access and to create breaks in surface fuels. ▪ Dispose of all removed material appropriately per City standards. ▪ Prioritize removal of highly flammable plants over fire resistant plants where tree removal is necessary.	▪ Increase the horizontal spacing between retained trees to reduce the potential for crown fire spread. ▪ Remove fuel ladders by increasing the vertical spacing between surface fuels and tree canopies. ▪ Create more fire resilient tree stands by reducing surface fuel loads, reducing ladder fuels, and reducing tree crown density through crown thinning.

Source: Appendix A of this DEIR

2.3.4 VMP Treatment Areas

The following subsections summarize current and proposed vegetation management activities by treatment area type. In general, treatment areas are organized by urban/residential parcels, canyon areas, City parks and open space areas, roadside treatment areas and medians, and other areas (e.g., parking lots, playground, urban parks) (**Figure 2-2**, sheets 1 through 10). **Figure 2-3**, sheets 1 through 6 show these treatment areas by priority (1, 2, and 3). **Table 2-8**, presented at the end of this chapter, provides more detail on proposed treatment techniques at each treatment area and proposed specific projects within those treatment areas. Note that the proposed treatment techniques listed in Table 2-8 represent those that are deemed appropriate and most conservative at the time this EIR was prepared. The information in Table 2-8 is intended to assist the City in selecting and prioritizing the ultimate treatment projects that will be included in the City's annual work plan. Section 9.2 of the VMP provides more detail about current management practices and proposed treatments for the below-described treatment areas. In this EIR, the term "current vegetation treatments" refers to those treatments that are currently conducted by the City and are represented within baseline conditions, as described in Section 3.1.2.

Urban and Residential Parcels

Urban and residential parcels are generally smaller than 1 acre in size and are distributed throughout the VMP area. These parcels are mapped as containing the following vegetation communities/land cover types: annual grassland (2.4 acres), closed-cone pine-cypress (8.9 acres), coastal oak woodland (18.4 acres), coastal scrub (2.4 acres), eucalyptus (10.7 acres), redwood (0.2 acre), urban (7.9 acres), and urban (acacia) (0.2 acre).

Current Vegetation Treatments

Current management practices for these parcels include manual vegetation treatment techniques (hand labor or mechanical) to reduce ladder fuels, control invasive species (e.g., broom), reduce surface fuels (e.g., grasses, weeds, down material), maintain reduced fuel loads, and prune tree canopies. Grazing is another treatment method typically conducted in areas where multiple City-owned parcels abut each other, creating a larger area for treatment.

Proposed Vegetation Treatments

Because all urban and residential parcels include land entirely or largely within 100 feet from existing structures, these treatment areas are considered Priority 1 treatment areas (as defined below in Section 2.3.5). All urban and residential treatment areas are classified as project URB-1 and the treatment area totals 47.5 acres. Table 2-8 summarizes proposed treatments on parcels identified as project URB-1 by dominant vegetation community type.

Canyon Areas

Canyon areas include multiple adjacent parcels that are situated within and along canyons and drainages in the VMP area. Four canyon areas are present in the VMP area, including: Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, and Beaconsfield Canyon. A brief description and summary of proposed vegetation management treatments within each canyon area are provided below. Table 2-8 below and Section 9.2 of the VMP provides more detail about these treatment areas.

Garber Park

Garber Park is collectively 14.3 acres in size and situated mostly along the south side of Claremont Canyon at the bottom of Claremont Canyon (Figure 2-2, sheet 1). The park primarily consists of a north-facing slope and is mapped as containing the following vegetation communities/land cover types: coast oak woodland (13.4 acres), eucalyptus (0.7 acre), and freshwater emergent wetland (0.1 acre). There are scattered eucalyptus, acacia, and pine trees within the mapped coast oak woodland. Garber Park Stewards and the Claremont Canyon Conservancy actively conduct vegetation management efforts in this park.

Given Garber Park's position in the lower part of the canyon and its north-facing slope, fuel moistures are relatively higher and fire hazard is relatively lower compared to other areas in the VMP. However, depending on annual rainfall, conditions may be dry during the late summer and fall. The plant pathogen Sudden Oak Death (SOD) is known to be present in Garber Park (UC Berkeley 2019), increasing the potential for dead oak trees to be present in this park. Downed tree branches and other woody debris located in gullies and on slopes in the park are a fire hazard.

Current Vegetation Treatments

Current vegetation management activities conducted at Garber Park include limited flashy fuel (e.g., grasses, weeds) treatment along Claremont Avenue to minimize ignition potential through the use of hand labor or mechanical techniques.

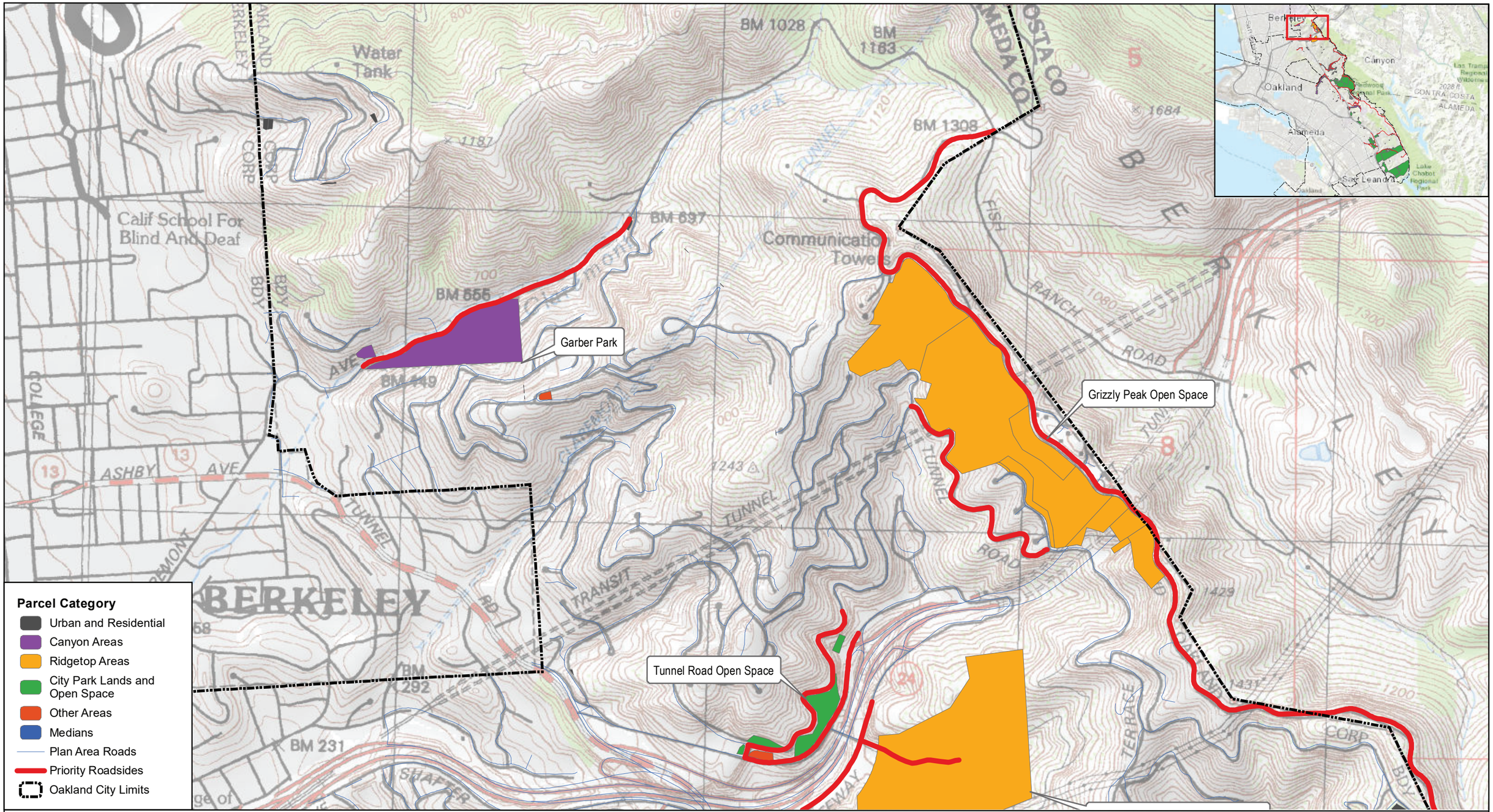
Proposed Vegetation Treatments

Through consultation with the Garber Park Stewards, the primary stewardship group that conducts vegetation management efforts in Garber Park, the following vegetation management treatments are proposed to reduce fire risk at Garber Park:

- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation.
- Clear downed wood and other debris from gullies and remove dead limbs.

Proposed specific projects at Garber Park (GAR-1, GAR-2, and GAR-3) are summarized in Table 2-8 and described below.

- **GAR-1**: Manage vegetation along adjacent roadside (Claremont Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based



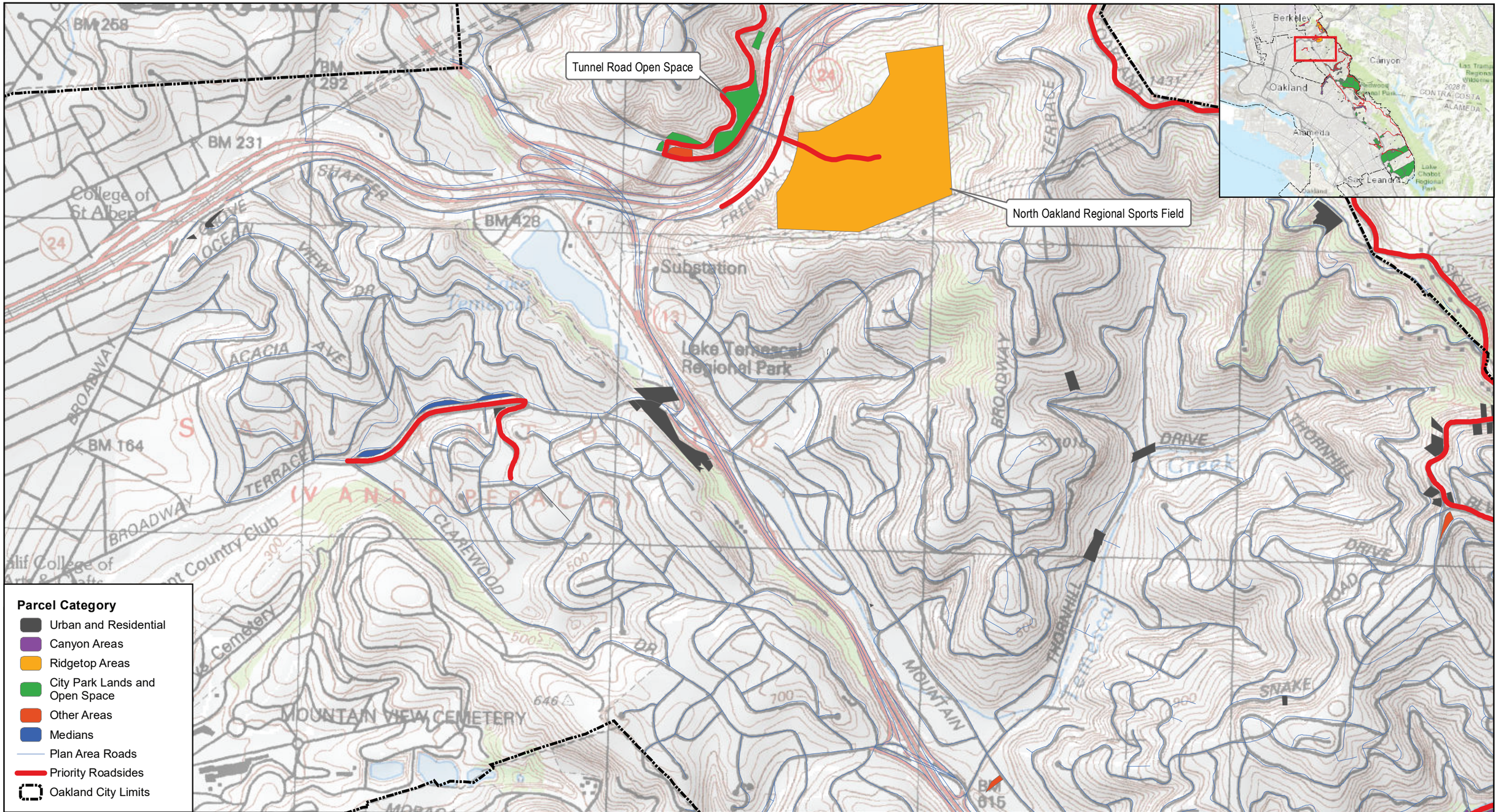
Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

Prepared by: Horizon Water and Environment

Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 1 of 10)

Vegetation Management Plan
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Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Horizon WATER and ENVIRONMENT

Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area (sheet 2 of 10)

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North Oakland Regional Sports Field

Parcel Category

- Urban and Residential
- Canyon Areas
- Ridgetop Areas
- City Park Lands and Open Space
- Other Areas
- Medians
- Plan Area Roads
- Priority Roadsides
- Oakland City Limits

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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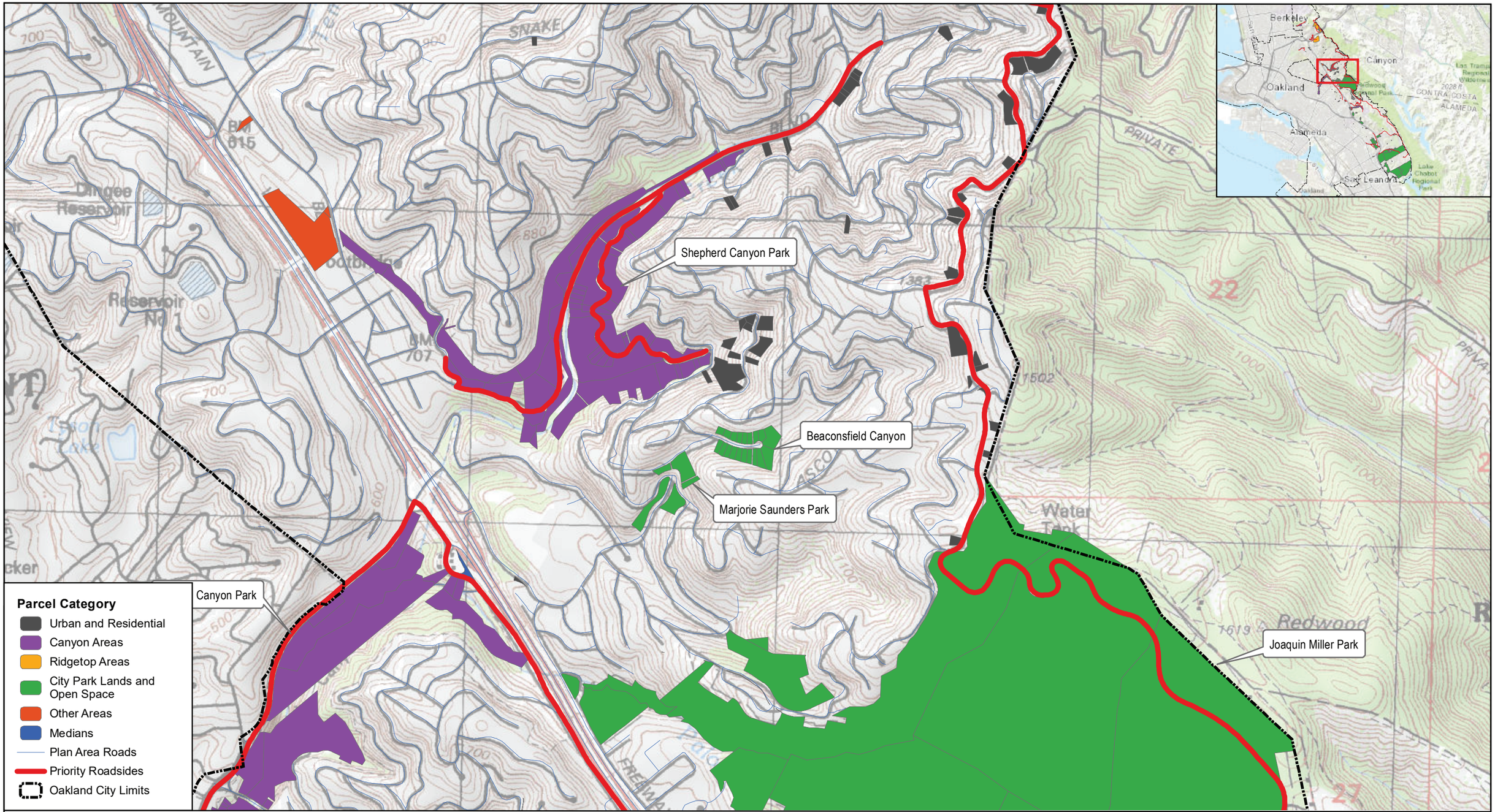
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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
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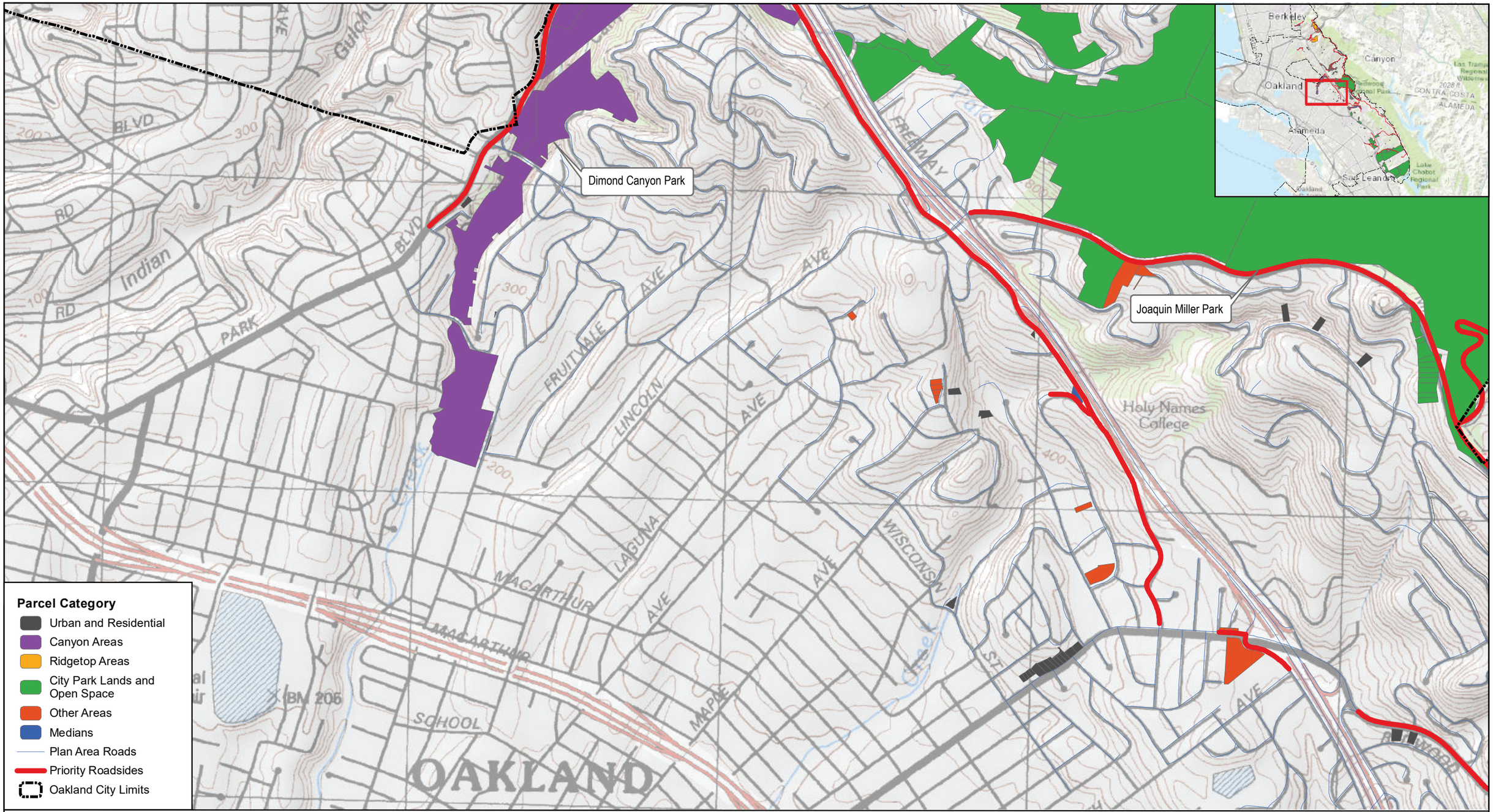
Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 4 of 10)

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Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 5 of 10)

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Joaquin Miller Park

Leona Heights Park

Holy Names College

FREEWAY

SKYLINE

Redwood

REGIONAL

Berkeley

Oakland

Alameda

San Leandro

Canyon

CONTRA COSTA

ALAMEDA

Parcel Category

- Urban and Residential
- Canyon Areas
- Ridgetop Areas
- City Park Lands and Open Space
- Other Areas
- Medians
- Plan Area Roads
- Priority Roadsides
- Oakland City Limits

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 6 of 10)

Vegetation Management Plan
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Leona Heights Park

McDonell Avenue

Police/Safety Department

Leona Street

Blue Rock Court

City Stables

Parcel Category

- Urban and Residential
- Canyon Areas
- Ridgetop Areas
- City Park Lands and Open Space
- Other Areas
- Medians
- Plan Area Roads
- Priority Roadsides
- Oakland City Limits

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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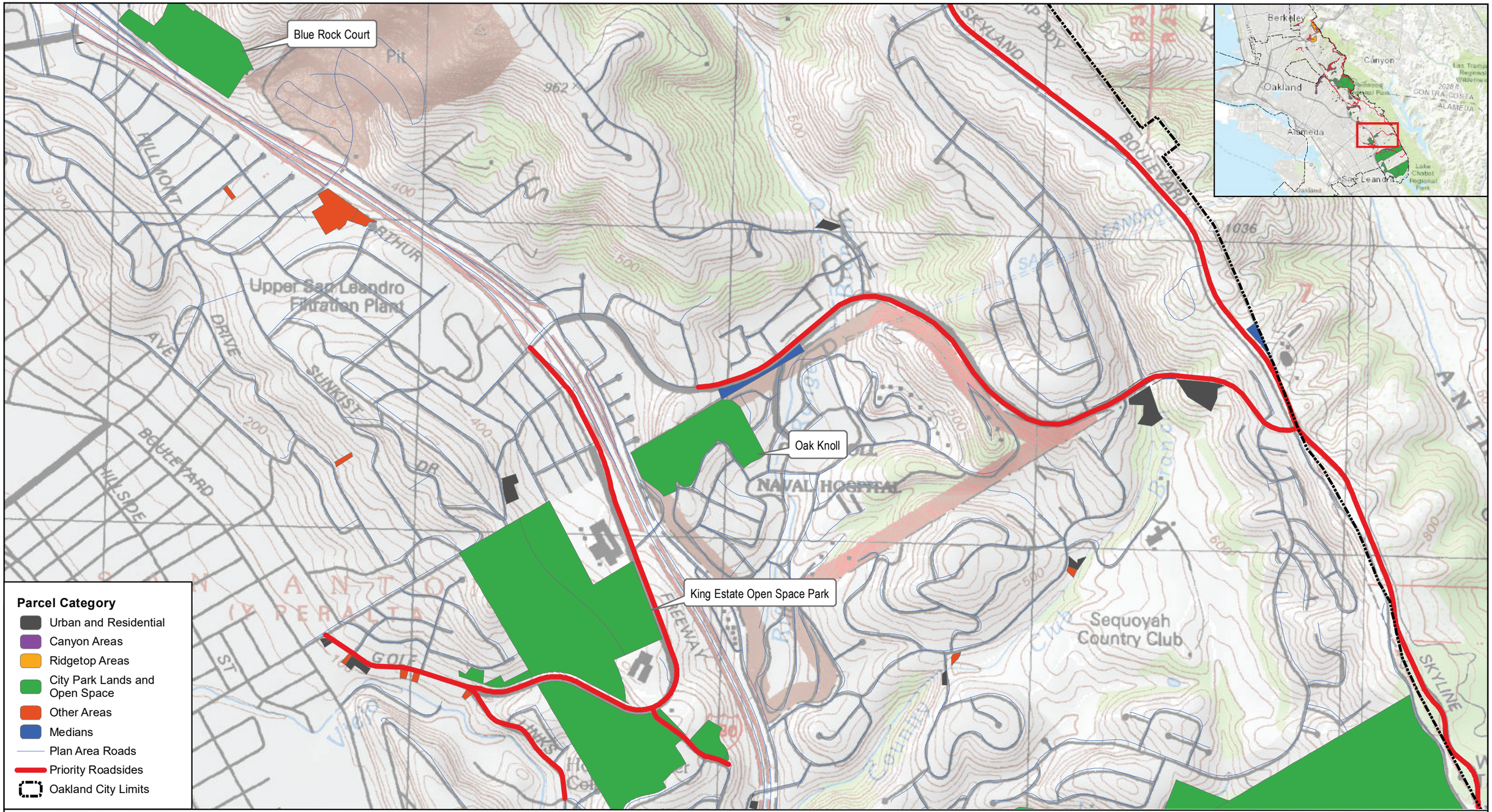
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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 7 of 10)

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Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 8 of 10)

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Oak Knoll

King Estate Open Space Park

Knowland Park and Arboretum

Sequoyah Country Club

Seneca Reservoir

Water Tank

KNOWLAND STATE ARBORETUM AND PARK

OAKLAND

Parcel Category

- Urban and Residential
- Canyon Areas
- Ridgetop Areas
- City Park Lands and Open Space
- Other Areas
- Medians
- Plan Area Roads
- Priority Roadsides
- Oakland City Limits

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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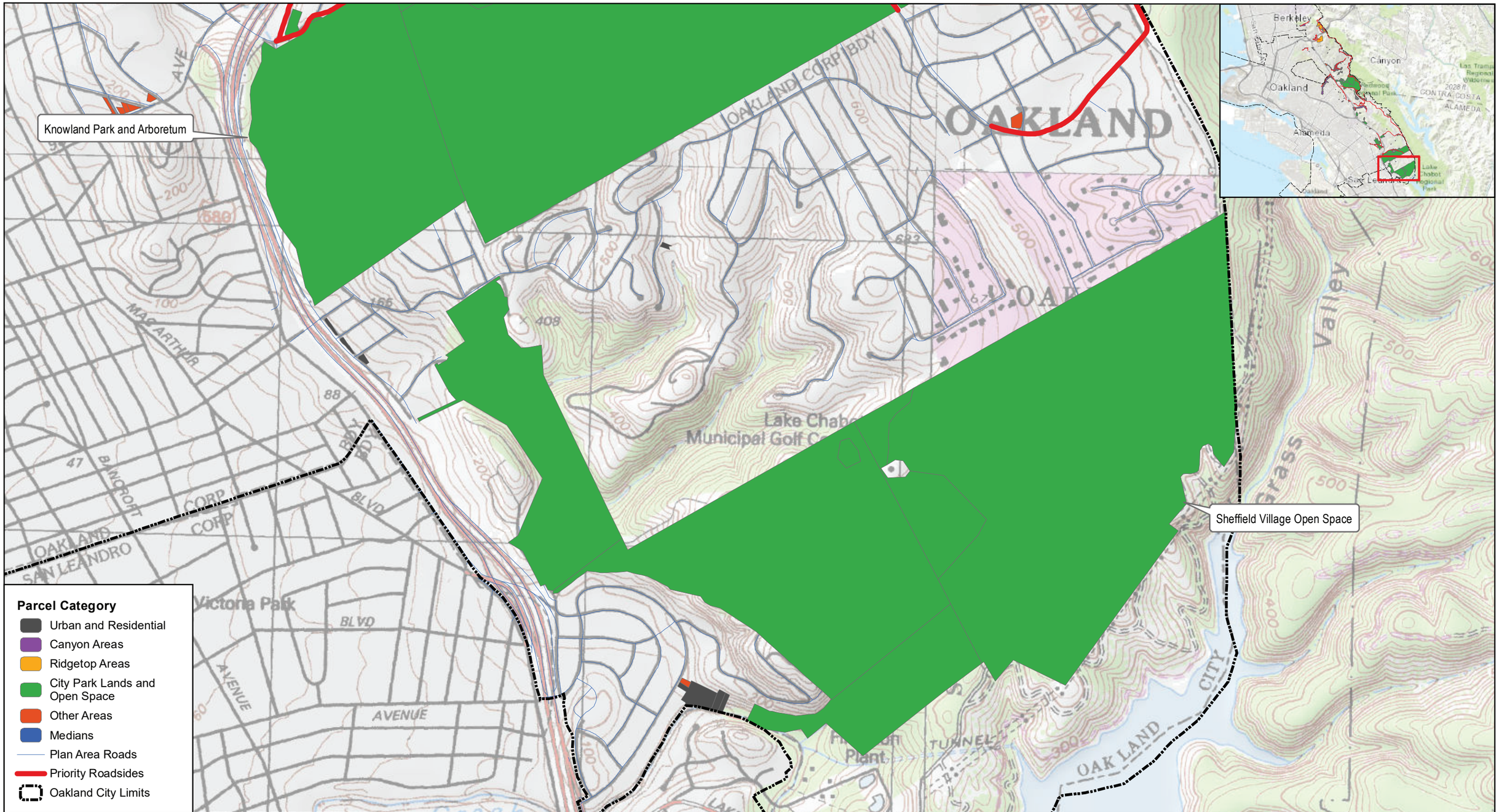
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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 9 of 10)

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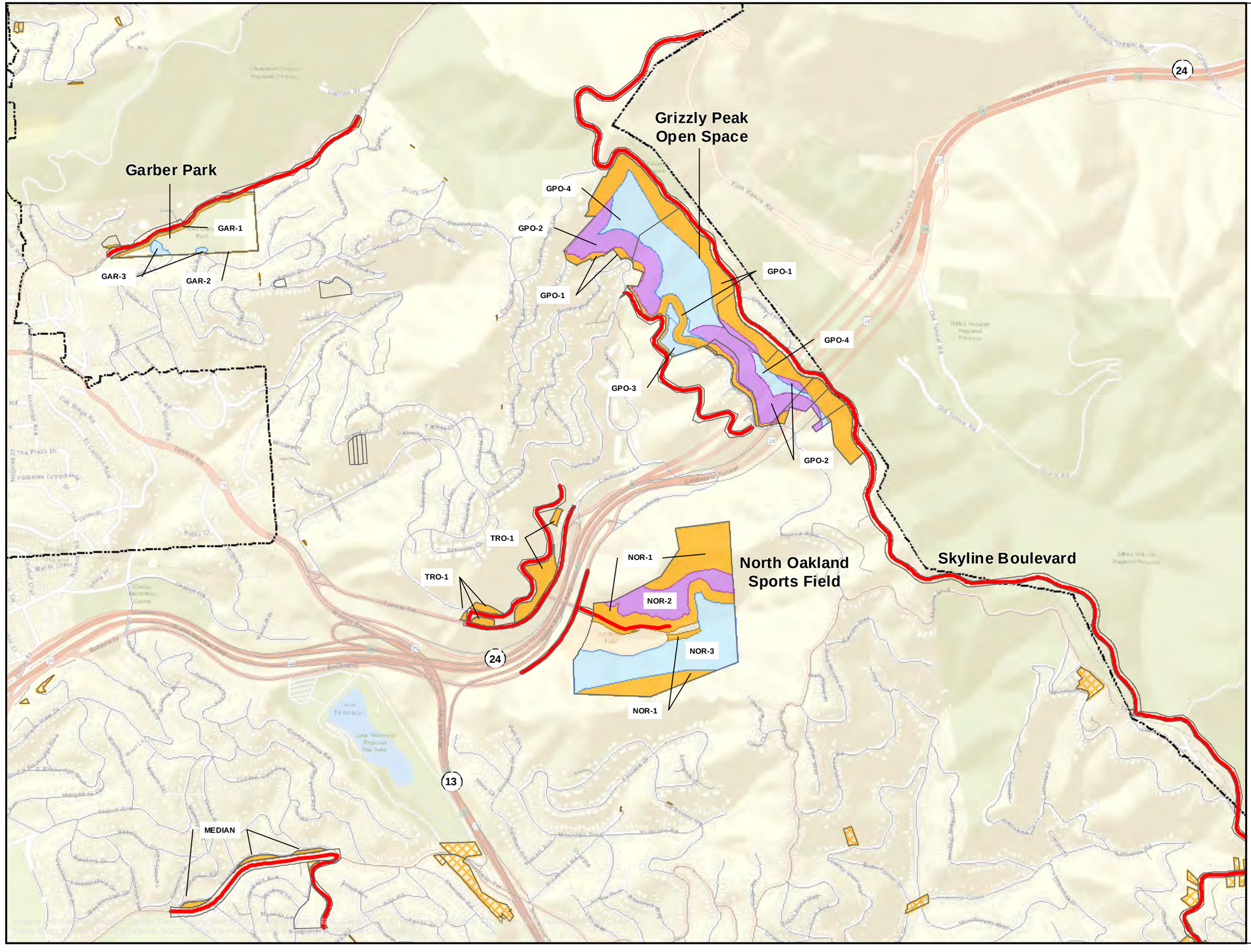
Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area (sheet 10 of 10)

Vegetation Management Plan
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Project Priority Ranking

- 1 - URB-1
- 1 - all other priority 1 projects
- 2
- 3
- Priority 1 Roadside Treatment Areas
- Priority 1 Roadside
- Parcels
- Oakland City Limits
- **NOR-1** VMP Treatment Project Number

N

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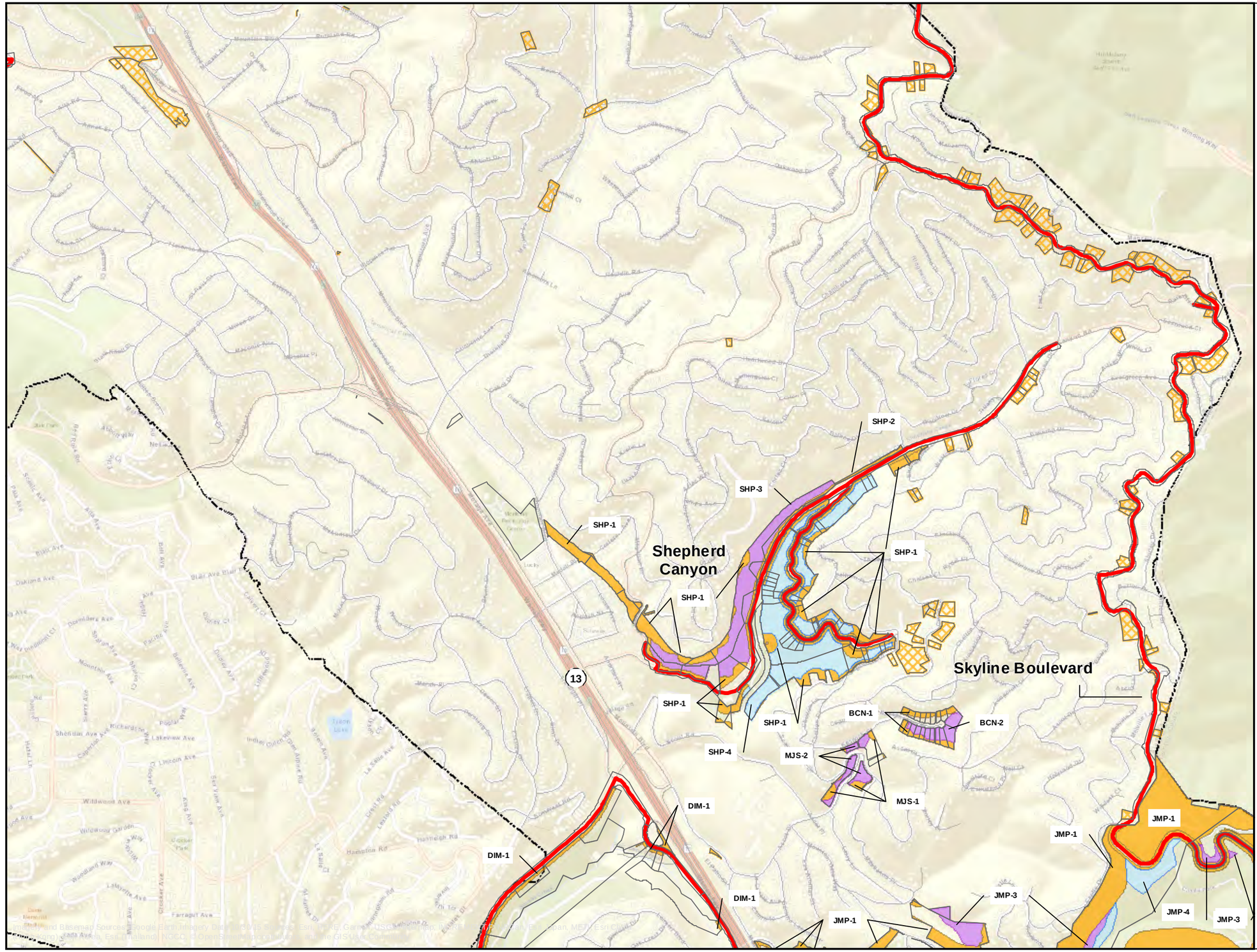
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Figure 2-3.
VMP Treatment Projects
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Project Priority Ranking

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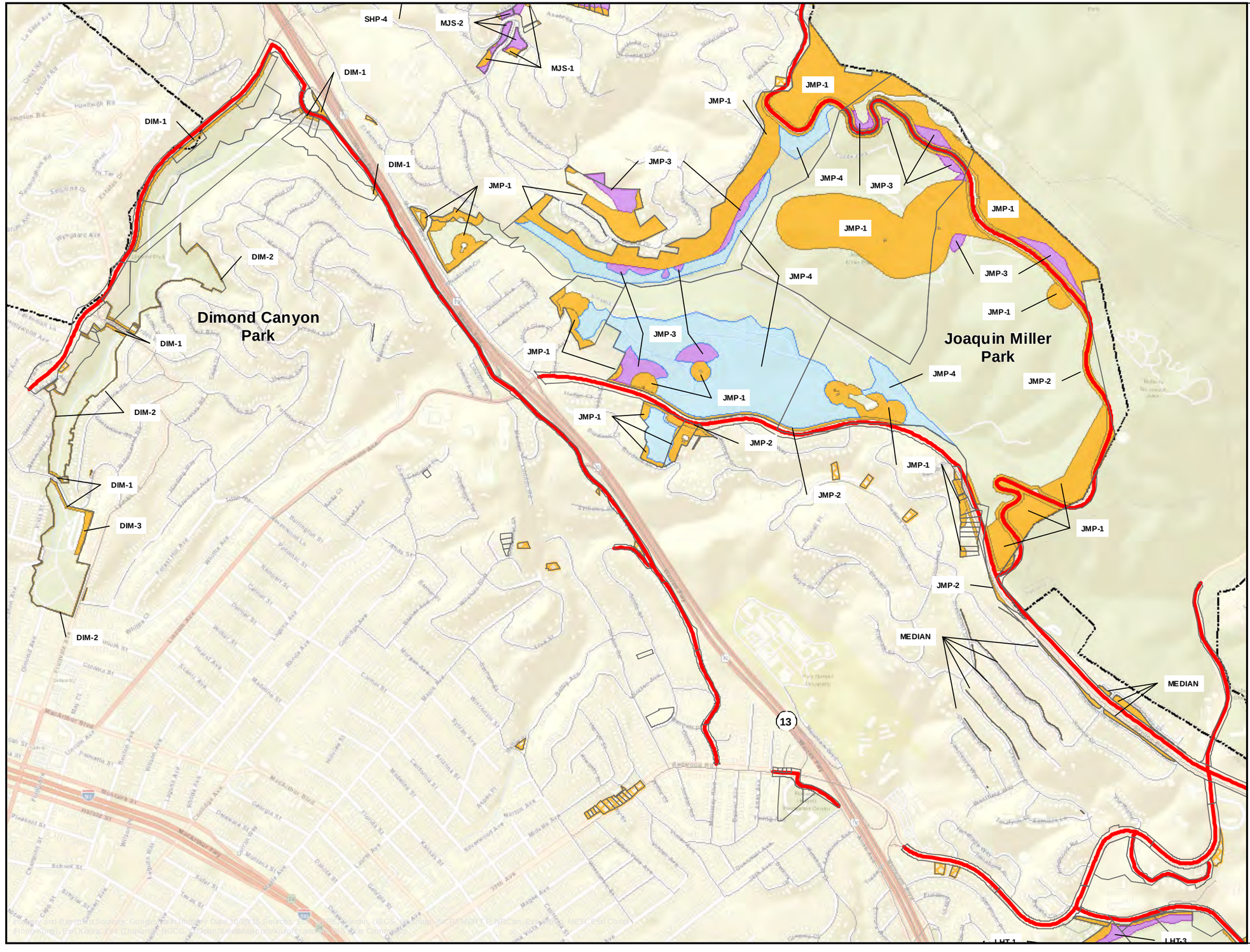
Figure 2-3.
VMP Treatment Projects
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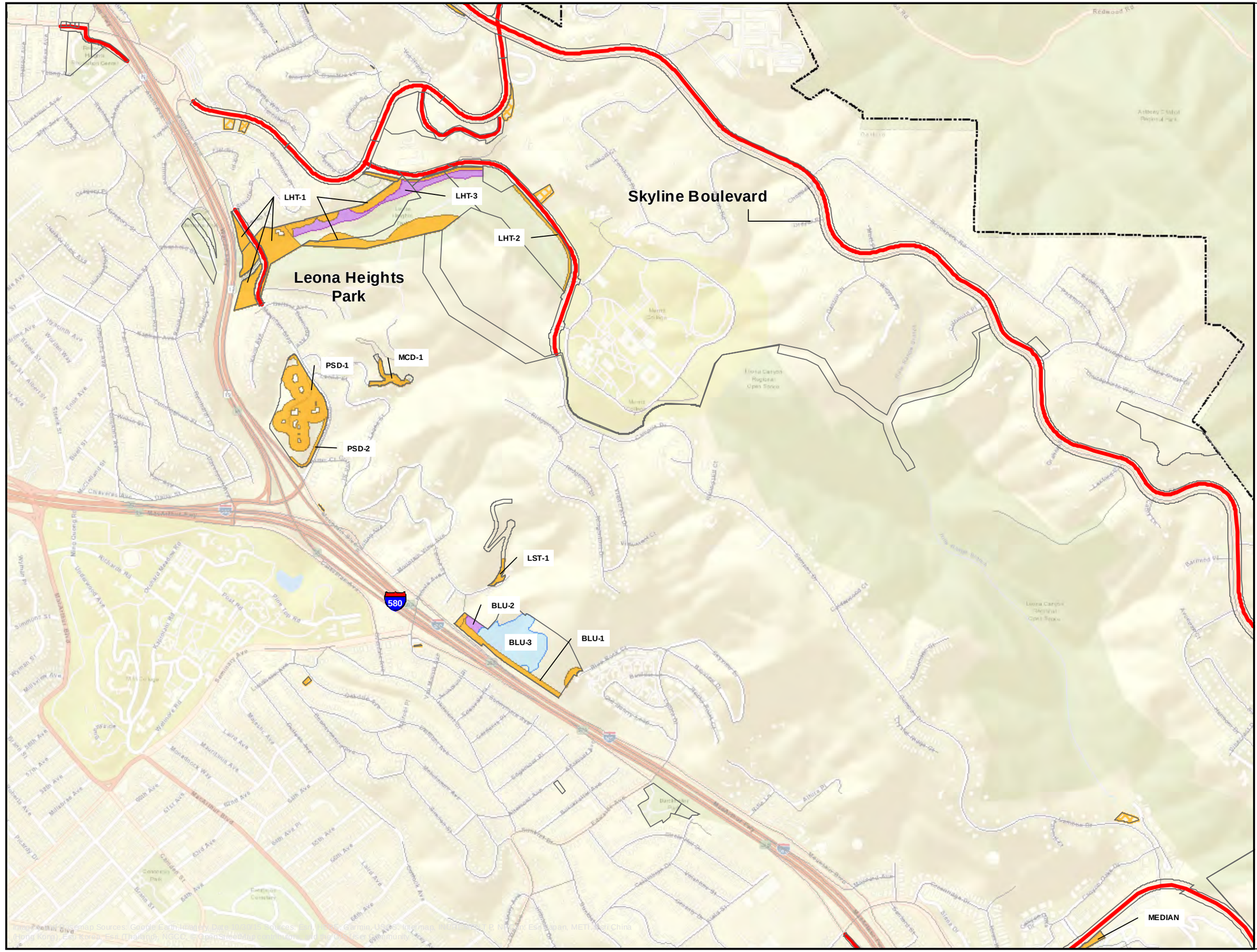
Figure 2-3.
VMP Treatment Projects
(sheet 3 of 6)

Vegetation Management Plan
Draft Environmental Impact Report

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- Priority 1 Roadside
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- Oakland City Limits
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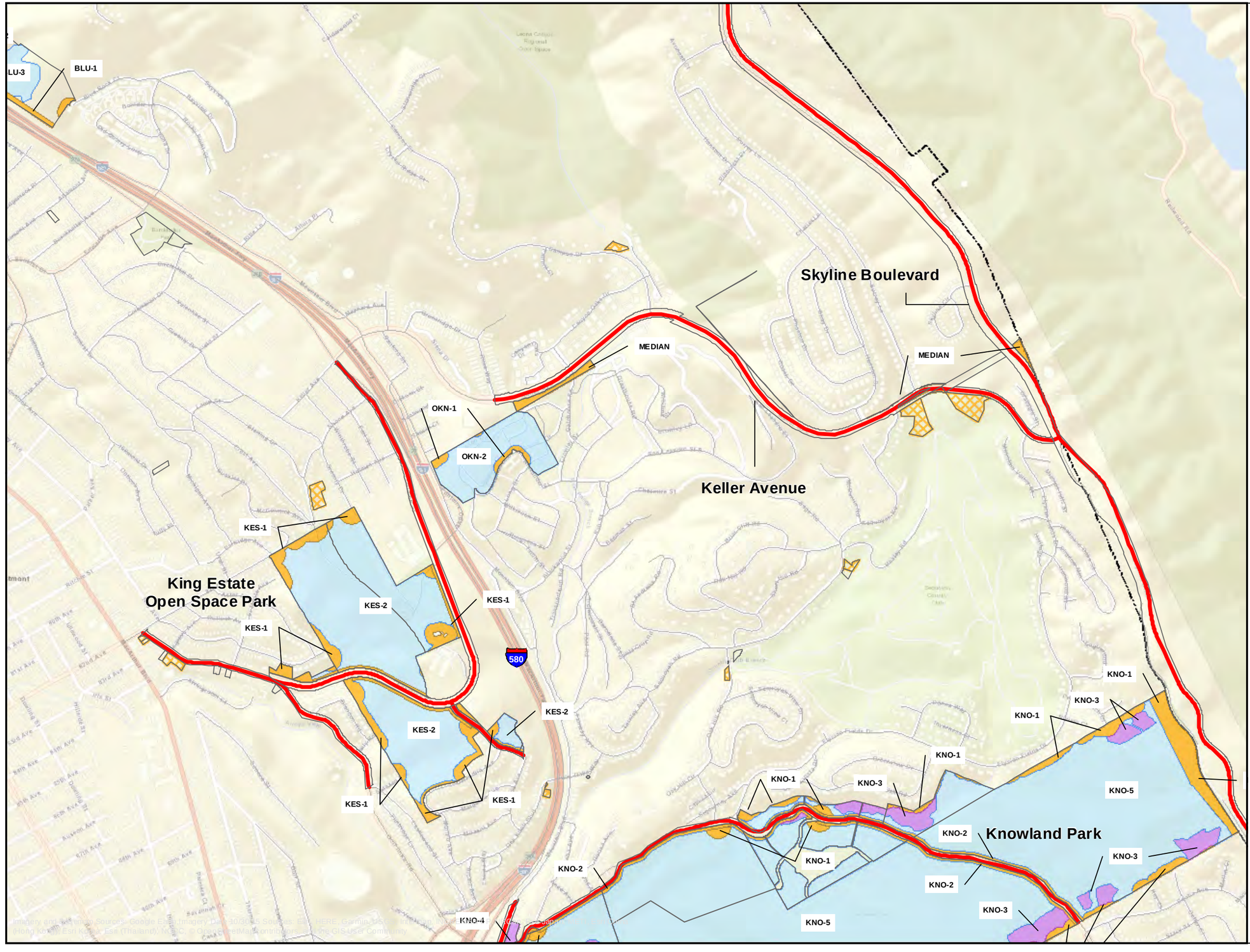
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Figure 2-3.
VMP Treatment Projects
(sheet 4 of 6)

Vegetation Management Plan
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Project Priority Ranking

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- Oakland City Limits
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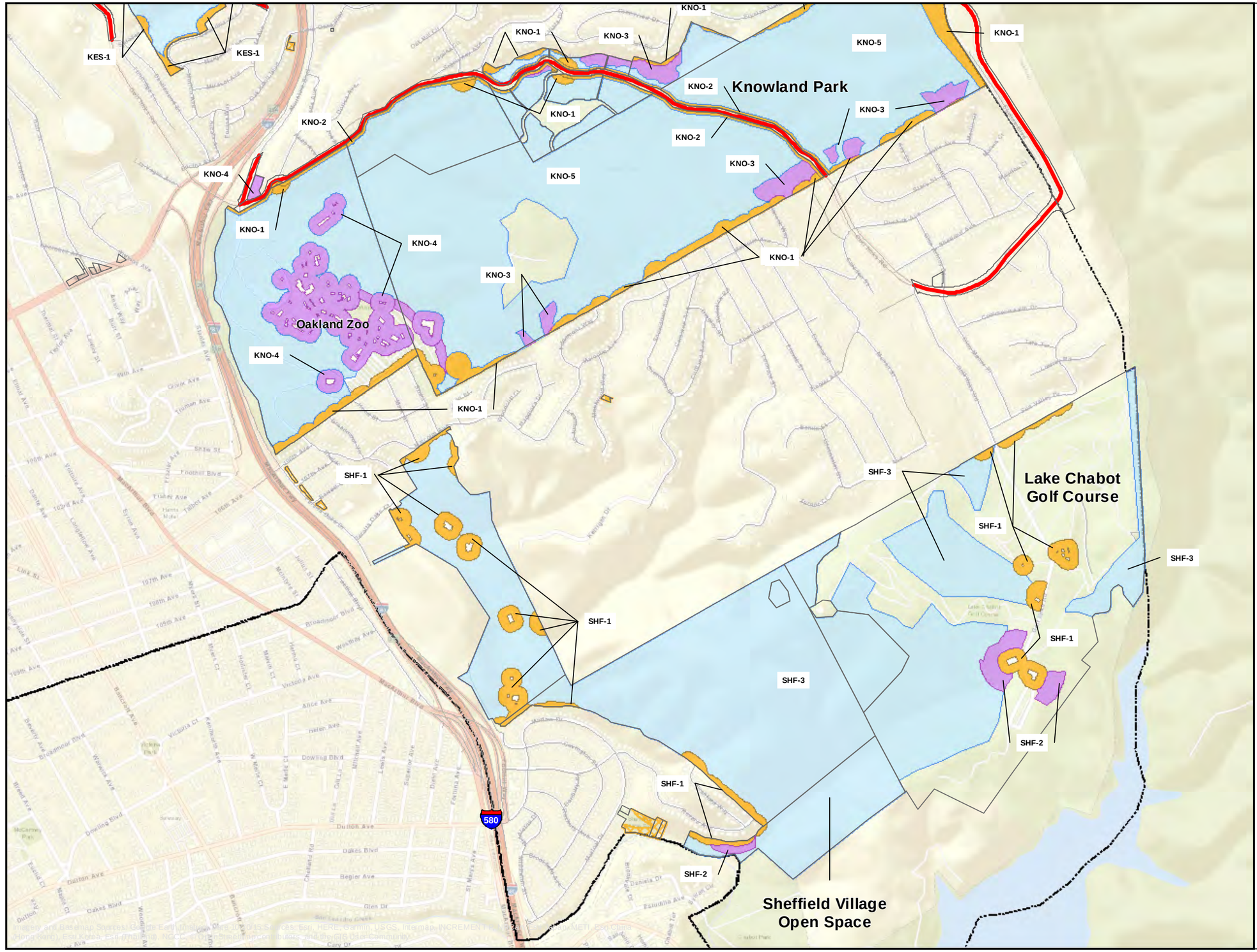
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Figure 2-3.
VMP Treatment Projects
(sheet 5 of 6)

Vegetation Management Plan
Draft Environmental Impact Report

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- Priority 1 Roadside
- Parcels
- Oakland City Limits
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Figure 2-3.
VMP Treatment Projects
(sheet 6 of 6)

Vegetation Management Plan
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on field observations, but not to exceed 30 feet. Specifically, trees hanging down on powerlines are a fire hazard and should be prioritized for treatment.

- **GAR-2**: Manage vegetation within 10 feet of the south and east property boundary line to facilitate firefighter access according to the standards outlined in Section 9.1 of the VMP.

- **GAR-3**: To manage fuel loading rates, remove eucalyptus trees from two locations along the southern park boundary, retaining lower fire risk trees**.**

Dimond Canyon Park

Dimond Canyon Park is collectively 74.7 acres in size and is situated along Sausal Creek, south of SR 13. The park includes the creek channel and some upland areas and is mapped as containing the following vegetation communities/land cover types: coast oak woodland (50.5 acres), coastal scrub (0.3 acre), eucalyptus (1.3 acres), redwood (5.5 acres), and urban (17.1 acres). It is primarily surrounded by residential development, with Park Boulevard forming its boundary in the northeast corner and Monterey Boulevard forming its boundary along the north. Leimert Boulevard and El Centro Avenue also bisect the park. Dimond Canyon Park includes both the undeveloped areas north of El Centro Avenue and the more developed Dimond Park. Friends of Sausal Creek, and Friends of Dimond Park, and Oakland Trail are stewardship groups which actively conduct vegetation management efforts in Dimond Canyon Park. Given its position along Sausal Creek, fuel moistures along the lower portion of the park are relatively higher and the fire hazard relatively lower compared to other VMP areas. Drier and more hazardous fire conditions exist in the park's upland areas farther from the creek. Two fires have occurred within Dimond Canyon within the past three years. Dead stone pines present on the south-facing hillslope west of Lyman Road in the southern portion of Dimond Park represent a potential fire hazard, as do dead acacia trees present in several areas. Fire behavior modeling resulted in primarily surface fire throughout the property, although small pockets of active crown fire were modeled in the coastal oak woodland area along Park Boulevard with grass/shrub understory and in a few small areas within the drainage with high slope gradients.

Current Vegetation Treatments

Current vegetation management practices are primarily limited to roadside treatment along Park Boulevard and Monterey Boulevard through use of hand labor or mechanical techniques.

Proposed Vegetation Treatments

Through consultation with the stewardship groups Friends of Sausal Creek and Friends of Dimond Park, both of which actively conduct vegetation management efforts in Dimond Canyon Park, the following vegetation management treatments are proposed to reduce fire risk for Dimond Canyon Park:

- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation. Trail maintenance should seek to provide unobstructed (horizontal and vertical) access for people traveling on foot.

- Continue to monitor the park for dead or dying trees, and remove dead or dying trees where they pose a fire hazard.

Proposed specific projects at Dimond Canyon Park (DIM-1, DIM-2, and DIM-3) are summarized in Table 2-8 and described below.

- **DIM-1:** Manage vegetation along adjacent roadsides (Park Boulevard, Monterey Boulevard, Leimert Boulevard, El Centro Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.

- **DIM-2:** Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1 of the VMP.

- **DIM-3:** Manage vegetation in the area between the parking lot located to the east of the pool and the adjacent residential structures (approximately 50 feet in width).

Shepherd Canyon Park

Shepherd Canyon Park is collectively 57.9 acres in size and is situated along Shepherd Creek in Shepherd Canyon, northeast of SR 13. The park includes the creek channel and some upland areas and is mapped as containing the following vegetation communities/land cover types: annual grassland (2.0 acres), closed-cone pine-cypress (1.5 acres), coastal oak woodland (31.9 acres), eucalyptus (16.6 acres), and urban (5.9 acres). This park also includes the Montclair Railroad Trail property that runs south from Montclair village, then bends east and then northeast into Shepherd Canyon, southeast of the Snake Road pedestrian crossing. Significant amounts of broom exist in the park, primarily along Shepherd Canyon Road and the Montclair Railroad Trail. The broom is primarily surrounded by residential development and is bounded primarily on the west by Montclair Railroad Trail.

Given its position along Shepherd Creek, fuel moistures along the lower portions of the park are relatively higher and fire hazard relatively lower than other VMP areas; however, drier and more hazardous conditions exist in the park's upland areas, moving up the slopes above the canyon floor. Fire behavior modeling resulted in active and passive crown fire concentrated along the western side of Shepherd Canyon Road where broom exists beneath eucalyptus tree canopies and surface fire throughout the remainder of the property. Dead and dying trees in the park (e.g., near Bishops Court and near the Escher fire road) also represent a potential fire hazard. Homeless encampments also pose an ignition risk.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Shepherd Canyon Road through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing throughout the park to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 9 acres of the park are currently grazed annually. Much of the park falls within the 100-foot buffer from existing structures or within 30 feet of existing roads.

Proposed Vegetation Treatments

Stewardship groups that actively manage vegetation in Shepherd Canyon Park include the Friends of Sausal Creek, Shepherd Canyon Homeowners, and the Friends of Montclair Railroad

Trail. The following vegetation management treatments were developed in consultation with these stewardship groups to reduce the fire risk at Shepherd Canyon Park:

- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation. Existing fire roads (e.g., the Escher fire road) should be treated to maintain access;

- Manage vegetation consistent with the schedule for clearance of private parcels in the same geographic area, if feasible.

Proposed specific projects at Shepherd Canyon Park (SHP-1, SHP-2, SHP-3, and SHP-4) are summarized in Table 2-8 and are described below.

- **SHP-1:** Manage vegetation within 100 feet of structures and within 150 feet of the park access gate according to the standards outlined in Section 9.1 of the VMP.

- **SHP-2:** Manage vegetation along adjacent roadsides (Shepherd Canyon Road, Escher Drive, Snake Road, and Bagshotte Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.

- **SHP-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.

- **SHP-4:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads. Grazing should be conducted later in the season after perennial grasses go to seed.

Leona Heights Park

Leona Heights Park is collectively 42.3 acres in size and is situated along Horseshoe Creek, a tributary to Lion Creek, south of Redwood Road and Campus Drive and east of SR 13. The park includes Horseshoe Creek, a constructed drainage along the Horseshoe Creek alignment in the upstream (east/southeast) end of the park, and some upland areas and also extends south of the Merritt College parking lot located west of Campus Drive. The downstream portion of the creek is more natural, with earthen bed and banks. Leona Heights Park is mapped as containing the following vegetation communities/land cover types: annual grassland (0.3 acre), coastal oak woodland (25.7 acres), eucalyptus (2.1 acres), redwood (13.8 acres), and urban (0.5 acre). The park is largely inaccessible given its steep terrain, with the exception of some trails. The Friends of Leona Heights Park stewardship group has historically been active in vegetation management efforts in Leona Heights Park, and more recently the Oakland Trails group has also been working in the park.

Fire behavior modeling indicate active and passive crown fire in coastal oak woodlands in upland areas in the eastern and northern portions of the park and primarily surface fire within redwood stands along the drainage bottom. Some isolated active crown fire was modeled in areas with steep slope gradients while only surface fire was modeled in the managed eucalyptus and oak stands at the park's western edge.

Current Vegetation Treatments

Current vegetation management practices are limited to roadside treatment along Campus Drive through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing in the lower portion of the park (approximately 9 acres) to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. A portion of the park is within 100 feet of existing structures along its northern and western boundaries.

Proposed Vegetation Treatments

Proposed specific projects at Leona Heights Park (LH-1, LH-2, and LH-3) are summarized in Table 2-8 and described below.

- **LHT-1:** Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within the current 9-acre management area according to the standards outlined in Section 9.1 of the VMP.
- **LHT-2:** Manage vegetation along adjacent roadside (Campus Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.
- **LHT-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.

Beaconsfield Canyon

Beaconsfield Canyon is collectively 4.3 acres and is located at the end of Keswick Court, southeast of Shepherd Canyon Park. Beaconsfield Canyon is mapped as containing the following vegetation communities/land cover types: closed-cone pine-cypress (1.4 acres), coastal oak woodland (1.4 acres), and coastal scrub (1.5 acres). Active and passive crown fires were modeled in coastal scrub where overstory trees are present. Surface fire only was modeled throughout the remainder of the property. The Friends of Beaconsfield Canyon Park stewardship group is active in vegetation management efforts on the Beaconsfield Canyon property.

Current Vegetation Treatments

Current vegetation management activities that occur at Beaconsfield Canyon include annual goat grazing of seasonal weeds and grasses on approximately 2-3 acres of hillside. The frequency of goat grazing activities depends on observed springtime growth. The Friends of Sausal Creek and Beaconsfield Canyon Volunteers stewardship groups also conduct an annual volunteer clean-up event that involves hand-removing invasive plant species such as French broom, Himalayan blackberry, and other invasive plants present. Members of these stewardship groups conduct ongoing plant removal by hand throughout the year as part of their stewardship activities.

Proposed Vegetation Treatments

Through consultation with the Friends of Sausal Creek and the Beaconsfield Canyon Volunteers, the following vegetation management treatments were developed for this property:

- Manage vegetation within 100 feet of structures according to standards outlined in Section 9.1 of the VMP.

- Implement brush and tree thinning in areas exhibiting extreme fire behavior and within 300 feet of structures according to standards outlined in Section 9.1 of the VMP.

These proposed specific projects at Beaconsfield Canyon (BCN-1 and BCN-2) are summarized in Table 2-8.

Ridgetop Areas

Ridgetop areas are single parcels or a group of multiple adjacent parcels that are situated at or near the summit of the Oakland Hills in the VMP area. Ridgetop areas present relatively higher fire hazard conditions due to typically lower fuel moistures and the potential for high or erratic winds during wildfire events. The VMP area includes three ridgetop areas where proposed vegetation management treatments have been identified: North Oakland Regional Sports Field, Grizzly Peak Open Space, and the City Stables property (see Figure 2-2, sheets 1, 2, and 7). Establishing fuel breaks at ridgetops is common practice and typically helps moderate fire behavior and provides important fire suppression control points. A brief description and summary of proposed vegetation management treatments within each ridgetop area is provided below. Table 2-8 below and Section 9.2 of the VMP provide more detail about these ridgetop treatment areas.

North Oakland Regional Sports Field

The North Oakland Regional Sports Field property is collectively 53.6 acres in size and is situated to the south of SR 24 immediately south of the Caldecott tunnels. The North Oakland Regional Sports Field property is mapped as containing the following vegetation communities/land cover types: coastal oak woodland (22.0 acres), coastal scrub (2.1 acres), eucalyptus (19.8 acres), urban (9.1 acres), and valley-foothill riparian (0.6 acre). The Oakland Landscape Committee is active in vegetation management efforts on the North Oakland Regional Sports Field property.

The property is characterized by a secondary eucalyptus stand (along the generally south- and west-facing slopes) in the northern and eastern portions of the site, which burned in the 1991 Tunnel Fire, and a coastal oak woodland stand in the southern half (along the more northerly facing slopes). The eucalyptus stands have a substantial understory of French broom and other highly flammable/rapidly spreading species. The lower, central portion of the property includes a tributary to Temescal Creek, ball fields, and a dirt access road that extends from Broadway in the west, through the eucalyptus stand, toward homes above on Skyline Boulevard. Public use as well as homeless encampments in the lower and upper portions of the property are a potential ignition source. Fire behavior modeling conducted for the VMP resulted in an active crown fire throughout most of the property's tree-dominated vegetation (eucalyptus and coastal oak woodland) and surface fire concentrated in managed areas along the property's dirt access road and in the area between the sports field and the eucalyptus stand.

Current Vegetation Treatments

Current management practices are limited to roadside treatment along the property's dirt access road (using hand and mechanical techniques) to reduce ladder fuels, control invasive

species, and to maintain surface fuel loads. Goat grazing also occurred in 2018 and 2019. The property is beyond 300 feet from existing residential structures but includes restroom facility, snack bar/eating area, and wooden bleachers at the ball fields.

Proposed Vegetation Treatments

Through consultation with the Oakland Landscape Committee, the following vegetation management treatments are proposed to reduce fire risk at this property:

- Maintain the site's dirt access road in a serviceable condition, improving roadside drainage where erosion and gullying have deteriorated access road.
- Implement measures to prevent unauthorized vehicle access to the property's dirt access road.
- Continue to manage vegetation via grazing to maintain fuel loads and minimize ignition potential.

Potential specific projects at North Oakland Sports Field (NOR-1, NOR-2, and NOR-3) are summarized in Table 2-8 and described further below.

- **NOR-1:** Manage vegetation according to the standards outlined in Section 9.1 of the VMP in the following locations: within 30 feet of the site's dirt access road, within 300 feet of ridgelines, within 150 feet of the park access gate, and within the existing managed area north of the ball fields and parking areas.
- **NOR-2:** Given the upper portion of the property's ridgetop location and the potential for ember generation resulting from crown fire, implement thinning recommendations in the property's eucalyptus stand beyond that treated under project NOR-1 according to the standards outlined in Section 9.1 of the VMP.
- **NOR-3:** To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodland communities, retaining lower fire risk trees.

A phased mosaic approach to Projects NOR-1 and NOR-2 may be appropriate, where 3-5 acres are thinned at a time, and follow-up maintenance occurs. This would limit the impacts to potential soil erosion, biological resources, and also moderate the overall cost over a longer planning period. This approach has been implemented on an approximately 5-acre section of the lower south-facing hillslope.

Grizzly Peak Open Space

The Grizzly Peak Open Space property is collectively 64.5 acres in size and is situated along the southwest side of Grizzly Peak Boulevard, southeast of Marlborough Terrace. The property generally extends between Grizzly Peak Boulevard at the top of the slope down to Bay Forest Drive, Tunnel Road, Buckingham Boulevard, and Westmoreland Drive at the slope bottom. The Grizzly Peak Open Space property is mapped as containing the following vegetation communities/land cover types: closed-cone pine-cypress (25.7 acres), coastal oak woodland (3.2 acres), coastal scrub (33.3 acres), eucalyptus (0.6 acre), and urban (1.6 acres).

The property extends across a steep, southwest-facing slope and abuts residential structures, community assets (communications facility), and a main access/egress route (Grizzly Peak Boulevard). Scenic views from the property increase human presence along Grizzly Peak Boulevard, including at roadside turnouts, and this increases potential ignition sources. Fire behavior modeling resulted in torching of tree canopies along the upper, northeastern portion of the property and active crown fire along the lower, southwestern portion of property in pine and eucalyptus stands. Fire behavior modeling reveals a potential for extreme fire behavior. The upper and lower portions of the property are within 100 feet of existing structures and much of the property is within 300 feet of structures.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Grizzly Peak Boulevard through the use of hand labor or mechanical techniques, hand labor or mechanical treatment along Bay Forest Drive in the lower portions of the property, and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads.

Proposed Vegetation Treatments

The following vegetation management treatments are proposed to reduce fire risk at Grizzly Peak Open Space:

- **GPO-1:** Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within 30 feet of Tunnel Road and Bay Forest Drive according to standards described in Section 9.1 of the VMP.
- **GPO-2:** Implement brush and tree thinning in areas exhibiting extreme fire behavior and within 300 feet of structures according to standards described in Section 9.1 of the VMP.
- **GPO-3:** To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodlands, retaining lower fire risk trees.
- **GPO-4:** Continue to implement grazing practices on the remainder of the property to maintain fuel loads.

These proposed specific projects at Grizzly Peak Open Space (GPO-1, GPO-2, GPO-3, and GPO-4) are summarized in Table 2-8.

City Stables

The City stables property is 7.4 acres, located along Skyline Boulevard, and dominated by grassland. The property is largely within 10 feet of existing structures and includes one of the City's remote automated weather stations. Fire behavior modeling resulted in no extreme fire behavior on this property. The property is currently leased to a private contractor who retains responsibility for vegetation management.

Current Vegetation Treatments

Vegetation management on this parcel is focused on reducing surface fuels (e.g., grasses, weeds) and maintaining fuel loads using hand labor, mechanical techniques, or grazing.

Proposed Vegetation Treatments

If the current lease expires within the timeframe of the VMP and the City regains management responsibility, the City would resume management of vegetation on the entire property according to the standards described in Section 2.3.4 above.

No proposed specific projects have been identified on this property at this time.

City Park Lands and Open Space

City park lands and open space areas are collections of multiple adjacent parcels, and are characterized by numerous vegetation types, and typically present high fire hazard conditions due to terrain, vegetation, and increased human presence resulting in increased ignition potential. The VMP area includes four primary park lands and open space areas: Sheffield Village Open Space, Knowland Park and Arboretum, Joaquin Miller Park, and King Estate Open Space Park. A brief description and summary of proposed vegetation management treatments within each of these areas are provided below. Table 2-8 below and Section 9.2 of the VMP provides more detail about these treatment areas.

Sheffield Village Open Space

Sheffield Village Open Space is collectively 455.4 acres in size and is situated at the southeastern-most portion of the VMP area, at the southern end of Golf Links Road and at the northwestern end of Lake Chabot. The property includes the Lake Chabot Golf Course but given the low fire hazard condition of the golf course, no treatments are proposed for that portion of the property. The Sheffield Village Open Space area also includes the historic Dunsmuir Estate. Sheffield Village Open Space is mapped as containing the following vegetation communities/ land cover types: annual grassland (59.4 acres), closed-cone pine-cypress (5.9 acres), coastal oak woodland (143.9 acres), coastal scrub (59.3 acres), eucalyptus (27.9 acres), perennial grassland (0.8 acre), and urban (158.1 acres).

Fire behavior modeling resulted in active crown fire in coastal scrub (where overstory trees are present), oak stands with a heavy shrub understory, and isolated areas within oak woodlands with grass understory where slope gradients are high, and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include grazing throughout the property (excluding the golf course and developed/landscaped portions of the Dunsmuir Estate) to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Portions of the southern edge of the property fall within the 100-foot and 300-foot buffers from existing structures. On-site structures include those in the Dunsmuir Estate portion of the property (at the end of Peralta Oaks Court).

Proposed Vegetation Treatments

Vegetation management treatments proposed at this property to reduce fire risk include maintaining the existing trail/road networks to facilitate access and to create breaks in surface vegetation.

Proposed specific projects at Sheffield Village Open Space (SHF-1, SHF-2, and SHF-3) are summarized in Table 2-8 and described below.

- **SHF-1:** Manage vegetation within 100 feet of structures, including those in the Dunsmuir Estates portion of the property, and within 150 feet of park access gates, according to the standards outlined in Section 9.1 of the VMP.
- **SHF-2:** Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1 of the VMP.
- **SHF-3:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.

Knowland Park and Arboretum

Knowland Park and Arboretum is collectively 473.5 acres in size and is situated in the southeastern portion of the VMP area. The property extends between Interstate 580 in the southwest and Skyline Boulevard in the northeast and is bisected by Golf Links Road. The property includes the Oakland Zoo at the southwestern edge and a newly constructed gondola between the zoo and a hilltop near the center of the property, where an additional fenced zoo exhibit is now located. The Knowland Park and Arboretum property is mapped as containing the following vegetation communities/land cover types: annual grassland (102.9 acres), mixed chaparral (also known as maritime chaparral) (8.1 acres), closed-cone pine-cypress (9.1 acres), coastal oak woodland (162.0 acres), coastal scrub (61.8 acres), eucalyptus (12.1 acres), freshwater emergent wetland (0.2 acre), perennial grassland (12.5 acres), redwood (0.2 acre), and urban (104.9 acres).

Views from the water tank located along Skyline Boulevard near the property's northeastern boundary increase human presence and thereby increase potential ignition sources. In addition, the Oakland Zoo's "California Trail" operations, including overnight campgrounds, as well as unauthorized motorized vehicle use within the park may increase ignition potential at Knowland Park. Fire behavior modeling resulted in active crown fire in the coastal scrub and chaparral stands in the central and eastern portions of the property (where overstory trees are present) and in the eucalyptus stands in the western portion of the property and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Golf Links Road through the center of the property through the use of hand labor or mechanical techniques and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 350 acres of the property are currently grazed annually. Grazing is currently rotated every two years in a checkerboard approach so all areas are covered. The Friends of Knowland Park stewardship group actively conducts vegetation

management efforts on the Knowland Park and Arboretum property and have worked with the City's grazing contractor to help minimize impacts on rare plants within the park through exclusion fencing and active management of the goat herd. Most of this property includes lands within 100 and 300 feet from existing structures.

Proposed Vegetation Treatments

The following vegetation management treatments were developed through consultation with the Friends of Knowland Park to reduce fire risk:

- Maintain the existing trail/road networks to facilitate access and to create breaks in surface vegetation.
- Implement measures to prevent unauthorized vehicle access (including two-wheel motorized vehicles) to the property's dirt access roads.
- Install signage at park entrances indicating that Knowland Park and Arboretum is a City of Oakland park, and notifying visitors of Park rules, including that campfires, fireworks, and other fire hazardous activities are prohibited.
- Grass heights following grazing treatment should be targeted to between 4-6 inches in height.
- Goats should be excluded from sensitive areas, such as rock outcrops and the emergent wetland.
- Where feasible, shrubs such as coffeeberry (*Frangula californica*), toyon (*Heteromeles arbutifolia*), and gooseberry (*Ribes* spp.) should be protected from goat grazing.

Proposed specific projects at Knowland Park (KNO-1, KNO-2, KNO-3, KNO-4, and KNO-5) are summarized in Table 2-8 and described below.

- **KNO-1:** Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 300 feet of ridgelines, which encompasses the area within 30 feet of known human congregation/activity areas along Skyline Boulevard according to the standards outlined in Section 9.1 of the VMP.
- **KNO-2:** Manage vegetation along adjacent roadside (Golf Links Road). Treatment width should be based on field observations, but not to exceed 30 feet.
- **KNO-3:** Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1 of the VMP.
- **KNO-4:** Manage vegetation within 100 feet of on-site structures in the zoo portion of the property and within 100 feet of the zoo/open space interface to minimize ignition potential and modify potential fire behavior near this developed portion of the property.
- **KNO-5:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.

Joaquin Miller Park

Joaquin Miller Park is 454.9 acres in size and is situated in the southeastern portion of the VMP area. The property extends between Joaquin Miller Road in the south, Skyline Boulevard in the east, Castle Drive in the west, and the Oakland Hills ridgeline in the north. Skyline Boulevard runs along the park's western edge then through the northern portion of the park where it exits at the park's northern corner. The southern portion of the park is more developed and includes access roads, parking areas, the Woodminster Amphitheater, a dog park, a nursery, and several structures (including the Community Center, Ranger Station, the historic Joaquin Miller house, Sequoia Lodge, Sequoia Arena, and the Metropolitan Horseman's Association Clubhouse). The northern portion of the park is less developed but includes numerous trails and dirt roads. Many of the fire roads within the park have not been maintained and are no longer accessible to vehicles due to vegetation growth.

Joaquin Miller Park is mapped as containing the following vegetation communities/land cover types: annual grassland (15.0 acres), closed-cone pine-cypress (109.3 acres), coastal oak woodland (88.0 acres), coastal scrub (5.8 acres), eucalyptus (62.0 acres), redwood (121.0 acres), urban (42.8 acres), urban (acacia) (6.6 acres), urban (mixed tree stand) (3.7 acres), and valley/foothill riparian (0.8 acre). In recent years, Monterey pine trees in the park have been reaching the end of their lifespan and dying, contributing to fuel load in the park.

Known areas for potential ignitions include a roadside turnout area that is prone to garbage and debris dumping from cars along Skyline Boulevard approximately 800 feet up from its intersection with Joaquin Miller Drive, a congregation area at the intersection of Castle Drive and Skyline Boulevard, and a congregation area that has experienced bonfires located at the top of Woodside Glen Court. Fire behavior modeling resulted in active and passive crown fire within the northern and central portions of the park within non-managed oak, pine, eucalyptus, and acacia stands. Active and passive crown fire also modeled within the acacia and mixed tree stands within the southern (lower) portions of the park and only surface fire modeled within redwood stands and throughout the lower, developed and managed portions of the park (except acacia and mixed tree stands). Recently, there has been a die-off of acacia trees in several areas of the park, which represents a potential fire hazard. Trees located along Joaquin Miller Road and Skyline Boulevard could pose obstacles to egress if they fall across these roads during a fire.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Joaquin Miller Road along the entire southern edge of the park and along Skyline Boulevard through the park using hand labor or mechanical techniques. Vegetation is also managed by hand labor or mechanical techniques in the areas adjacent to the dirt parking lot to the west of the Chabot Space and Science Center, at the WUI along the park's northwestern boundary, and around structures, the dog park, and the amphitheater in the developed portion of the park. Fire trails within the center of the park are cleared, and vegetation within 20 feet of the trails managed via hand labor. Oakland Trails volunteers, in collaboration with the Oakland Department of Public Works, have typically conducted the majority of trail maintenance work in the park. Adopt a Spot volunteers and groups such as Friends of Sausal Creek and Friends of Joaquin Miller Park maintain vegetation at adopted spots. Grazing is also conducted throughout the park in light, flashy fuel areas (grasslands, disturbed areas) to reduce and maintain surface fuel loads.

Approximately 150 acres of the property are currently grazed annually. Fire behavior modeling reveals a potential for extreme fire behavior in the property's pine, eucalyptus, acacia, and mixed tree stands. Much of the southern and western portions of the park's perimeter fall within the 100-foot and 300-foot buffers from existing structures.

Proposed Vegetation Treatments

The following vegetation recommendations, management treatments, and avoidance measures were developed in consultation with the Friends of Sausal Creek and the Friends of Joaquin Miller Park, stewardship groups to reduce fire risk in the park:

- Remove dead trees along roadsides along the perimeter of the park. Dead trees along roadways are high risk for fire ignition.
- Maintain the existing fire trail/dirt road network to facilitate access and to create breaks in surface vegetation.
- Avoid treatment within the pallid manzanita restoration area adjacent to the Chabot Space and Science Center and on both sides of Skyline Boulevard near the Redwood Glen Trailhead, approximately 500 feet west of the Roberts Park main entrance (this is known as the "Big Trees" pallid manzanita population). Also avoid treatment activities in pallid manzanita planting areas adjacent to the nursery.
- Avoid treatment on serpentine roadcuts, in particular the serpentine slopes at the intersection of Joaquin Miller Road and Skyline Boulevard. Rare plants including Tiburon buckwheat are known to occur in this location. Rare plant locations along these serpentine slopes extend along Joaquin Miller road approximately 300 feet northwest from the intersection and along Skyline Boulevard approximately 400 feet from the intersection.
- Removal of acacia and pine seedlings saplings can be targeted in treatment areas.
- Avoid treatment in identified memorial tree planting sites.
- Avoid treatment within the emergent wetland located in the northern portion of Joaquin Miller Park.
- Implement measures to prevent unauthorized vehicle access to the park's dirt access roads.

Potential specific projects at Joaquin Miller Park (JMP-1, JMP-2, JMP-3, and JMP-4) are summarized in Table 2-8, and described further below.

- **JMP-1:** Manage vegetation within 100 feet of on and off-site structures, within 300 feet of ridgelines, within 150 feet of park access gates and within 30 feet of known human congregation/activity areas along Skyline Boulevard and the top of Woodside Glen Court according to the standards outlined in Section 9.1 of the VMP.

- **JMP-2:** Manage vegetation along adjacent roadsides (Joaquin Miller Road, Skyline Boulevard, and Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.

- **JMP-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.

- **JMP-4:** Continue to manage vegetation via grazing in flashy fuel areas to maintain fuel loads.

King Estate Open Space Park

The King Estate Open Space Park is collectively 81.3 acres in size and is situated southwest of Interstate 580, south of 82nd Avenue, and bisected by Fontaine Street. The King Estate Open Space Park property is mapped as containing the following vegetation communities/ land cover types: annual grassland (61.1 acres), coastal oak woodland (12.0 acres), coastal scrub (4.3 acres), and urban (4.0 acres). The Oak Knoll Neighborhood Improvement Association is active in vegetation management efforts on the King Estate Open Space Park. The Association has assisted in grazing operations, identifying exclusion areas on the steep western slopes to minimize erosion and slope stability impacts.

Ignitions at King Estate Open Space Park are of concern given the proximity and density of homes in the adjacent neighborhoods and in consideration of large areas of ignitable grasses on the site. Use of fireworks on and around the property is prevalent in the weeks leading up to July 4th annually, with the most fireworks risk occurring on the eve and night of July 4th. Acacia trees located along the western perimeter of the property, and unmaintained vegetation on adjacent private properties to the south and areas owned by Oakland Unified School District also represent a high fuel load. Fire behavior modeling resulted in isolated active crown fire only in coastal scrub where overstory trees are present, and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Fontaine Street and Crest Avenue through the use of hand labor or mechanical techniques, and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 88 acres of the property are currently grazed annually. The perimeter of the property falls within the 100-foot and 300-foot buffers from existing structures.

Proposed Vegetation Treatments

The following vegetation management treatments were developed in consultation with the Oak Knoll Neighborhood Improvement Association to reduce fire risk in the park:

- Maintain the existing trail/road networks to facilitate access and to create breaks in surface vegetation.

- Implement measures to prevent unauthorized vehicle access to the property's dirt access roads.

- Coordinate with Oakland Unified School District regarding vegetation management on adjoining property, where appropriate.
- Coordinate with private property owners regarding vegetation management on adjoining property, where appropriate.
- Avoid or minimize grazing on the steep western slopes to minimize erosion and slope stability impacts.
- Install signage at park entrances indicating that King Estate Open Space Park is a City of Oakland park, and notifying visitors of Park rules, including that campfires, fireworks, and other fire hazardous activities are prohibited.

Proposed specific projects at King Estate Open Space Park (KES-1 and KES-2) are summarized in Table 2-8 and are described further below.

- **KES-1:** Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 30 feet of Fontaine Street and Crest Avenue according to the standards outlined in Section 9.1 of the VMP.
- **KES-2:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads and minimize ignition potential, particularly prior to the 4th of July holiday.

Other Open Space Areas

Other small City-owned parcels or groups of parcels that are not otherwise classified above but exhibit similar vegetation conditions and are currently managed by the City are summarized below. Current management practices include roadside treatment through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing throughout each area to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. The City proposes to continue managing these parcels in accordance with the standards described above in Section 2.3.3. Proposed specific projects at these parcels are summarized in Table 2-8.

- **Blue Rock Court.** This parcel is 15.4 acres and is located immediately north of I-580, northwest of Blue Rock Court. Fire behavior modeling resulted in active and passive crown fire in the eucalyptus stand, surface fire only throughout the remainder of the property.
- **Leona Street.** This parcel is 1.9 acres and is a road extension at the east end of Leona Street. Fire behavior modeling resulted in surface fire only in coastal oak woodland and annual grassland. Active crown fire in eucalyptus stand at the property's southern end.
- **McDonnell Avenue**. This parcel is 1.1 acres and is a road extension at the east end of McDonnell Avenue. Fire behavior modeling resulted in surface fire only.
- **Police/Safety Department Property**. This parcel is 11.3 acres. Fire behavior modeling resulted in surface fire only.

- **Tunnel Road Open Space**. This parcel totals 4.0 acres and is along Tunnel Road, west of SR 24. Fire behavior modeling resulted in surface fire only.

- **Marjorie Saunders Park**. This park totals 3 acres and is along Ascot Drive, southeast of Shepherd Park. Fire behavior modeling resulted in active and passive crown fire in the eucalyptus stands and surface fire only throughout the remainder of the property. The Friends of Sausal Creek and Piedmont Pines Neighborhood Association actively conduct vegetation management efforts at this park.

- **Oak Knoll**. This property totals 15.7 acres and is northeast of Mountain Boulevard and south of Keller Avenue. Fire behavior modeling resulted in surface fire only throughout the property.

Other Areas

Other City-owned properties in the VMP area that are not otherwise classified above include stations (nos. 6, 7, 21, 25 and 28), City facilities (parking lots, police stations), and developed parks and playgrounds (e.g., Montclair Park). This classification includes 43 properties encompassing 24.5 total acres. These properties are mapped as urban land cover types, fall entirely or largely within the 100-foot buffer from existing structures, and present a low fire risk as they are developed with irrigated and maintained landscaping. No current vegetation management activities are conducted on these parcels and no additional vegetation management treatments are identified for these parcels. However, should conditions change (e.g., property abandoned and landscape vegetation dies) and hazardous conditions observed during annual field assessments, vegetation management treatments would be the same as those identified for urban and residential parcels (described above).

Roadside Treatment Areas and Medians

Roadside treatment areas include the area of land within 30 feet of the roadside edge (edge of pavement) for all roads in the VMP area. The length of all roads in the VMP area totals 308 miles. A portion of these are considered main access/egress routes, which total 30 miles. Medians are similar to roadside treatment areas as they are located along roads in the VMP area but differ in that they are distinct parcels owned by the City. In the VMP area, there are 32 parcels classified as medians, totaling 5.8 acres. Annual vegetation management along roads and medians is focused on reducing ladder fuels, controlling invasive species (e.g., broom), maintaining fuel loads, reducing surface fuels (e.g., grasses, weeds), and pruning tree canopies for vertical clearance through the use of hand labor or mechanical techniques and grazing. Priority roadsides (30 miles) and all medians are considered Priority 1 treatment areas; the remaining roadside areas (278 miles) are considered Priority 2 treatment areas. These areas would be managed in accordance with the standards described in Section 2.3.3, above.

While the vegetation management needs vary year to year depending on precipitation and other site-specific factors, the City would likely treat priority roadsides (Priority 1 treatment areas) at least every 3 years and possibly more frequently. It is anticipated that the remaining roadside areas (Priority 2 treatment areas) would be treated every 3-5 years.

2.3.5 Priority Ranking of VMP Treatment Areas

The VMP includes a treatment prioritization system to prioritize vegetation treatment areas and projects into three different categories (Priority 1, 2, and 3) based on proximity to structures in the VMP area, ridgelines, and park access gates; areas along critical access/egress routes; areas subject to increased ignition potential; and areas that exhibit the potential for extreme fire behavior. Priority 1 areas are intended to be prioritized first. Once all Priority 1 areas have been completed or scheduled and budget allows, Priority 2 areas will be completed. Once all Priority 1 and 2 areas have been completed or scheduled and budget allows, Priority 3 areas will be completed. The VMP treatment areas (described in Section 2.3.4 above) were prioritized based on the treatment prioritization categories outlined below.

Priority 1 areas and the relevant annual vegetation management activities include the following:

- Areas within 100 feet of structures or critical infrastructure (e.g., water supplies, communications facilities) to provide defensible space for existing structures and reduce fire intensity at the WUI. This buffer is consistent with state level standards for defensible space (Public Resources Code [Pub. Res. Code] Section 4291) and may be reduced based on field observations.

- Areas within 30 feet from roadside edges (including City-owned medians) along major access/egress routes to reduce potential for wildfires generated by human activity (e.g., sparks, catalytic converters, tossed cigarettes). This activity also enhances greater egress and ingress in the event of an emergency and may be reduced based on field observations.

- Areas within 300 feet of ridgelines to reduce fuel loads and ladder fuels where high and erratic winds have potential to occur. Buffer distance is consistent with community fuel and structure protection standards (14 Cal. Code Regs. 103 [c][6], Diablo Firesafe Council 2015).

- Areas within 150 feet of park access gates to promote firefighter safety.

- Areas where vegetation management activities would enhance regional fuel breaks for more effective containment and suppression activities should a wildfire occur.

- Areas within 30 feet around known historic sources, areas, or sites of ignition to minimize wildfire ignitions originating from human activity.

Priority 2 areas and the relevant annual vegetation management activities include the following:

- Areas within 30 feet from roadside edges along all other roads in the VMP area not identified as Priority 1.

- Areas between 100 feet and 300 feet from structures where modeled fire behavior exhibits crown fire or flame lengths over 8 feet in order to minimize extreme fire behavior and reduce spotting potential from crown fires that may ignite vegetation or structures not adjacent to the fire. Buffer distance is consistent with community fuel

and structure protection standards (14 Cal. Code Regs. 103 [c][6], Diablo Firesafe Council 2015).

Priority 3 areas and the relevant annual vegetation management activities include the following:

- Areas currently managed by the City's goat grazing program, that are not identified for management under Priorities 1 and 2, to maintain lower fuel loads within larger park lands or open space areas.
- Areas with rapidly spreading species (including such plants as French broom, Scotch broom, pampas grass, and jubata grass) in oak woodland vegetation communities to reduce fuel loading rates.

2.3.6 Vegetation Management Techniques

Different vegetation management techniques may be more effective at reducing, removing, or altering vegetation, depending on vegetation type, location, condition, and configuration. Given the dynamic nature of vegetation, a single treatment technique or management approach may not be appropriate for one site over time; therefore, an adaptive approach that provides more flexibility to adjust and select management techniques based on conditions on the ground is the preferred long-term approach. The goal remains to maintain vegetation conditions in accordance with the desired vegetation management standards, but the specific methods may evolve over time. Below is a description of the four categories of vegetation management techniques (biological, hand labor, mechanical, and chemical) that would be used under the VMP. This EIR evaluates each of these techniques for their application in the VMP area.

Biological Techniques (Grazing)

Grazing is the primary biological vegetation management technique that uses livestock (e.g., goats, cattle, sheep) to reduce the fuel loading of live herbaceous growth, shrubs, and new growth of trees and prevent the expansion of brush/scrub into grasslands. Grazing is an effective method in large treatment areas where manual labor would be cost-prohibitive as well as in areas that are inaccessible to mowing equipment or in areas too steep for hand crews. Typically, grazing is conducted from late spring through the end of summer to reduce fine fuels prior to the onset of peak fire season. Grazing may or may not be necessary to conduct each year depending on the intent. For example, if the intended purpose of grazing is to reduce grass or other flashy fuels, it should be conducted annually but if the intended purpose is to control shrubs or maintain understory fuels, it may not need to be conducted every year.

Different livestock have different grazing habits and not all livestock are ideally suited for grazing in all areas. Animal selection is determined during the development of a site-specific grazing management plan. Grazing management plans consider site-specific conditions, specify management objectives and standards, and identify animal stocking rates and use levels (typically measured in pounds per acre of residual dry matter), grazing season, and monitoring requirements and performance criteria. To control livestock movement and prevent overgrazing, soil compaction, and resource damage, professional herders and portable electric fences are generally used. In addition, other less impactful vegetation management techniques (e.g., hand labor) may be needed in conjunction with grazing to protect riparian zones, retained

plants, and sensitive biological and cultural resource areas, and to minimize erosion and avoid the movement of invasive plants and pathogens.

In the Oakland Hills, goat grazing has been successfully used for reducing fine fuel loads in grasslands, brushlands, and beneath tree canopies at the following areas: King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Dunsmuir Estates (Sheffield Village Open Space), Shepherd Canyon, and London Road. Approximately 3,000 goats have been utilized on an annual basis (typically between May and August) to manage fine fuels on approximately 600 to 1,100 acres. Unlike other livestock, goats browse on woody vegetation (e.g., tree leaves, twigs, vines, and shrubs) and consume materials up to 6 feet above the ground, creating and maintaining a vertical separation between surface vegetation and the lower limbs of overstory trees.

Hand Labor Techniques

Hand labor techniques involve pruning, cutting, or removing trees, shrubs, and grasses by hand or using handheld equipment. Other hand labor treatments involve bark pulling, removing dead wood and litter, and mulching. Hand labor allows for selective management, pruning, thinning, or removal of targeted vegetation and is most effective for spot application on small areas or areas with difficult access or areas with sensitive species. The use of hand labor is focused on reducing ladder fuels, controlling highly flammable/rapidly spreading species (e.g., French broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Compared to other vegetation management techniques such as using heavy mechanical equipment or grazing, hand labor techniques typically have a lower potential for adverse environmental effects because the work is specifically targeted and implemented, although heavy foot traffic associated with hand labor can result in surface soil compaction and increase erosion potential. Hand tools include, but are not limited to, shovels, Pulaski hoes, McLeod fire tools, weed whips, chainsaws, handsaws, machetes, pruning shears, and loopers. Hand labor generates debris that is either removed from the site or is chipped/cut down and scattered on site.

Hand labor has been used in the VMP area for managing vegetation primarily on urban and residential parcels as well as along roadsides, in small treatment areas, and within larger parks or open space areas. Typical hand labor techniques to reduce fuel loads that may be used in the VMP area include line trimming, branch pruning/removal, hand-pulling and gathering, clearance pruning, mosaic thinning and dripline thinning, black plastic coverage, and mulch application. Refer to Section 8 of the VMP for a more detailed description of the hand labor techniques listed above.

Mechanical Techniques

Mechanical techniques include fuel reduction methods that use motorized heavy equipment to remove or alter grass/herbaceous material (e.g., mowers, diskers) or woody material (e.g., masticators, feller-bunches). Mechanical treatment techniques rearrange vegetation structures, compact or chip/shred material, reduce ladder fuels, control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing), and move material to staging areas for either reuse, off-site disposal, or composting; or burn piles. Currently, the City disposes of mechanically removed vegetation at approved and licensed composting facilities. In some instances, two or more pieces of mechanical equipment may be used together, or one piece of mechanical

equipment may be used independently. Mechanical equipment is used on an as-needed basis in combination with other treatment techniques described in this section.

Mechanical equipment is typically used to manage uniform fuels in large areas. Constraints to mechanical equipment use include steep slopes, dense tree cover that prohibits access, saturated soils, and dry, high-fire hazard weather conditions where equipment use could result in ignition. Mechanical equipment is also typically not used for selective plant removal due to the large size of equipment. Typical mechanical equipment techniques to reduce fuel loads include grading, mowing, disking, mechanical cutting/crushing, chipping, tree removal, yarding, and creating fire and fuel breaks.

Grading work would occur infrequently as this work is typically needed to create bladed firebreaks. Under the VMP, existing roads and trails would mostly be used as firebreaks. Mowing, mechanical cutting/crushing, use of a masticator, and chipping activities involve minimal compaction, rutting, or tire churning work. The typical depth of ground disturbance associated with these techniques is 6 inches belowground.

Disking is a technique whereby plant material is cut and mixed with surface soil to create a barrier of discontinuous fuel and bare earth to stop fire spread. Disking involves use of a tractor with a tow behind. Disked firebreaks are typically 12 feet wide and result in ground disturbance of up to 1 foot belowground. Yarding is the process of transporting cut trees, or portions thereof, from the cut location to a landing or staging area for subsequent treatment or transport off site. Yarding involves use of a tractor and may result in ground disturbance of 6-12 inches.

The City has used all of the aforementioned mechanical treatment techniques to manage vegetation for fire hazard reduction purposes.

Chemical Techniques (Herbicide)

Chemical techniques involve the use of herbicides to kill vegetation or prevent growth and are typically used in combination with other types of fuel reduction treatments, such as mowing, trimming, pruning, and grazing. Herbicides have a high kill rate and prevent treated plants from setting seed. They can be applied selectively, minimizing impacts to seeds of other species residing in the soil. Application of herbicides and other chemicals is typically performed by hand and can include sponging, spraying, or dusting chemicals onto unwanted vegetation. Hand application is effective for small treatment areas. The cut-and-daub treatment is another method that is effective for larger highly flammable/rapidly spreading plants, such as large trees and shrubs, to control regrowth and kill the portion of the plant remaining belowground. This treatment method involves cutting the plant stalks or trunks and then directly applying the herbicide with a brush, sponge, or hand sprayer with a cloth tied around the nozzle to the cambium layer of the freshly cut stump or stem. Because there is direct access to the cambium, the amount of herbicide used on each stump is small. This method minimizes the potential for adverse effects associated with herbicide contacting other plants surrounding the treatment area or coming into contact with a water surface. Under the VMP, the City would typically use the cut-and-daub treatment method where large trees have been removed (primarily eucalyptus and acacia). A backpack sprayer would be used to apply herbicides on surface fuels such as French broom, Scotch broom, pampas grass, and jubata grass.

Herbicides must be applied by a licensed and trained professional to ensure proper and safe use, handling, and storage of chemicals to treat vegetation. Herbicides are only applied by a prescription prepared by a licensed pest control advisor in accordance with federal, state, and local regulations and labeled specifications. Typically, 2-3 workers licensed and trained to apply herbicides would conduct this activity.

Herbicides are classified into two general types: pre-emergent and post-emergent. Pre-emergent herbicides are sprayed directly onto the ground and prevent plants from germinating and/or growing. However, pre-emergent herbicides may affect other desired species residing in the soil. Post-emergent herbicides are applied directly onto the plants.

In 2005, the Oakland City Council adopted Resolution 79133, which directed City staff to investigate modifying the City's Integrated Pest Management (IPM) Ordinance to allow the selective use of glyphosate and triclopyr for managing vegetation for wildfire hazard reduction purposes. However, no staff recommendation or environmental review has been completed since that time; thus, herbicides have not yet been used for vegetation management on City-owned property or along roadsides in the VMP area. In the VMP, the City proposes to allow the selective use of glyphosate (Accord or Rodeo formulation)[4], triclopyr, and imazapyr. For more information about the use of glyphosate, see Section 3.8, "Hazards and Hazardous Materials," in Chapter 3 of this DEIR.

Table 2-4 summarizes the type of herbicides that may be typically applied in late summer/ fall, VMP treatment areas where herbicides may be applied, targeted vegetation types, quantities per acre, maximum quantity used per acre annually, and application frequency.

[4] While use of glyphosate is proposed, some recent studies have indicated that the Roundup formulation of glyphosate may be toxic to humans. Out of an abundance of caution, the Roundup formulation of glyphosate is not proposed for use within the VMP area.

Table 2-4. Summary of Targeted Vegetation Types, VMP Treatment Areas, and Quantities Where Herbicides May Be Used

Targeted Vegetation Type	VMP Treatment Area Where Herbicides May be Used	Quantity Per Acre	Maximum Quantity of Herbicide Used per Acre Annually	Frequency of Herbicide Application
Eucalyptus	BLU-1, BLU-2, BLU-3, DIM-1, GAR-3, GPO-1, GPO-2, GPO-4, JMP-1, JMP-2, JMP-3, JMP-4, KNO-1, KNO-2, KNO-3, KNO-4, KNO-5, LHT-1, LST-1, MEDIAN, MJS-1, MJS-2, NOR-1, NOR-2, NOR-3, OKN-2, PSD-1, PSD-2, SHF-1, SHF-2, SHF-3, SHP-1, SHP-2, SHP-3, SHP-4, URB-1, Roadsides	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
French Broom	JMP-1, JMP-2, JMP-3, JMP-4, SHP-1, SHP-2, SHP-3, URB-1, Roadsides, and where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Scotch Broom	JMP-1, JMP-2, JMP-3, JMP-4, SHP-1, SHP-2, SHP-3, URB-1, Roadsides, and where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Acacia	JMP-1, JMP-3, JMP-4, Roadsides	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Pampas Grass	Where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Jubata Grass	Where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year	2 times per year

Note: Types of herbicides that may be used at select VMP treatment areas include glyphosate (Accord or Rodeo formulation), triclopyr, and imazapyr.

2.3.7 Equipment Needed for VMP Treatments

Various types of equipment would be needed to conduct the VMP treatment projects. The types of equipment that would be used are listed in **Table 2-5** below.

Table 2-5. Types of Equipment Used for VMP Treatments

Vehicle/Equipment Type	Fuel Type	Appliable VMP Treatment Activities
Light duty automobile (car/light truck)	Gasoline	All treatment activities (assumed for workers)
Heavy truck	Gasoline	Manual and mechanical tree/shrub/grass removal
Water truck	Gasoline	Manual and mechanical tree/shrub/grass removal
All-terrain vehicle	Diesel	Goat grazing
Chainsaw	Gasoline	Manual and mechanical tree removal Manual shrub removal
Rotary Mower	Gasoline	Mechanical and manual shrub/grass removal
Small Wheeled Tractor	Diesel	Mechanical shrub removal
Wheeled Tractor	Diesel	Mechanical shrub/grass removal
Crawler Type Tractor	Diesel	Mechanical shrub removal
Weed Whip	Gasoline	Manual grass removal
Skidder	Diesel	Mechanical tree removal
Loader	Diesel	Mechanical tree removal
Chipper	Gasoline	Manual and mechanical tree removal Manual shrub removal
Chipping Equipment	Gasoline	Mechanical shrub removal
Excavator	Diesel	Mechanical shrub removal
Masticator	Diesel	Mechanical tree removal
Feller-buncher	Diesel	Mechanical tree removal

2.3.8 Access to Treatment Areas

Access to VMP treatment areas would occur via existing access roads, City roads, and trails. No new access routes would be created to perform proposed VMP treatment projects.

Most vegetation treatment activities would not require any trail closures. However, depending on the treatment techniques employed, some temporary trail closures may be needed within the following parks/open space areas: Dimond Canyon Park, Garber Park, Joaquin Miller Park, King Estate Open Space Park, Knowland Park and Arboretum, North Oakland Sports Field,

Sheffield Village Open Space, and Shepherd Canyon Park. Within most of these areas, limited trail closures could last 1-5 days. However, at North Oakland Sports Field, proposed treatments may require the dirt access road/trail off Skyline Boulevard to be closed 2-4 weeks.

2.3.9 Construction Personnel

The VMP would result in an increase in OFD's current level of maintenance activities within the VMP area above baseline conditions, as described in Section 3.1.2. While the number of personnel to conduct VMP treatment projects would vary year to year, the estimated number of personnel required at each project site is typically 10-15 construction workers and one employee from OFD's Vegetation Management Unit. The maximum number of workers at a given site would be 18 workers. Worker estimates by VMP treatment project are summarized in Table 2-8.

2.3.10 Schedule and Timing for Implementing VMP Treatments

The VMP does not include a specific timeline for conducting proposed vegetation treatment projects identified in Section 2.3.4. The timeline for implementing VMP treatment projects would be dependent upon several variables including results of annual field assessments, targeted vegetation type requiring treatment, and budget available.

Vegetation management activities would occur year-round, as needed, subject to the limitations set forth in the mitigation monitoring and reporting program; however, given the variable nature of vegetation through changes in weather and season, the timing for certain treatments would be confined to specific months for optimization purposes, to reduce the fire danger, and to avoid or minimize impacts to special-status species (e.g., nesting birds). For example, treatments in grasslands should occur when grass cures or dries out. Mechanical removal of vegetation should also be conducted when the weather is not too dry or windy as some mechanical equipment has potential to ignite fires. Additionally, treatments intended to control or avoid the spread of high fire risk plants (e.g., broom, pampas/jubata grass, insect pests) is important. For certain vegetation types, treatment should occur before the timing of seeding of fire-resistant plant species and avoid periods when invasive or highly flammable species are in seed. Table 10 in the VMP summarizes treatment timing considerations for minimizing seed spread of high fire risk plants. Additionally, as described in Section 3.4, "Biological Resources," the timing of vegetation treatment activities would also take into consideration presence of nesting birds and special-status plant and animal species.

Vegetation management activities would primarily occur during weekdays (Monday through Friday); however, some occasional weekend work may be required.

2.3.11 Amount of Vegetation Management Activities Conducted Annually

For the purposes of this EIR, **Table 2-6** summarizes the estimated maximum annual amount of vegetation treatment activities that would occur in a given year (by acreage and technique type). The estimated values in Table 2-6 are based on vegetation management activities conducted by the City over the last 15 years. This EIR assumes the City may conduct goat grazing on up to 1,100 acres per year and that a combination of hand labor and mechanical treatment

methods would be employed at roadside treatment areas for up to 500 acres. Roadside treatment acreages, such as manual grass removal, are included within the individual categories below.

Table 2-6. Estimated Maximum Areas for Vegetation Treatment Activities

Vegetation Treatment Activities	Maximum Estimated Annual Area (acres)
Manual removal of trees (using chainsaws, chippers)	20
Manual removal of shrubs (using chainsaws, rotary mower, chipper)	145
Manual grass removal (rotary mower)	375
Mechanical tree removal (e.g., using feller/buncher, chainsaw, masticator, loader, skidder, chipper)	5
Mechanical shrub removal (e.g., using tractor, masticator, rotary mower)	5
Mechanical grass removal (e.g., rotary mower, tractor)	5
Goat grazing	1,100
Herbicide treatment for trees	20
Herbicide treatment for shrubs	15
Herbicide treatment for grasses*	0

* Herbicide treatment for grasses is proposed only for spot treatment of pampas/jubata grass; this treatment is captured in the "Herbicide treatment for shrubs" category.

2.3.12 Annual Work Plan Development Process

As described in Section 12 of the VMP, OFD would assess vegetation conditions in the VMP area in the winter or early spring months. Under the VMP, the timing of field assessments would vary each year and would be dependent upon weather conditions such as annual rainfall, number of hot and dry days, etc. The assessments would identify the level of effort necessary to treat vegetation as well as which vegetation management techniques would be most effective. The timing of vegetation management treatments would be determined based on the results of the field assessments. Typically, treatments would begin in the spring and early summer months, but timing may be adjusted according to weather conditions (e.g., temperature, precipitation) or other site-specific factors. Vegetation treatments may also be conducted more than once annually, depending on the site conditions and results of the field assessment. Treatment method selection is dependent upon the dominant vegetation type being treated and on the condition of vegetation observed during field assessments. Note that the treatment methods by treatment area (as described in Section 2.3.4 and Table 2-8) were initially derived based on assessments completed in developing the VMP. Such methods are subject to change based on future field observations.

After conducting field assessments, OFD would develop an annual work plan that identifies priority treatment areas, vegetation treatment techniques, implementation timing, resource needs and availability, funding sources, and monitoring and tracking needs. Following development of the annual work plan, the City will review the work plan with a qualified

biologist to identify sensitive resources within the treatment areas. Through this environmental screening process, the City will identify where avoidance and minimization measures will be required to avoid or minimize adverse effects to those resources. Recommended vegetation management treatments would vary by parcel type, as summarized in Section 2.3.3. Treatment areas would be prioritized based on the criteria described in Section 2.3.5. The number of projects identified in the annual work plan would be dependent on factors such as the climatic and hydrology conditions of the current and preceding year, as well as budget. In addition to the priority ranking criteria described in Section 2.3.5, the order in which areas or properties are ranked would be dependent upon the level of hazardous conditions and availability of resources (e.g., areas exhibiting more hazardous conditions would be treated first).

The annual work plan is an internal, working document that may be modified throughout the year due to various factors including field conditions, weather, vegetation growth, contractor or crew completion rates, staff and resource availability, treatment techniques, permit acquisition needs and emergency conditions, among others. As part of the annual work plan development process, OFD would coordinate with local volunteer/park stewardship groups, other City departments, and other agencies or landowners, as appropriate.

2.3.13 Annual Monitoring and Reporting

OFD would monitor and inspect vegetation conditions and treatment activities in the VMP Area throughout the year and develop an Annual VMP Report by February 28 summarizing the results of vegetation management activities, monitoring efforts, quantifying the number of parcels inspected and acreage treated, documenting annual expenditures associated with VMP projects completed the prior year, identifying any additional resource needs, and summarizing any pertinent issues identified and addressed during vegetation management activities. The Annual VMP Report would identify any proposed future changes to vegetation management activities conducted in the VMP Area and would be submitted to the Oakland City Council for review and comment.

The value of monitoring and adaptive management is the gathering of empirical information from treatment sites (before, during, and after treatment) that can help refine the approaches to vegetation treatment that better meet site-specific project objectives, provide effective wildfire risk reduction, and protect the environment. The Annual VMP Report includes elements that would aid in program implementation, help assess program effectiveness, and provide feedback for adaptive decision-making. Such elements under the VMP include but are not limited to:

- introducing independent science into the VMP activities,
- geospatially tracking later vegetation treatment projects,
- monitoring implementation of techniques and mitigation measures to document compliance, and
- monitoring the effectiveness of treatments in achieving desired fuel conditions and other objectives applicable to a treatment project.

The VMP annual report would provide metrics on the implementation performance of the VMP, including but not limited to, the following:

- Actual acreage treated vs. planned treatment acreage identified in the annual work plan. Subdivide treated acreage into two categories: (1) meets treatment standard immediately following treatment; (2) partially meets treatment standard immediately following treatment.
- Hours of annual pre-treatment site assessments performed by OFD.
- Hours of active treatment work inspections performed by OFD.
- Hours of post-treatment monitoring performed by OFD.
- Budget expended on vegetation management and associated tasks.

OFD would track performance of the VMP through geospatial mapping tools. Geospatially mapping of completed VMP treatment projects would support the annual monitoring and reporting process described above.

2.4 ADAPTIVE MANAGEMENT

The VMP would be implemented using an adaptive management approach. The results of the VMP's monitoring efforts contained in the Annual VMP Report would be used to determine which vegetation management activities or techniques are effective or ineffective; if there is a need to change or modify treatment techniques (among those described in Section 2.3.6), if there is a need to adjust the timing, duration, or priority of treatments on a specific property or within the VMP area; among other factors. OFD would document the results of monitoring efforts and make note of recommended changes to vegetation management activities or treatment methods. OFD would use the data contained in the Annual VMP Report to develop the Annual Work Plan for the subsequent year. If at any time the scope or impacts of the Project go beyond or differ from what is considered in this document, the City will evaluate whether to prepare supplemental environmental documentation under CEQA.

2.5 COORDINATION WITH STAKEHOLDERS AND VOLUNTEER GROUPS

Outreach to stakeholders and volunteer groups was conducted during VMP development, as summarized in Section 6 of the VMP. The VMP recommends continued and ongoing coordination between OFD and local volunteer and stewardship groups that are active in parklands or other portions of the VMP area. The VMP recognizes that effective communication and coordination is the responsibility of both OFD and local stewardship groups, with each making an effort to keep the other party informed and updated.

The following communication protocols are recommended to maintain coordination between OFD and local stewardship efforts.

OFD will identify a point of contact for communication and coordination purposes with local park stewardship groups. The Vegetation Management Unit of the Fire Prevention Bureau of OFD will be responsible for this outreach and can be contacted at 510-238-7388 or wildfireprevention@oaklandca.gov. Similarly, each park stewardship group will identify a point of contact for coordination with OFD. OFD will maintain an updated list of the points of contact, including names, telephone numbers, and email addresses. If there is a change in status regarding the point of contact for either OFD or a local stewardship group, each party is responsible for contacting OFD to update the contact list.

During the annual work plan development process, OFD will reach out to the local park stewardship groups (through the point of contact) to solicit input or feedback on current vegetation management needs in the specific park, as well as potential treatment options, treatment timing, local site conditions, and previous vegetation management efforts conducted on site. This coordination is especially important when a new contractor is selected to conduct vegetation management activities within a park. Coordination with the park stewardship group may include a site visit by OFD and/or the new vegetation management contractor.

When OFD has a clearer understanding of the timing for vegetation management work in a specific park, the OFD point of contact will provide this schedule update to the identified point of contact for that park.

Similarly, volunteer/park stewardship groups must contact OFD prior to implementing vegetation management actions within the VMP area. Key things for local stewards to update the OFD on include the location and extent of stewardship actions. This is an important step to minimize the potential for steward projects to potentially conflict with City plans or goals for vegetation management.

Volunteers and stakeholder groups that provided input during the VMP development process are identified in Appendix K of the VMP. In addition to the identified stewardship groups in Appendix K of the VMP, the Oakland Wildland Stewards (OWLS) is a coalition of stewardship groups operating in the VMP area.

2.6 VMP BEST MANAGEMENT PRACTICES

The VMP includes BMPs that are intended to avoid or minimize potential impacts associated with vegetation treatments proposed. These are described in Section 10 and Appendix I of the VMP. For the purposes of this DEIR, some applicable BMPs are presented as mitigation measures as they are intended to minimize adverse environmental impacts of the VMP.

2.7 ANTICIPATED PERMITS AND APPROVALS REQUIRED FOR THE VMP

Table 2-7 identifies potential permits and approvals that may be required to implement certain VMP treatment projects or parts of the VMP.

Table 2-7. Anticipated Regulatory Permits, Approvals, and Consultations

Agency	Permit / Approval / Consultation
Federal Agencies	
U.S. Army Corps of Engineers	Clean Water Act Section 404 permit (if any activities result in the discharge of dredged or fill material into jurisdictional waters of the U.S.)
U.S. Fish and Wildlife Service	Endangered Species Act compliance may be required if biological surveys reveal that the project could result in take of a covered species.
State Agencies	
California Department of Transportation	Encroachment permit
California Department of Fish and Wildlife	Trustee agency for the VMP. Approval may be required if there is incidental take of any state-listed species.
Regional	
San Francisco Bay Regional Water Quality Control Board	Section 401 Water Quality Certification and/or Waste Discharge Requirements (for activities that occur within waters of the State)
Local	
City of Oakland	Creek Protection Permit for VMP activities within Creekside Properties
	Tree removal permits, as necessary for individual projects
	Grading permits, as necessary for individual projects

Table 2-8. VMP Treatment Projects and Proposed Vegetation Management Techniques

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Garber Park							
GAR-1	1	Manage vegetation along adjacent roadside (Claremont Ave) and near trailheads, entry points to minimize ignition potential. Treatment should be based on field observations, but not to exceed 30 ft. Trees hanging down on power lines are a fire hazard and should be prioritized for treatment.	TOTAL	1.34			
			Coast Oak Woodland	1.34	Hand labor – grass removal	1	1
GAR-2	1	Manage vegetation within 10 feet of the south and east property boundary line to facilitate firefighter access according to the standards outlined in Section 9.1.	TOTAL	0.48			
			Coast Oak Woodland	0.43	Hand labor – shrub removal	18	1
			Eucalyptus	0.04	Hand labor – tree removal		1
			Coast Oak Woodland	0.43	Hand labor – grass removal	1	1
			Eucalyptus	0.04	Hand labor – grass removal		1
			Freshwater Emergent Wetland	0.01	N/A	N/A	N/A
GAR-3	1	To manage fuel loading rates, remove eucalyptus trees from two locations along the southern park boundary, retaining lower fire risk trees.	TOTAL	0.66			
			Eucalyptus	0.66	Mechanical – tree removal	10	1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Grizzly Peak Open Space							
GPO-1	1	Manage vegetation within 100 ft of structures, within 300 feet of ridgelines, and within 30 feet of Tunnel Road and Bay Forest Drive according to maintenance standards in Section 9.1.	TOTAL	28.50		18	
			Closed-cone Pine Cypress	12.29	Hand labor – tree removal		9
			Coast Oak Woodland	1.62	Hand labor – tree removal		1
			Coastal Scrub	10.37	Hand labor – shrub removal		5
			Eucalyptus	2.83	Hand labor – tree removal		2
			Urban	1.43	N/A		
GPO-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	19.06			
			Closed-cone Pine-Cypress	8.30	Mechanical – tree removal	18	2
			Coastal Scrub	10.43	Mechanical – shrub removal		3
			Eucalyptus	0.34	Mechanical – tree removal		1
GPO-3	3	To reduce fuel loading rates, remove eucalyptus trees and other rapidly spreading species from oak woodlands, retaining lower fire risk trees.	TOTAL	1.62			
			Coast Oak Woodland	1.62	Mechanical – tree removal	18	1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
GPO-4	3	Grazing	TOTAL	19.90		1-2	
			Closed-cone Pine-Cypress	7.01	Goat grazing		6
			Coastal Scrub	12.46	Goat grazing		10
			Eucalyptus	0.22	Goat grazing		1
			Urban	0.21	N/A		
Tunnel Road Open Space							
TRO-1	1	Continue to manage vegetation via grazing throughout the property to minimize ignition potential from adjacent roadways.	TOTAL	4.44		1-2	
			Annual Grassland	1.25	Goat grazing		1
			Coast Oak Woodland	2.73	Goat grazing		3
			Urban	0.47	N/A		
North Oakland Sports Field							
NOR-1	1	Manage vegetation according to the standards outlined in Section 9.1 in the following locations: within 30 feet of the site's dirt access road, within 300 feet of ridgelines, within 150 feet of the park access gate, and within the existing managed area north of the ball fields and parking areas.	TOTAL	21.51		18	
			Coast Oak Woodland	5.11	Hand labor – tree removal		4
			Coastal Scrub	0.47	Hand labor – shrub removal		1
			Eucalyptus	12.06	Mechanical – tree removal		3
			Urban	3.87	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
NOR-2	2	Given the upper portion of the property's ridgetop location and the potential for ember generation resulting from crown fire, implement thinning recommendations in the property's eucalyptus stand beyond that treated under project NOR-1 according to the standards outlined in Section 9.1.	TOTAL	7.76		10	
			Eucalyptus	7.76	Mechanical – tree removal		2
NOR-3	3	To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodland communities, retaining lower fire risk trees.	TOTAL	18.65		10	
			Coast Oak Woodland	16.87	Mechanical – tree removal		4
			Coastal Scrub	1.62	Mechanical – shrub removal		1
			Urban	1.16	N/A		
Shepherd Canyon Park							
SHP-1	1	Manage vegetation within 100 feet of structures and within 150 feet of the park access gate according to the standards outlined in Section 9.1.	TOTAL	13.23		18	
			Closed-cone Pine-Cypress	0.37	Hand labor – tree removal		1
			Coast Oak Woodland	6.00	Hand labor – tree removal		4
			Eucalyptus	5.93	Hand labor – tree removal		4
			Urban	0.93	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
SHP-2	1	Manage vegetation along adjacent roadsides (Shepherd Canyon Road, Escher Drive, Snake Road, and Bagshotte Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	9.26		18	
			Closed-cone Pine-Cypress	0.24	Hand labor – tree removal		1
			Coast Oak Woodland	6.58	Hand labor – tree removal		5
			Eucalyptus	2.39	Hand labor – tree removal		2
			Urban	0.05	N/A		
SHP-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	11.78		18	
			Annual Grassland	0.21	Hand labor – grass removal		1
			Coast Oak Woodland	2.79	Hand labor – tree removal		2
			Eucalyptus	7.31	Mechanical – tree removal		2
			Urban	1.48	N/A		
SHP-4	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads. Grazing should be conducted later in the season after perennial grasses go to seed.	TOTAL	20.37		1-2	
			Annual Grassland	1.79	Goat grazing		2
			Closed-cone Pine-Cypress	0.88	Goat grazing		1
			Coast Oak Woodland	16.16	Goat grazing		13
			Eucalyptus	0.98	Goat grazing		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Urban	0.56	N/A		
Beaconsfield Canyon							
BCN-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL	1.67		18	
			Closed-cone Pine-Cypress	0.61	Hand labor – tree removal		1
			Coast Oak Woodland	0.78	Hand labor – tree removal		1
			Coastal Scrub	0.28	Hand labor – shrub removal		1
BCN-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	1.98		10	
			Closed-cone Pine-Cypress	0.81	Mechanical – tree removal		1
			Coastal Scrub	1.17	Mechanical – shrub removal		1
Marjorie Saunders Park							
MJS-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL	0.87		18	
			Closed-cone Pine-Cypress	0.04	Hand labor – tree removal		1
			Coast Oak Woodland	0.1	Hand labor – tree removal		1
			Eucalyptus	0.72	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
MJS-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	1.81		10	
			Closed-cone Pine-Cypress	0.15	Mechanical – tree removal		1
			Eucalyptus	1.66	Mechanical – tree removal		1
Dimond Canyon Park							
DIM-1	1	Manage vegetation along adjacent roadsides (Park Boulevard, Monterey Boulevard, Leimert Boulevard, El Centro Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	3.42		18	
			Coast Oak Woodland	2.21	Hand labor – tree removal		2
			Eucalyptus	0.06	Hand labor – tree removal		1
			Redwood	0.18	Hand labor – tree removal		1
			Urban	0.97	N/A		
DIM-2	1	Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1.	TOTAL	2.47		18	
			Coast Oak Woodland	2.18	Hand labor – tree removal		2
			Coastal Scrub	0.03	Hand labor – tree removal		1
			Urban	0.25	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
DIM-3	1	Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1.	TOTAL	0.68		18	
			Urban	0.68	Hand labor – tree removal		1
Joaquin Miller Park							
JMP-1	1	Manage vegetation within 100 feet of on and off-site structures, within 300 feet of ridgelines, within 150 feet of park access gates and within 30 feet of known human congregation/activity areas along Skyline Boulevard and the top of Woodside Glen Court according to the standards outlined in Section 9.1.	TOTAL	117.32		18	
			Annual Grassland	6.06	Hand labor – grass removal		1
			Closed-cone Pine-Cypress	56.37	Hand labor – tree removal		38
			Coast Oak Woodland	15.62	Hand labor – tree removal		11
			Coastal Scrub	0.72	Hand labor – shrub removal		1
			Eucalyptus	17.73	Hand labor – tree removal		12
			Freshwater Emergent Wetland	0.10	N/A		
			Redwood	9.52	Hand labor – tree removal		7
			Urban	9.20	N/A		
			Urban (acacia)	0.94	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Urban (mixed)	0.83	Hand labor – tree removal		1
			Valley/foothill Riparian	0.22	N/A		1
JMP-2	1	Manage vegetation along adjacent roadsides (Joaquin Miller Road, Skyline Boulevard, and Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	18.23		18	
			Annual Grassland	0.36	Hand labor – grass removal		1
			Closed-cone Pine-Cypress	6.14	Hand labor – tree removal		5
			Coast Oak Woodland	2.60	Hand labor – tree removal		2
			Eucalyptus	2.68	Hand labor – tree removal		2
			Redwood	4.05	Hand labor – tree removal		3
			Urban	2.06	N/A		1
			Urban (mixed)	0.34	N/A		5
JMP-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	13.82		18	
			Annual Grassland	0.12	Mechanical – grass		1
			Closed-cone Pine-Cypress	3.52	Mechanical – tree removal		1
			Coast Oak Woodland	1.05	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Coastal Scrub	1.95	Mechanical – shrub		1
			Eucalyptus	2.88	Mechanical – tree removal		1
			Redwood	0.01	Mechanical – tree removal		1
			Urban	0.03	N/A		
			Urban (acacia)	2.25	Mechanical – tree removal		1
			Urban (mixed)	2.00	Hand labor – tree removal		2
JMP-4	3	Continue to manage vegetation via grazing in flashy fuel areas to maintain fuel loads	TOTAL	68.31		18	
			Annual Grassland	8.53	Goat grazing		7
			Closed-cone Pine-Cypress	13.81	Goat grazing		11
			Coast Oak Woodland	14.11	Goat grazing		11
			Coastal Scrub	0.62	Goat grazing		1
			Eucalyptus	6.33	Goat grazing		5
			Redwood	5.62	Goat grazing		5
			Urban	17.06	Goat grazing		14
			Urban (acacia)	1.73	Goat grazing		2

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Urban (mixed)	0.5	Goat grazing		1
Leona Heights Park							
LHT-1	1	Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within the current 9-acre management area according to the standards outlined in Section 9.1.	TOTAL	13.57		18	
			Annual Grassland	0.28	Hand labor – grass removal		1
			Coast Oak Woodland	7.07	Hand labor – tree removal		5
			Eucalyptus	2.08	Hand labor – tree removal		2
			Redwood	3.74	Hand labor – tree removal		3
			Urban	0.41	N/A		
LHT-2	1	Manage vegetation along adjacent roadside (Campus Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	1.86		18	
			Coast Oak Woodland	1.14	Hand labor – tree removal		1
			Redwood	0.39	Hand labor – tree removal		1
			Urban	0.33	N/A		
LHT-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	3.78		18	
			Coast Oak Woodland	3.49	Hand labor – tree removal		3
			Redwood	0.29	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
McDonnell Avenue							
MCD-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL	0.95		18	
			Coast Oak Woodland	0.55	Hand labor – tree removal		1
			Urban	0.40	N/A		
Police/Safety Department Property							
PSD-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL	7.17		18	
			Eucalyptus	4.27	Hand labor – tree removal		3
			Urban	2.90	N/A		
PSD-2	1	Manage vegetation along adjacent roadside (Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	0.54		18	
			Eucalyptus	0.54	Hand labor – tree removal		
Leona Street							
LST-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1	TOTAL	0.38		18	
			Coast Oak Woodland	0.16	Hand labor – tree removal		1
			Eucalyptus	0.22	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Blue Rock Court							
BLU-1	1	Manage vegetation within 100 feet of structures and within 30 feet of fire access road along southern property edge according to the standards outlined in Section 9.1.	TOTAL	2.40		18	
			Annual Grassland	2.75	Hand labor – grass removal		1
			Coast Oak Woodland	0.32	Hand labor – tree removal		1
			Eucalyptus	1.28	Hand labor – tree removal		1
			Urban	0.04	N/A		
BLU-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL	0.47		18	
			Eucalyptus	0.45	Mechanical – tree removal		1
			Urban	0.02	N/A		
BLU-3	3	Implement thinning recommendations in the property's eucalyptus stand beyond that treated under project BLU-2 according to the standards outlined in Section 9.1.	TOTAL	6.35		18	
			Annual Grassland	0.01	N/A		
			Coast Oak Woodland	0.11	Hand labor – tree removal		1
			Eucalyptus	6.24	Mechanical – tree removal		2

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Oak Knoll							
OKN-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL	1.23		18	
			Annual Grassland	0.18	Hand labor – grass removal		1
			Coast Oak Woodland	0.28	Hand labor – tree removal		1
			Urban	0.77	N/A		
OKN-2	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads and minimize ignition potential.	TOTAL	14.51		1-2	
			Annual Grassland	2.75	Goat grazing		3
			Coast Oak Woodland	0.15	Goat grazing		1
			Eucalyptus	1.28	Goat grazing		1
			Urban	10.33	N/A		
King Estate Open Space Park							
KES-1	1	Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 30 feet of Fontaine Street and Crest Avenue according to the standards outlined in Section 9.1.	TOTAL	15.57		18	
			Annual Grassland	8.99	Mechanical – grass		2
			Coast Oak Woodland	3.81	Hand labor – tree removal		3
			Coastal Scrub	0.04	Hand labor – shrub removal		1
			Urban	2.73	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
KES-2	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads and minimize ignition potential, particularly prior to the 4th of July holiday.	TOTAL	65.63		18	
			Annual Grassland	52.07	Goat grazing		41
			Coast Oak Woodland	8.19	Goat grazing		2
			Coastal Scrub	4.23	Goat grazing		4
			Urban	1.14	N/A		
Knowland Park and Arboretum							
KNO-1	1	Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 300 feet of ridgelines, which encompasses the area within 30 feet of known human congregation/activity areas along Skyline Boulevard according to the standards outlined in Section 9.1.	TOTAL	28.43		18	
			Annual Grassland	10.16	Mechanical – grass		2
			Closed-cone Pine-Cypress	1.43	Hand labor – tree removal		1
			Coast Oak Woodland	5.66	Hand labor – tree removal		4
			Coastal Scrub	3.16	Hand labor – shrub removal		2
			Eucalyptus	2.71	Hand labor – tree removal		2
			Perennial Grassland	0.02	Hand labor – grass removal		1
			Urban	5.28	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
KNO-2	1	Manage vegetation along adjacent roadside (Golf Links Road). Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	8.39		18	
			Annual Grassland	0.64	Hand labor – grass removal		1
			Coast Oak Woodland	6.12	Hand labor – tree removal		5
			Coastal Scrub	0.49	Hand labor – shrub removal		1
			Eucalyptus	0.56	Hand labor – tree removal		1
			Urban	0.58	N/A		
KNO-3	2	Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1.	TOTAL	14.01		18	
			Annual Grassland	0.10	Hand labor – grass removal		1
			Closed-cone Pine-Cypress	0.02	Hand labor – tree removal		1
			Coast Oak Woodland	3.22	Hand labor – tree removal		3
			Coastal Scrub	10.65	Hand labor – shrub removal		5
KNO-4	2		TOTAL	32.10		18	
			Annual Grassland	2.29	Mechanical – grass		1
			Coast Oak Woodland	2.11	Hand labor – tree removal		2

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
		Manage vegetation within 100 feet of on-site structures in the zoo portion of the property and within 100 feet of the zoo/open space interface to minimize ignition potential and modify potential fire behavior near this developed portion of the property.	Eucalyptus	0.26	Hand labor – tree removal		1
			Urban	27.44	N/A		
KNO-5	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.	TOTAL	368.13		18	
			Annual Grassland	87.92	Goat grazing		69
			Closed-cone Pine-Cypress	7.61	Goat grazing		6
			Coast Oak Woodland	144.34	Goat grazing		112
			Coastal Scrub	47.45	Goat grazing		37
			Eucalyptus	8.54	Goat grazing		7
			Freshwater Emergent Wetland	0.17	N/A		
			Mixed Chaparral	7.92	Goat grazing		7
			Perennial Grassland	12.51	Goat grazing		10
			Redwood	0.18	Goat grazing		1
			Urban	51.48	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Sheffield Village Open Space							
SHF-1	1	Manage vegetation within 100 feet of structures, including those in the Dunsmuir Estates portion of the property, and within 150 feet of park access gates, according to the standards outlined in Section 9.1.	TOTAL	23.92		18	
			Annual Grassland	1.60	Hand labor – grass removal		1
			Closed-cone Pine-Cypress	0.15	Hand labor – tree removal		1
			Coast Oak Woodland	5.17	Hand labor – tree removal		4
			Coastal Scrub	1.20	Hand labor – shrub removal		1
			Eucalyptus	3.32	Hand labor – tree removal		3
			Perennial Grassland	0.04	Hand labor – grass removal		1
			Urban	12.45	N/A		
SHF-2	2	Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1.	TOTAL	6.14		18	
			Annual Grassland	0.02	Hand labor – grass removal		1
			Coast Oak Woodland	1.83	Hand labor – tree removal		2
			Coastal Scrub	3.70	Hand labor – shrub removal		2
			Eucalyptus	0.08	Hand labor – tree removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Urban	0.51	N/A		
SHF-3	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.	TOTAL	288.34		18	
			Annual Grassland	57.04	Goat grazing		45
			Closed-cone Pine-Cypress	5.74	Goat grazing		5
			Coast Oak Woodland	129.35	Goat grazing		101
			Coastal Scrub	53.85	Goat grazing		42
			Eucalyptus	21.80	Goat grazing		17
			Perennial Grassland	0.81	Goat grazing		1
			Urban	19.76	N/A		
Urban and Residential Parcels							
URB-1	1	Maintain vegetation within the entirety of all urban and residential parcels according to standards in Section 9.1.	TOTAL	47.50		18	
			Annual Grassland		Hand labor – grass removal		1
			Closed-cone Pine-Cypress		Hand labor – tree removal		6
			Coast Oak Woodland		Hand labor – tree removal		11
			Coastal Scrub		Hand labor – shrub removal		1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Medians							
MEDIAN	1	Management includes reducing ladder fuels, controlling rapidly spreading species (e.g., broom), maintaining fuel loads, reducing surface fuels (e.g., grasses, weeds), and pruning tree canopies for vertical clearance.	TOTAL	5.66		18	
			Annual Grassland	0.93	Hand labor – grass removal		1
			Closed-Cone Pine-Cypress	0.53	Hand labor – tree removal		1
			Coast Oak Woodland	1.22	Hand labor – tree removal		1
			Eucalyptus	0.02	Hand labor – tree removal		1
			Urban	2.97	N/A		

Chapter 3
Environmental Setting, Impacts, and Mitigation Measures

3.1 OVERVIEW

Sections 3.2 through 3.14 of this chapter describe the environmental resources and potential environmental impacts of the VMP. Each section describes the existing environmental setting and background information for a particular resource topic to help the reader understand the conditions that could be affected by the VMP. In addition, each section in Chapter 3 includes a discussion of the criteria used to determine the significance levels of the VMP's environmental impacts. If appropriate, mitigation measures are identified to reduce, where possible, the adverse effects of significant impacts.

3.1.1 Significance of Environmental Impacts

According to the CEQA statutes and guidelines, an EIR should define the threshold of significance and explain the criteria used to determine whether an impact is above or below that threshold. For each environmental resource topic, significance criteria are identified to determine whether implementation of the proposed program would result in a significant environmental impact when evaluated against the baseline condition, as described in the environmental setting. The significance criteria vary depending on the environmental resource topic. In general, effects can be either significant or potentially significant (exceed the threshold) or less than significant (do not exceed the threshold). In some cases, a significant impact will be identified as significant and unavoidable if no feasible mitigation measures are available that would reduce the impact to a less-than-significant level. If a project is subsequently adopted despite identified significant impacts that would result from the project, CEQA requires the lead agency to prepare and adopt a statement of overriding considerations describing the social, economic, and other reasons for moving forward with the project despite its significant impacts.

Impact Terminology and Use of Language in CEQA

This DEIR uses the following terminology to describe environmental effects of the VMP:

- A finding of *no impact* is made when the analysis concludes that the VMP would not affect the particular environmental resource or issue.
- An impact is considered *less than significant* if the analysis concludes that there would be no substantial adverse change in the environment and that no mitigation is needed.
- An impact is considered *significant* or *potentially significant* if the analysis concludes that there would be, or could be, a substantial adverse effect on the environment.

- An impact is considered *less than significant with mitigation* if the analysis concludes that there would be no substantial adverse change in the environment with the inclusion of the mitigation measures described.
- An impact is considered *significant and unavoidable* if the analysis concludes that there could be a substantial adverse effect on the environment and that, even with the inclusion of feasible mitigation measures, the impact would not be reduced to a less-than-significant level.
- *Mitigation* refers to specific measures or activities adopted to avoid, minimize, rectify, reduce, eliminate, or compensate for an impact.
- A *cumulative impact* can result when a change in the environment results from the incremental impact of a project when added to other related past, present, or reasonably foreseeable future projects. Significant cumulative impacts may result from individually minor but collectively substantial projects. The cumulative impact analysis in this DEIR (provided in Section 4.5 of Chapter 4) focuses on whether the VMP's incremental contribution to significant cumulative impacts caused by past, present, or probable future projects is cumulatively considerable (i.e., significant).
- Because the term "significant" has a specific usage in evaluating impacts under CEQA, it is used only to describe the level of significance of impacts and is not used in other contexts within this document. Synonyms such as "substantial" have been used when not discussing the significance of an environmental impact.

Format of Impact Titles

Impact titles are formatted to summarize information about the impact, as follows:

Impact TOPIC-#: Impact Title (*Impact Conclusion*)

These terms are further described as follows:

- **TOPIC:** an abbreviation of the resource topic to which the impact applies (e.g., AES for aesthetics). The reader can determine the impact's resource topic by reading the impact title.
- **#:** impacts are numbered sequentially
- **Impact Title:** provides a brief text description of the impact. The reader can determine the specific issue that the impact discussion is addressing.
- **Impact Conclusion:** identifies the level of impact, with the five possibilities being No Impact, Less than Significant, Less than Significant with Mitigation, Significant and Unavoidable, or Beneficial. The reader can determine te impact's significance by reading the impact title.

3.1.2 Baseline Conditions

Under CEQA, the environmental setting or "baseline" serves as a gauge to assess changes to existing physical conditions that would occur as a result of a proposed project. According to

State CEQA Guidelines (Cal. Code Regs., tit. 14, Section 15125), for purposes of an EIR, the environmental setting is generally the existing physical conditions at the project site or in the project area at the time the NOP is published. While recent changes in the CEQA Guidelines have enabled the alternative use of a future projected or historic baseline; such alternative baselines are intended to apply to unique situations.

It is important to note that certain activities that are part of the VMP have been undertaken on an ongoing basis for some time. As described in Chapter 2, Section 2.2.1, OFD conducted vegetation management activities throughout the WPAD, a City-funded special assessment district that coincides with the City's VHFHSZ and financed various vegetation management activities throughout the Oakland hills. WPAD-funded vegetation management activities occurred between 2005 and 2018; since 2018, fewer vegetation management activities have occurred on City properties. For the purposes of this EIR, the baseline condition takes into consideration the range of vegetation management activities (type and amount) that has occurred annually between 2005 and 2018. **Table 3.1-1** below summarizes the approximate range of vegetation management activities that have occurred throughout the VMP area between 2005 and 2018.

Table 3.1-1. Summary of Vegetation Management Activities Conducted between 2005 and 2018

Vegetation Management Activities	Acres of Treatment					
	Fiscal Year (FY) 2005-06 to FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Goat Grazing	600-700	900	900	900	1,100	1,100
Roadside and Urban/ Residential Parcel Treatments using Hand Labor and Mechanical Treatment Techniques	400-500	367	227	152	152	152

Source: City of Oakland pers. comm., 2020.

For the purposes of this DEIR, the baseline condition is considered the average amount of vegetation management activities conducted annually over the last 15 years: approximately 900 acres of goat grazing and 400 acres of roadside treatment and other activities using a combination of hand labor and mechanical techniques. The impact analyses in this DEIR focus on new, additional, or different activities from the baseline activities that represent a marked difference from the baseline condition. Thus, the DEIR focuses on the incremental change or effects from baseline conditions resulting from the VMP.

3.1.3 Sections Eliminated from Further Analysis

Six resource topics have been eliminated from further analysis based on the nature and scope of the VMP activities. A brief summary and description of these resource topics dismissed from further review is provided below.

Agriculture and Forestry

The VMP area consists entirely of land designated as "urban and built-up" or "other land" (California Department of Conservation [CDOC] 2018). No Williamson Act contract lands are included in the VMP area (Bay Area Open Space Council 2011). Implementation of the VMP would not convert Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to a non-agricultural use. Agricultural activities and plant nurseries are permitted uses with limitations or a conditional use permit in most areas of the City. However, the "Earth Resources" section of the General Plan Open Space, Conservation, and Recreation Element indicates that "large-scale agriculture is no longer feasible in Oakland due to its urbanized character" (City of Oakland 1998). Activities conducted under the VMP would take place exclusively on City-owned properties, none of which are agricultural. Therefore, the VMP would not conflict with existing zoning for agricultural uses.

While portions of the VMP area includes forested fuel types, the VMP would not convert any forest areas to non-forest types or uses. Thus, the VMP would not result in adverse effects related to forestry criteria identified in Appendix G of the CEQA Guidelines. Tree removal and treatment of tree/ woodland/forest fuels in the VMP area are addressed in Section 3.2, "Aesthetics"; Section 3.4, "Biological Resources"; and Section 3.7, "Greenhouse Gas Emissions, Climate Change, and Energy."

Based on the above discussion, no impacts on agriculture and forestry resources would occur and this topic is not evaluated further in this EIR.

Land Use and Planning

The City has various land use plans and policies adopted for the purpose of avoiding or mitigating environmental effects. The City's General Plan (1998) addresses topics such as open space, conservation, and recreation; public safety; and hazards, including policies related to fire safety and reduction of wildfire risk. As described in Chapter 2 of this EIR, conducting vegetation management for the purposes of maintaining defensible space is required on properties within the VHFHSZ portion of the City (refer to Fire Code Section 4907 of the Oakland Municipal Code Chapter 15.12). Development of a vegetation management program such as the VMP supports compliance with Fire Code Section 4907.

The City also relies on other planning documents to guide public safety and hazard reduction. These include the *2016-2021 City of Oakland Local Hazard Mitigation Plan* (City of Oakland 2016), which identifies mitigation actions to reduce fire risk and wildfire hazard; and the *Oakland Annex to the 2010 ABAG Local Hazard Mitigation Plan – Taming Natural Disasters* (City of Oakland 2012), which lists regional mitigation strategies and prioritizes them for implementation in Oakland.

In 1997, the City adopted an Integrated Pest Management (IPM) Policy that limits the use of pesticides to manage pest problems on City-owned property. In 2005, the City adopted Resolution 79133 authorizing staff to evaluate an additional exemption from the IPM Policy that would permit the use of glyphosate and triclopyr on City-owned land within the WPAD to "improve fire prevention and reduce wild land fuels in a cost effective and environmentally sensitive way." The revised herbicide policy is part of the project being evaluated in this EIR.

Based on the above discussion, no impacts on land use and planning would occur and this topic is not evaluated further in this EIR.

Mineral Resources

Mining and quarrying activities for commercially valuable resources have taken place in Oakland, and extraction and quarrying are permitted uses in General Industrial and Manufacturing zoning designations with limitations and/or a conditional use permit. Only one quarry remains in operation, however. This operation has been designated a "Regionally Significant Constriction Aggregate Resource" by the State Mining and Geology Board (City of Oakland 1998). This site is not located within the VMP area, and activities conducted under the VMP would not prevent similar operations from continuing. Therefore, no impacts on mineral resources would occur and this topic is not evaluated further in this EIR.

Population and Housing

The VMP would not involve the construction of new housing or generate any long-term employment opportunities that could cause substantial population growth. Vegetation management activities would be conducted by contracted workers who would be employed temporarily in the VMP area. Because these jobs would likely be filled by the local work force, the VMP would not directly induce unplanned population growth related to new long-term employment opportunities. Further, the VMP would not result in the construction of new roads or trails that would indirectly induce population growth.

Although vegetation management activities would occur near residences throughout the VMP area, no residents would be displaced by the VMP, either temporarily or permanently. Rather, as the VMP is intended to minimize wildfire hazards, the VMP would help protect existing housing in the VMP area and surrounding areas, reduce the effect of housing loss, and limit the future displacement of residents adjacent to the VMP area in the event a catastrophic wildland fire occurred. This is considered an indirect beneficial effect of the VMP. Therefore, the VMP would not displace existing housing or people, such that replacement housing would be needed elsewhere. As such, no impacts related to housing displacement would occur, and this topic is not evaluated further in this EIR.

Public Services

The VMP does not involve construction of new or physically altered governmental facilities and no additional new or physically altered governmental facilities would be required to conduct proposed vegetation management activities. OFD and Oakland Police Department would continue to provide fire and police protection services throughout the VMP area. Implementation of the proposed vegetation treatment projects described in the VMP and summarized in Chapter 2, *Project* Description*,* would not require additional police or fire protection services such that acceptable service ratios could not be maintained. Rather, as one of the primary goals for the VMP is to reduce wildfire hazards along critical access/egress routes, conducting proposed vegetation management treatment projects along these routes would help ensure fire response times are maintained along these same routes in the long-term.

Additionally, because the VMP would not induce population growth which could lead to an increase in student enrollment in public schools, the VMP would not require construction of

new schools or result in Oakland public school capacities being exceeded. As such, there would be no impact on public services, and this topic is not evaluated further in this EIR.

Utilities and Service Systems

The VMP is limited to vegetation management activities and would not result in the construction of any new permanent structures that would generate wastewater, require wastewater treatment, or generate additional stormwater runoff. Proposed vegetation management activities would also not require large amounts of water or produce large amounts of wastewater. Only a minimal amount of water would be required for dust control purposes and a limited amount of wastewater treatment would be required for treating sewage generated by contractors conducting the work. Similar to other construction projects, port-a-potties would be used onsite and generated wastewater would be treated at a local wastewater treatment facility. Therefore, the VMP would not result in the construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities such that an adverse environmental effect would occur.

Additionally, most vegetation treatment activities would occur entirely aboveground (i.e., no excavation below the ground surface) and thus not disrupt belowground utilities such that relocation would be required. It is possible that some tree removal activities could involve more extensive ground disturbance that could affect belowground utilities. However, as standard practice, the City and/or its contractor(s) would contact Underground Service Alert (USA) North 811 prior to any excavation activities to confirm presence of any belowground utilities. In doing so, the City's contractor(s) would avoid potential adverse effects (including relocation) of existing belowground utilities.

For the reasons described above, impacts on utilities and service systems would be less than significant and this topic is not analyzed further in this EIR.

3.2 AESTHETICS

This section addresses the existing visual resources within the area potentially affected by the VMP and the pertinent local and state plans and policies related to the protection of visual and scenic resources. This section evaluates the potential effects of the VMP on aesthetic resources, including views from designated scenic highways, scenic areas, and public view corridors.

3.2.1 Environmental Setting

Definitions

When evaluating the impacts of vegetation treatments on the visual environment, the focus is on three overarching parameters: existing visual conditions; how these would be altered by implementing a treatment; and the significance of the change on scenic qualities of the landscape and publicly available viewpoints. Visual resources considered in an evaluation include those features in the natural and cultural landscapes that comprise the visible world and contribute to a person's understanding of and reaction to the scene before them. Visual resources include both natural elements, such as topography, vegetation, and water, and constructed features, such as earthworks, roads, and structures.

This visual analysis considers visual character, visual quality, and viewer sensitivity. Visual quality of treatment areas and viewer sensitivity have been ranked as being high to low. These elements of the visual analysis methodology are described below. Visual change is another term used throughout this analysis, and is described below.

- Visual character is the unique set of landscape features that combine to make a view, including native landforms, water, and vegetation patterns, as well as built features such as buildings, roads, and other structures.

- Visual quality is the intrinsic appeal of a landscape or scene and the associated public value attributed to the resource. A high rating is generally reserved for landscapes viewers might describe as "picture perfect." Landscapes rated high generally are memorable because of the way the components combine in a visual pattern. In addition, those landscapes are free from encroaching elements that would compromise the landscapes' visual integrity. In contrast, landscapes rated low often are dominated by visually discordant alterations that have been introduced by humans. Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by viewer sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity.

  - **Vividness:** The extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements. A vivid landscape makes an immediate and lasting impression on the viewer.

  - **Intactness:** The integrity of "visual order" in the landscape, which is the extent to which the natural landscape is free from visual intrusions. If all the various elements of a landscape appear to "belong" together, there will be a high level of intactness.

- **Unity:** The extent to which visual intrusions are sensitive to and in visual harmony with the natural landscape. Unity, in other words, represents the degree to which the visual elements maintain a coherent visual pattern.

- Viewer sensitivity reflects the level of interest or concern that viewers have for a particular visual resource, with visual quality taken into account. Viewer sensitivity is a measure of how noticeable proposed changes might be in a particular setting and from a particular location or viewshed (the area visible from a fixed vantage point). Viewer sensitivity is determined based on the visibility of a resource or view, the duration that a particular view would be available to viewers, and the number of viewers.

  - Visibility is a measure of how well an object or site can be seen. It depends on the angle or direction of the view; extent of visual screening; and the topographical relationship between the object or site and existing vantage points. Visibility is determined by considering any obstructions that may be in the sightline, such as trees and other vegetation, buildings, landforms, and haze or fog. Distance becomes a factor; with increasing distance from the viewer, objects become less prominent in the view and less clearly distinguishable.

  - Duration of view is the amount of time available to view the site or activity. For example, a high or extended view of a site may be 2 minutes or longer. In contrast, a low or brief duration of view occurs in a short amount of time — generally less than 10 seconds. For stationary locations, such as public vista points, the duration is extended. For travelers on a highway, the duration may be very short.

  - Number of viewers is a measure of how many viewers per day would have a view of the proposed activity. As indicated in Appendix G of the State CEQA Guidelines, visual analysis focuses on public viewpoints, which emphasize accessible locations with higher numbers of viewers (as opposed to private views, such as those available to residential viewers).

Viewer sensitivity is generally lower for more heavily urbanized, non-residential areas, such as commercial or industrial uses. Areas such as scenic vistas, parks, trails, and scenic roadways typically have a high visual quality and viewer sensitivity because these locales are publicly protected, appear natural, have view durations that are typically long, and have close-up views that are more commonly available. Typically, travel routes or areas where viewers have moderate concerns about the visual quality of an area have moderate sensitivity. Areas apart from travel routes and use areas where there are few viewers with concern about the visual quality typically have a low viewer sensitivity.

- Visual change is a function of contrast, dominance, and view blockage or disruption. Contrast and dominance contribute more to the degree of visual change than view disruption.

  - Contrast concerns the degree to which a treatment's visual characteristics or elements — such as its form, line, color, and texture — differ from the same visual elements in the existing landscape. The degree of contrast can range from low to high. A treatment resulting in forms, lines, colors, and textures similar to those of the existing landscape is more readily visually absorbed. When characteristics or

elements are similar to those of the existing condition, a treatment or treated site is more capable of being accepted in the landscape, compared to a landscape in which similarities are absent.

- Dominance is a measure of the proportion of the total field of view occupied by a treatment, a feature's apparent size relative to other visible landscape features, and the conspicuousness of the feature because of its location or position in the view. A feature's level of dominance is lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. As the distance between a viewer and a feature increases, its apparent size decreases, decreasing its dominance. Objects seen against the sky are more prominent or dominant than objects viewed against trees, landforms, and buildings.

- View blockage is concerned with the extent to which previously visible landscape features become blocked from view. View disruption also occurs when view continuity is interrupted, such as when a treatment might break the line of a sweeping vista.

Scenic Vistas

CEQA specifically protects scenic environmental qualities (Pub. Res. Code Section 21001), and Appendix G of the CEQA Guidelines evaluates whether the project will have a substantial adverse effect on a scenic vista. Scenic vistas are specific views with high visual quality that are available from public vantage points such as lookout points or ridgeline trails. These typically provide broad, long-range scenic views that offer panoramic and exceptional landscape-scale scenic quality. Scenic vistas are sometimes recognized by public agencies through designation of protective policies or labeled on maps as designated scenic viewing destinations.

Regional Visual Character

VMP Area Overview

Treatment areas within the VMP area include various landscapes, ranging from forested ridgetops in the Oakland Hills to the north (e.g., Grizzly Peak Open Space, North Oakland Sports Field) to steep canyon areas (e.g., Dimond Canyon Park, Shepherd Canyon) and City parks and open space areas that comprise a mixture of forest, woodland, and grassland habitats. The VMP area also encompasses small urban and residential parcels, 308 miles of roadside treatment areas, and road medians that generally traverse residential/urban neighborhoods in the Oakland Hills. **Figure 3.2-1 through Figure 3.2-4** include representative photographs of several VMP treatment areas.

Overall, the VMP area's visual character is defined by a combination of residential/urban development and various types of vegetation communities (forested woodland, eucalyptus, annual grassland, scrub) across canyon areas, ridgetops, City parks and open space areas, and roadsides.

Scenic Views

Several portions of the VMP area provide the background setting for scenic views from San Francisco County and from major highways, including State Route (SR) 13, Interstate (I-) 580,

and SR 24 for commuters and travelers living and working in nearby communities. Within the VMP area, some priority roadsides such as Skyline Boulevard and Grizzly Peak Boulevard also provide long-ranging scenic views of the San Francisco Bay, greater East Bay area, and San Francisco County.

Existing Light and Glare

Existing sources of nighttime light in the VMP area include lights along roadways, streets, walkways, and parking lots that are associated with parks, open spaces, and recreational areas, as well as structural and security lighting associated with urban/residential areas. For example, lights are present in parking lots at Joaquin Miller Park. The Montclair Golf Course, located within Dimond Canyon Park, has lights in its parking lot and the driving range also has bright outdoor lighting. Many of these lighted areas are located within forested areas. Sources of daytime glare are vehicles on roads and in parking lots. Urbanized areas contain varied light sources (e.g., streetlights, car headlights, building lighting, signage) and are sources of sky glow (area-wide illumination of the night sky from human-made light sources). Light and glare are low near most trails and forested areas in the VMP area.

Existing Visual Conditions of VMP Treatment Areas

The following sections describe the existing visual conditions (i.e., visual character, visual quality, and viewer sensitivity) of VMP treatment areas by parcel types. **Table 3.2-1** summarizes the visual character, visual quality, and viewer sensitivity of each parcel type.

Urban and Residential Parcels

Urban and residential parcels include parcels generally smaller than 1 acre in size and are distributed throughout the VMP area. These parcels are currently maintained by the City and undergo manual treatment of vegetation to reduce ladder fuels, control invasive species, and reduce surface fuels. A typical urban/residential parcel is shown in **Figure 3.2-1**, Photo 1. Since urban and residential parcels are scattered throughout the VMP area, the visual character and quality varies from site to site. The viewer sensitivity of nearby residents ranges from moderate to high depending on the degree of visibility of the treatment areas from nearby homes. The viewer sensitivity of motorists driving by these parcels is moderate.



Photo 1. View of a eucalyptus stand with treated understory vegetation on an urban/residential parcel.



Photo 2. View of Garber Park from the trail showing oak woodland understory vegetation.

Source: Dudek 2019

Figure 3.2-1. Typical Views of VMP Treatment Areas – Urban/Residential Parcels and Canyon Areas



Photo 3. View of riparian vegetation along a trail in Dimond Canyon Park.



Photo 4. View of grass with tree overstory in Shepherd Canyon Park.

Source: Dudek 2019

Figure 3.2-1. Typical Views of VMP Treatment Areas – Urban/Residential Parcels and Canyon Areas



Photo 1. View of upland vegetation in Leona Heights Park.



Photo 2. View of previously thinned area downslope of a non-thinned eucalyptus stand at North Oakland Sports Field

Source: Dudek 2019

Figure 3.2-2. Typical Views of VMP Treatment Areas – Canyons and Ridgetop Areas



Photo 3. View of the upper portion of Grizzly Peak Open Space along Grizzly Peak Boulevard.



Photo 4. Long-ranging view of the San Francisco Bay Area from Grizzly Peak Boulevard above Grizzly Peak Open Space.

Source: Dudek 2019

Figure 3.2-2. Typical Views of VMP Treatment Areas – Canyons and Ridgetop Areas



Photo 1. View of grazed grassland and oak woodlands in Sheffield Village Open Space.



Photo 2. View of grazed grassland and scattered trees of Knowland Park and Arboretum.

Source: Dudek 2019, Horizon 2019

Figure 3.2-3. Typical Views of VMP Treatment Areas – City Park Lands and Open Space Areas



Photo 3. View of an acacia tree stand along a trail in Joaquin Miller Park.



Photo 4. View of grazed grassland oak woodland and grass/shrub fuels in King Estate Open Space Park.

Source: Dudek 2019, Horizon 2019

Figure 3.2-3. Typical Views of VMP Treatment Areas – City Park Lands and Open Space Areas



Photo 1. View of grassland and oak woodland vegetation at Tunnel Road Open Space property.



Photo 2. View of a grazed roadside treatment area along Golf Links Road.

Source: Dudek 2019

Figure 3.2-4. Typical Views of VMP Treatment Areas – Open Space Areas and Roadside Treatment Areas



Photo 3. View of a roadside treatment area and median area along Joaquin Miller Road.

Source: Dudek 2019

Figure 3.2-4. Typical Views of VMP Treatment Areas – Open Space Areas and Roadside Treatment Areas

Table 3.2-1. Summary of Existing Visual Conditions in VMP Treatment Areas

Treatment Area	Visual Character	Visual Quality	Viewer Sensitivity
Urban and Residential Parcels	Varies from site to site.	Varies from site to site	Moderate to high for residents, passing motorists
Canyon Areas			
Garber Park	Characterized by predominantly oak woodland understory and the surrounding residential development along nearby roads.	Moderate	Moderate to high for adjacent residents, recreationists
Dimond Canyon Park	Characterized by riparian setting, undeveloped oak woodland habitat, and surrounding residential development.	Moderate	Moderate to high for adjacent residents; moderate for passing motorists
Shepherd Canyon Park	Marked by creek, coastal oak woodland, eucalyptus stands, and Shepherd Canyon Field.	Moderate	High for adjacent residents; moderate for passing motorists
Leona Heights Park	Defined by coastal oak woodland and redwood, steep topography, and surrounding residential development and community college.	Moderate	Moderate to high for adjacent residents, recreationists; moderate for passing motorists
Beaconsfield Canyon	Defined by closed-cone cypress, coastal oak woodland, and coastal scrub vegetation communities and native vegetation.	Moderate to high	Moderate to high for recreationists, adjacent residents
Ridgetop Areas			
North Oakland Regional Sports Field	Defined by ball fields, eucalyptus stands, access road, and existing electrical lines.	Moderate	Moderate to high for recreationists; moderate for passing motorists, residents
Grizzly Peak Open Space	Defined by steep slope, pine, and cypress trees mostly in the southern two-thirds of the property, and coastal scrub habitat to the north.	Moderate to high	Moderate to high for adjacent residents; moderate for passing motorists
City Stables	Defined by the existing stables and other structures on the site.	Low	Low to moderate for adjacent residents
City Park Lands and Open Space Areas			
Sheffield Village Open Space	Defined by a variety of land cover types, golf course, and adjacent residential development.	Moderate	Moderate for local hikers, adjacent residents
Knowland Park and Arboretum	Characterized by the zoo, various land cover types (mostly coast oak woodland, coastal scrub, and annual grassland), and surrounding residential development.	Moderate to high	Moderate for adjacent residents, passing motorists; low to moderate for motorists on I-580

Treatment Area	Visual Character	Visual Quality	Viewer Sensitivity
Joaquin Miller Park	Influenced by the developed recreational facilities in the southern portion of the park and the less developed portion to the north consisting of redwood groves, oak woodlands, meadows, and creeks.	High	High for recreationists; moderate for passing motorists
King Estate Open Space Park	Defined mostly by the annual grassland and hilly terrain.	Moderate to high	Moderate to high for adjacent residents; moderate for passing motorists
Other Open Space Areas			
Blue Rock Court	Characterized by eucalyptus, coast oak woodland, and grassland habitats, adjacent to residential development.	Low to moderate	Moderate for adjacent residents; low to moderate for passing motorists
Leona Street	Characterized by eucalyptus and coastal oak woodland vegetative cover on steep terrain; surrounded by low-density residential development.	Low to moderate	Low to moderate for nearby residents
McDonnell Avenue	Characterized by coast oak woodland vegetative cover.	Low to moderate	Low to moderate for nearby residents
Police/Safety Department Site on Mountain Boulevard	Characterized by eucalyptus trees, police/safety department facility, and surrounding residences.	Low to moderate	Low to moderate for nearby residents
Tunnel Road Open Space	Defined by the Oakland Hills Fire Memorial Park at the south end and coast oak woodland and grassland habitat present within this small hilly open space area.	Moderate	Moderate for passing motorists
Marjorie Saunders Park	Characterized by eucalyptus and coast oak woodland vegetation, local “painted rock,” rock-lined waterfall, and native plant landscaping.	Moderate	Moderate for adjacent residents; low to moderate for motorists
Oak Knoll	Characterized by grassland, eucalyptus, and urban land covers, with surrounding residential and commercial development.	Moderate	Moderate for passing motorists

Canyon Areas

Garber Park

Garber Park is situated primarily along the south side of Claremont Avenue at the bottom of Claremont Canyon. The park has a north-facing slope and is comprised of primarily coast oak

woodland habitat with scattered eucalyptus, acacia, and pine trees. A trail traverses through the park and is accessible from Evergreen Lane and Rispin Drive. Garber Park is characterized by the park's predominantly oak woodland understory and the surrounding residential development along Claremont Avenue, Evergreen Lane, Rispin Drive, and other nearby roads. Figure 3.2-1, Photo 2 shows a typical view of the oak woodland understory along the trail. The visual quality of the park is considered moderate due to its predominantly forested landscape and low-density residential development nearby. The viewer sensitivity is moderate to high for residents along adjacent roads and recreationists using the trail.

Dimond Canyon Park

Dimond Canyon Park is situated along Sausal Creek, south of SR 13, includes the creek channel, and is primarily surrounded by residential development. Park Boulevard generally forms the boundary of the park's northeast corner and Monterey Boulevard forms the boundary along the north. The park is also bisected by Leimert Boulevard and El Centro Avenue. The park is undeveloped north of El Centro Avenue and is developed south of this road. Dimond Canyon Park includes riparian vegetation and mostly coast oak woodland throughout the undeveloped portion of the park. A few trails traverse the park, including Old Canyon Trail, Dimond Canyon Trail, and Bridgeview Trail. Figure 3.2-1, Photo 3 shows riparian vegetation that can be seen from a trail within the park. Proposed treatments are focused along the adjacent roadsides bordering and bisecting Dimond Canyon Park. The visual character of Dimond Canyon Park is characterized by the park's riparian setting, undeveloped oak woodland habitat, and surrounding residential development. The visual quality is considered moderate as the park offers views of Sausal Creek and varied vegetation and topography. The viewer sensitivity varies between moderate and high for adjacent residents. Viewer sensitivity for motorists traveling on adjacent roads, including Leimert Boulevard, El Centro Avenue, Monterey Boulevard, and Park Boulevard, would be moderate due to speed of travel and the brief, limited viewing durations of the park.

Shepherd Canyon Park

Shepherd Canyon Park is situated along Shepherd Creek in Shepherd Canyon, northeast of SR 13. The park includes the creek channel and upland areas mapped with primarily coast oak woodland, eucalyptus, urban, annual grassland, and closed-cone pine-cypress. Montclair Railroad Trail runs from Snake Road to Mountain Boulevard. Large amounts of broom exist throughout the park, particularly along Shepherd Canyon Road. The park is surrounded by residential development to the west. Shepherd Canyon Road and Escher Road traverse the park. Views from Shepherd Canyon Road mostly consist of eucalyptus, broom, power lines, Oakland Fire Station No. 24, and the grassy Shepherd Canyon Field (public park). Figure 3.2-1, Photo 4 shows a view of the grassy and tree overstory in Shepherd Canyon Park. Montclair Railroad Trail is a paved 1.5-mile-long trail used by joggers, hikers, and bicyclists and similarly provides views of trees, broom, and grassland habitats. The park's visual character is marked by the creek, coastal oak woodland, eucalyptus stands, and Shepherd Canyon Field. The park's visual quality is considered moderate given the variety of vegetation types, sloped landforms, and presence of power lines along Shepherd Canyon Road. The viewer sensitivity is high for residents bordering the park, and moderate for motorists traveling on Shepherd Canyon Road.

Leona Heights Park

Leona Heights Park is situated along a drainage south of Redwood Road and Campus Drive east of SR 13. The park includes the drainage channel and some upland vegetation (Figure 3.2-1, Photo 1), extending south of the Merritt College parking lot west of Campus Drive. Much of the park is inaccessible due to its steep terrain with the exception of some trails, the main one being the York Trail. The York Trail connects the lower portion of the park at Mountain Boulevard to the upper portion near Merritt College, and eventually joins a fire road from McDonnell Avenue. Trail users have views of oak woodland habitat filled with bay trees, berries, and wildflowers. The park's visual character is defined by the park's primary vegetation/land cover types (coastal oak woodland and redwood), its steep topography, and surrounding residential development and community college. Given the park's mostly undeveloped nature, variety of vegetation types, and surrounding development, the visual quality is considered moderate. The viewer sensitivity is moderate to high for residents adjacent to the creek and recreationists using trails within the park. The viewer sensitivity is moderate for motorists traveling on adjacent roads, including Campus Drive, Redwood Road, and Mountain Boulevard.

Beaconsfield Canyon

Beaconsfield Canyon is located at the end of Keswick Court, southeast of Shepherd Canyon Park. This small 4.3-acre park consists of the following vegetation communities: closed-cone cypress, coastal oak woodland, and coastal scrub. A trail traverses through the canyon and is primarily used by nearby residents. The park's visual character is defined by these vegetation communities and native vegetation planted by the Beaconsfield Canyon Volunteers and the Friends of Sausal Creek stewardship groups. The visual quality is considered moderate to high given its natural and undeveloped setting. The viewer sensitivity is moderate to high for both recreationists using the trail and adjacent residents as this depends on level of visibility and both viewer groups typically have a higher concern of surrounding landscapes.

Ridgetop Areas

North Oakland Regional Sports Field

The North Oakland Regional Sports Field property (approximately 53.6 acres in size) is situated to the south of SR 24 and immediately south of the Caldecott tunnels. The property is characterized by a second-growth eucalyptus stand in its northern and eastern portions, and a coastal oak woodland stand in the southern half. The lower, central portion of the property also includes a tributary stream to Temescal Creek, baseball fields, and a dirt access road that bisects the property as it runs upward from Broadway from the west, through the eucalyptus stand, toward homes above on Skyline Boulevard. Overhead power lines maintained by Pacific Gas and Electric Company (PG&E) traverse the southern portion of the property. The dirt access road is used by recreationists, providing immediate views of eucalyptus stands and understory vegetation including French broom and other invasive species like pampas grass and jubata grass. **Figure 3.2-2**, Photo 2 shows a representative view of previously thinned area downslope of non-thinned eucalyptus trees. From the southern end of the dirt access road, long-ranging views of the San Francisco Bay and greater San Francisco Bay Area can be seen. The property's visual character is defined by the ball fields, eucalyptus stands, access road, and existing electrical lines. The area's visual quality is considered moderate given the property's predominantly undeveloped state in combination with built structures. For recreationists using

the dirt access trail, the viewer sensitivity is moderate to high because close-up views of trees and vegetation are available and viewer concern of recreationists is typically high.

As noted above, primary viewers of the North Oakland Regional Sports Field include motorists traveling on SR 24 and Broadway, occasional recreationists using the dirt access road, and residents along Skyline Boulevard and the surrounding area. The viewer sensitivity of motorists traveling on SR 24 is considered moderate. While expansive views of the park are available from this highway, due to the speed of travel and because motorists are expected to be focused on safe driving, viewer sensitivity of motorists is considered moderate. Viewer sensitivity of residents is considered moderate as residents have a higher level of concern for their surroundings and have varying degrees of visibility of the North Oakland Regional Sports Field.

Grizzly Peak Open Space

The Grizzly Peak Open Space property is collectively 64.5 acres in size and is situated along the southwest side of Grizzly Peak Boulevard, southeast of Marlborough Terrace. The property generally extends between Grizzly Peak Boulevard at the top of the slope down to Bay Forest Drive, Tunnel Road, Buckingham Boulevard, and Westmoreland Drive at the slope bottom. This property consists of the following vegetation communities/land cover types: closed-cone pine cypress, coastal scrub, coastal oak woodland, eucalyptus, and urban. The property extends across a steep, southwest-facing slope and abuts residential development, community assets (communications facility), and Grizzly Peak Boulevard. The visual character of the property is defined by the property's steep slope, pine, and cypress trees mostly in the southern two-thirds of the property, and coastal scrub habitat to the north. A view of the coastal scrub habitat in the northern portion of the property is shown in **Figure 3.2-2**, Photo 3. Grizzly Peak Boulevard itself provides scenic and long-range views of the greater San Francisco Bay Area, as shown in **Figure 3.2-2**, Photo 4. The visual quality is considered moderate to high as the cypress and pine trees and overall natural setting provide visual relief from adjacent residential development. Viewer sensitivity for immediately adjacent residents is moderate to high and viewer sensitivity for motorists traveling along adjacent roads (e.g., Grizzly Peak Boulevard, Bay Forest Drive, Tunnel Road) is moderate as views of the property are brief and typically motorists are focused on long-ranging panoramic views of the San Francisco Bay and greater San Francisco Bay Area.

City Stables

The City stables property is 7.4 acres and located along Skyline Boulevard. The property is dominated by grassland fuels and is largely within 10 feet from existing structures, including residences. One of the City's remote automated weather stations is situated on the property. The visual character of the property is defined by the existing stables and other structures on the site, which has low visual quality. The viewer sensitivity is also low to moderate as adjacent residents are accustomed to views of the existing stable and structures.

City Park Lands and Open Space Areas

Sheffield Village Open Space

Sheffield Village Open Space is an approximately 455.5-acre area situated at the southern end of Golf Links Road and at the northwestern end of Lake Chabot. While the property includes the Lake Chabot Golf Course, no VMP projects are proposed for this portion of the property. The

property also includes the historic Dunsmuir Estate. The property is predominantly mapped with the following vegetation communities/land cover types: annual grassland (59.4 acres), closed-cone pine-cypress (5.9 acres), coastal oak woodland (143.9 acres), coastal scrub (59.3 acres), eucalyptus (27.9 acres), perennial grassland (0.8 acre), and urban (158.1 acres). The area's visual character is defined by these various land cover types, golf course, and residential development southwest of the property. **Figure 3.2-3**, Photo 1 shows a grazed grassland and oak woodland area of this property. A steep fire access road traverses the open space site from west to east and is used by local hikers. The visual quality is moderate given the property's vast open space with varying vegetation communities. Because much of the site is not publicly accessible, aside from the fire access road traversing the site, the viewer sensitivity for local hikers is moderate. For residents adjacent to the open space area, the viewer sensitivity is considered moderate.

Knowland Park and Arboretum

Knowland Park and Arboretum is collectively 473.5 acres, extends between I-580 in the southwest and Skyline Boulevard in the northeast, and is bisected by Golf Links Road. The property includes the Oakland Zoo at the southwestern edge and a newly constructed gondola between the zoo and a hilltop near the center of the property, where an additional fenced zoo exhibit is now located. The Knowland Park and Arboretum property is mapped as the following vegetation communities/land cover types: annual grassland (102.9 acres), mixed chaparral (also known as maritime chaparral) (8.1 acres), closed-cone pine-cypress (9.1 acres), coastal oak woodland (162.0 acres), coastal scrub (61.8 acres), eucalyptus (12.1 acres), freshwater emergent wetland (0.2 acre), perennial grassland (12.5 acres), redwood (0.2 acre), and urban (104.9 acres). **Figure 3.2-3**, Photo 2 shows a grazed grassland area of Knowland Park with scattered trees. Several trails in western Knowland Park provide viewing opportunities of these vegetation communities. The visual character of Knowland Park and Arboretum is characterized by the zoo, various land cover types (mostly coast oak woodland, coastal scrub, and annual grassland), and surrounding residential development to the north and south of the park. The visual quality is moderate to high as the open space portion is largely undeveloped and comprised of various vegetation types. The viewer sensitivity is moderate for adjacent residents due to their long viewing durations and high concern about the visual setting in the immediate vicinity. Viewer sensitivity is moderate for motorists traveling along Golf Links Road due to a combination of scenic viewing opportunities of the open space area and short viewing durations. The viewer sensitivity is low to moderate for motorists traveling on I-580 as much of Knowland Park is not visible due to intervening topography and vegetation, and views are fleeting due to the speed of travel along this highway.

Joaquin Miller Park

Joaquin Miller Park is 454.9 acres in size and is situated in the southeastern portion of the VMP area. The property extends between Joaquin Miller Road in the south, Skyline Boulevard in the east, Castle Drive in the west, and the Oakland Hills ridgeline in the north. Skyline Boulevard runs along the park's western edge, then through the northern portion of the park, where it exits at the park's northern corner. The southern portion of the park is more developed and includes access roads, parking areas, the Woodminster Amphitheater, a dog park, a nursery, and several structures (including the Community Center, Ranger Station, the historic Joaquin Miller house, Sequoia Lodge, Sequoia Arena, and the Metropolitan Horseman's Association Clubhouse). The northern portion of the park is less developed but provides for public access along numerous trails and dirt roads. From the trails and dirt roads, recreationists have

immediate views of various vegetation communities (**Figure 3.2-3**, Photo 3) as well as expansive views looking toward the San Francisco Bay. Joaquin Miller Park is mapped as the following vegetation communities/land cover types: annual grassland (15.0 acres), closed-cone pine-cypress (109.3 acres), coastal oak woodland (88.0 acres), coastal scrub (5.8 acres), eucalyptus (62.0 acres), redwood (121.0 acres), urban (42.8 acres), urban (acacia) (6.6 acres), urban (mixed tree stand) (3.7 acres), and valley/foothill riparian (0.8 acre).

The visual character of Joaquin Miller Park is influenced by the developed recreational facilities in the southern portion of the park and the less developed portion to the north consisting of redwood groves, oak woodlands, meadows, and creeks. The visual quality of the northern portion of the park is considered high because of the various landscapes, views of the greater San Francisco Bay Area that can be seen from public trails, and the park's varying topography. The viewer sensitivity is high for recreationists given the park's high visual quality rating and high viewer concern. The viewer sensitivity for motorists traveling on Joaquin Miller Road and Skyline Boulevard is moderate given the mix of developed and less developed uses.

King Estate Open Space Park

The King Estate Open Space Park is collectively 81.3 acres in size and is situated southwest of I-580, south of 82nd Avenue, and bisected by Fontaine Street. The King Estate Open Space Park property is mapped as the following vegetation communities/land cover types: annual grassland (61.1 acres), coastal oak woodland (12.0 acres), coastal scrub (4.3 acres), and urban (4.0 acres). The park abuts several schools, including Howard Elementary School, the Bay Area Technology School, and the Sojourner Truth Independent Study. Views of the park are primarily available from Fontaine Street, a small segment of 82nd Avenue, and the backyards of adjacent residences. The fire roads are used by nearby residents for hiking and dog walking. Views of the San Francisco Bay and greater San Francisco Bay Area are accessible from some of these fire roads. The park's visual character is defined mostly by the annual grassland and hilly terrain (**Figure 3.2-3**, Photo 4). Given the park's undeveloped nature and surrounding residential development, the visual quality is moderate to high. Because large portions of the park are not visible from local roads and residences due to the park's rolling topography, the viewer sensitivity is moderate to high for adjacent residents and moderate for motorists traveling on Fontaine Street and a small segment of 82nd Avenue.

Other Open Space Areas

Figure 3.2-4 shows typical views of open space areas, roadside treatment areas, and median areas.

Blue Rock Court

This 15.4-acre parcel is largely characterized by eucalyptus, coast oak woodland, and grassland habitats. The property is situated immediately adjacent to a residential development located north of I-580 and northwest of Blue Rock Court. Visual quality is low to moderate because of the developed nature of the surroundings. Viewer sensitivity is moderate for residents within and near Blue Rock Court and low to moderate for motorists traveling on I-580.

Leona Street

This 1.9-acre area is a road extension at the east end of Leona Street. The site is characterized by eucalyptus and coastal oak woodland vegetative cover on steep terrain and surrounded by low-density residential development. Visual quality is low to moderate. Viewer sensitivity is low to moderate for nearby residents due to the slope of the site and steep terrain surrounding the site; open space area is hardly visible from nearby residences.

McDonnell Avenue

This 1-acre site is an extension of a narrow street and characterized by coast oak woodland vegetative cover. Visual quality is low to moderate because of the developed nature of the surroundings. Viewer sensitivity is low to moderate because partial views are limited to a few nearby residences.

Mountain Boulevard Police/Safety Department Site

This 11.3-acre parcel is characterized by eucalyptus trees and the police/safety department facility in the center of the parcel, and surrounding residences. Visual quality is low to moderate because of the developed nature of the surroundings. Viewer sensitivity is low to moderate because visibility is limited to nearby residences.

Tunnel Road Open Space Area

This 4-acre parcel is on Tunnel Road and west of SR 24. Visual character is defined by the Oakland Hills Fire Memorial Park at the south end and coast oak woodland and grassland habitat present within this small hilly open space area. **Figure 3.2-4**, Photo 1 shows a typical view of this open space area from Tunnel Road. Visual quality is moderate because of the park's undeveloped nature. Viewer sensitivity is moderate for motorists driving along Tunnel Road.

Marjorie Saunders Park

This 3-acre park is along Ascot Drive, southeast of Shepherd Park. Situated in the Montclair Village community, this small park is characterized by eucalyptus and coast oak woodland vegetation, the presence of a "painted rock" where local residents have painted greetings for special occasions, a rock-lined waterfall, and native plant landscaping. Visual quality is moderate because of the natural surroundings. Viewer sensitivity is moderate for adjacent residents and low to moderate for motorists.

Oak Knoll

This 15.7-acre property is northeast of Mountain Boulevard and south of Keller Avenue. Largely characterized by grassland, eucalyptus, and urban land covers and surrounding residential and commercial development. Visual quality is moderate because of the undeveloped nature of the site and views available from the park. Viewer sensitivity is moderate for nearby motorists traveling on Mountain Boulevard and Keller Avenue.

Roadside Treatment Areas and Medians

As described in Chapter 2, the City manages vegetation along 308 miles of City roads within the VMP area and medians (5.7 acres). Examples of priority 1 treatment roads throughout the VMP

area include Grizzly Peak Boulevard, Skyline Boulevard, Shepherd Canyon Road, Joaquin Miller Road, Monterey Boulevard, Redwood Road, Keller Avenue, and Golf Links Road. These roads traverse multiple parcel types, including urban and residential areas, open space/park areas, canyon areas, and ridgetop areas. **Figure 3.2-4**, Photos 2 and 3 show typical views of roadside treatment areas along Golf Links Road and Joaquin Miller Road. As many of the roadside treatment areas are adjacent to the above-described parcel types, in general, the visual quality of these roads generally varies from moderate to high.

3.2.2 Regulatory Setting

There are no federal laws or regulations that are applicable to aesthetics in relation to the VMP. This subsection discusses state and local laws and regulations that pertain to aesthetics for the VMP.

State Laws, Regulations, and Policies

California Scenic Highway Program

In 1963, the state legislature established the California Scenic Highway Program, contained in Streets and Highways Code Sections 260 et seq., to preserve and enhance the natural beauty of California (California Department of Transportation [Caltrans] 2020). The State Scenic Highway System includes designated scenic highways and those that are eligible for designation as scenic highways.

Within the VMP area, I-580 is an officially designated highway from the city limits of San Leandro to SR 24. In addition, SR 13 between SR 24 and I-580 (the MacArthur Freeway) is considered eligible for listing as a state scenic highway. Just outside of the VMP area, the portion of SR 24 east of the Caldecott Tunnel is designated as a state scenic highway.

Local Laws, Regulations, and Policies

City of Oakland General Plan

The Scenic Highways Element (City of Oakland 1974) of the *Oakland Comprehensive Plan* considers the MacArthur Freeway (I-580), Skyline Boulevard, Grizzly Peak Boulevard, and Tunnel Road as scenic routes within the City's limits. Policies related to protection of scenic resources along the MacArthur Freeway that are pertinent to the VMP include the following:

2. Visual intrusions within the scenic corridor should be removed, converted, buffered, or screened from the motorist's view.

3. Panoramic vistas and interesting views now available to the motorist should not be obliterated by new structures.

Specific policies related to Skyline Boulevard/Grizzly Peak Boulevard/Tunnel Road and that are also relevant to the VMP include the following:

2. Critical stretches of open space should be left intact, preserving visual continuity within the scenic corridor.

3. Grading of land and the clearing of vegetation should be kept to an absolute minimum on the properties adjacent to the scenic route.

5. Effort should be made to retain undeveloped areas that perpetuate the full range of plant types, plant communities and wildlife variety found in Oakland.

6. As much as feasible, wooded tracts of open land should be preserved with only careful inroads for development allowed.

7. The removal of large live trees, wherever they occur, should be avoided for desirable species of trees.

North Oakland Hill Area Specific Plan

The North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes vegetation management prescription with a goal to enhance and protect scenic views of the region: "Traveling along the winding scenic route, the driver, cyclist, or jogger is enclosed and shaded by forest and then, with a change in plant cover to low-growing scrub, bathed in light and presented with glorious Bay views."

3.2.3 Impact Analysis

Methodology

This subsection evaluates whether the VMP would result in significant impacts related to aesthetic resources. The significance criteria listed below were used to evaluate the VMP's effects on aesthetic resources in comparison to the existing baseline condition. The visual analysis is based on evaluations of ground-based photographs of the vegetation treatment areas, Street View by Google Maps, and visual simulations of select treatment areas included in the VMP (provided in Appendix A of this DEIR).

Visual effects were assessed based on the VMP's potential to have an adverse effect on scenic vistas, substantially damage views from scenic highways, or degrade the visual character or visual quality of a VMP treatment area. The evaluation of temporary or short-term visual impacts considers whether vegetation management activities could substantially degrade the existing visual character or quality of the site or surrounding area, as well as the duration over which any such changes would occur.

Actions with long-term visual effects, such as removing or thinning trees and other vegetation, can permanently alter the landscape in a manner that could affect existing scenic resources and the visual character or quality of the area, depending on the perspective of the viewer. In determining impact potential, the assessment considers the viewer sensitivity of the treatment areas.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland Thresholds of Significance Guidelines, it was determined that the VMP would result in a significant impact on aesthetics if it would:

- Have a substantial adverse effect on a public scenic vista;
- Substantially damage or destroy scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings located within a state or locally designated scenic highway;
- If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or
- Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area.

Issues Not Evaluated Further

The following significance criterion is dismissed from further analysis for the reasons described below.

- **Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area.** Vegetation management activities would occur during daytime hours and would not require any nighttime lighting. Once completed, the treatments themselves would not introduce a new source of light or glare. Thus, no impact would occur.

Environmental Impacts

Impact AES-1: Substantial Adverse Effects on Public Scenic Vistas (*Less than Significant with Mitigation*)

An adverse effect on the visual quality of a public scenic vista is generally most substantially adverse when viewed at a scale proportional to the scale of the activity resulting in the impact. For instance, large-scale removal of trees or shrubs may not appear significant from up close but would be more noticeable from a distance or in the context of a scenic vista. Similarly, small-scale shrub or tree removal could be perceived as a substantial adverse effect within close-range views but, when viewed from afar in the context of a scenic vista, such changes would likely be unnoticeable.

Within the VMP area, Grizzly Peak Boulevard, particularly the segment close to the Caldecott Tunnel, is often used as a scenic viewing area by motorists and recreationists as this road provides long-range views of the San Francisco Bay and greater Bay Area. Trails and fire access roads within some of the VMP treatment areas also provide scenic viewing opportunities of the Bay Area (e.g., trails within Joaquin Miller Park, King Estates Park, and the dirt access road in North Oakland Sports Field).

Proposed vegetation management activities that would occur throughout VMP treatment areas include hand labor, mechanical treatments, grazing, and herbicide treatments. Because vegetative conditions vary across treatment areas, multiple treatment methods would be employed at any given area, and treatment activities would be prioritized and phased over a 10-year timeframe, the likelihood of any one vegetation management activity occurring over a large enough area to have a substantial adverse effect on a scenic vista is minimal. The following VMP treatment projects would involve larger scale removal of trees and shrubs that could be noticeable from scenic vistas: NOR-1, NOR-2, NOR-3, GPO-1, and JMP-1. Potential effects on scenic vistas at these treatment areas are described in detail below.

North Oakland Sports Field (NOR-1, NOR-2, and NOR-3)

NOR-1, a priority 1 project at the North Oakland Sports Field, would involve thinning/removal of eucalyptus (12.06 acres), coast oak woodland (5.11 acres) and coastal scrub (0.47 acre) across a 21.51-acre total area using both mechanical and hand removal techniques. Such activities would be focused along the dirt access road, within 300 feet of ridgelines, and near the park's access gate. Mature eucalyptus stands would be thinned to ensure 35-foot horizontal spacing between trunks, and second-growth eucalyptus stands would be thinned to reach an average 25-foot spacing between trunks. Smaller trees, shrubs, grasses, and/or eucalyptus seedlings/saplings would be removed to achieve vertical separation between the top of surface fuels and lowest tree branch. The oak woodland stand in the southern portion of NOR-1 would be managed to create vertical separation between the top of surface fuels and the lowest tree branch. NOR-2 is a priority 2 project that would involve removal of 7.76 acres of eucalyptus in the northern portion of the property not addressed by NOR-1. NOR-3, a priority 3 project, would involve removing eucalyptus and other highly flammable species and invasive plants from oak woodland communities across an 18.65-acre area in the southern half of the property. Similar management standards described above for NOR-1 would also be applied at NOR-2 and NOR-3.

As noted previously, scenic views of the greater Bay Area are accessible from the fire access road along the ridgeline in the southern portion of the property, which is used by hikers and dog walkers. While the thinned eucalyptus stands could be seen from this viewpoint, the dominant vegetation types throughout this treatment area (mostly eucalyptus and oak woodland) would remain. Proposed thinning of eucalyptus stands and understory vegetation would reduce the density of these trees and other flammable vegetation but would not entail removing large swaths of trees. In addition, given the expansiveness of these treatment projects, activities would be phased over multiple years where 3-5 acres are thinned at a time; this would also spread out the effect on views from this vista point. However, because of the relatively large scale of tree removal proposed at North Oakland Sports Field, tree removal activities at this recreation area could have an adverse effect on the scenic vista from the ridgeline's access road. Implementation of **Mitigation Measure AES-1 (Conduct Visual Reconnaissance Prior to Implementing Tree Removal Activities to Determine if Vegetation Relocation or Thinning of Publicly Visible Treatment Areas is Necessary)** would require the City to conduct a visual reconnaissance of the treatment areas prior to conducting VMP activities to determine visibility of proposed treatments and, if determined necessary, potentially modify the location of tree removal activities or thin adjacent vegetation of the treatment area to reduce the visibility of removed vegetation from public viewpoints. The phasing of treatments VMP treatment projects NOR-1, NOR-2, and NOR-3 in combination with implementation of Mitigation Measure AES-1 would ensure that effects on scenic vistas would be less than significant.

Grizzly Peak Open Space (GPO-1)

GPO-1, a priority 1 project, would involve removing closed-cone pine cypress vegetation (12.29 acres), coast oak woodland (1.62 acres), coastal scrub (10.37 acres), and eucalyptus (2.83 acres) using hand labor techniques due to the steepness of the property. This work would be focused within 100 feet of structures, 300 feet of ridgelines, and 30 feet of Tunnel Road and Bay Forest Drive. Treatments for closed-cone pine cypress would involve thinning mature trees to obtain 30-foot horizontal spacing between trunks and removal of small trees, shrubs, grasses, and invasive species beneath tree canopies to create vertical separation between the top of surface fuels and the lowest tree branch. Coastal scrub vegetation would be managed to remove dead and dying scrub and thin shrub crowns to achieve horizontal separation from adjacent shrubs, shrub groupings, or trees. The treatments for eucalyptus would be the same as those described above for North Oakland Sports Field projects.

Scenic views of the greater Bay Area are accessible from Grizzly Peak Boulevard, which abuts the northern portion of GPO-1. As Grizzly Peak Boulevard is at the ridgeline and sits above the open space area, tree-thinning activities would not substantially affect long-ranging views of the Bay Area. If anything, removal of trees immediately adjacent to the road would open up views looking toward the Bay. Effects on scenic vistas at GPO-1 would be less than significant.

Joaquin Miller Park (JMP-1)

JMP-1 is a priority 1 project encompassing 117.32 acres that would involve managing various vegetation types within 100 feet of structures, 300 feet of ridgelines, 150 feet of park access gates, and congregation/activity areas along Skyline Boulevard and the top of Woodside Glen Court. Hand labor techniques would be applied for all tree removal activities within closed-cone pine cypress, eucalyptus, redwood, and urban vegetation types. The management standards would be similar to those described above for the North Oakland Sports Field and Grizzly Peak Open Space projects.

Within Joaquin Miller Park, views of most trails are limited to trees and vegetation immediately adjacent to the trail. However, some trails, such as the Sequoia-Bayview Trail, offer long-range views of the greater Bay Area. Proposed vegetation management activities may be noticeable from the Sequoia-Bayview Trail and other trails with scenic vistas, but such activities are not expected to substantially impair long-range views of the Bay Area. As with GPO-1, removal of select trees could potentially expand scenic views of the Bay Area. Nonetheless, the removal of trees could be perceived as an adverse effect on immediate views from certain vantage points along trails in Joaquin Miller Park. This would be a potentially significant impact. Implementation of **Mitigation Measure AES-1**, which requires a visual reconnaissance and, if necessary and feasible, actions that reduce the treatment area's visibility from public viewpoints would reduce effects on scenic vistas within Joaquin Miller Park to less than significant.

Mitigation Measures

Mitigation Measure AES-1: Conduct Visual Reconnaissance Prior to Implementing Tree Removal Activities to Determine if Vegetation Relocation or Thinning of Publicly Visible Treatment Areas is Necessary

The City will conduct a visual reconnaissance of VMP treatment areas involving tree thinning and removal to observe the surrounding landscape and determine if vegetation

management activities will have a significant effect on scenic vistas, public trails, or scenic routes that have views of the treatment area. If none are identified, treatments may be conducted without additional mitigation.

If the City identifies that public viewing points such as public trails or recreation areas with extended views of a VMP treatment area would be significantly affected, prior to conducting vegetation treatment activities, the City will identify opportunities to potentially modify the location of tree removal activities to reduce the visibility of removed vegetation from public viewpoints. If no changes are feasible without compromising the intended vegetation management standards and goals described in the VMP, the City will thin adjacent vegetation to break up the linear edges of treatment areas and reduce the contrast between the treatment area and surrounding vegetation.

Conclusion

Based on the above descriptions, vegetation management activities proposed at most VMP treatment areas would not obstruct or substantially degrade views from scenic vistas. Large-scale tree removal and thinning activities proposed at North Oakland Sports Field (NOR-1, NOR-2 and NOR-3) and Joaquin Miller Park (JMP-1) could degrade views from scenic vistas. Implementation of Mitigation Measure AES-1 would require that a visual reconnaissance occurs prior to reconnaissance of the treatment areas prior to conducting VMP activities to determine visibility of proposed treatments and, if necessary and feasible, a change in the location of tree removal actions to an area less publicly visible or thin vegetation surrounding the treatment area. With implementation of Mitigation Measure AES-1, the impact on scenic vistas would be **less than significant with mitigation**.

Impact AES-2: Substantial Damage to Scenic Views, Including Those within a State or Locally Designated Scenic Highway (*Less than Significant with Mitigation)*

Within the VMP area, the State of California has identified I-580 from the city limits of San Leandro to SR 24 as an officially designated state scenic highway. SR 13 between SR 24 and I-580 is considered eligible for listing as a state scenic highway.

Effects on Views from I-580

VMP treatment areas that are near I-580 include Blue Rock Court, Oak Knoll, King Estate Open Space Park, and Sheffield Village Open Space. Blue Rock Court is partially visible from I-580 to the east, although mature trees lining the highway partially screen views from I-580. Oak Knoll, another residential area, is partially visible from this highway but partially screened by mature vegetation along the highway and a retaining wall. Views of King Estate Open Space Park are largely screened by intervening topography and mature vegetation between the highway and open space park. Similarly, views of Sheffield Village Open Space are largely screened by constructed landforms and development between the highway and open space area. For treatment areas that are partially visible from I-580, limited vegetation management activities that could be seen range from goat grazing to tree and shrub removal using both hand removal and mechanical techniques. Tree and shrub removal activities proposed in these areas would occur in discrete locations (i.e., within 100-300 feet of structures) for fire reduction purposes and would not remove broad swaths of trees and shrubs. Because views of these treatment

areas would be largely screened by existing development, topography, or vegetation and any limited views of proposed vegetation management activities would be short in duration due to the high speed of travel along I-580, proposed vegetation management activities would not substantially damage views from this scenic highway.

Effects on Views from SR 13

Some of the roadside treatment projects west of SR 13 (e.g., Monterey Road) and treatments at Joaquin Miller Park closest to the highway may be partially visible from this portion of SR 13. However, mature trees along SR 13 provide visual screening of views looking toward these treatment areas. Additionally, due to the high speed of travel along SR 13, vegetation management activities proposed within these treatment areas would hardly be noticeable to motorists traveling on SR 13. Therefore, vegetation management activities proposed near SR 13 would not damage views from this highway.

Effects on Views from Skyline Boulevard, Grizzly Peak Boulevard, and Tunnel Road

The Scenic Highways Element (City of Oakland 1974) of the Oakland Comprehensive Plan considers the I-580, Skyline Boulevard, Grizzly Peak Boulevard, and Tunnel Road as scenic routes within the City's limits. Impacts to views from I-580 are discussed above. The following discussion describes the VMP's effects and potential conflicts with policies protecting views along Skyline Boulevard, Grizzly Peak Boulevard and Tunnel Road.

Skyline Boulevard

Skyline Boulevard provides long-ranging scenic views of the San Francisco Bay, greater East Bay Area, and San Francisco County. Below is a description of VMP treatment areas visible from Skyline Boulevard.

- **Skyline Boulevard at Urban/Residential Parcels.** Several priority projects on urban/residential parcels (less than 1 acre) are located immediately adjacent to Skyline Boulevard. The majority of these VMP projects are interspersed within developed residential parcels and do not provide long-range views of the Bay Area. Under the VMP, the dominant vegetation types within these parcels would remain. As these VMP projects are small in scale and scattered throughout the VMP area and often adjacent to parcels that would not be treated, vegetation management activities proposed at urban/residential parcels near Skyline Boulevard would not substantially damage views from this scenic route. Nonetheless, limited tree removal immediately adjacent to Skyline Road could be perceived as an adverse visual effect. Implementation of Mitigation Measure AES-1 would reduce this effect to a less-than-significant level.

- **Skyline Boulevard at Joaquin Miller Park.** In general, the portion of Skyline Boulevard that passes through Joaquin Miller Park offers mostly short-range views of mature trees and vegetation. Treatment projects located adjacent to Skyline Boulevard within Joaquin Miller Park would be visible from this road. Some long range-range views are available from Skyline Boulevard as it passes through Joaquin Miller Park in a few locations. Vegetation treatment within 300 feet of the ridgeline in Joaquin Miller Park may open up views of the Bay Area from these locations. While large swaths of trees would not be removed from treatment areas along this segment of Skyline Boulevard,

tree removal could be perceived as an adverse visual effect. Implementation of Mitigation Measure AES-1 would reduce this effect to a less-than-significant level.

- **Skyline Boulevard at Knowland Park.** As Skyline Boulevard passes through Knowland Park, treatment areas immediately adjacent to the road would be visible. Other treatment areas within Knowland Park are largely blocked due to topography. Proposed thinning of eucalyptus stands and understory vegetation immediately adjacent to Skyline Boulevard would reduce the density of these trees and other flammable vegetation but would not entail removing large swaths of trees. Nonetheless, tree removal activities could be perceived as an adverse effect. Implementation of Mitigation Measure AES-1 would reduce this impact to a less-than-significant level.

Grizzly Peak Boulevard

Scenic views of the greater Bay Area are accessible from Grizzly Peak Boulevard. As Grizzly Peak Boulevard is at the ridgeline and sits above the Grizzly Peaky open space area, tree-thinning activities within Grizzly Peak Open Space would not substantially affect long-ranging views of the Bay Area. If anything, removal of trees immediately adjacent to the road would open up views looking toward the Bay. Treatment areas within North Oakland Sports Field would also be visible from portions of Grizzly Peak Boulevard, although the majority of treatment areas are on slopes that are less visible from this vantage point. The dominant vegetation types throughout the North Oakland Sports Field (mostly eucalyptus and oak woodland) would remain. Proposed thinning of eucalyptus stands and understory vegetation would reduce the density of these trees and other flammable vegetation but would not entail removing large swaths of trees. In addition, given the expansiveness of the treatment projects within the North Oakland Sports Field, vegetation management activities would be phased over multiple years which would also spread out the effect on views from Grizzly Peak Boulevard. Nonetheless, tree removal activities could be perceived as an adverse visual effect. Implementation of Mitigation Measure AES-1 would ensure that treatment activities at North Oakland Sports Field and Grizzly Peak Open Space would not substantially degrade scenic views from Grizzly Peak Boulevard.

Tunnel Road

Similar to Grizzly Peak Boulevard, treatment activities proposed along Tunnel Road may open up views towards the Bay. A small portion of treatment areas within Grizzly Peak Open Space would be visible from Tunnel Road. While treatments are not anticipated to substantially damage views from this road, tree removal could be perceived as an adverse visual effect. Implementation of Mitigation Measure AES-1 would ensure that treatment activities along Tunnel Road would not substantially degrade scenic views from this road.

Conclusion

The impact on views from scenic highways and scenic routes would be **less than significant with mitigation**.

Impact AES-3: Short-term Degradation of Visual Character or Quality of Public Views (*Less than Significant with Mitigation*)

Proposed vegetation management activities would have varying effects on visual character or quality of public views. The following impact discussion focuses on the short-term aesthetic effects of treatment activities proposed under the VMP while the activities are being conducted.

Grazing

Similar to existing conditions, goat grazing would be used to reduce fine fuel loads in grasslands and brushlands and beneath tree canopies at the following areas: King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Sheffield Village Open Space, and Shepherd Canyon. This technique would also be used at Leona Heights Park, Beaconsfield Canyon, North Oakland Sports Field, roadside treatment areas and medians, and other small open space areas. Goat grazing would be temporary and intermittent at each treatment area, and would occur during the late spring to end of summer. The presence of goats, temporary fencing to keep them contained, and water troughs for the goats may be visible for a short duration to motorists passing by, nearby residents, and other recreationists. Because goats are not uncommon in natural landscapes, this activity would have limited visual intrusiveness on public views. Therefore, goat grazing activities would not substantially degrade the visual character or quality of views of the VMP treatment areas.

Mechanical and Hand Labor Treatments

During hand labor and mechanical vegetation treatment activities, hand-held and large mechanical equipment such as chainsaws, loppers, tractors, and other vehicles would be used with attachments intended to cut, uproot, crush/compact or chop vegetation. Hand labor treatment activities would not substantially alter the visual character or quality of an area due to the small size of hand-held equipment. Mechanical treatment activities would involve larger equipment than hand labor treatments but would typically be completed in a shorter duration than hand labor treatments as work would occur at a faster pace. Treatment activities for grass fuel types would be relatively faster than those associated with shrub or tree fuel types. Both hand labor and mechanical treatment activities already occur on an annual basis along roadside treatment areas; thus, many residents and other sensitive viewers are accustomed to seeing these activities. However, because the scale of these activities would increase under the VMP, the presence of large equipment and workers could contrast with the surrounding environment and temporarily degrade the visual character or quality of some VMP treatment areas. This impact would be potentially significant. Implementation of **Mitigation Measure AES-2 (Staging)** would ensure that equipment and materials are staged on access roads or already disturbed areas and not on major roadways. This mitigation measure would help minimize the visibility of vegetation management activities from public roadways. With implementation of Mitigation Measure AES-2, potential effects on visual character or visual quality of public views in VMP treatment areas would be less than significant with mitigation.

Herbicides

Under the VMP, herbicides would be applied by hand only. Where large eucalyptus and acacia trees have been removed, the cut-and-daub treatment would be applied primarily on the freshly cut stump or stem of such trees to reduce the need for ongoing maintenance. A backpack sprayer would be used to apply herbicides directly onto highly flammable/rapidly spreading

(including such plants as French broom, Scotch broom, pampas grass, and jubata grass). For both herbicide treatment methods, only 2-3 personnel would be on-site at any given treatment area. This treatment activity would also be temporary at any given location and limited to controlling plant growth as described above. For these reasons, herbicide application activities would not substantially degrade the visual character or visual quality of public views in VMP treatment areas. This impact would be less than significant.

Mitigation Measures

Mitigation Measure AES-2: Staging (VMP BMP GEN-4)

To the extent feasible, staging will occur on access roads, surface streets, or other disturbed areas that are already compacted and support only ruderal vegetation. Similarly, all vegetation management equipment and materials will be contained within the existing service roads, paved roads, or other predetermined staging areas. Staging areas for equipment, personnel, vehicle parking, and material storage will be sited as far as possible from major roadways.

Conclusion

Short-term effects on visual character and visual quality due to grazing, hand labor, and herbicide treatment activities would be less than significant. Use of large, heavy equipment for mechanical treatment activities could temporarily degrade the visual character or quality of a treatment area, but implementation of Mitigation Measure AES-2 would reduce this impact to **less than significant with mitigation**.

Impact AES-4: Long-term Degradation of Visual Character or Quality of Public Views (*Less than Significant with Mitigation*)

In describing the intent of the VMP and its proposed treatment activities, Chapter 2, *Project* Description, states that the goal of vegetation management in the VMP is not the wholesale removal of all vegetation or conversion of vegetation type; rather, the VMP proposes targeted vegetation management activities to minimize the potential for ignitions, crown fires, and extreme fire behavior; create potential fire breaks; and retain safe evacuation routes. This is accomplished by reducing fuel loads; maintaining those conditions; and altering the structure, composition, and spacing of retained vegetation. **Figure 3.2-5 through Figure 3.2-7** depict existing and simulated post-treatment views of representative treatment activities.

As noted in Section 3.2.1, "Environmental Setting," and summarized in Table 3.1-1, the VMP treatment areas vary by landform (i.e., steep canyons, ridgetops, hilly open space areas) and have a mixture of dominant vegetation/land cover types, including annual grasslands, coastal scrub, coast oak woodland, eucalyptus, closed-cone cypress, redwood, acacia, and a mixture of other urban tree species among other vegetation types. The visual character of each VMP treatment area is characterized by these varying landforms and mixture of dominant vegetation types, and they generally have moderate to high visual quality as these natural settings are mostly undeveloped and provide pleasing visual contrast to the surrounding residential/urban development throughout the VMP area.

In many cases, public views of the treatment areas would be available only at foreground viewing distances (approximately 0.25 mile or less) from trails, roads, and residences. Steep and

hilly terrains in canyons and other open space areas limit the viewing distance of several treatment areas such as King Estates Open Space, Dimond Canyon Park, Beaconsfield Canyon, Leona Heights Park, and other treatment areas. Some treatment areas, such as the North Oakland Sports Field and Grizzly Peak Open Space, are visible from SR 24 but such views would be short in duration due to the speed of travel along this highway. Similarly, partial views of Knowland Park and Arboretum, Sheffield Village Open Space, and Oak Knoll are available from I-580, although largely obscured by intervening trees and development, and are fleeting due to the speed of travel.

The following impact discussion focuses on the long-term aesthetic effects of treatment activities proposed under the VMP after treatment activities have been completed.



Existing Condition. Area above the dirt access road within the proposed 30-foot roadside treatment area at North Oakland Sports Field.



Visual Simulation. Simulated condition of the 30-foot roadside treatment area along the dirt access road in North Oakland Sports Field (Treatment Project NOR-1). Area treated to remove all but the dominant tree trunk for multi-trunk trees; surface vegetation treated to remove ladder fuels and retain some shrubs and non-flammable trees. Subsequent treatments would be necessary to achieve 25-foot spacing between retained trees.

Source: Dudek 2019

Figure 3.2-5. Existing Condition and Visual Simulation of NOR-1 at North Oakland Sports Field.



Existing Condition. Area along Grizzly Peak Boulevard looking west.



Visual Simulation. Simulated condition of the roadside along Grizzly Peak Boulevard treated to thin brush density, remove flashy fuels (grasses/weeds), remove pyrophytic trees, and provide horizontal (ladder fuels) and vertical separation between well-spaced retained trees (Treatment Project GPO-1).

Source: Dudek 2019

Figure 3.2-6. Existing and Visual Simulation of GPO-1 at Grizzly Peak Open Space.



Existing Condition. Area along the west side of Shepherd Canyon Road, looking west.



Visual Simulation. Simulated condition of the roadside treatment area along Shepherd Canyon Road treated to remove broom understory, apply surface mulch, prune select lower limbs to remove ladder fuels, mow weeds along roadside edge. Future treatments would be required to achieve a desired 35-foot spacing between retained trees. The simulation shows the interim treatment, allowing for retained trees to become more wind-firm before additional thinning occurs.

Source: Dudek 2019

Figure 3.2-7. Existing and Visual Simulation of SHP-2 at Shepherd Canyon Park.

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Grazing

As described above in Impact AES-3, goat grazing would primarily occur in grasslands and brushland environments and beneath tree canopies to reduce fine fuel loads. Under baseline conditions, this technique has been utilized by the City to manage fire fuels on approximately 900 acres annually over the last 15 years. Under the VMP, goat grazing would be utilized on a total of approximately 1,100 acres across multiple treatment areas over the 10-year VMP period. Goats browse on woody vegetation (tree leaves, twigs, vines, and shrubs) and consume materials up to 6 feet above the ground. Once goat grazing is completed in the summer or fall season, some sensitive viewers with close-up views of a parcel may notice that vegetation has been reduced; however, such a change would be minor in scale and would not substantially alter the visual character of an area. Because vegetation within treated areas would grow back and goat grazing is an ongoing activity throughout the VMP area, this treatment technique would not substantially degrade the visual character or quality of VMP treatment areas in the long term.

Mechanical and Hand Labor Treatments

Once completed, mechanical and hand labor treatment activities proposed for shrub and tree removal would have varying effects on the visual character and quality of VMP treatment areas. Under the VMP, the levels of vegetation thinning activities would be determined according to vegetation management standards and goals established to remove flammable vegetation and reduce fire hazard risks. Treatment activities would also be prioritized whereby priority 1 projects would focus on managing vegetation within 100 feet of structures to provide defensible space for existing structures, 30 feet from roadside edges along major access/egress routes to reduce potential for wildfires generated by human activity, and within 300 feet of ridgelines to reduce fuel loads and ladder fuels where high and erratic winds have potential to occur. In shrub-dominant communities, priority 1 projects would typically involve removing all dead and dying brush/scrub, removing shrubs to create horizontal separation among other adjacent shrubs, and thinning shrubs to create vertical separation between the top of the shrub and the lowest tree branches. As another example, in eucalyptus and closed-cone pine-cypress stands, proposed management standards would focus on thinning mature tree stands to achieve horizontal spacing between trunks and removing understory growth of small trees, grasses, and other highly flammable species beneath tree canopies to create vertical separation between the top of surface fuels and the lowest tree branch. Refer to Chapter 2, Section 2.3.3, "Vegetation Management Standards," for a summary of the VMP's management standards and goals; refer to Section 9.1 of the VMP (Appendix A of this DEIR) for a complete description of management standards and goals by dominant vegetation type. It is important to note that, by conducting vegetation management activities in accordance with these management standards, the VMP would not completely eliminate dominant vegetation types or large swaths of trees in any given treatment area.

Effects on Visual Character and Visual Quality from Foreground Views. As part of the VMP, visual simulations were prepared for select treatment projects proposed at the North Oakland Regional Sports Field, Grizzly Peak Open Space, and Shepherd Canyon Park. Existing and simulated conditions of the following treatment projects are presented in **Figure 3.2-5** through **Figure 3.2-7**: NOR-1, GPO-1, and SHP-2. The long-term changes to visual character and visual quality at each of these treatment areas are described below.

- **VMP Treatment Project NOR-1**. One component of VMP treatment project NOR-1 would involve managing eucalyptus stands within 30 feet of the dirt access road at the North Oakland Sports Field. As shown in **Figure 3.2-5**, eucalyptus stands would be thinned to remove all but the dominant tree trunks for multi-trunk trees. Surface vegetation beneath the eucalyptus trees would also be managed to remove ladder fuels while retaining some shrubs and lower fire risk trees. From the perspective shown in **Figure 3.2-5**, vegetation and tree thinning along the dirt access road would result in a minor or moderate visual change and could be noticeable to hikers and other recreationists who use this road frequently. Because the larger and more mature eucalyptus trees would remain intact, the visual character and visual quality of the site would not substantially change from this perspective. Over time, the thinned understory would fill in with successional vegetation. Successional vegetation is anticipated to be similar in species composition to the vegetation at the treatment location prior to treatment, with the exception of areas that are actively revegetated. Removing select understory vegetation would potentially improve the visual conditions along this access road over time.

- **VMP Treatment Project GPO-1**. Under VMP treatment project GPO-1, one management action would involve thinning of shrubs, weeds, and grasses along Grizzly Peak Boulevard, removing some lower fire risk trees, and providing horizontal and vertical separation between retained trees. As shown in **Figure 3.2-6**, these actions would result in a moderate change but views of the slope below Grizzly Peak Boulevard would remain intact as this activity would merely reduce the density of vegetation surrounding shrubs. While such actions may be perceptible to adjacent residents who are accustomed to viewing this treatment areas, such actions would not be readily noticeable to motorists passing by. Because coastal shrubs would remain the dominant vegetative community, proposed treatment activities would not substantially degrade the visual character or quality of this treatment area.

- **VMP Treatment Project SHP-2**. Under VMP treatment project SHP-2, roadside treatment activities along Shepherd Canyon Road would involve removing French broom understory, pruning select lower limbs to remove ladder fuels, and mowing weeds along the roadside edge. This particular simulation shows an interim treatment; additional treatments would be necessary to achieve 35-foot spacing between retained trees. The interim treatment activities would allow retained trees to become more wind-firm before additional thinning activities would occur. As shown in **Figure 3.2-7**, along this segment of Shepherd Canyon Road, mature eucalyptus trees would remain in place, and the thinning of understory vegetation would not substantially degrade the visual character or quality of this stretch of road. Rather, such actions would clean up and improve the visual conditions of this roadside treatment area.

The simulations presented in **Figure 3.2-5** through **Figure 3.2-7** show select examples of how the visual character and quality of views would change in the immediate foreground of treatment projects NOR-1, GPO-1, and SHP-2. While visual character and quality vary from site to site, the same management recommendations by dominant vegetation type (in addition to other standards described in Section 9.1 of the VMP [Appendix A of this DEIR]) would apply across the VMP treatment areas. Such standards are intended to reduce fuel loads, composition, and

spacing of retained vegetation and not necessarily to remove all vegetation within treatment areas.

Within some open space areas and parks, such as Joaquin Miller Park (e.g., project JMP-1), the VMP proposes thinning of trees and understory vegetation near public trails and park access gates. Although large trees and other vegetation would remain in VMP treatment areas, less vegetation would be present where mechanical and manual tree removal occurs. Given the high viewer sensitivity from public trails and high volume of recreationists at Joaquin Miller Park, there could be an adverse visual impact to the existing visual character and quality of views from some trails in this park as views tend to be extended for recreationists. Similarly, removal or pruning of large trees adjacent to other public trails throughout the VMP area could be perceived as an adverse visual effect to recreationists. As a result, the visual character and visual quality could be degraded in select areas throughout the VMP area. This is a potentially significant impact. Implementation of Mitigation Measure AES-1 would reduce this impact to a less-than-significant level.

Effects on Visual Character and Visual Quality from Middle Ground Views. Some treatment areas, including the North Oakland Sports Field and Grizzly Peak Open Space, would be visible from middle ground distances from eastbound SR 24, other nearby roads, and residences south of these treatment areas. As noted previously, vegetation management activities within these two treatment areas would involve thinning of trees and vegetation in select areas (e.g., within 30 feet of access roads and 300 feet of ridgelines) to reduce the fire hazard risks. Selective thinning of eucalyptus, pine, and Monterey cypress trees in these areas (in accordance with management recommendations for VMP treatment projects GPO-1, GPO-2, NOR-1 and NOR-2) would result in moderate permanent changes in the existing visual character of the landscape as the tree densities would be reduced. At a large scale, these actions could be more noticeable from middle ground distances, such as from eastbound SR 24, nearby roads, and residences south of the North Oakland Sports Field and Grizzly Peak Open Space. As described in Chapter 2, *Project* Description*,* Table 2-6, the City estimates the maximum amount of manual tree removal activities would be 20 acres per year and the maximum amount of mechanical tree removal activities would be 5 acres per year. Given the size of the treatment areas within the North Oakland Sports Field and Grizzly Peak Open Space, it is anticipated that mechanical and hand labor tree removal activities would be phased over the VMP's 10-year timeframe; thus, visual changes to the altered landscape would also occur in a phased manner. Over time, other understory vegetation anticipated to be similar in species composition to pre-treatment conditions would grow to fill in the areas where vegetation has been removed. For these reasons and because large trees would remain where thinning occurs (in accordance with horizontal spacing requirements imposed by the VMP's management standards), impacts on middle ground views from mechanical and hand labor tree and shrub removal activities would not result in a long-term, substantial degradation of the existing visual character or visual quality at the North Oakland Sports Field and Grizzly Peak Open Space.

Herbicides

As described above in Impact AES-3, herbicide application would be limited in scope and would primarily occur in areas where eucalyptus and acacia trees have been removed and to limit or reduce plant growth and plant coverage of surface fuels (including such plants as French broom, Scotch broom, pampas grass, and jubata grass). Herbicides would be applied to the cut stump or stems of secondary-growth eucalyptus and acacia trees to reduce the need for ongoing

maintenance. As noted in Chapter 2, *Project* Description, Table 2-6, this treatment would be limited to 20 acres per year. Therefore, because the scope of herbicide application would be limited to controlling the growth and cover of specific trees that have already been removed and on select highly flammable/rapidly spreading plants within treatment areas, herbicide application activities alone would not substantially alter or degrade the long-term visual character or quality of public views.

Mitigation Measures

See text in Impact AES-1 above.

Conclusion

Based on the discussion above, long-term effects of VMP activities on visual character and quality would be **less than significant with mitigation**.

3.3 AIR QUALITY

This section describes the existing air quality conditions in the study area, which includes the VMP area and the San Francisco Bay Area Air Basin (SFBAAB). This section also describes the relevant air quality regulations, air quality significance criteria, methodology used to evaluate impact significance, and the VMP's resulting air quality impacts. This section also describes mitigation measures that would reduce potentially significant air quality impacts. Detailed information about the assumptions and modeling results discussed in this section are provided in **Appendix C**, *Air Quality/Greenhouse Gas/Energy Calculations,* of this DEIR.

3.3.1 Environmental Setting

Study Area

The study area consists of the locations where physical actions associated with the VMP would take place. This area is located within the SFBAAB, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The study area for air quality impacts is evaluated at both local and regional scales. Air quality at the local scale involves evaluating the potential for local "hot spots" to result in areas adjacent to anticipated VMP treatment sites due to emissions of pollutants of local concern, including carbon monoxide, particulate matter, and toxic air contaminants. Air quality at the regional scale involves evaluating air pollutants of regional concern such as ozone, ozone precursors, and particulate matter.

San Francisco Bay Area Air Basin

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic air drainage features. The SFBAAB, managed by BAAQMD, comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, as well as portions of Solano and Yolo Counties. Air quality is determined by natural factors such as climate, topography, and meteorology, in addition to the presence of air pollution sources and ambient conditions.

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, all of which distort normal wind flow patterns. The Coast Ranges split, resulting in a western coast gap, the Golden Gate, and an eastern coast gap, Carquinez Strait; these allow air to flow in and out of the SFBAAB and the Central Valley (BAAQMD 2017a).

BAAQMD divides the SFBAAB into subregions with distinct climate and topographic features. The proposed VMP area is located in the Northern Alameda and Western Contra Costa Counties Subregion of the SFBAAB.

Northern Alameda and Western Contra Costa Counties Subregion

This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by the San Francisco Bay (the Bay) and its eastern boundary by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridgeline height of approximately 1,500 feet, a substantial barrier to air flow. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills. In this area, marine air traveling through the Golden

Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west.

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures during summer average in the mid-70s (in degrees Fahrenheit [°F]), with minimums in the mid-50s. Winter highs are in the mid- to high 50s, with lows in the low to mid-40s.

The air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels. The air pollution potential at the northern (Richmond) and southern (Oakland, San Leandro) parts of this subregion is marginally higher than at communities directly east of the Golden Gate because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources. Some industrial facilities are quite close to residential areas. The subregion is also traversed by major freeways that are frequently congested. Traffic and congestion, along with the motor vehicle emissions they generate, are increasing (BAAQMD 2017a).

Air Pollutants

Several air pollutants of concern would be associated with VMP activities. These air pollutants are discussed briefly below. Two main categories of air pollutants are described: criteria air pollutants and toxic air contaminants. Criteria air pollutants are those air pollutants with national and/or state air quality standards that define allowable concentrations of these substances in the ambient air. TACs are those air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas that is highly toxic. CO is formed by the incomplete combustion of fuels and is emitted directly into the air. Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distribution of vehicular traffic. CO concentrations are also influenced by wind speed and atmospheric mixing. Under inversion conditions (when a low layer of warm air, along with its pollutants, is held in place by a higher layer of cool air), CO concentrations may be distributed more uniformly over an area to some distance from vehicular sources. CO binds with hemoglobin, the oxygen-carrying protein in blood, and thereby reduces the blood's capacity to carry oxygen to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties in people with chronic diseases, impair mental abilities, and cause death.

Ozone

Ozone (O_3) is a reactive gas that, in the troposphere (the lowest region of the atmosphere), is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when nitrogen oxides and reactive organic gases react in the presence of sunlight.

Ozone at the Earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the stratosphere, ozone exists naturally and shields the Earth from harmful incoming ultraviolet radiation. High concentrations of ground-level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill natural communities, agricultural crops, and some human-made materials (e.g., rubber, paint, and plastics).

Nitrogen Oxides

Nitrogen oxides (NO_X)is a family of gaseous nitrogen compounds that are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Reactive Organic Gases

Reactive organic gases (ROG) consist of hydrocarbon compounds that exist in the ambient air. ROG contributes to the formation of smog and/or may itself be toxic. ROG emissions are a major precursor to the formation of ozone.

Particulate Matter

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets. PM is made up of various components, including acids, organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to the potential for causing health problems. PM particles that are smaller than 10 micrometers in diameter, called PM10, are of most concern because these particles pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. PM10 particles are typically found near roadways and industrial operations that generate dust. PM10 particles are deposited in the thoracic region of the lungs. Fine particles, called PM2.5, are particles less than 2.5 micrometers in diameter and are found in smoke and haze. PM2.5 particles penetrate deeply into the thoracic and alveolar regions of the lungs. lungs. Ultrafine particulate matter, which has a diameter less than 0.1 micrometer (PM0.1), is not federally regulated at this time, although it is a subset of PM10 and PM2.5 emissions. It is generally recognized that smaller particles are more harmful to human health. Unlike larger particles, PM0.1 can penetrate pulmonary tissue, enter the bloodstream, and circulate throughout the body. Thereby, PM0.1 can damage internal systems that may be inaccessible to larger particles.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. Suspended SO_2 particles contribute to poor visibility in the SFBAAB and are a component of PM10.

Lead

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. There is no known safe exposure level to lead. The health effects of lead poisoning include loss of appetite,

weakness, apathy, and miscarriage. Lead poisoning can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract and can reduce mental capacity.

Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out since 1996, which has resulted in dramatic reductions in ambient concentrations of lead. Because lead persists in the environment forever, however, areas near busy highways continue to have high levels of lead in dust and soil.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plant operations, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations and can cause death.

Sulfates

Sulfates are the fully oxidized, ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds result primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

CARB's sulfate standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

Vinyl Chloride

Vinyl chloride is a colorless gas that does not occur naturally. It is formed when other substances, such as trichloroethane, trichloroethylene, and tetrachloroethylene, are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) for a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Toxic Air Contaminants

Hundreds of different types of toxic air contaminants (TACs) exist, with varying degrees of toxicity. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. For some chemicals, such as carcinogens, no thresholds exist below which exposure can be considered risk-free. Examples of TAC sources in the VMP area include fossil fuel combustion sources, pesticides, and asbestos, including naturally occurring asbestos (NOA).

Sources of TACs include stationary sources, area-wide sources, and mobile sources. The U.S. Environmental Protection Agency (USEPA) maintains a list of 187 TACs, also known as hazardous air pollutants. These hazardous air pollutants are also included on CARB's list of TACs (CARB 2020a). According to the *California Almanac of Emissions and Air Quality* (CARB 2013), many

researchers consider diesel PM (DPM) to be a primary contributor to health risk from TACs because particles in diesel exhaust carry a mixture of many harmful organic compounds and metals, rather than being a single substance as are other TACs. Unlike many TACs, outdoor DPM is not monitored by CARB because no routine measurement method has been identified. However, using the CARB emission inventory's PM10 database, ambient PM10 monitoring data, and results from several studies, CARB has made preliminary estimates of DPM concentrations throughout the state (California Office of Environmental Health Hazard Assessment [OEHHA] 2001).

Naturally Occurring Asbestos

Asbestos is the common name for a group of naturally occurring, fibrous silicate minerals that can separate into thin but strong and durable fibers. Ultramafic rocks form in high-temperature environments far below the surface of the earth. By the time they are exposed at the ground surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of metamorphic rock called serpentinite. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in the bodies of these rocks, along their boundaries, or in the soil. Asbestos that occurs naturally in the environment (NOA) was identified as a TAC in 1986 by CARB. NOA is located in many parts of California and is commonly associated with ultramafic rocks, according to the California Department of Conservation, Division of Mines and Geology's 2002 special publication, *Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California*. (The department was renamed the California Geological Survey [CGS] in 2006.)

For individuals living in areas with NOA, there are many potential pathways for airborne exposure. Exposure to soil dust containing asbestos can occur under a variety of scenarios, including children playing in the dirt; dust raised from unpaved roads and driveways covered with crushed serpentine; grading and earth disturbance associated with construction activity; quarrying; and gardening. For homes built on asbestos outcroppings, asbestos can be tracked into the home on shoes and can also enter as fibers suspended in the air. Once such fibers are indoors, they can be entrained into the air by normal household activities such as vacuuming; many respirable fibers are small enough to pass through vacuum cleaner bags.

People exposed to low levels of asbestos may be at an elevated risk (e.g., above background rates) for lung cancer and mesothelioma. The risk is proportional to the cumulative inhaled dose (quantity of fibers), and also increases with the time since first exposure. Although numerous factors influence the disease-causing potency of any form of asbestos (such as fiber length and width, fiber type, and fiber chemistry), all forms are carcinogenic.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., roasting coffee). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is known as odor

fatigue; a person can become desensitized to almost any odor, after which recognition occurs only with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the concentration in the air. When an odor sample is progressively diluted, the odor concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odor reaches a level that is no longer detectable.

Air Quality Attainment and Local Conditions

CARB and USEPA have established ambient air quality standards (AAQS) to protect human health and welfare. Geographic areas are deemed to be in "attainment" if these standards are met or in "nonattainment" if they are not met. Nonattainment status is classified by the severity of the nonattainment problem. Marginal, moderate, serious, severe, and extreme nonattainment classifications have been established for ozone; nonattainment classifications for PM range from marginal to serious. **Table 3.3-1** shows the state and federal attainment status for the SFBAAB.

Table 3.3-1. San Francisco Bay Area Air Basin Attainment Status

Contaminant	Averaging Time	Concentration	State Standards Attainment Status[1]	Federal Standards Attainment Status[2]
Ozone	1-hour	0.09 ppm	N	See footnote 3
	8-hour	0.070 ppm	N	N (Marginal)
Carbon Monoxide	1-hour	20 ppm	A	
		35 ppm		A
	8-hour	9.0 ppm	A	A[4]
Nitrogen Dioxide	1-hour	0.18 ppm	A	
		0.100 ppm[6]		U
	Annual arithmetic mean	0.030 ppm	A	
		0.053 ppm		A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	
		0.075 ppm		A
	24-hour	0.04 ppm	A	
		0.14 ppm		A
	Annual arithmetic mean	0.030 ppm		A
Particulate Matter (PM10)	24-hour	50 µg/m^3	N	
		150 µg/m^3		U
	Annual arithmetic mean	20 µg/m^3	N	
Fine Particulate Matter (PM2.5)	24-hour	35 µg/m^3		N (Moderate)[7]
	Annual arithmetic mean	12 µg/m^3	N	U/A
Sulfates	24-hour	25 µg/m^3	A	
Lead[8]	30-day average	1.5 µg/m^3	A	
Hydrogen Sulfide	1-hour	0.03 ppm	U	
Vinyl Chloride[8] (chloroethene)	24-hour	0.010 ppm	U	
Visibility Reducing Particles	8-hour (10:00 to 18:00 PST)	See footnote 5	U	

A – attainment
N – nonattainment
U – unclassified
ppm – parts per million
µg/m^3 – micrograms per cubic meter
PST – Pacific Standard Time

Notes:

1. California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM10, and visibility-reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average (i.e., all standards except for lead and the PM10 annual standard), then some measurements may be excluded. In particular measurements that are excluded include those that the CARB determines would occur less than once per year on average.
2. National standards shown are the "primary standards" designed to protect public health. National air quality standards are set by USEPA at levels determined to be protective of public health with an adequate margin of safety. National standards other than for ozone, particulates, and those based on annual averages are not to be exceeded more than once per year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 parts per billion) or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 $\mu g/m^3$. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentiles is less than 35 $\mu g/m^3$. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM10 is met if the 3-year average falls below the standard at every site. The annual PM2.5 standard is met by spatially averaging annual averages across officially designated clusters of sites and then determining if the 3-year average of these annual averages falls below the standard.
3. The national 1-hour ozone standard was revoked by USEPA on June 15, 2005. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 ppm to 0.070 ppm. An area meets the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. This table provides the attainment statuses for the 2015 standard of 0.070 ppm.
4. In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
5. Statewide Visibility-Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
6. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average of nitrogen dioxide at each monitoring station within an area must not exceed 0.100 ppm (effective January 22, 2010).
7. On January 9, 2013, USEPA issued a final rule to determine that the Bay Area attains the 24-hour PM2.5 national standard. This USEPA rule suspends key state implementation plan (SIP) requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area will continue to be designated as "nonattainment" for the national 24-hour PM2.5 standard until such time as the Air District submits a "redesignation request" and a "maintenance plan" to USEPA, and USEPA approves the proposed redesignation.
8. CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure below which there are no adverse health effects determined.

Source: CARB 2019, USEPA 2020, BAAQMD 2020c

Air Monitoring Data

BAAQMD, CARB, and USEPA operate an extensive air monitoring network to measure progress toward attainment of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The closest air monitoring station to the VMP area is in Oakland on International Boulevard, located south and west of the VMP area. **Table 3.3-2** shows the most recent three years of available data from stations in the area. Site-level data were available for ozone, PM2.5, and NO_2.

Table 3.3-2. Air Monitoring Data for 2016-2018

Monitoring Station	Pollutant Standard		2016		2017		2018	
			Exceed-ances[a]	Maximum Concentration	Exceed-ances[a]	Maximum Concentration	Exceed-ances[a]	Maximum Concentration
Oakland-9925 International Blvd	Ozone	8-hour	0/0	0.057	2/2	0.100	0/0	0.052
		Hourly	0/0	0.082	2/1	0.136	0/0	0.061
	PM2.5	24-hour	0	15.500	7	70.200	13	172.100
	NO_2	Hourly	0/0	59.200	0/0	64.900	0/0	72.900

Notes: ppb = parts per billion; ppm = parts per million; µg/m^3 = micrograms per cubic meter; N/A = Not Applicable

[a] The first value represents the number of days on which the federal standard was exceeded. The second number is the number of days on which the state standard was exceeded.

[b] Annual values for particulate matter are averages.

Maximum concentration is obtained from national data where national and state values differ. No data for PM10 or CO were available from these sites.

Source: CARB 2020b.

TACs in SFBAAB

In 2006, BAAQMD undertook the creation of a regional emissions inventory for TACs from major sources of emissions in the Bay Area, including nearly 200 toxic gases or particles. Emissions inventories for 2005 and 2015 were used as data inputs to a regional air quality model to predict concentrations of key toxic compounds and the associated cancer risk. Some of the key findings from this work were that DPM contributed more than 85 percent of the total inventoried cancer risk and that simulated potential cancer risk from TACs is highest near major DPM sources. Another key finding is that cancer risk from TACs is dropping; when emissions inputs accounted for state diesel regulations and other reductions, modeled risk values were projected to drop by more than 50 percent between 2005 and 2015. Measurement-based assessments of cancer risk from air pollution show similar reductions. According to the most recent analysis (for 2012), the average regional cancer risk was about 300 per million. That is, for every 1 million residents exposed for 70 years to current levels of TACs, 300 would be expected to develop cancer as a result of the exposure. According to the analysis, more than 70 percent of the cancer risk related to air pollution in the Bay Area is attributable to DPM, and 90 percent of the total risk is attributable to three compounds: DPM, benzene, and 1,3-butadiene. All three of these compounds are produced through fuel combustion (BAAQMD 2014).

Sensitive Receptors

Sensitive receptors are those segments of the population most susceptible to poor air quality: children, the elderly, and individuals with pre-existing serious health problems affected by air quality (e.g., asthma) (CARB 2005). Examples of locations that contain sensitive receptors are residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. Residences include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds include play areas associated with parks or community centers. Receptors in the vicinity of VMP activities could include any of these receptor types, in particular single-family residences in rural, suburban, and urban settings. VMP project sites are generally located in the Oakland Hills and border residential areas and open spaces. **Table 3.3-3** includes information on the sensitive receptors closest to the major VMP treatment areas. Smaller parcels, which are not included in the table, often include or are adjacent to single-family residences.

Table 3.3-3. Sensitive Receptors Near VMP Treatment Areas

VMP Treatment Area	Sensitive Receptor	Distance in Feet to Nearest Receptor from VMP Treatment Area (center/edge)
Garber Park	Multiple residences along Alvarado Road, Evergreen Lane, Siler Place, and Rispin Drive	215 / 0
	Claremont Hotel	1,600 / 600
Grizzly Peak Open Space	Multiple residences along Tunnel Road, Bay Forest Drive, Buckingham Boulevard, and Westmoorland Drive	290 / 0
North Oakland Sports Field	Residences along Gwin Road, Fairlane Drive, Swainland Road, and Skyline Boulevard	1,100 / 300
Skyline Boulevard	Multiple single-family residences along Skyline Boulevard	30 (from road center) / 0
Shepherd Canyon	Shepherd Canyon Park, Shepherd Canyon Trail, and Montclair Park	0 / 0
	Single-family residences along Magellan Drive, Cortereal Avenue, Snake Road, Drake Drive, Zinn Drive, Cortez Court, Bishop Court, Westover Drive, Pelham Place, Scarborough Drive	425 / 0
	First Church of Christ Scientist	2,800 / 350
Dimond Canyon Park	Single-family residences along Leimert Boulevard, Monterey Boulevard, Bridgeview Drive, Arden Place, Clemens Road, Oakmore Road, Park Boulevard, Hanly Road, El Centro Avenue, Lyman Road, Canon Avenue, Vista Street	220 / 0
	The Renaissance International School, Corpus Christi School, Glenview Elementary School	415 / 100
	Dimond Branch Oakland Public Library	4,000 / 670
	Zion Lutheran Church, Corpus Christi Church	415 / 85
Joaquin Miller Park	Residences along Joaquin Miller Road, Burdeck Court, Butters Drive, Robinson Drive, Skyline Boulevard, Castle Drive, Waybridge Court, Castle Park Way, Mastlands Drive, Joaquin Miller Court, Woodcrest Circle	1,500 / 0
	Joaquin Miller Park, Chabot Space and Science Center	0 / 0
	A Child's House – Preschool	1,800 / 150
	Church of Jesus Christ of Latter-Day Saints	4,500 / 1,200
Leona Heights Park	Residences along Redwood Road, Geranium Place, Berneves Court, Mountain Boulevard	280 / 0
	East Hills Community Church	1,700 / 330

VMP Treatment Area	Sensitive Receptor	Distance in Feet to Nearest Receptor from VMP Treatment Area (center/edge)
	Mountain Boulevard Montessori School, Chatham Nursery School, Carl B Munck Elementary School, Merritt College	640 / 5
	Sunrise of Oakland Hills (Assisted Living Facility)	2,100 / 1,350
King Estate Open Space Park	Residences along Greenly Drive, Sterling Drive, McCormick Avenue, Sunkist Drive, 82nd Avenue, El Monte Avenue, Aster Avenue, Ney Avenue, Fontaine Street, Blandon Road, Sarazen Avenue, Castlewood Street, Calandria Avenue, Murillo Avenue, Crest Avenue	550 / 0
	Sojourner Truth School, Charles P. Howard Elementary School	410 / 0
	Bethany Home Care, E.E. Cleveland Manor (assisted living facilities)	2,400 / 750
	United Lutheran Church of Oakland, Center of Hope Community Church, Masjid Al-Islam	1,040 / 10
Knowland Park	Residences along Golf Links Road, Anza Avenue, Burgos Avenue, Sigourney Avenue, Orinda Vista Drive, Royal Oak Road, Elysian Fields Drive, Riviera Court, Pebble Beach Drive, Fox Hills Court, Scotia Avenue, Merlin Court, Cotter Street, Key Court, Caloden Lane, Fallbrook Way, Malcolm Avenue, Elvessa Street, Ettrick Street, Lochard Street, Cameron Avenue, Snowdown Avenue, Edgemont Way, Maggiora Drive, Hellman Street, Stella Street, Mark Street, Hood Street, 106th Avenue, Sheldon Street, Broadmoor View, Stanley Avenue	920 / 0
	St. Paschal Baylon Catholic Church, Northern Light School, Grass Valley Elementary School, BJ's Daycare Center	2,800 / 210
	Oakland Zoo, Knowland Park	0 / 0
	Sunny Care Home, Bethany Home Care, D'Nalor Care Homes (assisted living facilities)	3,535 / 120
	Harris Motel, Commodore Hotel, Premier Inn & Suites, Starlite Motel, Welcome Inn, Crown Lodge Motel, Travis Lodge Motel 16	5,800 / 1,350
Lake Chabot Golf Course	Residences along Sun Valley Drive, Golf Links Road, Turner Avenue, Lochard Street	1,200 / 10
	East Bay Bible Church	2,650 / 1,325
	Sheffield Village Open Space	1,100 / 0
Sheffield Village Open Space	Residences along Cranford Way, Revere Avenue, Marlow Drive, Malcolm Avenue, Broadmoor View, Daniels Drive, Sylvan Circle, Lochard Street	725 / 0
	East Bay Innovation Academy	3,650 / 10

VMP Treatment Area	Sensitive Receptor	Distance in Feet to Nearest Receptor from VMP Treatment Area (center/edge)
	Fairhaven Bible Chapel, Creekside Community Church	2,580 / 650
	Dunsmuir Hellen Historic Estate, Lake Chabot Golf Course	1,100 / 0
	D'Nalor Care Homes	5,550 / 1,890

Source: Based on Google Earth aerial views.

Existing Levels of Emissions Generated by Vegetation Treatment Activities

As detailed in Chapter 2, *Project* Description, and Section 3.1.2, "Baseline Conditions," the baseline conditions for this EIR consider a range of existing vegetation management activities and assume that a certain amount of goat grazing and roadside treatment (via hand labor and mechanical activities) is being performed. These activities would generate air pollutant emissions from the consumption of fossil fuels during equipment and vehicle use. Existing air pollutant emissions from the baseline activities assumed in Section 3.1.2 are summarized in **Table 3.3-4**. According to City staff, current and past goat grazing activities have resulted in no known odor complaints (Hansen 2020, pers. comm.).

Table 3.3-4. Baseline Conditions Criteria Pollutant Emissions

Vegetation Management Activity		Emissions – Annual (Tons / Year)			
		ROG	NO_X	PM10	PM2.5
Grazing	Grazing	0.00	0.00	0.00	0.00
	Worker Trips	2.61E-03	0.019	0.01	1.64E-03
Roadside Treatments	Roadside Treatments	1.00	0.15	0.02	0.02
	Worker Trips	3.59E-03	0.03	0.01	2.26E-03
Baseline Total		1.01	0.20	0.04	0.02

3.3.2 Regulatory Setting

This subsection discusses the federal, state, regional, and local laws, regulations, and policies that pertain to air quality in the VMP area.

Federal Laws, Regulations, and Policies

USEPA is responsible for establishing the NAAQS, enforcing the federal Clean Air Act (CAA), and regulating transportation-related emission sources such as aircraft, ships, and certain types of locomotives, under the exclusive authority of the federal government. USEPA also establishes vehicular emission standards, including those for vehicles sold in states other than California. (Automobiles sold in California must meet stricter emission standards established by CARB, as described below.)

Clean Air Act

The CAA required USEPA to establish NAAQS, which are described above and shown in Table 3.3-1. The CAA also required each state to prepare an air quality control plan.

Non-road Emission Regulations

USEPA has adopted emissions standards for various types of non-road engines, equipment, and vehicles. For non-road diesel engines, USEPA has adopted multiple tiers of emission standards.

USEPA signed a final rule on May 11, 2004, introducing the Tier 4 emission standards, to be phased in between 2008 and 2015 (69 Code of Federal Regulations [CFR] 38957–39273, June 29, 2004). The Tier 4 standards require that emissions of PM and NO_X be further reduced by about 90 percent. Such emission reductions can be achieved using control technologies, including advanced exhaust gas after-treatment. To enable sulfur-sensitive control technologies in Tier 4 engines, such as catalytic particulate filters and NO_X absorbers, USEPA also mandated reductions in sulfur content in non-road diesel fuels. In most cases, federal non-road regulations also apply in California, which has only limited authority to set emission standards for new non-road engines. The CAA preempts California's authority to control emissions from new farm and construction equipment less than 175 horsepower (CAA Section 209[e][1][A]) and requires California to receive authorization from USEPA for controls over other off-road sources (CAA Section 209[e][2][A]).

State Laws, Regulations, and Policies

California Clean Air Act

The California Clean Air Act (CCAA) requires nonattainment areas to achieve and maintain the health-based CAAQS by the earliest practicable date. The CCAA is administered by CARB at the state level; at the regional level, local air quality management districts are required to develop plans and control programs for attaining the state standards. Table 3.3-1 shows the CAAQS.

CARB is responsible for ensuring implementation of the CCAA, meeting state requirements of the federal CAA, and establishing the CAAQS. It is also responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

In-use Off-road Diesel Vehicle Regulation

In 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use, off-road, heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2011, the regulation was amended to modify the compliance dates for performance standards and establish requirements for compliance with verified diesel emission control strategy technologies that reduce PM and/or NO_X emissions.

Truck and Bus Regulation

In 2008, CARB approved a regulation to substantially reduce emissions of DPM, NO_X, and other pollutants from existing on-road diesel vehicles operating in California. The regulation requires affected trucks and buses to meet performance standards and requirements by 2023. Affected vehicles included on-road, heavy-duty, diesel-fueled vehicles with a gross vehicle weight rating greater than 14,000 pounds. The regulation was updated in 2011 and 2014 to provide more compliance flexibility and reflect the impact of the 2008 economic recession on vehicle activity and emissions. Heavy-duty trucks used for VMP activities would be required to comply with this regulation.

Heavy-duty On-board Diagnostic System Regulations

In 2004, CARB adopted regulations requiring on-board diagnostic (OBD) systems on all 2007 and later model year heavy-duty engines and vehicles (i.e., vehicles with a gross vehicle weight rating greater than 14,000 pounds) in California. CARB subsequently adopted a comprehensive OBD regulation for heavy-duty vehicles model years 2010 and beyond. The heavy-duty OBD regulations were updated in 2010, 2013, and 2016 with revisions to enforcement requirements, testing requirements, and implementation schedules. Heavy-duty trucks used during VMP activities would be required to comply with the heavy-duty OBD regulatory requirements.

Heavy-duty Vehicle Inspection Program

The heavy-duty vehicle inspection program requires heavy-duty trucks and buses to be inspected for excessive smoke and tampering and for compliance with engine certification labels. Any heavy-duty vehicle (i.e., a vehicle with a gross vehicle weight rating greater than 14,000 pounds) traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations. Owners of trucks and buses found to be in violation are subject to penalties starting at $300 per violation. Heavy-duty trucks used during VMP activities would be subject to the inspection program.

California Standards for Diesel Fuel Regulations

These regulations require diesel fuel with sulfur content of 15 parts per million (ppm) or less (by weight) to be used for all diesel-fueled vehicles that are operated in California. The standard also applies to non-vehicular diesel fuel, other than diesel fuel used solely in locomotives or marine vessels. The regulations also contain standards for the aromatic hydrocarbon content and lubricity of diesel fuels.

Airborne Toxic Control Measures

CARB regulates TACs by requiring implementation of various airborne toxic control measures (ATCMs), which are intended to reduce emissions associated with toxic substances. The following ATCMS may be relevant to VMP activities.

Naturally Occurring Asbestos ATCMs

These regulations ensure that activities in areas containing NOA must implement asbestos dust mitigation measures, and they restrict the use of asbestos-containing material on road surfacing to less than 0.25 percent. Projects that disturb more than 1 acre in areas containing NOA must submit and obtain local air district approval of an asbestos dust mitigation plan. The plan must specify how the operation will minimize emissions and must address specific emission sources. This ATCM supersedes the BAAQMD's natural asbestos-related regulation and requires permits from the BAAQMD (as detailed in "Regional Laws, Regulations, and Policies" below).

ATCM to Limit Diesel-fueled Commercial Motor Vehicle Idling

On October 20, 2005, CARB approved an ATCM to limit idling of diesel-fueled commercial motor vehicles. This regulation was a follow-up to previous idling ATCMs, and it consists of new engine and in-use truck requirements, as well as idling emission performance standards. The regulation

requires 2008 and newer model year heavy-duty diesel-fueled engines to be equipped with a nonprogrammable engine shutdown system that automatically shuts down the engine after 5 minutes of idling or, optionally, meets a stringent NO_X idling emission standard (i.e., 30 grams per hour). The regulation also applies to the operation of in-use trucks, requiring operators of both in-state and out-of-state registered, sleeper berth–equipped trucks to manually shut down their engines when idling more than 5 minutes at any location within California, beginning in 2008. Affected vehicles include diesel-fueled commercial vehicles with a gross vehicle weight rating greater than 10,000 pounds. The regulation contains exceptions for equipment that requires the engine to remain on to operate, such as ready-mix concrete trucks. Trucks used for hauling or vendor delivery of materials for VMP activities would be required to comply with these requirements.

Regional Laws, Regulations, and Policies

BAAQMD is responsible for implementing air quality regulations on a regional level, including developing plans and control measures for stationary sources of air pollution to meet the NAAQS and CAAQS. BAAQMD also implements permit programs for the construction, modification, and operation of air pollution sources and enforces air pollution statutes and regulations governing stationary sources. With CARB oversight, BAAQMD also administers local regulations.

Regulations and Rules

The BAAQMD supports incentive programs to reduce criteria pollutant emissions within its jurisdiction, as well as establishing rules and permitting requirements. The VMP may be subject to some or all of the following BAAQMD rules (BAAQMD 2020b):

Regulation 2: Permits outlines the air permitting program, including exemptions and sources that require permitting.

Regulation 2, Rule 1: Permits General Requirements outlines permitting requirements and exemptions. This rule prohibits any source from causing a public nuisance, defines what equipment is subject to permitting/new source review requirements, and exempts portable stationary equipment (e.g., generators or soil screeners) from permitting if they comply with all applicable requirements of CARB's Portable Equipment Registration Program.

Regulation 6, Rule 1: Particulate Matter restricts emissions of PM.

Regulation 11, Rule 14: Asbestos-Containing Serpentine was adopted in 1991 to control asbestos emissions from unpaved road surfaces and other surfacing operations. This regulation has been superseded by CARB's ATCM for Surfacing Applications and for Construction, Grading, Quarrying, and Surface Mining Operations; however, applicable VMP activities would be required to obtain BAAQMD approval of asbestos dust mitigation plans and notify BAAQMD of maintenance operations (BAAQMD 2020a, 2020b).

BAAQMD Planning

BAAQMD has adopted several air quality improvement plans, as required by state and federal regulations, to ensure progress in attaining and maintaining the NAAQS and CAAQS. These plans are described below.

Bay Area 2010 Clean Air Plan

BAAQMD adopted the *Bay Area 2010 Clean Air Plan* (2010 CAP) (BAAQMD 2010) to improve Bay Area air quality and meet public health goals. More specifically, the control strategy described in the 2010 CAP is designed to reduce emissions and decrease ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reduce greenhouse gas (GHG) emissions to protect the climate.

The 2010 plan addresses four categories of pollutants: (1) ground-level ozone and its key precursors, ROG and NO_X; (2) particulate matter, primarily PM2.5, as well as precursors to secondary PM2.5[5]; (3) airborne toxic contaminants; and (4) GHGs. The control strategy in the 2010 CAP describes measures that address or control stationary source s, transportation, mobile source s, land use and local impact s, energy and climate s, and further study measures to reduce air pollutants (BAAQMD 2010).

2017 Clean Air Plan

The 2017 CAP updates the 2010 CAP and provides a regional strategy to protect public health and protect the climate (BAAQMD 2017b). The 2017 CAP includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as PM, O_3, and TACs; reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near term; and decrease emissions of carbon dioxide (CO_2) by reducing fossil fuel combustion.

Particulate Matter Plan

To fulfill federal air quality planning requirements, BAAQMD adopted a PM2.5 emissions inventory for 2010 at a public hearing in November 2012. This was transmitted to CARB for inclusion in the California State Implementation Plan (SIP). BAAQMD also produced an informational report entitled *Understanding Particulate Matter: Protecting Public Health in the San Francisco Bay Area* to help guide ongoing efforts to analyze and reduce PM in the Bay Area (BAAQMD 2012). The 2010 and 2017 CAPs contain multi-pollutant approaches that include several measures for reducing PM emissions in the Bay Area.

In January 2013, USEPA issued a final rule determining that the San Francisco Bay Area has attained the 24-hour PM2.5 NAAQS; this action suspended federal SIP planning requirements for the Bay Area (BAAQMD 2020c).

[5] PM includes all particles that are suspended in the air. PM is both directly emitted (referred to as direct PM or primary PM) and also formed in the atmosphere through reactions among different pollutants (referred to as indirect or secondary PM).

BAAQMD CEQA Significance Thresholds

The CEQA Guidelines recommend that criteria established by the local air district should be relied upon to make determinations of significance regarding air quality impacts. BAAQMD has developed CEQA guidelines to assist local jurisdictions in evaluating potentially adverse impacts on air quality. Based on the most recent CEQA Guidelines (BAAQMD 2017a), were used to identify the thresholds provided below.

Local Laws, Regulations, and Policies

City of Oakland General Plan

The City of Oakland General Plan's Open Space Conservation and Recreation Element contains the following objectives, policies, and actions that may be relevant to the VMP (City of Oakland 1996):

Objective CO-12: Air Resources. To improve air quality in Oakland and the surrounding Bay Region.

> **Action CO-12.2.2: Use of Non-Gasoline Powered Vehicles.** As funding permits, convert City fleet vehicles to non-gasoline powered vehicles.
>
> **Policy CO-12.6: Control of Dust Emissions.** Require construction, demolition and grading practices which minimize dust emissions. These practices are currently required by the City and include the following:
>
> - Avoiding earth moving and other major dust generating activities on windy days.
> - Sprinkling unpaved construction areas with water during excavation, using reclaimed water where feasible.
> - Covering trucks hauling dirt and debris to reduce spills. If spills do occur, they should be swept up promptly before materials become airborne.
> - Preparing a comprehensive dust control program for major construction in populated areas or adjacent to sensitive uses like hospitals and schools.
> - Operating construction and earth-moving equipment, including trucks, to minimize exhaust emissions.

Oakland 2030 Equitable Climate Action Plan

The City's 2030 Equitable Climate Action Plan (ECAP) contains the following policy that may be relevant to the VMP (City of Oakland 2020):

> **Policy CL-2: Phase Out Fossil Fuel Dependency in All City Agreements and Contracts.** Explore ways to eliminate fossil fuel reliance in all agreements and contracts entered into by the City of Oakland, including utility and contractor franchise agreements, facility and infrastructure design and construction contracts, and other agreements in which fossil fuels will be directly or indirectly utilized to conduct the City's business.

3.3.3 Impact Analysis

This discussion describes the methodology for estimating air pollutant emissions and the significance criteria used to evaluate air quality impacts from implementing the VMP's proposed vegetation management activities. Where feasible, mitigation measures are identified to reduce the level of potentially significant impacts.

Methodology

This section describes the methods used to evaluate whether the vegetation management activities of the VMP would result in significant impacts related to air quality, odors, and TACs. Emissions associated with proposed management activities were quantified; the sources of these emissions include off-road equipment such as chainsaws, tractors, mowers, chippers, masticators, and excavators; material-hauling vehicles; vendor trips, and worker commutes. Emissions of criteria pollutants were estimated based on the equipment, phasing, duration, material import and export volumes, vegetation management area sizes, and worker quantities. See Section 2.3.9, "Construction Personnel" for more information on worker quantities. The assumptions used to develop these estimates are summarized in Appendix C of this DEIR.

Emissions from livestock and off-road equipment were estimated based on values used in a project with similar equipment and vegetation management activities, specifically the emission rates used in the California Vegetation Treatment Program (CalVTP) EIR (California Board of Forestry and Fire Protection 2019). Emissions from worker, vendor, and hauling trips were estimated using California Emissions Estimate Model (CalEEMod) Version 2016.3.2. Herbicide emissions were estimated using the California Department of Pesticide Regulation's volatile organic compound (VOC) emissions calculator for the following assumed formulations of herbicides: Rodeo, Triclopyr 3A, and Imazapyr 2SL. To provide a conservative approach to the impact analysis, maximum application of each herbicide was assumed for the full annual herbicide-treated area under the VMP (described in Tables 2-3 and 2-5). Appendix C of this DEIR provides relevant emission rate data from the CalVTP EIR, calculations for the VMP treatment area, CalEEMod modeling results, and herbicide use assumptions.

TAC risks and odor-related impacts were evaluated qualitatively, given the scope and nature of the VMP and the varying project locations. Potential sources of odors and TACs were considered in the evaluation.

BAAQMD uses average daily and maximum annual emissions values for construction- and operational-related thresholds. Average daily emissions were calculated by dividing the maximum annual emissions by the number of days on which vegetation management work is anticipated to take place in a given year. The VMP's average daily emissions were compared against BAAQMD's mass emission thresholds (described below), and the City of Oakland's thresholds, which are based on the BAAQMD's mass emission thresholds (also described below) to determine whether the proposed activities would result in a significant impact.

Criteria for Determining Significance

The criteria for determining significance used for this EIR were based on Appendix G of the CEQA Guidelines, the City of Oakland's *CEQA Thresholds of Significance Guidelines* (2013), and local

BAAQMD significance criteria. The Appendix G thresholds are presented first, followed by the City's, and then the BAAQMD's thresholds. The Appendix G thresholds were applied in the "Environmental Impacts" discussion below with consideration of the City's and the BAAQMD's thresholds, which are largely numeric. As such, the discussions and tables in this section indicate which City and BAAQMD thresholds are relevant to specific Appendix G thresholds and their cumulative consideration in the impact discussions below.

According to Appendix G of the CEQA Guidelines, the VMP would result in a significant impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations as defined by BAAQMD; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The City's CEQA thresholds of significance are based on BAAQMD thresholds, including numeric BAAQMD criteria pollutant thresholds for daily and annual emissions, as detailed in the BAAQMD thresholds. **Table 3.3-5** provides the City's thresholds of significance (as provided in its *CEQA Thresholds of Significance Guidelines*) and the applicable Appendix G thresholds. These numeric City thresholds were considered in the impact discussions matching the relevant Appendix G threshold.

Table 3.3-5. City of Oakland Air Quality Thresholds of Significance and Relevant CEQA Guidelines Appendix G Thresholds

City of Oakland Threshold	Applicable Appendix G Threshold
During project construction, result in average daily emissions of 54 pounds per day of ROG, NOx, or PM2.5, or 82 pounds per day of PM10.	2
During project operation, result in average daily emissions of 54 pounds per day of ROG, NOx, or PM2.5 or 82 pounds per day of PM10; or result in maximum annual emissions of 10 tons per year of ROG, NOx, or PM2.5 or 15 tons per year of PM10.	2
Contribute to carbon monoxide (CO) concentrations exceeding the CAAQS of nine ppm averaged over eight hours and 20 ppm for one hour.*	2
For new sources of TACs, during either project construction or project operation expose sensitive receptors to substantial levels of TACs under project conditions resulting in (a) an increase in cancer risk level greater than 10 in one million, (b) a non-cancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM2.5 of greater than 0.3 micrograms per cubic meter; or, under cumulative conditions, resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM2.5 of greater than 0.8 micrograms per cubic meter.	3
Expose new sensitive receptors to substantial ambient levels of TACs resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM2.5 of greater than 0.8 micrograms per cubic meter.**	NA
Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people.	4

* The City of Oakland's CEQA Thresholds of Significance Guidance notes that the CO threshold is applicable as follows: "Pursuant to BAAQMD CEQA Guidelines, localized CO concentrations should be estimated for projects in which (a) project-generated traffic would conflict with an applicable congestion management program established by the county congestion management agency or (b) project-generated traffic would increase traffic volumes at affected intersections to more than 44,000 vehicles per hour (or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited, such as tunnels, parking garages, bridge underpasses, natural or urban street canyons, and below-grade roadways). In Oakland, only the MacArthur Maze portion of Interstate 580 exceeds the 44,000 vehicles per hour screening criteria.)

** This threshold is not applicable to the project since the project does not propose to add any new sensitive receptors.

Source: City of Oakland 2013.

BAAQMD has established mass emission thresholds of significance to determine if air pollutant emissions would result in a cumulatively considerable net increase of criteria pollutant for which the air basin is already designated in nonattainment for AAQS (BAAQMD 2017a). These mass emissions thresholds are shown in **Table 3.3-6**.

Table 3.3-6. BAAQMD Air Quality Thresholds of Significance

Pollutant	Average Daily Emissions (pounds per day)	Annual Emissions (tons per year)
ROG	54	10
NO_X	54	10
PM10 (Exhaust)	82	15
PM2.5 (Exhaust)	54	10
PM10/PM2.5 (Fugitive Dust)	Implementation of BMPs	None
Local CO	None	None

Source: BAAQMD 2017a.

BAAQMD recommends implementing BMPs for all projects to reduce fugitive dust emissions. With implementation of fugitive dust BMPs, BAAQMD considers the impact of fugitive dust emissions to be less than significant.

Similarly, BAAQMD requires that several prescriptive fugitive dust measures be included in the Asbestos Dust Mitigation Plan, which is required under the state Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations for projects in ultramafic rock areas that may emit or re-suspend dust that may contain NOA. With implementation of the required fugitive dust measures in the Asbestos Dust Mitigation Plan, the BAAQMD considers the impact of NOA emissions to be less than significant.

BAAQMD has also established screening criteria that specify an acceptable distance between sensitive receptors and common sources of odors, such as landfills and wastewater treatment plants. BAAQMD specifies that an odor source with five or more confirmed complaints per year averaged over 3 years would be considered to have a significant impact on receptors within the screening distance. BAAQMD acknowledges that a lead agency has discretion under CEQA to use other established odor detection thresholds or other significance thresholds for CEQA review.

Environmental Impacts

Impact AQ-1: Conflict with or Obstruct Implementation of Applicable Air Quality Plans (*Less than Significant*)

The VMP would have a significant impact if it would conflict with or impair implementation of applicable air quality plans that address the SFBAAB's existing nonattainment status of ozone, PM2.5, and PM10 for state and/or federal air quality standards. Applicable air quality plans include the 2010 and 2017 CAPs.

The 2010 CAP (BAAQMD 2010) contains a control strategy that includes measures for stationary sources, mobile sources, transportation controls, land use and local impacts, energy and climate, and additional measures to control ozone and its precursors (ROG and NO_X), PM10, PM2.5, and TACs. The 2017 CAP (BAAQMD 2017b) similarly provides ozone control strategies

related to numerous potential ozone precursor sources, including stationary sources, transportation, natural and working lands, waste management, energy, and buildings. In particular, Policy TR-19 of the 2017 CAP provides incentives for lower emission trucks, and Policy TR-22 of the CAP provides incentives for the use of lower-emitting construction equipment. Compliance with these policies would reduce transportation- and construction-related ozone precursor emissions (BAAQMD 2017b).

As shown in Table 2-6 in Chapter 2, *Project* Description, and discussed in more detail in Impact AQ-2 and Appendix C of this DEIR, hand labor techniques would involve the use of chainsaws, while mechanical techniques would be conducted with heavy-duty off-road equipment such as mowers, tractors, chippers, and excavators. Hand labor and prescribed herbivory activities (grazing) are currently conducted as part of baseline activities in the VMP area, while mechanical treatment and herbicide use would be new activities under the VMP (see **Table 3.3-7**). Policy CL-2 of the ECAP encourages the City to reduce reliance on fossil fuel dependency in City agreements and contracts; compliance with this policy could limit contractors' use of these types of equipment while conducting vegetation management activities. Although the City recently adopted a ban on certain fossil fuel–powered tools (such as leaf blowers), if these equipment types are used to conduct VMP treatment activities they would likely rely on portable generators to provide recharging capabilities on site; therefore, the ban would not affect emissions from VMP treatment activities.

Table 3.3-7. VMP and Baseline Treatment Activities

Cal VTP Treatment Activity Category	Acres Treated Per Year	
	Baseline	VMP
Mechanical – Tree removal	0	5
Mechanical – Shrub removal	0	5
Mechanical – Grass removal	0	5
Hand labor – Tree removal	0	20
Hand labor – Shrub removal	110	145
Hand labor – Grass removal	290	375
Herbicide – Tree removal	0	20
Herbicide – Shrub removal	0	15
Prescribed Herbivory – Tree and Shrub removal	900	1,100

The VMP would involve temporary maintenance-related emissions, would not result in induced growth, and would not result in a permanent new source of emissions. As described below in Impact AQ-2, annual emissions from the VMP would be slightly higher than baseline emissions. Over time, VMP emissions from vehicles would decline through compliance with stricter statewide vehicle emission regulations. As shown in Table 3.3-7, for all criteria pollutant emissions, the existing baseline and VMP-related emissions would be less than the BAAQMD's thresholds and in compliance with the 2017 CAP goals of meeting attainment for these criteria pollutants.

Conclusion

The VMP would not result in a permanent new source of emissions and would not induce population growth. Therefore, it would not conflict with applicable air quality plans, and this impact would be **less than significant** and no mitigation is required.

Impact AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation or Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region Is in Nonattainment (*Less than Significant with Mitigation*)

The VMP would result in emission of criteria pollutants for vegetation management activities through the combustion of fossil fuels by equipment, worker and vendor vehicles, and material-hauling trucks.

The nonattainment status of ozone, PM10, and PM2.5 in the SFBAAB is considered an existing significant cumulative impact. All other criteria pollutants are in attainment. The BAAQMD has established significance thresholds that apply to determining if there would be a violation of any air quality standard or contribute substantially to an existing or projected air quality violation. These thresholds also apply to cumulative air impacts and a project's potential to considerably contribute to a cumulative impact. These significance thresholds were developed considering the region's air pollutant sources and anticipated population growth and related emissions in the air basin. A project that does not exceed these significance thresholds would not violate or considerably contribute to a cumulative air quality impact. BAAQMD recommends implementation of BMPs to reduce fugitive dust emissions for all projects. With implementation of the BAAQMD BMPs and fugitive dust control measures listed in **Mitigation Measure AQ-1 (Fugitive Dust BMPs)**, BAAQMD considers fugitive dust emissions to be less than significant. Although not required to reduce the significance of fugitive dust emissions or other air quality pollutants, **Mitigation Measure GEO-1 (Minimize Area of Disturbance), Mitigation Measure HAZ-1 (Vehicle and Equipment Maintenance), and Mitigation Measure HAZ-5 (Standard Herbicide Use Requirements)** would further minimize potential air quality pollutant emissions by minimizing the area of disturbance, ensuring proper vehicle and equipment maintenance, and ensuring appropriate use of herbicides.

As demonstrated in the emissions calculations presented in **Table 3.3-8** and Appendix C of this DEIR, VMP treatment activities would generate criteria pollutants below the threshold levels established by BAAQMD and those of the City. Further, the VMP's limited activities and short duration at any given treatment area would not be anticipated to generate the traffic conditions requiring a quantitative analysis for local CO concentrations (i.e., would not conflict with an applicable congestion management program established by the county congestion management agency or cause traffic volume increases at affected intersections to more than 44,000 vehicles per hour). As discussed in more detail in Section 3.12, "Transportation," in Impact TRA-2, the addition of 3-8 workers under the VMP would result in 18-48 additional daily vehicle trips beyond the City's current activities for the duration of each project, well below the City's threshold of 100 trips per day and OPR's threshold of 110 trips per day. The VMP would not exceed the City's thresholds of significance for carbon monoxide and the other criteria pollutants. Additionally, the purpose of the VMP is to decrease the frequency and scale of

wildfires in the VMP area that would result in uncontrolled emissions of criteria pollutants, including NO_X and PM.

Table 3.3-8. VMP Criteria Pollutant Emissions

VMP Activity		Emissions – Annual (Tons / Year)			
		ROG	NO_X	PM10	PM2.5
Baseline					
Grazing	Grazing	0.00	0.00	0.00	0.00
	Worker Trips	2.61E-03	0.019	0.01	1.64E-03
Roadside Treatments	Roadside Treatments (Assume all Hand Labor)	1.00	0.15	0.02	0.02
	Worker Trips	3.59E-03	0.03	0.01	2.26E-03
	Baseline Total	1.01	0.20	0.04	0.02
VMP					
Grazing	Grazing	0.00	0.00	0.00	0.00
	Grazing – Trips	0.00278	0.0183	0.00679	0.00188
Hand Labor	Hand Labor	1.78	0.24	0.03	0.02
	Hand Labor – Trips	5.29E-03	3.81E-02	1.30E-02	3.58E-03
Mechanical	Mechanical	1.04E-02	2.53E-02	1.95E-03	1.60E-03
	Mechanical – Trips	1.20E-04	1.61E-03	2.80E-04	1.00E-04
Herbicide	Herbicide	0.14	0.00	0.00	0.00
	Herbicide – Trips	6.00E-05	4.00E-05	1.40E-04	4.00E-05
Summary					
Annual	**Emissions – Annual (tons/year)**				
	VMP Total	1.93	0.33	0.05	0.03
	VMP Total – Baseline	0.93	0.13	0.02	0.01
	BAAQMD Threshold	10	10	15	10
Average Daily	**Emissions – Average Daily (lb/day)**				
	VMP Total	15.98	2.71	0.43	0.24
	VMP Total – Baseline	4.26	0.40	0.02	0.01
	BAAQMD Threshold	54	54	82	54
Above Threshold?		No	No	No	No

Mitigation Measures

Mitigation Measure AQ-1: Fugitive Dust BMPs

The City and its contractors will implement the following measures:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California ATCM identified in 13 CCR Section 2485). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and name of the City staff person to contact regarding dust complaints. Following the review of any dust complaints, the City contact person shall respond and take corrective action within 48 hours. Assessments and responses to dust complaints will be conducted in compliance with the BAAQMD's applicable particulate matter rules and regulations, including but not limited to Regulation 6.

Mitigation Measure GEO-1: Minimize Area of Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

Emissions from VMP treatment activities would be below BAAQMD and City thresholds. Implementing Mitigation Measure AQ-1 would ensure the impact from fugitive dust emissions would be less than significant. Implementing Mitigation Measures GEO-1, HAZ-1, and HAZ-5 would further decrease emissions of criteria pollutants. Additionally, the purpose of the VMP is

to decrease the frequency and scale of wildfires in the VMP area that would result in uncontrolled emissions of criteria pollutants, including NO_X and PM. Therefore, this impact would not be cumulatively considerable and would be **less than significant with mitigation**.

Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations (*Less than Significant with Mitigation*)

Mechanical and Hand Labor Treatments

Mechanical treatments would involve the use of off-road equipment such as mowers, chippers, tractors, masticators, and excavators. These types of equipment are often diesel powered and emit DPM. Hand labor treatments would involve the use of chainsaws, which, when powered with gasoline mixed with engine oil, emit VOCs and PM. TAC exposure for short durations is generally not quantified as cancer potency factors are based on lifetime exposure (estimated at 70 years) and there is considerable uncertainty in trying to evaluate the cancer risk from activities that would last only a small fraction of a lifetime (OEHHA 2015). In addition, concentrations of mobile-source DPM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (CARB 2005). At any given treatment area, VMP activities would be of short duration (1 to 5 days). VMP activities would not involve the construction of any homes or creation of new sensitive receptors, and would not expose sensitive receptors to substantial levels of TACs resulting in increased health risks.

Ultramafic rock, which can contain NOA, may be present on VMP parcels near SR 13, Joaquin Miller Road, Skyline Boulevard, and parcels near Lake Chabot. While mechanical treatment activities have the potential to disturb soil, treatment activities would be limited to 15 acres per year, with the area of disturbed ground being less than that. As described above, the BAAQMD requires implementation of fugitive dust control-related mitigation measures during construction/maintenance activities to minimize potential emissions or resuspensions of NOA, and enforces compliance with the NOA-related ATCM by requiring that the BAAQMD is notified of maintenance operations and approves asbestos dust mitigation plans prior to the commencement of maintenance activities. In addition to Mitigation Measures AQ-1 and GEO-1, implementation of **Mitigation Measure AQ-2 (Comply with Asbestos ATCM by Obtaining an Approved Asbestos Dust Mitigation Plan or Exemption)** would ensure that the City prepares and implements a BAAQMD-approved asbestos dust mitigation plan, and corresponding dust control BMPs, for treatment activities within potential NOA areas.

VMP treatment activities near individual sensitive receptors would be temporary and infrequent. For these reasons and those described above, the impact from these treatment types would be less than significant with mitigation. Additionally, though difficult to quantify or evaluate, VMP activities would decrease the risk of unpredictable, uncontrolled exposure to pollutant emissions due to large wildfires in the VMP area.

Grazing

Prescribed herbivory would involve transporting goats between VMP treatment areas. Emissions from vehicles used for transportation would be the main source of air quality-related pollutant emissions from this activity. Direct emissions from livestock are discussed in Section 3.7, “Greenhouse Gas Emissions, Climate Change, and Energy.” The use of vehicles to transport

goats near individual sensitive receptors would be short in duration and infrequent. Therefore, the impact from this treatment type would be less than significant.

Herbicides

This activity would involve the spraying of herbicides on surface fuels (such as French broom, Scotch broom, pampas grass, and jubata grass) and cut-and-daub application of herbicides on stumps of removed trees. Herbicides can be used in numerous formulations that vary in terms of emissions of VOCs and other compounds that could be harmful to sensitive receptors. As detailed in Chapter 2, *Project* Description, and Table 2-4, the application of herbicides in any individual treatment area would be temporary and infrequent, and the volumes used would be limited due to the treatment techniques used. Herbicide use would be conducted in compliance with BAAQMD's applicable permits and regulations, and other applicable laws and regulations related to herbicides (as detailed in Section 3.8, "Hazards and Hazardous Materials"). Furthermore, **Mitigation Measures HAZ-4 (Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides)** and HAZ-5, include standard herbicide use requirements and measures to avoid or minimize adverse effects on people from use of herbicides. Therefore, this activity would not pose long-term or substantial health risks to nearby residents and workers near VMP treatment sites. Therefore, the impact from this treatment type would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure AQ-2 would limit the potential for sensitive receptors to be exposed to NOA by requiring the preparation and implementation of an asbestos dust mitigation plan. The implementation of Mitigation Measures AQ-1, GEO-1, HAZ-1, and HAZ-5 would further limit the potential for sensitive receptors to be exposed to pollutants.

Mitigation Measure AQ-2: Comply with Asbestos ATCM by Obtaining an Approved Asbestos Dust Mitigation Plan or Exemption

VMP-related ground-disturbing activities greater than 1 acre within potential NOA-containing areas (specifically areas near SR 13, Joaquin Miller Road, Skyline Boulevard, and parcels near Lake Chabot) will be required to comply with CARB's ATCM for NOA. The City and its contractors will prepare and implement an asbestos dust mitigation plan in compliance with the State Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations with the BAAQMD's implementation requiring submission of an Asbestos Dust Mitigation Plan Application, which includes a checklist of BMPs that must be implemented. The plan will specify actions to be taken during VMP treatment activities to minimize NOA emissions. The plan will also address specific emission sources as identified by the BAAQMD to be: track-out onto the paved public road; active storage piles; inactive disturbed surface areas and storage piles; traffic on unpaved on-site roads; earthmoving activities; off-site transport of materials; and post-project stabilization of disturbed soil surfaces. Specific measures to be implemented will include but not be limited to removing visible track out, keeping active storage piles covered or wet, controlling inactive areas or storage piles, maintain trucks and wet loads to prevent spillage, and limit vehicle speeds. The City and its contractors will submit the plan to BAAQMD for approval prior to implementation, and will not proceed with VMP implementation until BAAQMD has approved the plan and proposed BMPs or an exemption is received

Mitigation Measure AQ-1: Fugitive Dust BMPs

See text for Impact AQ-2 above.

Mitigation Measure GEO-1: Minimize Area of Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

VMP activities would be performed in compliance with BAAQMD's applicable permits and regulations. Activities near individual receptors would be temporary and infrequent. Additionally, VMP activities would decrease the risk of unpredictable, uncontrolled exposure to pollutant emissions from wildfires. Any potential NOA-related impacts from VMP ground-disturbing activities in potential ultramafic rock areas would be fully mitigated by compliance with CARB's ATCM for NOA and implementation of Mitigation Measure AQ-2. Therefore, the VMP's impact on sensitive receptors from fugitive dust and other TACs would be **less than significant with mitigation**.

Impact AQ-4: Result in Other Emissions Such as Odors Adversely Affecting a Substantial Number of People (*Less than Significant*)

Activities associated with the VMP would not generate permanent or long-term objectionable odors but could generate short-term, temporary odors related to grazing livestock; cut, chipped, or stockpiled vegetation; and the operation of gasoline- or diesel-powered equipment.

VMP treatment activities would not include any land uses or operation types identified by BAAQMD as most likely to cause odors (e.g., landfills, wastewater treatment plants) (BAAQMD 2017a). Odors associated with grazing and gasoline- or diesel-powered equipment would not be significant because they would occur for brief periods at any given location. In addition, VMP activities would reduce the likelihood of future uncontrolled wildfires that would expose sensitive receptors to objectionable odors.

Conclusion

VMP activities could generate temporary odors related to grazing livestock; cut, chipped, or stockpiled vegetation; and the operation of fossil fuel-powered equipment. With respect to individual receptors, these activities would be short in duration and infrequent. In addition, VMP activities would reduce the likelihood of future uncontrolled wildfires that would expose

sensitive receptors to objectionable odors. Therefore, the potential for the VMP to create objectionable odors that would affect a substantial number of people would be **less than significant** and no mitigation is required.

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3.4 BIOLOGICAL RESOURCES

This section presents the environmental setting, regulatory setting, and potential impacts of the VMP related to biological resources. The impact analysis describes the methodology used to evaluate significance and then presents the impact evaluation. Detailed information about special-status species database searches and surveys is provided in **Appendix D**, *Biological Resources Information*, of this DEIR. *Note that all figures cited in this section appear at the end of the section.*

3.4.1 Environmental Setting

To identify existing biological conditions in the VMP area, the following information sources, among others, were reviewed:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) Report (USFWS 2020a, provided in Appendix D of this DEIR)
- California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2020) and California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California (CNPS 2020) queries for the following U.S. Geological Survey (USGS) 7.5-minute quadrangles: Briones Valley, Hayward, Hunters Point, Las Trampas Ridge, Oakland East, Oakland West, Richmond, San Leandro, and Walnut Creek (provided in Appendix D of this DEIR)
- California Native Plant Society, East Bay Chapter (CNPSEB) Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database (CNPSEB 2020)
- eBird.org records for the VMP area (eBird 2020)

Methods

Field Surveys

Field surveys to map land cover and vegetation and to identify potentially suitable habitat for special-status species within the VMP area were conducted over several weeks by Horizon biologists in 2017, with supplemental site visits conducted in spring 2019 and spring 2020. Biologists visited those portions of the VMP area known from background research (including Laurel Marcus and Associates et al. 2010, USFWS 2010a, USFWS 2015, Bartosh et al. 2010, and Jurjavcic et al. 2015) to have potentially sensitive biological resources on foot. Some portions of the VMP area were observed with binoculars due to limited access. Some parcels that were completely developed were mapped using aerial imagery. Portions of some parcels were mapped using vegetation signatures from aerial imagery. Wildlife species observed or recognized by signs such as scat, tracks, burrows, nests, bird songs, or calls during the survey were identified and data collected. An inventory of plant and wildlife species observed during the 2017 field surveys is provided in Appendix D of this DEIR.

Habitat Classification and Mapping

Habitats were mapped using the California Wildlife Habitat Relationships (CWHR) System (Mayer and Laudenslayer 1988). This classification system was chosen because it is appropriate for California landscapes such as the Oakland Hills, relevant to wildlife, accessible to the public, can be input into the predictive fire models that were used to develop the VMP, and is flexible enough to be used for habitat types over a large survey area. Habitat classification types were entered into ArcGIS 10.3 software to create a "vegetation and land cover" data layer covering the entire VMP area, based on field survey data and interpretation of aerial imagery (**Figure 3.4-1**; all figures appear at the end of this section). A crosswalk to other vegetation classification systems (e.g., Sawyer et al. 2009, CalVeg) is provided in Appendix D of this DEIR.

Riverine habitat was mapped using data from the Creek and Watershed Map of Western Alameda County (Sowers et al. 2010), while pond and lake data was mapped from the National Hydrography Dataset (USGS 2016) (**Figure 3.4-2**).

To provide additional information on habitats considered sensitive natural communities, these habitats were mapped using the classification system in *A Manual of California Vegetation* (Sawyer et al. 2009) and are shown in **Figure 3.4-3**.

Taxonomy and Nomenclature

Plant names follow the nomenclature in the Jepson eFlora (Jepson Flora Project 2020). Plants that are designated as invasive are those listed as moderate or high by the California Invasive Plant Council (Cal-IPC) (Cal-IPC 2020).

Habitats in the VMP Area

Topography and land use within the VMP area exhibit substantial variation. Most of the VMP area is situated in the hills of eastern Oakland, California. A smaller portion of the VMP area is located on parcels within urban/residential areas in the vicinity of SR 13 and I-580. Land uses include residential, transportation corridors, open space and park lands, and vacant lots. Elevations in the VMP area range from 100 feet above mean sea level (msl) at an urban parcel on Golf Links Road to approximately 1,540 feet above msl at the top of the ridgeline, near Chabot Science Center.

Prior to urbanization, vegetation in the VMP area was primarily grasslands and shrublands, (Nowak 1993). Only about 2.3 percent of land in the Oakland area was covered by forests, including coast redwood (*Sequoia sempervirens*) forests, coast live oak (*Quercus agrifolia*) stands, and riparian woodlands (Nowak 1993). Major logging of redwood forests occurred in the mid-1800s (Simon 2014). Between 1880 and 1920, large-scale tree planting was undertaken in the Oakland Hills, initially by Joaquin Miller and later by Frank Havens (Nowak 1993). Tree species planted included pines (*Pinus* spp.), acacia (*Acacia* spp.), and eucalyptus (*Eucalyptus* spp.) (Nowak 1993). Havens planted an estimated 3 million blue gum eucalyptus (*Eucalyptus globulus*) and Monterey pine (*Pinus radiata*) seedlings (Simon 2014).

Fire and vegetated fire hazard management have also shaped vegetation in the Oakland Hills. In the last 100 years, 14 significant fires have occurred in the Oakland Hills (City of Oakland 2017). This includes the 1991 Tunnel Fire, which burned 1,700 acres (City of Oakland 2017). Many of

the fires burned large areas, restarting succession of vegetation in these areas. Additionally, the City has conducted vegetated fire hazard management activities within the VMP area since 2003. Activities such as goat grazing, brush and French broom removal, mowing, hand removal of weeds, tree trimming, removal of sapling eucalyptus and Monterey pine trees, removal of dead or dying vegetation, and other vegetation management practices have shaped vegetation in the Oakland Hills by removing biomass and, in some cases, shifting successional processes.

The following discussion provides descriptions of habitats present within the VMP area. Terrestrial habitats are generally described in terms of vegetation present. Figure 3.4-1 shows the mapped habitats within the VMP area, and **Table 3.4-1** summarizes habitat area and percentage of the total VMP area. Each community type is described based on the habitat descriptions in the CWHR System and specific conditions encountered within the survey area. Wildlife species typically associated with these biological communities are also described below. Much of the information regarding typical wildlife associated with each habitat type is from the East Bay Regional Park District (EBRPD) Draft Wildfire Hazard Reduction and Resource Management Plan EIR (LSA 2009b).

Table 3.4-1. Habitats and Spatial Coverage within the VMP Area

Vegetative Habitat Type	Acres	Percentage
Coast Oak Woodland	630.6	28.1%
Redwood	141.4	6.3%
Valley/Foothill Riparian	1.4	0.1%
Eucalyptus	177.9	7.9%
Closed-cone Pine-Cypress	180.7	8.1%
Coastal Scrub	176.9	7.9%
Mixed Chaparral (Maritime Chaparral)	8.1	0.4%
Annual Grassland	258.1	11.5%
Perennial Grassland (Native Perennial Grassland)	13.4	0.6%
Freshwater Emergent Wetland	0.4	<0.1%
Urban	654.6	29.2%
Total	***2,253***	***100.0%***

Note: Riverine habitat was not directly mapped and is thus not included in the acreage total.

Terrestrial Habitats

Tree-Dominated

Coast Oak Woodland

This habitat is dominated by coast live oak; the canopy may range from open to relatively closed. This habitat is generally found along drainages within the Plan Area, but is also found along hillslopes and upland flats. In areas along drainages, California bay laurel (*Umbellularia californica*) is common, and may be co-dominant with coast live oak. California buckeye

(*Aesculus californica*) is occasionally found in this habitat type. The understory is variable in composition and includes species such as native California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), oso berry (*Oemleria cerasiformis*), ocean spray (*Holodiscus discolor*), woodfern (*Dryopteris arguta*) and swordfern (*Polystichum munitum*), as well as non-native Himalayan blackberry (*R. armeniacus*). Forests dominated by coast live oak are considered to be one of the most fire resistant tree-dominated habitats (Sugihara et al. 2006). The thick bark and small leaves of coast live oak contribute to the fire resistance of this habitat (Sugihara et al. 2006).

On hill slopes and other non-riparian areas, coast live oaks are generally the main canopy species, and may be more widely spaced. In these locations, various grasses are often dominant in the understory, including wild oats (*Avena* spp.) and ripgut brome (*Bromus diandrus*). Purple needlegrass (*Stipa pulchra [=Nasella pulchra]*) is occasionally found in the understory in coast oak woodlands with a more open canopy.

Coast oak woodland support a diverse assemblage of wildlife. Amphibians associated with this habitat include ensatina (*Ensatina eschscholtzii*), arboreal salamander (*Aneides lugubris*), and California slender salamander (*Batrachoseps attenuatus*) (LSA 2009a). Typical bird species include Nuttall's Woodpecker (*Picoides nuttallii*), Acorn Woodpecker (*Melanerpes formicivorus*), Western Scrub-Jay (*Aphelocoma californica*), Steller's Jay (*Cyanocitta stelleri*), Hutton's Vireo (*Vireo huttoni*), Oak Titmouse (*Baeolophus inornatus*), Violet-green Swallow (*Tachycineta thalassina*), Orange-Crowned Warbler (*Vermivora celata*), Bushtits (*Psaltriparus minimus*), and Dark-Eyed Junco (*Junco hyemalis*). Raptors, including Red-Shouldered Hawk (*Buteo lineatus*) and Cooper's Hawk (*Accipiter cooperii*) may also occur. Amphibians such as California newt (*Taricha torosa*) may be found in this habitat, particularly near streams. Small mammals common to oak woodlands include California mouse (*Peromyscus californicus*), dusky-footed woodrat (*Neotoma fuscipes*), as well as non-native eastern fox squirrel (*Sciurus niger*) (LSA 2009a). Larger mammals typically found in this habitat include bobcat (*Lynx rufus*), coyote (*Canis latrans*), and California mule deer (*Odocoileus hemionus californicus*).

Redwood Forest

Redwood forests are found in a few portions of the VMP area, largely along canyons and drainages within Joaquin Miller Park and Leona Heights Park. Coast redwood (*Sequoia sempervirens*) is the dominant tree in this habitat. Subdominant trees include coast live oak and bay laurel. The understory is dominated by ferns such as western swordfern (*Polystichum munitum*). Other common understory species include wild ginger (*Asarum caudatum*) and huckleberry (*Vaccinium ovatum*).

Redwood forests provide food, cover, and other habitat elements for a wide variety of wildlife species. Many species associated with coast oak woodland habitat may also be found in the redwood forest. Bird species typical of this habitat include Steller's Jay, Brown Creeper (*Certhia americana*), Hairy Woodpecker (*Picoides villosus*), Pacific Wren (*Troglodytes pacificus*), and Pacific-Slope Flycatcher (*Empidonax difficilis*).

Valley/Foothill Riparian

Valley foothill habitat is associated with the moderately sized and large drainages within the VMP area. Dominant species include willows (*Salix* spp.), mainly arroyo willow (*S. lasiolepis*), and

white alder (*Alnus rhombifolia*). Bigleaf maple (*Acer macrophyllum*) is found as a subdominant species, and red alder (*Alnus rubra*) is occasionally found.

This habitat may support many breeding birds, including Warbling Vireo (*Vireo gilvus*), Wilson's Warbler (*Cardellina pusilla*), Downy Woodpecker (*Picoides pubescens*), Northern Flicker (*Colaptes auratus*), Chestnut-Backed Chickadee (*Poecile rufescens*), Swainson's Thrush (*Catharus ustulatus*), Wilson's Warbler (*Cardellina pusilla*), Black-Headed Grosbeak (*Pheucticus melanocephalus*), Song Sparrow (*Melospiza melodia*), and Pacific-Slope Flycatcher. Many other bird species may use this habitat during migration. San Francisco dusky-footed woodrats (*Neotoma fuscipes annectens*) typically use this habitat, as do raccoons (*Procyon lotor*). Riparian habitat provides dispersal corridors for wildlife species. Riparian areas also provide important habitat for amphibians such as Sierran treefrog (*Pseudacris sierra*) and Coast Range newt (*Taricha torosa torosa*).

Eucalyptus Forest

Eucalyptus trees were introduced to the Oakland Hills from Australia, starting in the late 19th century (Nowak 1993). Blue gum eucalyptus is by far the most common eucalyptus species in this habitat. Other trees present as minor components of this community include coast live oak and bay laurel. Understory composition varies and may consist of eucalyptus saplings, shrubs, and non-native grasses such as wild oats, ripgut brome, and panic veldt grass (*Ehrharta erecta*). In some areas, especially in groves with mature eucalyptus trees, the understory is very sparse, in part due to the allelopathic (growth-suppressing) effects of the eucalyptus leaf litter (del Moral and Muller 1970). Thick litter may also shield bare soil from sunlight and enhance soil moisture retention. In areas where understory vegetation is present, common shrubs include French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), poison oak (*Toxicodendron diversilobum*), and cotoneaster (*Cotoneaster* spp.).

Monarch butterflies (*Danaus plexippus*) are known to overwinter in specific eucalyptus groves along the California coast from Mendocino County south to Baja California, Mexico. While observations of some monarchs are known in the VMP area, substantial or significant monarch butterfly overwintering groves are not present in the VMP area (CDFW 2020, Western Monarch Count Resource Center 2020).

This habitat type provides roosts, perches, and nest sites for a number of bird species, especially raptors. Bird species commonly observed in eucalyptus forests in the VMP area include American Crow (*Corvus brachyrhynchos*), California Scrub-Jay (*Aphelocoma californica*), American Robin (*Turdus migratorius*), Great Horned Owl (*Bubo virginianus*), Red-Tailed Hawk (*Buteo jamaicensis*), and Red-Shouldered Hawk (*Buteo lineatus*). Eucalyptus litter creates micro-habitats for various small vertebrate species that occur in a variety of woodland habitats, including forest alligator lizard (*Elgaria multicarinata multicarinata*), Pacific gopher snake (*Pituophis catenifer catenifer*), and woodrat (*Neotoma* spp.) (Pearson 1988).

Closed-Cone Pine-Cypress

In the VMP area, closed-cone pine-cypress habitat is dominated by Monterey pine and Monterey cypress (*Hesperocyparis macrocarpa*). Large portions of the Oakland Hills were planted with these species by Joaquin Miller, Frank Haven, and others (Nowak 1993). Monterey pine is native to San Mateo, Monterey, and San Luis Obispo Counties and Monterey cypress is

native to Monterey County. Both species have been planted in parks and other urban areas throughout coastal California. Subdominant trees in this habitat include coast live oak and eucalyptus. The understory ranges from sparse to dense, and in some areas resembles coastal scrub habitat (described below). The understory can include species such as sticky monkey flower (*Mimulus aurantiacus*), coyote brush (*Baccharis pilularis*), poison oak, and western bracken fern (*Pteridium aquilinum* var. *pubescens*). Blue elderberry (*Sambucus nigra* ssp. *caerulea*) can be found occasionally scattered in this habitat. Other shrubs may include French broom and Scotch broom.

Bird species that use this habitat include Chestnut-Backed Chickadee, Pine Siskin (*Spinus pinus*), Hairy Woodpecker, Pygmy Nuthatch (*Sitta pygmaea*), Pacific Wren, and Western Bluebird (*Sialia mexicana*); in addition, a variety of migratory birds that may forage in this habitat. Raptors such as Great Horned Owl, Cooper's Hawk (*Accipiter cooperii*), Red-tailed Hawk, and Red-shouldered Hawk may use closed-cone pine-cypress habitat as nest sites. Small vertebrates may use this habitat, but it does not typically support the diverse wildlife assemblages associated with oak and riparian woodlands (LSA 2009a).

Shrub-Dominated

Coastal Scrub

Coastal scrub is dominated by shrub species, including California sagebrush (*Artemisia californica*) and coyote brush. Subdominant shrubs include coffeeberry (*Frangula californica*), sticky monkey flower, western bracken fern, and silver bush lupine (*Lupinus albifrons* var. *albifrons*). Understory species include various annual grasses. Emergent trees may be present at low cover. Some areas mapped as coastal scrub consist of less complex communities dominated by coyote brush or a mix of coyote brush and poison oak. French broom is occasionally a component of this community. These coyote brush–dominated habitats may have been grassland habitats in the past (McBride and Heady 1968). The coyote brush–dominated community generally supports fewer wildlife species, possibly due to lower plant diversity and simpler habitat structure (LSA 2009a). This habitat is typically found on slopes, and large areas are found in Grizzly Peak Open Space, Joaquin Miller Park, Knowland Park, and Sheffield Village Open Space, with smaller areas in other portions of the VMP area.

Birds associated with this habitat include California Towhee (*Melozone crissalis*), California Quail (*Callipepla californica*), Wrentit (*Chamaea fasciata*), Anna's Hummingbird (*Calypte anna*), Allen's Hummingbird (*Selasphorus sasin*), Western Scrub-jay, Bewick's Wren (*Thryomanes bewickii*), and Spotted Towhee (*Pipilo maculates*). Fence lizards (*Sceloporus* spp.) and forest alligator lizard may also be found in this habitat. Mammals typical of this habitat include deer mouse (*Peromyscus maniculatus*), brush rabbit (*Sylvilagus bachmani*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), and mountain lion (*Puma concolor*) (LSA 2009a). Coastal scrub provides suitable habitat for the Alameda whipsnake (*Masticophis lateralis euryxanthus*), federally listed as threatened.

Mixed Chaparral

In the VMP area, mixed chaparral habitat is dominated by chamise (*Adenostoma fasciculatum*) and typically found on dry, south-facing slopes in Knowland Park. Brittle leaf manzanita (*Arctostaphylos crustacea* ssp. *crustacea*) is present in this habitat (Jurjavcic et al. 2015). This

habitat type is also known as maritime chaparral, which is considered a rare remnant vegetation community (Jurjavcic et al. 2015). There is little to no canopy cover in this habitat, and shrubs may be very dense. Other common species in this habitat include sticky monkey flower, coyote brush, poison oak, and soap plant (*Chlorogalum pomeridianum*). Wildlife use of this habitat is similar to coastal scrub, described above. This habitat is highly adapted to rapidly recover in response to fire, and its structure is influenced by fire. Additionally, many plant species within this habitat are dependent upon fire for regeneration.

Grassland/Herbaceous

Grassland habitat supports a variety of native forbs, including California poppy (*Eschscholzia californica*), blue-eyed grass (*Sisyrinchium bellum*), annual lupine (*Lupinus bicolor*), dwarf owl's clover (*Triphysaria pusilla*), and purple owl's clover (*Castilleja exserta*). Non-native forbs present in grasslands include field mustard (*Brassica rapa*), wild radish (*Raphanus sativus*), yellow star-thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), filarees (*Erodium* spp.), and milk thistle (*Silybum marianum*).

Various wildlife species use grasslands for breeding and/or foraging. Reptiles that breed in grassland habitats include western fence lizard (*Sceloporus occidentalis*) and California red-sided garter snake (*Thamnophis sirtalis infernalis*) (Kie 1988). Mammals typical of this habitat include California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), and coyote (Kie 1988). Annual grasslands provide foraging habitat for raptors, including Barn Owl (*Tyto alba*), Great Horned Owl, Red-tailed Hawk, and American Kestrel (*Falco sparverius*).

Annual Grassland

Non-native annual grasses such as barleys (*Hordeum* ssp.), bromes (*Bromus* spp.), wild oats, brome fescue (*Festuca bromoides*), and others dominate this community. Non-native perennial grasses in this community include Italian rye grass (*Festuca perennis*). Native grass species such as purple needlegrass (*Stipa pulchra*) are present at low cover in some areas mapped as annual grassland.

Perennial Grassland (Native)

Perennial grassland dominated by native species is found scattered within the more common annual grassland community. These relic stands are remnants of the native perennial grasslands that were more prevalent before non-native annual grasses were introduced to California (Stromberg and Griffen 1996). Native perennial grasses such as purple needlegrass, California oat grass (*Danthonia californica*), foothill needlegrass (*Stipa lepida*), and blue wildrye (*Elymus glaucus*) are characteristic species in this habitat. Non-native annual grasses including barleys, bromes, wild oats, and others are also common in this habitat type.

Perennial grassland dominated by native species is found in a few locations within the VMP area, such as Knowland Park (Bartosh et al. 2010) and Sheffield Village Open Space.

Developed/Landscaped

Urban/Developed

Urban/developed habitat includes paved and unpaved roads, buildings, median strips, lawns, yards, and landscaped parks. This habitat type consists of a mosaic of different vegetation types (McBride and Reid 1988). Most urban/developed habitat within the VMP area may also be classified as being within the "urban residential zone" or "suburban zone" (McBride and Reid 1988). Plant species composition and cover in this habitat varies because of its artificial character, human influence (e.g., mowing, irrigating, planting, weeding), and past disturbance. A variety of bird species may use this habitat, including Mourning Dove (*Zenaida macroura*), Anna's Hummingbird, American Robin (*Turdus migratorius*), Scrub-Jay, Northern Mockingbird (*Mimus polyglottos*), House Finch (*Haemorhous mexicanus*), Wrentit, Bushtit (*Psaltriparus minimus*), and Oak Titmouse (*Baeolophus inornatus*) (McBride and Reid 1988). Common wildlife in these areas includes raccoon, Virginia opossum (*Didelphis virginiana*), and striped skunk (*Mephitis mephitis*) (McBride and Reid 1988). California mule deer (*Odocoileus hemionus californicus*) may also be found in this habitat.

Aquatic and Wetland Habitats

Riverine

Riverine habitat in the VMP area includes perennial, intermittent, and ephemeral streams. Major streams within the VMP area are shown on Figure 3.4-2. Perennial streams flow year-round, while intermittent streams dry down seasonally and ephemeral streams flow for only a short period. All of these streams provide water sources for wildlife and important habitat for aquatic species. Coast Range newt occurs in this habitat. Rainbow trout (*Oncorhynchus mykiss*) are known to occur in perennial streams in the VMP area, including Sausal, Palo Seco, and Shepherd Creeks (Laurel Marcus and Associates et al. 2010).

Freshwater Emergent Wetland

Freshwater emergent wetlands provide food, water, and cover for many bird species, and are among the most productive wildlife habitats in California (Kramer 1988). A small emergent wetland is located in the northeastern portion of Joaquin Miller Park between the Fern Creek trail and Skyline Boulevard. This wetland is dominated by California blackberry (*Rubus ursinus*) and rushes (*Juncus* spp.). A second small emergent wetland is located within Knowland Park and is dominated by rushes and sedges. An emergent wetland is also present in Garber Park. Small areas with emergent wetlands may be present along streams in the VMP area.

Sensitive Natural Communities in the VMP Area

Portions of the VMP area contain sensitive natural communities as identified by California Department of Fish and Wildlife (CDFW 2019a). Although Monterey pine forest and Monterey cypress (*Hesperocyparis macrocarpa*) stands are considered sensitive natural communities in their native range, these vegetation types within the VMP area represent stands that were planted and would not be considered sensitive in the VMP area. Global Rank (G) and State Rank (S) are listed. Natural communities with ranks of S1-S3 are considered Sensitive Natural Communities. Figure 3.4-3 shows mapped occurrences of the following sensitive natural communities in the VMP area:

- *Sequoia sempervirens* (redwood forest) Alliance (Alliance code 86.100.00, G3 S3): Joaquin Miller Park, Leona Heights Park, Dimond Canyon Park
- *Nassella* spp. – *Melica* spp. (needle grass – melic grass grassland) Alliance (Alliance code 41.151.00, G4 S4): Knowland Park, Sheffield Village Open Space
- *Umbellularia californica* (California bay forest) Alliance (Alliance code 74.100.00, G4 S3): Joaquin Miller Park, Dimond Canyon Park, Knowland Park, Sheffield Village Open Space
- *Diplacus aurantiacus* (bush monkeyflower scrub) Alliance (Alliance code 32.082.00, G3 S3?): Knowland Park, Sheffield Village Open Space
- *Arctostaphylos* (*crustacea*, *tomentosa*) (brittle leaf – woolly leaf manzanita chaparral) Alliance (Alliance code 37.308.00, G3 S3): Knowland Park
- *Alnus rubra* (red alder forest) Alliance (Alliance code 61.410.00, G5 S4): Dimond Canyon Park

Areas mapped as Freshwater Emergent Wetland and Valley/Foothill Riparian are generally considered sensitive natural communities. As described below in Section 3.4.2, "Regulatory Setting," wetlands and waters are protected by both federal and state regulations. Although not directly within the VMP area, the serpentine prairie located within Redwood Regional Park represents a sensitive natural community and is located immediately adjacent to the VMP area. It is closest to roadside treatment areas along Skyline Boulevard that are within the VMP area.

Critical Habitat

USFWS and NMFS have designed critical habitat for some species listed under the federal Endangered Species Act (ESA). Critical habitat is a specific geographic area that contains features essential to the conservation of a listed species and that may require special management and protection. The USFWS Critical Habitat Mapper (USFWS 2020b) and NMFS critical habitat shapefiles were consulted to determine the presence of designated Critical Habitat within the VMP area. Critical habitat for Alameda whipsnake is present within the VMP area (**Figure 3.4-4**).

Wildlife Movement Corridors and Nurseries

The VMP area is located within the WUI, where recreational trails and nearby residential development represent most of the surrounding land uses. Portions of the VMP area, particularly large parks (such as Joaquin Miller Park and Knowland Park) and parks along streams (such as Dimond Canyon Park and Leona Heights Park) and associated riparian habitat provide important movement corridors for wildlife.

Portions of the VMP area provide important habitat for wildlife, including breeding habitat. Grasslands, shrubs, trees, and other substrates within the VMP area provide nesting habitat for birds. Streams in the VMP area provide breeding habitat for amphibians and fish, while uplands provide breeding habitat for other wildlife. Trees in the VMP area provide breeding roost habitat for bats.

Biological Resources by Parcel Type and Topography

The VMP area encompasses a large area with various types of parcels and topographic features, including urban and residential areas, canyon areas, ridgetops, City parks and open spaces, and roadside clearance areas. While the discussion above summarizes habitat types present throughout the VMP area, the discussion that follows generally describes the types of habitats present on these various parcel types. The range of vegetation and habitat types on a parcel reflect site conditions such as the site's position in the watershed, physiographic setting, slope aspect, underlying geology and soil, soil moisture, and past land uses. Figure 2-2, sheets 1 through 10, in Chapter 2, *Project* Description, show the parcel types in the VMP.

Urban and Residential Areas

Urban and residential parcels contain a variety of habitat types (Figure 3.4-1), largely because of the artificial character of landscaping (e.g., planted, maintained) in these areas. These parcels are generally much smaller than other parcel types, but may still contain ecologically valuable plant and wildlife resources, especially if they are located near larger undeveloped parcels.

Canyon Areas

Canyon areas within the VMP area include portions of Garber Park, Dimond Canyon Park, Shepherd Canyon Park and the Montclair Railroad Trail, and Leona Heights Park.

Garber Park

Garber Park is dominated by coast live oak and bay laurel, with big leaf maple and California buckeye subdominant (Figure 3.4-1, Sheet 1). A grove of eucalyptus is also present. A small freshwater emergent wetland is located in the southeastern portion of the park. The volunteer group Garber Park Stewards has conducted regular restoration activities within the park to remove invasive species and restore native habitat. This park contains a diverse community of native plant species, including yarrow (*Achillea millefolium*), common snowberry (*Symphoricarpos albus*), and blue wildrye.

Dimond Canyon Park

Dimond Canyon Park is dominated by a mix of coast live oak and bay laurel (Figure 3.4-1, Sheet 2). A narrow band of riparian habitat follows Sausal Creek in the southern portion of park, although it is too narrow to appear at the mapped scale. At the southern end of Dimond Canyon Park is developed urban habitat, with structures, lawn, oak trees, and a demonstration garden of California native plants. The golf course to the north is also characterized as urban habitat. Redwoods become dominant in the portion of the park along Palo Seco Creek. The volunteer group Friends of Sausal Creek has conducted restoration activities within the park since 1996 (Laurel Marcus and Associates et al. 2010). The City has also initiated and managed large-scale restoration projects in Sausal Creek.

Shepherd Canyon Park and Montclair Railroad Trail

Shepherd Canyon Park contains a developed area with sports fields near Shepherd Canyon Road (Figure 3.4-1, Sheet 2). Outside of the developed area, the park is dominated by coast live oak woodland, with patchy areas of Monterey pine and cypress, annual grassland, and eucalyptus. Eucalyptus is dominant in the western portion of the Montclair Railroad Trail, and patches of

broom are also common. Coast live oak becomes dominant in the northeastern portion of the trail.

Leona Heights Park

A redwood forest community dominates the portion of Leona Heights Park along the stream. Further upslope, coast live oak becomes dominant. Broom is sporadically common along the trails within the oak-dominated habitat. Coastal scrub and annual grassland characterize the eastern portion of the park on more exposed south-facing slopes.

Ridgetop Areas

Ridgetop areas within the VMP area include portions of the North Oakland Regional Sports Field, Grizzly Peak Open Space, and City Stables.

North Oakland Regional Sports Field

The northern portion of the North Oakland Regional Sports Field is dominated by a eucalyptus forest. The understory of this forest is mainly broom, especially in the most northern portion of the site. Scattered coast live oak and bay laurel are present within the eucalyptus forest.

The central area of the North Oakland Regional Sports Field consists of urban/developed habitat, including sports fields and a fire road. A small area of riparian habitat is located along a stream that runs east to west across the central portion of the sports field. The southern portion of the site consists of coast oak woodland, with a small patch of coastal scrub, both along north-facing slopes.

Grizzly Peak Open Space

Grizzly Peak Open Space is dominated by two habitats. Coastal scrub is the dominant habitat in the northern and central portions of this area, mainly on south- and southeastern-facing slopes; a Monterey pine community is dominant is the southern and central portions of the area, often on northwestern-facing slopes. The Monterey pine community has an open canopy, and the species composition of the understory in this community is similar to the coastal scrub habitat. Dominant shrubs include coyote brush and sticky monkeyflower. Compared to earlier mapping efforts in this area (Federal Emergency Management Agency [FEMA] 2014), the VMP area mapping indicates that the extent of Monterey pine may have expanded. A portion of the southern part of the Grizzly Peak Open Space is characterized by a eucalyptus forest community.

City Stables

Habitat at the City Stables is characterized as urban, with most of the site being developed.

City Park Lands and Open Space

City park lands and open space within the VMP area include Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, and King Estate Open Space Park.

Sheffield Village Open Space

Sheffield Village Open Space is dominated by coast oak woodland and coastal scrub habitats, with patches of annual grassland present on some south- and west-facing slopes. The coastal scrub habitat is dominated by coyote brush in areas adjacent to the Lake Chabot Golf Course but is generally more diverse in areas toward the central portion of the open space.

Knowland Park

Knowland Park is the largest of the open space areas in the VMP area, covering approximately 470 acres. It contains a diverse assemblage of habitats and has been identified as a Botanical Protection Priority Area by the CNPSEB (Bartosh et al. 2010). It also contains the developed habitat of the Oakland Zoo. Coast oak woodlands dominate the northeastern portion of the park, as well as drainages throughout the park. Both coastal scrub and mixed chaparral (also known as maritime chaparral) are present, generally along south-facing slopes but also on some north-facing slopes. Coastal scrub in the eastern portion of the park is generally a simple assemblage of coyote brush and poison oak. This same species assemblage is also found in some of the coastal scrub community mapped south of Golf Links Road. Smaller patches of coastal scrub contain a more diverse mix of shrub species, including California sagebrush and lupines. Annual grasslands dominate the southern and central portions of the park, typically on south-facing slopes, with islands of native perennial grasslands dominated by purple needlegrass. Other native perennial grass species in the park include blue wildrye, California oat grass, and California brome (*Bromus carinatus*).

Joaquin Miller Park

Redwood forest covers most of the eastern portion of Joaquin Miller Park. Coast oak woodland is dominant along drainages in the eastern and northern portions of the park. The southwestern portion is landscaped and contains buildings and other developed spaces, including Woodminster Amphitheater, a nursery, dog play areas, ranger station, and community center. Stands of Monterey pine and Monterey cypress are scattered throughout the park, with a large stand west of the Sequoia Arena. A large stand of eucalyptus is found at the western edge of the park, near Castle Drive. Small areas of coastal scrub are also present, generally on south-facing slopes. Several canyons are present in the park, including Palo Seco and Cinderella Canyons and Fern Ravine.

The Chabot Space and Science Center and the associated pallid manzanita (*Arctostaphylos pallida*) restoration site are located adjacent to the park's northern property boundary, partially within the park and partially off site. Other populations of pallid manzanita are present, including on both sides of Skyline Boulevard near the Redwood Glen Trailhead, approximately 500 feet west of the Roberts Park main entrance (this is known as the "'Big Trees'" pallid manzanita population). Pallid manzanita planting areas are also located adjacent to the nursery.

Serpentine soils are located in the southernmost portion of the park, near the intersection of Skyline Boulevard and Joaquin Miller Road. These soils support occurrences of special-status plant species such as Presidio clarkia (*Clarkia franciscana*) and Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*).

King Estate Open Space Park

King Estate Open Space Park is dominated by annual grassland, with coast oak woodland present in drainages. Coastal scrub dominated by coyote brush is also present on slopes in some portions of the park. Acacias are present at the park's western boundary.

Roadside Clearance Areas

Roadside clearance areas are located throughout the VMP area and contain a variety of the habitats described above. These areas generally provide limited habitat for wildlife due to their proximity to roadways. As described above, a population of pallid manzanita is located on both sides of Skyline Boulevard near the Redwood Glen Trailhead in Joaquin Miller Park. The federally listed Presidio clarkia is known to occur on City-owned medians in the vicinity of Skyline Boulevard and Chadbourne Way (USFWS 2010a). This species also occurs on roadsides nearby, specifically along the north side of Kimberlin Heights Drive, Colgett Drive, and Crestmont Drive at the junction with Westfield Way (USFWS 2010a).

Special-Status Plant and Wildlife Species

Special-status plant and wildlife species identified as present or potentially occurring within the VMP area are listed, and photographs provided, in Appendix D of this DEIR. Analysis conducted for this DEIR identified 181 special-status plant species and 10 special-status animal species as documented to occur or having potential to occur in or near the VMP area.

Special-Status Plants

For purposes of this evaluation, special-status plants are plant species that are listed under or included in:

- the federal ESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species;
- the California Endangered Species Act (CESA) as threatened, endangered, rare, or a candidate species;
- the CNPS's California Rare Plant Rank (CRPR) designations as rare or endangered with ranks of 1A, 1B, 2A, or 2B (defined in footnote of **Table 3.4-2**);
- the CRPR with ranks 3 or 4 (defined in footnote of Table 3.4-2); or
- the CNPSEB Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database with an A rank that are known from the Bay Hills region.

A list of special-status plant species known or thought to have potential for occurrence in the VMP area was compiled using CNPS lists (CNPS 2020, Lake 2020), and CNDDB records (CDFW 2020) (**Figure 3.4-5**). Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing as CRPR 1B or 2 are, in general, considered to meet CEQA's Section 15380 criteria (described under "California Environmental Quality Act" in Section 3.4.2, "Regulatory Setting" below), and adverse effects on these species may be

considered significant. Impacts on plants that are listed by the CNPS as CRPR 3 or 4 are also considered during CEQA review; because these species are typically not as rare as CRPR 1B or 2, however, impacts on them are less frequently considered significant. Additionally, plants with an A Rank on the CNPSEB Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database are included in this analysis, although these species may not meet CEQA's Section 15380 criteria.

Table 3.4-2 identifies special-status plant species that are federally listed or state listed as endangered or threated; plants that are considered "state rare"; CRPR 1, 2, 3 or 4 species; and CNPSEB A-ranked species that are known to have occurred or may occur in or near the VMP area. Special-status plant species with occurrence potential identified as "none" or "not expected" are included in Table D-1 of Appendix D of this DEIR. Their distribution, legal status, general habitat requirements, and known occurrences in the VMP area are also provided.

Special-Status Wildlife

For purposes of this evaluation, special-status wildlife are species that are:

- Listed under the ESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species;
- Listed under the CESA as threatened, endangered, or a candidate species;
- Designated by CDFW as a California species of special concern; or
- Listed in the California Fish and Game (F&G) Code as a fully protected species (birds at Section 3511, mammals at Section 4700, reptiles and amphibians at Section 5050, and fish at Section 5515).

Table 3.4-3 identifies special-status wildlife species that are known to occur or may occur in or near the VMP area. Their distribution, legal status, general habitat requirements, potential to occur, and known occurrences in the VMP area are also provided. Special-status wildlife species with occurrence potential identified as "none" or "not expected" are included in Table D-2 of Appendix D of this DEIR. **Figure 3.4-6** shows known occurrences of special-status wildlife in the VMP area. Figure 3.4-4 shows critical habitat in the VMP area. These species are described further below.

Fish

Sausal Creek supports resident rainbow trout (*Oncorhynchus mykiss*) (Leidy et al. 2005, Laurel Marcus and Associates et al. 2010). The Sausal Creek watershed historically supported steelhead trout, the anadromous special-status form of *O. mykiss*; however, there is currently no evidence of anadromy in the *O. mykiss* population there (Leidy et al. 2005). Resident rainbow trout are not a special-status species.

Amphibians and Reptiles

Special-status reptiles with the potential to occur in the VMP area include western pond turtle (*Emys marmorata*), Alameda whipsnake, and California red-legged frog. Alameda whipsnake is

most likely to occur within coastal scrub and chaparral habitats, but this species may also use adjacent habitats such as grasslands and oak woodlands (USFWS 2011). Portions of the VMP area are within designated areas of critical habitat for this species, particularly the Grizzly Peak Open Space (Figure 3.4-4). Western pond turtles have the potential to occur within the VMP area within aquatic habitat such as perennial streams.

Birds

Special-status birds with the potential to occur in the VMP area include White-tailed Kite (*Elanus leucurus*), Golden Eagle (*Aquila chrysaetos*), and Yellow Warbler (*Setophaga petechial*).

Table 3.4-2. Special-Status Plant Species with Potential to Occur in the VMP Area

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Federally Listed or State-listed Endangered and Threatened Plant Species					
Arctostaphylos pallida pallid manzanita	FT	SE	1B.1	Broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub. Grows on uplifted marine terraces on siliceous shale or thin chert. May require fire. 180-460 meters. Blooms December through March.	**Present.** This species is present in Joaquin Miller Park, near Chabot Space and Science Center, and along Skyline Boulevard near these areas. Possible in Garber Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or closed-cone pine-cypress habitats).
Clarkia franciscana Presidio clarkia	FE	SE	1B.1	Coastal scrub, valley and foothill grassland. Serpentine outcrops in grassland or scrub. Strict serpentine endemic. 20-305 meters. Blooms May through July.	**Present.** A CNDDB occurrence is present in the VMP area in Joaquin Miller Park, and in the median strip between Chadbourne Way and Skyline Boulevard. This species also occurs on roadsides nearby, specifically along the north side of Kimberlin Heights Drive, Colgett Drive, and Crestmont Drive at the junction with Westfield Way (USFWS 2010a). Possible in adjacent areas on serpentine substrate.
Plagiobothrys diffusus San Francisco popcornflower	-	SE	1B.1	Valley and foothill grassland, coastal prairie. Historically from grassy slopes with marine influence. 45-360 meters. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area in Knowland Park, Joaquin Miller Park, Sheffield Village Open Space, King Estate Open Space Park, and urban and residential parcels (with annual or perennial grasslands).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
California Rare Plant Rank 1 and 2 Species					
Amsinckia lunaris bent-flowered fiddleneck	-	-	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. 3-795 meters. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland). A 1938 CNDDB occurrence from "southern slopes of Redwood Ridge" with 1-mile accuracy overlaps portions of Joaquin Miller Park.
Balsamorhiza macrolepis big-scale balsamroot	-	-	1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Sometimes on serpentine. 35-1,465 meters. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or annual grassland).
Blepharizonia plumosa big tarplant	-	-	1B.1	Valley and foothill grassland. Dry hills and plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 30-505 meters. Blooms July through October.	**Possible.** Suitable habitat is present in the VMP area in Sheffield Village Open Space, Knowland Park, King Estate Open Space Park, and urban and residential parcels (with annual grassland).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Dirca occidentalis western leatherwood	-	-	1B.2	Broad-leafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. 25-425 meters. Blooms January through April.	**Present.** A CNDDB occurrence is present in the VMP area in Joaquin Miller Park. Possible in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland).
Eriogonum luteolum var. *caninum* Tiburon buckwheat	-	-	1B.2	Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Serpentine soils; sandy to gravelly sites. 0-700 meters. Blooms May through September.	**Present.** This species is present within the VMP area in Joaquin Miller Park. Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood and in serpentine areas along Skyline Boulevard.
Fissidens pauperculus minute pocket moss	-	-	1B.2	North coast coniferous forest. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. 10-1,024 meters.	**Possible.** Suitable habitat is present in the VMP area.
Fritillaria liliacea fragrant fritillary	-	-	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-400 meters. Blooms February through April.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or grassland).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Helianthella castanea Diablo helianthella	-	-	1B.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 45-1,070 meters. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or grassland).
Hemizonia congesta ssp. *congesta* congested-headed hayfield tarplant	-	-	1B.2	Valley and foothill grassland. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. 20-560 meters. Blooms April through November.	**Present.** A documented occurrence is present in the VMP area (Lake 2020) in Knowland Park. Possible in Sheffield Village Open Space, King Estate Open Space Park, Joaquin Miller Park, and urban and residential parcels (with annual grassland).
Meconella oregana Oregon meconella	-	-	1B.1	Coastal prairie, coastal scrub. Open, moist places. 60-640 meters. Blooms March through April.	**Possible.** Suitable habitat is present in the VMP area in Grizzly Peak Open Space, Joaquin Miller Park, Leona Heights Park, and Knowland Park.
Polemonium carneum Oregon polemonium	-	-	2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. 0-1,830 m. Blooms April through September.	**Possible.** Suitable habitat is present in the VMP area in Grizzly Peak Open Space, North Oakland Sports Field, Joaquin Miller Park, Leona Heights Park, King Estate Open Space Park, Knowland Park, and Sheffield Village Open Space.
Streptanthus albidus ssp. *peramoenus* (=*Streptanthus glandulosus* ssp. *glandulosus*) most beautiful jewelflower	-	-	1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Serpentine outcrops, on ridges and slopes. 95-1,000 meters. March through October.	**Present.** This species is present in the VMP area in Joaquin Miller Park (Lake 2020) and Knowland Park (OWLS 2017). Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood and in serpentine areas along Skyline Boulevard.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Viburnum ellipticum oval-leaved viburnum	-	-	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1,400 meters. Blooms May through June.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland).
California Rare Plant Rank 3 and 4 Species					
Androsace elongata ssp. *acuta* California androsace	-	-	4.2	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland, meadows and seeps, pinyon and juniper woodland. Highly localized and often overlooked due to small size. 150-1,200 meters. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland).
Calochortus umbellatus Oakland star-tulip	-	-	4.2	Chaparral, lower montane coniferous forest, broad-leafed upland forest, valley and foothill grassland, cismontane woodland. Often on serpentine. 100-700 meters. Blooms March through May.	**Present.** Suitable habitat is present in the VMP area. Documented in Knowland Park (Placemakers 2011), Joaquin Miller Park, and Leona Heights Park. Possible in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, North Oakland Regional Sports Field, Sheffield Village Open Space, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or annual grassland).
Castilleja ambigua var. *ambigua* johnny-nip	-	-	4.2	Coastal bluff scrub, coastal scrub, coastal prairie, marshes and swamps, valley and foothill grassland, vernal pool margins. 0-435 meters. Blooms March through August.	**Possible.** Suitable habitat is present in the VMP area in Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, King Estate Open Space Park, and urban and residential parcels (with annual grassland).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw	-	-	4.2	Chaparral, cismontane woodland, lower montane coniferous forest. Dry, rocky places in serpentine soil. 150-1,450 meters. Blooms April through July.	**Possible.** Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood, in serpentine areas of Joaquin Miller Park, and in serpentine areas along Skyline Boulevard.
Leptosiphon acicularis bristly leptosiphon	-	-	4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Grassy areas, woodland, chaparral. 55-1,500 meters. Blooms April through July.	**Present.** Documented in Knowland Park in 2013 (Calflora 2020). Possible in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or grassland).
Leptosiphon grandiflorus large-flowered leptosiphon	-	-	4.2	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, valley and foothill grassland. Open, grassy flats, generally sandy soil. 5-1,200 meters. Bloom April through August.	**Possible.** Suitable habitat is present in the VMP area and there is one historic (1900) record near Skyline High School.
Micropus amphibolus Mt. Diablo cottonweed	-	-	3.2	Valley and foothill grassland, cismontane woodland, chaparral, broad-leafed upland forest. Bare, grassy or rocky slopes. 45-825 meters. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with coast oak woodland or grassland).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Microseris sylvatica sylvan microseris	-	-	4.2	Chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland. Serpentine. 45-1,500 meters. Blooms March through June.	**Possible.** Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood, in serpentine areas of Joaquin Miller Park, and in serpentine areas along Skyline Boulevard.
Ranunculus lobbii Lobb's aquatic buttercup	-	-	4.2	Cismontane woodland, valley and foothill grassland, vernal pools, north coast coniferous forest. Mesic sites. Generally occurs in wetlands. 15-470 meters. Blooms February through May.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, and King Estate Open Space Park.
Plants of Local or Regional Significance (California Native Plant Society, East Bay Chapter A-Ranked Species)					
Adiantum aleuticum five-finger fern	-	-	A1	Riparian, mixed evergreen forest, chaparral, yellow pine forest, red fir forest, lodgepole forest, subalpine forest, Douglas-fir forest.	**Possible.** Suitable habitat is present in the VMP area.
Agoseris apargioides var. *apargioides* seaside agoseris	-	-	A2	Forest, grassland, sand/ sandstone, scrub. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area.
Agoseris heterophylla var. *cryptopleura* mountain dandelion	-	-	A1	Many plant communities, weak serpentine affinity. Blooms May through June.	**Possible.** Suitable habitat is present in the VMP area.
Agoseris heterophylla var. *heterophylla* annual agoseris	-	-	A1	Many plant communities, weak serpentine affinity. Blooms May through June.	**Possible.** Suitable habitat is present in the VMP area.
Agoseris retrorsa spear-leaved agoseris	-	-	A2	Scrub, oak woodland, conifer forest. Blooms April through August.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Agrostis hallii Hall's bent grass	-	-	A2	Forest, woodland. Blooms May through July.	**Present.** Present in Knowland Park (OWLS 2017).
Allium amplectens narrow-leaved onion	-	-	A2	Dry slopes, serpentine, woodlands. Blooms April through July.	**Possible.** Suitable habitat is present in the VMP area.
Allium falcifolium sickle-leaved onion	-	-	A1	Rock/talus/scree, serpentine. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Alnus rubra red alder	-	-	A2	Riparian. Blooms February through March.	**Present.** Present in Garber Park and Leona Heights Park (OWLS 2017).
Amaranthus californicus Californian amaranth	-	-	A2	Wetlands. Blooms July through October.	**Possible.** Suitable habitat is present in the VMP area.
Amaranthus powellii Powell's amaranth	-	-	A1	Disturbed habitats. Blooms June through October.	**Possible.** Suitable habitat is present in the VMP area.
Ammannia coccinea long-leaved ammannia	-	-	A1	Riparian, wetlands. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Aphyllon vallicolum California broom-rape	-	-	A2	Forest, woodlands. Blooms July through September.	**Possible.** Suitable habitat is present in the VMP area.
Apocynum androsaemifolium bitter dogbane	-	-	A2	Chaparral, dry slopes, rock/talus/ scree. Blooms May through October.	**Present.** Present in Dimond Canyon Park (Lake 2020).
Asclepias speciosa showy milkweed, milkweed	-	-	A2	Many habitats, including roadsides. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Asarum caudatum wild-ginger	-	-	A2	Forest, redwood forest. Blooms March through August.	**Present.** Present in Dimond Canyon Park and Joaquin Miller Park (OWLS 2017).
Berberis nervosa Oregon grape	-	-	A1	Forest. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Brodiaea terrestris ssp. *terrestris* dwarf brodiaea	-	-	A2	Grassland, wetlands, woodlands. Blooms April through July.	**Present.** Present in Knowland Park (OWLS 2017).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Calycadenia multiglandulosa sticky calycadenia	-	-	A2	Rock/talus/scree, scrub, serpentine. Blooms May through October.	**Possible.** Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood, in serpentine areas of Joaquin Miller Park, and in serpentine areas along Skyline Boulevard.
Carex brevicaulis short-stemmed sedge	-	-	A1	Rock/talus/scree, sand/ sandstone. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area.
Carex densa dense sedge	-	-	A2	Wetlands. Blooms April through July.	**Present.** Present in Knowland Park (OWLS 2017). Possible in other wetlands.
Carex globosa round-fruited sedge	-	-	A2	Well-drained soil of wooded areas, edges. Blooms April through June.	**Present.** Present in Knowland Park (OWLS 2017).
Carex gracilior slender sedge	-	-	A1	Forest, grassland, wetlands. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Carex leptopoda slender-footed sedge, short-scaled sedge	-	-	A1	Wetlands. Blooms May through August.	**Present.** Present in Beaconsfield Canyon and Knowland Park (OWLS 2017). Possible in other wetlands.
Carex multicostata many-ribbed sedge	-	-	A1	Dry soil, meadows, open conifer forest. Blooms July through September.	**Present.** Present in Knowland Park (OWLS 2017).
Carex senta western rough sedge, rough sedge	-	-	A2	Riparian, wetlands Blooms April through August.	**Possible.** Suitable habitat is present in the VMP area.
Castilleja applegatei ssp. *martinii* wavy-leaved indian paintbrush	-	-	A2	Chaparral, scrub. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Castilleja exserta ssp. *latifolia* owl's-clover	-	-	A1	Coastal bluff, sand/sandstone. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Castilleja subinclusa ssp. *franciscana* Franciscan indian paintbrush	-	-	A1	Chaparral and scrub. Blooms March through July.	**Present.** Present in Knowland Park (OWLS 2017).
Chorizanthe polygonoides var. *polygonoides* knotweed spineflower	-	-	A1	Gravel, sand/sandstone. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area. Historically (1891) documented in the vicinity of Leona Heights (Lake 2020).
Chrysolepis chrysophylla var. *minor* golden chinquapin	-	-	A2	Chaparral, forest, sand/sandstone. Blooms June through September.	**Present.** Present in Joaquin Miller Park (OWLS 2017) and along Grizzly Peak Boulevard (Lake 2020).
Cicendia quadrangularis timwort	-	-	A2	Grassland. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Cicuta douglasii water-hemlock	-	-	A2	Freshwater marsh, wetlands. Blooms June through September.	**Possible.** Suitable habitat is present in the VMP area.
Cirsium quercetorum brownie thistle	-	-	A2	Grassland, woodlands. Blooms April through August.	**Possible.** Suitable habitat is present in the VMP area.
Clarkia purpurea ssp. *purpurea* purple clarkia	-	-	A2	Grassland. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Clarkia purpurea ssp. *viminea* large godetia	-	-	A1	Open, grassy or shrubby places. Blooms May through July.	**Possible.** Suitable habitat is present in the VMP area.
Clintonia andrewsiana red clintonia	-	-	A1	Redwood forest. Blooms May through July.	**Possible.** Suitable habitat is present in the VMP area.
Corallorhiza maculata var. *maculata* spotted coralroot	-	-	A2	Forests and woodlands. Blooms May through August.	**Present.** Present in Garber Park, Joaquin Miller Park, and Knowland Park (OWLS 2017).
Cornus glabrata brown dogwood	-	-	A1	Riparian. Blooms May through June.	**Possible.** Suitable habitat is present in riparian habitat in the VMP area.
Cryptantha micromeres minute-flowered cryptantha	-	-	A1	Burns, chaparral, woodlands. Blooms March through July.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Cryptantha microstachys Tejon cryptantha	-	-	A2	Chaparral, woodlands. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Cryptantha torreyana var. *pumila* Torrey's cryptantha	-	-	A2	Forest, dry slopes. Blooms April through June.	**Present.** Present in Knowland Park (Lake 2020).
Cuscuta californica var. *californica* California dodder	-	-	A1	Chaparral, grassland. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Cyperus erythrorhizos red-rooted cyperus	-	-	A2	Riparian. Blooms July through October.	**Possible.** Suitable habitat is present in the VMP area.
Cyperus niger black sedge	-	-	A1	Wetlands. Blooms July through November.	**Present.** Present in Leona Heights Park (OWLS 2017).
Cyperus odoratus coarse cyperus	-	-	A1	Wetlands. Blooms July through October.	**Possible.** Suitable habitat is present in the VMP area.
Deinandra corymbosa (=*Hemizonia corymbosa*) coast tarweed	-	-	A2	Coastal bluff, grassland. Blooms March through November.	**Present.** Present in Knowland Park (OWLS 2017).
Delphinium californicum ssp. *californicum* coast larkspur, California larkspur	-	-	A2	Chaparral. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Dendromecon rigida bush poppy	-	-	A2	Burns, chaparral, scrub. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Dicentra formosa Pacific bleeding heart	-	-	A2	Forest and redwood forest. Blooms March through July.	**Present.** Present in Marjorie Saunders Park (OWLS 2017).
Dichondra donelliana California ponysfoot	-	-	A1	Coastal prairie, coastal scrub. Blooms January through March.	**Present.** Present in Joaquin Miller Park (OWLS 2017).
Echinodorus berteroi burhead	-	-	A1	Freshwater marsh.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Eclipta prostrata false daisy	-	-	A1	Wetlands. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Elatine brachysperma waterwort	-	-	A1	Freshwater marsh, wetlands. Blooms April through September.	**Possible.** Suitable habitat is present in the VMP area.
Elatine californica waterwort	-	-	A2	Freshwater marsh. Blooms March through August.	**Possible.** Suitable habitat is present in the VMP area.
Elymus stebbinsii Stebbins' wheat grass	-	-	A1	Chaparral, forest, dry slopes. Blooms June through July.	**Possible.** Suitable habitat is present in the VMP area.
Epilobium ciliatum ssp. *watsonii* San Francisco willowherb	-	-	A2	Freshwater marsh, riparian. Blooms May through October.	**Possible.** Suitable habitat is present in the VMP area.
Ericameria arborescens golden-fleece	-	-	A2	Chaparral, forest, woodlands. Blooms August through November.	**Possible.** Suitable habitat is present in the VMP area.
Erigeron petrophilus var. *petrophilus* rock daisy	-	-	A2	Rock/talus/scree, serpentine. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Eriogonum fasciculatum var. *foliolosum* leafy California buckwheat, California buckwheat	-	-	A1	Dry slopes. Blooms June through August.	**Present.** Present in Joaquin Miller Park, although these observations are planted (Lake 2020).
Eriogonum luteolum var. *luteolum* golden-carpet wild buckwheat, golden carpet	-	-	A2	Gravel, sand/sandstone, serpentine. Blooms July through November.	**Present.** Historically (1901) present in Joaquin Miller Park (Lake 2020).
Eschscholzia caespitosa tufted poppy	-	-	A1	Chaparral. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Euonymus occidentalis var. *occidentalis* burning bush	-	-	A1	Riparian. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Festuca elmeri Elmer's fescue	-	-	A1	Moist, wooded slopes, under trees in rich soil. Blooms May through July.	**Possible.** Suitable habitat is present in the VMP area.
Gaultheria shallon salal	-	-	A1	Forest and redwood forest. Blooms April through July.	**Present.** Present in Joaquin Miller Park (OWLS 2017).
Gilia achilleifolia ssp. *achilleifolia* California gilia	-	-	A2	Open or shaded, generally grassy places, sandy or rocky soil. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Gilia tricolor ssp. *tricolor* birds-eye gilia	-	-	A2	Grassland. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Githopsis diffusa ssp. *robusta* southern bluecup	-	-	A1	Shaded or disturbed area, burns. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Githopsis specularioides common bluecup	-	-	A2	Burns, chaparral, woodland. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area.
Glyceria xoccidentalis western manna grass	-	-	A2	Wetlands. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Hordeum jubatum ssp. *jubatum* foxtail barley	-	-	A2	Many plant communities. Blooms May through July.	**Possible.** Suitable habitat is present in the VMP area.
Horkelia californica var. *californica* California horkelia	-	-	A1	Grassland, scrub. Blooms March through September.	**Possible.** Suitable habitat is present in the VMP area.
Horkelia californica var. *elata* tall horkelia	-	-	A2	Wetlands, riparian. Blooms June through September.	**Possible.** Suitable habitat is present in the VMP area.
Hosackia stipularis var. *stipularis* stipulate lotus	-	-	A1	Chaparral. Blooms April through June.	**Present.** Present in Joaquin Miller Park (OWLS 2017).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Iris douglasiana Douglas iris	-	-	A2	Mixed evergreen forest, coastal prairie. Blooms March through July.	**Present.** Present in Beaconsfield Canyon, Dimond Canyon Park, Garber Park, Joaquin Miller Park, Knowland Park, and Marjorie Saunders Park (OWLS 2017).
Juncus oxymeris pointed rush	-	-	A1	Swales, wetlands. Blooms July through August.	**Possible.** Suitable habitat is present in the VMP area.
Juncus phaeocephalus var. *phaeocephalus* brownheaded rush	-	-	A2	Wetlands. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Layia chrysanthemoides smooth layia	-	-	A1	Grassland. Blooms March through June.	**Present.** Present in King Estate Open Space Park (Lake 2020).
Layia gaillardioides woodland layia	-	-	A2	Scrub, woodlands. Blooms March through August.	**Possible.** Suitable habitat is present in the VMP area.
Layia hieracioides tall layia	-	-	A2	Open, semi-shady, or disturbed sites, in light soil. Blooms April through July.	**Possible.** Suitable habitat is present in the VMP area.
Leptosiphon liniflorus flax-flowered leptosiphon	-	-	A1	Scrub, serpentine, woodlands. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Ligusticum apiifolium Pacific lovage	-	-	A2	Coastal bluff, grassland, scrub, woodlands. Blooms June through July.	**Present.** Present in the VMP area on Grizzly Peak Boulevard, approximately 500 feet west of the intersection with Fish Ranch Road.
Lilium pardalinum ssp. *pardalinum* leopard lily	-	-	A1	Freshwater marsh, riparian. Blooms May through August.	**Possible.** Suitable habitat is present in the VMP area.
Limosella acaulis southern mudwort	-	-	A2	Wetlands. Blooms May through October.	**Possible.** Suitable habitat is present in the VMP area.
Lithophragma bolanderi Bolander starflower	-	-	A2	Open slopes, riparian, woodland. Blooms February through July.	**Possible.** Suitable habitat is present in the VMP area.
Lomatium caruifolium var. *caruifolium* caraway-leaved lomatium	-	-	A2	Wetland riparian. Blooms March-May.	**Present.** Present in the VMP area in Joaquin Miller Park, on the Sinawik Loop trail (Lake 2020).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Lupinus affinis fleshy lupine	-	-	A1	Coastal prairie, northern coastal scrub, mixed evergreen forest. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Lythrum californicum California loosestrife	-	-	A2	Wetlands. Blooms April through September.	**Possible.** Suitable habitat is present in the VMP area.
Madia anomala plump-seeded madia	-	-	A1	Grassland. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Mentha canadensis American cornmint, Japanese peppermint	-	-	A1	Wetlands, riparian. Blooms July through October.	**Possible.** Suitable habitat is present in the VMP area.
Micropus californicus var. *subvestitus* slender cottonweed	-	-	A1	Many plant communities, dry slopes. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Microseris acuminata Sierra Foothills microseris	-	-	A2	Grassland. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Microseris campestris San Joaquin microseris	-	-	A1	Grassland, vernal pool. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Microseris elegans elegant microseris	-	-	A2	Grassland, vernal pool. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Mimulus douglasii (=*Diplacus douglasii*) Douglas monkeyflower	-	-	A2	Chaparral, gravel, rock/talus/scree, serpentine, woodlands. Blooms February through April.	**Possible.** Possible on serpentine soils along roadside clearance areas in the Crestmont neighborhood, in serpentine areas of Joaquin Miller Park, and in serpentine areas along Skyline Boulevard. This species was reported from the Serpentine Prairie in Redwood Regional Park in 1991 but has not been found in subsequent surveys (Lake 2020).
Minuartia californica California sandwort	-	-	A1	Chaparral, grassland, dry slopes, rock/talus/scree, sand/sandstone, serpentine. Blooms February through April.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Monardella douglasii Douglas' monardella	-	-	A2	Chaparral, grassland, serpentine, woodlands. Blooms May through July.	**Possible.** Suitable habitat is present in the VMP area.
Morella californica wax myrtle	-	-	A2	Forest, redwood forest, scrub. Blooms March through April.	**Possible.** Suitable habitat is present in the VMP area.
Muilla maritima common muilla	-	-	A2	Alkali areas, grassland, wetlands, dry slopes, scrub, serpentine, woodlands. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Oenothera elata ssp. *hookeri* evening-primrose	-	-	A2	Wetlands. Blooms June through September.	**Possible.** Suitable habitat is present in the VMP area.
Osmorhiza brachypoda California cicely	-	-	A2	Forest, riparian, woodlands. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Oxalis oregana redwood sorrel	-	-	A1	Redwood forest. Blooms February through August.	**Present.** Present in the VMP area in Dimond Canyon and Joaquin Miller Park (OWLS 2017).
Oxalis pilosa hairy wood-sorrel	-	-	A1	Chaparral, grassland, scrub. Blooms February through September.	**Possible.** Suitable habitat is present in the VMP area.
Pectocarya pusilla little pectocarya	-	-	A2	Grassland, woodlands. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Penstemon heterophyllus var. *purdyi* foothill penstemon	-	-	A1	Chaparral, forest, grassland. Blooms May through June.	**Possible.** Suitable habitat is present in the VMP area.
Pentachaeta alsinoides tiny pentachaeta	-	-	A2	Grassland. Blooms March through June.	**Possible.** Suitable habitat is present in the VMP area.
Pentachaeta exilis ssp. *exilis* meager pentachaeta	-	-	A1	Grassland. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Perideridia oregana yampah	-	-	A1	Dry slopes, rock/talus/scree, woodlands. Blooms July through August.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Persicaria lapathifolia willow weed	-	-	A2	Wetlands. Blooms June through October.	**Possible.** Suitable habitat is present in the VMP area.
Petasites frigidus var. *palmatus* western sweet coltsfoot	-	-	A1	Riparian, redwood forest. Blooms January through April.	**Possible.** Suitable habitat is present in the VMP area.
Phacelia ramosissima branching phacelia	-	-	A2	Dry slopes, dry wash, grassland. Blooms April through October.	**Possible.** Suitable habitat is present in the VMP area.
Phacelia tanacetifolia tansy phacelia	-	-	A2	Gravel, sand/sandstone. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Phalaris arundinacea reed canary grass	-	-	A1	Wetlands, riparian. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Phyla nodiflora turkey tangle frogfruit	-	-	A1	Wetland, riparian. Blooms May through June.	**Present.** Present in the VMP area in Leona Heights Park (OWLS 2017).
Pinus attenuata knobcone pine	-	-	A1	Burns, chaparral, forest, sand/ sandstone. Blooming period not provided.	**Possible.** Suitable habitat is present in the VMP area.
Pinus coulteri Coulter pine	-	-	A2	Chaparral, forest. Blooms May through June.	**Present.** Present in the VMP area in Knowland Park (OWLS 2017).
Piperia elongata dense flower rein orchid	-	-		Forest, scrub. Blooms May through July.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Plagiobothrys fulvus var. *campestris* field popcornflower, fulvous popcornflower	-	-	A2	Grassland, gravel, sand/sandstone, woodlands. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Poa howellii Howell's bluegrass	-	-	A1	Chaparral, rock/talus/scree, woodlands. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Polypodium scouleri leather-leaf fern	-	-	A2	Coastal prairie, coastal strand, redwood forest, mixed evergreen forest, coastal bluff.	**Possible.** Suitable habitat is present in the VMP area. Species occurrences documented near VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Polystichum californicum California sword fern	-	-	A1	Redwood forest, mixed evergreen forest.	**Possible.** Suitable habitat is present in the VMP area.
Pseudognaphalium biolettii Bioletti's cudweed	-	-	A2	Dry slopes, sand/sandstone. Blooms April through June.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Pseudognaphalium microcephalum white everlasting	-	-	A1	Chaparral, dry slopes. Blooms June through August.	**Possible.** Suitable habitat is present in the VMP area.
Quercus chrysolepis canyon live oak	-	-		Chaparral, scrub. Blooms April through May.	**Present.** Present in the VMP area in Joaquin Miller Park and Knowland Park (OWLS 2017).
Quercus durata var. *durata* leather oak	-	-	A2	Chaparral, serpentine. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area on serpentine soils.
Quercus parvula var. *shrevei* island scrub oak	-	-	A1	Chaparral, woodlands. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Ranunculus occidentalis var. *occidentalis* western buttercup	-	-	A2	Grassland, woodlands. Blooms March through July.	**Possible.** Suitable habitat is present in the VMP area.
Ribes aureum var. *gracillimum* golden currant	-	-	A2	Riparian. Blooms February through May.	**Possible.** Suitable habitat is present in the VMP area.
Rorippa palustris ssp. *palustris* marsh yellow-cress	-	-	A2	Wetlands. Blooms March through September.	**Possible.** Suitable habitat is present in the VMP area.
Salix scouleriana Scouler's willow	-	-	A2	Wetlands. Blooms February through June.	**Possible.** Suitable habitat is present in the VMP area.
Sambucus racemosa var. racemosa red elderberry	-	-	A1	Riparian. Blooms May through July.	**Present.** Present in the VMP area in Beaconsfield Canyon and Joaquin Miller Park (OWLS 2017).
Sanicula laciniata coast sanicle	-	-	A2	Chaparral, scrub, woodlands. Blooms March through May.	**Present.** Present in the VMP area in Joaquin Miller Park and Knowland Park (OWLS 2017).

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Scutellaria californica California skullcap	-	-	A2	Scrub, woodlands. Blooms June through July.	**Possible.** Suitable habitat is present in the VMP area.
Setaria parviflora knotroot bristle grass, perennial foxtail	-	-	A1	Chaparral, grassland. Blooms May through September.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Sidalcea diploscypha fringed checkerbloom	-	-	A1	Grassland, woodlands. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area.
Sisyrinchium californicum golden-eyed-grass	-	-	A1	Freshwater marsh. Blooms March through August.	**Possible.** Suitable habitat is present in the VMP area.
Spiranthes romanzoffiana hooded ladies' tresses	-	-	A1	Coastal bluff, freshwater marsh. Blooms May through September.	**Possible.** Suitable habitat is present in the VMP area.
Stachys ajugoides bugle hedge nettle	-	-	A2	Wetlands. Blooms April through September.	**Possible.** Suitable habitat is present in the VMP area.
Stephanomeria elata stephanomeria	-	-	A2	Dry slopes. Blooms July through November.	**Possible.** Suitable habitat is present in the VMP area.
Stylocline gnaphaloides everlasting neststraw	-	-	A2	Sand/sandstone. Blooms March through May.	**Present.** Present in the VMP area in Joaquin Miller Park (Lake 2020).
Symphyotrichum lanceolatum var. *hesperium* marsh aster	-	-	A2	Riparian, wetlands. Blooms July through August.	**Possible.** Suitable habitat is present in the VMP area.
Taxus brevifolia pacific yew	-	-	A1	Woodlands. Blooms June through July.	**Possible.** Suitable habitat is present in the VMP area.
Tetrapteron graciliflorum hill sun cup	-	-	A2	Grassland, dry slopes, scrub, woodlands. Blooms March through April.	**Possible.** Suitable habitat is present in the VMP area.
Trifolium barbigerum bearded clover	-	-	A2	Wetlands. Blooms February through May.	**Possible.** Suitable habitat is present in the VMP area.
Trifolium depauperatum var. *depauperatum* dwarf sack clover	-	-	A2	Grassland, wetlands. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.

Scientific Name Common Name	Status[1]			Habitat Association	Potential to Occur in the VMP Area
	Federal	State	CRPR/ EBCNPS		
Trifolium dichotomum branched indian clover	-	-	A2	Coastal bluff, grassland, dry slopes, woodlands. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Trifolium macraei Macrae's clover, double-headed clover	-	-	A1	Sand/sandstone, many plant communities. Blooms March through May.	**Possible.** Suitable habitat is present in the VMP area.
Trifolium olivaceum olive clover	-	-	A2	Valley grassland, foothill woodland. Blooms April through May.	**Possible.** Suitable habitat is present in the VMP area.
Trifolium wormskioldii cow clover	-	-	A1	Wetlands. Blooms May through October.	**Possible.** Suitable habitat is present in the VMP area.
Trillium ovatum ssp. *ovatum* white trillium	-	-	A2	Forest, redwood forest. Blooms February through April.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Triodanis biflora Venus' looking-glass	-	-	A2	Burns, many plant communities, disturbed. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Triphysaria versicolor ssp. *faucibarbata* smooth owl's-clover	-	-	A2	Grassland. Blooms April through June.	**Possible.** Suitable habitat is present in the VMP area.
Trisetum canescens tall trisetum	-	-	A2	Forest. Blooms May through August.	**Possible.** Suitable habitat is present in the VMP area.
Viola adunca ssp. *adunca* western blue violet	-	-	A1	Forest. Blooms April through August.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Viola glabella stream violet	-	-	A2	Forest, riparian. Blooms March through August.	**Present.** Present in the VMP area in Joaquin Miller Park (OWLS 2017).
Viola sempervirens evergreen violet, redwood violet	-	-	A1	Redwood forest. Blooms January through July.	**Present.** Present in the VMP area in Dimond Canyon Park and Joaquin Miller Park (OWLS 2017).

Notes: [1] Status Codes:

Federal

FE Listed as endangered under the Endangered Species Act

FT Listed as threatened under the Endangered Species Act

State

SE Listed as endangered under the California Endangered Species Act
ST Listed as threatened under the California Endangered Species Act
SC Candidate for listing under the California Endangered Species Act
SR Listed as rare under the Native Plant Protection Act

California Rare Plant Rank (CRPR)

1B Plants rare, threatened, or endangered in California and elsewhere
2B Plants rare, threatened, or endangered in California but more common elsewhere
3 Plants about which information is needed-a review list
4 Plants of limited distribution-a watch list
.1 seriously threatened in California
.2 moderately threatened in California
.3 not very threatened in California

East Bay Chapter of the California Native Plant Society (EBCPS)

A1 Species known from 2 or less botanical regions in Alameda and Contra Costa Counties, either currently or historically.
A1x Species previously known from Alameda or Contra Costa Counties, but now believed to have been extirpated, and no longer occurring here.
A2 Species currently known from 3 to 5 regions in the two counties, or, if more, meeting other important criteria such as rare statewide, small populations, stressed or declining populations, small geographical range, limited or threatened habitat, etc.

Table 3.4-3. Special-status Wildlife Species with Potential to Occur in the VMP Area

Scientific Name Common Name	Status[1]		Habitat Association	Potential to Occur in the VMP Area
	Federal	State		
Federal or State Endangered, Threatened, and Candidate Animal Species				
Masticophis lateralis euryxanthus Alameda whipsnake	FT	ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna, and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices, or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	**Present.** Present in the VMP area in Knowland Park (Placemakers 2011). Possible in Grizzly Peak Open Space (critical habitat for this species), North Oakland Sports Field, Joaquin Miller Park, and Sheffield Village Open Space.
Rana draytonii California red-legged frog	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Possible.** Suitable habitat is present in the VMP area in North Oakland Sports Field, Dimond Canyon Park, Joaquin Miller Park, Leona Heights Park, Knowland Park, and Sheffield Village Open Space.
California Fully Protected or Species of Special Concern				
Emys marmorata western pond turtle	-	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Requires basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometer from water for egg-laying.	**Present.** Suitable habitat is present in the VMP area, including aquatic portions of Garber Park, North Oakland Sports Field, Dimond Park, Joaquin Miller Park, Leona Heights Park, Knowland Park, and Sheffield Village Open Space. Observed in the Sausal Creek watershed (Lowe 2000).
Aquila chrysaetos Golden Eagle	-	SP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**Possible (Foraging only).** Species may use grasslands for foraging, but nesting is not expected. Possible foraging in King Estate Open Space Park, Knowland Park, and Sheffield Village Open Space.

Scientific Name Common Name	Status[1]		Habitat Association	Potential to Occur in the VMP Area
	Federal	State		
Elanus leucurus White-tailed Kite	-	SP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Possible.** Suitable habitat is present in the VMP area. Possible in King Estate Open Space Park, Knowland Park, and Sheffield Village Open Space.
Setophaga petechia Yellow Warbler	-	SSC	Riparian plant associations near water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants, including cottonwoods, sycamores, ash, and alders.	**Possible.** Suitable habitat is present in the VMP area in riparian areas within North Oakland Sports Field, Dimond Canyon Park, Joaquin Miller Park, Leona Heights Park, Knowland Park, and Sheffield Village Open Space.
Antrozous pallidus pallid bat	-	SSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with forested or grassland habitats).
Eumops perotis californicus western mastiff bat	-	SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with forested or grassland habitats).

Scientific Name Common Name	Status[1]		Habitat Association	Potential to Occur in the VMP Area
	Federal	State		
Lasiurus blossevillii western red bat	-	SSC	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Possible.** Suitable habitat is present in the VMP area in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park, Joaquin Miller Park, King Estate Open Space Park, and urban and residential parcels (with forested or grassland habitats).
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	-	SSC	Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	**Present.** This species is present in both tree-dominated and shrub-dominated communities in the VMP area. Present in Joaquin Miller Park and Knowland Park. Possible in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, and King Estate Open Space Park.

Notes: [1] Status Codes:

Federal

FE	Listed as endangered under the Endangered Species Act
FT	Listed as threatened under the Endangered Species Act
FC	Candidate for listing under the Endangered Species Act
FD	Delisted under the Endangered Species Act

State

SE	Listed as endangered under the California Endangered Species Act
ST	Listed as threatened under the California Endangered Species Act
SC	Candidate for listing under the California Endangered Species Act
SD	Delisted under the California Endangered Species Act
SSC	California Species of Special Concern
SP	State fully protected

Mammals

Special-status mammals with the potential to occur in the VMP area include western red bat (*Lasiurus blossevillii*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), and San Francisco dusky-footed woodrat. Western red bats and western mastiff bats may roost in trees in the VMP area. San Francisco dusky-footed woodrat stick houses were observed in many locations within the VMP area and were most often encountered in oak woodlands and riparian areas.

3.4.2 Regulatory Setting

Biological resources are regulated by the following federal, state, and local laws and ordinances.

Federal Laws, Regulations, and Policies

Federal Endangered Species Act

The ESA (16 USC Section 1531 et seq.; 50 CFR Parts 17 and 222) provides for conservation of species that are endangered or threatened throughout all or a substantial portion of their range, as well as protection of the habitats on which they depend. USFWS and the National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. In general, USFWS manages terrestrial and freshwater species, whereas NMFS manages marine and anadromous species.

Section 9 of the ESA and its implementing regulations prohibit the "take" of any fish or wildlife species listed under the ESA as endangered or threatened, unless otherwise authorized by federal regulations. The ESA defines the term "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC Section 1532). The USFWS regulations define the term "harm" to include significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns (50 CFR Section 17.3). Section 7 of the ESA (16 USC Section 1531 et seq.) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats. Listed plant species are legally protected from take under the ESA only if they occur on federal lands or if the project requires a federal action, such as a Clean Water Act (CWA) Section 404 fill permit from USACE. Section 10(a)(1)(B) of the ESA provides a process by which nonfederal entities may obtain an incidental take permit from USFWS or NMFS for otherwise lawful activities that may incidentally result in "take" of endangered or threatened species, subject to specific conditions. A habitat conservation plan (HCP) must accompany an application for an incidental take permit.

Based on a review of recent ecological studies of other projects in the vicinity; aerial photos and topographic maps; and other relevant scientific literature, technical databases, and resource agency reports, the following federally listed wildlife species occur, or have potential to occur, in the VMP area: Alameda whipsnake and California red-legged frog (*Rana draytonii*). If the VMP would result in take of a federally listed wildlife species, incidental take approval would be required through either Section 7 or Section 10 consultation with USFWS.

In addition, the following federally listed plant species occur, or have potential to occur, in the VMP area: pallid manzanita and Presidio clarkia. If VMP activities requiring a Section 404 permit would result in adverse effects on any federally listed plant species, Section 7 consultation with USFWS would be required. However, the City would not need incidental take approval for impacts on federally listed plant species occurring on City-owned land.

USFWS and NMFS have designed critical habitat for some listed species. Critical habitat is a specific geographic area that contains features essential to the conservation of a listed species and that may require special management and protection. Critical habitat for Alameda whipsnake is present within the VMP area (Figure 3.4-4).

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC Section 1801 et seq.) governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans (FMPs) to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from NMFS, establish Essential Fish Habitat (EFH) in FMPs for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with the NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by the NMFS.

The Pacific Fisheries Management Council (PFMC) has designated EFH for the following three FMPs in the VMP area: Pacific coast groundfish, coastal pelagic species, and Pacific coast salmon. Thus, if the VMP would result in impacts on EFH, consultation with NMFS would be required. Such consultation would occur during the Section 7 or 10 consultation process (see "Federal Endangered Species Act" above).

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC Sections 703–712; 50 CFR Subchapter B) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory birds, or part, nests, or eggs of such migratory birds, that are listed in wildlife protection treaties between the United States and Canada, Mexico, Japan, and Russia. The MBTA applies to almost all avian species that are native to California. The MBTA prohibits the take of such species, including the removal of nests, eggs, and feathers. It requires that all federal agencies consult with USFWS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect migratory birds.

The Migratory Bird Treaty Reform Act amends the MBTA so that nonnative birds or birds that have been introduced by humans to the United States or its territories are excluded from protection under the MBTA.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, directs each federal agency taking actions that have or may have adverse impacts on migratory bird populations to work with USFWS to develop a memorandum of understanding to promote the conservation of migratory bird populations.

Federal Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions (16 USC Section 668). Under the Bald and Golden Eagle Protection Act, it is a violation to "take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle commonly known as the American eagle, or golden eagle, alive or dead, or any part, nest or egg, thereof." "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb." "Disturb" is further defined in 50 CFR Part 22.3 as:

> "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Clean Water Act

The CWA (33 USC Section 1251 et seq.) establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the U.S., which includes all navigable waters, their tributaries, lakes and ponds, and impoundments of jurisdictional waters, as well as some wetlands adjacent to the aforementioned waters (33 CFR Section 328.3). Areas typically not considered to be jurisdictional waters include ephemeral features, diffuse stormwater runoff and directional sheet flow over upland, non-tidal drainage and irrigation ditches excavated on dry land, prior converted cropland, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial waterbodies such as swimming pools, vernal pools, water-filled depressions, stormwater control features, groundwater recharge structures, water reuse and wastewater recycling structures, and waste treatment systems (33 CFR Section 328.3). Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under the provisions of CWA Section 404. Activities involving placement of fill into jurisdictional waters of the U.S. are regulated by USACE through permit requirements. No USACE permit is effective in the absence of state water quality certification pursuant to Section 401 of CWA.

Section 401 of the CWA requires an evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) issue water quality certifications. Each RWQCB is responsible for implementing Section 401 in compliance with the CWA and its water quality control plan (also known as a Basin Plan). Applicants for a federal license or permit to conduct activities that may result in a discharge to waters of the U.S. (including wetlands or vernal pools) must also obtain a Section 401 water quality certification to ensure that any such discharge will comply with the applicable provisions of the CWA.

State Laws, Regulations, and Policies

California Endangered Species Act

The CESA (F&G Code Chapter 1.5, Sections 2050-2116 and 14 Cal. Code Regs. Sections 783-787.9) 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, CDFW has jurisdiction over state-listed species. CDFW regulates activities that may result in "take" (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of individuals listed under the CESA. Habitat degradation or modification is not expressly included in the definition of "take" under the F&G Code. CDFW has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification."

Based on a review of recent ecological studies of other projects in the vicinity; aerial photographs and topographic maps; and other relevant scientific literature, technical databases, and resource agency reports, one state-listed wildlife species occurs, or has potential to occurs, in the VMP area: Alameda whipsnake. Three state-listed plant species occur, or have potential to occur, in the VMP area: pallid manzanita, Presidio clarkia, and San Francisco popcornflower (*Plagiobothrys diffusus*). If VMP activities would result in take of a state-listed species, an incidental take permit would be required through Section 2081 consultation with CDFW.

California Environmental Quality Act

Under CEQA (Pub. Res. Code Section 21000 et seq.), a project is normally considered to result in a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species; substantially interferes with the movement of resident or migratory fish or wildlife; or substantially diminishes habitat for fish, wildlife, or plants. The CEQA Guidelines (14 Cal. Code Regs. Section 15380) define "endangered" as when an animal or plant's survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors." A species of animal or plant is rare when either "[a]lthough not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens or [t]he species is likely to become endangered in the future." A species is presumed threatened or endangered based on its listing under the CESA and ESA, as well as any other species that meet the criteria of the resource agencies or local agencies (e.g., CDFW-designated "species of special concern" and species ranked as CRPR 1 or 2).

California Fish and Game Code

The F&G Code includes various statutes that protect biological resources, including the Native Plant Protection Act of 1977 (NPPA) and the CESA (F&G Code Sections 2050–2098). The NPPA (F&G Code Section 1900-1913) authorizes the Fish and Game Commission to designate plants as endangered or rare and prohibits take of any such plants, except as authorized in limited circumstances.

The CESA prohibits state agencies from approving a project that would jeopardize the continued existence of a species listed under the CESA as endangered or threatened. Section 2080 of the F&G Code prohibits the take of any species that is state listed as endangered or threatened, or designated as a candidate for such listing. CDFW may issue an incidental take permit authorizing

the take of listed and candidate species if that take is incidental to an otherwise lawful activity, subject to specified conditions.

F&G Code Sections 3503 and 3513 protect native and migratory birds, including their nests and eggs, from all forms of take. In addition, Section 3511 lists fully protected birds, Section 5515 lists fully protected fish, Section 4700 lists fully protected mammals, and Section 5050 lists fully protected amphibians.

CDFW regulates activities that will interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the F&G Code requires that CDFW be notified of lake or streambed alteration activities. If CDFW subsequently determines that such an activity might adversely affect an existing fish and wildlife resource, it has the authority to issue a streambed alteration agreement, including requirements to protect biological resources and water quality.

Porter-Cologne Water Quality Control Act

The SWRCB works in coordination with the nine RWQCBs to preserve, protect, enhance, and restore water quality. Each RWQCB makes decisions related to water quality for its region and may approve, with or without conditions, or deny projects that could affect waters of the state. Their authority comes from the CWA and the State's Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (California Water Code Section 13000 et seq.). The Porter-Cologne Act broadly defines waters of the state as "any surface water or groundwater, including saline waters, within the boundaries of the state." Because the Porter-Cologne Act applies to any water, whereas the CWA applies only to certain waters, California's jurisdictional reach overlaps and may exceed the boundaries of waters of the U.S. For example, Water Quality Order No. 2004-0004-DWQ states that shallow waters of the state include headwaters, wetlands, and riparian areas. Where riparian habitat is not present, such as may be the case at headwaters, jurisdiction is taken to the top of bank.

On April 2, 2019, the SWRCB adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State, which became effective on May 28, 2020. In these new guidelines, riparian habitats are not specifically described as waters of the state but instead as important buffer habitats to streams that do conform to the State Wetland Definition. The Procedures describe riparian habitat buffers as important resources that may be included in required mitigation packages when granting permits that involve impacts to waters of the state, as well as to other areas requiring permit authorization from the RWQCBs.

Pursuant to the CWA, projects that are regulated by USACE must also obtain a Section 401 water quality certification from the RWQCB. This certification ensures that the proposed project will uphold state water quality standards. Because California's jurisdiction to regulate its water resources is much broader than that of the federal government, proposed impacts on waters of the state require water quality certification even if the area occurs outside of USACE jurisdiction. Moreover, the RWQCB may impose mitigation requirements even if USACE does not, such as for riparian habitats which are buffers to waters of the state. Under the Porter-Cologne Act, the SWRCB and RWQCBs also have the responsibility of granting CWA National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements for certain point-source

and non-point-source discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources.

Any activities within the VMP area that affect waters of the United States or waters of the state would require Section 401 water quality certification and/or waste discharge requirements from the San Francisco Bay RWQCB. Most wetlands and open water features in the VMP area are considered both waters of the United States and waters of the State. It is possible that some features, such as ditches, that are not considered waters of the United States may be subject to the jurisdiction of the San Francisco Bay RWQCB as waters of the state.

Local Laws, Regulations, and Policies

Applicable local plans, policies, regulations, and ordinances are presented below.

City of Oakland Protected Trees Ordinance

Oakland Municipal Code Chapter 12.36 (Protected Trees) was enacted to protect and preserve trees by regulating their removal; prevent unnecessary tree loss and minimize environmental damage from improper tree removal; encourage appropriate tree replacement plantings; effectively enforce tree preservation regulations; and promote the appreciation and understanding of trees. The ordinance defines protected trees as California or coast live oak trees measuring 4 inches in trunk diameter at breast height (dbh, defined as approximately 4.5 feet above existing grade) or larger, and any other tree (except eucalyptus and Monterey pine) measuring 9 inches dbh or larger on any property. Protected trees also include Monterey pine trees where they occur on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed. Monterey pine trees are not protected in non-development-related situations or in situations involving removal of five or fewer trees per acre; however, public posting and written notice of proposed tree removal to the City's Office of Parks and Recreation is required per Section 12.36.070A and Section 12.36.080A, respectively. Except as noted above, eucalyptus and Monterey pine trees are not protected by this ordinance. To remove any protected trees, a tree removal permit is required.

City of Oakland Hazardous Trees Ordinance

Oakland Municipal Code Chapter 12.40 (Hazardous Trees) defines a "hazardous tree" as any tree that poses an imminent threat to life or property, as determined by inspection using the criteria established by Section 12.40.030. The ordinance defines procedures for removing hazardous trees to prevent personal injury or damage to neighboring properties.

City of Oakland Creek Protection Ordinance

The purpose and intent of the City of Oakland's Creek Protection Ordinance (Oakland Municipal Code Chapter 13.16) is to:

- Safeguard and preserve creeks and riparian corridors in a natural state;
- Preserve and enhance creekside vegetation and wildlife;
- Prevent activities that would contribute significantly to flooding, erosion, or sedimentation; destroy riparian areas; or inhibit their restoration;

- Enhance recreational and beneficial uses of creeks;
- Control erosion and sedimentation;
- Protect drainage facilities; and
- Protect the public health and safety, and public and private property.

The ordinance includes permitting guidelines for development and construction projects taking place in or near creeks. Activities subject to the guidelines include the clearing of vegetation for wildfire hazard reduction purposes. Vegetation management activities on any creekside property require a Creek Protection Permit. "Creekside properties" are defined as properties located within Oakland, as identified by the Watershed Programs Manager, that have a creek or riparian corridor crossing the property and/or are contiguous to a creek or riparian corridor. Creekside properties within the VMP area are shown on Figure 3.4-2. The intent is to ensure that permitted activities will avoid or limit, to the extent feasible, adverse impacts to creeks. For vegetation management activities within creekside properties under the VMP, OFD will obtain a Creek Protection Permit, as outlined in the ordinance.

A Creek Protection Plan is required for approval of a Creek Protection Permit when the work falls within Categories III and IV (Oakland Municipal Code Section 13.16.130). The Creek Protection Plan must include BMPs to protect the creek. Category III includes work that may adversely impact the creek beyond the 20-foot setback from the top of bank of the creek and is within 100 feet of the centerline of the creek. Category IV includes work that is conducted between the centerline of the creek and the 20-foot setback from the top of bank of the creek.

City of Oakland General Plan

The Open Space, Conservation, and Recreation Element of the City's General Plan (City of Oakland 1996) is the official policy document addressing the management of open land, natural resources, and parks in Oakland. The following objectives and policies from the City of Oakland General Plan are relevant to the VMP:

Objective OS-1: Resource Conservation Areas - To conserve and appropriately manage undeveloped areas in Oakland which have high natural resource value, scenic value, or natural hazards which preclude safe development.

> **Policy OS-1.1:** Wildland Parks - Conserve existing City and Regional Parks characterized by steep slopes, large groundwater recharge areas, native plant and animal communities, extreme fire hazards, or similar conditions. These areas are included in Figure 4 as Potential Resource Conservation Areas. Manage such areas to protect public health and safety and conserve natural resources.

Objective CO-1: Soil Conservation – To protect and preserve soil as a resource for healthy plant, animal, and human life.

Objective CO-6: Surface Waters – To protect the ecology and promote the beneficial uses of Oakland's creeks, lakes, and nearshore waters.

Policy CO-6.1: Creek Management – Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.

Objective CO-7: Plant Resources – To minimize the loss of native plant communities and restore these communities where they have been damaged or lost, and to preserve Oakland's trees unless there are compelling safety, ecological, public safety, or aesthetic reasons for their removal.

Policy CO-7.1: Protection of Native Plant Communities – Protect native plant communities, especially oak woodlands, redwood forests, native perennial grasslands, and riparian woodlands, from the potential adverse impacts of development. Manage development in a way which prevents or mitigates adverse impacts to these communities.

Policy CO-7.2: Native Plant Restoration – Encourage efforts to restore native plant communities in areas where they have been compromised by development or invasive species, provided that such efforts do not increase an area's susceptibility to wildfire.

Policy CO-7.3: Forested Character – Make every effort to maintain the wooded or forested character of tree-covered lots when development occurs on such lots.

Policy CO-7.4: Tree Removal – Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.

Policy CO-7.5: Non-native Plant Removal – Do not remove non-native plants within park and open space areas solely because they are non-natives. Plant removal should be related to other valid management policies, including fire prevention.

Policy CO-7.6: Rehabilitation of Damaged or Dead Vegetation – Encourage programs which rehabilitate, enhance, or replace damaged or dead vegetation as appropriate.

Objective CO-8: Wetlands – To conserve wetlands so that they may continue to provide habitat for fish and wildlife.

Policy CO-8.1: Mitigation of Development Impacts – Work with federal, state, and regional agencies on an on-going basis to determine mitigation measures for development which could potentially impact wetlands. Strongly discourage development with unmitigable adverse impacts.

Objective CO-9: Rare, Endangered, and Threatened Species – To protect rare, endangered, and threatened species from the impacts of urbanization.

Policy CO-9.1: Habitat Protection – Protect rare, endangered, and threatened species by conserving and enhancing their habitat and requiring mitigation of potential adverse impacts when development occurs within habitat areas.

Objective CO-10: Vegetation Management – To manage vegetation so that the risk of catastrophic wildfire is minimized.

> **Policy CO-10.1:** Flammable Vegetation Control – Subject to the availability of City resources and at the direction of the City Council and applicable City departments, control flammable vegetation on public and private open space lands in the Oakland Hills to reduce wildfire hazards.
>
> **Policy CO-10.2:** Fire Prevention Measures – As determined necessary by the City, require individual property owners and developers in high hazard areas to reduce fire hazards on their properties through a range of preventative measures. Landscaping and site planning in these high hazard areas should minimize future wildfire hazards.

Objective CO-11: Wildlife – To sustain a healthy wildlife population within the City of Oakland.

> **Policy CO-11.1:** Protection from Urbanization – Protect wildlife from the hazards of urbanization, including loss of habitat and predation by domestic animals.
>
> **Policy CO-11.2:** Migratory Corridors – Protect and enhance migratory corridors for wildlife. Where such corridors are privately owned, require new development to retain native habitat or take other measures which help sustain local wildlife population and migratory patterns.

North Oakland Hill Area Specific Plan

North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes vegetation management prescription.

3.4.3 Impact Analysis

Methodology

The biological resources analysis for the DEIR relies on both a review of existing databases and a baseline evaluation of biological resources that were conducted during VMP development, as described in Section 3.4.1. The following impact analysis focuses on reasonably foreseeable effects of the VMP compared with baseline conditions at the time the NOP was published (November 2019).

As described in Section 3.1, "Overview," certain activities that are proposed as part of the VMP have been undertaken by OFD in the past on an ongoing basis. Therefore, the baseline was established by averaging the amount of vegetation management activities conducted annually over the last 15 years, which amounts to 900 acres of goat grazing and 400 acres of roadside treatment and small parcel activities, using a combination of hand labor and mechanical techniques. These activities have not typically involved removal of mature trees, although saplings have been removed. Under the VMP, treatment of roadside areas and urban/residential parcels would be anticipated to encompass 500 acres per year, an increase of 25 percent over baseline conditions.

The proposed VMP activities that have not been routinely conducted in the past are primarily tree removal and herbicide application. In terms of spatial distribution, areas of mechanical and hand labor have largely been restricted to roadside areas and small parcels under baseline conditions. Under baseline conditions, grazing has occurred within Shepherd Canyon Park, Leona Heights Park, Beaconsfield Canyon, North Oakland Sports Field, Grizzly Peak Open Space, Sheffield Village Open Space, Knowland Park and Arboretum, King Estate Open Space Park, and Joaquin Miller Park. With implementation of the VMP, mechanical and hand labor techniques would take place more broadly within the boundaries of parks and open spaces, rather than being limited to roadsides or access points.

It is important to note that the potential impacts associated with vegetation management activities to reduce fuel loads and associated fire risk are generally temporary in nature as vegetation and habitats change and develop over time. The VMP does not propose vegetation type conversion (such as conversion from oak woodland to grassland). Additionally, site-specific biological resource surveys would be conducted, as appropriate and as required by the mitigation measures identified below, before the implementation of individual VMP treatment projects.

The potential direct and indirect effects of the VMP are described and evaluated according to significance criteria from Appendix G of the CEQA Guidelines and the City's adopted significance criteria. Direct impacts are those that would be caused by VMP activities and occur at the same time and place as those activities, whereas indirect impacts are those that are reasonably foreseeable and caused by VMP activities, but would occur at a different time or place. For project impacts that would be significant, feasible mitigation measures are identified, and any residual impact is evaluated to determine whether mitigation measures would reduce the impact to a less-than-significant level or whether the impact would remain significant and unavoidable.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland CEQA Thresholds of Significance, it was determined that the VMP would result in a significant impact on biological resources if it would:

- 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 CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Fundamentally conflict with local policies or ordinances protecting biological resources, or conflict with the provisions of an adopted HCP or Natural Community Conservation Plan (NCCP);

- Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code Chapter 12.36) by removal of protected trees under certain circumstances; or

- Fundamentally conflict with the City of Oakland Creek Protection Ordinance (Oakland Municipal Code Chapter 13.16) intended to protect biological resources.

Environmental Impacts

The impact analysis describes the potential effects on biological resources that may result from VMP activities, including mechanical treatment techniques, hand labor techniques, herbicide application, and grazing.

Impact BIO-1: Potential Adverse Effects on Special-Status Plant Species (*Less than Significant with Mitigation*)

Impact BIO-1A: State-Listed and/or Federally Listed Special-Status Plants (*Less than Significant with Mitigation*)

As described in Section 3.4.1, "Environmental Setting," three state-listed and/or federally listed (hereafter jointly referred to as "listed") plant species are known to occur or have potential to occur in the VMP area: pallid manzanita, Presidio clarkia, and San Francisco popcornflower.

As described above, pallid manzanita is a shrub that is present within Joaquin Miller Park, including on both sides of Skyline Boulevard near the Redwood Glen Trailhead, approximately 500 feet west of the Roberts Park main entrance (known as the "'Big Trees'" pallid manzanita population). Pallid manzanita planting areas are also located adjacent to the nursery. The Chabot Space and Science Center and the associated pallid manzanita restoration site is located partially within park boundaries and partially off site adjacent to the park's northern property boundary. Habitat for this species includes broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. Potentially suitable habitat is present for this species in Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Field, Sheffield Village Open Space, Knowland Park, King Estate Open Space Park, and on some urban and residential parcels that have coast oak woodland or closed-cone pine-cypress habitats). The pathogen *Phytophthora cinnamomi* has killed individual pallid manzanitas within the VMP area (USFWS 2015).

Presidio clarkia, an annual plant, is also present within Joaquin Miller Park, on serpentine soils located in the southernmost portion of the park, near the intersection of Skyline Boulevard and Joaquin Miller Road. Presidio clarkia is also known to occur on City-owned medians near Skyline Boulevard and Chadbourne Way (USFWS 2010a). This species also occurs on roadsides nearby, specifically along the north side of Kimberlin Heights Drive, Colgett Drive, and Crestmont Drive at the junction with Westfield Way (USFWS 2010a). There are also other observations of this species in the nearby Crestmont neighborhood (CDFW 2020).

San Francisco popcornflower has not been observed within the VMP area; however, a 1997 CNDDB occurrence is located near the intersection of Redwood Road and Skyline Boulevard. This occurrence is listed in the EBCNPD database with a note stating that the identification is uncertain (Lake 2020). This species occurs in vernally moist grassland habitats. Potentially suitable habitat for this species is present in Knowland Park, Joaquin Miller Park, Sheffield Village Open Space, King Estate Open Space Park, and urban and residential parcels that have annual grasslands.

As described in Section 2.5 in Chapter 2, *Project* Description, of this DEIR, OFD will reach out to the local park stewardship groups during the annual work plan development process to solicit input or feedback on current vegetation management needs in the specific park, as well as potential treatment options, treatment timing, and local site conditions. This conversation will include discussion of any special-status plants (naturally occurring or planted by stewardship groups) that are known to occur near or within treatment areas.

Impacts to listed plants that would adversely affect more than 5 percent of a given population for state-listed or federally listed species, 10 percent for CRPR List 1B and 2 species, and 20 percent for CRPR List 3 or 4 or A-ranked species would be significant, as they would have an increased likelihood of reducing the resiliency of local populations to repopulate and recover[6]. The lower thresholds reflect the relative regional rarity of the different categories of these species (state-listed or federally listed species, CRPR List 1B and 2 species, and CRPR List 3 or 4 or A-ranked species) and, therefore, the potential for impacts of VMP activities on regional populations of these species to substantially reduce the number or restrict the range of a special-status plant species.

Mechanical and Hand Labor Treatments

Potential adverse effects from mechanical and hand labor treatments include physical removal of listed plants due to trampling or vehicle access to treatment areas, as well as accidental direct removal during VMP activities. Mechanical methods also have the potential to spread pathogens such as *Phytophthora*, which is spread through cutting by contaminated equipment and contaminated soil (see Impact BIO-3B for further discussion on pathogens), or to introduce invasive species into listed plant populations.

USFWS listed vegetation and fire management, including mowing, weed whacking, and weed eating, as one of the primary threats to subpopulations of Presidio clarkia in the Oakland Hills (USFWS 2010a). USFWS also states:

> Presidio clarkia within the Chadbourne Way, Kimberlin Heights Drive, Colgett Drive, Crestmont Drive, and Old Redwood Road subpopulations continue to be threatened by road maintenance and vegetation and fire management activities implemented by the City of Oakland before the clarkia plants have released and dispersed their seeds" (USFWS 2010a).

[6] These thresholds have been previously relied on in the County of San Mateo Routine Maintenance Program Environmental Impact Report (County of San Mateo 2020).

While carefully planned and timed mowing can result in improved habitat conditions for Presidio clarkia (Naumovich 2019), mowing can also remove individual Presidio clarkia plants. Mowing or other direct removal of Presidio clarkia plants prior to seed set and dispersal would be a significant impact.

Implementation of **Mitigation Measure BIO-1 (Provide Biologist Review and Worker Training), Mitigation Measure GEO-1 (Minimize Area of Disturbance), Mitigation Measure BIO-2a (Avoid Special-Status Plant Species), Mitigation Measure BIO-2b (Provide Compensatory Mitigation for Special-Status Plant Species), Mitigation Measure BIO-3 (Seeding with Native Species)** and **Mitigation Measure BIO-4 (Avoid Presidio Clarkia Sensitive Time Periods)** would reduce these impacts on listed plant species. Mitigation Measure BIO-1 requires a training program for all staff, contractors, and volunteers who would perform vegetation management work. The training program would be conducted by a qualified biologist and would describe special-status species, including plants, and how to avoid harming the species. This training program would reduce the incidence of accidentally destroying a listed plant or plant population. Mitigation Measure BIO-2a requires pre-activity surveys to identify and flag protected plants, implement avoidance buffers, and implement appropriate treatment windows to avoid sensitive seasons (e.g., avoiding seed set and dispersal) during the species' lifecycles. If special-status plants cannot be completely avoided, a qualified botanist has determined that the treatment activity will not be beneficial to the special-status plant population, and impacts would be above the threshold (5 percent of a population for listed plants, 10 percent for CRPR List 1B and 2 species, and 20 percent for CRPR List 3 or 4 or A-ranked species), Mitigation Measure BIO-2b would require compensation for significant impacts on populations of special-status plants through a combination of preservation and enhancement of those species' populations outside VMP treatment areas. Mitigation Measure BIO-3 would require seeding of soils exposed by VMP activities with native plant or annual sterile seeds, which would minimize the potential for invasive plant species to colonize exposed soils and subsequently spread into adjacent listed plant populations. Mitigation Measure BIO-4 would require surveys for Presidio clarkia annual prior to implementing VMP treatments in areas known to support Presidio clarkia populations. VMP treatments would not occur within areas supporting Presidio clarkia populations until a qualified biologist determines that the Presidio clarkia have released their seeds for the season, and no herbicide use would be allowed in these areas. Mitigation Measure GEO-1 would minimize the area of soil disturbance when VMP activities are conducted, reducing the potential for impacts to listed plant species. With implementation of these mitigation measures, mechanical and hand labor impacts on listed plant populations would be less than significant.

Grazing

Allowing animals to graze in areas where pre-construction surveys have not been completed or protection fencing has not been installed around listed plants could result in animals trampling or consuming listed plants, which would be a significant impact. As described above, implementation of Mitigation Measure BIO-2a would require pre-activity surveys to identify and flag protected plants, implement avoidance buffers, and implement appropriate treatment windows to avoid sensitive seasons during the species' lifecycles. Implementation of **Mitigation Measure BIO-5 (Grazing)** would require exclusion of grazing animals from listed plant populations unless a qualified botanist determines that grazing would be beneficial to the population, in which case grazing may occur within the population under the direct supervision

of a qualified botanist. With implementation of these mitigation measures, grazing impacts on listed plant populations would be less than significant.

Herbicides

Herbicides, if used in the vicinity of listed plant populations, could result in the death of individual listed plants; this would be a significant impact. Herbicide impacts to listed plants could occur from inadvertent direct application to a listed plant, off-target herbicide contact via drift, or residual herbicide in soil. Implementation of Mitigation Measure BIO-1 would minimize potential herbicide impacts by training staff, contractors, and volunteers about special-status species, including plants, and how to avoid harming these species. This training would reduce the potential for accidentally applying herbicide to a listed plant or plant population. Implementation of Mitigation Measure BIO-2a would require pre-activity surveys to identify and flag protected plants and establish avoidance buffers and would prohibit the use of herbicide within 100 feet of listed plants, minimizing the potential for herbicide impacts to listed plants. By conducting the surveys prior to the activities, the surveys would most accurately identify the locations of existing plants. A lead agency may rely on future studies to devise the specific design of a mitigation measure when the results of later studies are used to tailor mitigation measures to fit on-the-ground environmental conditions. (*Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 524 [upholding mitigation measures, based on preconstruction surveys, requiring identified steps for avoiding impacts to biological resources to be implemented].) Implementation of **Mitigation Measure HAZ-5 (Standard Herbicide Use Requirements)** would reduce the potential for herbicide impacts to listed plants by using the lowest recommended application rates of herbicides and surfactants, and avoiding application of herbicides within 48 hours of predicted rainfall (which would minimize the potential for herbicide to run off into adjacent areas). Implementation of Mitigation Measure HAZ-5 also requires herbicides to be applied by or under the supervision of a licensed applicator. **Mitigation Measure HAZ-4 (Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides)** would avoid use of herbicides under wind conditions that would exacerbate herbicide drift, by prohibiting the use of spray herbicide application when wind velocities are greater than 7 miles per hour. These mitigation measures would minimize the potential for herbicide drift onto listed plants. As herbicide would not be applied in areas with listed plants, residual soil effects of herbicides would have no impact on listed plants. With implementation of these mitigation measures, herbicide impacts on listed plant populations would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

The City shall retain a qualified biologist to review the annual work plan each year prior to conducting proposed VMP activities. The qualified biologist shall provide detailed guidance to staff regarding special status-species, sensitive habitats, and implementation of relevant mitigation measures described in this EIR. The qualified biologist shall also develop and present an environmental training program to all staff responsible for performing VMP treatment activities, including City contractors and volunteers. The training program shall be presented annually, at a minimum. Staff shall be trained to recognize special-status species and their habitats within the applicable VMP treatment areas. The training shall include maps and photos of known special-

status species populations and location of riparian corridors or sensitive habitats. Staff shall also be trained to use protective measures, including those described in Mitigation Measures BIO-2a through BIO-5, GEO-1, and HAZ-4 and HAZ-5, to ensure that such species are not adversely impacted by VMP activities.

Mitigation Measure BIO-2a: Avoid Special-Status Plant Species (revised from VMP BMP BIO-3)

The City and its contractors shall ensure that, before conducting treatment activities, VMP treatment areas shall be surveyed for special-status plants with the potential to occur in the VMP area. Avoidance of Presidio Clarkia is described in Mitigation Measure BIO-4. To avoid and/or minimize potential impacts on special-status plants, the following actions shall be taken:

1. A qualified botanist shall conduct protocol-level surveys for special-status plants within the treatment area following survey methods from CDFW's Protocols for Surveying and Evaluating Impacts on Special Status Native Plant Populations and Natural Communities (CDFW 2018), or most updated version. Surveys shall be conducted during the appropriate blooming period before commencement of work.

2. If protocol-level surveys, consisting of at least two survey visits (e.g., early blooming season and later blooming season) during a normal weather year, have been completed in the 5 years before implementation of the VMP treatment project and no special-status plants were found, and no treatment activity occurred after the protocol-level survey, treatment may proceed in that area without additional plant surveys.

3. If special-status plants are not found, the botanist will document the findings in a report to the City and no further mitigation will be required.

4. If special-status plant species are present at the treatment area based on the pre-treatment survey, the City's preferred approach is to avoid causing any impacts to the special-status species or its habitat, if feasible. In the event that complete avoidance is not possible, the qualified biologist shall minimize impacts on the species by implementing one or more of the following measures, as appropriate based upon the plant identified, the nature of the treatment, and the location:

    A. Flag or otherwise delineate in the field the special-status plant populations and/or sensitive natural community to be protected;

    B. Allow adequate buffers around plants or habitat; the location of the buffer zone shall be shown on the contract documents and marked in the field with stakes and/or flagging in such a way that exclusion zones are visible to personnel without excessive disturbance of the sensitive habitat or population itself (e.g., from installation of fencing); and

C. Schedule vegetation treatment or other activities to take place during dormant and/or non-critical life cycle period.

5. If special-status plant species are identified at the treatment area and treatment is not planned for two years, the qualified biologist will conduct a follow-up survey prior to treatment to determine if the boundaries of the population have shifted and to implement the measures outlined in step (4) above.

6. Herbicides shall not be used within 100 feet of special-status plant populations.

7. If impacts to special-status plant populations cannot be completely avoided or minimized to a less than significant level, the City shall implement the following measures:

    - The qualified botanist will determine if the special-status plant population will benefit from treatment in the occupied habitat area even though some of the individual plants may be adversely affected during treatment activities. If the qualified botanist determines that treatment activities will be beneficial to a special-status plant population, no compensatory mitigation will be required. For a treatment to be considered beneficial to special-status plants, the qualified botanist will demonstrate that habitat function is expected to improve with implementation of the treatment such that special-status plant populations would expand, regenerate, or display increased vigor after treatment implementation. This determination will consider and cite scientific studies demonstrating that the species or a similar species has benefitted from increased sunlight from canopy opening, eradication of invasive species, or otherwise reduced competition for resources. This determination will be documented in the survey results letter report. The City may consult with CDFW and/or USFWS for technical information regarding this determination.

    - If a qualified botanist determines that treatment activities will not be beneficial to a special-status plant population and if the impacts are above the specified thresholds (5 percent for state-listed or federally listed species, 10 percent for CRPR List 1B and 2 species, and 20 percent for CRPR List 3 or 4 or A-ranked species), then Mitigation Measure BIO-2b shall be implemented.

Mitigation Measure BIO-2b: Provide Compensatory Mitigation for Special-Status Plant Species

The City shall prepare a Compensatory Mitigation Plan and provide compensatory mitigation for impacts on special-status plant populations where such impacts are unavoidable, a qualified botanist has determined that the treatment activity will not be beneficial to the special-status plant population, and impacts are above the specified thresholds: 5 percent for state-listed or federally listed species, 10 percent for CRPR List 1B and 2 species, and 20 percent for CRPR List 3 or 4 or A-ranked species.

The Compensatory Mitigation Plan will detail the compensatory mitigation strategy for unavoidable impacts on special-status plants. Compensation for unavoidable impacts on populations of special-status plants shall be provided by a combination of preservation and enhancement of those species' populations. For impacts on populations (including partial populations) of a specific special-status plant species, compensatory mitigation shall include preservation, enhancement, and management of lands that (a) already support equal or greater numbers (and health) of individuals of that species and (b) contain sufficient unoccupied habitat to allow for an increase in populations (at least equivalent to the number affected) through habitat enhancement and management. Compensatory mitigation may also include creating off-site populations on mitigation sites through seed collection or transplantation and/or restoring or creating suitable habitat. To determine the magnitude of the impact to the entire population of the species, the number of individuals affected will be determined by using the highest number of individuals known to be present in the impact area within the prior 10 years (if the impact area has undergone multiple surveys in recent years). If the special-status plant taxa impacted are listed under ESA, CESA, or NPPA, the Compensatory Mitigation Plan will be submitted to CDFW and/or USFWS (as appropriate) for review and comment.

Success criteria for preserved and compensatory populations shall include:

- The extent of occupied area and plant density (number of plants per unit area) in compensatory populations would be equal to or greater than the affected occupied habitat.

- Compensatory and preserved populations would be self-producing. Populations would be considered self-producing when:

  - plants reestablish annually for a minimum of five years with no human intervention such as supplemental seeding; and

  - reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the treatment area vicinity.

If off-site conservation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the Compensatory Mitigation Plan shall include details of these measures, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long term viable populations.

If relocation efforts are part of the Compensatory Mitigation Plan, the plan shall include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria such as those listed above, and remedial action responsibilities should the initial effort fail to meet long-term conservation requirements.

After the Compensatory Mitigation Plan has been implemented, the City shall document the results in a mitigation monitoring report until the success criteria in the plan are met.

Mitigation Measure BIO-3: Seeding with Native Species (VMP BMP BIO-10)

To minimize the potential for invasive plant species to colonize exposed soils and subsequently spread into adjacent listed plant populations, the City and its contractors shall reseed exposed soil resulting from VMP activities as follows:

1. Sites where vegetation management activities result in exposed soil shall be stabilized to prevent erosion. Disturbed areas shall be seeded with native seed as soon as is appropriate after vegetation management activities are completed. An erosion control seed mix may be applied to exposed soils, including down to the ordinary high water mark on stream banks.

2. The erosion control seed mix shall consist of California native grasses (such as, but not limited to *Hordeum brachyantherum*, *Elymus glaucus*, *Stipa pulchra*, *Danthonia californica*, and *Festuca microstachys*) or annual, sterile seed.

Mitigation Measure BIO-4: Avoid Presidio Clarkia Sensitive Time Periods

If VMP treatment activities, including mowing and weed eating, are planned within known habitat for Presidio clarkia (defined as the median strips and roadside along Skyline Boulevard and Chadbourne Way between Crestmont Drive and Redwood Road, roadsides along the north side of Kimberlin Heights Drive, Colgett Drive, the roadside of Crestmont Drive at the junction with Westfield Way, the roadside of Old Redwood Road, and the portion of Joaquin Miller Park located south of Skyline Boulevard near the junction with Joaquin Miller Road), the City and its contractors shall ensure that the following processes are followed:

- Annually prior to the implementation of proposed VMP treatment activities within Presidio clarkia known habitat areas, a qualified botanist shall conduct a survey of Presidio clarkia distribution in areas where VMP treatments are proposed during the blooming period for this species (typically May and June). The botanist shall mark the limits of the Presidio clarkia distribution, and no work shall occur in these areas until a qualified botanist determines that the Presidio clarkia have released their seeds, which typically occurs in the late summer.

- If VMP treatments occur in areas adjacent to marked Presidio clarkia populations during the species growing season prior to Presidio clarkia seed release, a biological monitor shall be present during treatment implementation. The biological monitor shall monitor work crews to prevent accidental entry into the Presidio clarkia areas.

- Herbicides, if chosen as a VMP treatment method, shall not be used within 100 feet of Presidio clarkia known habitat areas.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

1. Livestock shall generally (in >80 percent of situations) be excluded from riparian areas where feasible, and shall be entirely (i.e., completely) excluded from streams with steep banks. Grazing contractors shall provide alternative water sources to avoid livestock reliance on natural water sources. Prior to conducting grazing on creekside properties (as defined in the Creek Protection Ordinance), the City shall obtain a Creek Protection Permit.

2. If temporary fencing is used during grazing treatments, wildlife-friendly fencing design shall be used. The fencing shall minimize the chance of wildlife entanglement by avoiding barbed wire, loose or broken wires, or any material that could impale or snag a leaping animal. The fencing shall be highly visible to birds and mammals by using high-visibility tape or wire, flagging, or other markers. Fencing shall be constructed to allow wildlife to jump over easily without injury by installing the top wire low enough (no more than approximately 40 inches high on flat ground) to allow adult deer to jump over it.

3. Livestock shall be excluded from known locations of special-status plant species and mixed chaparral habitat. If a qualified botanist determines that grazing would be beneficial to a special-status plant species, grazing may occur within the special-status plant population under the direct supervision of a qualified botanist.

4. Livestock shall be monitored to ensure over-grazing of treatment areas does not occur. Grasslands should not be grazed to less than 4 inches.

Mitigation Measure GEO-1: Minimize Area of Disturbance (VMP BMP GEN-2)

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, “Hazards and Hazardous Materials.”

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, “Hazards and Hazardous Materials.”

Conclusion

VMP treatments could result in impacts to listed plant species from physical removal by hand or mechanical treatments, grazing, or accidental herbicide application to listed plants. Implementation of Mitigation Measures BIO-1 through BIO-5, GEO-1, HAZ-4, and HAZ-5 would reduce potential impacts through staff training, pre-treatment surveys for listed plants, implementation of avoidance buffers, seeding with native plant species, exclusion of grazing animals from listed plant populations, avoidance of Presidio clarkia sensitive time periods, and minimizing potential for herbicide to inadvertently be applied to listed plants. Therefore, impacts would be **less than significant with mitigation.**

Impact BIO-1B: CRPR 1B or 2 Plants (*Less than Significant with Mitigation*)

In addition to the listed plant species discussed above, 13 special-status plant species are listed in the CNPS Rare Plant inventory as CRPR 1B or 2 and are either known to occur or have potential to occur in the VMP area. **Table 3.4-2** lists information about these plant species.

Because CRPR 1B or 2 plant species are generally somewhat more widespread than listed plant species discussed in Impact BIO-1A, the threshold for a significant impact on CRPR 1B or 2 plant species is 10 percent (see explanation of numerical thresholds in Impact BIO-1A). If impacts on CRPR 1B or 2 plant species are unavoidable, a qualified botanist has determined that the treatment activity will not be beneficial to the special-status plant population, and more than 10 percent of a specific population would be affected, the impact would be significant because of the potential to substantially reduce the size of the regional population.

Mechanical and Hand Labor Treatments

Potential impacts on CRPR 1B or 2 plant species as a result of mechanical and hand labor activities would be similar to those described for listed plants in Impact BIO-1A. Implementation of Mitigation Measures BIO-1, BIO-2a, BIO-2b, BIO-3, and GEO-1 would reduce these impacts. Mitigation Measure BIO-1 requires a training program for all staff, contractors, and volunteers who would perform vegetation management work. The training would describe special-status species, including plants, and how to avoid harming the species. This training would reduce the incidence of accidentally destroying a listed plant or plant population. Mitigation Measure BIO-2a requires pre-activity surveys to identify and flag protected plants, implement avoidance buffers, and implement appropriate treatment windows to avoid sensitive seasons during the species' lifecycles (e.g., avoiding seed set and dispersal). If special-status plants cannot be completely avoided, a qualified botanist has determined that the treatment activity will not be beneficial to the special-status plant population, and impacts would be above the threshold (10 percent of a population for CRPR 1B or 2 plants), Mitigation Measure BIO-2b would require compensation for significant impacts on populations of special-status plants through a combination of preservation and enhancement of those species' populations outside VMP treatment areas. Mitigation Measure BIO-3 would require seeding of soils exposed by VMP activities with native plant or annual sterile seeds, which would minimize the potential for invasive plant species to colonize exposed soils and subsequently spread into adjacent listed plant populations. Mitigation Measure GEO-1 would minimize the area of soil disturbance when VMP activities are conducted, reducing the potential for impacts to listed plant species. With implementation of these mitigation measures, mechanical and hand labor impacts on CRPR 1B or 2 plants would be less than significant.

Grazing

Allowing animals to graze in areas where pre-construction surveys have not been completed or protection fencing has not been installed around CRPR 1B or 2 plants could result in animals trampling or consuming CRPR 1B or 2 plants, which would be a significant impact. As described in Impact BIO-1A, implementation of Mitigation Measure BIO-2a would require pre-activity surveys to identify and flag protected plants, implement avoidance buffers, and implement appropriate treatment windows to avoid sensitive seasons during the species' lifecycles. Implementation of Mitigation Measure BIO-5 would require exclusion of grazing animals from CRPR 1B or 2 plant populations unless a qualified botanist determines that grazing would be

beneficial to the population, in which case grazing may occur within the population under the direct supervision of a qualified botanist. With implementation of these mitigation measures, grazing impacts on CRPR 1B or 2 plants would be less than significant.

Herbicides

Herbicides, if used in the vicinity of CRPR 1B or 2 plant populations, could result in the death of individual CRPR 1B or 2 plants; this would be a significant impact. Herbicide impacts to CRPR 1B or 2 plants could occur from inadvertent direct application to a plant, off-target herbicide contact via drift, or residual herbicide in soil. Implementation of Mitigation Measure BIO-1 would minimize potential herbicide impacts by training staff, contractors, and volunteers about special-status species, including plants, and how to avoid harming the species. This training would reduce the potential for of accidentally applying herbicide to a CRPR 1B or 2 plant or plant population. Implementation of Mitigation Measure BIO-2a would require pre-activity surveys to identify and flag protected plants and establish 100-foot minimum avoidance buffers, minimizing the potential for herbicide impacts to CRPR 1B or 2 plants. If special-status plants cannot be completely avoided and impacts would be above the threshold (5 percent for state-listed or federally listed species, 10 percent for CRPR List 1B and 2 species, and 20 percent for CRPR List 3 or 4 or A-ranked species), Mitigation Measure BIO-2b would require compensation for significant impacts on populations of special-status plants through a combination of preservation and enhancement of those species' populations outside VMP treatment areas. Herbicide application would only occur in upland areas, and the implementation of Mitigation Measure HAZ-5 would reduce the potential for herbicide impacts to CRPR 1B or 2 plants by using the lowest recommended application rates of herbicides and surfactants, and avoiding application of herbicides within 48 hours of predicted rainfall (which would minimize the potential for herbicide to run off into adjacent areas). Implementation of Mitigation Measure HAZ-5 also requires herbicides to be applied by a licensed applicator. Mitigation Measure HAZ-4 avoids use of herbicides under wind conditions that would exacerbate herbicide drift, by prohibiting the use of spray herbicide application when wind velocities are greater than 7 miles per hour. These mitigation measures would minimize the potential for herbicide drift onto CRPR 1B or 2 plants. As herbicide would not be applied in areas with CRPR 1B or 2 plants, residual soil effects of herbicides would have no impact on soil plants. With implementation of these mitigation measures, herbicide impacts on CRPR 1B or 2 plants would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-2a: Avoid Special-Status Plant Species (revised from VMP BMP BIO-3)

See text in Impact BIO-1A above.

Mitigation Measure BIO-2b: Provide Compensatory Mitigation for Special-Status Plant Species

See text in Impact BIO-1A above.

Mitigation Measure BIO-3: Seeding with Native Species (VMP BMP BIO-10)

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure GEO-1: Minimize Area of Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

VMP treatments could result in impacts to CRPR 1B or 2 plant species from physical removal by hand labor or mechanical treatments, grazing, or accidental herbicide application. Implementation of Mitigation Measures BIO-1 through BIO-3, BIO-5, GEO-1, HAZ-4, and HAZ-5 would reduce potential impacts through staff training, pre-treatment surveys for CRPR 1B or 2 plants, implementation of avoidance buffers, compensatory mitigation if impacts are above thresholds, seeding with native plant species, exclusion of grazing animals from plant populations, and minimizing potential for herbicide to inadvertently be applied to CRPR 1B or 2 plants. Therefore, impacts would be **less than significant with mitigation.**

Impact BIO-1C: CRPR 3 or 4 Plants and Plants Listed in the CNPSEB Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database with an A rank (*Less than Significant with Mitigation*)

Five special-status plant species are listed in the CNPS Rare Plant inventory as CRPR 3 or 4 and are known to occur or have potential to occur in the VMP area: California androsace (*Androsace elongata* ssp. *acuta*), Oakland star-tulip (*Calochortus umbellatus*), johnny-nip (*Castilleja ambigua* var. *ambigua*), phlox-leaf serpentine bedstraw (*Galium andrewsii* ssp. *gatense*), and bristly leptosiphon (*Leptosiphon acicularis*). Additionally, 155 special-status plant species with an A rank in the CNPSEB Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties Database (A-ranked species) are known to occur or have potential to occur in the VMP area. **Table 3.4-2** lists information about CRPR 3 or 4 and A-ranked species.

The potential impacts of VMP activities on CRPR 3 or 4 and A-ranked plant species are similar to those discussed in Impact BIO-1B. The mechanisms by which impacts are expected to occur for CRPR List 3 or 4 and A-ranked species are the same as those discussed for CRPR List 1B or 2 plants. CRPR List 3 or 4 and A-ranked plant species tend to be more widespread and abundant than CRPR List 1B or 2 species, however, and are less likely to experience a substantial reduction in population, which would be a significant impact.

Because CRPR 3 or 4 plant and A-ranked plant species are generally more widespread than CRPR 1B or 2 plant species, the threshold for a substantial impact on CRPR 3 or 4 special-status plant species is 20

percent. If impacts on CRPR 3 or 4 or A-ranked plant species are unavoidable, a qualified botanist has determined that the treatment activity will not be beneficial to the special-status plant population, and more than 20 percent of a specific population would be affected, the impact would be significant because of the species' regional rarity and the potential to substantially reduce the size of the regional population. Implementation of Mitigation Measures BIO-1 through BIO-3, BIO-5, GEO-1, HAZ-4, and HAZ-5 would reduce potential impacts through staff training, pre-treatment surveys for CRPR 3 or 4 or A-ranked plants, implementation of avoidance buffers, compensatory mitigation if impacts are above thresholds, seeding with native plant species, exclusion of grazing animals from special-status plant populations unless a qualified botanist determines that grazing would be beneficial the population, in which case grazing may occur within the special-status plant population under the direct supervision of a qualified botanist, and minimizing potential for herbicide to inadvertently be applied to special-status plants. Implementation of these mitigation measures would reduce the impact on CRPR 3 or 4 or A-ranked plant species to a less-than-significant level.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-2a: Avoid Special-Status Plant Species (revised from VMP BMP BIO-3)

See text in Impact BIO-1A above.

Mitigation Measure BIO-2b: Provide Compensatory Mitigation for Special-Status Plant Species

See text in Impact BIO-1A above.

Mitigation Measure BIO-3: Seeding with Native Species (VMP BMP BIO-10)

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure GEO-1: Minimize Site Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

VMP treatments could result in impacts to CRPR 3 or 4 or A-ranked plant species by physical removal from hand labor or mechanical treatments, grazing, or accidental herbicide application.

Implementation of Mitigation Measures BIO-1 through BIO-3, BIO-5, GEO-1, HAZ-4, and HAZ-5 would reduce potential impacts through staff training, pre-treatment surveys for CRPR 3 or 4 or A-ranked plants, implementation of avoidance buffers, compensatory mitigation if impacts are above thresholds, seeding with native plant species, exclusion of grazing animals from special-status plant populations, and minimizing potential for herbicide to inadvertently be applied to special-status plants. Therefore, impacts would be **less than significant with mitigation.**

Impact BIO-2: Potential Adverse Effects on Special-Status Wildlife Species (*Less than Significant with Mitigation*)

The following discussions evaluate impacts on special-status wildlife species.

Impact BIO-2A: Potential Adverse Effects on Special-Status Amphibians and Reptiles (*Less than Significant with Mitigation*)

Special-status reptiles with the potential to occur in the VMP area include western pond turtle and Alameda whipsnake (**Table 3.4-3**). California red-legged frog is the only special-status amphibian with potential to occur in the VMP area (**Table 3.4-3**).

Alameda whipsnake occurs primarily in coastal scrub and chaparral communities, but also forages in a variety of other nearby communities (typically within 500 feet of coastal scrub and chaparral) in the inner Coast Range, including grasslands and open woodlands (Swaim 1994). Chaparral and coastal scrub habitats serve as the core habitat for Alameda whipsnake home ranges (USFWS 2011). Other important habitat features usually found in "core" habitat include small mammal burrows, rock outcrops, talus, and other forms of shelter (USFWS 2011). This species' range includes five specific areas; this includes, within the VMP area, from the Anthony Chabot area to Las Trampas Ridge (USFWS 2017). Alameda whipsnake is most likely to occur within coastal scrub and chaparral habitats, but this species may also use adjacent habitats such as grasslands and oak woodlands. Portions of the VMP area are within critical habitat for this species, particularly the Grizzly Peak Open Space (Figure 3.4-4).

Western pond turtles have the potential to occur within the VMP area in aquatic habitat such as perennial streams, marshes, and ponds, and have been observed within the Sausal Creek Watershed. Western pond turtles may move up 1,150 feet away from aquatic habitat to nest in or travel through upland areas, although most individuals typically remain much nearer to their respective waterbodies (Pilliod et al. 2013).

California red-legged frog has potential to occur in aquatic habitat such as streams, freshwater pools, and ponds with emergent or overhanging vegetation. Within the VMP area, California red-legged frog is expected to occur within streams, wetlands, and riparian habitat immediately adjacent to aquatic movement and breeding habitat. The species' preferred breeding habitat consists of deep perennial pools with emergent vegetation for egg mass attachment, but this species is also known to breed in streams, backwaters within streams and creeks, ponds, and marshes (USFWS 2002). Non-breeding frogs may also be found within riparian areas (USFWS 2002). During the dry season, California red-legged frog is not typically found far from water, but this species is known to disperse up to 1.7 miles from aquatic habitat through upland habitats during periods of wet weather (USFWS 2002, Fellers and Kleeman 2007). Use of upland areas is expected to occur only during dispersal during wet periods.

All Treatments

VMP activities would generally occur in upland areas, which would reduce the potential for impacts to western pond turtle and California red-legged frog. VMP activities are generally anticipated to occur further than 100 feet from streams, in accordance with the Creek Protection Ordinance. A Creek Protection Permit would be required for any projects on creekside parcels. The City will minimize vegetation management within 100 feet of streams, but some vegetation management could still be needed near creeks to reduce fire hazard. **Table 3.4-4** shows priority projects located on creekside parcels, indicates whether the projects are within 100 feet of creek centerlines and provides acreages of these projects. **Table 3.4-4** is based on a GIS analysis of distance from streams. Smaller drainage features that would be considered streams under the Creek Protection ordinance may not be fully captured in this GIS analysis. The majority (58.6 acres out of a total of 92 acres) of the VMP treatment project acreage within 100 feet of streams consists of grazing treatments. VMP treatments could increase erosion and, subsequently, sedimentation within aquatic habitat for these species, reducing habitat quality. This would be a significant impact. Implementation of Mitigation Measures GEO-1 and GEO-2 would reduce the potential for sedimentation-related impacts to aquatic habitat by minimizing the area of VMP treatments to the minimum footprint necessary and by implementation of erosion and sediment control measures.

Table 3.4-4. Priority Projects within Creekside Properties

VMP Treatment Project Number	Priority	Within 100 feet of Creek?	Acreage of VMP Treatment Project within 100 Feet of Creek
Garber Park			
GAR-1	1	Yes	0.6
GAR-2	1	No	0
GAR-3	1	No	0
North Oakland Sports Field			
NOR-1	1	Yes	1.8
NOR-2	2	No	0
NOR-3	3	Yes	2.5
Shepherd Canyon Park			
SHP-1*	1	Yes	1.4
SHP-2*	1	Yes	1.2
SHP-3*	2	No	0
SHP-4*	3	Yes	5.9
Beaconsfield Canyon			
BCN-1	1	Yes	0.4
BCN-2	2	Yes	0.9
Marjorie Saunders Park			
MJS-1	1	Yes	0.2
MJS-2	2	Yes	0.6

VMP Treatment Project Number	Priority	Within 100 feet of Creek?	Acreage of VMP Treatment Project within 100 Feet of Creek
Dimond Canyon Park			
DIM-1*	1	Yes	0.7
DIM-2	1	Yes	0.5
DIM-3	1	No	0
Joaquin Miller Park			
JMP-1	1	Yes	2.2
JMP-2	1	Yes	0.2
JMP-3	2	No	0
JMP-4	3	Yes	3.3
Leona Heights Park			
LHT-1	1	Yes	3.8
LHT-2	1	Yes	0.3
LHT-3	2	Yes	0.4
Police/Safety Department Property			
PSD-1	1	No	0
PSD-2	1	Yes	0.1
Knowland Park and Arboretum			
KNO-1	1	Yes	1.2
KNO-2	1	Yes	3.2
KNO-3	2	Yes	1.5
KNO-4	2	Yes	0.2
KNO-5*	3	Yes	23.2
Sheffield Village Open Space			
SHF-1	1	Yes	4.0
SHF-2	2	Yes	2.2
SHF-3	3	Yes	26.2
Urban and Residential Parcels			
URB-1*	1	Yes	3.2
Tunnel Road Open Space			
TRO-1	1	Unknown**	Unknown**
Blue Rock Court			
BLU-1	1	Unknown**	Unknown**
BLU-2	2	Unknown**	Unknown**
BLU-3	3	Unknown**	Unknown**
King Estate Open Space Park			
KES-1	1	Unknown**	Unknown**

VMP Treatment Project Number	Priority	Within 100 feet of Creek?	Acreage of VMP Treatment Project within 100 Feet of Creek
KES-2	3	Unknown**	Unknown**
Oak Knoll			
OKN-1	1	Unknown**	Unknown**
OKN-2	3	Unknown**	Unknown**
Grizzly Peak Open Space			
GPO-1	1	Unknown**	Unknown**
GPO-2	2	Unknown**	Unknown**
GPO-3	3	Unknown**	Unknown**
GPO-4	3	Unknown**	Unknown**
Total			***92.0***

* Some parcels within this priority project are considered creekside parcels, but not all parcels are.

** These VMP projects would be on creekside parcels but creek mapping information was not available.

Workers implementing VMP treatments could attract predators of California red-legged and Alameda whipsnake by leaving food scraps or other trash at VMP treatment areas. Increased predation of California red-legged frog, western pond turtle, and Alameda whipsnake would be a significant impact. Implementation of **Mitigation Measure BIO-6 (Trash Removal)** would reduce the potential for workers to attract predators of these species by requiring all waste and contaminants to be contained and removed daily from the work site. With implementation of these mitigation measures, impacts from erosion, sedimentation, and trash on Alameda whipsnake, California red-legged frog, and western pond turtle would be less than significant.

Mechanical and Hand Labor Treatments

VMP activities would occur in chaparral and coastal scrub habitats and areas adjacent to these habitats. Activities within these areas could impact Alameda whipsnake, if present, through injury or mortality. Injury or mortality could be caused by equipment, vehicle traffic, and worker foot traffic and exposure to chemicals from equipment leaks. VMP activities within such habitat would also result in temporary habitat impacts (e.g., vehicles or equipment denuding or crushing grassland vegetation, localized noise disturbance or vibration from equipment or hand-held machinery) while mechanical and hand labor treatments are taking place. Thinning within suitable habitat would reduce vegetation density, but it is not expected to prevent the species' use of affected areas because individuals routinely use adjacent open habitats.

Injury or mortality of Alameda whipsnake individuals would be a significant impact. Implementation of Mitigation Measure BIO-1, which requires worker training, and **Mitigation Measure BIO-7 (Protection of Alameda Whipsnake)**, which requires pre-treatment surveys of scrub habitat, avoidance of the Alameda whipsnake breeding period, biological monitoring of VMP treatment implementation in Alameda whipsnake habitat, and prohibition of erosion control materials containing plastic monofilament, would reduce the potential for impacts.

Alameda whipsnake may use existing animal burrows within suitable habitat as refugia. VMP treatment activities within suitable habitat for Alameda whipsnake could result in temporary impacts to suitable habitat through vegetation removal by both mechanical and hand labor techniques and collapsing of burrows or other refugia by the passage of heavy equipment. Although habitat conversion is not the intended goal of the VMP, removal of trees in areas adjacent to coastal scrub habitat (such as within the closed-cone pine-cypress habitat in Grizzly Peak Open Space under projects GPO-1 and GPO-2) would improve habitat for Alameda whipsnake by decreasing shading of coastal scrub shrubs (which are preferred habitat for this species) and allowing these shrubs to become relatively more dominant within this habitat.

No VMP treatments are proposed within California red-legged frog breeding habitat or aquatic habitat for western pond turtle. As described above, most VMP treatments would occur in upland habitat and habitats that are more than 100 feet away from streams. These aspects of the VMP would minimize potential impacts to these species. However, some VMP treatments would occur within 100 feet of streams, as indicated in **Table 3.4-4**. Implementation of VMP treatments in habitats within 100 feet of streams could impact California red-legged frogs or western pond turtle through injury or mortality. Hand labor treatments have a smaller chance of impacting these species, while mechanical treatments with heavy equipment have a greater chance. Implementation of **Mitigation Measure BIO-8 (Protection of California Red-legged Frogs and Western Pond Turtles)** would minimize the potential for impacts to these species through avoidance of treatment activities immediately following rain storms (when these species are most likely to venture into upland areas farther from aquatic habitat), pre-construction surveys within 100 feet of aquatic habitat, establishment of no-work buffers if these species are detected, and relocation of these species by a qualified biologist. With implementation of Mitigation Measures BIO-1, BIO-7, and BIO-8, mechanical and hand labor impacts on Alameda whipsnake, California red-legged frog, and western pond turtle would be less than significant.

Grazing

VMP grazing treatments are not anticipated to result in direct injury or mortality of Alameda whipsnake, California red-legged frog, or western pond turtle. As described above, the majority of the VMP treatment project acreage within 100 feet of streams consists of grazing treatments. If grazing were to occur within riparian or aquatic habitats, temporary impacts could occur to habitats that support California red-legged frog and western pond turtle. Grazing could increase sedimentation into aquatic habitats, temporarily reducing habitat quality for California red-legged frog and western pond turtle. Over several years, grazing could cumulatively result in stream bank failure, erosion, and successive sedimentation, all of which could permanently alter suitable California red-legged frog and western pond turtle aquatic habitat. Implementation of Mitigation Measure BIO-5 would reduce these impacts by generally excluding (in >80 percent of situations) livestock from riparian areas, completely excluding livestock from streams with steep banks, require grazing lessees or contractors to provide alternative (i.e., other than natural) water sources for livestock, and monitoring to prevent over-grazing. With implementation of this mitigation measure, grazing impacts on Alameda whipsnake, California red-legged frog, and western pond turtle would be less than significant.

Herbicides

Herbicide use could result in adverse effects on special-status amphibians and reptiles. Glyphosate-based herbicide appears to have limited impacts on amphibians (USFWS 2002). The ester formulation of triclopyr may have direct impacts on amphibians, while the parent compound of triclopyr has been shown to be practically nontoxic to fish (USFWS 2002). In general, USEPA uses bird toxicity data as a surrogate for terrestrial-phase reptiles and amphibians and fish toxicity data as a surrogate for aquatic-phase amphibians (USEPA 2020). Herbicide use near streams or wetlands could enter these aquatic resources, resulting in impacts to California red-legged frog or western pond turtle, if present. Implementation of **Mitigation Measure BIO-9 (Protection of California Red-legged Frogs from Herbicide Use)** would reduce the potential for herbicide impacts to special-status reptiles and amphibians by using the lowest recommended rates of herbicides and surfactants, not applying herbicides to open water or riparian corridors, and not applying herbicides within 48 hours of predicted rainfall (which would minimize the potential for herbicide to run off into aquatic features). Implementation of Mitigation Measure HAZ-4 would restrict herbicide application to low- to no-wind conditions to prevent drift into sensitive areas. Implementation of **Mitigation Measure HYD/WQ-1 (Work Windows)** would reduce the potential for herbicides to enter aquatic habitat by restricting their application to the dry season. With implementation of these mitigation measures, herbicide impacts on Alameda whipsnake, California red-legged frog, and western pond turtle would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-6: Trash Removal (revised from VMP BMP BIO-7)

The City and its contractors shall be required to keep all waste and contaminants contained and remove them daily from the work site. Wildlife-proof trash receptacles shall be used. Uneaten human food and trash attracts predators of the California red-legged frog and Alameda whipsnake. A litter control program shall be instituted at each vegetation treatment site. All workers shall ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. The trash containers shall be removed from the vegetation treatment site at the end of each working day.

Mitigation Measure BIO-7: Protection of Alameda Whipsnake (revised from VMP BMP BIO-5)

1. Prior to implementing vegetation treatments in suitable Alameda whipsnake habitat (within 500 feet of core habitat), personnel involved in vegetation removal and earth-disturbing activities shall participate in an Environmental Awareness Training per Mitigation Measure BIO-1. Workers shall be informed

about Alameda whipsnake and their habitat, conservation goals, identification, and procedures to follow in the event of a possible sighting.

2. Any coastal scrub and chaparral habitat present within a vegetation treatment area shall be inspected by a qualified biologist prior to treatment to determine the presence or potential presence of Alameda whipsnakes.

3. To the maximum extent practicable, vegetation clearing activities in coastal scrub habitats shall be scheduled to avoid the breeding period for the Alameda whipsnake (March 15 through June 15).

4. A qualified biological monitor shall monitor vegetation removal and ground disturbance within Alameda whipsnake habitat, or other activities that may result in take of Alameda whipsnake. The biological monitor shall have the authority to stop any work that could result take of Alameda whipsnake. If an Alameda whipsnake is observed, the snake will be allowed to leave the area on its own volition.

5. The biological monitor shall inspect the treatment area for Alameda whipsnake each day before work begins by checking debris piles, and also beneath vehicles/equipment before it is moved.

6. If erosion control is needed, plastic monofilament netting or similar material containing netting shall not be used, as Alameda whipsnake may become entangled in this material. Coconut coir matting or tackified hydroseeding compounds are acceptable alternatives.

Mitigation Measure BIO-8: Protection of California Red-legged Frogs and Western Pond Turtles (based on VMP BMP BIO-4)

If vegetation treatment areas are planned within 100 feet of aquatic habitat, the City and its contractors shall implement the following measures.

1. A qualified biologist shall conduct one daytime survey for California red-legged frog and western pond turtle within 48 hours before commencement of vegetation management activities.

2. If no California red-legged frogs or western pond turtles are found within the activity area during the survey, the work may proceed.

3. If a California red-legged frog or western pond turtle, or the eggs or hatchlings of western pond turtle, are found within the activity area during the survey or during VMP activities, the qualified biologist shall implement the following measures:

    A. For vegetation management activities that will take less than 1 day, conduct a survey for red-legged frogs and western pond turtles on the morning of and before the scheduled work.

I. If no California red-legged frogs, western pond turtles, or turtle nests are found, the work may proceed.

II. If eggs or larvae of either species are found, a 100-foot no-disturbance buffer zone shall be established around the location of the eggs. Work may proceed outside of the buffer zone; however, work within the buffer zone shall be postponed until the eggs have hatched and young turtles have moved outside of the work area. The monitoring biologist shall determine the buffer size based on the specific site conditions and type of vegetation management.

III. If an active western pond turtle nest is detected within the treatment area, a 100-foot buffer zone around the nest shall be maintained during the breeding and nesting season (April 1-August 31). The buffer zone shall remain in place until the young have left the nest and moved outside of the work area, as determined by a qualified biologist.

IV. If adult or juvenile California red-legged frogs or western pond turtles are found, the qualified biologist shall implement one of the following two procedures:

a.) If, in the opinion of the qualified biologist, the individual(s) are likely to leave the work area on their own, and work can be feasibly rescheduled, a buffer zone shall be established around the location of the individual(s). Work may proceed outside of the buffer zone. Work within the buffer zone shall be postponed until the individual(s) have left the area, as determined by the qualified biologist. The monitoring biologist shall determine the buffer size based on the specific site conditions and type of vegetation management.

b.) If, in the opinion of the qualified biologist, capture and removal of the individual(s) to a safe location outside of the work area is less likely to result in adverse effects than leaving the individual(s) in place and rescheduling the work (e.g., if the individual[s] could potentially hide and be missed during a follow-up survey), the individual(s) shall be captured and relocated by a qualified biologist (with USFWS and/or CDFW approval, depending on the listing status of the species in question), and work may proceed.

B. For vegetation management that will take more than 1 day, the qualified biologist shall conduct a survey for California red-legged frogs and western pond turtles each morning before the scheduled work commences.

I. If an active western pond turtle nest is detected within the treatment area, a 100-foot buffer zone around the nest shall be established and maintained during the breeding and nesting season (April 1-August 31). The buffer zone shall remain in place until the young have left the nest and moved outside of the work area, as determined by a qualified biologist.

II. If adult or juvenile California red-legged frogs or western pond turtles are found, the individual(s) shall be captured and relocated by a qualified biologist (with USFWS and/or CDFW approval, depending on the listing status of the species in question), and work may proceed.

Mitigation Measure BIO-9: Protection of California Red-legged Frogs from Herbicide Use (VMP BMP BIO-2)

- In accordance with Mitigation Measure HAZ-5, only herbicides approved for use by USEPA and registered for use by CDPR shall be used for vegetation management, and approved herbicides shall be applied in accordance with federal, state, and local regulations.

- In accordance with Mitigation Measure HAZ-5, no herbicides shall be applied in open water or within 60 feet of streams.

- In project areas identified as providing suitable habitat for the California red-legged frog, the City shall ensure that any applications of sprayable formulations of herbicides shall:

  1. be applied only when the air is calm or moving away from red-legged frog habitat;

  2. begin in the portion of the work area nearest the suitable habitat and proceed away from the habitat; and

  3. not be conducted within 40 yards upwind of suitable habitat when air currents are moving toward the habitat

Mitigation Measure GEO-1: Minimize Soil Disturbance

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, “Hazards and Hazardous Materials.”

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, “Hazards and Hazardous Materials.”

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, “Hydrology and Water Quality”.

Conclusion

VMP activities could result in impacts on California red-legged frog, western pond turtle, and Alameda whipsnake through direct mortality (e.g., crushing, herbicide toxicity) and injury, or through indirect habitat degradation (e.g., removal of cover, water quality degradation), increased exposure to predators, or reduced fecundity. Implementation of Mitigation Measures BIO-5 through BIO-9, GEO-1, GEO-2, HAZ-4, HAZ-5, and HYD/WQ-1, would generally avoid grazing in riparian habitat and restrict grazing from streams to prevent erosion and sedimentation, prevent increased predation pressure on special-status amphibians and reptiles through proper trash storage and removal, require pre-activity surveys and implement necessary avoidance measures to prevent impacts on California red-legged frog and western pond turtle, and require pre-activity surveys and implement avoidance measures to prevent impacts on Alameda whipsnake, minimize the footprint of disturbance, implement erosion and sediment controls to prevent impacts to aquatic habitat, restrict herbicide use near suitable California red-legged frog aquatic habitat, prevent herbicide use in riparian habitat and contact with aquatic habitat, and reduce the potential for herbicides to enter aquatic habitat by restricting their application to the dry season. The implementation of these mitigation measures would prevent potential impacts to these species and their habitat during VMP treatment, which reduces the potential impact on California red-legged frog, western pond turtle, and Alameda whipsnake to a less-than-significant level. The impact would be **less than significant with mitigation.**

Impact BIO-2B: Potential Adverse Effects on Special-Status Birds and Other Protected Bird Nests (*Less than Significant with Mitigation*)

Special-status birds with the potential to occur in the VMP area include White-tailed Kite, Golden Eagle, and Yellow Warbler. Golden Eagle is not anticipated to nest in the VMP area due to lack of suitable nesting habitat, but this species may forage within grasslands in the VMP area. White-tailed Kite and Yellow Warbler may both nest and forage within the VMP area. White-tailed Kites could forage in grasslands and nest in trees adjacent to these areas. Yellow Warbler may nest and forage in riparian habitat within the VMP area. Other bird species that are protected by the MBTA and F&G Code Sections 3503 and 3503.5 could nest in grasslands, shrubs, trees, and other substrates within the VMP area. Due to seasonal curing times for fine fuels, and associated fire risk, complete avoidance of the bird nesting season is not possible.

All Treatments

Adult special-status birds and birds associated with active nests are not expected to be killed or injured by VMP activities because they could easily fly from the work site during staging, personnel arrival, and initial startup of equipment. However, eggs or young in nests may be killed, injured, or abandoned as a result of destruction by maintenance personnel or equipment, or removal of vegetation containing nests, as described below. This would be a significant impact on special-status bird species and other protected bird nests. Workers implementing VMP treatments could attract predators to active nests by leaving food scraps or other trash at VMP treatment areas. In some areas, VMP treatments would remove trees and shrubs that are suitable nesting habitat for White-tailed Kite and, potentially, Yellow Warbler, as well as other species with active nests. However, this is not anticipated to be a substantial loss of suitable nesting substrate when compared to the overall nesting substrate available in the VMP area and the surrounding vicinity. Implementation of **Mitigation Measure BIO-10 (Minimize Impacts to**

Nesting Birds via Site Assessments and Avoidance Measures) would reduce the potential for significant impacts on active bird nests by conducting pre-construction surveys and establishing buffers around nests identified during surveys. In addition, implementation of Mitigation Measures BIO-1 and BIO-6 would reduce impacts on active bird nests by requiring staff training and proper trash storage and disposal to avoid attracting predators to active nests. With implementation of these mitigation measures, impacts on adult special-status birds and birds associated with active nests would be less than significant.

Mechanical and Hand Labor Treatments

Removal of vegetation and trees could potentially harm the nests, eggs, or juvenile birds in nests protected by the MBTA and F&G Code and nests belonging to special-status birds through direct removal. Noise from vegetation management treatments could adversely affect nesting success of these species. Mechanical and hand labor treatments that employ the use of power tools (e.g., chainsaw) and equipment (e.g., masticator) are anticipated to have higher noise levels than other treatments types (as discussed in Section 3.10, "Noise and Vibration"), and would therefore have the highest potential for adverse noise impacts on nesting special-status birds and other protected bird nests. Such an impact on an active protected nest or special-status bird species would be significant. Implementation of Mitigation Measure BIO-10 would reduce the potential for significant impacts on active bird nests.

Foraging special-status and other birds are expected to avoid VMP treatment areas during implementation activities due to increased noise and human activity. These impacts would be temporary, would occur only during implementation of mechanical treatments, and would not substantially reduce the relatively abundant foraging habitat elsewhere in unaffected portions of the VMP area and the surrounding areas. With implementation of Mitigation Measure BIO-10, impacts of mechanical and hand labor treatments on foraging special-status birds and other birds would be less than significant.

Grazing

Grazing is not anticipated to generate excessive noise that would disrupt nesting or directly affect trees used by special-status bird species or other nesting birds. Yellow Warblers nest in riparian areas, including riparian shrubs. Their nests, if present in riparian shrubs, could be disturbed by goats, which would be a significant impact. However, goats would generally be excluded from riparian areas and would be strictly excluded from streams in accordance with Mitigation Measure BIO-5, which would reduce the potential for significant impacts on active Yellow Warbler nests. Additionally, approximately 900 acres within the VMP area are currently grazed each year for fire risk reduction under baseline conditions. During implementation of the VMP, a maximum of 1,100 acres of annual grazing would occur; therefore, the increased amount of grazing would not result in a substantial increase in the potential for disturbance of special-status bird species or other nesting birds. With implementation of Mitigation Measure BIO-5, impacts of grazing on special-status birds and other birds would be less than significant.

Herbicides

As with other VMP treatment techniques, herbicide application would eliminate treated vegetation and potentially alter vegetation structure in some portions of the VMP area. Herbicides would be used to control regrowth of removed trees and shrubs, and to kill or

prevent growth of vegetation within targeted portions of the VMP area. Herbicide application would primarily occur within two feet of ground level, but may be applied within 10 feet of ground level (for foliar herbicide application to shrubs) and would be unlikely to affect species that nest in trees or other substrates above that height. Herbicides used under the VMP are generally not anticipated to result in significant impacts to special-status birds given the relatively abundant foraging habitat and nesting substrate available in untreated portions of the VMP area and surrounding vicinity. In addition, implementation of Mitigation Measure HAZ-5 would prevent herbicide use within riparian habitat, which is suitable habitat for Yellow Warbler. The application of herbicide to an active nest belonging to special-status or other bird species could result in mortality of individuals, nest abandonment, or reduced fitness, all of which would be a significant impact. Implementation of Mitigation Measure BIO-10 would minimize potential impacts to active special-status and other bird nests from herbicide use by creating avoidance buffers around active nests. With implementation of Mitigation Measures BIO-10 and HAZ-5, impacts of herbicides on special-status birds and other birds would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-6: Trash Removal (revised from VMP BMP BIO-7)

See text in Impact BIO-2A above.

Mitigation Measure BIO-10: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1)

- When feasible, tree and shrub removal shall be conducted outside of the typical bird nesting season (February 1 and August 31).
- For activities occurring between February 1 and August 31, project areas shall be surveyed by a qualified biologist for nesting birds within 2 weeks prior to starting work. If a lapse in project-related work of 2 weeks or longer occurs, the treatment area shall be resurveyed before project work can be reinitiated.
- If nesting birds are found, a buffer shall be established around the nest and maintained until the young have fledged. Appropriate buffer widths are 250 feet for raptors, herons, and egrets; 25 feet for ground-nesting non-raptors; and 50 feet for non-raptors nesting on trees, shrubs, and structures. A qualified biologist may identify an alternative buffer based on a site-specific evaluation. No work shall occur within the buffer without written approval from a qualified biologist, for as long as the nest is active.

- The boundary of each buffer zone shall be marked with fencing, flagging, or other easily identifiable marking if work will occur immediately outside the buffer zone.
- All protective buffer zones shall be maintained until the nest becomes inactive, as determined by a qualified biologist.
- If monitoring shows that disturbance to actively nesting birds is occurring, buffer widths shall be increased until monitoring shows that disturbance is no longer occurring. If this is not possible, work shall cease in the area until young have fledged and the nest is no longer active.

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

VMP treatments have the potential to impact special-status birds (i.e., White-tailed Kite, Golden Eagle, and Yellow Warbler) and protected bird nests through direct removal of nests and noise impacts to nesting birds. Such an impact would be significant. Implementation of Mitigation Measures BIO-1, BIO-5, BIO-6, BIO-10, and HAZ-5 would reduce the potential for significant impacts by staff training, restricting grazing in riparian habitat, requiring proper trash storage and disposal to avoid attracting predators to active nests, conducting pre-activity nesting bird surveys and establishing species-appropriate avoidance buffers where active bird nests are found, and restricting the use of herbicides in riparian habitat. The implementation of these mitigation measures would prevent potential impacts to special-status bird species and other protected bird nests during VMP treatment, which reduces the potential impact to a less-than-significant level. Therefore, impacts would be **less than significant with mitigation.**

Impact BIO-2C: Potential Adverse Effects on Special-Status Mammals and CEQA-relevant Bat Species (*Less than Significant with Mitigation*)

Special-status mammals with the potential to occur in the VMP area include western red bat, pallid bat, western mastiff bat, and San Francisco dusky-footed woodrat. Several non-special-status but CEQA-relevant bat species (hereafter referred to as "CEQA-relevant bats") have potential to occur in the VMP area, including myotis bats (*Myotis* spp.) and big brown bat (*Ephesicus fiscus*). Western red bats, western mastiff bats, and CEQA-relevant bats may roost in trees in the VMP area. San Francisco dusky-footed woodrat stick houses (also referred to as "nests") were observed in many locations within the VMP area and were most often encountered in oak woodlands and riparian areas.

Mechanical and Hand Labor Treatments

Mechanical and hand labor treatments could impact special-status bats or large colonial roosts of CEQA-relevant bat species through the removal of trees that provide roosting habitat or direct mortality of bats. Removal of an active special-status roost or large colonial roost of CEQA-relevant bats would be a significant impact. The bat maternity season (March 15–July 31) is an especially sensitive period, as young may be unable to fly (i.e., non-volant) during this period. Implementation of **Mitigation Measure BIO-11 (Protection of Bat Colonies)** would

reduce the potential for impacts on special-status bats through evaluation of trees by a qualified biologist to determine the location of high-quality bat habitat, avoidance of maternity roosts while occupied by non-volant bats, and (where roosts are unavoidable) exclusion of bats from occupied non-breeding roosts during less sensitive periods.

Mechanical and hand labor treatments could result in accidental crushing of woodrat stick houses, or direct mortality from crushing by mechanical equipment. Implementation of **Mitigation Measure BIO-12 (Protection of Dusky-footed Woodrats)** would minimize these impacts by avoiding woodrat stick houses, maintaining an intact escape corridor where feasible, and hand-dismantling of houses by a qualified biologist if avoidance is not feasible. Mitigation Measure BIO-1 requires a training program for all staff, contractors, and volunteers who would perform vegetation management work. The training would describe biological resources, including special-status mammals and CEQA-relevant bat species, and how to avoid harming them. With implementation of Mitigation Measures BIO-1, BIO-11, and BIO-12, impacts of mechanical and hand labor on special-status mammals and CEQA-relevant bat species would be less than significant.

Grazing

Grazing would have no impact on bats, as grazing at ground level would not impact bat habitat. If grazing occurs in areas where woodrat stick houses are located, grazing animals could climb on stick houses. This impact would be less than significant, as stick houses would likely not be destroyed by grazing animals. Impacts of grazing on special-status mammals and CEQA-relevant bat species would be less than significant and no mitigation is required.

Herbicides

Herbicide use could result in impacts on bats if they ingest or come into direct contact with herbicides. Consumption by mammals of vegetation exposed to glyphosate may result in impacts to growth and reproduction (USEPA 2019). Imazapyr is categorized as practically nontoxic to small mammals (USEPA 2005). Triclopyr acid was found to be practically nontoxic to mammals (USEPA 1998). Other ingredients present in herbicides such as surfactants may have impacts on wildlife. Herbicide is expected to be applied on vegetation at or within 10 feet of ground level. Implementation of Mitigation Measure HAZ-4 limits application frequency; minimizes potential for drift; and prohibits application within 200 feet of residences, schools, and public use areas. Implementation of Mitigation Measure HAZ-5 would reduce the potential to impact bats by requiring the use of the lowest recommended application rates of herbicides and surfactants that achieve project objectives, and Mitigation Measure HYD/WQ-1 would restrict work to daylight hours (except in case of an emergency) when bats are not active. Given the relative abundance of bat foraging habitat in untreated portions of the VMP area and surrounding vicinity, and with implementation of Mitigation Measures HAZ-4, HAZ-5, and HYD/WQ-1, impacts on bats from herbicide use would be less than significant.

Herbicide use could impact woodrats if they were to eat vegetation treated with herbicide. As described above, woodrat stick houses were often observed in riparian areas adjacent to creeks. Implementation of Mitigation Measure HAZ-4 limits application frequency; minimizes potential for drift; and prohibits application within 200 feet of residences, schools, and public use areas. Implementation of Mitigation Measure HAZ-5 would reduce the potential for impacts to woodrats by prohibiting herbicide use within 60 feet of streams. Given the relative abundance

of woodrat foraging habitat in untreated portions of the VMP area and surrounding vicinity, and with implementation of Mitigation Measures HAZ-4 and HAZ-5, impacts on woodrats from herbicide use would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-11: Protection of Bat Colonies (VMP BMP BIO-8)

To minimize impacts on special-status bats (e.g., pallid bat, western mastiff bat, and western red bat) and large colonies of CEQA-relevant bats, the City and its contractors shall implement the following practices during tree trimming and removal activities:

1. If high-quality habitat for roosting bats (i.e., large trees with cavities of sufficient size to support roosting bats, as determined by a qualified bat biologist) is present, a qualified bat biologist shall conduct a survey for evidence of bat use within 2 weeks before the commencement of work activities. If bat-use evidence is observed, or if high-quality roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), the biologist shall conduct an evening survey and/or nocturnal acoustic survey (as necessary) to determine if a bat colony is present and to identify the specific location of the bat colony.

2. If no active maternity colony or non-breeding bat roost is located, work can continue as planned.

3. If an active maternity colony or non-breeding bat roost is located, work shall be redesigned/rescheduled to avoid disturbance of the roosts, if feasible.

4. If an active maternity colony is located and work cannot be redesigned to avoid removal or disturbance of the occupied tree or structure, disturbance shall take place outside the maternity roost season (March 15–July 31), and a disturbance-free buffer zone (determined by a qualified bat biologist based on the roost situation and species' sensitivity) shall be observed during this period.

5. If an active non-breeding bat roost is located and work cannot be redesigned to avoid removal or disturbance of the occupied tree or structure, the individuals shall be safely evicted between August 1 and October 15 or from February 15 to March 14. Bats may be evicted through exclusion after notifying CDFW. Trees with roosts that need to be removed shall first be disturbed at dusk, just before removal that same evening, to allow bats to escape during the darker hours.

Mitigation Measure BIO-12: Protection of Dusky-footed Woodrats (VMP BMP BIO-9)

1. If woodland, forest, or scrub habitat is present in a treatment area, a qualified biologist shall conduct a focused survey for woodrat stick houses within the

treatment area, access routes, and staging areas within seven days of the commencement of treatment activities.

2. If a woodrat stick house is identified in a work area, the City shall attempt to preserve the nest and maintain an intact dispersal corridor between the stick house and undisturbed habitat. Retained woodrat stick houses shall be marked with high visibility construction fencing or flagging to avoid accidental encroachment on the stick house.

3. If the woodrat stick house cannot be avoided, a qualified biologist shall deconstruct the stick house by hand in a phased approach and relocate the stick house materials to the nearest undisturbed suitable habitat. In the phased dismantling process, each house will be partially dismantled on the first day, and the remainder will be dismantled the next day, to encourage dispersal of any woodrats present. If the biologist observes that young are present, dismantling shall cease. Dismantling shall resume when the biologist determines that the young have left or are old enough to vacate under their own volition.

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Conclusion

Table 3.4-5 summarizes potential direct impacts on special-status wildlife species and identifies the mitigation measures to reduce impacts to less-than-significant levels, where appropriate, for each species that could occur in the VMP area. VMP treatments have the potential to impact special-status mammals and CEQA-relevant bats through the removal of trees that provide roosting habitat for these species, direct mortality of bats, accidental crushing of woodrat stick houses, direct mortality of woodrats, or woodrat ingestion of herbicides. Implementation of Mitigation Measure BIO-1 would reduce the potential for impacts on bats and special-status mammals through a training program for staff. Implementation of Mitigation Measure BIO-11 would reduce the potential for impacts on special-status bats through evaluation and identification of trees with high-quality bat habitat by a qualified biologist, avoidance of maternity roosts through redesigning/rescheduling work or no-disturbance buffers, and exclusion of bats from occupied non-breeding roosts during less sensitive (i.e., when non-volant bats are absent) periods would minimize impacts on bats present. Implementation of Mitigation Measure BIO-12 would minimize impacts on woodrats by conducting surveys for stick houses, avoiding stick houses and maintaining an intact escape corridor, where feasible, and phased hand-dismantling of stick houses by a qualified biologist if avoidance is not feasible. Implementation of Mitigation Measure HAZ-4 limits application frequency; minimizes potential for drift; and prohibits application within 200 feet of residences, schools, and public use areas.

Table 3.4-5. Summary of Direct Impacts on Special-Status Wildlife Species from VMP Implementation

Special-Status Species	Impact Summary				Mitigation for Potentially Significant Impacts
	Mechanical Treatments	Hand Labor Treatment	Grazing	Herbicides	
Amphibians					
California red-legged frog *Rana draytonii*	Direct mortality	Direct mortality	Direct mortality Sedimentation of CRLF habitat	Herbicide use near streams could result in adverse effects.	BIO-1, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, GEO-1, GEO-2, HAZ-4, HYD/WQ-1
Reptiles					
Alameda whipsnake *Masticophis lateralis euryxanthus*	Direct mortality	Direct mortality	Direct mortality	Herbicide use could result in adverse effects.	BIO-1, BIO-5, BIO-6, BIO-7, HAZ-4, HYD/WQ-1
western pond turtle *Emys marmorata*	Direct mortality	Direct mortality	Direct mortality	Herbicide use near streams could result in adverse effects.	BIO-1, BIO-5, BIO-6, BIO-8, GEO-1, GEO-2, HAZ-4, HYD/WQ-1
Birds*					
White-tailed Kite *Elanus leucurus*	Nest harm, noise, direct removal	Nest harm, noise, direct removal	Grazing would not generate excessive noise that could disrupt nesting or directly impact trees used by special-status bird species or nesting birds.	Nest harm	BIO-1, BIO-6, BIO-10
Golden Eagle (foraging only in VMP area) *Aquila chrysaetos*	Less than significant	Less than significant	Less than significant	Less than significant	N/A

Special-Status Species	Impact Summary				Mitigation for Potentially Significant Impacts
	Mechanical Treatments	Hand Labor Treatment	Grazing	Herbicides	
Yellow Warbler *Setophaga petechia*	Nest harm, noise, direct removal	Nest harm, noise, direct removal	Grazing would not generate excessive noise that could disrupt nesting or directly impact trees used by special-status bird species or nesting birds.	Nest harm	BIO-1, BIO-10, BIO-5, BIO-6, HAZ-5
Mammals					
pallid bat *Antrozous pallidus*	noise, direct removal	noise, direct removal	No impact	Impacts to growth and reproduction.	BIO-1, BIO-11, HAZ-5, HYD/WQ-1
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	direct removal	direct removal	Grazing animals could walk on woodrat stick houses, but impacts would be less than significant.	Impacts to growth and reproduction.	BIO-1, BIO-12, HAZ-5
western mastiff bat *Eumops perotis californicus*	noise, direct removal	noise, direct removal	No impact	Impacts to growth and reproduction.	BIO-1, BIO-11, HAZ-5, HYD/WQ-1
western red bat *Lasiurus blossevillii*	noise, direct removal	noise, direct removal	No impact	Impacts to growth and reproduction.	BIO-1, BIO-11, HAZ-5, HYD/WQ-1

*Bird nests protected under the Migratory Bird Treaty Act and the California Fish and Game Code would have impacts similar to those for special-status bird nests and would be similarly protected by proposed mitigation measures.

Implementation of Mitigation Measure HAZ-5 would reduce the potential for herbicide impacts by requiring the lowest recommended application rates of herbicides and surfactants that achieve project objectives during application, and prohibiting herbicide use within 60 feet of streams. Implementation of Mitigation Measure HYD/WQ-1 would reduce impacts on bats by restricting work to daylight hours (except in case of an emergency), when bats are not active. The implementation of these mitigation measures would prevent potential impacts to special-status mammals and CEQA-relevant bats during VMP treatment, which would reduce the potential impact to a less-than-significant level. Therefore, impacts on special-status mammals and CEQA-relevant bats would be **less than significant with mitigation.**

Impact BIO-3: Potential Adverse Effects on Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations or by CDFW, USFWS, or NMFS (*Less than Significant with Mitigation*)

Impact BIO-3A: Impacts on Riparian Habitat or Other Sensitive Natural Communities (*Less than Significant with Mitigation*)

Note that impacts to wetlands are addressed separately in Impact BIO-4.

Several VMP treatment projects are located on parcels defined as "creekside properties" under the City of Oakland's Creek Protection Ordinance (Figure 3.4-2). **Table 3.4-4** in Impact BIO-2A shows priority projects located within creekside properties and/or within 100 feet of creek centerlines. The majority (58.6 acres out of a total of 92 acres) of the VMP treatment project acreage within 100 feet of streams consist of grazing treatments (VMP treatment project numbers SHP-4, JMP-4, KNO-5, and SHF-3). To implement VMP treatment projects on creekside properties (including grazing), OFD would be required to obtain a Creek Protection Permit. **Table 3.4-6** shows sensitive natural communities present within priority projects.

Table 3.4-6. Sensitive Natural Communities within Priority Project Areas

VMP Treatment Project Number	Priority	Sensitive Natural Community	Acres
Dimond Canyon Park			
DIM-1	1	red alder forest	0.02
		redwood forest	0.18
Joaquin Miller Park			
JMP-1	1	redwood forest	9.52
		Valley/Foothill Riparian	0.22
JMP-2	1	redwood forest	4.05
JMP-3	2	redwood forest	0.01
JMP-4	3	redwood forest	5.62
Leona Heights Park			
LHT-1	1	redwood forest	3.74
LHT-2	1	redwood forest	0.39
LHT-3	2	redwood forest	0.29

VMP Treatment Project Number	Priority	Sensitive Natural Community	Acres
Knowland Park and Arboretum			
KNO-1	1	needle grass – melic grass grassland	0.02
KNO-5	3	bush monkeyflower scrub	0.51
		California bay forest	1.03
		Freshwater Emergent Wetland	0.17
		brittle leaf – woolly leaf manzanita chaparral	7.92
		needle grass – melic grass grassland	12.51
		redwood forest	0.18
Sheffield Village Open Space			
SHF-1	1	Needle grass – melic grass grassland	0.04
SHF-2	2	California bay forest	0.12
SHF-3	3	bush monkeyflower scrub	0.25
		California bay forest	0.62
		Needle grass – melic grass grassland	0.81
Urban and Residential Parcels			
URB-1	1	California bay forest	0.21
		redwood forest	0.23

All Treatments

The VMP does not propose vegetation type conversion as an end goal or strategy; rather, thinning vegetation and providing, creating, and maintaining adequate spacing among retained vegetation is the primary management strategy to reduce the potential for ignitions and the likelihood of extreme fire behavior. Additionally, any work within riparian habitats would require notification of CDFW under Section 1602 of the F&G Code, which is likely to result in additional conditions. For all treatments, implementation of Mitigation Measure GEO-1 would minimize impacts to sensitive natural communities by minimizing the footprint of soil disturbance. Implementation of Mitigation Measure BIO-1 would reduce the potential for impacts on sensitive natural communities through a training program for staff. Implementation of Mitigation Measure HYD/WQ-1 would limit vegetation treatment to periods without significant rainfall, herbicide use to the dry season, and work in waterbodies, which would limit impacts to riparian habitat.

Mechanical and Hand Labor Treatments

Mechanical and hand labor treatments could alter species composition over time. Although vegetation type conversion is not the goal of the VMP, vegetation treatment may cause shifts in the relative abundance of plant species within each vegetation type. Priority projects within the VMP that propose hand and/or mechanical labor treatments would overlap the following sensitive natural communities: redwood forest, California bay forest, red alder forest, riparian

areas, and needle grass – melic grass grassland. See **Table 3.4-6** and Figure 3.4-3 for more details on the size and location of these communities.

Within forested vegetation types, the general goal of VMP treatment activities is a shaded fuel break. The treatment standards for each of these sensitive natural communities are as follows:

- For redwood forest, the treatment standards focus on creating vertical separation between the top of surface fuels and the lowest tree branch by thinning young redwood crown sprouts and sapling growth, maintaining a closed redwood canopy to shade understory fuels, and removing highly flammable plant species. These treatment techniques are not anticipated to result in significant impacts to redwood communities within the VMP.

- For California bay forest, the treatment standards for oak woodland described in the VMP would apply. These standards focus on creating vertical separation between the top of surface fuels and the lowest tree branch, maintaining a closed canopy, removal of understory fuels, and removing highly flammable plant species. California bay is included on the list of highly flammable plant species in Appendix D of the VMP (provided in **Appendix A**, *Draft Vegetation Management Plan*, of this DEIR). However, in areas where this tree is dominant (such as California bay forest), it would remain the dominant tree species following VMP treatment. Understory composition may change following treatment; however, these forested sensitive natural communities would remain sensitive natural communities following treatment because the dominant or characteristic species would remain.

- Red alder forest and other riparian areas within the VMP area pose a relatively low fire risk, and treatment activities would be minimized in these areas. Treatment standards within riparian areas focus on removal/treatment of downed tree and leaf litter material outside of the stream channel, treatment of ladder fuels on the edges of riparian habitat where this habitat abuts other habitat types, and removal of highly flammable plant species. The approach of minimizing treatment in these areas would limit impacts to these habitats. Additionally, the requirement for notification of CDFW under Section 1602 of the F&G Code for treatments within riparian areas, and the requirement of a Creek Protection Permit for work within creekside properties, are expected to result in additional impact reduction practices. Implementation of **Mitigation Measure BIO-13 (Develop and Implement a Plan to Replace Riparian Habitat)** would mitigate loss of habitat by replacing any native riparian trees removed from within riparian habitat in the VMP area.

- Needle grass – melic grass grassland is present on 0.06 acre of the areas proposed for mechanical and/or hand labor treatments. Treatment of these areas by mechanical or hand labor techniques such as mowing or weed whacking is not anticipated to result in significant impacts to community, due to the small area of treatment. Additionally, the dominant native grass in this community is purple needlegrass, a perennial grass that is anticipated to persist following mechanical and/or hand labor treatments.

With implementation of Mitigation Measure BIO-13, which requires the development and implementation of a plan to replace riparian resources, impacts on sensitive natural communities from mechanical and hand labor would be less than significant.

Grazing

Under baseline conditions, goat grazing occurs on approximately 900 acres of the VMP area annually. With implementation of the VMP, goat grazing is anticipated to increase to 1,100 acres annually. Most areas proposed for grazing under the VMP are already being grazed under baseline conditions. Sensitive natural communities within areas proposed for grazing treatment include riparian areas, California bay forest, bush monkeyflower scrub, brittle leaf – woolly leaf manzanita chaparral, and needle grass – melic grass grassland. Overgrazing of these sensitive natural communities could results in significant impacts. The VMP recommends development of site-specific grazing management plans for each grazing treatment area. These grazing management plans would consider site-specific conditions; specify management objectives and standards; and identify animal stocking rates and use levels (typically measured in pounds per acre of residual dry matter), grazing season, monitoring requirements, and performance criteria. Development of such plans would reduce potential impacts on sensitive natural communities. Implementation of Mitigation Measure BIO-5 would also reduce impacts by generally excluding livestock from riparian areas, excluding livestock from mixed chaparral (brittle leaf – woolly leaf manzanita chaparral) habitat, monitoring livestock to prevent overgrazing, and not grazing grasslands to lower than 4 inches. As described in the VMP, the City is encouraged to coordinate with local park stewardship groups to minimize potential grazing impacts to restoration projects conducted within the VMP area. With implementation of site-specific grazing management plans and Mitigation Measure BIO-13, impacts on sensitive natural communities from grazing would be less than significant.

Herbicides

Herbicide use is not proposed on the dominant species found within sensitive natural communities. Herbicide use is proposed on eucalyptus, acacia, French broom, Scotch broom, pampas grass, and jubata grass. If used near sensitive natural communities, herbicide could have off-target impacts through drift of spray-applied herbicide into the sensitive natural community. Implementation of Mitigation Measure HAZ-5, which prohibits the use of herbicide within 60 feet of streams, would reduce the potential for herbicide impacts on riparian vegetation. Implementation of Mitigation Measure HAZ-4**,** which avoids herbicide treatment during wind conditions that would exacerbate herbicide drift, and Mitigation Measure HAZ-5, which requires herbicides to be applied by a licensed applicator, would minimize the potential for drift onto non-target plants and sensitive natural communities. With implementation of Mitigation Measures HAZ-4 and HAZ-5, impacts on sensitive natural communities from herbicides would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-13: Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat.

The City's preferred approach is to avoid causing any impacts to riparian areas, if feasible. Before implementation of treatment activities, the City, under the direction of a qualified biologist, shall flag or fence riparian areas to be avoided with brightly visible construction flagging and/or fencing. For unavoidable impacts to riparian habitat, the City shall develop and implement a plan to replace riparian habitat affected by VMP activities.

For replacement of riparian habitat, native riparian trees 4-6 inches dbh removed for the VMP shall be replaced at a 2:1 ratio; native riparian trees larger than 6 inches dbh shall be replaced at a 3:1 ratio. These replacement trees shall be planted within riparian zones in the VMP area. Planted trees shall be monitored annually for 5 years to assess the effectiveness of replacement efforts, and results shall be reported to CDFW. The performance standard for success of the mitigation shall be 65 percent survival of planted trees after 5 years.

Alternatively, the City may preserve existing riparian habitat of equal or better value to the affected riparian habitat through a conservation easement at a sufficient ratio to offset the loss of riparian habitat function. Mitigation Measure GEO-1: Minimize Area of Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

Vegetation type conversion is not proposed under the VMP, and sensitive natural communities would remain following VMP treatment. Removal of trees within riparian habitat would impact this community. Overgrazing and herbicide drift could also impact sensitive natural communities. Implementation of Mitigation Measure BIO-5, BIO-13, GEO-1, HAZ-4, and HAZ-5 would avoid and minimize impacts on sensitive natural communities. Thus, impacts would be **less than significant with mitigation.**

Impact BIO-3B: Impacts Caused by Non-native and Invasive Species and Pathogens (*Less than Significant with Mitigation*)

VMP treatment activities have potential to introduce or encourage the spread of non-native or invasive plant species and pathogens through the removal of existing vegetation, soil disturbance, transferring of plant and pathogen material, and vehicle and equipment operation in areas of such plants and pathogens. The introduction or spread of non-native or invasive plants and pathogens could impact sensitive natural communities, causing adverse modifications to vegetation communities that represent habitat for special-status plant and animal species.

The VMP area is located within the Pitch Canker Zone of Infestation (CAL FIRE 1998) and SOD Zone of Infestation (CAL FIRE 2005) and the "Regulated Area" for sudden oak death (SOD) as designated by the California Department of Food and Agriculture (CDFA). Eucalyptus longhorn borer beetles have also been documented in the VMP area. Pitch canker is an introduced disease of pines caused by the fungus *Fusarium circinatum* (CAL FIRE 2013). Monterey pine is currently the most prevalent host for pitch canker (Gordon et al. 2012). Pitch canker impacts include crown dieback and mortality of infected trees of all sizes (CAL FIRE 2013). Pitch canker can spread through airborne spores, insects, pruning tools, and movement of logs from infected trees (CAL FIRE 2013).

Phytophthora species are microscopic oomycetes (water molds), and many *Phytophthora* species are known to be plant pathogens (Phytosphere Research 2018). SOD is a disease of oak trees caused by *Phytophthora ramorum* that also infects more than 100 other plant species (Alexander and Swain 2010). It is estimated to have killed more than one million oaks and tanoaks (*Notholithocarpus densiflorus*) between 2000 and 2010 (Alexander and Swain 2010). California bay trees are prevalent hosts of this pathogen, and they play a role in its spread to nearby oaks (Alexander and Swain 2010). SOD has been detected within the following VMP areas: Garber Park, Shepherd Canyon, Dimond Canyon Park, Joaquin Miller Park, Leona Heights Park, Knowland Park, and Sheffield Village (UC Berkeley 2016). SOD has also been detected in trees within or immediately adjacent to the priority roadside treatment area along Skyline Boulevard (UC Berkeley 2016). *Phytophthora cinnamomi* is another plant pathogen known to occur in the VMP area, which has killed pallid manzanitas in the VMP area (USFWS 2015). *Phytophthora* can be present in a variety of sites and materials, including commercial nursery stock, landscaped and agricultural areas, and natural areas. *Phytophthora* can be spread via soil, plant material and debris, and water from infested areas (Phytosphere Reasearch 2018).

A variety of plant species listed as invasive by the California Invasive Plant Council (Cal-IPC 2020) and/or listed as noxious weeds by CDFA (CDFA 2020) are present within the VMP area. Implementation of the VMP would include vegetation treatment on some rapidly spreading/highly flammable species that are also listed as invasive, such as French broom, Scotch broom, pampas grass, and jubata grass. Removal of these species would minimize their spread within the VMP area, which would be a beneficial impact. Implementation of the VMP would cause some degree of ground disturbance in treatment areas, which could lead to the spread of invasive plant species. VMP implementation would also involve crews and equipment moving among multiple sites, which could spread seeds or other propagules of invasive plant species to new areas.

Mechanical Treatments

Mechanical treatments would result in soil disturbance, increasing the potential for invasive species to establish in disturbed areas. Additionally, equipment used for mechanical treatment could carry pathogens or invasive species seeds from sites outside of the VMP area or from infested sites within the VMP area to uninfested sites. The spread of plant pathogens or invasive species into new, uninfested areas would be a significant impact. Implementation of Mitigation Measure BIO-1 would reduce this impact by requiring staff training. Implementation of Mitigation Measure BIO-3 would reduce the risk of invasive plants establishing in disturbed areas by requiring seeding of exposed soil with native plant species. Implementation of **Mitigation Measure BIO-14 (Prevent the Spread of Invasive Plants and Plant Pathogens)** would minimize the potential for spread of invasive plants and plant pathogens by requiring cleaning of equipment before arrival at a treatment site, sanitizing of equipment used in areas infested with pitch canker disease and/or SOD, and not transporting diseased wood outside of Alameda or Contra Costa Counties. Implementation of Mitigation Measure HAZ-1 would minimize the potential for spread of pathogens and invasive species by requiring equipment to be cleaned before being transferred and used in a different watershed. With implementation of these mitigation measures, impacts related to non-native and invasive species and pathogens from mechanical treatments would be less than significant.

Hand Labor Treatments

Hand labor treatments are not anticipated to result in substantial soil disturbance. Hand tools could carry pathogens or invasive species seeds from sites outside of the VMP area or from infested sites within the VMP area to uninfested sites. The spread of plant pathogens or invasive species into new, uninfested areas would be a significant impact. As described above, implementation of Mitigation Measure BIO-14 would reduce the potential for spread of invasive plants and plant pathogens. With implementation of Mitigation Measure BIO-14, impacts related to non-native and invasive species and pathogens from hand labor would be less than significant.

Grazing

Grazing treatments, when properly applied, can reduce invasive species within grasslands, which would be a beneficial impact (Huntsinger et al. 2007). Livestock used for vegetation treatment could transport invasive plants from outside the VMP area. However, grazing has been used as a vegetation management practice for many years in the VMP area and VMP grazing treatments generally overlap with existing grazing areas. In addition, the degree of increase in grazed area above baseline conditions would be less than significant. Therefore, impacts related to non-native and invasive species and pathogens from grazing would benefit grassland habitat and would be less than significant and no mitigation is required.

Herbicides

Most species targeted for herbicide application are considered invasive, such as French broom, Scotch broom, pampas grass, and jubata grass. Herbicide use is also proposed on blue gum eucalyptus (which has a Cal-IPC rating of “Limited”) and acacia species. Acacia species present in the VMP area include silver wattle (*Acacia dealbata*, Cal-IPC “Moderate”) and blackwood acacia (*Acacia melanoxylon*, Cal-IPC “Limited”). Treatment of invasive species with herbicide would reduce their abundance in the VMP area, which would be a beneficial impact. However, crews

applying herbicide could carry pathogens or invasive species seeds from sites outside of the VMP area or from infested sites within the VMP area to uninfested sites. As described above, implementation of Mitigation Measure BIO-14 would reduce the potential for spread of invasive plants and plant pathogens. With implementation of Mitigation Measure BIO-14, impacts related to non-native and invasive species and pathogens from herbicide would benefit habitats in the VMP area and would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-3: Seeding with Native Species (VMP BMP BIO-10)

See text in Impact BIO-1A above.

Mitigation Measure BIO-14: Prevent the Spread of Invasive Plants and Plant Pathogens

To minimize the spread of plant pathogens, the City and its contractors shall require that all equipment (including personal gear such as boots) shall be cleaned of soil, seeds, and plant material prior to arriving on a treatment site. All soil and organic material (e.g., roots, sap) shall be removed from the surfaces of equipment and clothing. If necessary, a detergent solution and brush shall be used to scrub surface contaminants at a utility sink.

Tools and machinery used to prune, cut, or chip trees infected with pitch canker disease shall be cleaned and sterilized before being used on uninfected trees or in uninfested areas. Tools and machinery used to prune, cut, or chip trees or shrubs in areas of known SOD infestation (currently Garber Park, Shepherd Canyon, Dimond Canyon Park, Joaquin Miller Park, Leona Heights Park, Knowland Park, Sheffield Village, and roadside areas of Skyline Boulevard) shall be cleaned and sterilized before being used in a new treatment area. Tools and machinery will be cleaned and sterilized prior to being used in proximity to known pallid manzanita populations. Ethyl or isopropyl alcohol (70-90%), 10% solution of bleach (1 part household bleach in 9 parts water), or a quaternary ammonium disinfectant (such as Lysol®) may be used. Proper use of ethyl or isopropyl alcohol involves spraying to thoroughly wet the surface and allowing to air dry before use. For freshly diluted bleach solution, exposure for a minimum of 1 minute is required. As bleach solutions degrade quickly, bleach solutions dispensed by spray bottles must be made fresh daily. Due to corrosivity, bleach solutions are not advised for steel or other materials that could be damaged by corrosion. Proper use of quaternary ammonium disinfectant involves use according to manufacturer recommendations.

Limbs and small pieces of wood from diseased trees may be chipped and the mulch deposited on site. Any material, including logs, that is removed from the site should be tightly covered with a tarp during transit and taken to the nearest landfill or designated disposal facility for prompt burial, chipping and composting, or burning. Diseased wood shall not be transported beyond Alameda or Contra Costa County

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

Implementation of the VMP would result in increased potential for the spread and establishment of invasive species and pathogens from soil disturbance, equipment use, and grazing. However, implementation of Mitigation Measures BIO-1, BIO-3, BIO-14, and HAZ-1 would reduce the potential for the introduction and spread of invasive plants and pathogens. Thus, the level of impact would be less **than significant with mitigation.**

Impact BIO-4: Potential Adverse Effects on Federally Protected or State-Protected Wetlands (*Less than Significant with Mitigation*)

Emergent wetlands are present within Joaquin Miller Park, Knowland Park, and Garber Park (Figure 3.4-1). Riverine habitat in the VMP area includes perennial, intermittent, and ephemeral streams (Figure 3.4-2), and small wetlands may be present along portions of these riverine habitats. As described in Impact BIO-3A, some VMP treatment projects are located within 100 feet of creeks. VMP treatments are not anticipated to occur in wetland areas due to the low fire risk in these habitats. Most VMP treatments would occur in upland areas and would not result in direct disturbance to wetlands or other federally protected or state-protected waters.

Mechanical Treatments

Mechanical techniques have the potential to loosen and disturb soils. Without adequate protection measures in place, such activities could lead to indirect impacts on nearby wetlands or waters due to erosion, sedimentation, and siltation. Leaks and spills associated with the operation and maintenance of motorized equipment present another risk to wetlands and waters. It is possible that heavy equipment may need to cross stream channels to access treatment areas, which could cause temporary or permanent impacts to these features. Impacts that result in the loss of functions and values of affected wetlands or water features would be significant.

Implementation of the following mitigation measures would reduce the VMP's potential for impacts to federally protected or state-protected wetlands or waters. Implementation of Mitigation Measures BIO-1 and BIO-6 would reduce impacts on wetlands and waters by requiring staff training and proper trash storage and disposal. Implementation of **Mitigation Measure BIO-15 (Avoid Impacts on Federally Protected Wetlands and Waters, as Feasible)** and **Mitigation Measure BIO-16 (Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State)** would minimize impacts to wetlands and waters by avoiding impacts to these features and providing compensatory mitigation for unavoidable impacts, respectively. Implementation of Mitigation Measure GEO-1 would limit ground disturbance to the minimum footprint necessary to meet VMP objectives, leave stumps intact, and minimize heavy equipment use on steep slopes. Implementation of Mitigation Measure GEO-2 would require the use of erosion and sediment controls. Implementation of Mitigation Measures HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, and HAZ-8 would ensure proper handling and use of herbicides and other hazardous materials, along with appropriate vehicle maintenance to prevent spills and leaks. Implementation of Mitigation Measure HYD/WQ-1 would limit

vegetation treatment to periods without significant rainfall, limit herbicide use to the dry season, and limit work in waterbodies. Additionally, any VMP treatment activity that would involve work within riparian habitat would require notification of CDFW under Section 1602 of the F&G Code, which is expected to result in additional impact reduction practices. With implementation of these mitigation measures, impacts on federally protected and state-protected wetlands and waters from mechanical treatments would be less than significant.

Hand Labor Treatments

In comparison to other treatments, hand labor treatments would likely have a low potential for increasing sedimentation or siltation of wetlands or waters. However, if hand labor treatments occurred in wetlands or waters, temporary impacts to these features could occur during vegetation removal. Impacts that result in the loss of functions and values of the wetland or water feature would be significant. Implementation of Mitigation Measures BIO-15 and BIO-16 would minimize impacts to federally protected and state-protected wetlands and waters by avoiding impacts to these features and providing compensatory mitigation for unavoidable impacts, respectively. Implementation of Mitigation Measure HYD/WQ-1 would limit vegetation treatment to periods without significant rainfall, herbicide use to the dry season, and work in waterbodies. With implementation of these mitigation measures, impacts on federally protected and state-protected wetlands and waters from hand labor would be less than significant.

Grazing

Grazing activities have the potential to denude vegetation, compact soils, and create livestock trails and areas of bare soil, which could lead to the formation of gullies and erosional features that result in sedimentation or siltation of wetlands or waters. Grazing animals could also cause erosion of streams with steep banks. Finally, grazing animals could congregate near water sources and degrade these features through the accumulation of manure and urine. Impacts that result in the loss of functions and values of the wetland or water feature would be significant. Implementation of Mitigation Measure BIO-5 would reduce the VMP's potential for impacts to wetlands or waters from grazing by requiring monitoring of livestock to ensure over-grazing does not occur, generally excluding livestock from riparian areas, completely excluding livestock from streams with steep banks, and requiring contractors to provide alternative water sources to avoid livestock reliance on natural water sources. With implementation of Mitigation Measure BIO-5, impacts on federally protected and state-protected wetlands and waters from grazing would be less than significant.

Herbicides

Herbicide use is not proposed in wetlands, but it is proposed on eucalyptus, acacia, French broom, Scotch broom, pampas grass, and jubata grass. If used near wetlands or waters, herbicide could have non-targeted impacts through drift of spray-applied herbicide on wetlands or waters. Additionally, herbicides could be transported into wetlands or waters through runoff if applied immediately before rain events. Impacts that result in the loss of functions and values of the wetland or water feature would be significant. Implementation of Mitigation Measure HAZ-4, which avoids herbicide application during high-wind conditions to minimize the potential for drift into wetlands and waters, and Mitigation Measure HAZ-5, which prohibits the use of herbicide within 60 feet of streams, would collectively reduce the potential for herbicide

impacts on wetlands and streams. Implementation of Mitigation Measure HAZ-5 also requires herbicides to be applied by a licensed applicator and limits the use of herbicides and surfactants to only those that have been approved for by USEPA. Implementation of Mitigation Measure HYD/WQ-1 would limit vegetation treatment to periods without significant rainfall, herbicide use to the dry season, and work in waterbodies. With implementation of these mitigation measures, impacts on federally protected and state-protected wetlands and waters from herbicide would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-6: Trash Removal (revised from VMP BMP BIO-7)

See text in Impact BIO-2A above. Mitigation Measure BIO-15: Avoid Impacts on Federally Protected and State-Protected Wetlands and Waters, as Feasible.

To the extent feasible, VMP activities shall avoid federally protected and state-protected wetlands and waters. If VMP treatments are planned to occur within or immediately adjacent to wetlands or waters, the City and its contractors shall restore surface topography and drainage to pre-implementation conditions. Where appropriate, revegetation shall be implemented with site-adapted native species.

Mitigation Measure BIO-16: Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State.

Work within areas defined as waters of the U.S. that includes placement of fill will require a Clean Water Act (CWA) Section 404 permit and Section 401 Water Quality Certification. All work proposed in jurisdictional waters of the U.S. must be authorized under these permits, and the work must comply with the general and regional conditions of the permits. In areas where permanent loss of jurisdictional waters or wetlands would result, the City shall ensure that mitigation is implemented such that no net loss would occur for permanent impacts, consistent with the terms of the CWA Section 404 permit, the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (73 Code of Federal Regulations [CFR] 19594), and the Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division (U.S. Army Corps of Engineers [USACE] 2015, or current version). Compensatory mitigation may include purchase of credits from an approved mitigation bank or in-lieu fee program, or creation, reestablishment, or enhancement of wetlands in the VMP area or at an off-site location. At a minimum, mitigation shall be provided at a ratio that ensures no net loss of the functions and values associated with the affected resources.

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Conclusion

Implementation of the VMP could result in impacts to federally protected or state-protected wetlands or waters through sedimentation and siltation, equipment crossing of wetlands or waters, accumulation of manure and urine from grazing animals, and herbicide transport into wetlands or waters through aerial drift or runoff. Implementation of Mitigation Measures BIO-1, BIO-5, BIO-6, BIO-15, BIO-16, GEO-1, GEO-2, HAZ-1, HAZ-2, HAZ-3, HAZ-4, HAZ-5, HAZ-6, HAZ-8, and HYD/WQ-1 would avoid and minimize potential impacts during and following VMP activities. Therefore, impacts on federally protected and state-protected wetlands and waters would be **less than significant with mitigation.**

Impact BIO-5: Potential Interference with Wildlife Movement, Established Wildlife Corridors, or the Use of Native Wildlife Nursery Sites (*Less than Significant with Mitigation*)

Impacts to non-special-status birds are discussed in Impact BIO-2B, and impacts to special-status bats and CEQA-relevant bats are discussed in Impact BIO-2C, above.

Impact BIO-5A: Wildlife Movement (*Less than Significant*)

The VMP area is located within the WUI, where recreational trails and nearby residential development represent most of the surrounding land uses. Portions of the VMP area, particularly large parks (such as Joaquin Miller Park and Knowland Park) and parks along streams (such as Dimond Canyon Park and Leona Heights Park) and associated riparian habitat provide important movement corridors for wildlife. Implementation of VMP treatments may cause wildlife to avoid these areas during treatment activities. However, VMP treatment activities would be relatively short in duration and would not result in permanent access restrictions or barriers to movement for wildlife. Wildlife would be able to move around VMP treatment projects during implementation. Finally, implementation of the VMP would not result in conversion of habitat types. For these reasons and in consideration of the abundant natural vegetation communities outside of areas undergoing active treatment at a given time, impacts on wildlife movement would be less than significant. Although impacts to wildlife movement would be less than significant, implementation of wildlife-friendly fencing during grazing treatments as required in Mitigation Measure BIO-5 would further reduce the impact of fencing on wildlife movement.

Conclusion

Wildlife movement corridors are present within the VMP area, but implementation of the VMP would not result in permanent barriers to movement and conversion of habitat types would not occur. Therefore, impacts on wildlife movement would be **less than significant** and no mitigation is required; however, implementation of Mitigation Measure BIO-5 would provide additional protection for natural vegetation communities from wildlife movement**.**

Impact BIO-5B: Potential Adverse Effects on Non-special-status Fish (*Less than Significant with Mitigation*)

Streams in the VMP area provide important habitat for fish, including breeding habitat. Resident rainbow trout are present in the VMP area in perennial streams in the Sausal Creek watershed, including Sausal, Palo Seco, and Shepherd Creeks (Laurel Marcus and Associates et al. 2010). Other non-special-status fish potentially present in streams within the VMP area include riffle sculpin (present in Sausal Creek) (Leidy et al. 2020).

All Treatments

VMP activities would generally occur in upland areas, which would reduce the potential for impacts to fish. VMP activities are generally anticipated to occur farther than 100 feet from streams, in accordance with the City's Creek Protection Ordinance. However, some VMP treatments would occur within 100 feet of streams, as described in **Table 3.4-4** in Impact BIO-2A. For VMP activities in creekside parcels, a Creek Protection Permit would be required. Removal of riparian vegetation could reduce shading of streams and increase water

temperatures, reducing habitat quality for fish. Implementation of Mitigation Measure BIO-1 would reduce impacts on fish by requiring staff training. As described in Impact BIO-3A, implementation of Mitigation Measure BIO-13, which requires the development and implementation of a plan to replace riparian resources, would reduce the potential for impacts to riparian vegetation. With implementation of these mitigation measures, impacts on fish from VMP activities would be less than significant.

Mechanical Treatments

As described in Impact BIO-4 and Section 3.9, "Hydrology and Water Quality," VMP treatments have the potential to loosen and disturb soils. Without adequate protection measures in place, such activities could lead to impacts on fish due to erosion, sedimentation, and siltation. Leaks and spills associated with the operation and maintenance of motorized equipment would present another impact to fish habitat. It is possible that heavy equipment may need to cross stream channels to access treatment areas, which could cause temporary or permanent impacts to fish habitat. Impacts that result in death of native fish at a level that jeopardizes the ability of the local population to recover would be significant. For the purposes of this analysis, this significance level is defined as five individual native fish per lake, reservoir, stream, or waterbody per day, based on CDFW bag (e.g., "take") limits in western Alameda County.

Implementation of Mitigation Measures BIO-15 and BIO-16 would minimize impacts to wetlands and waters by avoiding these features and providing compensatory mitigation for unavoidable impacts. Implementation of Mitigation Measure GEO-1 would limit ground disturbance to the minimum soil footprint necessary to meet objectives, require leaving stumps intact, and minimize heavy equipment use on steep slopes. Implementation of Mitigation Measure GEO-2 would require the use of erosion and sediment controls. Implementation of Mitigation Measures HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, and HAZ-8 would ensure proper handling and use of herbicides and other hazardous materials, and maintaining vehicles to prevent spills and leaks. Implementation of Mitigation Measure HYD/WQ-1 would limit vegetation treatment to periods without significant rainfall, limit herbicide use to the dry season, and limit work in waterbodies. With implementation of these mitigation measures, impacts on non-special-status fish from mechanical treatments would be less than significant.

Hand Labor Treatments

Hand labor treatments are not anticipated to result in significant impacts on fish, because these activities would not be conducted in aquatic habitat.

Grazing

VMP grazing treatments are not anticipated to result in direct injury or mortality of fish. If grazing were to occur within streams or riparian habitats, temporary impacts to fish habitat could occur. Grazing could increase sedimentation into streams, temporarily reducing habitat quality for fish. Over several years, grazing could cumulatively result in stream bank failure, erosion, and successive sedimentation, all of which could permanently alter suitable fish habitat. Implementation of Mitigation Measure BIO-5 would reduce these impacts by generally excluding livestock from riparian areas, completely excluding livestock from streams with steep banks, requiring grazing lessees or contractors to provide alternative (i.e., other than natural) water sources for livestock, and monitoring to prevent over-grazing. With implementation of

this mitigation measure, impacts on non-special-status fish from grazing would be less than significant.

Herbicides

If used near streams, herbicides may enter these habitats through drift of spray-applied herbicide wetlands or waters. Additionally, herbicides could be transported into streams or other waterbodies through runoff if applied immediately before rain events. If herbicides were to enter streams or other aquatic habitat containing fish, fish could be killed or harmed. This would be a significant impact. Implementation of Mitigation Measure HAZ-4, which requires measures to avoid or minimize adverse effects on non-target organisms during herbicide application, and Mitigation Measure HAZ-5, which requires herbicides to be applied by a licensed applicator, would collectively avoid herbicide use during windy conditions and other site-specific conditions that would exacerbate herbicide drift and minimize the potential for drift into fish habitat. Implementation of Mitigation Measure HAZ-5, which also prohibits the use of herbicide within 60 feet of streams, would reduce the potential for herbicide impacts on fish. With implementation of these mitigation measures, impacts on non-special-status fish from herbicides would be less than significant.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-13: Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat

See text in Impact BIO-3A above.

Mitigation Measure BIO-15: Avoid Impacts on Federally Protected Wetlands and Waters, as Feasible.

See text in Impact BIO-4 above.

Mitigation Measure BIO-16: Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State

See text in Impact BIO-4 above.

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, “Geology, Soils, and Seismicity.”

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Conclusion

Implementation of the VMP could result in impacts to fish through sedimentation and siltation, equipment crossing of wetlands or waters, accumulation of manure and urine from grazing animals, and herbicide transport into wetlands or waters through aerial drift or runoff. Implementation of Mitigation Measures BIO-1, BIO-5, BIO-13, BIO-15, BIO-16, GEO-1, GEO-2, HAZ-1, HAZ-2, HAZ-3, HAZ-4, HAZ-5, HAZ-6, HAZ-8, and HYD/WQ-1 would avoid and minimize potential impacts on non-special-status fish species by generally avoiding grazing in riparian habitat and restricting grazing from streams to prevent erosion and sedimentation, requiring the development of a plan to replace riparian resources, avoiding impacts to wetlands and waters and providing compensatory mitigation for unavoidable impacts, limiting ground disturbance, requiring use of erosion and sediment controls, ensuring proper handling and use of herbicides and other hazardous materials, along with appropriate vehicle maintenance to prevent spills and leaks, limiting vegetation treatment to periods without significant rainfall, limiting herbicide use to the dry season, and limiting work in waterbodies . Therefore, impacts on non-special-status fish species would be **less than significant with mitigation.**

Impact BIO-6: Conflict with Local Policies or Ordinances Protecting Biological Resources (*Less than Significant with Mitigation*)

Local policies and ordinances protecting biological resources include the City of Oakland Protected Trees Ordinance, Hazardous Trees Ordinance, Creek Protection Ordinance, the City of Oakland General Plan, and Resolution 79133.

Resolution 79133 was adopted in 2005 and directed City staff to evaluate the selective use of glyphosate and triclopyr to manage vegetation for wildfire hazard reduction purposes.

All Treatments

The City would obtain a tree removal permit where necessary to remove protected trees. As described in Section 0.0.208622944, protected trees are defined as California or coast live oak trees measuring 4 inches dbh (single or aggregate of multiple trunks belonging to the same tree) or larger, and any other tree with a single trunk or aggregate of multiple trunks (except eucalyptus and Monterey pine) measuring 9 inches dbh or larger on any property. Protected trees also include Monterey pine trees where they occur on City property where more than five Monterey pine trees per acre are proposed to be removed. No tree removal permit is required for corrective actions performed under the Hazardous Tree Ordinance.

Eucalyptus trees are not considered protected trees under the Protected Trees Ordinance and are not discussed further. In the Draft VMP (provided in Appendix A of this DEIR), treatments in all forested vegetation types prioritize the retention of healthy trees. In the closed-cone pine-cypress habitat type, Monterey pine and Monterey cypress trees are dominant. Proposed VMP treatments in this habitat type include thinning mature pine or cypress stands to reach an average 30-foot horizontal spacing between trunks. This treatment approach would result in a post-treatment stand density of approximately 48 trees per acre. Treatments prioritize retention of healthy trees and removal of all single-stem pines and cypress with trunk diameters measuring less than 8 inches (see Appendix A for more details). Prioritized retention of healthy trees and removal of smaller Monterey pine and cypress trees would reduce the impacts on these protected trees.

In acacia-dominated stands, proposed VMP treatments would thin these stands to reach an average 35-foot horizontal spacing between trunks. This treatment approach would result in a post-treatment stand density of approximately 36 trees per acre. As described in the VMP, treatments in eucalyptus, closed-cone pine-cypress, Urban (Acacia), and Urban (Mixed Tree Stand) tree-dominated communities would prioritize retention of City-designated protected lower fire risk trees existing in these stands and incorporate them into the tree spacing standards identified above, which would also minimize impacts to protected trees.

In oak woodland and redwood habitat types, proposed tree removal activities would focus on the removal of individual eucalyptus, pine, or acacia trees from within these habitats. In redwood habitats, young redwood crown sprouts and sapling growth would be thinned, but three sprouts (trunks) would be retained per stump. Thinning of saplings and crown sprouts instead of mature trees would minimize impacts on protected size classes of redwoods.

Annual acreage of tree thinning is anticipated to be no more than approximately 25 acres per year across the 10-year VMP timeline. Implementation of Mitigation Measure BIO-13 would

replace trees removed in riparian areas. Therefore, impacts related to conflict with the Protected Trees or Hazardous Trees Ordinances would be less than significant with mitigation.

Vegetation management activities on any creekside property (described in more detail in Impact BIO-3a) would require a Creek Protection Permit. The City would comply with the Creek Protection Ordinance by obtaining a permit for all VMP activities that are planned within creekside properties and complying with all applicable permit conditions. Therefore, impacts related to conflict with the Creek Protection Ordinance would be less than significant. Additionally, implementation of Mitigation Measure BIO-13 would further reduce impacts by replacing trees removed in riparian areas.

The VMP would comply with the City's General Plan policies as described below. Compliance with General Plan Policy OS-1.1: Wildland Parks would be achieved by managing vegetation in City parks within the VMP area to reduce wildfire hazard while protecting natural resources within these parks. Compliance with General Plan Policy CO-6.1: Creek Management would be achieved by complying with the Creek Protection Ordinance. The VMP would comply with Objective CO-7: Plant Resources by not resulting in vegetation type conversion, removing vegetation based on fire hazard characteristics, and maintaining the wooded character of areas that are forested under baseline conditions. As described in Impact BIO-4, impacts to wetlands could occur under the VMP. Implementation of the mitigation measures described in Impact BIO-4 and listed below would avoid or minimize impacts to wetlands, in compliance with Objective CO-8: Wetlands. Implementation of Mitigation Measure GEO-2 would require the use of erosion and sediment controls. Implementation of Mitigation Measures, HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, and HAZ-8 would ensure proper handling and use of herbicides and other hazardous materials, and maintaining vehicles to prevent spills and leaks. Implementation of Mitigation Measures BIO-15 and BIO-16 would minimize impacts to wetlands and waters by avoiding impacts to these features and providing compensatory mitigation for unavoidable impacts.

Impact BIO-1 describes the potential for impacts to rare, endangered, or threatened species. Implementation of the mitigation measures described in Impact BIO-1 would minimize the potential for impacts, complying with Objective CO-9: Rare, Endangered, or Threatened Species. Implementation of Mitigation Measures BIO-1 through BIO-5, GEO-1, HAZ-4, and HAZ-5 would reduce potential impacts through staff training, pre-implementation surveys for listed plants, implementation of avoidance buffers, compensatory mitigation if impacts are above thresholds, avoidance of Presidio clarkia sensitive time periods, seeding with native plant species, exclusion of grazing animals from special-status plant populations, and minimizing potential for herbicide to inadvertently be applied to special-status plants.

Implementation of the following measures would also be protective of non-special-status wildlife, in accordance with Objective CO-11: Wildlife. Implementation of Mitigation Measures HYD/WQ-1, HAZ-4, HAZ-5, GEO-1, GEO-2, BIO-5 through BIO-9 would prevent herbicide use in riparian habitat and contact with aquatic habitat, generally avoid grazing in riparian habitat and restrict grazing from streams to prevent erosion and sedimentation, prevent increased predation pressure on both special-status and non-special-status species through proper trash storage and removal, minimize the footprint of disturbance, implement erosion and sediment controls to prevent impacts to aquatic habitat, restrict herbicide use near suitable California red-legged frog and western pond turtle aquatic habitat, require pre-activity surveys and implement

necessary avoidance measures to prevent impacts on California red-legged frog and western pond turtle, and require pre-activity surveys and implement avoidance measures to prevent impacts on Alameda whipsnake. Implementation of Mitigation Measure BIO-10 would reduce the potential for significant impacts on special-status and non-special-status birds by conducting pre-activity nesting bird surveys and establishing species-appropriate avoidance buffers where active bird nests are found. Implementation of Mitigation Measure BIO-11 would reduce the potential for impacts on special-status bats through evaluation and identification of trees with high-quality bat habitat by a qualified biologist, avoidance of maternity roosts through resigning/rescheduling work or no-disturbance buffers, and exclusion of bats from occupied non-breeding roosts during periods shall minimize impacts on bats present. Implementation of Mitigation Measure BIO-12 would minimize these impacts on woodrats by avoiding houses and maintaining an intact escape corridor, where feasible; and hand-dismantling of houses by a qualified biologist if avoidance is not feasible. Implementation of Mitigation Measure HYD/WQ-1 would reduce impacts on bats by restricting work to daylight hours (except in case of an emergency), when bats are not active.

As is the stated intent of the VMP, the City would manage vegetation so that the risk of catastrophic wildfire is minimized, in accordance with Objective CO-10: Vegetation Management.

The North Oakland Hills Area Specific Plan (City of Oakland 1986) includes vegetation management prescriptions for new development within the portion of the VMP area covered by the specific plan. Implementation of the VMP would not be considered development of VMP parcels. However, VMP treatments are generally consistent with vegetation management prescriptions in the specific plan.

With implementation of the identified mitigation measures, impacts related to conflicts with local policies or ordinances protecting biological resources would be less than significant.

Herbicides

Consistent with Resolution 79133, this EIR constitutes an evaluation of limited herbicide use on City-owned properties designated as a high wildfire hazard for the purposes of managing vegetation for wildfire risk reduction. Implementation of herbicide treatments under the VMP would not conflict with Resolution 79133; therefore, the impact of herbicides would be less than significant and no mitigation is required.

Mitigation Measures

Mitigation Measure BIO-1: Provide Biologist Review and Worker Training

See text in Impact BIO-1A above.

Mitigation Measure BIO-2a: Avoid Special-Status Plant Species (revised from VMP BMP BIO-3)

See text in Impact BIO-1A above.

Mitigation Measure BIO-2b: Provide Compensatory Mitigation for Special-Status Plant Species

See text in Impact BIO-1A above.

Mitigation Measure BIO-3: Seeding with Native Species (VMP BMP BIO-10)

See text in Impact BIO-1A above.

Mitigation Measure BIO-4: Avoid Presidio Clarkia Sensitive Time Periods

See text in Impact BIO-1A above.

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Impact BIO-1A above.

Mitigation Measure BIO-6: Trash Removal (revised from VMP BMP BIO-7)

See text in Impact BIO-2A above.

Mitigation Measure BIO-7: Protection of Alameda Whipsnake (VMP BMP BIO-5)

See text in Impact BIO-2A above.

Mitigation Measure BIO-8: Protection of California Red-legged Frogs and Western Pond Turtles (revised from VMP BMP BIO-4)

See text in Impact BIO-2A above.

Mitigation Measure BIO-9: Protection of California Red-legged Frogs from Herbicide Use (VMP BMP BIO-2)

See text in Impact BIO-2A above.

Mitigation Measure BIO-10: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures (revised from VMP BMP BIO-1)

See text in Impact BIO-2B above.

Mitigation Measure BIO-11: Protection of Bat Colonies (VMP BMP BIO-8)

See text in Impact BIO-2C above.

Mitigation Measure BIO-12: Protection of Dusky-footed Woodrats (VMP BMP BIO-9)

See text in Impact BIO-2C above.

Mitigation Measure BIO-13: Avoid Riparian Habitat and Develop and Implement a Plan to Replace Affected Riparian Habitat.

See text in Impact BIO-3A above.

Mitigation Measure BIO-15: Avoid Impacts on Federally Protected Wetlands and Waters, as Feasible.

See text in Impact BIO-4 above.

Mitigation Measure BIO-16: Provide Compensatory Mitigation for Unavoidable Impacts on Waters of the United States and the State.

See text in Impact BIO-4 above.

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity"

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Conclusion

The City would comply with applicable tree protection, creek protection, and general plan policies to protect biological resources. Limited herbicide use as proposed in the VMP would be consistent with local plans and policies as well as with Resolution 79133. With the implementation of the mitigation measures identified above, impacts related to conflicts with local policies or ordinances protecting biological resources would be **less than significant with mitigation**.

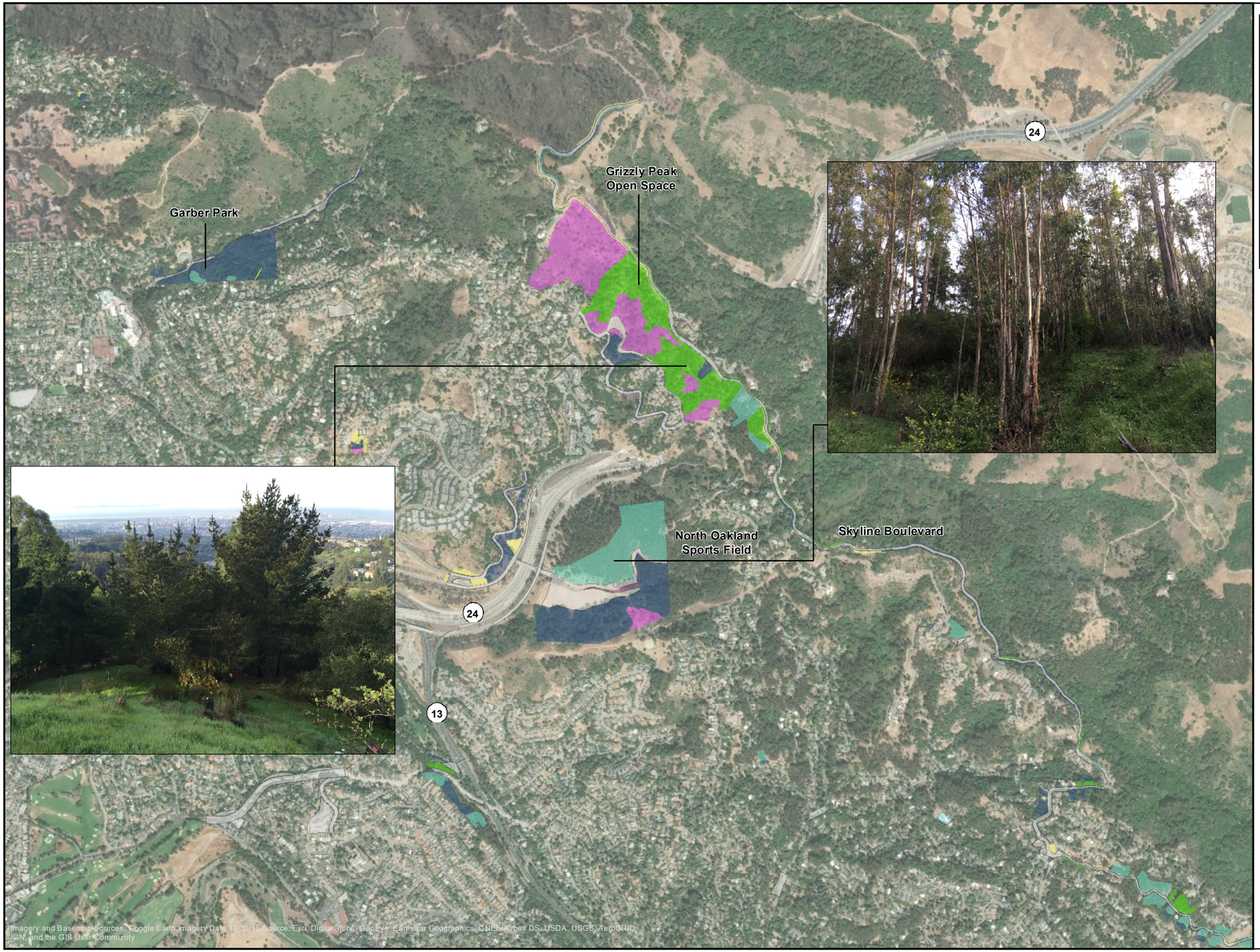
Impact BIO-7: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan (*No Impact*)

The VMP area is located within the Pacific Gas and Electric Company (PG&E) Bay Area Operations and Maintenance Habitat Conservation Plan (HCP) boundary (82 Federal Register 15063). Species covered under this HCP that could also occur in the VMP area are the California red-legged frog and Alameda whipsnake. The VMP is not a PG&E-covered activity under the HCP and would not conflict with the HCP's conservation strategy or provisions. The VMP area is not covered within any other HCPs; therefore, the VMP would not conflict with provisions adopted by an HCP, NCCP, or other approved local, regional, or state habitat conservation plan (CDFW 2019b, USFWS 2019).

Conclusion

There would be **no impact**.

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Habitat Types

- Annual Grassland
- Coast Oak Woodland
- Closed-cone Pine-Cypress
- Coastal Scrub
- Eucalyptus
- Freshwater Emergent Wetland
- Urban
- Valley/foothill Riparian

N

0 0.25 0.5

Miles

Figure 3.4-1
Habitats in the VMP Area
(sheet 1 of 5)

Vegetation Management Plan
Draft Environmental Impact Report

Imagery and Basemap Sources: Google Earth Imagery Date: 10/30/15 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Shepherd Canyon

Skyline Boulevard

13

Dimond Canyon Park

Joaquin Miller Park

Habitat Types

- Annual Grassland
- Coast Oak Woodland
- Closed-cone Pine-Cypress
- Coastal Scrub
- Eucalyptus
- Freshwater Emergent Wetland
- Redwood
- Urban
- Valley/foothill Riparian

N

0 0.25 0.5

Miles

Imagery and Basemap Sources: Google Earth Imagery Date 10/30/15 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Figure 3.4-1
Habitats in the VMP Area
(sheet 2 of 5)

Vegetation Management Plan
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Habitat Types

- Annual Grassland
- Coast Oak Woodland
- Closed-cone Pine-Cypress
- Coastal Scrub
- Eucalyptus
- Redwood
- Urban

N

0 0.25 0.5

Miles

Figure 3.4-9
Habitats in the VMP Area
(sheet 3 of 5)

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Imagery and Basemap Sources: Google Earth Imagery Date: 11/30/15 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Habitat Types

- Annual Grassland
- Coast Oak Woodland
- Closed-cone Pine-Cypress
- Coastal Scrub
- Eucalyptus
- Freshwater Emergent Wetland
- Mixed Chaparral
- Perennial Grassland
- Redwood
- Urban

N

0 0.25 0.5

Miles

Figure 3.4-1
Habitats in the VMP Area
(sheet 4 of 5)

Vegetation Management Plan
Draft Environmental Impact Report

Imagery and Basemap Sources: Google Earth Imagery Date: 10/2015 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Oakland Zoo

Knowland Park

Lake Chabot Golf Course

Sheffield Village Open Space

580





Habitat Types

- Annual Grassland
- Coast Oak Woodland
- Closed-cone Pine-Cypress
- Coastal Scrub
- Eucalyptus
- Freshwater Emergent Wetland
- Mixed Chaparral
- Perennial Grassland
- Redwood
- Urban

N

0 0.25 0.5

Miles

Figure 3.4-1
Habitats in the VMP Area
(sheet 5 of 5)

Vegetation Management Plan
Draft Environmental Impact Report

Imagery and Basemap Sources: Google Earth Imagery Date 10/30/15 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Harwood (Claremont) Creek

Garber Park

GAR-1

GAR-2

GAR-3

Grizzly Peak Open Space

GPO-1

GPO-2

GPO-3

GPO-4

TRO-1

North Oakland Sports Field

NOR-1

NOR-2

NOR-3

Skyline Boulevard

Lake Temescal

Temescal Creek

MEDIAN

24

13



Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

VMP Creekside Parcels

Very High Fire Hazard Severity Zone

Oakland City Limits

Creek 100-foot buffer

Western Alameda County Creeks

Creek

Engineered channel

Underground culvert or storm drain

National Hydrography Database (NHD)

Lake or Pond

N

0 0.25 0.5

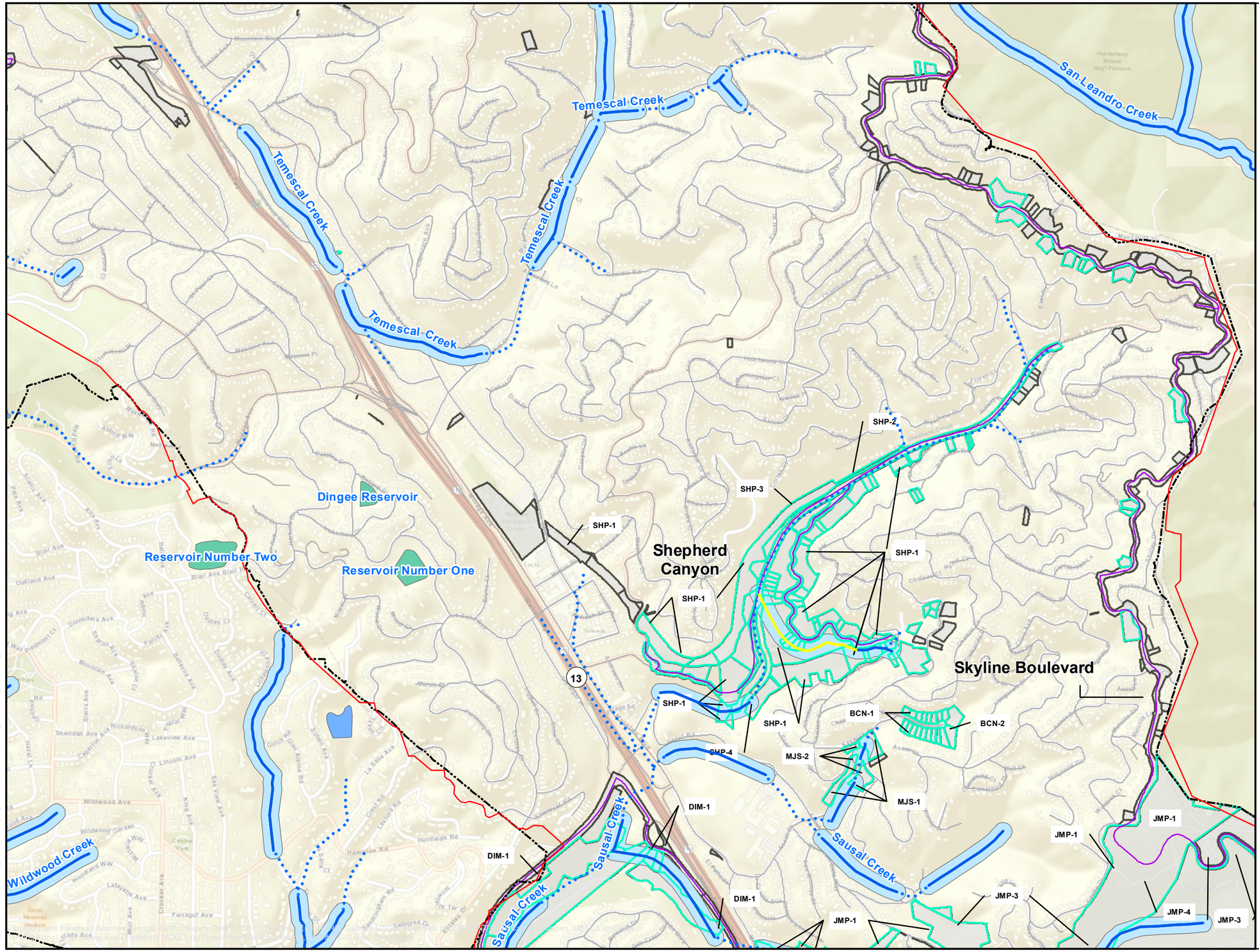
Miles

Figure 3.4-2.
Lakes and Streams in the VMP Area
(sheet 1 of 6)

Vegetation Management Plan
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Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

VMP Creekside Parcels

Very High Fire Hazard Severity Zone

Oakland City Limits

Creek 100-foot buffer

Western Alameda County Creeks

Creek

Engineered channel

Underground culvert or storm drain

National Hydrography Database (NHD)

Lake or Pond

Reservoir

N

0 0.25 0.5

Miles

Figure 3.4-2.
Lakes and Streams in the VMP Area
(sheet 2 of 6)

Vegetation Management Plan
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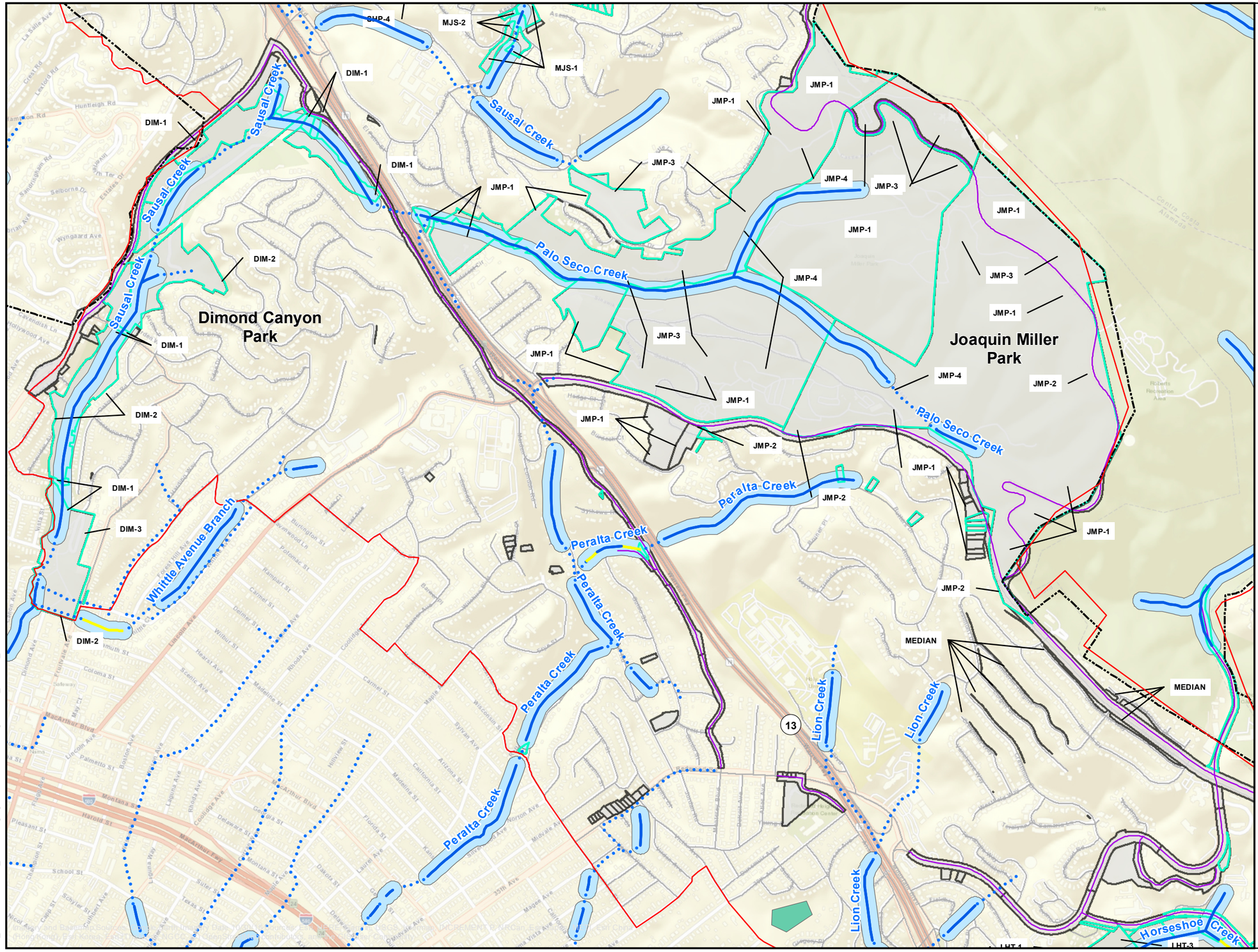
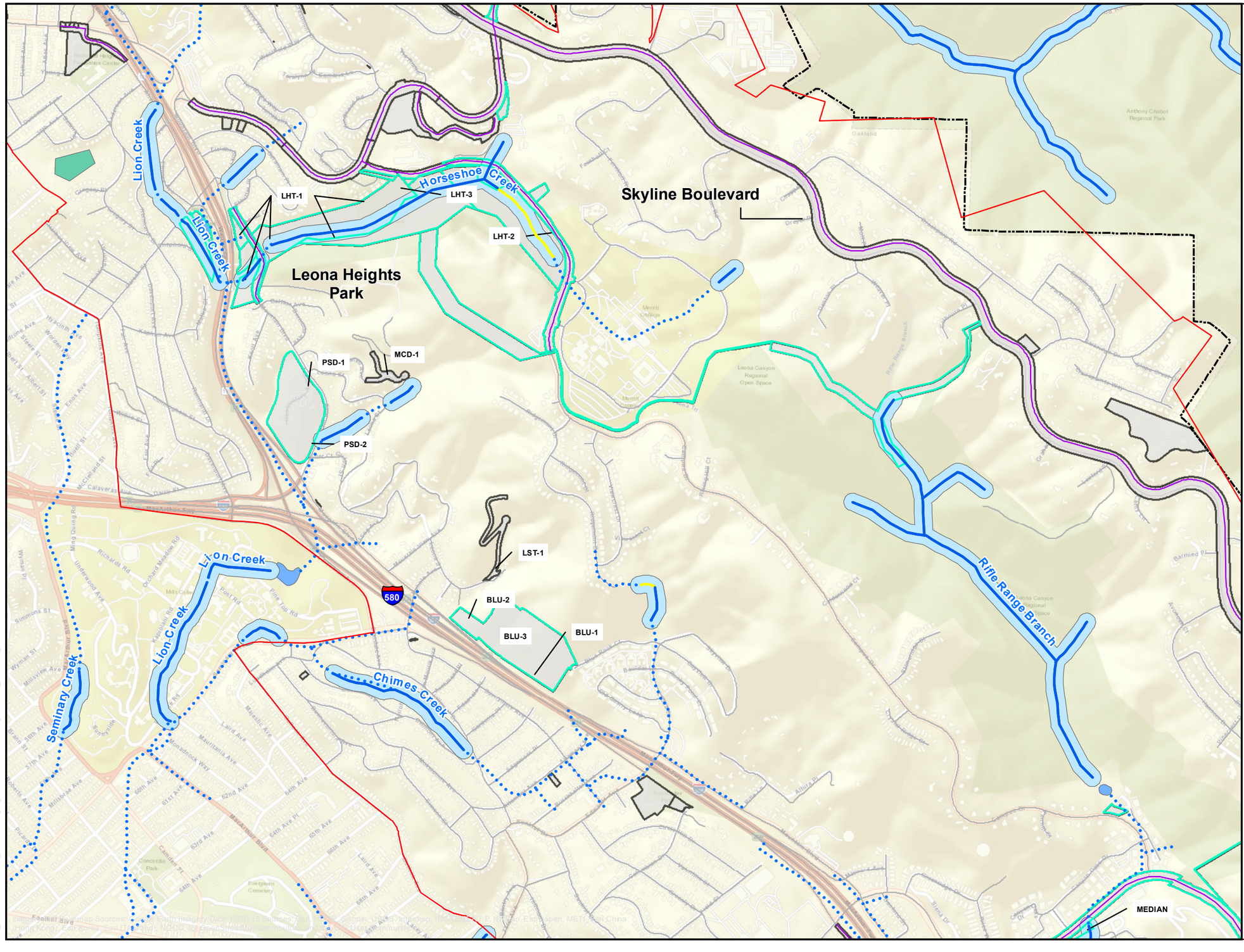


Figure 3.4-3.
Lakes and Streams in the VMP Area
(sheet 3 of 6)

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Priority 1 Roadside Treatment Areas
VMP Roadsides
VMP Parcels
VMP Creekside Parcels
Very High Fire Hazard Severity Zone
Oakland City Limits
Creek 100-foot buffer

Western Alameda County Creeks
Creek
Engineered channel
Underground culvert or storm drain

National Hydrography Database (NHD)
Lake or Pond
Reservoir

N

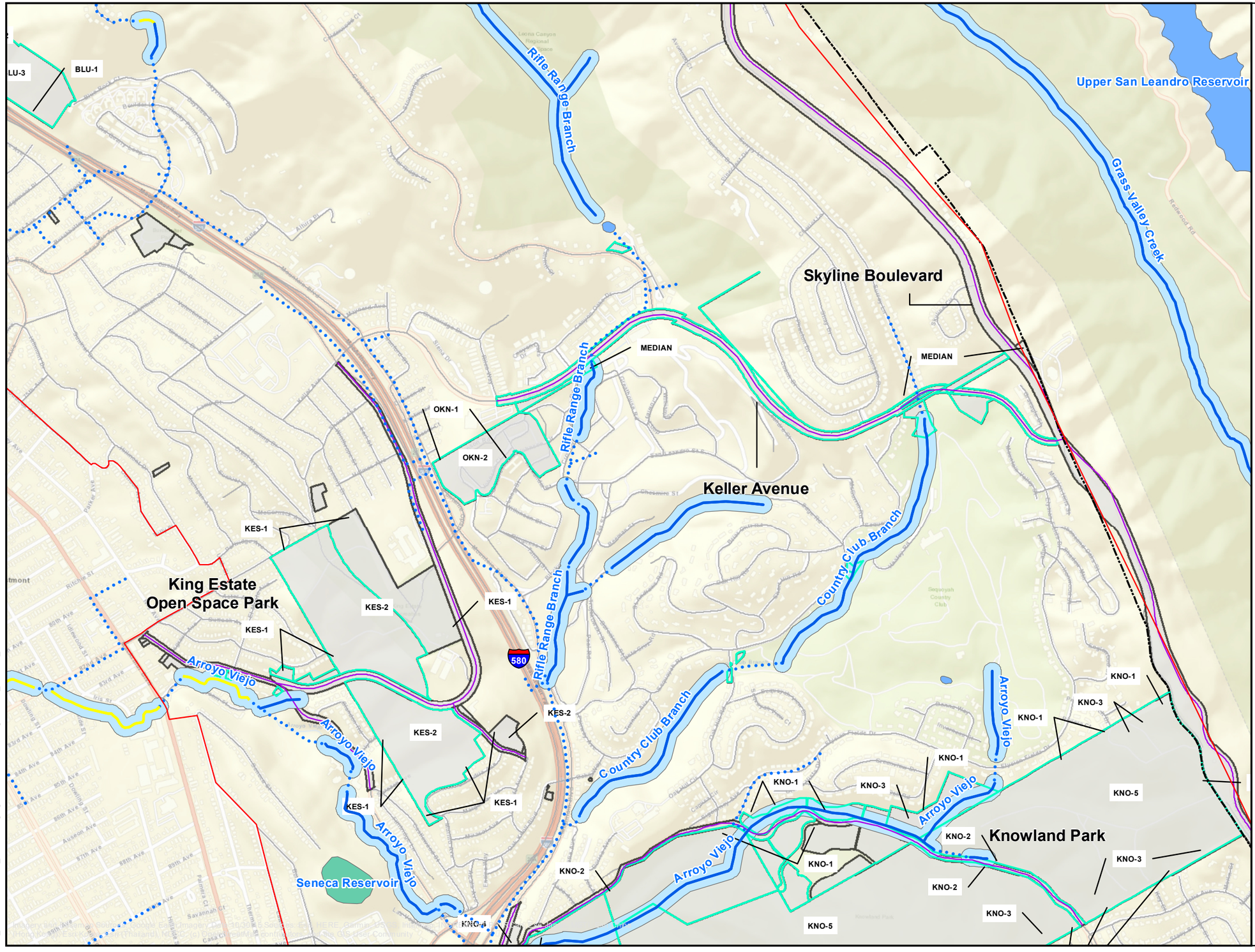
0 0.25 0.5
Miles

Figure 3.4-4.
Lakes and Streams in the VMP Area
(sheet 4 of 6)

Vegetation Management Plan
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Priority 1 Roadside Treatment Areas
VMP Roadsides
VMP Parcels
VMP Creekside Parcels
Very High Fire Hazard Severity Zone
Oakland City Limits
Creek 100-foot buffer

Western Alameda County Creeks
Creek
Engineered channel
Underground culvert or storm drain

National Hydrography Database (NHD)
Lake or Pond
Reservoir

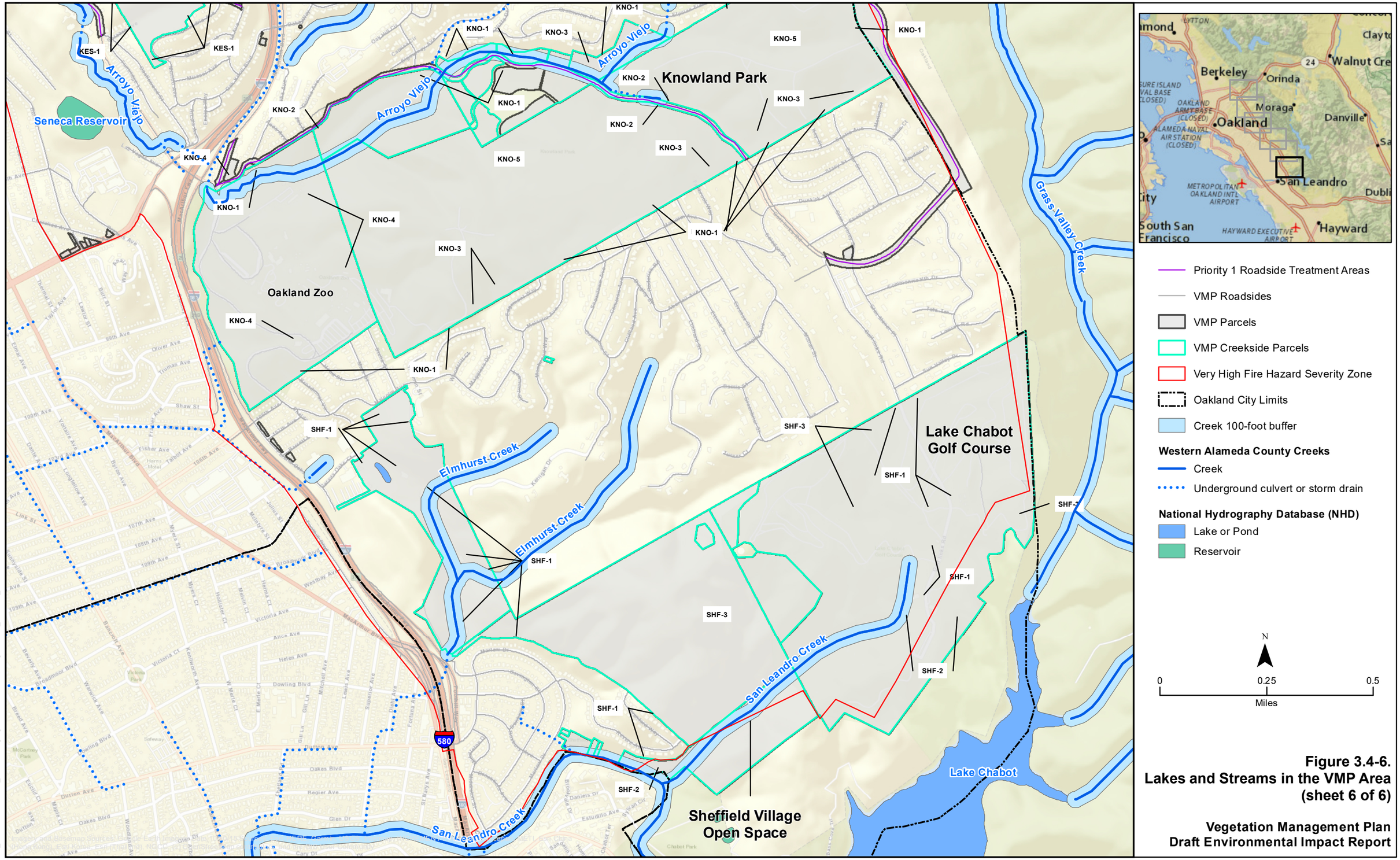
N
0 0.25 0.5
Miles

Figure 3.4-5.
Lakes and Streams in the VMP Area
(sheet 5 of 6)

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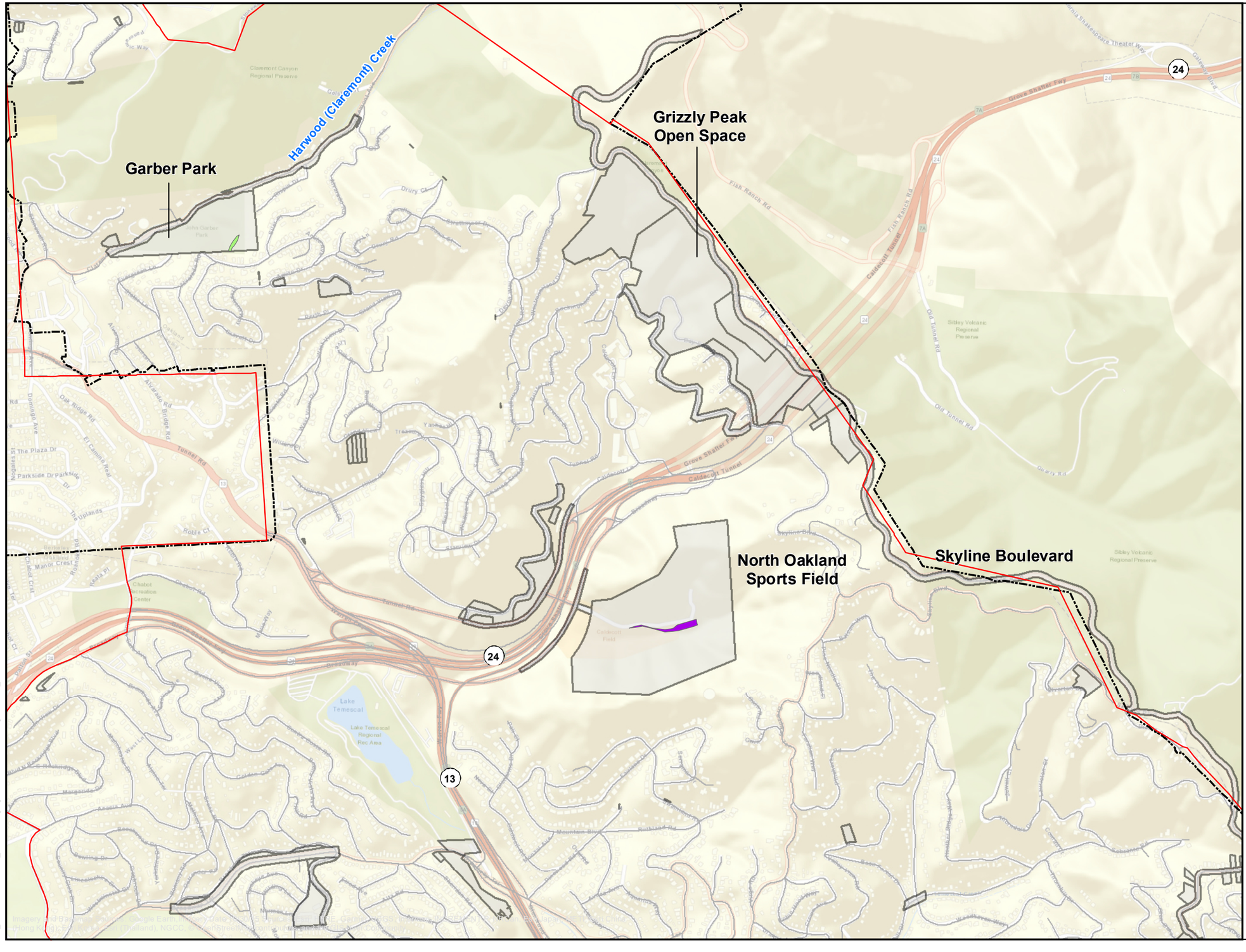


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Figure 3.4-6.
Lakes and Streams in the VMP Area (sheet 6 of 6)

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VMP Roadsides

VMP Parcels

Very High Fire Hazard Severity Zone

Oakland City Limits

Sensitive Natural Communities

Freshwater Emergent Wetland

Valley/foothill Riparian

N

0 0.25 0.5

Miles

Figure 3.4-3.
Sensitive Natural Communities in the VMP Area (sheet 1 of 6)

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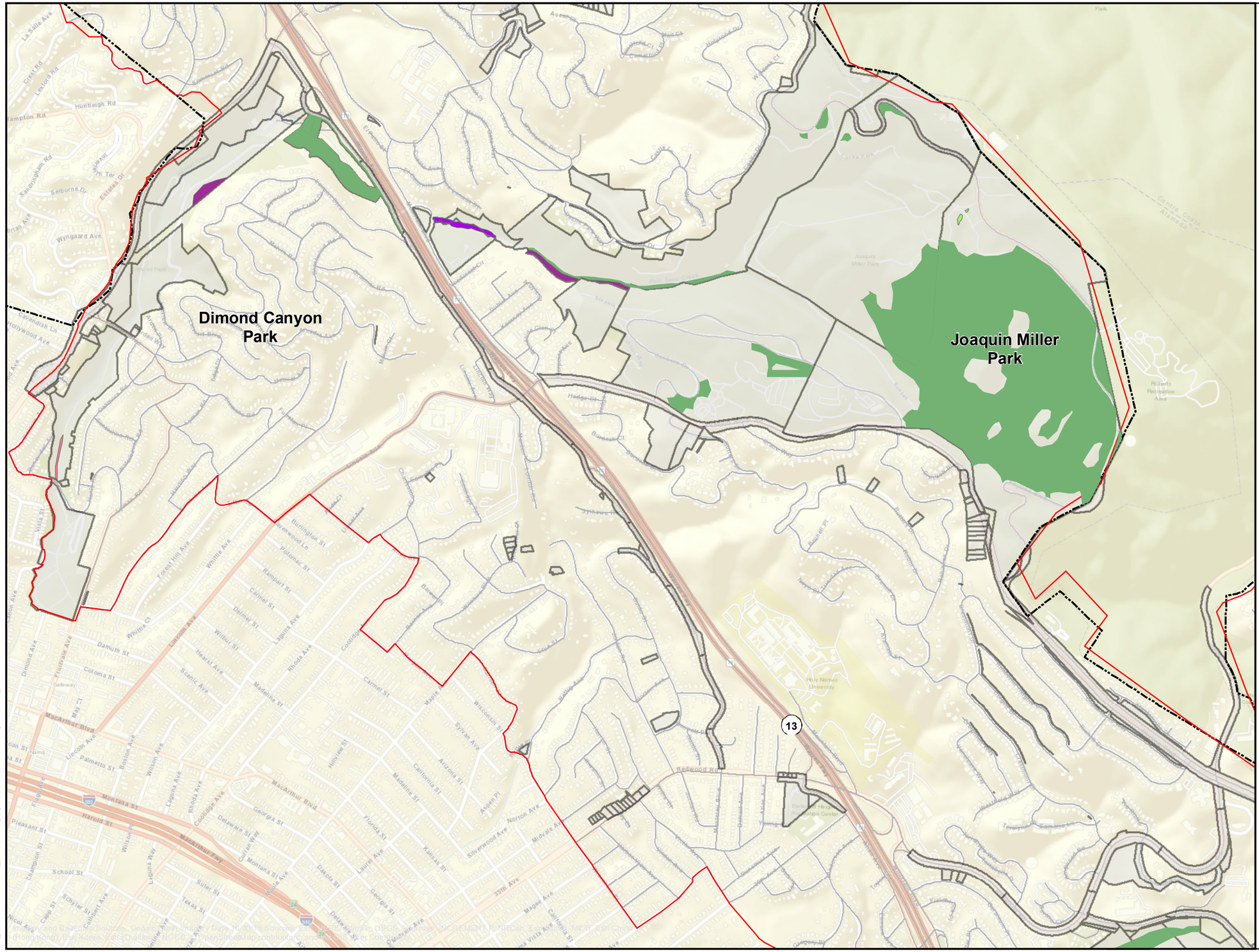


Figure 3.4-3
Sensitive Natural Communities in the VMP Area (sheet 2 of 6)

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Figure 3.4-3
Sensitive Natural Communities in the VMP Area (sheet 3 of 6)

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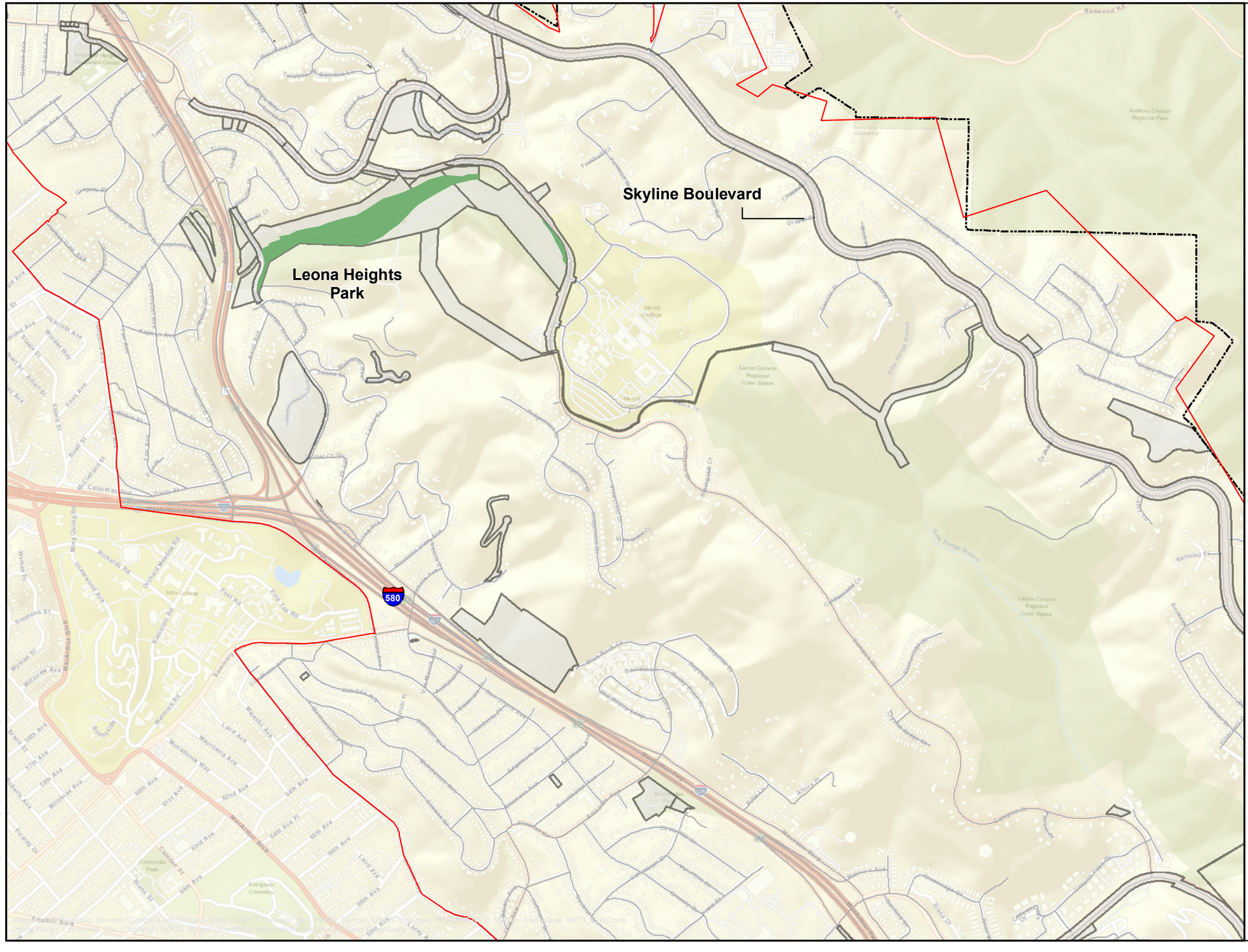


Figure 3.4-3
Sensitive Natural Communities in the VMP Area (sheet 4 of 6)

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Figure 3.4-3
Sensitive Natural Communities in the VMP Area (sheet 5 of 6)

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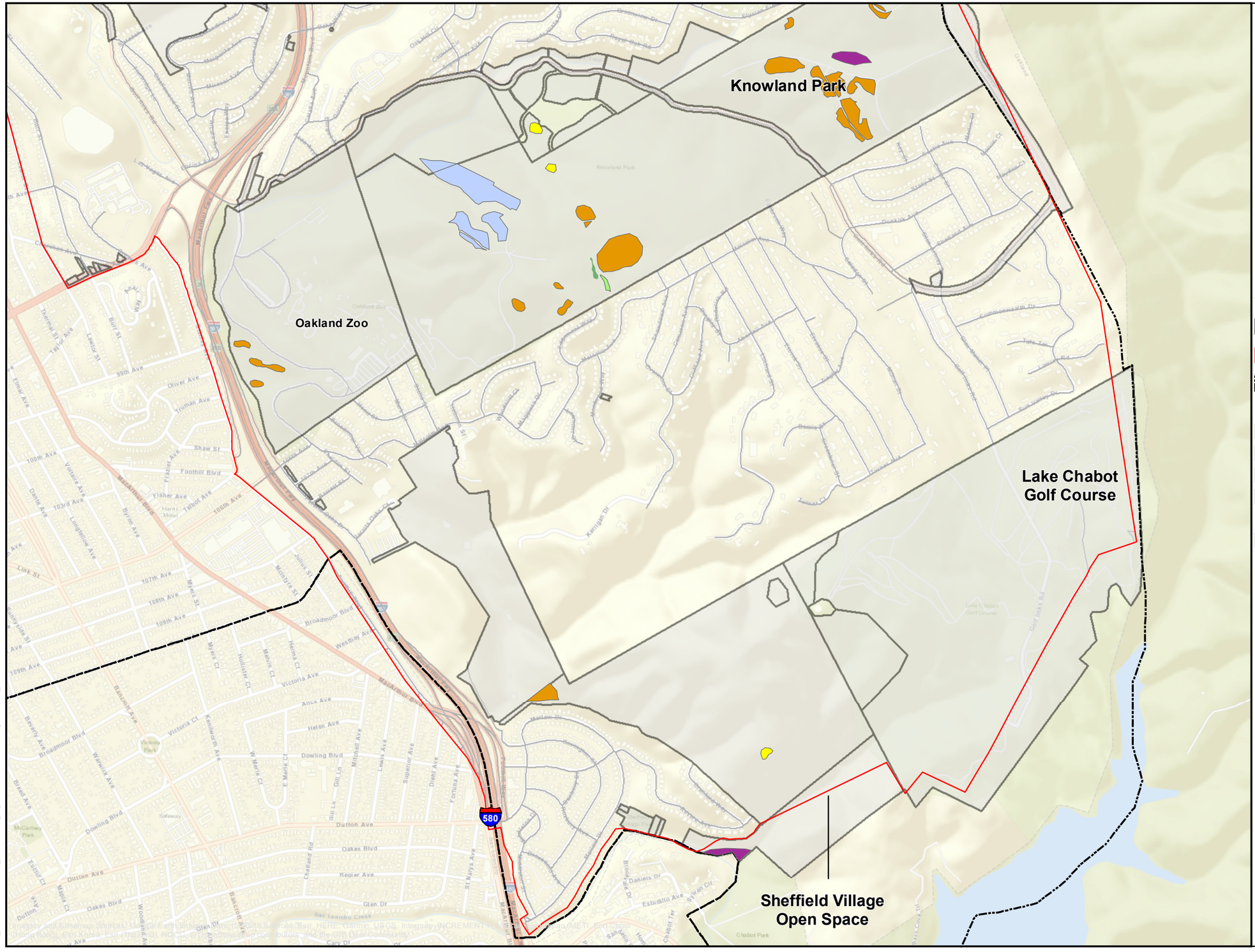
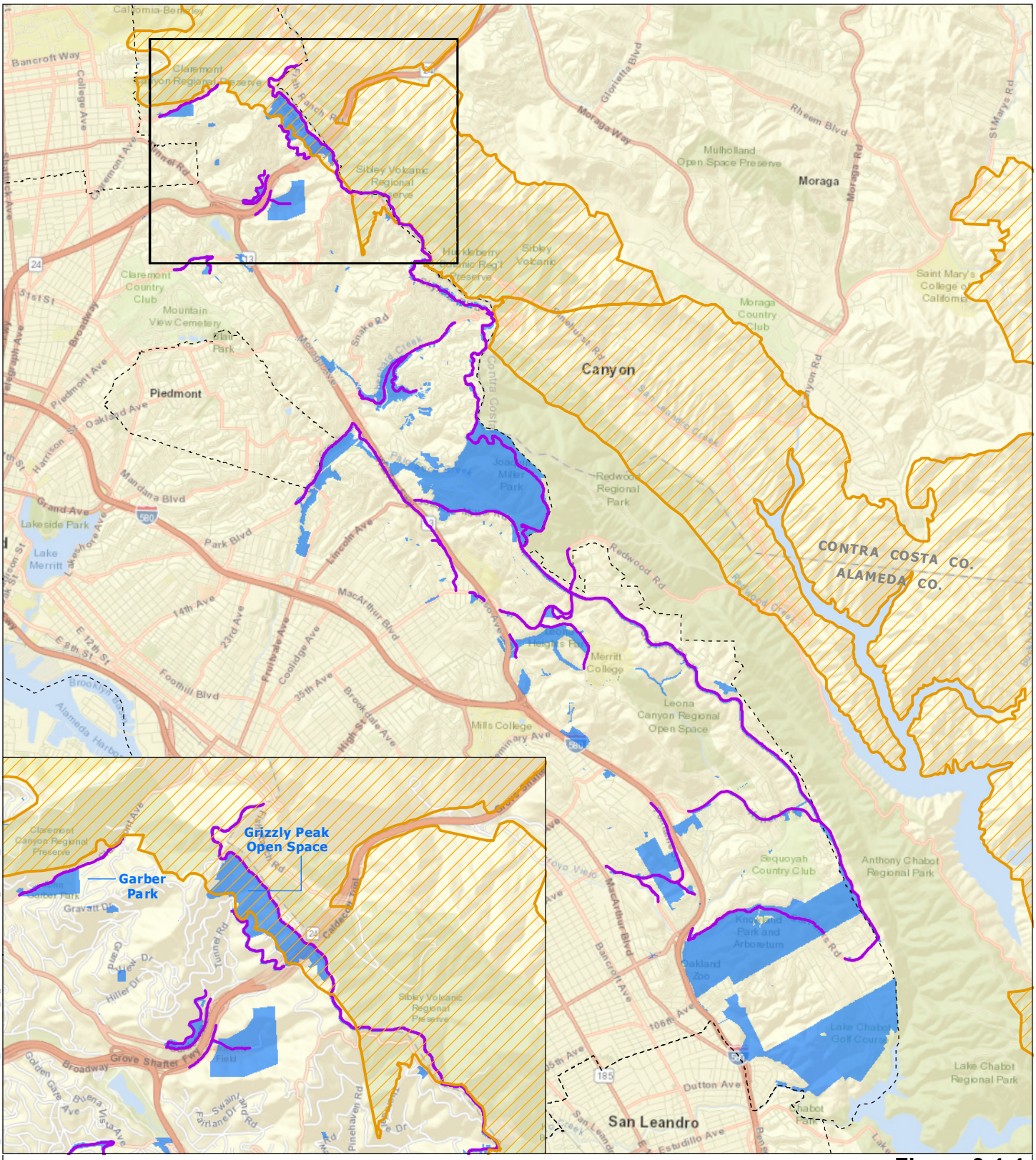


Figure 3.4-3
Sensitive Natural Communities in the VMP Area (sheet 6 of 6)

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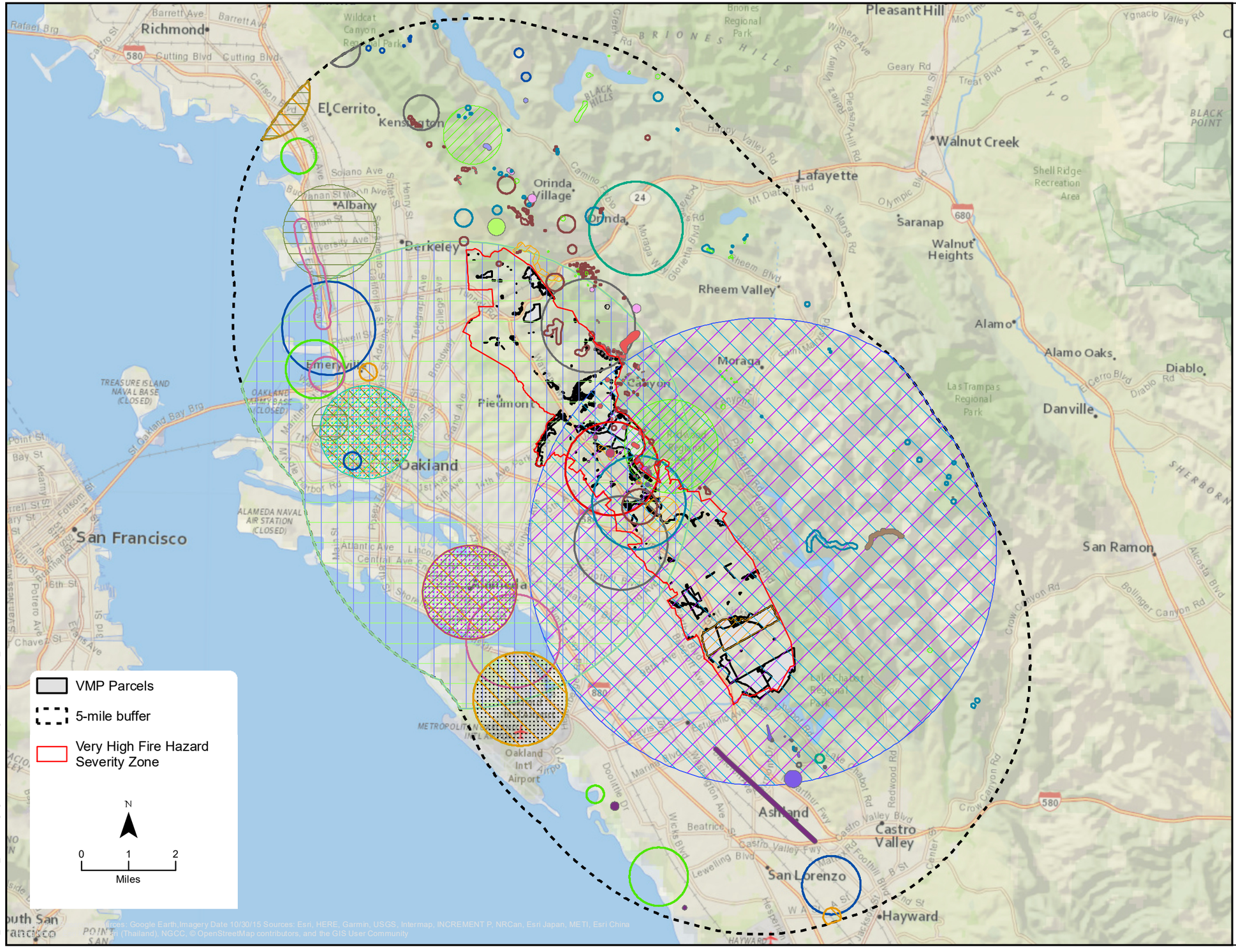
Figure 3.4-4
Critical Habitat

Horizon WATER and ENVIRONMENT

Sources: City of Oakland; CAL FIRE

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Special-Status Plant Species

Source: CNDDB October 2020 update

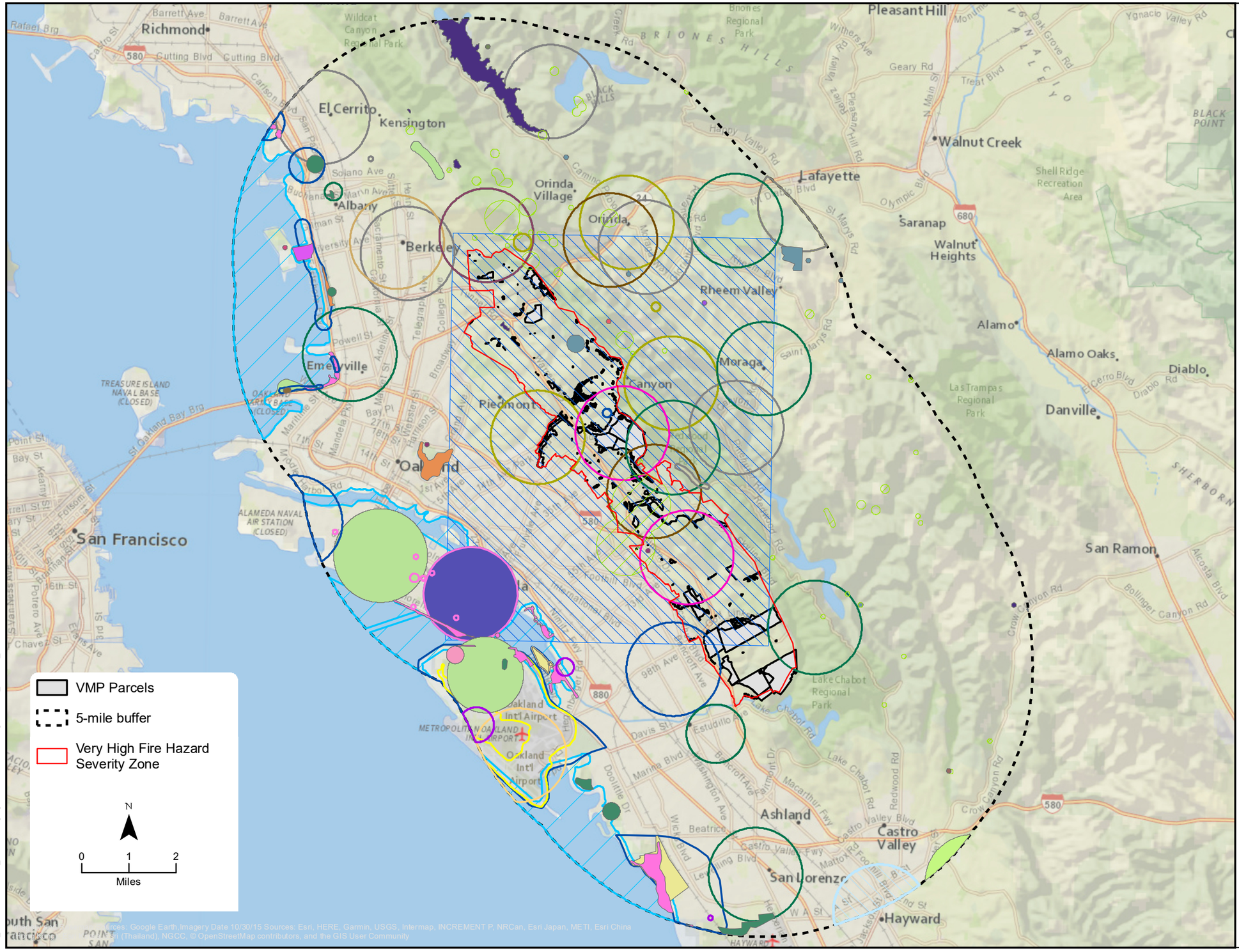
- California seablite
- Choris' popcornflower
- Congdon's tarplant
- Diablo helianthella
- Franciscan thistle
- Jepson's coyote-thistle
- Kellogg's horkelia
- Loma Prieta hoita
- Marin knotweed
- Mt. Diablo fairy-lantern
- Oregon meconella
- Point Reyes salty bird's-beak
- Presidio clarkia
- San Francisco Bay spineflower
- San Francisco popcornflower
- San Joaquin spearscale
- Santa Clara red ribbons
- Santa Cruz tarplant
- Tiburon buckwheat
- adobe sanicle
- alkali milk-vetch
- bent-flowered fiddleneck
- big-scale balsamroot
- dark-eyed gilia
- fragrant fritillary
- long-styled sand-spurrey
- minute pocket moss
- most beautiful jewelflower
- oval-leaved viburnum
- pallid manzanita
- robust spineflower
- saline clover
- slender-leaved pondweed
- western leatherwood
- woodland woollythreads

Figure 3.4-5
CNDDB-mapped Plants in the VMP Area

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Special-Status Plant Species

Source: CNDDB October 2020 update

- Alameda Island mole
- Alameda song sparrow
- Alameda whipsnake
- American badger
- American peregrine falcon
- Bay checkerspot butterfly
- California Ridgway's rail
- California black rail
- California least tern
- California red-legged frog
- California tiger salamander
- Cooper's hawk
- Crotch bumble bee
- Sacramento perch
- San Francisco dusky-footed woodrat
- Townsend's big-eared bat
- bald eagle
- big free-tailed bat
- burrowing owl
- foothill yellow-legged frog
- golden eagle
- longfin smelt
- monarch - California overwintering population
- northern harrier
- pallid bat
- salt-marsh harvest mouse
- salt-marsh wandering shrew
- saltmarsh common yellowthroat
- tidewater goby
- western bumble bee
- western mastiff bat
- western pond turtle
- western snowy plover
- white-tailed kite
- yellow rail
- yellow warbler

Figure 3.4-6
CNDDB-mapped Special-status Animals in the VMP Area

Vegetation Management Plan
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3.5 CULTURAL RESOURCES

Cultural resources include prehistoric and historic-era archaeological sites; tribal cultural resources (TCRs) or traditional cultural properties (TCPs); built environment resources such as historic-era buildings, structures, and linear features); and landscapes and districts. Prehistoric archaeological sites are places where Native Americans lived or carried out activities during the prehistoric period, which is generally defined as before the 1760s in the VMP area. Historic-era archaeological sites reflect the activities of people after initial exploration and settlement in the region during the late 1700s. Native American sites can also reflect the historic era. Prehistoric and historic-era sites may contain artifacts, cultural features, subsistence remains, and/or human burials. TCRs are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe; TCRs are discussed in Section 3.13, "Tribal Cultural Resources," of this DEIR. TCPs can include TCRs, but they also encompass resources that are culturally important to any community.

3.5.1 Environmental Setting

Prehistory

The prehistory of the VMP area reflects information known about the indigenous population from the time the region was first populated with humans until the arrival of the first Europeans, who recorded their journeys through the written record. The prehistoric record is derived from over a century of archaeological research, and while much has been gleaned from these studies, large gaps in the data record remain. The following prehistoric culture sequence, derived from Milliken et al. (2010:114-118), briefly outlines the prehistory of the San Francisco Bay region.

The Early Holocene (Lower Archaic; 8000 to 3500 B.C.) is considered a time when populations were very mobile as they practiced a foraging subsistence pattern around the region. Artifacts that characterize this period include the millingslab and handstone to process seeds, as well as large wide-stemmed and leaf-shaped projectile points.

The Early Period (Middle Archaic; 3500 to 500 B.C.) is marked by the appearance of cut shell beads in the archaeological record, as well as the presence of the mortar and pestle for processing acorns. House floors with postholes indicate substantial living structures, which suggests a move toward establishing a more sedentary lifestyle and an increasing population.

The Middle Period, which includes the Lower Middle Period (Initial Upper Archaic; 500 B.C. to A.D. 430) and Upper Middle Period (Late Upper Archaic; A.D. 430 to 1050), appears to be a time when geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The presence of milling tools, obsidian and chert concave-base projectile points, and sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a "dramatic cultural

disruption" occurred, as evidenced by the sudden collapse of the *Olivella* saucer bead trade network.

The Initial Late Period (Lower Emergent; A.D. 1050 to 1550) reflects a social complexity that had developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

The Terminal Late Period (Upper Emergent; A.D. 1550 to circa 1750) generally represents the indigenous cultures that were encountered by the Spanish explorers when they first arrived in San Francisco Bay.

Ethnography

The population indigenous to the VMP area spoke a language referred to as Costonoan, a derivative from a Spanish term for "coast people." Costonoan, which consisted of six known languages and various dialects within those languages, was spoken over a broad territory that included all of the San Francisco Peninsula and all lands along the east and south of San Francisco Bay, and extended south to include Monterey Bay, Salinas Valley, and the area around Hollister. Those residing in the VMP area spoke the Chochenyo dialect of San Francisco Bay Costonoan (Milliken et al. 2009:6). This dialect was spoken along the east shore of the bay from Fremont north to Richmond, and easterly into the Livermore Valley.

The Costonoan peoples, who are referred to as the Ohlone, Mutsun, or Rumsen depending on geography, were not a united cultural or political entity (Milliken et al. 2009:2-4). Rather, there were strong differences between the San Francisco and Monterey bay occupants, not only in language but also in culture. Political affinity was based on the tribelet, which comprised one or more villages within a specific geographic territory (Levy 1978:487).

Typically, a tribelet controlled a territory with a range of 10 to 12 miles in diameter and contained a population of 200 to 400 people living among four or five villages (Milliken et al. 2010:99). Those groups living in the VMP region resided in large villages along permanent streams in locations that allowed access to the diverse resources found in the tidal marshlands, valley floor, and hills (Milliken et al. 2010:106; Moratto 2004:225). Such villages were below the elevation of the VMP area, but the hills of the VHFHSZ were accessed for hunting and collecting plant resources. In fact, the Ohlone regularly used controlled burning to reduce dense brush that was a fire hazard; to enhance grazing lands for deer, elk, and antelope; and to encourage the growth of seed-bearing grasses (Levy 1978:491).

The Ohlone of the south and east San Francisco Bay Area were among the first people in the region to feel the impact created by the arrival of the Spanish explorers. Mission Santa Clara de Assis in the town of Santa Clara was established in 1777, just seven months after the founding of Mission Dolores in San Francisco. This was followed by the pueblo at San Jose (Pueblo de San Jose de Guadalupe) shortly thereafter (Kyle et al. 2002:423-424). Mission San Jose, in present-day Fremont, was established in 1797.

The Huchiun Ohlone occupied the Oakland-Richmond area. They had strong trading and marriage ties with the tribes on the San Francisco Peninsula, traveling about the bay in tule

boats. By 1795, most, if not all, of the Huchiun tribal members had been relocated to Mission Dolores in San Francisco (Milliken et al. 2009).

History

The historic era began in the San Francisco Bay Area when Spanish explorers arrived in the late 1760s and 1770s. Members of the Portola expedition were the first to arrive, in November 1769, reaching San Francisco Bay before returning to Monterey. Pedro Fages followed in 1770 and made a return trip in 1772. The latter visit was chronicled by Father Crespi as Fages' group followed up the east side of the bay and eventually into the Sacramento Valley. Members of the Fages company were, thus, the first non-native people to traverse the Oakland Hills and VMP area (Kyle et al. 2002:5).

Mission Santa Clara de Assis was founded in 1777 on the banks of the Guadalupe River in the Santa Clara Valley, at the south end of San Francisco Bay. Later that same year, the Pueblo of San Jose de Guadalupe was established along the Guadalupe River, approximately 2.25 miles from the mission, to grow food for the clerics and their neophytes (or converts). The town, now known as San Jose, was the first civilian settlement in Alta California (Kyle et al. 2002:422-424).

It was not until 1797 that the Spanish settled in the eastern portion of San Francisco Bay. At this time, Father Fermin Francisco de Lasuen founded the Mission San Jose at the Ohlone village of Orisom (or Oroysom), in what is now Fremont in southern Alameda County. By the early 1800s, the mission had control of land north to Oakland and east into the Livermore Valley. The mission grew to be among the most populated Spanish missions in the system. It also contained large numbers of livestock that roamed throughout its land holdings. According to Kyle et al. (2002:7-8), "for the entire decade of the 1830s it maintained a remarkable record and was probably the most prosperous of all the California missions both before and after secularization." The mission was secularized in November 1836.

The VMP area of Oakland was once part of the Rancho San Antonio, a land grant awarded in 1820 by the last Spanish governor, Pablo Vicente de Sola, to Luis Maria Peralta. The rancho encompassed approximately 44,000 acres and stretched from the shores of San Francisco Bay to the crest of the hills, extending from San Leandro Creek on the south to El Cerrito Creek on the north (Kyle et al. 2002:9). Don Luis Peralta built an adobe in what is now old Oakland shortly after receiving the land. The adobe was originally occupied by his four sons, who operated the property, but they constructed their own homes in the 1830s and 1840s at other locations within the rancho. Don Luis Peralta divided Rancho San Antonio among his four sons in 1847, giving equitable shares to each that reached from the bay to hills. The VMP area is within the two central portions of the original land grant.

Anglo-Americans began to move into the area by the late 1840s, and two of the Peralta brothers sold off or rented most of their lands. Still, the area remained largely unpopulated by colonists until the onset of the Gold Rush. A great influx of unsuccessful argonauts began to filter into the east bay, where they squatted on property belonging to the Peraltas and others. The City of Oakland was established by three such squatters who, as a team, first settled on the land in 1850, then persuaded Antonio Peralta to rent them the property; they then proceeded as if they were the owners and laid out the town of Oakland. One of the squatters, Horace W. Carpentier, was elected to the State Assembly to represent Alameda County. He secretly presented a bill to

the state legislature in 1852 to incorporate Oakland; two years later, the City incorporated and Carpentier became mayor. During this early period, Carpentier also took control of and began development of the Oakland waterfront, and became a partner in a ferry to San Francisco (Kyle et al. 2002).

The area quickly grew when, in 1869, it was selected to be the western terminus of the transcontinental railroad; the port was also an important draw for economic and population growth. Growth was further spurred by the 1906 San Francisco earthquake, which drove thousands out of San Francisco toward the East Bay; Oakland's population doubled during this decade. Many small communities that had developed in the immediate vicinity during the early years of settlement were consolidated into the larger Oakland urban area. Most of the area encompassed by the VMP was annexed to the City in 1909 (Oakland Planning History 2020). By 1935, Oakland was one of the largest cities in the state.

Early on, the City invested in parks and open space for its citizens. This effort was spearheaded by Frank Mott, who was Oakland's mayor between 1905 and 1915. Mott teamed with Mumford Robinson, a well-known city planner, to develop a plan to beautify the city with civic improvements that included broad boulevards and large parks (Oakland Planning History 2020). The various parks and open spaces within the VMP area are a testimony to Mott's early vision of the City. Joaquin Miller Park, for example, was dedicated in 1917.

In the 1940s, Oakland grew rapidly due to wartime economic expansion; the combination of a large port and railroad terminus drew a substantial amount of wartime industry. Postwar industrial slowdown caused jobs and residents to move out of Oakland toward the end of the 1950s. The 1989 Loma Prieta earthquake damaged Oakland's infrastructure, including the collapse of a section of the Cypress Freeway in downtown Oakland and parts of the Bay Bridge. Rebuilding of the city since that time, and especially in the 2000s, has created a resurgence in prosperity and population.

Area of Potential Effects

An area of potential effects (APE) would be established for individual projects conducted under the VMP that require federal permits. Each APE would encompass the project's area of direct impact and a 20-foot buffer, as well as construction staging areas and access improvements, as necessary.

3.5.2 Regulatory Setting

Federal Laws, Regulations, and Policies

National Historic Preservation Act Section 106

The National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies to consider the preservation of historic and prehistoric resources. The NHPA authorizes the Secretary of the Interior to expand and maintain the National Register of Historic Places (NRHP) and established an Advisory Council on Historic Preservation (ACHP) as an independent federal entity. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on significant cultural resources, which are referred to as *historic properties*, and afford the ACHP a reasonable opportunity to comment on the undertaking before licensing

or approving the expenditure of funds on any undertaking that may affect properties listed, or eligible for listing, in the NRHP.

Federal review of projects is normally referred to as the Section 106 process. The Section 106 review normally involves a four-step procedure described in detail in the implementing regulations (36 CFR Part 800):

- Initiate the Section 106 consultation process by notifying the appropriate consulting parties. Consultation is between the federal agency, the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer, and other consulting parties, including but not limited to the ACHP, certified local governments, and members of the general public with an economic, social, or cultural interest in the project.

- Identify properties that could be affected by the project and determine if they are listed in, or eligible for listing in, the NRHP, in consultation with the SHPO and interested parties.

- Assess the effects of the undertaking on properties that are eligible for inclusion in the NRHP, in consultation with the SHPO.

- Resolve adverse effects by developing and evaluating alternatives that could avoid, minimize, or mitigate impacts on historic resources. Consult with the SHPO, other agencies, and interested parties to develop an agreement (Memorandum of Agreement or Programmatic Agreement) that addresses the treatment of historic properties and notify the ACHP.

The ACHP's *Regulations, Protection of Historic Properties* (36 CFR Part 800) establish procedures for compliance with Section 106. These regulations define the criteria of adverse effect, define the role of the SHPO in the Section 106 review process, set forth documentation requirements, and describe procedures to be followed if significant historic properties are discovered during implementation of an undertaking. Historic properties must be considered in project planning and construction. The responsible federal agency must submit any proposed undertaking that may affect NRHP-eligible properties to the SHPO for review and comment before the project's approval.

As noted, Section 106 prescribes specific criteria for determining whether a project would have an adverse effect on a historic property, if any such properties exist within the APE as defined by the agency (36 CFR Section 800.5). An impact is considered adverse when prehistoric or historic archaeological sites, structures, districts, or objects listed in or eligible for listing in the NRHP are subjected to the following effects:

- Physical destruction of or damage to all or part of the property;

- Alteration of a property;

- Removal of the property from its historic location;

- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property that causes its deterioration; and
- Transfer, lease, or sale of the property.

Because the City would need to obtain a permit from USACE under CWA Section 404 for some of the proposed actions, the VMP constitutes a federal undertaking that would require compliance with Section 106 of the NHPA and federal significance criteria apply. For federally permitted or funded projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and that:

- Are associated with events that have made a contribution to the broad pattern of our history;
- Are associated with the lives of people significant in our past;
- Embody the distinct characteristics of a type, period, or method of construction, that represent the work of a master, that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or are likely to yield, information important in prehistory or history.

State Laws, Regulations, and Policies

California implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), an office of the California Department of Parks and Recreation (DPR), implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions as well as serving as a consulting party in the federal process described above.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (Pub. Res. Code Section 5024.1[a]).

The eligibility criteria for inclusion on the CRHR are based on NRHP criteria (Pub. Res. Code Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including historic properties formally determined eligible for, or listed in, the NRHP. Cultural resources eligible for listing in the CRHR are referred to as *historical resources*.

To be eligible for the CRHR, a prehistoric or historic-period resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the CRHR, it must also retain enough of its character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. A historical resource that does not retain sufficient integrity to meet the NRHP criteria may still be eligible for listing in the CRHR.

The CRHR consists of resources that are listed automatically, as well as those that must be nominated through an application and public hearing process. The CRHR automatically includes the following:

- California properties listed on the NRHP and those formally determined to be eligible for the NRHP;
- California Historical Landmarks (CHLs) from No. 770 onward; and
- California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Resources Commission for inclusion on the CRHR.

Other resources that may be nominated to the CRHR are:

- Historical resources with a significance rating of Category 3 through 5 (i.e., properties identified as eligible for listing in the NRHP, the CRHR, and/or a register maintained by a local jurisdiction);
- Individual historical resources;
- Historical resources contributing to historic districts; or
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone.

California Environmental Quality Act

CEQA, as codified at Pub. Res. Code Sections 21000 et seq., requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources. As defined in Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site

about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; and
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition, the CEQA Guidelines define historical resources as: (1) a resource in the CRHR; (2) a resource included in a local register of historical resources, as defined in Pub. Res. Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Pub. Res. Code Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Pub. Res. Code Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site is to be treated in accordance with the provisions of Pub. Res. Code Section 21083 regarding unique archaeological resources. The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of a project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

Assembly Bill 52 – Tribal Cultural Resources

TCRs, defined in Pub. Res. Code Section 21074(a), are also considered historical resources and are specifically addressed under CEQA. Impacts to TCRs are referenced independently from cultural resources in the CEQA checklist and are discussed in Section 3.13, "Tribal Cultural Resources," in greater detail.

AB 52 requires that state lead agencies consult with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if requested by the tribe. The bill, chaptered in Pub. Res. Code Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment. A detailed description of AB 52 and its requirements is provided in Section 3.13, "Tribal Cultural Resources," of this DEIR.

California Public Resources Code and California Administrative Code

Human remains, including those buried outside of dedicated cemeteries, are protected under several state laws, including Pub. Res. Code Section 5097.98 and Health and Safety Code Section 7050.5. Impacts could include intentional disturbance, mutilation, or removal of interred human remains.

Local Laws, Regulations, and Policies

City of Oakland General Plan

The City of Oakland General Plan contains a robust "Historic Conservation Strategy," which is thoroughly discussed in the Historic Preservation Element (City of Oakland 1994). Like most planning documents in urban areas, Oakland's General Plan focuses heavily on preservation of built environment resources (i.e., houses, buildings) and historic neighborhoods or districts.

Archaeological resources are addressed in Chapter 5, "Historic Preservation and Ongoing City Activities." The following policies are relevant to archaeological resources in the VMP area:

Objective 4: Archeological Resources: To develop databases identifying existing or potential archeological sites and adopt procedures for protecting significant archeological resources.

> **Policy 4.1 Archeological Resources**: To protect significant archeological resources, the City will take special measures for discretionary projects involving ground disturbances located in archeologically sensitive areas.

Policy 4.1 lists the following archaeological protection procedures for discretionary projects that involve ground-disturbing activities in sensitive areas:

- Mapping areas of high prehistoric or historic archeological potential;
- Archival studies for new development or other activities involving ground disturbance within areas of high archeological potential;
- Determination of whether the ground disturbance activity could damage archeological materials;
- Surface reconnaissance by archeologist, as necessary if ground disturbances could damage archaeological materials; and
- Subsequent actions, as necessary, such as monitoring or limited archaeological excavations.

3.5.3 Impact Analysis

Methodology

This analysis relies on standard professional practice for the assessment of VMP impacts on cultural resources. CEQA requires project proponents to assess a project's potential effects on historical resources (i.e., those that are listed or eligible for listing in the CRHR or in a local register or survey that meets the requirements of Pub. Res. Code Sections 5020.1[k] and 5024.1[g]). This entails the following steps:

- Identify potential historical resources.
- Evaluate the significance of identified cultural resources.

- Evaluate the anticipated effects of a project on all historical resources.

Archival Research

The Draft VMP (Dudek 2019:109) recognizes Oakland's rich and multicultural past, which includes Ohlone archaeological sites, buildings dating from the Spanish-Mexican settlement period, structures from the pioneer communities of the early 1860s, Italianate Victorian houses, and development from the 1906 post-earthquake boom. Historic-era buildings reflect a diversity of architectural styles, including Victorian, Beaux Arts, International, New Brutalist, and modernist styles. The VMP notes that the OHP's CRHR web page lists 67 resources in the City of Oakland. These include resources listed in the NRHP (51), as a CHL (8), as listed both in the NRHP and as a CHL (6), and as a State Point of Interest (2). There are 145 properties designated by the City as Oakland landmarks (City of Oakland 2020). The City also lists 45 buildings on a local register of historic resources and identifies nine historic preservation districts.

Eleven of the City's designated landmarks and one district are within the VHFHSZ area of the VMP. **Table 3.5-1** lists the resources within the VMP that are on Oakland's list of Designated Landmarks and historic preservation districts. Table 3.5-1 also provides information found in the OHP's *Built Environment Resources Directory* (BERD) for Alameda County (OHP 2020a) and California Historical Resources for Alameda County (OHP 2020b), and the NRHP (National Park Service 2020).

Table 3.5-1. City of Oakland Designated Landmarks and Historic Preservation Districts in the VMP

Oakland Landmark No.	Resource Name	CRHR Eligibility	NRHP Eligibility
4	Tower to General John C. Fremont in Joaquin Miller Park	No information; not in BERD	No information
5	Joaquin Miller Park and Abbey	Yes	Listed
32	Caldecott Tunnel – Bore 3	No	No information
34	Montclair Fire House – 6226 Moraga Avenue	Not evaluated	No information
37	Dunsmuir House and Carriage House – 2960 Peralta Oaks Court	Yes	Listed
38	Leona Park	No information; not in BERD	No information
40	Leimert Bridge	No information; not in BERD	No information
51	George McCrea House and Indian Campground – 3500 Mountain Boulevard	No information; not in BERD	Listed
103	Chrysthouse – 1600 Fernwood Drive	No information; not in BERD	No information
133	Claremont Resort and Spa – 41 Tunnel Road	Yes	Listed

Oakland Landmark No.	Resource Name	CRHR Eligibility	NRHP Eligibility
144	Morse House – 5654 Margarido Drive	Yes	Yes
8	Sheffield Village Historic District	Not evaluated	No information

Sources: City of Oakland 2020; OHP 2020a, 2020b; National Park Service 2020.

Research on the OHP web site also found that three designated CHLs (OHP 2020c) are within the VMP area, as listed in **Table 3.5-2**.

Table 3.5-2. California Historical Landmarks in the VMP Area

California Historical Landmark No.	Name	Location in the VMP Area
107	Joaquin Miller Home	Joaquin Miller Park
962	Site of Blossom Rock Navigation Trees	Redwood Regional Park, Madrone Picnic Area
970	Rainbow Trout Species Identified	Redwood Regional Park

Source: OHP 2020c

A record search of the VMP area was conducted by the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University in June 2020 (File No. 19-1867 and No. 19-2275). The purpose of the record search was to provide additional baseline information about the number of recorded cultural resources within the VMP area to ascertain the sensitivity of the region for cultural resources, along with the NRHP/CRHR eligibility status of the resources recorded. **Appendix E** of this DEIR contains the NWIC record search results. The NWIC information has largely been derived from study results voluntarily filed at the Information Center, and is not necessarily a comprehensive reflection of all cultural resources work conducted on the VMP lands. It is important to note that, although 40 studies (many of which include multiple reports) overlap with the VMP area, most of the property and roads included in the VMP area have not been completely surveyed for cultural resources. Of the 40 reported projects, 10 are along roadways (almost all on SR 13 and SR 24), while another 11 are telecommunications projects with either narrow linear or small isolated footprints; three others are general overviews of the region and six are for residential developments. The remaining 10 projects represented a variety of actions, including two studies for fire management and a study of Anthony Chabot Regional Park.

The record search revealed that four historic districts are included in or overlap portions of the VMP area. In addition, six archaeological resources and 14 built environment resources have been recorded in the VMP area. Many of these resources are elements of the four recorded districts that overlap portions of the VMP area. All of the recorded resources and districts are from the historic era; none reflect the prehistory or Native American presence in the region. Recorded resources in the program area, as identified by the NWIC record search, are listed in **Table 3.5-3**. Two districts, two buildings, and one archaeological site have previously been evaluated and determined to be significant properties or resources. One district, eight buildings, and one archaeological site have previously been evaluated and identified as not eligible for

either the CRHR or NRHP. The remaining seven buildings and archaeological sites have not yet been evaluated; data are not clear about the evaluation status of Anthony Chabot Regional Park.

Table 3.5-3. NWIC Record Search Results

Resource No. (P-XX-XXX)	Name/Title	Type[1]	USGS Quadrangle	NRHP/CRHR Eligibility
01-005846	Lake Temescal Regional Park	D	Oakland East	Not Eligible
01-010128	Bridge 28 0015L Caldecott Tunnel – Bore #3	BE	Oakland East	Not Eligible
01-010523	Lake Chabot Clubhouse*	BE	Hayward	Eligible for CRHR
01-011121	Cooper Residence	BE	Oakland East	Not Eligible
01-011122	Common Area of Tract 4156	BE	Oakland East	Not Eligible
01-011248	Utility Pole #110134281	BE	Oakland East	Not Eligible
01-011252	Utility Pole #26298	BE	Oakland East	Not Eligible
01-011377	Oakland, Antioch, & Eastern Railway / Sacramento Northern Railway	BE	Oakland East	Not Evaluated
01-011382	City of Oakland Fire Department Station 6	BE	Oakland East	Not Eligible
01-011414	Anthony Chabot Regional Park	D	Hayward, Las Trampas Ridge, Oakland East	Unknown[2]
01-011415, 07-004484	Redwood Regional Park Historic District*	D	Oakland East	Eligible
01-011416	CA-ALA-000650H – stone-lined ditch	BE	Oakland East	Not Eligible
01-011419	Anthony Chabot Equestrian Center*	BE	Oakland East	Eligible
01-011420, 07-004486	Sibley Volcanic Regional Preserve*/ Round Top Regional Park*	D	Oakland East	Eligible for the NRHP/Listed in the CRHR
01-011421	5750 Redwood Road / Skyline Ranch*	S	Oakland East	Eligible
01-011424	11500 Skyline Boulevard – Richard C. Trudeau Training Center	BE	Oakland East	Not Eligible
01-011538	Leona Heights Sulfur Mine / McDonell Sulfur Mine	S	Oakland East	Not Eligible
01-011995	S1: Refuse scatter	S	San Leandro	Not Evaluated
01-011997	S3: Stone Quarry	S	San Leandro	Not Evaluated
01-011998	S4: Fence line	BE	Hayward, San Leandro	Not Evaluated
01-011999	S5: Dirt Road	S	San Leandro	Not Evaluated
01-011200	S6: Cypress Structure Landfill (reclaimed)	S	Hayward	Not Evaluated
01-011201	S7: WPA-era landscape elements	BE	Hayward	Not Evaluated

Notes: Resources with an * have been evaluated and determined eligible for listing in the NRHP and/or CRHR.

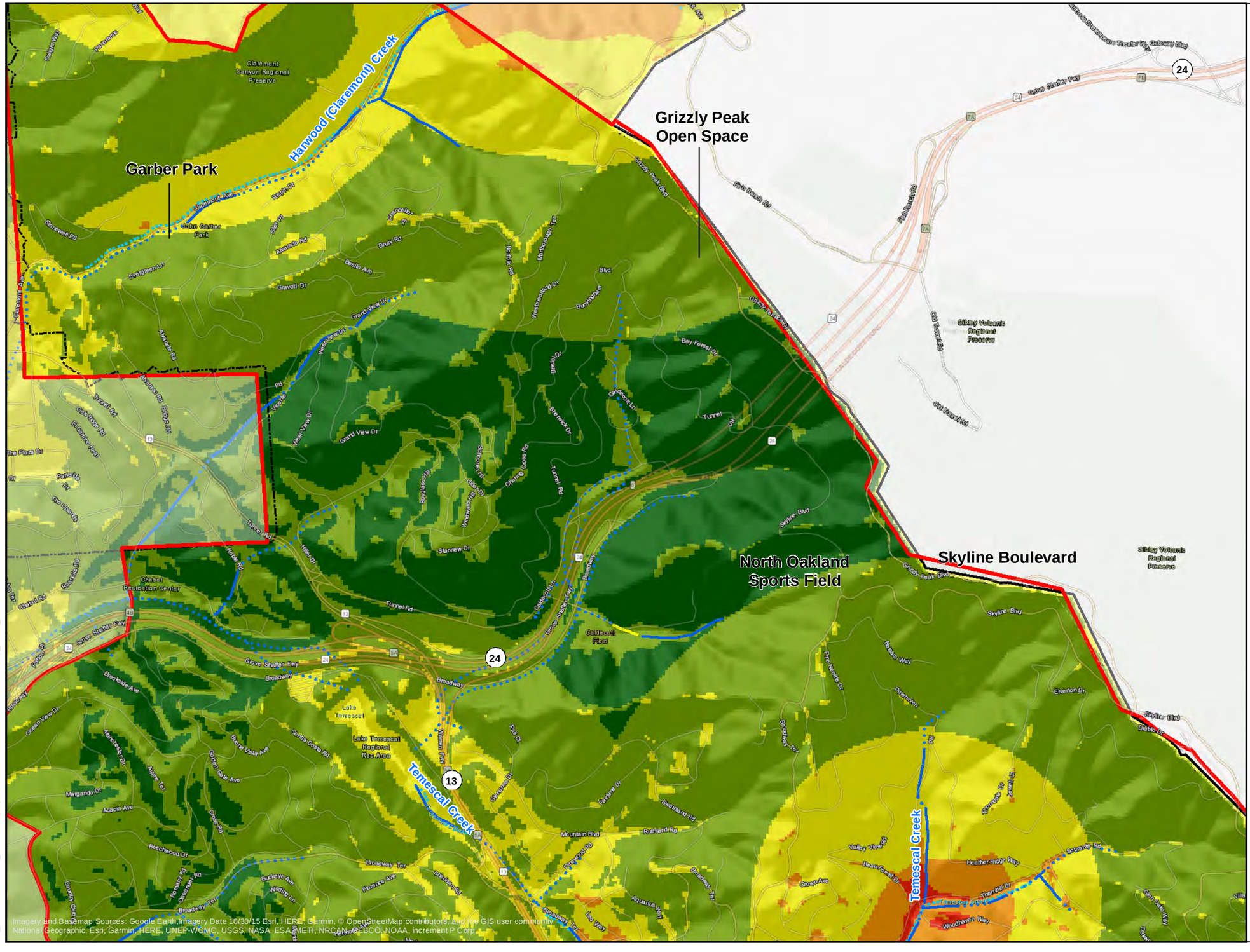
[1] BE=Built Environment (building or structure); D=District; S=Site; WPA = Works Projects Administration

[2] The park was recorded as a district, but it appears that was not evaluated as such; only individual elements of the park were evaluated.

Source: NWIC Record Search File No. 19-1867, No. 19-2275.

The cultural resources study also examined the potential for surface archaeological resources within the VMP area, and a predictive model was developed using GIS. The fundamental concept surrounding predictive models is to project known patterns or relationships into unknown areas. In the case of archaeological predictive modeling, the primary assumption is that archaeological sites tend to recur in areas favorable to human settlement. The model utilized those environmental characteristics of places where sites do or do not occur, and allowed for the extrapolation from small areas to broader geographic areas. Previous research by Meyer (2013) has indicated that, among the multiple environmental conditions that may predict prehistoric human settlement or activity in central and northern California, three environmental factors—distance to water, slope, and distance to a confluence of streams —are useful for predicting the majority of site locations. Surface site potential within the VMP area is depicted in **Figure 3.5-1**.

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Very High Fire Hazard Severity Zone

Oakland City Limits

Western Alameda County Creeks

Creek

Engineered channel

Underground culvert or storm drain

Archaeological Sensitivity

Lowest

Low

Moderate

High

Highest

Historical Creeks (EcoAtlas 2007)

N

0 0.25 0.5

Miles

Figure 3.5-1
Surface Site Potential in the VMP Area

Page 1 of 6

Vegetation Management Plan
Draft Environmental Impact Report

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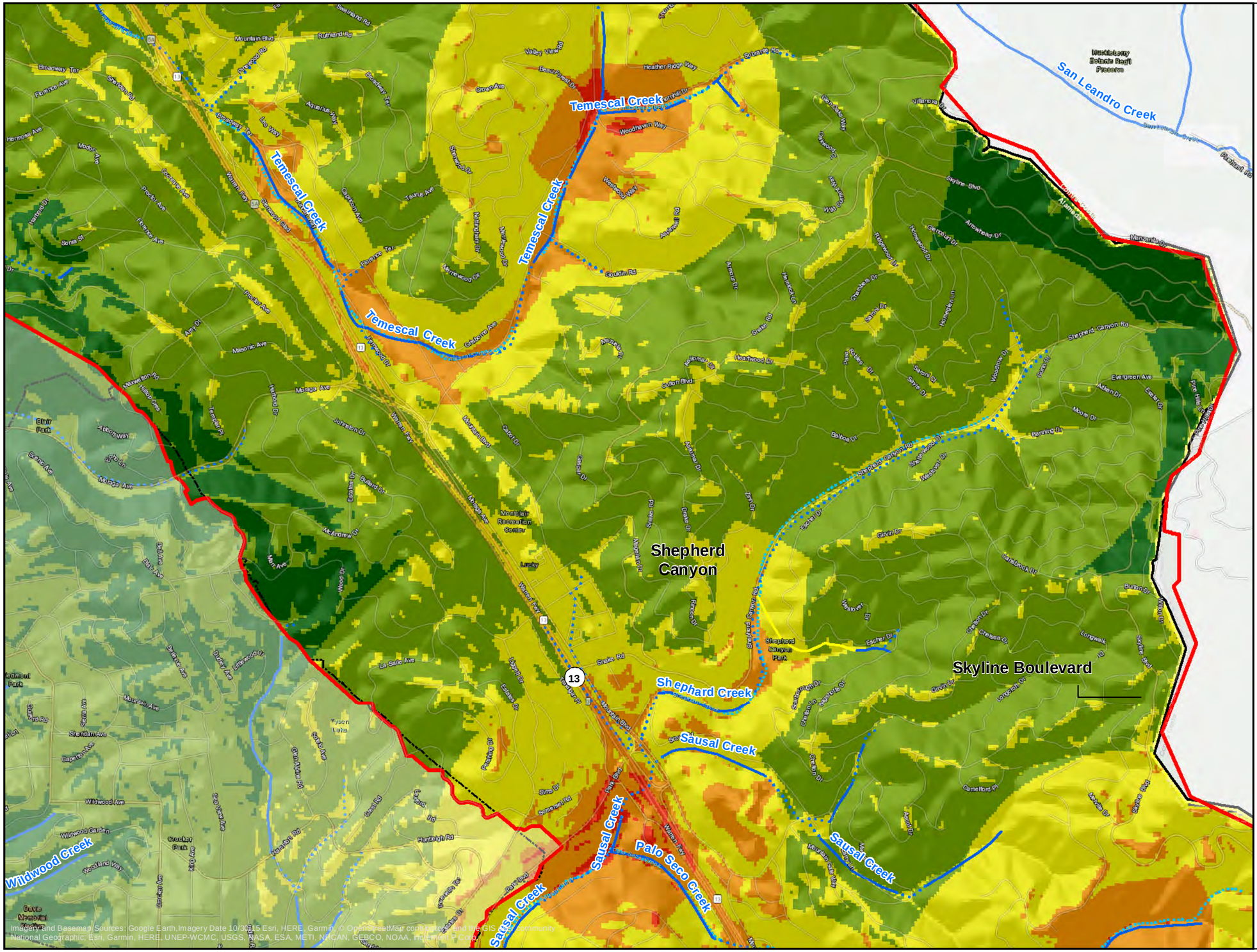


Figure 3.5-1
Surface Site Potential in the VMP Area

Vegetation Management Plan
Draft Environmental Impact Report

Imagery and Basemap Sources: Google Earth,Imagery Date 10/3/2015 Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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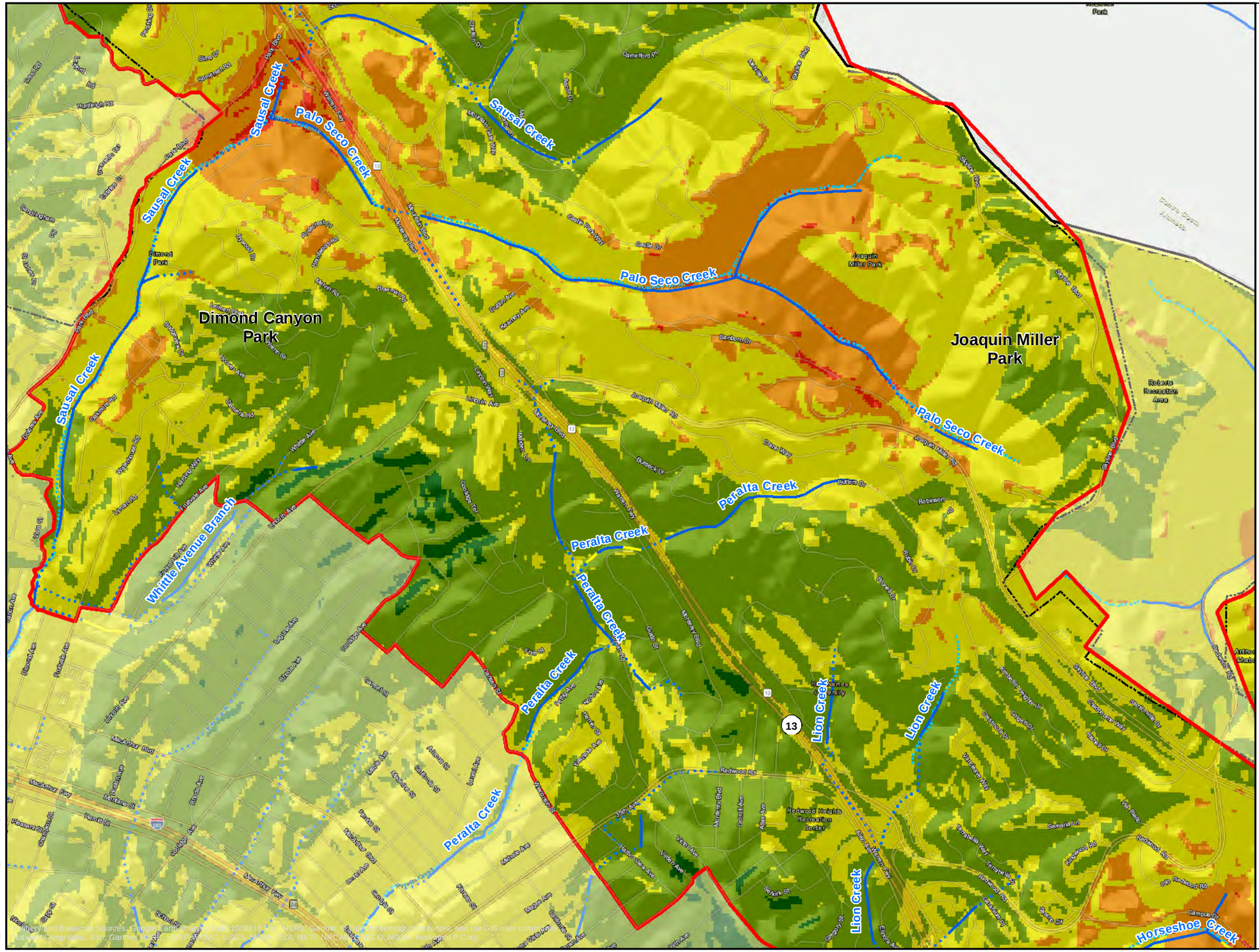


Figure 3.5-1
Surface Site Potential in the VMP Area

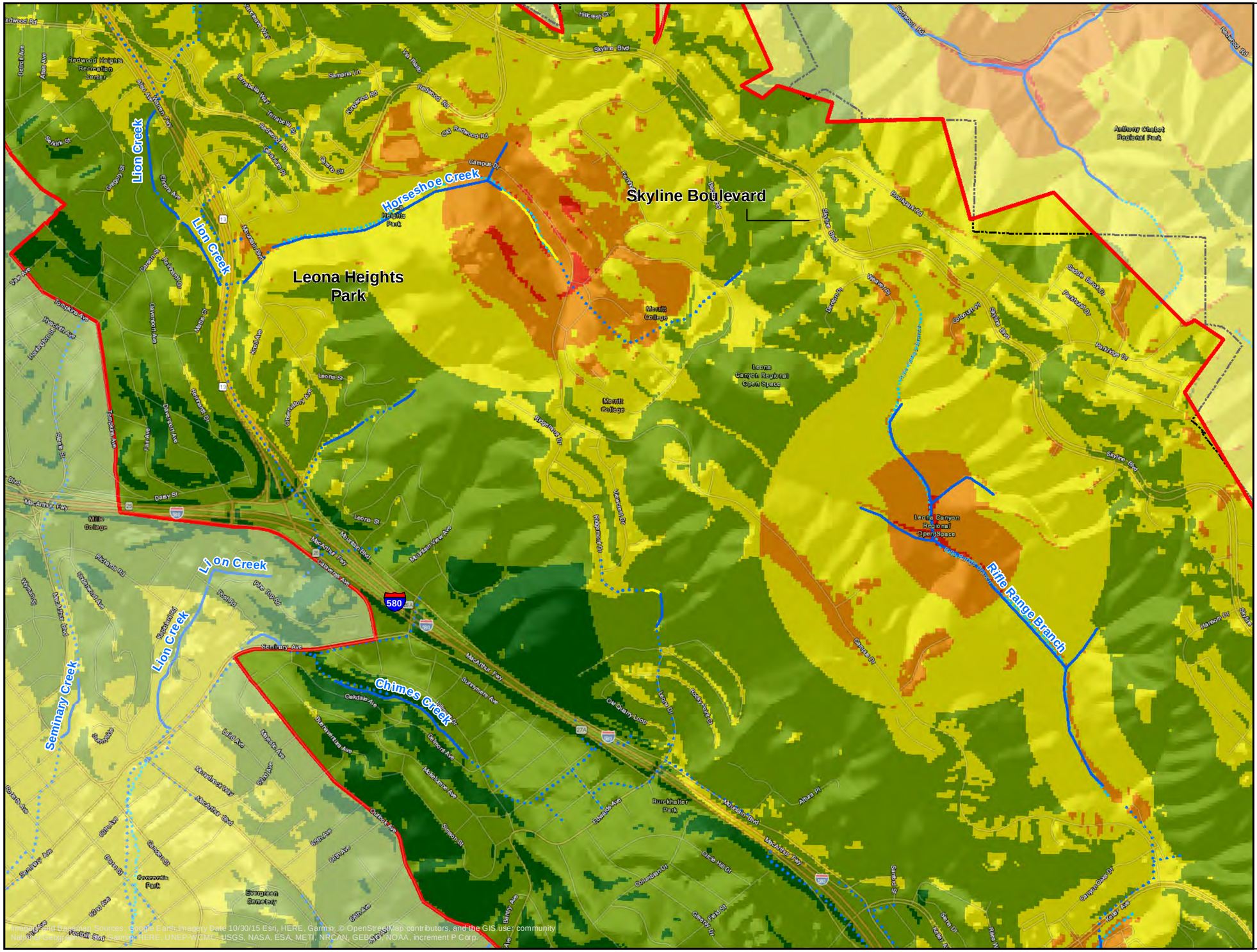
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Tiles and Basemap Sources: Google, Earthstar Geographics, CNES/Airbus DS, HERE, Garmin, OpenStreetMap contributors, and the GIS user community, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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Very High Fire Hazard Severity Zone

Oakland City Limits

Western Alameda County Creeks

- Creek
- Engineered channel
- Underground culvert or storm drain

Archaeological Sensitivity

- Lowest
- Low
- Moderate
- High
- Highest

Historical Creeks (EcoAtlas 2007)

N

0 0.25 0.5

Miles

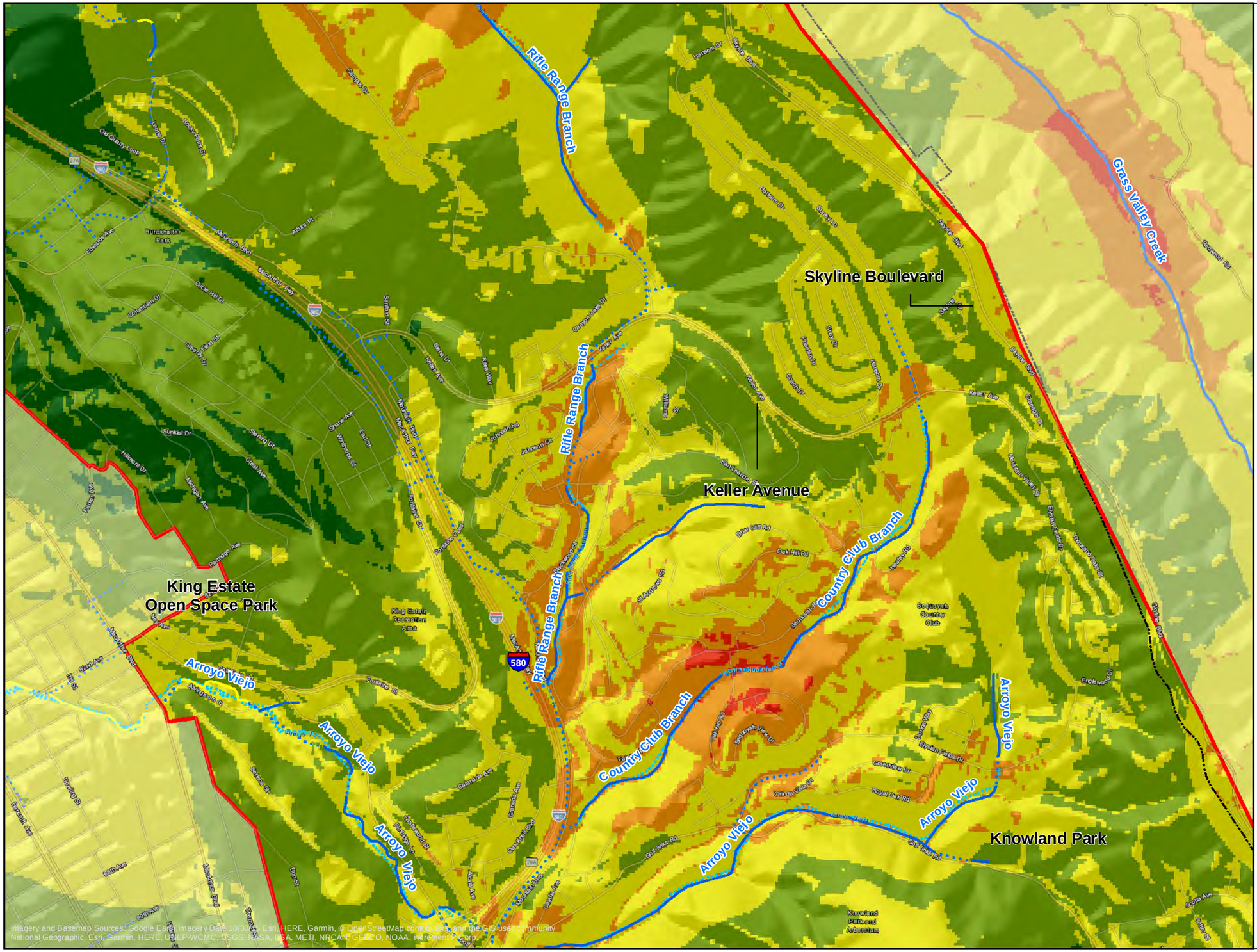
Figure 3.5-1
Surface Site Potential in the VMP Area

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Very High Fire Hazard Severity Zone

Oakland City Limits

Western Alameda County Creeks

Creek

Engineered channel

Underground culvert or storm drain

Archaeological Sensitivity

Lowest

Low

Moderate

High

Highest

Historical Creeks (EcoAtlas 2007)

N

0 0.25 0.5

Miles

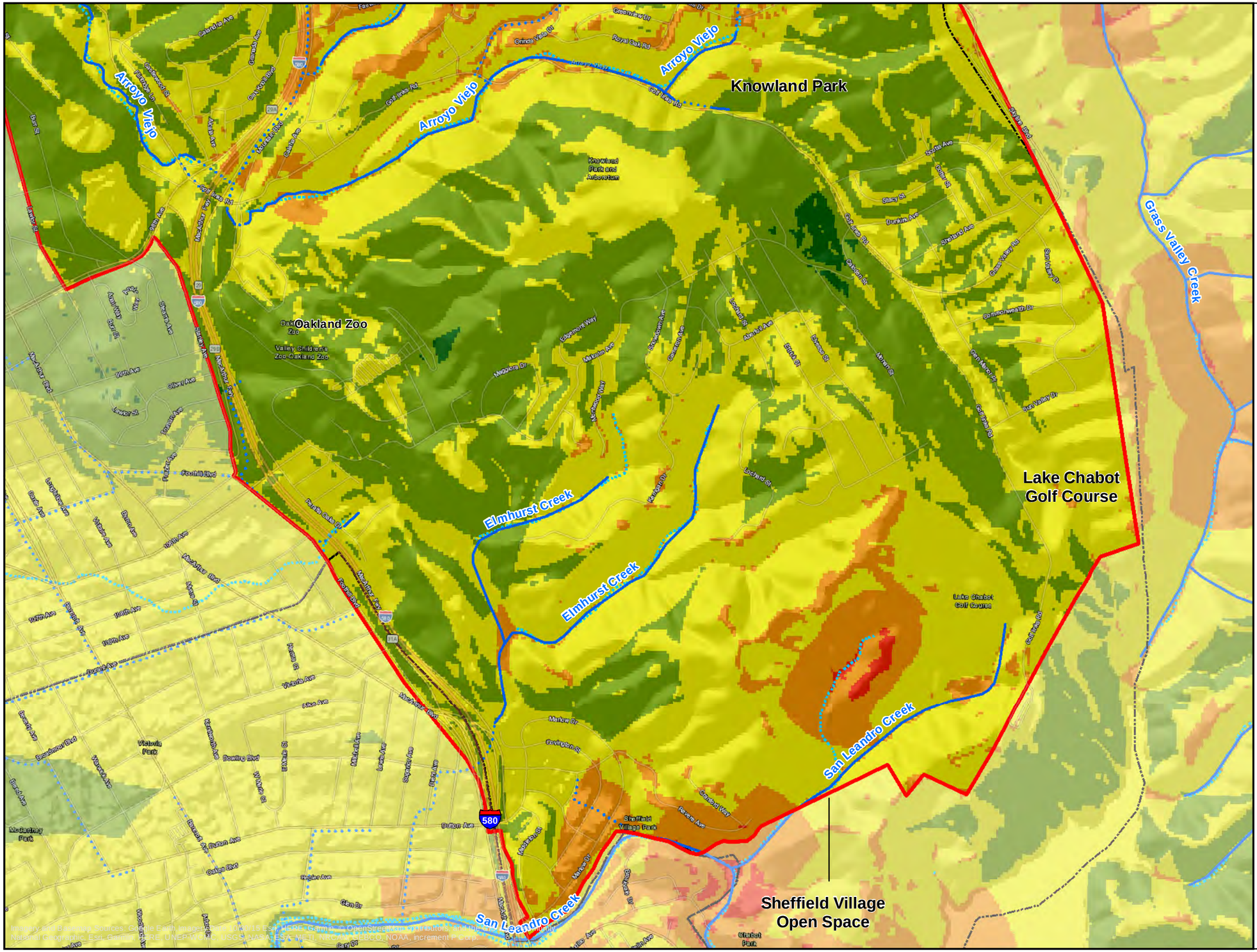
Figure 3.5-1
Surface Site Potential in the VMP Area

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Very High Fire Hazard Severity Zone

Oakland City Limits

Western Alameda County Creeks

Creek

Underground culvert or storm drain

Archaeological Sensitivity

Lowest

Low

Moderate

High

Highest

Historical Creeks (EcoAtlas 2007)

N

0 0.25 0.5

Miles

Figure 3.5-1
Surface Site Potential in the VMP Area

Vegetation Management Plan
Draft Environmental Impact Report

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Native American Consultation

An email request was made to the Native American Heritage Commission (NAHC) on August 12, 2019, to review its files for the presence of recorded sacred sites in the VMP area. The NAHC responded on August 16, 2019, stating that no significant resources were identified in the VMP area as a result of a search of their files. The NAHC also provided a list of seven tribes and tribal contacts with a traditional and cultural affiliation with the VMP area for notification pursuant to Pub. Res. Code Section 21080.3.1 (AB 52). Coordination with tribes is described in Section 3.13, "Tribal Cultural Resources." No tribes have previously provided notice to the City of a desire to be notified of all projects, and none of the tribes that were contacted requested consultation on the VMP. Impacts to TCRs are analyzed in Section 3.13, "Tribal Cultural Resources."

Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the VMP would result in a significant impact on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource under CEQA Guidelines Section 15064.5; or
- Disturb any human remains, including those interred outside of dedicated cemeteries.

Issues Not Evaluated Further

Vegetation management techniques include biological treatments, primarily grazing; hand labor techniques; mechanical techniques; and chemical applications (i.e., herbicides). Due to the nature of the VMP, impacts of the following vegetation management techniques would result in no impacts because they do not involve ground disturbance or impacts to structures, and therefore are not discussed further in this section:

- Hand labor techniques, except for the use of shovels, Pulaski hoes, and McLeod fire tools
- Herbicides

It should be noted that tribal consultation did not result in identification of TCRs related to locations of plants important to Oakland-area tribes.

Environmental Impacts

Impact CUL-1: Adverse Change in Significance of Historical Resources of the Historic Era and Built Environment (*Less than Significant*)

Archival research has identified 13 historic-era resources within the VMP area that have been determined significant by the City, the state, or at a national level, as summarized in **Table 3.5-4**. Five of these resources do not appear to have been evaluated for CRHR/NRHP eligibility but

may, in fact, meet those criteria, should they be evaluated in the future, and they are considered potentially eligible for the purposes of this environmental document. Furthermore, as mentioned earlier, not all of the previously recorded resources identified by the record search have been evaluated, nor has most of the VMP area been surveyed for cultural resources. As a result, it can be anticipated that the VMP area likely contains numerous as-yet-unidentified historic-era buildings and built resources that could be NRHP/CRHR-eligible and, therefore, are considered potentially eligible for the purposes of this analysis.

Table 3.5-4. Summary of Historic Resources in the VMP Area

Name	Portion of VMP Area	Significance		
		City	State	National
Joaquin Miller Park and Abbey / Tower to General John C. Fremont / CHL 107	JMP-1, JMP-2, JMP-3, JMP-4; Abbey: JMP-1; Tower: JMP-4	X	X	X
Caldecott Tunnel – Bore 3*	--	X		
Montclair Fire House*	--	X		
Dunsmuir House and Carriage House / Sheffield Village Historic District	URB-1	X	X	X
Leona Heights Park*	LHT-1, LHT-2, LHT-3	X		
Leimert Bridge*	DIM-1 (does not include bridge)	X		
George McCrea House and Indian Campground	--	X	X	X
Chrysthouse*	--	X		
Claremont Resort and Spa	--	X	X	X
Morse House	--	X	X	
Lake Chabot Clubhouse / Anthony Chabot Equestrian Center / Skyline Ranch	URB-1, Median		X	X
Redwood Regional Park Historic District / CHL 962 and 970	URB-1		X	X
Sibley Volcanic Regional Preserve / Round Top Regional Park	URB-1		X	X

* Sites potentially eligible for listing

Seven of the known historical resources are within portions of the VMP area, as shown in Table 3.5-4. Routine maintenance vegetation management activities, as described in Section 2.2.1 under "Current and Recent Vegetation Management Activities led by Oakland Fire Department," have been occurring at and around the known historical resources for decades. This work is often done in historic parks and districts with assistance of stewardship groups that are committed to maintaining the integrity of the resource/park/district, including natural and manicured landscapes.

As noted in Section 2.2.1 under "Current and Recent Vegetation Management Activities Led by Oakland Fire Department," OFD has traditionally used hand labor to manage vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas, and these activities would continue to occur under the VMP. Within the VMP area, historic resources are considered priority 1 treatment areas, and the VMP calls for clearing flammable materials from within 30 feet of historic structures through hand techniques or manual mechanical methods. More generally, within the VMP area, all areas within 100 feet of structures are also considered priority 1 treatment areas and are managed in a similar fashion. Thus, the VMP enhances protection to all built environment resources, whether they are identified as culturally significant or not.

Vegetation management activities specific to the Joaquin Miller Park and Sheffield Village Open Space historic districts are called out in Table 2-8 in Chapter 2, *Project* Description. These techniques include hand or manual labor for removal of all vegetation within 100 feet of structures at both parks. Mechanical removal of trees is proposed for Joaquin Miller Park within 300 feet of structures, and grazing is proposed in flashy fuel areas. Hand labor would be used to remove trees within 300 feet of structures at Sheffield Village Open Space, and grazing would also be used in grassy areas and flashy fuel locations. These techniques are currently used to manage vegetation around these parks and, in particular, around the built environment contributors to the historic districts.

Conclusion

Within the VMP area, historic-era resources and buildings are considered priority 1 treatment areas. Application of the management standards outlined in Section 9.1 of the VMP (**Appendix A**, *Draft Vegetation Management Plan,* of this DEIR) would safely protect these resources from the impacts of fire. As a result, the priority 1 treatment projects described in the VMP would have a **less than significant** impact on known historical resources of the historic era and built environment and no mitigation is required.

Impact CUL-2: Adverse Change in Significance of Archaeological Sites that Are Historical Resources (*Less than Significant with Mitigation*)

Six previously recorded archaeological sites are known to be located within the VMP area, and others are likely present in areas that have not yet been surveyed for archaeological resources. In addition, archaeological resources are not always visible on the ground surface; therefore, ground disturbance could reveal the presence of buried archaeological resources.

As previously noted, distance to water, slope, and distance to a confluence of streams have been identified as the principal characteristics applicable to the sensitivity of an area to contain archaeological deposits. The terrain of the VMP area is characterized by eleven drainages that

run generally east to west or northeast to southwest, downward from the summit ridgeline that roughly parallels Grizzly Peak Boulevard and Skyline Drive. The presence of so many streams would indicate that there is a high probability of archaeological resources on VMP lands; however, this prediction is countered by knowledge that these creeks generally converge into a few larger creeks in the lower plain below the VHFHSZ, where large Native American settlements are known to occur. Furthermore, the lands within the VMP area are generally very steeply sloped. The steepest slopes in the VHFHSZ have gradients up to 62 degrees (186 percent), although most of the area has slope gradients of less than 27 degrees (50 percent) and the mean slope gradient for the area is 16 degrees (29 percent) (Dudek 2019). A study for Napa County (Watershed Information & Conservation Council 2010) determined that locations with a slope of less than 15 percent were the most sensitive for archaeological resources (highest sensitivity), while areas with a slope of 15-20 percent were considered to be of high sensitivity. Generally, slopes of 20-30 percent were of moderate sensitivity, while those of 30-40 percent were of low sensitivity. Slopes of 40 percent or more were considered to have the lowest sensitivity for archaeological deposits. Based on the Napa County study, the VMP area largely falls within the categories of moderate to low sensitivity for archaeological resources.

Application of the sensitivity model for the presence of archaeological resources within the VMP area is depicted in Figure 3.5-1. **Table 3.5-5** lists the percentages of land by sensitivity for the entire VMP area. The vast majority of the region has a moderate sensitivity, while 15 percent of the acreage is identified as high or highest sensitivity.

Table 3.5-5. Acreage According to Sensitivity Ranking for the VMP Area

Sensitivity Ranking	Total Acres in VMP Area	% of Total Acres
Lowest	122	5
Low	703	31
Moderate	1,095	49
High	302	14
Highest	15	1

Table 3.5-6 lists the amount of acreage according to archaeological sensitivity for each of the VMP treatment areas. Not all of the treatment areas are sensitive for archaeological resources; six of the 20 VMP treatment areas (Tunnel Road Open Space, North Oakland Sports Field, Marjorie Saunders Park, McDonnell Avenue, Leona Street, and Blue Rock Court) are identified with only lowest and low rankings for sensitivity. Three treatment areas have similar rankings with minimal additional acreage (< 1 acre) identified as moderate sensitivity (Garber Park, Grizzly Peak Open Space, and Beaconsfield Canyon). The Police/Safety Department Property and King Estates treatment areas are also of low sensitivity but have somewhat more substantial amounts (2.66 and 16.40 acres, respectively) of moderately sensitive acreage. The remaining nine treatment areas, although they may contain lowest or low sensitivity lands, have acreage of moderate and high sensitivity; four of these (Dimond Canyon Park, Joaquin Miller Park, Leona Heights Park, and Sheffield Open Space) also contain land with high and highest sensitivity.

Table 3.5-6. VMP Treatment Projects and Archaeological Sensitivity by Acres

VMP Treatment Area	Priority	Acres According to Archaeological Sensitivity				
		Lowest	Low	Moderate	High	Highest
Garber Park						
GAR-1	1	--	0.46	0.87	--	--
GAR-2	1	--	0.27	0.04	--	--
GAR-3	1	--	0.65	--	--	--
Grizzly Peak Open Space						
GPO-1	1	12.09	15.23	0.40	--	--
GPO-2	2	9.83	9.11	--	--	--
GPO-3	3	9.19	0.41	--	--	--
GPO-4	3	2.42	17.47	--	--	--
Tunnel Road Open Space						
TRO-1	1	3.21	1.14	--	--	--
North Oakland Sports Field						
NOR-1	1	16.66	5.00	--	--	--
NOR-2	2	7.72	--	--	--	--
NOR-3	3	11.67	6.85	--	--	--
Shepard Canyon Park						
SHP-1	1	--	6.79	5.09	0.43	--
SHP-2	1	--	4.59	4.45	0.04	--
SHP-3	2	--	2.11	9.06	0.45	--
SHP-4	3	--	7.39	11.36	1.39	--
Beaconsfield Canyon						
BCN-1	1	--	1.51	--	--	--
BCN-2	2	--	1.85	0.03	--	--
Marjorie Saunders Park						
MJS-1	1	--	0.79	--	--	--
MJS-2	2	--	1.60	--	--	--
Dimond Canyon Park						
DIM-1	1	--	0.22	1.61	1.02	0.41
DIM-2	1	--	0.54	1.15	0.02	--
DIM-3	1	--	0.25	0.42	--	--

VMP Treatment Area	Priority	Acres According to Archaeological Sensitivity				
		Lowest	Low	Moderate	High	Highest
Joaquin Miller Park						
JMP-1	1	--	17.98	63.83	31.38	0.42
JMP-2	1	--	3.33	13.57	1.08	--
JMP-3	2	--	1.63	9.79	2.38	--
JMP-4	3	--	1.66	42.31	22.96	1.29
Leona Heights Park						
LHT-1	1	--	0.69	10.66	1.66	--
LHT-2	1	--		0.54	1.24	0.04
LHT-3	2	--	--	3.21	0.55	--
McDonnell Avenue						
MCD-1	1	--	0.80	--	--	--
Police/Safety Department Property						
PSD-1		--	4.45	2.64	--	--
PSD-2	1	--	0.45	0.02	--	--
Leona Street						
LST-1	1	0.22	0.09	--	--	--
Blue Rock Court						
BLU-1	1	1.66	0.36	--	--	--
BLU-2	2	0.36	0.10	--	--	--
BLU-3	3	6.2	0.15	--	--	--
Oak Knoll						
OKN-1	1	--	0.55	0.59	--	--
OKN-2	3	--	4.99	8.50	0.77	--
King Estates						
KES-1	1	0.43	9.63	4.90	--	--
KES-2	3	1.53	52.34	11.50	--	--
Knowland Park and Arboretum						
KNO-1	1	0.08	16.40	10.47	0.42	--
KNO-2	1	--	1.95	5.06	1.34	--
KNO-3	2	--	9.60	4.29	0.02	--
KNO-4	2	0.55	21.49	9.40	0.64	--
KNO-5	3	0.35	203.45	156.13	6.96	--

VMP Treatment Area	Priority	Acres According to Archaeological Sensitivity				
		Lowest	Low	Moderate	High	Highest
Sheffield Village Open Space						
SHF-1	1	--	5.19	14.91	3.27	--
SHF-2	2	--	1.29	3.50	1.35	--
SHF-3	3	--	44.01	176.52	62.17	3.95
Urban and Residential Parcels						
URB-1	1	12.31	21.81	7.5	1.54	0.42
Medians						
MEDIAN	1	0.11	2.49	1.94	0.51	--

As previously noted, six known archaeological sites are present within the VMP area. One of these resources (Skyline Ranch) has previously been evaluated as eligible for listing in the CRHR/NRHP and another (Leona Heights Sulfur Mine/ McDonell Sulfur Mine) has previously been determined to be ineligible for listing; the remaining four sites have not been evaluated. All four of these unevaluated sites are in the VMP treatment area for project SHF-3, which involves grazing. These sites are described below:

- Site P-01-011995 is a historic refuse scatter consisting of sheet metal, a broken concrete container, stove parts, and a fence post. While it is unlikely that the site would be found significant, a definitive statement on its eligibility should be made in order to conduct grazing, as animals walking through the area could move or break the surface artifacts present.
- Site P-01-011997, a stone quarry, should similarly be evaluated.
- Site P-01-011999 is a dirt access road; grazing would not damage this site, but its eligibility should be determined.
- Grazing also would not affect site P-01-011200, which is a landfill comprised of the debris resulting from the collapse and demolition of the Cypress Structure due to the Loma Prieta earthquake in 1989. This site has been intentionally capped; therefore, it is protected from disturbance from grazing or any other surface techniques that would be implemented under the VMP.

Additional archaeological sites (surface or subsurface) are undoubtedly located within the VMP area, and likely within the VMP treatment areas as well. These sites could be adversely affected by treatment activities that cause ground disturbance, especially if the activities occur in areas ranked high and highest for archaeological sensitivity. However, site types relative to the kind of activity planned should be analyzed, as not all archaeological sites would be equally affected by the various techniques.

Grazing could adversely affect archaeological sites as large numbers of animals would be concentrated in restricted areas. Hooves can churn up the ground and move artifacts both horizontally and vertically within the treatment area. Artifacts can also be broken.

Mechanical techniques such as grading, disking, and yarding, as described in Chapter 2, can disturb the ground up to a depth of about 1 foot, and can damage both surface and subsurface archaeological remains. These activities can also move archaeological materials horizontally, as can mowing.

Most hand labor techniques generally would not be expected to affect archaeological deposits; however, damage could result if shovels, Pulaski hoes, or McLeod fire tools are used. Use of these implements could break artifacts and disturb the vertical integrity of surface archaeological sites or subsurface materials.

Mitigation Measures

Mitigation Measure CUL-1: Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity.

Although vegetation management activities can occur all year round, the City will ensure that City workers and members of stewardship groups who assist with implementing the VMP will receive informal training in the form of a brochure to educate them about the need to avoid and protect significant archaeological resources. The material will be developed by a qualified archaeologist meeting the U.S. Secretary of the Interior's guidelines for professional archaeologists. The material will include relevant information regarding sensitive cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. The material will also describe appropriate avoidance and minimization measures for resources that could be discovered and will outline what to do and whom to contact if potential archaeological resources or artifacts are encountered. The requirement for confidentiality and culturally appropriate treatment of any finds of significance to Native Americans, consistent with Native American tribal values, will be underscored.

During development of the VMP annual work plan, the maps that depict the archaeological sensitivity of each treatment area will be reviewed by OFD and compared to the proposed VMP treatment activities. If the work plan includes ground-disturbing techniques in areas identified as having high or highest sensitivity, either the work plan will be modified to use non-ground-disturbing techniques or the treatment area will be surveyed by a qualified archaeologist. If archaeological resources are identified, Mitigation Measure CUL-2 will be implemented.

Mitigation Measure CUL-2: Avoid Use of Techniques that Cause Ground Disturbance within Known Archaeological Historical Resources.

One known archaeological site (Skyline Ranch) that appears eligible for listing in the CRHR/NRHP exists within the VMP area, and four previously recorded sites in the VMP area have not been evaluated for eligibility. Additionally, other sites may be identified in the future during VMP-related activities or through cultural resources studies for other City projects. Archaeological sites that have been identified but not evaluated can be

treated by avoidance or by conducting an evaluation study. If a site is evaluated and determined not to be eligible for listing in the CRHR/NRHP, future avoidance of any kind is not required. If a site is found to be eligible, preservation in place is the preferred treatment under Section 15126.4(b)(3) of the CEQA Guidelines. As such, grazing and mechanical techniques, along with hand labor activities that cause ground disturbance, would not be implemented within the site boundaries and a 10-foot buffer. Alternatively, though not preferred, data recovery studies of eligible sites could take place, and the OFD would then be able to use any VMP method deemed appropriate.

Mitigation Measure CUL-3: Response Measures for Potential Unknown Archaeological Resources and Tribal Cultural Resources.

If evidence of any subsurface archaeological features or deposits (e.g., lithic scatters, midden soils, historic era mining, farming, or construction materials) is discovered during VMP treatment activities, all ground-disturbing activity in the area of the discovery shall be halted within 50 feet of the find until a qualified archaeologist can assess the significance of the find and make recommendations. If the finds are of Native American origin, a Native American representative from a traditionally and culturally affiliated tribe will be notified and invited to assess the significance of the find and make recommendations in collaboration with the archaeologist. If the site can be protected in place and avoided, no further action is necessary. Further evaluation for CRHR eligibility and treatment will be required if the resource cannot be protected and avoided. Such evaluations shall be conducted by a qualified archaeologist and, if the site is of Native American origin, in consultation with a Native American representative from a tribe with a traditional and cultural affiliation with the project area.

If, after evaluation, a resource is considered significant, or is considered a tribal cultural resource, all preservation options shall be considered as required by CEQA (see Pub. Res. Code Section 21084.3), including avoidance of the resource, possible capping, data recovery, and/or mapping. Treatment that preserves or restores the cultural character and integrity of a tribal cultural resource may include tribal monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or soil.

If artifacts are recovered from significant prehistoric archaeological resources or tribal cultural resources, the first option shall be to transfer the artifacts to an appropriate tribal representative. If possible, accommodations shall be made to re-inter the artifacts near the site. If no other options are available, recovered prehistoric archeological material will be housed at a qualified curation facility.

The results of the identification, evaluation, and/or data recovery program for any unanticipated discoveries shall be presented in a professional-quality report that details all methods and findings, evaluates the nature and significance of the resources, analyzes and interprets the results, and distributes this information to the public.

Conclusion

Implementation of the following mitigation measures would reduce significant impacts on archaeological historical resources. Mitigation Measure CUL-1 (Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity) would provide

City and volunteer workers with information about identifying archaeological resources, assess treatment areas for archaeological sensitivity, and inspect areas of high and highest sensitivity for the presence of archaeological resources. Mitigation Measure CUL-2 (Avoid Use of Techniques that Cause Ground Disturbance Within Known Archaeological Historical Resources) would ensure that archaeological sites would be protected from disturbance by VMP techniques. Mitigation Measure CUL-3 (Stop Work if Cultural Remains Are Unearthed and Work with Local Native American Tribes if the Site Is Determined to Be a Tribal Cultural Resource) would ensure that archaeological resources discovered during implementation of the VMP would be protected in place or evaluated, and that Native American tribes would be consulted if the discovered site reflects Native American lifeways. With implementation of Mitigation Measures CUL-1 through CUL-3, potential effects on archaeological and historical resources in VMP treatment areas would be **less than significant with mitigation**.

Impact CUL-3: Disturb Human Remains, Including Those Interred Outside of Dedicated Cemeteries (*Less than Significant with Mitigation*)

No locations with human remains are currently known to exist on lands within the VMP area; however, burials may be identified during the course of pre-maintenance surveys or discovered as the result of ground-disturbing activities, such as those listed in Impact CUL-2. Although unlikely, particularly due to terrain and general geographical locations of VMP treatment areas, ground disturbance could uncover human remains. Implementation of **Mitigation Measure CUL-4 (Stop Work if Human Remains Are Unearthed during Project Activities)** would reduce potential disturbance of human remains by ensuring compliance with the California Health and Safety Code. Therefore, impacts of the VMP on human remains would be **less than significant with mitigation.**

Mitigation Measures

Mitigation Measure CUL-4: Stop Work if Human Remains Are Unearthed during Project Activities.

California law protects Native American human burials, skeletal remains, cremated remains, and items associated with Native American burials from vandalism and inadvertent destruction. Consistent with the California Health and Safety Code Sections 7050.5 and 7052 and the California Native American Historical, Cultural, and Sacred Sites Act, if suspected human remains are found during treatment activities, potentially damaging ground-disturbing activities within 50 feet of the remains will be halted immediately, and the Alameda County Coroner shall be notified immediately to determine the nature of the remains. The Coroner shall examine all discoveries of suspected human remains within 48 hours of receiving notice of a discovery (Health and Safety Code Section 7050.5[b]). If the remains are determined to be those of a Native American, the Coroner shall contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050.5[c]). The NAHC shall then assign a most likely descendant (MLD) to serve as the main point of Native American contact and consultation. Following the coroner's findings, the MLD, in consultation with the City, shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments, if present, are not disturbed. The responsibilities for acting upon notification of a discovery of Native

American human remains are identified in the California Native American Historical, Cultural, and Sacred Sites Act.

Conclusion

With the implementation of Mitigation Measure CUL-4, the potential to disturb human remains, including those interred outside of designated cemeteries would be **less than significant with mitigation**.

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3.6 GEOLOGY, SOILS, AND SEISMICITY

This section discusses existing conditions and evaluates the VMP's effects related to geology, soils, seismicity, and paleontological resources. It also describes applicable federal, state, and local regulations related to geology, soils, seismicity, and paleontological resources.

3.6.1 Environmental Setting

Regional Geology

The VMP area is located within the Northern California Coast Ranges, a part of the California's Coast Ranges Geomorphic Province, a highly seismically active area with northwest-trending ranges with low mountains and valleys (CDOC 2002). The geologic structure in the area is directly related to tectonic processes between the Calaveras and Hayward Fault Zone. The Hayward Fault Zone stretches from San Jose northwest along the foothills of the East Bay Hills to San Pablo Bay (CGS 2010). Lateral and compressional forces along the fault have resulted in folding, and faulting and uplift of the East Bay Hills (Contra Costa County Community Development Department 2004). The VMP area is situated along the Hayward Fault Zone within the East Bay Hills, characterized as moderate to very steep-sloped ranges and interior valleys, which generally consists of exposed Franciscan complex bedrock, which becomes heavily fractured and metamorphized along the Hayward Fault (CGS 1991). The Franciscan complex consists of a mixture of rocks including chert, greenstone, sandstone, shale, and various metamorphic rocks. Rock materials of the East Bay Hills consists mostly of tilted Tertiary-aged Miocene marine sedimentary rocks and non-marine sedimentary rocks of shale and sandstone of the Great Valley Sequence (CGS 1991). A narrow band of ultramafic rocks can be found along the Hayward fault alignment.

The geology of the VMP area is shown in **Figure 3.6-1** and further described below.

Soils

Soils underlying the East Bay Hills can generally be grouped into two areas. The western foothills are primarily upland soils (Maymen, Millsholm, and Xerorthents). These upland soils are distributed throughout the hillslopes of the northern portion of the VMP area and have slopes of 30 to 75 percent. Millsholm loam is a shallow soil, less than 12 inches and has a high erosion rate with 50 to 70 percent slopes. Xerorthents consists of soil materials with high rapid runoff rates and erosion potential. These upland soils are typically well drained with high to very high runoff potential and low plasticity (Natural Resources Conservation Service [NRCS] 2020). Texture of these soils generally consists of loam, clay loam, or clay, approximately 20 to 40 inches thick before encountering bedrock.

Along the eastern side of the East Bay Hills, in the southern portion of the VMP area near Lake Chabot, soils that commonly occur include Los Osos clay loam, Millsholm loam, and Los Gatos loam. These soils are moderate to very steep sloping, overlying hard sedimentary rock formations. These soils are excessively drained. Los Gatos loam generally occurs as loam to gravelly loam 24 to 39 inches thick above bedrock (NRCS 2020). This unit is well drained with

very high runoff. Los Gatos loam is highly susceptible to erosion by wind and moderately susceptible to erosion by water.

Seismicity

Alquist-Priolo Fault Zones and Faults

The San Francisco Bay area is known to be highly seismically active, including northwest-trending ranges. The Hayward Fault Zone is located along the center of the VMP area with other faults in the county associated with this fault zone. This fault is estimated to have a 31 percent probability of producing an earthquake of magnitude 6.7 or greater within the next 30 years (Field 2014).

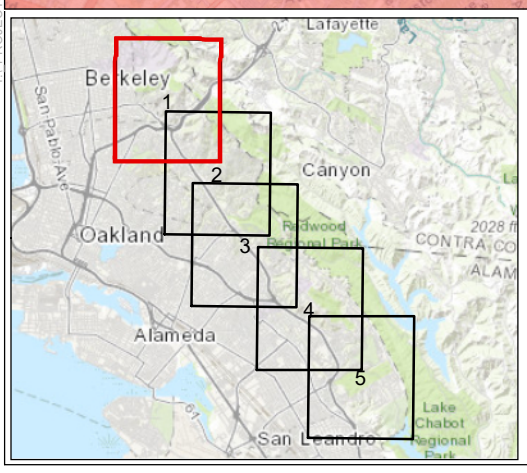
Other faults in proximity to the VMP area include Chabot Fault (0 mile), Moraga Fault (1.9 mile east), Miller Creek Fault (1.7 mile east), and Wildcat Fault (0.75 mile north).

Wildcat fault

Moraga fault

Chabot fault

Hayward fault zone, northern Hayward section (Hayward fault)



Proposed Project

Program Area

Geological Landform and Age

- marine and nonmarine (continental) sedimentary rocks, Pleistocene
- marine sedimentary and metasedimentary rocks, Cretaceous
- marine sedimentary and metasedimentary rocks, Cretaceous-Jurassic
- marine sedimentary rocks, Miocene
- nonmarine (continental) sedimentary rocks, Pliocene-Pleistocene
- plutonic rocks, Mesozoic
- volcanic rocks, Tertiary

Faults

QuaternaryFaults

N

0 1,000 2,000

Feet

Horizon WATER and ENVIRONMENT

Source: ESRI 2020, USGS CGS 2007

Figure 3.6-1

Geology of VMP Area

Sheet 1 of 5

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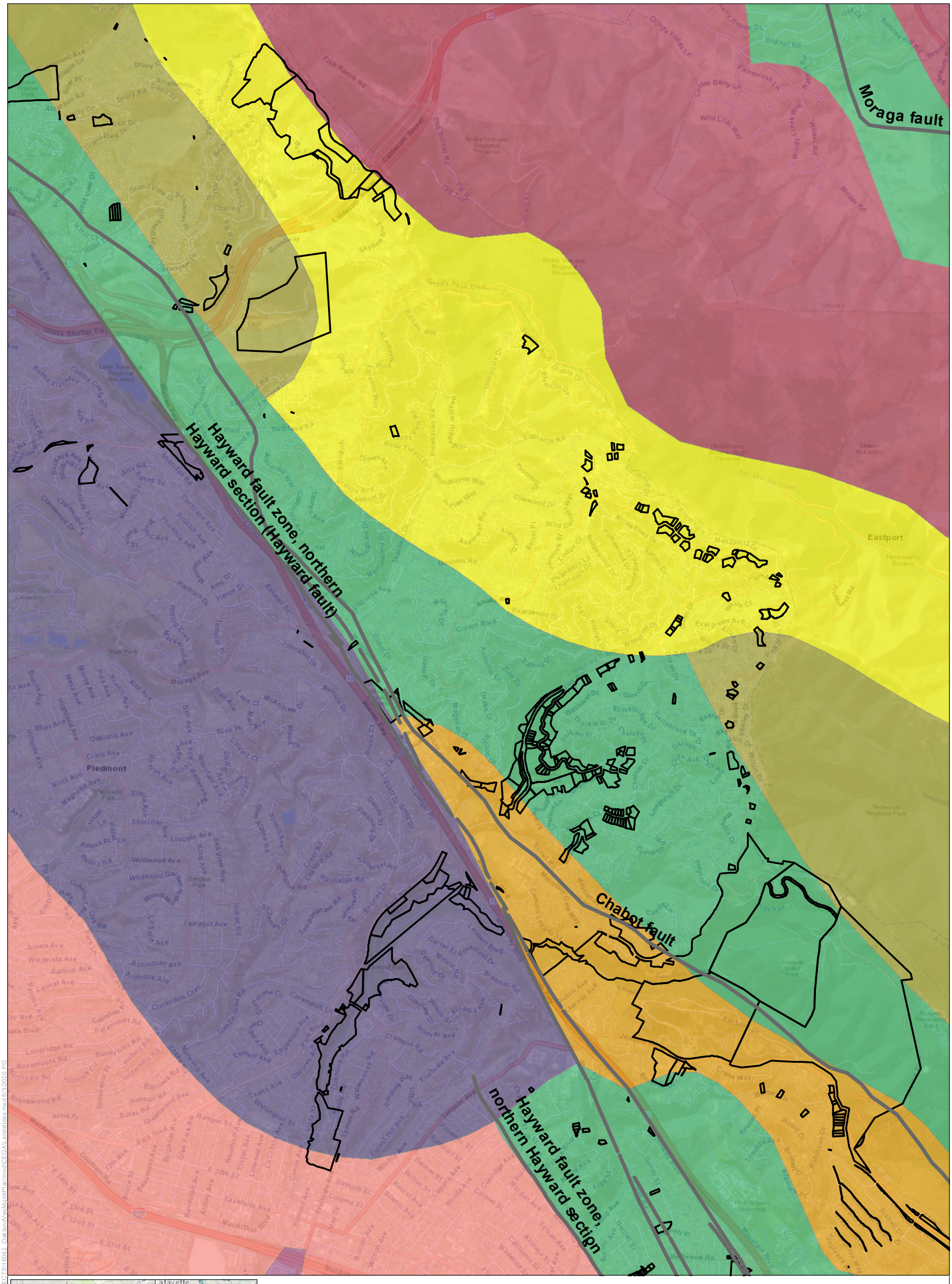


Figure 3.6-1
Geology of VMP Area

Sheet 2 of 5

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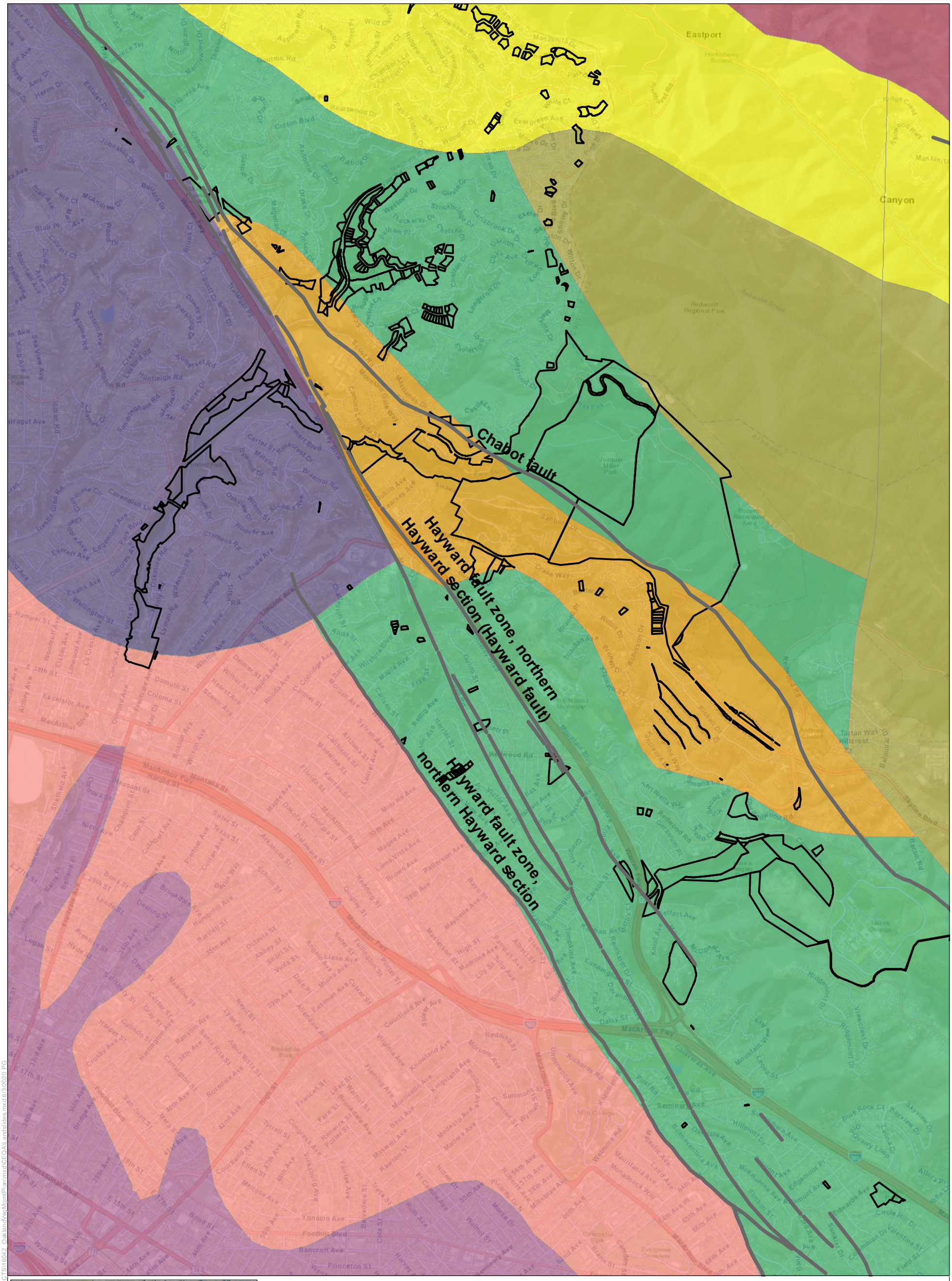


Figure 3.6-1
Geology of VMP Area

Sheet 3 of 5

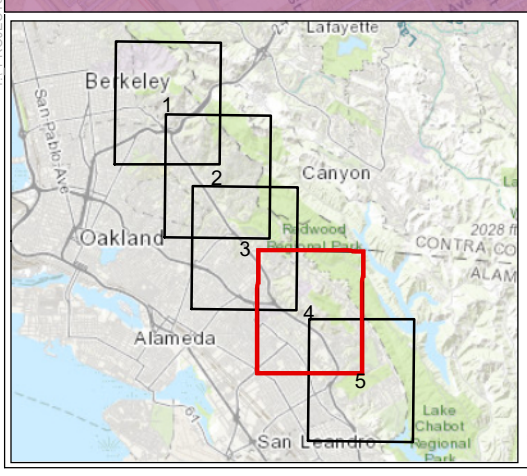
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Chabot fault

Hayward fault zone, northern Hayward section



Proposed Project

Program Area

N

0 1,000 2,000

Feet

Geological Landform and Age

- marine and nonmarine (continental) sedimentary rocks, Pleistocene
- marine and nonmarine (continental) sedimentary rocks, Pleistocene-Holocene
- marine sedimentary and metasedimentary rocks, Cretaceous
- marine sedimentary and metasedimentary rocks, Cretaceous-Jurassic
- marine sedimentary rocks, Miocene
- nonmarine (continental) sedimentary rocks, Pliocene-Pleistocene
- plutonic rocks, Mesozoic
- volcanic rocks, Tertiary

Faults

QuaternaryFaults

Source: ESRI 2020, USGS CGS 2007

Figure 3.6-1
Geology of VMP Area

Sheet 4 of 5

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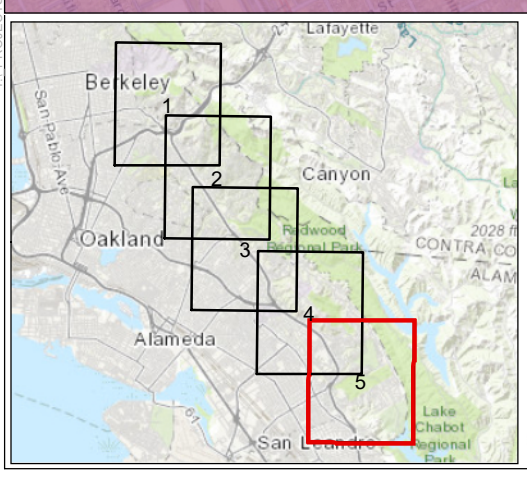
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Chabot fault

Hayward fault zone, northern Hayward section

Hayward fault zone, southern Hayward section (Ashland fault)



Proposed Project

Program Area

Geological Landform and Age

- marine and nonmarine (continental) sedimentary rocks, Pleistocene
- marine and nonmarine (continental) sedimentary rocks, Pleistocene-Holocene
- marine sedimentary and metasedimentary rocks, Cretaceous
- marine sedimentary and metasedimentary rocks, Cretaceous-Jurassic
- marine sedimentary rocks, Miocene
- plutonic rocks, Mesozoic
- volcanic rocks, Tertiary

Faults

QuaternaryFaults

N

0 1,000 2,000

Feet

Horizon WATER and ENVIRONMENT

Source: ESRI 2020, USGS CGS 2007

Figure 3.6-1
Geology of VMP Area

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Ground Shaking

The severity of ground shaking experienced at a specific location depends on a variety of factors, such as the magnitude and duration of the seismic event, fault type associated with the event, distance from the epicenter, and physical properties of the underlying geology and soils. The San Francisco Bay area lies in a very seismically active region with relatively frequent and significant ground shaking events. Since ground shaking is a considerable hazard throughout the San Francisco Bay area, ground shaking can cause landslides resulting in liquefaction in the VMP area and surrounding areas. **Table 3.6-1** shows the probability for large earthquakes to occur in the region. Like other locations in the vicinity of major, active faults such as the Hayward Fault, the potential for very strong ground shaking at the VMP area is high.

Table 3.6-1. Earthquake Probability for the San Francisco Region

Magnitude (≥M)	Average Reoccurrence Interval (Years)	Likelihood of Event within 30 years
6.0	8.9	98%
6.7	29	72%
7.0	48	51%
7.5	124	20%
8.0	825	4%

Source: Field 2014

Landslides

Rock slope failure or landslides may occur in steeply sloped areas during substantial seismic events. Saturated soils and precipitation events increase the likelihood of a landslide being triggered.

The CGS compiled and created statewide landslide susceptibility maps through interpolation of historic landslide information, local geology, rock strength, and hillslope angle (methodology by Wilson and Keefer 1985 and implemented by Ponti et al. 2008) to create classes of landslide susceptibility (where 0 is low and 10 is high) (CDOC 2020). Landslide susceptibility is shown in **Figure 3.6-2**, including the relative likelihood of deep landsliding based on rock strength and steepness of slopes in the region. In general, steep slopes and weak rocks are more likely to generate landslides, while landslide susceptibility is low on very low slopes, even in weak materials. Classes VIII, IX, and X are very high landslide susceptibility and include moderate to very steep slopes in weak rock and very steep slopes in hard rock. Areas of interest within the VMP area are described below.

In general, steeper portions of the East Bay Hills have a moderate (V to VIII) to high (IX to X) susceptibility of landslides (CDOC 2020). These hillslopes are more susceptible to landslides, particularly during or soon after very wet winters when the ground is saturated for extended periods. Ground saturation increases the soil pore water content, which reduces the shear strength of the slope, which can increase the risk for landsliding. When saturated soils occur near roadways, landslides may be exacerbated by road vibration and can occur as road slip-outs.

Liquefaction

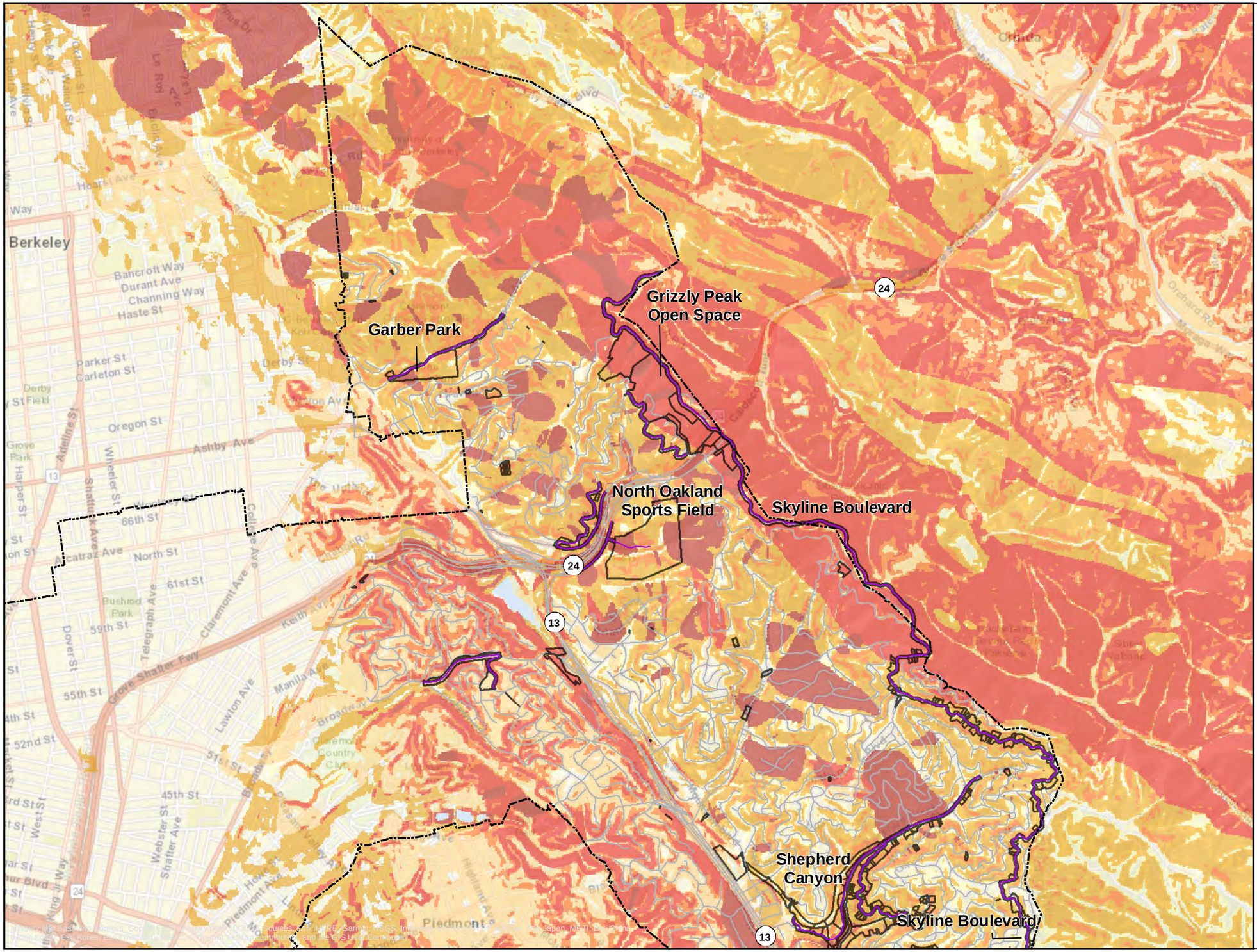
Soil liquefaction is a phenomenon that occurs when saturated sandy or silty soils lose strength during cyclic loading, such as caused by earthquakes. During the loss of strength, the soil acquires mobility sufficient to permit both horizontal and vertical movements, essentially behaving like a liquid. The factors known to influence liquefaction potential are soil type and depth, grain size, density, groundwater level, degree of saturation, and both the intensity and duration of ground shaking.

Liquefaction hazard mapping in the region indicates that the majority of upland areas in the VMP are rated very low for liquefaction hazard, with the exception of small areas such as Golf Links Road north of the Oakland Zoo (moderately low), Peralta Oaks Court (moderately low), and the area from Lyman Road (moderately low to moderate) east toward Park Boulevard (moderate) (USGS 2006).

Liquefaction

Soil liquefaction is a phenomenon that occurs when saturated sandy or silty soils lose strength during cyclic loading, such as caused by earthquakes. During the loss of strength, the soil acquires mobility sufficient to permit both horizontal and vertical movements, essentially behaving like a liquid. The factors known to influence liquefaction potential are soil type and depth, grain size, density, groundwater level, degree of saturation, and both the intensity and duration of ground shaking.

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Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

Oakland City Limits

Landslide Susceptibility Classes (0 - 10)*

0	VII
III	VIII
V	IX
VI	X

*0 - III (Low)
V - VIII (Moderate)
IX - X (High)

Source: CGS (2011), methodology of Wilson and Keefer (1985) as implemented by Ponti et al (2008)

N

0 0.5 1
Miles

Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 1

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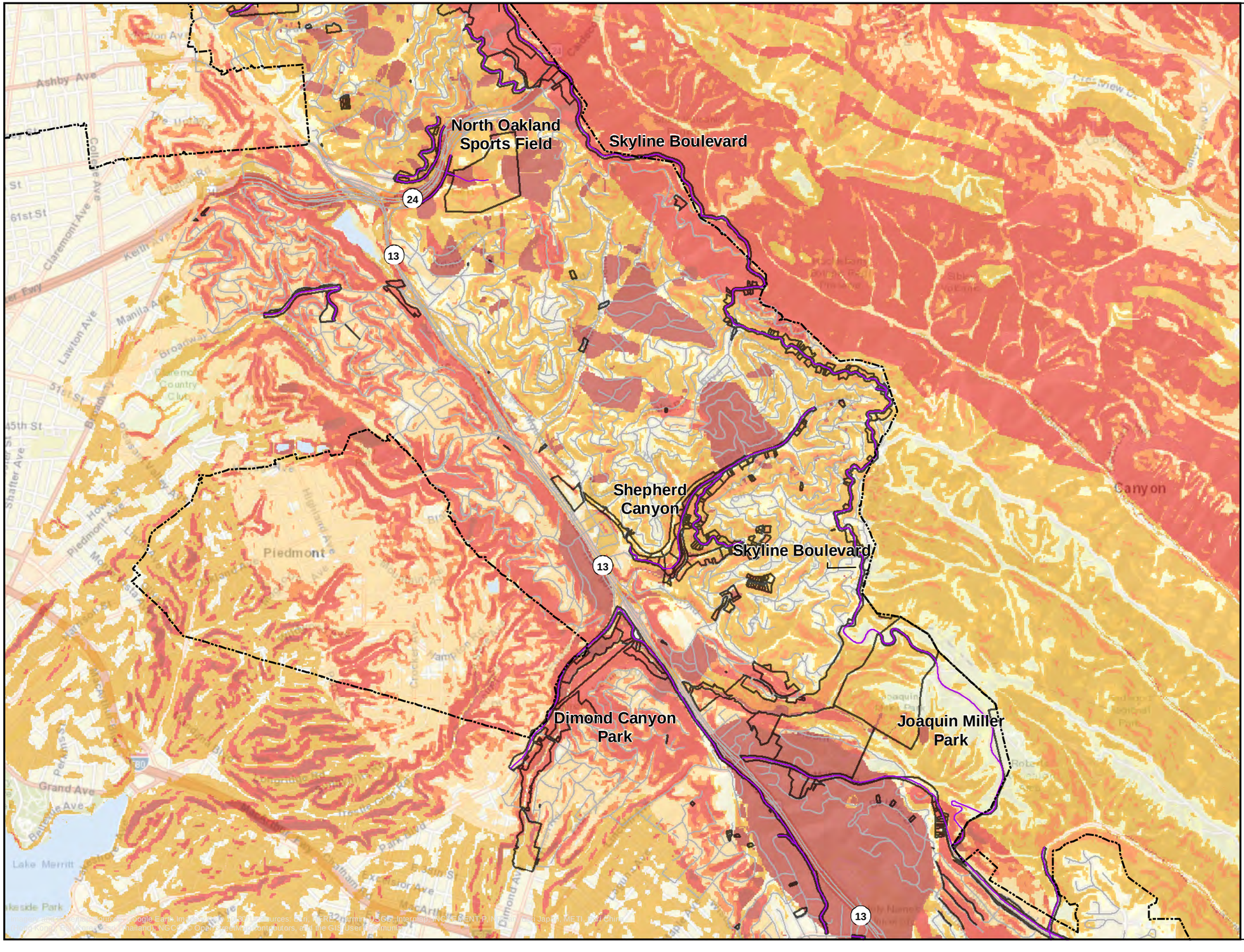




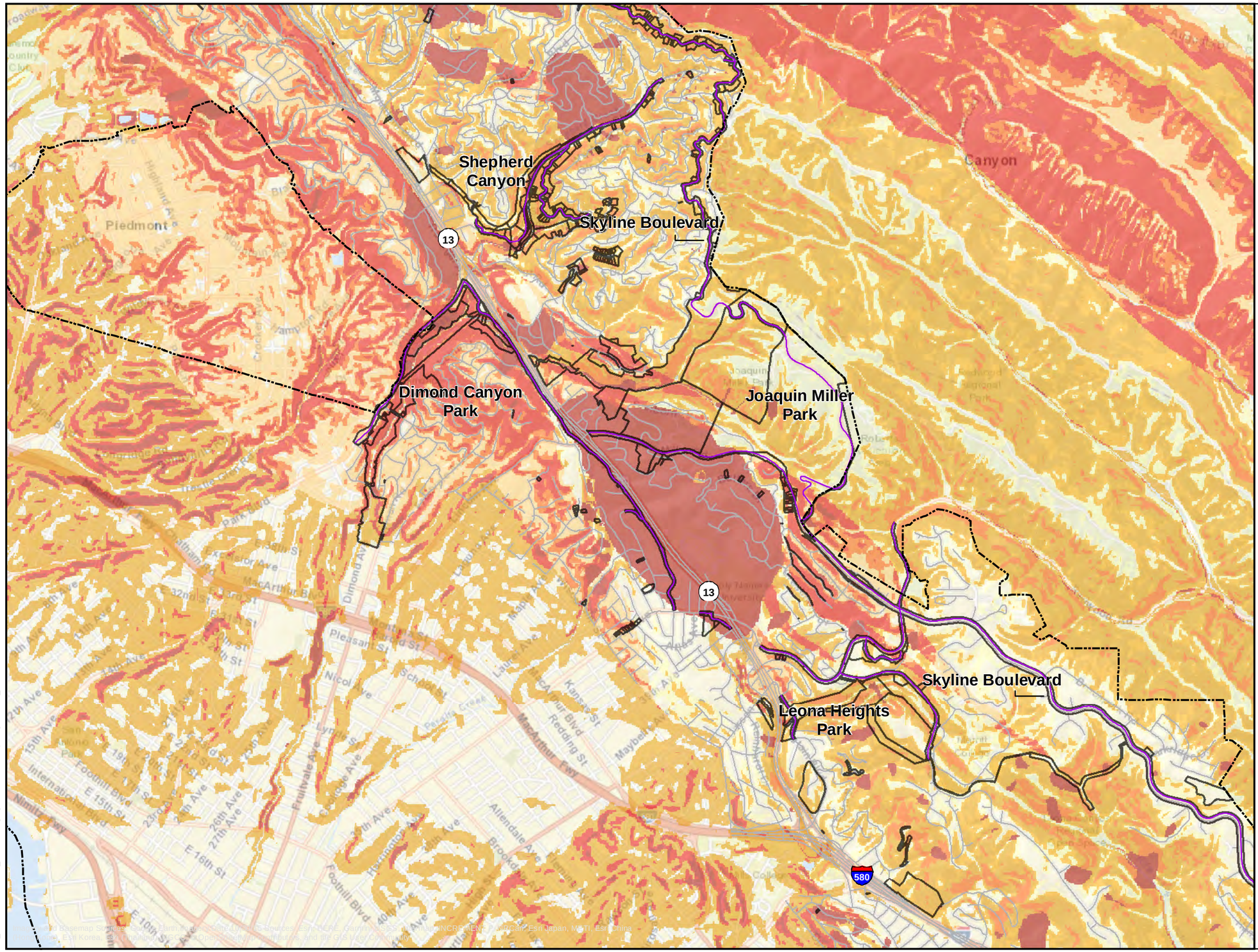
Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 2

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Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

Oakland City Limits

Landslide Susceptibility Classes (0 - 10)*

0	VII
III	VIII
V	IX
VI	X

*0 - III (Low)
V - VIII (Moderate)
IX - X (High)

Source: CGS (2011), methodology of Wilson and Keefer (1985) as implemented by Ponti et al (2008)

N

0 0.5 1

Miles

Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 3

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Dimond Canyon Park

Joaquin Miller Park

Skyline Boulevard

Leona Heights Park

King Estate Open Space Park

Skyline Boulevard

Keller Avenue

Knowland Park



Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

Oakland City Limits

Landslide Susceptibility Classes (0 - 10)*

0	VII
III	VIII
V	IX
VI	X

*0 - III (Low)
V - VIII (Moderate)
IX - X (High)

Source: CGS (2011), methodology of Wilson and Keefer (1985) as implemented by Ponti et al (2008)

N

0 0.5 1

Miles

Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 4

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Skyline Boulevard

Leona Heights Park

Skyline Boulevard

Keller Avenue

King Estate Open Space Park

Knowland Park

Oakland Zoo

Lake Chabot Golf Course

580

185



Priority 1 Roadside Treatment Areas

VMP Roadsides

VMP Parcels

Oakland City Limits

Landslide Susceptibility Classes (0 - 10)*

0	VII
III	VIII
V	IX
VI	X

*0 - III (Low)
V - VIII (Moderate)
IX - X (High)

Source: CGS (2011), methodology of Wilson and Keefer (1985) as implemented by Ponti et al (2008)

N

0 0.5 1

Miles

Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 5

Vegetation Management Plan
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Skyline Boulevard
Keller Avenue
King Estate
Open Space Park
Knowland Park
Oakland Zoo
Lake Chabot
Golf Course
Sheffield Village
Open Space
San Leandro
Upper San Leandro Reservoir
Lake Chabot
580
185
112
880



Priority 1 Roadside Treatment Areas
VMP Roadsides
VMP Parcels
Oakland City Limits

Landslide Susceptibility Classes (0 - 10)*

0	VII
III	VIII
V	IX
VI	X

*0 - III (Low)
V - VIII (Moderate)
IX - X (High)

Source: CGS (2011), methodology of Wilson and Keefer (1985) as implemented by Ponti et al (2008)

N
0 0.5 1
Miles

Figure 3.6-2
Landslide Susceptibility in the VMP Area

Sheet 6

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Paleontological Resources

A paleontological resource is defined as fossilized remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils. In California, paleontological resources are generally observed in sedimentary and metasedimentary deposits. Based on a database query of the University of California Museum of Paleontology in search of paleontological discoveries, 533 recorded collections were found within Alameda County. Specimens included plant material, invertebrates, microfossils, and vertebrates; and were found in geologic formations listed below (University of California Museum of Paleontology [UCMP] 2020).

Geologic formations within Alameda County with recorded[7] paleontological resources include:

- Claremont
- Claremont Shale
- Grizzly Peak
- Knoxville
- Monterey
- Orinda
- San Antonio
- Sobrante
- Unnamed Eocene

Many recorded paleontological resources had unspecified locations within the County; however, the following paleontological resource locations in the vicinity of VMP sites were recorded: Berkeley, Caldecott Tunnel, Oakland, Lake Chabot, Claremont Canyon, Round Top (UCMP 2020).

3.6.2 Regulatory Setting

Federal Laws, Regulations, and Policies

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and creation of the National Earthquake Hazards Reduction Program (NEHRP) established a long-term earthquake risk reduction program to better understand, predict, and mitigate risks associated with seismic events. The following four federal agencies are responsible for coordinating activities under NEHRP: USGS; National Science Foundation; FEMA; and National Institute of Standards and Technology. Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction. The current program objectives (NEHRP 2016) are as follows:

1. Develop effective measures to reduce earthquake hazards;
2. Reduce facilities and system vulnerabilities to earthquakes;
3. Improve earthquake hazards identification and risk assessment methods; and
4. Improve the understanding of earthquakes and their effects.

[7] Some collections did not specify geologic formation (UCMP 2020).

Implementation of NEHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (California Pub. Res. Code Section 2621 *et seq*.) was passed to reduce the risk to life and property from surface faulting in California. The Alquist-Priolo Act prohibits construction of most types of structures intended for human occupancy directly on or across the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Pub. Res. Code Sections 2690 et seq.) establishes statewide minimum public safety standards for mitigation of earthquake hazards. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, such as strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State of California is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones. In addition, the Seismic Hazards Mapping Act addresses expansive soils, settlement, and slope stability. Under the Seismic Hazards Mapping Act, cities and counties may withhold the development permits for a site within a seismic hazard zone until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Public Resources Code

Pub. Res. Code Section 5097.5 states that "no person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor." As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

Local Laws, Regulations, and Policies

City of Oakland General Plan

Applicable policies and actions from the City of Oakland General Plan Safety Element (City of Oakland 2004) include the following:

Policy GE-1: Develop and continue to enforce and carry out regulations and programs to reduce seismic hazards and hazards from seismically triggered phenomena.

- **Action GE-1.2:** Enact regulations requiring the preparation of site-specific geologic or geotechnical reports for development proposals in areas subject to earthquake-induced liquefaction, settlement or severe ground shaking, and conditioning project approval on the incorporation of necessary mitigation measures.

Policy GE-2: Continue to enforce ordinances and implement programs that seek specifically to reduce the landslide and erosion hazards.

- **Action GE-2.1:** Continue to enforce provisions under the subdivision ordinance requiring that, under certain conditions, geotechnical reports be filed and soil-hazards investigations be made to prevent grading from creating unstable slopes, and that any necessary corrective actions be taken.

- **Action GE-2.2:** Continue to enforce the grading, erosion and sedimentation ordinance by requiring, under certain conditions, grading permits and plans to control erosion and sedimentation.

- **Action GE-2.3:** Continue to enforce provisions under the creek protection, storm water management and discharge control ordinance designed to control erosion and sedimentation.

- **Action GE-2.5:** Enact regulations requiring new development projects to employ site-design and source-control techniques to manage peak storm-water runoff flows and impacts from increased runoff volumes.

- **Action GE-2.6:** Design fire-preventive vegetation-management techniques and practices for creek-sides and high-slope areas that do not contribute to the landslide and erosion hazard.

3.6.3 Impact Analysis

Methodology

Impacts related to geology, soils, seismicity, and associated hazards were evaluated based on professional standards and review of soils and geologic information for the VMP area. This analysis focused on the VMP's potential to increase the risk of personal injury, risk of loss of life, and damage to property as a result of existing geologic conditions in the VMP area. The impact analysis assumes that the risk to, or posed by, existing City facilities from seismic hazards, expansive soils, or other geologic hazards within the VMP area are part of the baseline condition

and would not be an impact of the VMP. This analysis also considers the VMP's potential impacts on paleontological resources.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland CEQA Thresholds of Significance, the VMP would have a significant impact related to geology, soils, and seismicity if it would expose people or structures to geologic hazards, soils, and/or seismic conditions so unfavorable that they could not be overcome by special design using reasonable construction and maintenance practices. Specifically, the VMP would result in a significant impact related to geology, soils and seismicity if it would:

- Expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (Refer to Division of Mines and Geology Special Publications 42 and 117 and Pub. Res. Code Section 2690 et seq.);
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil, creating substantial risks to life, property, or creeks/waterways;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007, as it may be revised) creating substantial direct or indirect risks to life or property;
- Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property;
- Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or

- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Issues Not Evaluated Further

Due to the nature of the VMP, there would be no impacts related to the following significance criteria and, therefore, these significance criteria are not evaluated further:

- **Rupture of a known earthquake fault**. The Hayward Fault runs through the VMP area and is the only fault in the plan's vicinity that is recognized by the Alquist-Priolo Earthquake Fault Zoning Act. However, the VMP would not directly or indirectly cause substantial adverse effects involving rupture of a known earthquake fault or strong seismic ground shaking. Additionally, the VMP does not include construction of structures that could be affected by seismic or secondary seismic hazards.

- **Strong seismic ground shaking.**The VMP is located within a seismically active area. However, the VMP would not result in construction of structures and treatment techniques would not substantially increase exposure to seismic ground shaking.

- **Seismic-related ground failure, including liquefaction**. In general, the VMP area is located in upland areas and rated very low for liquefaction. As mentioned above, soils in the VMP area are well drained are therefore less susceptible to liquefaction.

- **Be located on expansive soils**.The VMP area is within the East Bay Hills, characterized as moderate to steep slopes with shallow loam soil types that have a low shrink or swell potential. Shrink-swell potential primarily affects structures and the VMP does not include construction of buildings or roadways. Therefore, the VMP would not result in substantial adverse effects related to expansive soils.

- **Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line** . These features primarily affect structures and the VMP does not include construction of buildings or roadways. Therefore, the VMP would not result in substantial adverse effects related to location above a well, pit, swamp, mound, tank vault, or unmarked sewer line.

- **Be located above landfills or unknown fill soils**. The VMP area is not located above any landfills or unknown fill soils. Therefore, no physical impact on landfills woul occur.

- **Soils incapable of supporting septic tanks or alternative wastewater disposal**. The VMP does not include construction of septic tanks or wastewater treatment systems; therefore this criterion is not applicable to the VMP.

Environmental Impacts

Impact GEO-1: Result in Substantial Erosion or Loss of Topsoil (*Less than Significant with Mitigation*)

Steeply sloped areas within the VMP area are more susceptible to erosion or loss of topsoil than less steep areas. For this EIR, erosion and loss of topsoil are evaluated together as surficial

erosion. In contrast, landslides are larger, singular mass movements; landslide potential is described further below in Impact GEO-2. Steeper hillslopes in the VMP area are more sensitive to potential erosion impacts caused by VMP activities. Additionally, the history of past land practices can influence hydrologic conditions, resulting in erosion impacts or effects to natural drainage courses. For example, soils that have been compacted provide reduced infiltration rates for precipitation, which typically results in increased overland runoff, which in turn may lead to increased erosion. Such erosion events may be exacerbated by vegetation removal if the vegetation removal is extensive, reduces the vegetative canopy to a substantial degree, and increases the extent of bare soil that would be susceptible to raindrop erosion or rilling. Because of the interaction between rainfall, surface erosion, and water quality, these issues are also discussed in Section 3.9, "Hydrology and Water Quality." The increased potential for erosion following VMP activities can contribute sediment to downstream waterways.

VMP activities may also affect the tree root structure in treatment areas. Damage to tree root structure can contribute to soil instability and increase the risk of surface erosion. In addition, the loss of plant cover and loss of input of organic matter could potentially degrade the soil structure. Additionally, soil compaction potentially due to mechanized equipment or grazing could increase runoff due to reduced rainfall infiltration, as described above, resulting in the potential for increased surface erosion. These potential effects are described further below by the proposed vegetation management techniques.

Grazing

Grazing has a relatively lower potential for ground disturbance compared to other VMP treatments; however, soil compaction, displacement, and erosion can occur from over-grazing and the development of animal trails. When areas are overgrazed, trails can develop as animals follow repeated paths of foraging and movement. Grazing trails, when they develop, can have a hydrologic effect of concentrating runoff and increasing erosion. The mechanical force from grazing animals' hooves can also compact the soil and cause soil movement in a downslope direction. As described above, soil compaction lowers the ability of the soil to infiltrate rainfall (i.e., lowered infiltration rate), which results in an increased likelihood of overland flow.

Under baseline conditions, approximately 900 acres of the VMP area are grazed annually. The VMP would increase grazing activities up to 1,100 acres per year. The VMP would thereby incrementally increase grazing-related erosion impacts. Implementation of **Mitigation Measure BIO-5 (Grazing)** would avoid, reduce, or minimize erosion impacts from grazing by monitoring livestock to prevent overgrazing. Up to 900 acres of VMP areas have been grazed annually over the last several years. During that time, grazing management has included the rotation and movement of herds to prevent overgrazing effects. The conditions in Mitigation Measure BIO-5 would provide additional measures to avoid and minimize erosion impacts by preventing overgrazing.

Mechanical Treatments

Mechanical treatment techniques have the potential to increase soil erosion and loss of topsoil where vegetation removal or other activities remove the vegetative ground cover and expose or disturb the top layer of soil. Additionally, mechanical equipment can compact soils or cause rutting, increasing erodibility of soil. The VMP includes standards to guide the areal concentration of vegetation removal. These standards would help to avoid and reduce the

potential for significant erosion. Implementation of **Mitigation Measure GEO-1 (Minimize Soil Disturbance)** would further minimize soil disturbance by limiting ground disturbance to the minimum footprint necessary to meet objectives, leaving stumps intact, and minimizing the use of mechanical equipment on steep slopes. Implementation of **Mitigation Measure GEO-2 (Erosion and Sediment Control Measures)** would minimize soil erosion and loss of topsoil by requiring erosion control measures in areas where soils are potentially disturbed. Implementation of **Mitigation Measure GEO-3 (Geotechnical Evaluation)** would reduce the potential for landslides through evaluation of potential for future landslide potential from VMP treatments by a qualified professional in situations where landslide potential is increased. This measure would also help reduce soil erosion impacts from operating equipment used during mechanical treatment activities. Implementation of **Mitigation Measure AES-2 (Staging)** would reduce the potential for erosion by requiring that equipment be staged on areas that have already been compacted or previously disturbed. Implementation of **Mitigation Measure HYD/WQ-1 (Work Windows)**, which requires that wheeled or tracked equipment used by creeks only be used when there is no flow and prohibits vegetation treatment activities within 48 hours of a significant rainfall, would further reduce soil erosion effects.

Hand Labor Treatments

In comparison to other treatments, hand labor treatments would likely have a relatively lower potential to cause soil erosion or loss of topsoil due to the smaller scale and reduced intensity of the treatment. However, removal of soil-binding roots can lead to soil exposure. As described above, implementation of Mitigation Measures GEO-1 and GEO-2 would also reduce the potential for soil erosion from hand labor treatments.

Herbicides

Herbicides would be used to remove targeted vegetation or prevent regrowth. Herbicide would be applied using the cut and daub method or by backpack sprayer. Herbicide use on herbaceous species is not proposed, with the exception of spot treatment of pampas grass and jubata grass. As broadcast herbicide application is not proposed on herbaceous groundcover, this would minimize the potential for significant soil exposure or the creation of large barren soil areas with subsequent erosion. Long-term effects of herbicide use could affect the root structure in treated areas, potentially causing root decay or instability, which could increase erosion in the longer-term. However, the increase in erosion from herbicide use is not anticipated to be significant.

Mitigation Measures

Mitigation Measure AES-2: Staging (VMP BMP GEN-4)

See text in Section 3.2, “Aesthetics.”

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Section 3.4, “Biological Resources.”

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

To reduce the potential for erosion and loss of topsoil, the City and its contractors shall implement the following measures during ground-disturbing activities:

- To minimize impacts to natural resources, the City and its contractors shall limit the area of ground disturbance to the minimum footprint necessary to meet the goals and objectives of the vegetation management activity.

- Ground-disturbing activities will not occur when soils are saturated, or within one week following an inch or more of rain, unless the ground is consistently firm and can support the weight of machinery or livestock (during grazing) without creating ruts.

- The City and its contractors shall leave stumps from removed trees and shrubs intact, with stump heights not exceeding 6 inches, as measured from the uphill side.

- When heavy equipment is used, the City and its contractors shall utilize low ground-pressure equipment, to the extent feasible.

- The City and its contractors shall not use heavy equipment on unstable slope areas, slopes with gradients exceeding 65%, slopes with gradients between 50% and 65% where the erosion hazard rating is high or extreme, or slopes with gradients over 50% that lead without flattening to sufficiently dissipate water flow and trap sediment before reaching a stream or other water resource.

- The City and its contractors shall regrade or recontour any areas subject to soil disturbance from heavy equipment, including dragging or skidding of trees or other material.

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

The City and its contractors shall implement the following measures:

- Upland soils exposed by maintenance activities shall be seeded and stabilized using erosion control fabric or hydroseeding.

- Erosion control fabrics shall consist of natural fibers that biodegrade over time. No plastic or other non-porous material shall be used as part of a permanent erosion control approach. Plastic sheeting may be used to protect a slope from runoff temporarily, but only if there are no indications that special-status species would be affected by the application, as determined by a qualified biologist.

- Erosion control materials shall be absent of monofilament material or netting that can entrap wildlife.

- Erosion control measures shall be installed according to manufacturer's specifications.

- Appropriate measures include, but are not limited to, the following:

  - silt fences
  - straw bale barriers
  - brush or rock filters
  - storm drain inlet protection
  - sediment traps
  - sediment basins
  - erosion control blankets and mats
  - soil stabilization (e.g., tackified straw with seed, jute, or geotextile blankets, broadcast and hydroseeding)

- All temporary construction-related erosion control methods (e.g., silt fences) shall be removed at the completion of the project.
- The City and its contractors shall comply with California Stormwater Quality Association (CASQA) Construction BMPs guidance and specifications on implementation of the erosion control measures listed above (see also www.casqa.org/resources/bmp-handbooks/construction):
  - SC-3. Sediment Basins
  - SC-4. Straw or Sand Bag Barriers
  - SC-5. Sediment Traps
  - SC-6. Silt Fences
  - SS-1. Erosion Control Blankets, Mats, and Geotextiles
  - VR-1. Brush or Rock Filters
  - VR-4a. Temporary Outlet Protection
  - VR-4b. Storm Drain Inlet Protection
  - WD-1. Earth Dike
  - WD-1. Slope Drain
  - WD-3. Temporary Drains and Swales

Mitigation Measure GEO-3: Geotechnical Evaluation

City staff shall determine on a case-by-case basis whether to retain a qualified professional (e.g., engineering geologist or geotechnical engineer) to conduct a geotechnical reconnaissance to evaluate the potential impacts of VMP treatment activities on future landslide potential if:

- Habitable structures are located within 100 feet of the toe of the slope downhill of the treatment area and
- The prescribed treatment would include the use of heavy equipment or machinery and substantial ground-disturbing activities (i.e., this measure would not apply to methods such as hand treatment, weed eating, or herbicide treatment), and one or more of the following conditions is identified:
  - The treatment area is listed as "unstable," "many landslides" on applicable slope stability mapping; or
  - The average slope steepness of the treatment area is greater than 10 degrees (about 18 percent); or
  - There is visible evidence of landslide activity (e.g., scarps, crooked trees, landslide-generated debris piles) within the treatment area, as documented by a field reconnaissance visit.

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Section 3.9, "Hydrology and Water Quality."

Conclusion

The VMP would have potential for erosion or topsoil loss due to soil disturbance and vegetation removal. Implementation of Mitigation Measures AES-2, BIO-5, GEO-1, GEO-2, GEO-3, and HYD/WQ-1 would avoid and minimize potential effects of erosion or loss of topsoil during and following VMP activities to a less-than-significant level. Therefore, impacts for erosion or loss of topsoil would be considered **less than significant with mitigation**.

Impact GEO-2: Substantial Adverse Effects Involving Landslides (*Less than Significant with Mitigation*)

Landslides can result in substantial property damage, injury, and loss of life. Landslides are more likely to occur with saturated soil conditions, and are more prone to happen during or following winter seasons with abundant rainfall. Landslides can also be triggered by earthquakes. As discussed in the environmental setting, much of the VMP is located in a region designated as highly susceptible to landslides (CDOC 2020). In addition to rainfall and earthquakes, slope instability and the likelihood for landslides is affected by several factors including geologic material and structure, slope steepness, groundwater and soil moisture conditions, soil type, land use practices, and vegetation cover conditions.

The VMP would not involve construction of habitable structures. Therefore, no additional long-term exposure to landslides beyond current conditions would occur as a result of the VMP. However, some VMP treatment techniques, such as those that occur on steep slopes, could result in increased potential for landslides.

Plant root systems provide cohesion to surface soils and reduce soil water content, which reduce the driving factors that favor landslide development. Treatment techniques resulting in the removal of vegetation (e.g., mechanical treatment, hand removal, herbicide application, etc.) could affect the root structure in treated areas such that the stability of slopes and soils could decrease, which could increase the risk for landslide. If the removal of vegetation is extensive, at a watershed scale, it can also affect soil moisture content by reducing evapotranspiration, also leading to increased soil moisture, runoff and in some specific instances increase the risk of landslides. However, such an effect generally requires a more comprehensive and wide-scale removal of vegetation than what is proposed in the VMP.

In general, regardless of vegetation management technique, areas with steeper slopes and where previous landslides have occurred are at higher risk for future landslides. Additionally, landslides can impact water quality through generation of erodible material and can result in increased sedimentation impacts to areas located below (downstream of) the VMP. These issues are discussed in more detail in Section 3.9, "Hydrology and Water Quality." However, the widespread or complete removal of vegetation in treatment areas would not occur under the VMP, which would minimize the potential for these impacts. Vegetation treatment within the VMP area (provided in Appendix A of this DEIR) includes leaving a minimum number of trees per acre in each vegetation type and guidance on spacing between retained trees. For example, mature eucalyptus stands would be thinned to ensure 35-foot horizontal spacing between trunks, and second-growth eucalyptus stands would be thinned to reach an average 25-foot spacing between trunks.

Moderate to high severity wildfire can greatly increase the likelihood of debris sliding and debris flows (Haas et al. 2017). Wildfires can also create soil hydrophobicity, whereby rainstorms following a wildfire can result in significantly increased runoff and the potential for debris flows, which can impact people or structures that are located below an area that has burned. The VMP would reduce risks of fire, especially catastrophic fire, and thus help reduce the risk for post-fire soil hydrophobicity and resulting debris flows. This would be a beneficial impact compared to existing conditions.

Grazing

Grazing has a lower ground disturbance potential compared to mechanical techniques; however, soil compaction, displacement and erosion can occur from over grazing and the development of animal trails. While overgrazing could increase surface runoff and erosion, it would not likely contribute to increasing the risk for landsliding. Implementation of **Mitigation Measure BIO-5** would minimize the potential of landslides from grazing by monitoring livestock to ensure over-grazing does not occur.

Hand Labor Techniques

Some hand labor techniques (e.g., use of chainsaws and weed whips) include shrub removal, minor pruning, and mulch application. The potential for these types of vegetation management

activities to increase the risk of landslides is considered very minimal due to the small scale of the activity and minimal soil disturbance. The impact would be less than significant and no mitigation is required.

Mechanical Techniques

Mechanical treatment techniques would have elevated potential to create landslides from ground disturbance compared to grazing and hand labor techniques. Mechanical techniques generally including mowing, grading, tree removal, and chipping that require large mechanical equipment. Mechanical vegetation removal, especially along steep slopes and areas already prone to landslides would generate a higher potential of slope instability. For example, if many trees that were anchoring the toe of a previously active slide area were removed, the historic or previous landslide could be activated. However, the standards for vegetation treatment within the VMP (leaving a minimum number of trees per acres in each vegetation types and guidance on spacing between retained trees) would minimize this potential, because the wide scale removal of trees that could reactivate a slide area would not occur under the VMP. However, if mechanical techniques caused slope instability that could result in landslides or debris flows, resulting in impacts to habitat or infrastructure, the impacts would be potentially significant. Based on the tree removal standards proposed in the VMP, tree removal activities in the VMP would not occur at a scale or extent to result in such slope instability, landslides, or debris flows. Implementation of **Mitigation Measures GEO-1 and GEO-2** would further minimize the risk of landslides by minimizing the areas of disturbance and by implementing erosion control measures in areas where soils are disturbed. Implementation of **Mitigation Measure GEO-3** would reduce the potential for landslides through evaluation of potential for future landslide potential from VMP treatments by a qualified professional in situations where landslide potential is increased. Implementation of **Mitigation Measure AES-2** would reduce the potential for landslides by staging equipment on areas that have already been compacted or previously disturbed.

Herbicide

Herbicides would be used to kill vegetation or prevent growth. Potential to create landslides from ground disturbance from herbicide treatments is insignificant. However, long-term effects could affect the root structure in treated areas such that the stability of slopes and soils could decrease, which would increase the risk of landslide. Based on the areas where herbicide would be applied, and the standards proposed in the VMP for tree retention, herbicide application under the VMP would not occur at a scale or extent to result in slope instability, landslides, or debris flows. The increase in erosion from herbicide use is not anticipated to be significant.

Mitigation Measures

The City would implement the following mitigation measures to reduce Impact GEO-2:

Mitigation Measure AES-2: Staging (VMP BMP GEN-4)

See text in Section 3.2, “Aesthetics.”

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Section 3.4, “Biological Resources.”

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Impact GEO-1 above.

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Impact GEO-1 above.

Mitigation Measure GEO-3: Geotechnical Evaluation

See text in Impact GEO-1 above.

Conclusion

The VMP is unlikely to increase the potential risk for landslides. Application of Mitigation Measures AES-2, BIO-5, GEO-1, GEO-2, and GEO-3, would provide additional impact avoidance and minimization to reduce potential effects on long-term slope instability in landslide-prone areas during and following implementation of VMP activities. Therefore, potential adverse effects involving landslides would be considered **less than significant with mitigation.**

Impact GEO-3: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature (*Less than Significant with Mitigation*)

Some of the VMP activities (e.g., grazing, hand removal, herbicide application) would be conducted above-ground. Therefore, these treatment types would not impact paleontological resources or unique geological features. Soils would be disturbed during implementation of mechanical treatments. Mechanical treatments could disturb soils to a depth of one foot. The potential for these ground-disturbing activities to uncover, much less destroy, a previously documented or unknown paleontological resources is unlikely, since resources are usually found at least a few feet but often many feet below the ground surface. However, the possibility exists that ground disturbance could reveal the presence of a buried paleontological resource. Implementation of **Mitigation Measure GEO-4 (Stop Work if Paleontological Resources Are Unearthed during VMP Treatment Activities)** would ensure that paleontological resources discovered during implementation of the VMP would be protected in place or evaluated. The impact on unique paleontological resources from implementation of the VMP would be less than significant with mitigation.

Mitigation Measures

The City and its contractors shall implement the following mitigation measure to reduce Impact GEO-3:

Mitigation Measure GEO-4: Stop Work if Paleontological Resources Are Unearthed during VMP Treatment Activities

If evidence of any paleontological resources (e.g., fossilized remains of plants and animals) is discovered during VMP treatment activities, the City and its contractors shall halt all ground-disturbing activity within 20 feet of the find until a qualified professional paleontologist can assess the significance of the find and make recommendations. If the site can be protected in place and avoided, no further action is necessary. Further evaluation and treatment shall be required if the resource cannot be protected and

avoided. Such evaluations shall be conducted by a qualified paleontologist. Treatment may include preparation and recovery of fossil materials for an appropriate museum or university collection, and may include preparation of a report describing the finds. The City shall be responsible for ensuring that the consulting paleontologist's recommendations for treatment are implemented.

Conclusion

The VMP is unlikely to uncover, much less destroy, paleontological resources. Implementation of Mitigation Measure GEO-4 would provide additional impact avoidance and minimization during implementation of the VMP. Therefore, the potential impacts to paleontological resources and unique geological features would be **less than significant with mitigation.**

3.7 GREENHOUSE GAS EMISSIONS, CLIMATE CHANGE, AND ENERGY

This section includes an environmental setting that describes the existing greenhouse gas (GHG) emissions and climate change issues in the study area, which includes the VMP area and the broader state of California context. The environmental setting also describes energy resources that serve the VMP area. This section then describes the regulatory setting and evaluates the VMP's effects on GHG emissions, climate change, and energy resources. The impact evaluation begins by describing the methodology used to evaluate significance and then presents the impact analysis. Detailed information about the assumptions and modeling calculations used in this analysis are provided in **Appendix C**, *Air Quality/Greenhouse Gas Emissions Calculations,* of this DEIR.

3.7.1 Environmental Setting

Climate change results from the accumulation in the atmosphere of GHGs, which are produced primarily by the burning of fossil fuels for energy. Because GHGs (CO_2, methane, and N_2O) persist and mix in the atmosphere, emissions anywhere in the world affect the climate everywhere in the world. GHG emissions are typically reported in terms of carbon dioxide equivalents (CO_2e), which convert all GHGs to an equivalent basis taking into account their global warming potential (GWP) compared to CO_2. **Table 3.7-1** shows the six GHGs and their respective GWP.

Table 3.7-1. Greenhouse Gas Overview and Global Warming Potential

Greenhouse Gas	GWP over 100 years (in IPCC 2013/SAR)[(a)]	Description
Carbon Dioxide (CO_2)	1/1	Released into the atmosphere through burning of fossil fuels (coal, natural gas and oil), solid waste, trees, and wood products, and also because of certain chemical reactions; removed from the atmosphere when it is absorbed by plants and oceans; remains in the atmosphere for 50 to more than 100,000 years.
Methane (CH_4)	28/21	Emitted during the production and transport of coal, natural gas, and oil; methane emissions also result from livestock and other agricultural practices and from the decay of organic waste, notably in municipal solid waste landfills; remains in the atmosphere for about 10 years.
Nitrous Oxide (N_2O)	265/310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
Hydrofluoro-carbons (HFCs)	4-12,400/ 650–11,700	Typically used in refrigeration and air conditioning equipment, as well as in solvents; emissions are generated primarily from use in air conditioning systems in buildings and vehicles; remains in the atmosphere from 10 to 270 years.

Greenhouse Gas	GWP over 100 years (in IPCC 2013/SAR)[a]	Description
Perfluoro-carbons (PFCs)	6,630-11,100/ 6,500–9,200	Emitted as by-products of industrial and manufacturing sources; remains in the atmosphere from 800 to 50,000 years.
Sulfur Hexa-fluoride (SF_6)	23,500/23,900	Used in electrical transmission and distribution; remains in the atmosphere approximately 3,200 years.

[a] As scientific understanding of the global warming potential (GWP) of various greenhouse gases (GHGs) improves over time, GWP values are updated in the Intergovernmental Panel on Climate Change (IPCC) scientific assessment reports. For regulatory consistency, however, the United Nations Framework Convention on Climate Change reporting guidelines (and international treaties) for national inventories continue to the use of GWP values to those published in the IPCC's 1996 Second Assessment Report (SAR). The table shows GWP values for 100 years from IPCC 2013 and SAR.

Sources: U.S. Environmental Protection Agency [USEPA] 2018; IPCC 2013; IPCC 1996

These six gases are the major GHGs that were recognized by the United Nations Framework Convention on Climate Change in 1992 and other later international climate change treaties including the Kyoto Accords which was the first international treaty to establish GHG emission reduction goals. Other GHGs were not recognized by the international treaties, chiefly because of the smaller role that they play in global climate change or the uncertainties surrounding their effects. One GHG not recognized by the international treaties is atmospheric water (H_2O) because no obvious correlation exists between H_2O and specific human activities. Water acts in a feedback manner; higher temperatures lead to higher H_2O vapor concentrations, which in turn cause more global warming (Intergovernmental Panel on Climate Change [IPCC] 2013). Nitrogen trifluoride was not recognized in the initial Kyoto Accords, but was subsequently included by the United Nations Framework Convention on Climate Change and recognized in California as a GHG.

The most important GHG in human-induced global warming is CO_2. Although many gases have much higher GWP than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for about 81 percent of the GWP of all GHGs emitted by the United States (USEPA 2020a). Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions over time and, thus, substantial increases in atmospheric CO_2 concentrations. In 2018, atmospheric CO_2 concentrations were about 409 ppm, more than 46 percent higher than the pre-industrial concentrations of about 280 ppm (USEPA 2020a). In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its long lifespan in the atmosphere (50,000–100,000 years).

In 2015, total Bay Area GHG emissions were 85 million metric tons of carbon dioxide equivalents (MMT CO_2e) which represents a decrease from the 86.6 MMT CO_2e estimated for 2011 emissions (BAAQMD 2015, BAAQMD 2017a). The transportation sector was the largest source of emissions, accounting for approximately 41 percent of the total 2015 emissions. Light and medium-duty cars and trucks accounted for 72 percent of emissions in the transportation sector while heavy duty truck accounted for 16 percent.

In 2017, Oakland's core emissions, GHGs emitted within city limits were approximately 2.6 MMT CO_2e while consumption emissions, which include lifecycle GHGs emitted due to activities occurring within city limits, were approximately 7.4 MMT CO_2e. With consumption emissions included, material use and waste was the largest source of emissions (39 percent), followed by transportation and land use (32 percent), buildings and energy use (20 percent), and port operations (9 percent). Total GHG emissions have declined by 24 percent since 2005 (City of Oakland 2020a).

Vegetation and soil in natural and working lands can serve as both carbon sources and sinks depending on management practices and events like wildfires. In California, from 1995-2016, urban forests were net carbon sinks (CARB 2020).

Energy Resources and Consumption

California has extensive energy resources, including an abundant supply of crude oil, high production of conventional hydroelectric power, and leads the nation in electricity generation from renewable resources (solar, geothermal, and biomass resources) (U.S. Energy Information Administration [EIA] 2020). California has the second highest total energy consumption in the United States but one of the lowest energy consumption rates per capita (47th in 2018) due to its mild climate and energy efficiency programs (EIA 2020). A comparison of California's energy consuming end-use sectors indicates that the transportation sector is the greatest energy consumer, by approximately two to three times compared to the other end-use sectors (Industrial, Commercial, and Residential, which are listed in order of greatest to least consumption) (EIA 2020). California is the largest consumer of motor gasoline and jet fuel in the United States (EIA 2020).

The City of Oakland uses East Bay Community Energy (EBCE) as its energy provider and utilizes EBCE's 100-percent carbon-free service for municipal accounts (City of Oakland 2019). The city placed 3rd in the 2019 Green Fleet awards and has acquired only alternative fuel or hybrid vehicles since 2002 (City of Oakland 2018a, American Council for an Energy Efficient Economy [ACEEE] 2019, 100 Best Fleets 2020). Oakland's municipal fleet is composed of greater than 9-percent-efficient vehicles, including hybrid, plug-in hybrid, and battery electric vehicles (ACEEE 2019). Between 2005 and 2013, City-wide energy use decreased 2.2 percent, with a 3.3-percent increase in electricity use being offset by a 5.4 decrease in natural gas use (City of Oakland 2020b). As of 2017, there were over 25 MW of solar capacity installed in the City (City of Oakland 2019).

Issues Linked to Climate Change

Anthropogenic (human-caused) emissions of GHGs are widely accepted in the scientific community as contributing to global warming. Temperature increases associated with climate change are expected to adversely affect plant and animal species, cause ocean acidification and sea level rise, alter frequency and intensity of precipitation events, increase wildfire risks, affect water supplies, affect agriculture, and harm public health (BAAQMD 2017a, City of Oakland 2018b, IPCC 1996, IPCC 2013). Projected local impacts of climate change include rising Bay and Delta waters, increased vulnerability to floods, decreased water supply due to shrinking Sierra snowpack, increased fire danger, more extreme heat events and public health impacts, added stress on infrastructure, higher prices for food and fuels, and other ecological and quality of life impacts (City of Oakland 2018b). Increased wildfire risk and severity are anticipated throughout

California due to the progression of climate change (Westerling 2018, Krawchuk et al. 2009). Ten of the most destructive fires in California have occurred since 2015 (CAL FIRE 2019a), and California is facing a dramatic increase in the number and severity of wildfires. The Fourth Climate Assessment (Bedsworth et al. 2018), projects that California's wildfire burn area likely will increase by 77 percent by the end of the century. As identified in Governor Newsom's Strike Force report (State of California 2019), the growing risk of catastrophic wildfires has created an imperative for the state to act urgently and swiftly to expand fire prevention efforts. The VMP anticipates an increase in wildfire potential due to climate change and seeks to manage fuels such that wildfire impacts are reduced.

Global climate change is already affecting ecosystems and societies throughout the world. Climate change adaptation refers to the efforts undertaken by societies and ecosystems to adjust to and prepare for current and future climate change, thereby reducing vulnerability to those changes. Human adaptation has occurred naturally over history; people move to more suitable living locations, adjust food sources, and more recently, change energy sources. Similarly, plant and animal species also adapt over time to changing conditions; they migrate or alter behaviors in accordance with changing climates, food sources, and predators.

Many national, as well as local and regional, governments are implementing adaptive practices to address changes in climate, as well as planning for expected future impacts from climate change. Some examples of adaptations that are already in practice or under consideration include conserving water and minimizing runoff with climate-appropriate landscaping, capturing excess rainfall to minimize flooding and maintain a constant water supply through dry spells and droughts, protecting valuable resources and infrastructure from flood damage and sea level rise, and using energy- and water-efficient appliances. By reducing the risk of wildfires and thereby also reducing the significant carbon releases associated with catastrophic wildfires, the VMP supports adaptive practices to help address climate change.

3.7.2 Regulatory Setting

This subsection discusses the federal, state, and local laws, and regulations that pertain to GHG emissions in the proposed project area and the state of California.

Federal Laws, Regulations, and Policies

USEPA is responsible for the regulation of transportation-related emission sources, such as aircraft, ships, and certain types of locomotives, under the exclusive authority of the federal government. USEPA also establishes vehicular emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by CARB.

In *Massachusetts v. The Environmental Protection Agency* [2007], the U.S. Supreme Court ruled that GHGs are air pollutants that can be regulated under the CAA. The court found that USEPA has a mandatory duty to enact rules regulating mobile GHG emissions under the CAA. The court held that GHGs fit the definition of an air pollutant that causes and contributes to air pollution and may reasonably be anticipated to endanger public health or welfare. Following the court's decision, in 2009, the USEPA Administrator found that the current and projected concentrations

of GHGs threaten public health and welfare of current and future generations and that combined emissions from new motor vehicles contribute to GHG pollution.

Corporate Average Fuel Economy Standards

On April 1, 2010, USEPA and the National Highway Traffic Safety Administration (NHTSA) established a program to reduce GHG emissions and improve fuel economy standards for new model year 2012–2016 cars and light trucks. On August 9, 2011, USEPA and the NHTSA announced standards to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses. On October 15, 2012, USEPA and NHTSA established a program to reduce GHG emissions and improve fuel economy standards for new cars and light trucks through 2025 (USEPA 2012). In August 2016, USEPA and the NHTSA jointly finalized Phase 2 Heavy-Duty National Program standards to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles for model year 2018 and beyond (USEPA 2020b). However, in August 2018, USEPA and the NHTSA proposed amendments to the standards covering model years 2021 – 2026 that would decrease the existing fuel efficiency requirements for those years and these amendments were finalized in March 2020 (NHTSA 2020).

State Laws, Regulations, and Policies

California Environmental Protection Agency (Cal EPA) is a state agency that includes CARB, the SWRCB, nine RWQCBs, California Department of Resources Recycling and Recovery (CalRecycle), California Department of Toxic Substances Control (DTSC), OEHHA, and California Department of Pesticide Regulation (CDPR). The mission of Cal EPA is to restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality.

GHG Reduction Goals

In recent years, California has enacted a number of policies and plans to address GHG emissions and climate change. In 2006, the California State Legislature enacted AB 32, the Global Warming Solutions Act, which set the overall goals for reducing California's GHG emissions to 1990 levels by 2020. Executive Order (EO) S-3-05 established a goal of 80 percent below 1990 levels by 2050. EO B-30-15 established an interim target to reduce California's GHG emissions to 40 percent below 1990 levels by 2030, and the 2030 target has been codified in Senate Bill (SB) 32, which was signed into law on September 8, 2016. Along with SB 32, AB 197 was also signed into law on September 8, 2016, and requires the state to focus its pollution-reduction efforts on disadvantaged communities and to increase legislative oversight of climate programs.

CARB approved the *First Update to the AB 32 Scoping Plan* on May 22, 2014 (CARB 2014). This update defines climate change priorities for the next 5 years and also sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The update also highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals and evaluates how to align the state's longer term GHG reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

In 2017, CARB further updated the Scoping Plan to reflect progress since 2005, additional reduction measures, and plans for reductions beyond 2020. CARB approved the *2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (CARB 2017) on December 14, 2017, to reflect the 2030 target set by EO B-30-15 and codified by SB 32

(CARB 2017, CARB 2018). The 2017 Scoping Plan includes further emission reductions from cap and trade, clean energy, doubling building energy efficiency, clean fuels, transit-oriented development, clean cars and transit, sustainable freight, reduction of methane and refrigerants, and restoration of natural and working lands.

GHG Reduction Regulations

CARB has completed rulemaking to implement several GHG emission reduction regulations and continues to investigate the feasibility of implementing additional regulations. These include the low carbon fuel standard, which reduces GHG emissions associated with fuel usage, and the Renewable Portfolio Standard (RPS), which requires electricity suppliers to increase the amount of electricity generated from renewable sources to certain thresholds by various deadlines. SB 350 established a California GHG reduction target of 40 percent below 1990 levels and sets a renewable portfolio goal of 50 percent by 2030, along with encouraging energy efficiency savings and electrification of transportation. In 2018, SB 100 updated the RPS to require 50 percent renewable resources by the end of 2026, 60 percent by the end of 2030, and 100 percent renewable energy and zero carbon resources by 2045. EO B-55–18 signed by Gov. Brown set a goal of statewide carbon neutrality by 2045 and net negative emissions thereafter.

In January 2012, CARB approved the Advanced Clean Cars Program, a vehicle emission control program for model years 2017–2025. To advance California's support of the national program to regulate emissions, CARB submitted a proposal that would allow automobile manufacturer compliance with USEPA's requirements to show compliance with California's requirements for the same model years. The final rulemaking package was filed on December 6, 2012, and the final rulemaking became effective on December 31, 2012.

California Integrated Energy Policy

SB 1389, passed in 2002, requires the California Energy Commission (CEC) to prepare an *Integrated Energy Policy Report* (IEPR) for the governor and legislature every 2 years and an update every other year (CEC 2020a). The report analyzes data and provides policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2020a). The 2017 *Final Integrated Energy Policy Report* includes policy recommendations such as implementing the Clean Energy and Pollution Reduction Act; resiliency of the electricity sector; and addressing the vulnerability of California's energy infrastructure to extreme events related to climate change, including sea-level rise and coastal flooding (CEC 2018a). The 2018 IEPR Update, *Toward A Clean Energy Future*, was split into two volumes that were adopted separately in August 2018 and February 2019 (CEC 2018b, CEC 2019). The 2018 Update covers a broad range of topics, including decarbonizing buildings, energy efficiency, energy equity, integrating renewable energy, climate adaptation activities for the energy sector, and the California Energy Demand Forecast. The Final 2019 Integrated Energy Policy Report provides analyses of electricity sector trends, building decarbonization and energy efficiency, zero-emission vehicles, energy equity, climate change adaptation, and electricity, natural gas, and transportation energy demand forecasts (CEC 2020b).

California Forest Carbon Plan

The California Forest Carbon Plan was prepared by the Forest Climate Action Team, which was comprised of members from multiple state and federal agencies. The plan contains the

following goals, objectives, and targets that may be relevant to the VMP (Forest Climate Action Team 2018):

Goal: California's overarching climate goal for forests is to manage them as healthy and resilient net sinks of carbon that provide a range of ecosystem and societal benefits while reducing GHG and other carbon emissions associated with management activities, conversion, wildfire events, and other disturbances.

Objectives and Targets:

- Enhance: Expand and improve forest management to enhance forest health and resilience, resulting in enhanced long-term carbon sequestration and storage potential.
  - Improve Health and Resilience on Private and State/Local Public Forestland
    - By 2020, double the current rate of forest restoration and fuels reduction treatments, including prescribed fire, through the CAL FIRE Vegetation Treatment Program (CalVTP; CAL FIRE 2019b) from the recent average of 17,500 acres per year to 35,000 acres per year.
    - By 2030, increase forest restoration and fuels treatments, including mechanical thinning and prescribed burning, from the current rate of approximately 17,500 acres per year to 60,000 acres per year.
  - Restore Ecosystem Health of Wildfire- and Pest-Impacted Areas through Reforestation
- Protect: Increase protection of California's forested lands and reduce conversion to non-forest uses, resulting in a more stable forested land base.
- Innovate: Pursue innovations in wood products and biomass utilization in a manner that reduces or offsets GHG emissions; promotes land stewardship; and strengthens rural economies and communities.
- Protect and Expand Urban Forests
  - Protect the existing tree canopy through policies and programs targeting ongoing maintenance and utilization of industry best management practices.
  - By 2030, increase total urban tree canopy statewide by 10 percent above current levels, targeting disadvantaged and low-income communities and low-canopy areas, with a preference for planting species and varieties that provide substantial carbon storage and are resilient to climate-linked stressors

Regional Laws, Regulations, and Policies

BAAQMD Clean Air Plan and Regional Climate Protection Strategy

The BAAQMD has adopted and released the *Final 2017 Bay Area Clean Air Plan* (also known as *Spare the Air – Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area*) and *Regional Climate Protection Strategy* (RCPS) that updates the *2010 Bay Area Clean Air Plan*; provides a road map for the BAAQMD's future efforts to reduce air pollution; and

identifies rules, control measures, and strategies to reduce GHG emissions throughout the Bay Area. As part of this update, 85 control measures have been identified and categorized within nine economic sectors, including stationary sources, transportation, waste, water, and energy. Potential measures applicable to the VMP include (but are not limited to) the reduction of solid waste, reduction of water use, and use of clean available construction equipment in local projects (BAAQMD 2017a).

In addition, the BAAQMD has established a Climate Protection Planning Program, which aims to achieve its goal of reducing GHG emissions in the Bay Area by establishing GHG reduction goals, developing and implementing the 2017 Clean Air Plan, and working with local governments (BAAQMD 2020a). The BAAQMD's GHG emission reduction goals are 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050 (BAAQMD 2020b).

Local Laws, Regulations, and Policies

Applicable local plans, policies, regulations, and ordinances are presented below.

Oakland 2030 Equitable Climate Action Plan

The City's 2030 Equitable Climate Action Plan (ECAP) contains the following goals and actions that may be relevant to the VMP:

Goal: GHG reduction target for the year 2030 of 56 percent below 2005 levels.

ECAP Actions:

> **A-4. Wildfire Risk Reduction.** Adopt and fully implement a Vegetation Management Plan for high-fire risk areas. Continue to update and enforce the Oakland Fire Code to require building owners in high-risk areas to maintain defensible space and implement fire prevention measures. Increase wildfire safety requirements for new construction or major renovations in high fire risk areas.
>
> **CR-2. Expand and Protect Tree Canopy Coverage.** By 2022, create a fifty-year Urban Forest Master Plan that: Prioritizes strategies to address disparities among neighborhoods in tree canopy coverage; Ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices; Establishes a clear and sustainable funding mechanism for ongoing tree maintenance; and Establishes a protocol and goals for community partnerships for tree planting and maintenance.
>
> **CR-3. Rehabilitate Riparian Areas and Open Space**. Secure funding to continue and expand programs to restore creeks and provide ecosystem services in coordination with stormwater management planning, prioritizing investment that reduces climate risks in frontline communities. Include funding for ongoing maintenance and public access.

City of Oakland General Plan

The following policies from the City of Oakland General Plan are relevant to the VMP (City of Oakland 1996):

Objective CO-13: Energy Resources. To manage Oakland's energy resources as efficiently as possible, reduce consumption of non-renewable resources, and develop energy resources which reduce dependence on fossil fuels.

3.7.3 Impact Analysis

Methodology

This section describes the methods used to evaluate whether the maintenance activities of the VMP would result in significant impacts related to GHG emissions, climate change, and energy.

GHG Emissions from Equipment, Vehicles, and Livestock

Emissions associated with proposed management activities were quantified; the sources of these emissions include off-road equipment such as chainsaws, tractors, mowers, chippers, masticators, and excavators; material hauling vehicles; vendor trips, and worker commutes. Emissions of GHGs were estimated based on the equipment, phasing, duration, material import and export volumes, and worker quantities. See Section 2.3.9, "Construction Personnel," for more information on worker quantities. The assumptions used to develop these estimates which are summarized in Appendix C of this DEIR.

In addition, GHG emissions from livestock and off-road equipment were estimated based on values used in a project with similar equipment and vegetation management activities, the CalVTP EIR (CAL FIRE 2019b). Emissions from worker, vendor, and hauling trips were estimated using CalEEMod Version 2016.3.2.

Carbon Sequestration Analysis

Impacts on carbon sequestration are discussed qualitatively in this analysis. VMP activities such as yarding, creation of fuel breaks, pruning, and chipping result in temporary removal of stored carbon, accelerated release of carbon via decay, and by removing growing vegetation may initially decrease sequestration rates. Other activities such as mulching, grazing, thinning, and revegetation may gradually increase carbon stored in soil and vegetation.

While VMP areas have been prioritized and treatment methods selected, the VMP includes an adaptive management component and it is not known which specific plants will receive which type or types of treatment and when, therefore the loss of carbon stock cannot be accurately quantified. Modeling carbon content requires detailed information on the health, size, and type of vegetation removed at the time of removal, which, given the 10-year plan timeframe, would be speculative at this point. Calculation of any increases in carbon sequestration rates over time due to reduced fire risk, improved plant health, and increased soil organic carbon content would be similarly speculative at this time. Therefore, a qualitative discussion of the carbon sequestration impacts of the plan are provided as well as an analysis of the plan's consistency with BAAQMD's Clean Air Plan, the California Forest Carbon Plan, and the State's Updated Scoping Plan.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland CEQA Thresholds of Significance, the VMP would result in a significant impact on GHG emissions and energy resources if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, specifically;
  - Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs;
  - Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation; or
  - Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

In addition, the VMP would result in a significant impact on carbon sequestration if it would:

- Result in the loss of forest land or conversion of forest land to non-forest use, such that it would release significant amounts of GHG emissions, or significantly reduce carbon sequestering.

The BAAQMD CEQA Guidelines included operation-related thresholds of significance for land use development and stationary-source projects. Stationary sources have a threshold of 10,000 MT CO_2e. For land use development projects, including residential, commercial, industrial, and public land uses and facilities, the threshold includes compliance with a qualified GHG reduction strategy or annual emissions of less than 1,100 MT CO_2e or efficiency performance criteria based on service population (BAAQMD 2017b). This "bright-line threshold" of 1,100 MT CO_2e was set for the 2020 goal established in AB 32. At the time of publication of this EIR, BAAQMD has not provided an updated analysis regarding the applicability of this bright-line threshold to the 2030 and 2050 goals of SB 32. Because implementation of the VMP would take place after 2020, the GHG analysis should consider whether the project would make substantial progress toward these future goals. In absence of guidance from BAAQMD, the relevance of an appropriate threshold for post-2020 GHG emissions must be considered. For purposes of this EIR, this analysis presents several threshold options and evaluates the VMP against each option to support the final impact conclusion.

Bright-Line Threshold

One option to consider is to continue the use of the 1,100 MT CO_2e threshold. This threshold was established by BAAQMD by conducting a "gap" analysis, considering the emissions reductions required from projects undergoing CEQA review that are not otherwise addressed by existing regulations or strategies identified in the Scoping Plan. BAAQMD determined that, with a bright-line threshold of 1,100 MT CO_2e, most CEQA projects would be required to implement all feasible mitigation measures because they would exceed this threshold and, most importantly, that 92 percent of GHG emissions above this threshold would be captured (Appendix D of BAAQMD 2017b).

Sacramento Metropolitan Air Quality Management District (SMAQMD) initially conducted a similar analysis of the CEQA projects that would be captured by establishing a bright-line threshold for the 2020 goals. Recently, SMAQMD updated its analysis and determined that the existing bright-line threshold would still capture over 98 percent of GHG emissions (SMAQMD 2020). Thus, it would be reasonable to assume that an updated analysis by BAAQMD would find that projects would continue to achieve a high capture rate of total GHG emissions with use of this bright-line threshold. This conclusion supports the continued use of 1,100 MT CO_2e as a significance threshold post-2020 and indicates that continued progress toward the 2030 and 2050 goals is likely to be maintained with this bright-line threshold.

Revised Bright-Line Threshold

A second option to consider is applying the CARB's 40 percent reduction target for 2030 compared to 2020 levels. Applying this to BAAQMD's bright-line threshold would produce a revised bright-line threshold of 660 MT CO_2e. The City of Oakland's 56 percent reduction goal in 2030 from 2005 is not relevant as it was based on an emission inventory analysis that does not include the primary emission source categories included in the VMP emission inventory, such as animal grazing, off-road construction equipment, and landscaping equipment (Appendix B of City of Oakland 2020a). Even if a 56 percent reduction was applied to the 1,100 MT CO_2e threshold, this would produce a revised bright-line threshold of 484 MT CO_2e. Either of these options would be overly conservative, as existing regulations will reduce the statewide and Oakland area emissions substantially. In addition, the 2017 Scoping Plan estimates that only a 4- to 8-percent reduction will be required from natural and managed lands (the emission category most applicable to analysis of the VMP); the 2017 Scoping Plan indicates that this reduction is to be achieved by increased management to improve resiliency (reduce wildland fires) and more reliable long-term carbon storage. These approaches are the purpose of the VMP.

Zero Equivalency Threshold

A third option is to consider a zero equivalency option, which establishes a level below which project-specific increases in GHG emissions are considered equivalent to zero. This concept is currently used for air-permitted sources by the San Joaquin Valley Air Pollution Control District (SJVAPCD), which has established that its zero equivalency level is 230 MT CO_2e per year (SJVAPCD 2012). While this policy is primarily applicable to small stationary sources, it puts into context what can be classified as a *de minimis* increase in GHG emissions.

Other Threshold Options

Other threshold options considered and dismissed for evaluation of the VMP in this EIR are use of an efficiency metric or comparison to a "business as usual" (BAU) or reference percent reduction. An efficiency metric, such as BAAQMD's 4.2 MT CO_2e per service population, GHG per acre managed, or GHG per animal grazed, is not a feasible option because it would be difficult to establish the correct service population or alternative metric to apply to natural and managed lands, such as comparing emissions to a typical residential/commercial land use project, where this type of threshold is more commonly used. A BAU approach would be difficult to apply because capturing the primary vegetation management source categories would require quantification of changes in resiliency and reliability of long-term carbon storage. At this time, quantitative methods to measure these changes are still being established, as outlined in

the 2017 Scoping Plan. Without a reliable method for quantifying this change, which is the primary reduction target for this source category, a BAU analysis would not be meaningful.

Threshold Used in This Analysis

Based on these three potential options of bright-line thresholds, ranging from 230 MT CO_2e per year to 1,100 MT CO_2e per year, emissions less than any of these possible values would be less than significant because the project would be making substantial progress toward the 2030 and 2050 GHG emission goals.

Environmental Impacts

Impact GHG-1: Generate GHG Emissions (*Less than Significant*)

VMP activities would generate GHG emissions through the combustion of fossil fuels during the operation of gasoline- and diesel-powered equipment and off-road vehicles. Worker, vendor, and hauling trips would also generate GHG emissions. Additionally, livestock would emit methane during grazing activities. Impacts on carbon sequestration are discussed in Impact GHG-4 below. **Table 3.7-2** shows annual GHG emissions from current and recent vegetation management activities (as detailed under Section 2.2.1, "Background") were estimated to be approximately 158 MT CO_2e, while the VMP's estimated annual GHG emissions would be approximately 217 MT CO_2e. Appendix C of this DEIR contains detailed assumptions used to estimate current and VMP-related annual GHG emissions. The increase in emissions from baseline would result primarily from the increase in grazing and increased use of construction and landscaping equipment to conduct mechanical treatments. Thus, the VMP would generate an increase of approximately 59 MT CO_2e from baseline conditions, which is less than any of the three bright-line threshold options (ranging from 230 MT CO_2e per year to 1,100 MT CO_2e per year). These emissions would likely decrease over time as vehicles and equipment, in compliance with federal and state regulations and City goals, increase in efficiency and transition to low or no emission models. Additionally, VMP activities would decrease the risk of large uncontrolled and unplanned emissions from wildfires; this reduction has not been accounted for in these baseline calculations.

Table 3.7-2. VMP GHG Emissions

VMP Activity		CO_2e Emissions – Annual (Metric Tons / Year)
Baseline		
Grazing	Grazing	101.72
	Worker Trips	8.11
Roadside Treatments	Roadside Treatments (Assume all Hand Labor)	35.20
	Worker Trips	12.52
	Baseline Total	157.55

VMP Activity		CO_2e Emissions – Annual (Metric Tons / Year)
VMP		
Grazing	Grazing	123.30
	Grazing – Trips	8.98
Hand Labor	Hand Labor	59.00
	Hand Labor – Trips	18.90
Mechanical	Mechanical	6.20
	Mechanical – Trips	5.60E-01
Herbicide	Herbicide	0.00
	Herbicide – Trips	0.12
Summary		
	Emissions – Annual (metric tons/year)	
Annual	VMP Total	217.06
	VMP Total – Baseline	59.51
	BAAQMD Threshold	1,100
Above Threshold?		No

Conclusion

VMP activities would result in the emission of GHGs through the combustion of fossil fuels by equipment and vehicles, and in the form of methane emissions from livestock. VMP GHG emissions would be well below the three potential bright-line thresholds. Additionally, the purpose of the VMP is to reduce the risk of uncontrolled wildfires which can emit large amounts of GHGs. Therefore, the VMP's impacts regarding generation of GHG emissions would be **less than significant** and no mitigation is required**.**

Impact GHG-2: Potential to Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs (*Less than Significant*)

The City of Oakland has established a goal of reducing GHG emissions by 56 percent by 2030 compared to a 2005 baseline. The VMP would use fossil-fuel powered vehicles and off-road construction and landscaping equipment and would not involve the construction of any facilities that would generate GHG emissions. The VMP would also generate GHG emissions in the form of methane from grazing. The emission source categories included in the City's emission inventory, which was used to determine that a 56 percent reduction by 2030 would be needed to meet climate goals, did not include the primary emission source categories relevant to the VMP, such as animal grazing, off-road construction equipment, and landscaping equipment (Appendix B of City of Oakland 2020a).

Even though GHG emissions associated with the VMP are not explicitly included in the City's GHG emission inventory, the adoption and implementation of a VMP is one of the actions included in the Oakland 2030 Equitable Climate Action Plan. The VMP would not conflict with any of the goals, policies, or implementation actions identified in the applicable GHG reduction plans, such as the *Oakland 2030 Equitable Climate Action Plan* (City of Oakland 2020a), because it would not create any facilities that would generate future GHG emissions, and would be completed as efficiently as possible. Vegetation management and urban forestry are also recognized in the 2017 Scoping Plan (CARB 2017) as being needed to enhance carbon sequestration and resilience through management and restoration. Therefore, the activities proposed in the VMP are in line with the 2017 Scoping Plan goals for natural and working lands. Also, many of the activities that would be conducted under the VMP are currently performed under existing conditions. Additionally, VMP activities would decrease the risk of large uncontrolled and unplanned emissions from wildfires, which is key to improving resilience of natural and working lands. Thus, the VMP's emissions would not involve any activities that would conflict with the City's plans and reduction goals or the statewide reduction goals related to AB 32, SB 32, and EO B-55-18, and would not represent a significant source of the City's GHG emissions.

Conclusion

For the reasons described above, this impact would be **less than significant** and no mitigation is required**.**

Impact GHG-3: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy Resources or Conflict with a State or Local Plan for Renewable Energy or Energy Efficiency (*Less than Significant with Mitigation*)

The VMP's activities would require the consumption of energy (fossil fuels, electricity) for equipment, worker vehicles, vendor and hauling trips, and powering the electric fence used during grazing. The consumption of energy for the VMP's equipment and vehicles would be reduced by implementing **Mitigation Measure AQ-1 (Fugitive Dust BMPs),**which would minimize vehicle idling and ensure that equipment is properly tuned and maintained.

The energy consumption during VMP activities is necessary for fire hazard reduction and resource protection; and a portion of VMP activities are already conducted under current/baseline conditions. Additionally, wildfires can damage powerlines and other energy infrastructure and responses to wildfires can expend large amount of energy with protection of public safety prioritized over efficiency. VMP activities would not cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources.

In addition, VMP activities would not conflict with any of the goals, policies, or implementation actions identified in the applicable energy plans, such as the *Final 2019 Integrated Energy Policy Report, City of Oakland General Plan,* and *City of Oakland Energy and Climate Action Plan* because the VMP activities would not create any future energy demands and would be completed as efficiently as possible. Thus, with implementation of Mitigation Measure AQ-1, the VMP would not conflict with any plans relating to renewable energy or energy efficiency.

Mitigation Measures

Mitigation Measure AQ-1: Fugitive Dust BMPs

See text in Section 3.3, "Air Quality."

Conclusion

The VMP's effect on energy resources would be **less than significant with mitigation**.

Impact GHG-4: Reduction in Carbon Sequestration (*Less than Significant*)

The 2018 Forest Carbon Plan includes multiple goals relating to sustaining forests and it supports the treatment of forests to reduce wildfire risks, primarily through thinning and forest treatments that improve forest health.

VMP activities involving the removal of trees, shrubs, and grasses would lead to a temporary drop in carbon in live vegetation and could marginally decrease carbon sequestration rates in the short term. However, these activities would support forest health and reduce the risk of catastrophic wildfire, which can result in the uncontrolled and rapid release of significant amounts of stored carbon and the dramatic reduction in future sequestration by destroying vegetation over large areas. In the 2017 Scoping Plan, California identified that 80 percent of carbon sequestration loss from natural and working lands was a result of loss from wildland fire.

Most forest carbon removed would be left as cut, chipped, or mulched material on the ground surface. This material would decompose into soil carbon, with some off-gassing from the decomposition process. Some material would be hauled off-site to mulch/compost facilities. Additionally, VMP treatments in forested areas focus on removing smaller trees such as saplings and sprouts, while retaining larger diameter trees which are both more fire-resistant and store larger amounts of carbon compared to smaller diameter trees. This approach would minimize the amount of forest carbon lost due to VMP treatments.

Conclusion

VMP activities would lead to a temporary drop in carbon in live vegetation and could marginally decrease carbon sequestration rates in the short term. However, the purpose of these activities is to reduce the risk of wildfires, which can result in the uncontrolled and rapid release of large amounts of stored carbon and a dramatic reduction in carbon sequestration rates over impacted areas over the longer term. Additionally, these activities are in alignment with the State's Forest Carbon Plan. Therefore, this impact would be **less than significant** and no mitigation is required.

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3.8 HAZARDS AND HAZARDOUS MATERIALS

This section describes the existing conditions of the VMP area and regulatory setting with respect to hazards and hazardous materials. The environmental setting section identifies areas potentially affected by known hazardous materials in soil or groundwater. This section also describes the significance criteria and methodology used to evaluate the potential impacts of the VMP related to hazardous materials. Potential wildfire impacts associated with the VMP are described in Section 3.14, "Wildfire."

3.8.1 Environmental Setting

Schools

Multiple schools are located within the VMP area. Public schools within 0.25 mile of VMP treatment projects are shown in **Table 3.8-1**.

Hazardous Materials in Soil and Groundwater

Hazardous materials contamination of soil and groundwater typically occurs from improper hazardous materials containment or management at sites with current or past land uses involving hazardous materials use (e.g., gas stations, dry cleaning facilities, military land uses, waste disposal sites). Known hazardous materials sites are documented in the SWRCB's GeoTracker database and California Department of Toxic Substance Control's (DTSC's) EnviroStor database. **Table 3.8-2** shows such known sites within 0.25 mile of VMP treatment projects, as identified in GeoTracker and/or EnviroStor. In addition to known hazardous materials sites, unknown contamination of soil or groundwater with hazardous materials is possible.

Airports

No airports are located within 2 miles of the VMP area. The nearest airport is Oakland International Airport, which is approximately 3.3 miles from the closest portion of the VMP area.

Table 3.8-1. Public Schools within 0.25 Mile of VMP Treatment Projects

School			Distance to VMP Areas (feet)
Name	**Address**	**Grades**	
East Bay Innovation Academy	3400 Malcolm Avenue	6-12	82.6
Castlemont High	8601 MacArthur Boulevard	8-12	291.8
LPS Oakland R & D Campus	8601 MacArthur Boulevard	9-10	313.6
Castlemont Primary Academy	8711 MacArthur Boulevard	K-5	300.9
Castlemont Junior Academy	8711 MacArthur Boulevard	6-8	308.0
Hillcrest Elementary	30 Marguerite Drive	K-8	0.0
Bay Area Technology	8251 Fontaine Street	6-12	278.1
Rudsdale Continuation	8251 Fontaine Street	10-12	246.0
Independent Study, Sojourner Truth	8251 Fontaine Street	1-12	258.6
Montclair Elementary	1757 Mountain Boulevard	K-5	131.3
Glenview Elementary	4215 La Cresta Avenue	K-5	964.3
Parker Elementary	7929 Ney Avenue	K-5	1,046.0
Grass Valley Elementary	4720 Dunkirk Avenue	K-5	554.9
Chabot Elementary	6686 Chabot Road	K-5	701.3
Conservatory of Vocal/Instrumental Arts	3800 Mountain Boulevard	K-9	811.2
Community School for Creative Education	8755 Fontaine Street	K-4	258.2
Howard Elementary	8755 Fontaine Street	K-5	244.3
Kaiser Elementary	25 South Hill Court	K-5	544.8
Community Day	4917 Mountain Boulevard	9-12	0.0
Oakland Community Day Middle	4917 Mountain Boulevard	7-8	0.0
Francophone Charter School of Oakland	9736 Lawlor Street	K-8	118.5
Carl B. Munck Elementary	11900 Campus Drive	K-5	219.1
Joaquin Miller Elementary	5525 Ascot Drive	K-5	506.4
Montera Middle	5555 Ascot Drive	6-8	516.6
Burckhalter Elementary	3994 Burckhalter Avenue	K-5	329.5
Redwood Heights Elementary	4401 39th Avenue	K-5	150.6

Table 3.8-2. Known Hazardous Materials Sites within 0.25 Mile of VMP Treatment Projects

Hazardous Materials Site					Distance to VMP Areas (feet)
Site Name	**Address**	**EnviroStor / GeoTracker ID**	**Site Type**	**Status**	
Oakland Unity High School	2955 Peralta Oaks Court	60001662	School Investigation	No Action Required	183.8
Oakland Naval Hospital	8750 Mountain Boulevard	1970003	State Response	No Further Action	705.6
Oakland Naval Hospital	8750 Mountain Boulevard	80001204	Voluntary Cleanup	Active	705.6
Durant Park Man Area	4720 Dunkirk Avenue	80000389	Military Evaluation	No Further Action	222.6
6200 Antioch Street	6200 Antioch Street	60002624	Voluntary Cleanup	Active	393.9
Bennett's Auto Repair	735 MacArthur Boulevard	T0600101825	LUST Cleanup Site	Completed – Case Closed	548.5
Former Dynasty Cleaners	293-295 MacArthur Boulevard	T10000006397	Cleanup Program Site	Open – Assessment & Interim Redial Action	1250.8
Sabek Inc.	635 MacArthur Boulevard	T0600100729	LUST Cleanup Site	Completed – Case Closed	641.7
Earle Shenk Residence	6159 Acacia Avenue	T0600101570	LUST Cleanup Site	Completed – Case Closed	796.8
Gallagher & Burke	7100 Mountain Boulevard	T0600101135	LUST Cleanup Site	Completed – Case Closed	301.3
Arco	2740 98th Avenue	T0600100088	LUST Cleanup Site	Completed – Case Closed	465.7
Oak Knoll Naval Hospital	8750 Mountain Boulevard	T0600100954	LUST Cleanup Site	Completed – Case Closed	715.6
Oakland Naval Hospital	8750 Mountain Boulevard	T0600112722	Military Cleanup Site	Completed – Case Closed	954.7
Chevron	11880 Skyline Boulevard	T0600101291	LUST Cleanup Site	Completed – Case Closed	113.2
City of Oakland Corporation Yard	5921 Shepherd Canyon Road	T0600100469	LUST Cleanup Site	Completed – Case Closed	0.0
City of Oakland Fire Station #24	6226 Moraga Avenue	T0600101588	LUST Cleanup Site	Completed – Case Closed	0.0
Classic Touch Cleaners	3518 Fruitvale Avenue	T10000003562	Cleanup Program Site	Completed – Case Closed	971.8
Former Norge Cleaners	2114 MacArthur Boulevard	T10000001544	Cleanup Program Site	Open – Verification Monitoring	1008.7
Glenview Elementary School	4215 La Cresta Avenue	T10000011445	LUST Cleanup Site	Open – Site Assessment	657.5
1431 Leimert Boulevard	1431 Leimert Boulevard	T10000011595	Cleanup Program Site	Open – Site Assessment	178.5
Unocal #5269	2240 Mountain Boulevard	T0600101457	LUST Cleanup Site	Completed – Case Closed	632.6

Hazardous Materials Site					Distance to VMP Areas (feet)
Site Name	**Address**	**EnviroStor / GeoTracker ID**	**Site Type**	**Status**	
City of Oakland Fire Station #25	2795 Butters Drive	T0600100579	LUST Cleanup Site	Completed – Case Closed	0.0
Hi Hat Cleaners	11881 Skyline Boulevard	T06019799056	Cleanup Program Site	Completed – Case Closed	197.1
Private Residence	6106 Oceanview Drive	T10000005350	LUST Cleanup Site	Completed – Case Closed	758.7
City of Oakland Fire Station #6	7080 Colton Boulevard	T0600100585	LUST Cleanup Site	Completed – Case Closed	22.6
Car Service	5865 Broadway	T0600191449	LUST Cleanup Site	Completed – Case Closed	781.0
Chevron #9-3575	5775 Broadway	T0600101668	LUST Cleanup Site	Completed – Case Closed	1081.6
Private Residence	Private Residence	T10000001165	LUST Cleanup Site	Completed – Case Closed	584.7
Golden Gate Academy	3800 Mountain Boulevard	T0600101634	LUST Cleanup Site	Completed – Case Closed	509.7
Sequoyah Country Club	4550 Heafey Road	T0600101215	LUST Cleanup Site	Completed – Case Closed	638.7
Exxon #7-8907	8008 Mountain Boulevard	T0600100554	LUST Cleanup Site	Completed – Case Closed	1289.0
Lake Chabot Golf Course	11450 Golf Links Road	T0600101699	LUST Cleanup Site	Completed – Case Closed	0.0
Merritt College	12500 Campus Drive	T0600101633	LUST Cleanup Site	Completed – Case Closed	88.9
Young's Cleaners	10700 MacArthur Boulevard	SL18344764	Cleanup Program Site	Open – Assessment & Interim Remedial Action	999.2
EBMUD San Leandro Filter Plant	7700 Greenley Drive	T0600102049	LUST Cleanup Site	Completed – Case Closed	1238.0
Leona Heights Sulfur Mine	End of McDonell Avenue	L10003827506	Cleanup Program Site	Open – Verification Monitoring – Land Use Restrictions	934.0
Chevron #9-2142 (Independent)	4150 Redwood Road	T0600102249	LUST Cleanup Site	Open – Assessment & Interim Remedial Action	143.0
Chevron #9-3415	4500 Park Boulevard	T0600102247	LUST Cleanup Site	Completed – Case Closed	705.1
USA Petroleum	10700 MacArthur Boulevard	T0600101808	LUST Cleanup Site	Completed – Case Closed	516.8
Chevron #9-1740	6550 Moraga Avenue	T0600100353	LUST Cleanup Site	Completed – Case Closed	559.8
Mills College	5000 MacArthur Boulevard	T0600100899	LUST Cleanup Site	Completed – Case Closed	635.5
Shell #13-5683	9750 Golf Links Road	T0600101931	LUST Cleanup Site	Completed – Case Closed	148.3
BP #11122	3101 98th Avenue	T0600100203	LUST Cleanup Site	Completed – Case Closed	688.0

Hazardous Materials Site					Distance to VMP Areas (feet)
Site Name	**Address**	**EnviroStor / GeoTracker ID**	**Site Type**	**Status**	
Shell #13-5683	9750 Golf Links Road	T0600140495	LUST Cleanup Site	Completed – Case Closed	49.0
Southland #19403	10501 Foothill Boulevard	T0600100002	LUST Cleanup Site	Completed – Case Closed	556.2
Emergency Operations Center	3304 Joaquin Miller Road	T0600101586	LUST Cleanup Site	Completed – Case Closed	18.0
Payless Gas	999 MacArthur Boulevard	T0600198797	Cleanup Program Site	Completed – Case Closed	1054.0
10605 Foothill Boulevard	10605 Foothill Boulevard	T10000012379	Cleanup Program Site	Open – Verification Monitoring	492.9
Exxon #7-4121	10605 Foothill Boulevard	T0600120383	LUST Cleanup Site	Completed – Case Closed	507.7
Arco #6002	6235 Seminary Avenue	T0600100105	LUST Cleanup Site	Completed – Case Closed	11.4
Caltrans Caldecott Tunnel	240 Caldecott Lane	T10000003438	LUST Cleanup Site	Completed – Case Closed	543.5
Desert Petroleum #796	2844 Mountain Boulevard	T0600100090	LUST Cleanup Site	Open – Site Assessment	982.9
Mashhoon Property / Union 76	5725 Thornhill Drive	T0600102278	LUST Cleanup Site	Completed – Case Closed	779.8

Notes: LUST = leaking underground storage tank

Source: DTSC 2020; SWRCB 2020

Emergency Response and Evacuation

As described in Chapter 2, *Project* Description*,* one of the primary goals of the VMP is to reduce wildfire hazard along critical access/egress routes within the City's very high fire hazard severity zone (VHFHSZ). As such, many of the roadways identified for treatment in the VMP are considered critical routes for emergency response and evacuation. Many of these roadways are also designated evacuation routes in the City of Oakland General Plan, Safety Element (City of Oakland 2004), including:

- Skyline Boulevard
- Golf Links Road
- Keller Avenue
- Redwood Road
- Joaquin Miller Road
- Park Boulevard
- Grizzly Peak Boulevard
- Claremont Avenue

3.8.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act) (42 U.S. Code [USC] Section 9601 *et seq.*) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, the USEPA has the authority to identify the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (through the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 USC Section 6901 *et seq.*) was enacted in 1976 as an amendment to the Solid Waste Disposal Act to address the nationwide generation of municipal and industrial solid waste. RCRA gives USEPA the authority to control the generation, transport, treatment, storage, and disposal of hazardous waste, including underground storage tanks storing hazardous substances. RCRA also establishes a framework for the management of nonhazardous wastes. RCRA addresses only active and future facilities; it does not address abandoned or historical sites, which are covered by CERCLA (as described above).

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC Section 136 *et seq.*) was enacted in 1947. The purpose of FIFRA is to establish federal jurisdiction over the distribution,

sale, and use of pesticides. Key provisions of FIFRA require pesticide applicators to pass a licensing examination for status as "qualified applicators," create a review and registration process for new pesticide products, and provide for thorough and understandable labeling that includes instructions for safe use.

Occupational Safety and Health Administration Regulations

The Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration (OSHA) to ensure safe and healthful conditions for workers by setting and enforcing standards and by providing training, outreach, education, and assistance. To fulfill this purpose, OSHA develops and enforces mandatory job safety and health standards. These standards, codified in 29 Code of Federal Regulations (CFR) Part 1910, address issues that range in scope from walking and working surfaces, to exit routes and emergency planning, to hazardous materials and personal protective equipment (PPE). They include exposure limits for a wide range of specific hazardous materials, including pesticides, as well as requirements that employers provide PPE (i.e., protective equipment for eyes, face, or extremities; protective clothing, and respiratory devices) to their employees wherever such equipment is necessary (29 CFR Section 1910.132).

State Laws, Regulations, and Policies

California state regulations, which are equal to or more stringent than federal regulations, require those handling hazardous wastes to plan for and manage such wastes to handle, store, and dispose of them properly, to reduce risks to human health and the environment.

Hazardous Substance Account Act

The Hazardous Substance Account Act (HSAA), codified in Health and Safety Code Sections 25300-25395.45, is the California equivalent of CERCLA. The HSAA established a program to: (a) provide for response authority for releases of hazardous substances, including spills and hazardous waste disposal sites that pose a threat to the public health or the environment; (b) compensate persons, under certain circumstances, for out-of-pocket medical expenses and lost wages or business income resulting from injuries proximately caused by exposure to releases of hazardous substances, and (c) make available adequate funds in order to permit the State of California to assure payment of its 10-percent share of the costs mandated pursuant to CERCLA.

Hazardous Waste Control Act

The Hazardous Waste Control Act of 1972 created the Hazardous Waste Management Program, which is similar to, but more stringent than, the federal program under RCRA. The Hazardous Waste Control Act is implemented by regulations contained in Title 26 of the California Code of Regulations (Cal. Code Regs.). These regulations list more than 800 materials that may be hazardous and establish criteria for their identification, packaging, and disposal. Under the Hazardous Waste Control Act and Title 26 Cal. Code Regs., hazardous waste generators must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must also be filed with DTSC.

Pesticide Regulations

USEPA has delegated primary authority to the California Department of Pesticide Regulation (CDPR) to enforce federal and state laws pertaining to the proper and safe use of pesticides. County Agricultural Commissioners (CACs) and their staffs are largely responsible for in-field enforcement of CDPR's pesticide use regulations in California's 58 counties. Personnel from CDPR's headquarters and CDPR field staff provide training, coordination, and technical and legal support to the counties.

Title 3 Cal. Code Regs., Division 6 describes the role of CDPR and provides guidance related to pesticide regulatory programs; pesticides (including pesticide registration and the identification and use of restricted materials); licensing, work requirements, and pesticide-related worker safety during pest control operations; and environmental protection for groundwater, air quality, aquatic and marine environments, surface water, and compost. The CACs, on behalf of CDPR, are responsible for enforcement of these human health and environmental protections in the field.

Healthy School Act of 2000 (California Education Code, Sections 17608–17613)

The Healthy School Act of 2000 restricts the use of certain pesticides at school sites and requires noticing for application of approved pesticides at schools. Under Section 17610 of the California Education Code, the use of a pesticide on a school site is prohibited if that pesticide is granted a conditional registration, an interim registration, or an experimental use permit by CDPR, or if the pesticide is subject to an experimental registration issued by USEPA, and (a) the pesticide contains a new active ingredient or (b) the pesticide is for new use. The use of a pesticide on a school site is prohibited if CDPR cancels or suspends registration, or requires phase-out of use, of that pesticide.

Under Section 17611 of the California Education Code, each school site must keep records of all pesticide use at the school site for a period of 4 years, and make such information available to the public. Under Section 17612, the school designee must annually provide to all staff and parents/guardians of pupils written notification of the names of all pesticide products (as well as product active ingredients) that are expected to be applied at the school site in the upcoming year. The school designee must post a warning sign in each area of the school site where pesticides are to be applied, displaying the pesticide product's name, manufacturer's name, USEPA's product registration number, intended date and areas of application, and reason for the pesticide applications.

Emergency Services Act

Under the Emergency Services Act, the State of California developed a plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. This office coordinates the responses of other agencies, including USEPA, the California Highway Patrol, the nine RWQCBs, the various air quality management districts, and County disaster response offices.

California Occupational Safety and Health Administration Standards

Title 8 of the California Occupational Safety and Health Administration (Cal/OSHA) regulations specifies that workers who may be exposed to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous levels of constituents are subject to monitoring and personal safety equipment requirements that specifically address airborne contaminants. The primary intent of the Title 8 requirements is to protect worker health.

Local Laws, Regulations, and Policies

City of Oakland General Plan

Goals and policies from the City of Oakland General Plan (City of Oakland 2004) that are relevant to the VMP include the following:

> **Policy FI-3:** Prioritize the reduction of the wildfire hazard, with an emphasis on prevention.
>
> **Policy PS-1:** Maintain and enhance the city's capacity to prepare for, mitigate, respond to and recover from disasters and emergencies.
>
> **Policy HM-1:** Minimize the potential risks to human and environmental health and safety associated with the past and present use, handling, storage and disposal of hazardous materials.
>
> **Policy HM-2:** Reduce the public's exposure to toxic air contaminants through appropriate land use and transportation strategies.

North Oakland Hill Area Specific Plan

The North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes a vegetation management prescription and specific policies and mitigation measures to reduce fire hazard risk within the North Oakland hill area. The approach and goals addressed by these policies and mitigation measures have, in many cases, been incorporated into the City's General Plan and elements of the Draft VMP.

Unified Program: Alameda County Department of Environmental Health

Many of the federal and state laws and regulations described above are implemented on the local level by Certified Unified Program Agencies (CUPAs). The Alameda County Department of Environmental Health (ACDEH) is the CUPA for Alameda County, including the City of Oakland, and implements numerous hazardous materials management and environmental protection programs, including:

- Hazardous Materials Business Plan
- Hazardous Waste Generator
- Underground Storage Tank
- Aboveground Petroleum Storage Act
- California Accidental Release Prevention

City of Oakland's Integrated Pest Management Resolution

The City of Oakland's Pest Management Resolution (No. 73968 C.M.S., 1997) identifies that pesticides shall not be used in or on City-owned properties or facilities, with specific exemptions. Exemptions include where use is required to preserve and/or protect human health and safety, around fire hydrants, and on public streets and rights-of-way maintained by the City, amongst others. Certain pesticides (e.g., pesticidal soaps, botanicals, horticultural oils) are also exempted.

Airport Land Use Compatibility Plans

No airport land use compatibility plans are applicable to the VMP. As noted above, the VMP area is more than 3 miles from the nearest airport (Oakland International Airport).

3.8.3 Impact Analysis

Methodology

This analysis used a qualitative approach to assess the potential for VMP activities to result in adverse impacts related to hazards and hazardous materials. The assessment and significance determinations were guided by the significance criteria provided below. The analysis assumed adherence to existing laws and regulations during applicable VMP activities. Where appropriate and feasible, mitigation measures were identified to reduce potentially significant impacts.

Criteria for Determining Significance

Based on the City of Oakland's CEQA Thresholds of Significance Guidelines (2013) and any subsequent relevant updates to Appendix G of the CEQA Guidelines (on which the City's Guidelines are based), the VMP would result in a significant impact on hazards or hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors [NOTE: Per the BAAQMD CEQA Guidelines, evaluate whether the project would result in persons being within the Emergency Response Planning Guidelines (ERPG) exposure level 2 for acutely hazardous air emissions either by siting a new source or a new sensitive receptor. For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers];
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5, and as a result, create a significant hazard to the public or the environment;

- Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions;

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Issues Not Evaluated Further

The following criteria are dismissed from the impact analysis for the reasons described below:

- **Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions.** The VMP would be limited to vegetation management activities and would not change the design or configuration of any streets; thus, it would not affect the number of emergency access routes for existing streets exceeding 600 feet in length.

- **For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.** None of the treatment areas are within 2 miles of an airport or within an airport land use compatibility plan area. Therefore, there is no potential for VMP activities to subject people to hazards or excessive noise from being located an airport land use compatibility plan area or within close proximity to an airport.

- **Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.** Potential wildland fire effects on people or structures are evaluated and described in Section 3.14, "Wildfire."

Environmental Impacts

Impact HAZ-1: Create a Significant Hazard to the Public or the Environment from the Routine Transport, Use, or Disposal of Hazardous Materials (*Less than Significant with Mitigation*)

Implementation of the VMP would have a beneficial effect on public safety, as it would remove dead/hazardous trees in areas near public trails and roads; however, some treatment

techniques would involve transport, use, and potential disposal of hazardous materials, which would have potential to create a hazard to the public or the environment. The different treatment techniques that would be used under the VMP and their relative potential to create a significant hazard to the public or the environment are discussed below.

Grazing

As described in Chapter 2, *Project* Description, livestock grazing (e.g., goats, cattle, sheep) is the primary biological treatment technique that would be used for the VMP. Grazing would have limited potential to create a hazard to the public or environment from the routine transport, use, or disposal of hazardous materials. In general, livestock grazing would not use hazardous materials. Transport of herds to treatment areas may involve the use of trucks or trailers, which would contain hazardous materials, such as fuel, oil, and lubricants. Implementation of **Mitigation Measure HAZ-1 (Vehicle and Equipment Maintenance)** and **Mitigation Measure HAZ-2 (Vehicle and Equipment Fueling)** would ensure that vehicles and equipment used to transport and manage herds are properly maintained, and that any fueling or repairs is done in safe areas to minimize potential risks to people and the environment.

Hand Labor Techniques

Some hand labor techniques (e.g., use of chainsaws and weed whips) may use small amounts of hazardous materials, such as fuel, oil, and lubricants. In general, hand labor treatment techniques would not involve the transport, use, or disposal of any hazardous materials. For any hand labor equipment that requires maintenance or fueling, implementation of Mitigation Measures HAZ-1 and HAZ-2 would ensure that the risks from these activities are minimized and that equipment is properly maintained such that potential for leaks of hazardous materials is reduced.

Mechanical Techniques

Mechanical treatment techniques would have elevated potential to create hazards to the public or environment from transport, use, and disposal of hazardous materials compared to biological and hand labor techniques. Mechanical equipment such as mowers, dickers, masticators, and feller-bunches would use greater quantities of hazardous materials (e.g., fuel, oil, lubricants), which may need to be stored temporarily at a treatment site and/or transported or disposed of periodically. If these materials were improperly handled/ managed, it could subject workers, the public, and the environment to a significant hazard.

Under the VMP, hazardous materials would be disposed of at licensed facilities and in accordance with federal, state, and local laws and regulations. Further, **Mitigation Measure HAZ-3 (On-Site Hazardous Materials Management)** would require that hazardous materials used at treatment sites are inventoried and stored properly (watertight containers or enclosed storage shed with secondary containment). Implementation of Mitigation Measures HAZ-1 and HAZ-2 would ensure that risks to people and the environment from vehicle and equipment maintenance and fueling are minimized. Properly maintained mechanical equipment also would be less likely to leak hazardous materials to the environment during mechanical treatment activities.

Herbicides

Chemical treatment techniques would include use of herbicides to kill vegetation or prevent growth. Herbicides are toxic substances that can be harmful to humans and non-target plants and animals when mishandled or used ineffectively. Under the VMP, both the cut and daub method and backpack spraying may be used, with the latter method primarily being used for application on high fire risk plants including French broom, Scotch broom, pampas grass and jubata grass. As described in Chapter 2, *Project* Description*,* herbicide application under the VMP must be done by a licensed and trained professional and herbicides are only applied by a prescription prepared by a licensed pest control advisor in accordance with federal, state, and local regulations and labeled specifications.

Under FIFRA, all pesticides/herbicides registered for use in the U.S. are evaluated for potential adverse effects on humans and the environment and label instructions are developed for safe use. Herbicide labels would indicate appropriate PPE for herbicide applicators, and OSHA regulations also would require that the City of Oakland or its contractors provide herbicide applicators with PPE during VMP chemical treatment activities to minimize their potential health risks.

Glyphosate and triclopyr are both common herbicides that have been used in the U.S. and California for decades. Glyphosate was first registered for use in the U.S. in 1974 (USEPA 2020a), while triclopyr was first registered in 1979 (National Pesticide Information Center 2018). Both chemicals are included in hundreds of different commercial products and commonly used for a variety of applications, including for managing vegetation in rights-of-way, pasture and rangelands, and landscaping. Since glyphosate's first registration, USEPA has reviewed and reassessed its safety and uses on a 15-year cycle as part of the registration review program. As of January 2020, USEPA continues to find that there are no risks of concern to human health when glyphosate is used in accordance with its current label (USEPA 2020a). USEPA also found that glyphosate is unlikely to be a human carcinogen (USEPA 2020a). Like glyphosate, triclopyr has undergone reregistration by USEPA. While triclopyr was found to be slightly toxic by oral and dermal routes (and thereby placed in Toxicity Category III for these effects), it was ultimately found to be safe for use when following label requirements, including updated risk mitigation measures imposed by USEPA (USEPA 1998).

Other chemicals proposed for use in the VMP also generally have low toxicity to humans and have been shown to be safe for use when applied in accordance with label instructions. **Table 3.8-3** shows toxicity information for chemicals used in vegetation management, as identified and evaluated in California Board of Forestry and Fire Protection's California Vegetation Treatment Program (CalVTP) EIR (California Board of Forestry and Fire Protection 2019).

Table 3.8-3. Human Toxicity of Chemicals Used in Vegetation Management

Chemical	Formulation	Human Toxicity
Glyphosate[1] (Accord) (Rodeo)	Isopropylamine salt, potassium salt, dimethylamine salt & diammonium salt	Overall low toxicity. Skin and eye irritation possible. No evidence of neurotoxicity, immunotoxicity, or acute toxicity. Reproductive toxicity at very high doses. Recent claims of carcinogenicity (class 2A) based on animal studies. Substantial evidence finds human carcinogenicity unlikely. Very low toxicity via oral and dermal routes. Possible endocrine-disruptor.[2]
Imazapyr (Imazapyr 2SL)	Isopropylamine salt	Overall low toxicity. No evidence of carcinogenicity, neurotoxicity, immunotoxicity, or reproductive/developmental toxicity. Slightly toxic via acute oral, dermal, and inhalation routes. No evidence of carcinogenicity or mutagenicity.
Triclopyr (Turflon Ester) (Garion 3) (Garion 4)	Butoxyethyl ester & trimethylamine salt	Overall low toxicity (moderate toxicity if ingested) (technical triclopyr acid). Slightly toxic via acute oral, dermal, and inhalation routes (TEA and TBEE). Slightly toxic by acute oral and dermal routes. Practically nontoxic by inhalation. Not carcinogenic (technical triclopyr acid). Slightly toxic via acute oral, dermal, and inhalation routes (TEA and TBEE) slightly toxic by acute oral and dermal routes. Practically nontoxic by inhalation. Not carcinogenic.

Notes: TBEE = triclopyr, butoxylethyl ester; BEA = triclopyr, triethylamine salt.

1. Table 3.10-1 from the CalVTP EIR specifically lists Roundup products, but the analysis in Appendices HAZ-1 and HAZ-2 of the CalVTP EIR considers potential human health impacts from glyphosate generally (including other product formulations). Thus, the conclusions of overall low toxicity and unlikely human carcinogenicity would apply to other products using glyphosate as an active ingredient (e.g., Rodeo and Accord). USEPA's pesticide/herbicide registration process considers the identity and quantity of all chemicals in the product, including any inactive or inert ingredients that could potentially pose a health hazard.
2. The large majority of medical and scientific research supports the conclusion that glyphosate is not a likely carcinogen. Although glyphosate has been listed under Proposition 65 based on the International Agency for Research on Cancer's (IARC) classification of glyphosate as probably carcinogenic (based on one study in mice), federal courts in two separate decisions found that California could not require warnings on glyphosate products because warnings stating that glyphosate is a carcinogen are misleading, and that requiring the warnings would violate the First Amendment. In 2020, Judge Shubb in the District Court for the Eastern District of California found that "the Proposition 65 warning requirement for glyphosate was false and misleading given the weight of authority" and issued a permanent injunction preventing the state of California from requiring warnings on glyphosate products. The Court relied upon decades of actual laboratory and field testing of glyphosate that conclude that glyphosate is not likely to be carcinogenic to humans and that no other meaningful risks to human health occur when the product is used according to the label. Recent expert panels have been convened to directly evaluate the claims of the IARC that glyphosate is carcinogenic to humans. Reports of these panels strongly counter that claim and indicate there is insufficient evidence that

glyphosate is carcinogenic. (Appendix HAZ-1 of the CalVTP EIR for more detailed information regarding glyphosate and human health risks. Although several juries have awarded damages to plaintiffs alleging personal injuries as a result of exposure to Roundup, there is significant question regarding the toxicological basis for these verdicts.

Source: California Board of Forestry and Fire Protection 2019

Herbicides proposed for use under the VMP only include materials that have been approved for use by the USEPA and that were also evaluated by the Cal VTP as safe for use. Under the VMP, treatment areas with the greatest risk for adverse effects to people or the environment from chemical techniques would likely be urban and residential parcels, canyon areas that are parkland and publicly-accessible, and city parklands and open space areas. Ridgetop areas that are not typically accessible via public-use trails and roadways and medians would have less potential for people or pets to inadvertently enter areas treated with herbicides prior to the point at which it would be safe for reentry. Less publicly-accessible VMP areas also would have reduced potential for people or pets to be subjected to herbicide exposure from off-site drift of herbicides during spray application methods (although herbicide label instructions typically include measures to reduce potential for off-site drift). If members of the public or their pets were to be exposed to herbicide residues or airborne droplets in any VMP treatment area type, this would be a potentially significant impact.

To ensure herbicide label reentry intervals are properly enforced and to reduce the potential for public exposure to herbicides from off-site drift in the context of the VMP, **Mitigation Measure HAZ-4 (Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides)** would be implemented. Additionally, implementation of **Mitigation Measure HAZ-5 (Standard Herbicide Use Requirements)** would reduce potential impacts by limiting use of herbicides near schools; requiring that herbicides are not applied in upland areas within 48 hours of predicted rainfall (i.e., to prevent off-site movement of herbicides); requiring that the lowest recommended rates of herbicides are used to achieve project objectives, and other measures.

As discussed previously, implementation of Mitigation Measure HAZ-3 would minimize potential hazards from storage of chemicals on-site at treatment sites prior to chemical treatments. Under this mitigation measure, chemicals would be inventoried and labeled on-site and secondary containment would be provided to prevent any spills or leakage.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-1:

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

The City and its contractors shall implement the following measures:

- All vehicles and equipment shall be kept clean. Excessive buildup of oil and grease shall be prevented.
- Incoming vehicles and equipment (including delivery trucks and employee and subcontractor vehicles) shall be checked for leaking oil and fluids. Leaking vehicles or equipment shall not be allowed on-site.

- No heavy equipment shall operate in a running stream.
- No equipment shall be serviced in the creek channel or immediate floodplain.
- If necessary, servicing of equipment at the job site shall be conducted in a designated, protected area to reduce threats to water quality from vehicle fluid spills. Designated service areas shall not connect directly to the ground, surface water, or storm drain system. The service area shall be clearly designated with berms, sandbags, or other barriers. Secondary containment, such as a drain pan, shall be used to catch spills or leaks when removing or changing fluids. Fluids shall be stored in appropriate containers with covers, and recycled or disposed of properly off-site.
- If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location shall be conducted in the channel or floodplain.
- Equipment shall be cleaned of any sediment or vegetation before being transferred and used in a different watershed, to avoid spreading sediment, pathogens, or exotic/invasive species.
- Vehicle and equipment washing can take place on-site only as needed to prevent the spread of sediment, pathogens, or exotic/invasive species. No runoff from vehicle or equipment washing shall be allowed to enter water bodies, including creek channels and storm drains, without being subjected to adequate filtration (e.g., vegetated buffers, hay wattles or bales, and silt screens). The discharge of decant water from any on-site wash area to water bodies or areas outside of the active project site is prohibited.

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

The City and its contractors shall implement the following measures:

- No fueling shall be done in stream channels (top-of-bank to top-of-bank) or immediate floodplain.
- All off-site fueling sites (i.e., on access roads above the top-of-bank) shall be equipped with secondary containment and avoid a direct connection to soil, surface water, or the storm drainage system.
- For stationary equipment that must be fueled on-site, secondary containment, such as a drain pan or drop cloth, shall be used to prevent accidental spills of fuels from reaching soil, surface water, or the storm drain system.

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

The City and its contractors shall implement the following measures:

- An inventory of all hazardous materials used (and/or expected to be used) at the work site and the end products that are produced (and/or expected to be produced) after their use shall be maintained by the worksite manager.

- As appropriate, containers shall be properly labeled with a "Hazardous Waste" label and hazardous waste shall be recycled or disposed of properly off-site at an appropriate hazardous waste facility.

- Contact of chemicals with precipitation shall be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage.

- Petroleum products, chemicals, cement, fuels, lubricants, non-storm-drainage water, and water contaminated with the aforementioned materials shall not contact soil and shall not be allowed to enter surface waters or the storm drainage system.

- All toxic materials, including waste disposal containers, shall be covered when not in use and located as far as possible from any direct connection to the storm drainage system or surface water.

- All trash that is brought to a project site during maintenance activities (e.g., plastic water bottles, lunch bags or other trash) shall be removed from the site daily.

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

The City of Oakland or its contractors shall implement the following measures to avoid or minimize effects on non-target entities from application of herbicides for the VMP:

- Reentry intervals included on the product label shall be followed and enforced for workers and the public. In instances where a reentry interval is not provided on the herbicide product label, a reentry interval of at least 48 hours shall be implemented. Signs shall be installed on all sides of the treatment area clearly stating the date of treatment and reentry interval, and describing potential hazards to people and pets from entering the area prior to the close of the reentry interval.

- Where herbicides are applied in public parks or publicly-accessible areas or in open space areas within 30 feet of public-use trails, or in any other situations where it is reasonably possible that people or pets could enter treated areas, fencing or other material preventing entry shall be temporarily installed around the treated area for the duration of the reentry interval to prevent access.

- Spray application methods shall not be used when wind velocities are greater than 7 miles per hour. Spray application methods shall not be used within 100 feet of any residences or public use areas.

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

The City and its contractors shall implement the following measures:

- Herbicides shall not be used in areas within 0.25 mile of schools. Only hand or mechanical vegetation removal shall be used within 0.25 mile of schools.
- Herbicides (if selected as a vegetation management technique) shall be applied only if hand or mechanical vegetation removal is not feasible, and at no times within 0.25 mile of schools as described above.
- Only herbicides and surfactants that have been approved for use by the U.S. Environmental Protection Agency (USEPA) and are registered for use by the California Department of Pesticide Regulation (CDPR) shall be used for vegetation control activities.
- Herbicide application shall be consistent with Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label instructions and use conditions issued by USEPA, CDPR, and the Alameda County Agricultural Commissioner.
- Herbicides shall not be applied within 48 hours of predicted rainfall.
- The lowest recommended rates of herbicides and surfactants that achieve project objectives shall be utilized to achieve desired control. Cut-and-daub application of herbicides shall be used where feasible to reduce the amount of herbicide used. This is anticipated to be on the stumps of removed eucalyptus and acacia trees.
- An indicator dye may be added to the tank mix to help the applicator identify areas that have been treated and to better monitor the overall application.
- Herbicides shall not be applied in open water or within 60 feet of streams.

Conclusion

Implementation of the VMP would have a largely beneficial effect on public safety from removal of dead/hazardous trees in public parks and along public trails. While some treatment techniques would use hazardous materials, impacts would be avoided or greatly reduced through compliance with existing federal, state, and local laws and regulations related to hazardous materials, and implementation of Mitigation Measures HAZ-1 through HAZ-5. As a result, this impact would be **less than significant with mitigation.**

Impact HAZ-2: Create a Significant Hazard to the Public or the Environment through the Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment (*Less than Significant with Mitigation*)

Wildland fire within the VMP area could spread to adjacent areas, resulting in burning and subsequent release of hazardous materials from buildings and vehicles. Implementation of the

VMP would reduce the risk of wildfire within the VMP area, thus reducing the risk of hazardous material release due to wildfire.

As discussed in Impact HAZ-1, several of the proposed treatment techniques would involve use of hazardous materials. Particularly for mechanical and chemical techniques, hazardous materials (e.g., fuel, oil, lubricant, accelerants, and herbicides) may need to be stored temporarily at VMP treatment sites, staging areas, or at the City of Oakland's or its contractors' maintenance yards. Fueling and maintenance of vehicles and equipment at VMP treatment sites would also introduce the potential for upset or accident conditions.

If hazardous materials were not stored/managed properly, this could potentially lead to accidental, uncontrolled releases of these materials, which could pose a significant hazard to the public or the environment. For example, storage of hazardous materials at VMP treatment sites without secondary containment (i.e., a secondary structure or catchment device that would contain the volume of material in case the primary containment fails) could potentially lead to quantities of these materials being released to the environment. The impacts of such an event would be compounded if hazardous materials clean-up materials were not readily available to staff on-site.

Implementation of Mitigation Measures HAZ-1 through HAZ-3 would minimize the potential for accidental release of hazardous materials to the environment. In particular, Mitigation Measure HAZ-3 would require that chemicals are stored in watertight containers or in an enclosed storage shed with appropriate secondary containment. Mitigation Measures HAZ-1 and HAZ-2 would require that vehicle and equipment maintenance and fueling do not occur in sensitive areas (e.g., within or near streambanks), and Mitigation Measure HAZ-2 would require that all off-site fueling sites are equipped with secondary containment and avoid a direct connection to soil, surface water, or the storm drainage system.

Additionally, implementation of **Mitigation Measure HAZ-6 (Spill Prevention and Response)** would further reduce the potential for accidental release of hazardous materials from VMP activities and would mitigate the impacts to people and the environment in the event that hazardous materials are accidentally released. As described below, Mitigation Measure HAZ-6 would, among other things, require that City of Oakland field personnel are trained in spill prevention, hazardous material control, and cleanup of accidental spills; equipment and materials for cleanup of spills are available on-site at all times; and spill prevention kits are always in close proximity when personnel are using hazardous materials.

Although spills of substantial quantities of acutely hazardous materials during VMP activities would be unlikely, in the event of a substantial spill, state and local agencies would be able to provide an effective response through the coordination, planning, and training provided under the California Emergency Services Act.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-2:

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

City personnel shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm-drainage water into channels by following these measures:

2. New City field personnel shall be trained appropriately in spill prevention, hazardous material control, and cleanup of accidental spills.

3. Equipment and materials for cleanup of spills shall be available on site at all times, and spills and leaks shall be cleaned up immediately and disposed of at a hazardous waste facility.

4. City field personnel shall ensure that hazardous materials are handled properly, and natural resources are protected by all reasonable means.

5. Spill prevention kits shall always be in close proximity when City personnel are using hazardous materials (e.g., at crew trucks and other reasonable locations). All City field personnel shall be advised of these locations.

6. City personnel shall routinely inspect the work site, vehicles, and equipment to verify that spill prevention and response measures are implemented and maintained properly. All leaks shall be repaired promptly. Drip pans shall be used to catch leaks until repairs are made.

    - For small spills on impervious surfaces, absorbent materials shall be used to remove the spill, rather than hosing it down with water. For small spills on pervious surfaces such as soil, the spill area shall be excavated and properly disposed of rather than being buried. Absorbent materials shall be collected and disposed of properly and promptly.

    - All significant spills of hazardous materials, including oil, shall be reported immediately. To report a spill: (1) Dial 911 or your local emergency response number; and (2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Conclusion

Implementation of the VMP would require use of hazardous materials, which could be accidentally released to environment, thereby endangering the public, if adequate precautions are not taken. Implementation of Mitigation Measures HAZ-1, HAZ-2, HAZ-3, and HAZ-6 would substantially reduce the potential for upset or accident conditions involving release of hazardous materials and would reduce the adverse effects to people and the environment if an

accidental release were to occur. As a result, this impact would be **less than significant with mitigation**.

Impact HAZ-3: Create a Significant Hazard to the Public through the Storage or Use of Acutely Hazardous Materials near Sensitive Receptors *(Less than Significant with Mitigation)*

As discussed under Impacts HAZ-1 and HAZ-2 above, the VMP would involve use of hazardous materials contained in mechanical equipment and herbicides. These materials also may need to be stored temporarily at treatment sites. Many of the treatment areas under the VMP would be located near sensitive receptors, such as residential uses, schools, parks, and daycare centers. While these activities could potentially create a significant hazard to the public (e.g., if hazardous materials used in VMP activities were improperly stored and inadvertently released to the environment or if herbicides were applied in a manner that is inconsistent with the product label); however, implementation of the mitigation measures described above and compliance with existing laws and regulations related to hazardous materials would reduce the potential hazards to a level that is less than significant.

Specifically, Mitigation Measure HAZ-3 would require that containers of hazardous materials (e.g., herbicides) or waste are properly labeled and provided with secondary containment to prevent spillage or leakage. Mitigation Measure HAZ-4 would ensure that reentry intervals for herbicides are followed and enforced for workers and members of the public, thereby avoiding the risk of toxicity effects from reentering a treated area too quickly. This mitigation measure also would limit the use of herbicide spray application methods during windy conditions and within close proximity to residences. Further, Mitigation Measure HAZ-5 would require that herbicides not be used within 0.25 mile of schools (only hand or mechanical vegetation removal techniques would be used within 0.25 mile of schools). All of these measures would minimize the potential for hazards, as would compliance with herbicide product labels developed in accordance with FIFRA.

The VMP would not create any new permanent sources of hazardous emissions. As discussed in Section 3.3, “Air Quality,” and in Impact HAZ-4 below, emissions from VMP activities would primarily be related to combustion of fuel in internal combustion engines (used in mechanical treatment techniques and during transport of materials). Some emissions also would occur from spray herbicide applications, although the requirements under Mitigation Measures HAZ-4 and HAZ-5 would limit these emissions from occurring in close proximity to sensitive receptors. In general, any potential exposure of sensitive receptors at residences, schools, parks or daycare facilities would be temporary and the pollutant concentrations would likely be significantly diluted by the time they reach these receptors. No nursing homes or medical facilities were identified within the VMP area.

Given that ERPG exposure level 2 is “the maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual’s ability to take protective action” (BAAQMD 2017), the VMP would not place individuals within these conditions and/or above this exposure level. The emissions of criteria pollutants from VMP activities would be marginally above baseline conditions and well below BAAQMD air quality thresholds of significance (see Table 3.3-7 in Section 3.3). The DPM emissions associated

with off-road mechanical equipment operation under the VMP would be temporary in any given location and concentrations of mobile source DPM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (CARB 2005). As described in Section 3.3, "Air Quality," DPM exposure for short durations is generally not quantified as cancer potency factors are based on lifetime exposure (OEHHA 2015). As such, any DPM exposure due to the VMP would not reasonably be expected to result in any adverse short- or long-term health impacts.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-3:

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Impact HAZ-1 above.

Conclusion

Implementation of the VMP would require use and storage of hazardous materials, including in areas near sensitive receptors, which could result in adverse impacts if adequate precautions are not taken. Implementation of Mitigation Measures HAZ-3, HAZ-4, and HAZ-5 would reduce the potential to create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors to a level that is less than significant. The VMP would not subject any individuals to ERPG exposure level 2 conditions. As a result, this impact would be **less than significant with mitigation**.

Impact HAZ-4: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School (*Less than Significant with Mitigation*)

As shown in Table 3.8-1, a number of schools are located within 0.25 mile of proposed VMP treatment areas. Therefore, VMP activities would occur within proximity to existing schools. Mechanical treatment techniques, as well as some hand labor techniques (e.g., chainsaws), would emit some hazardous emissions (e.g., DPM) from operation of internal combustion engines. In general, these emissions would be similar to the emissions from any type of construction project and would be temporary in any given location. See Section 3.3, "Air Quality," for additional discussion and estimates of criteria pollutant emissions from VMP activities as compared to baseline conditions. Due to the relatively minor and temporary nature of these types of hazardous emissions associated with VMP activities, these techniques would not pose a substantial threat to the health of school students or staff.

As described in Impact HAZ-1, chemical treatment techniques would include the use of spray methods to apply herbicide over larger areas to control vegetation and reduce fire risk. If spray methods were used in close proximity to schools, such that airborne herbicide droplets could drift or inadvertently enter school grounds and thereby expose children and staff to inhalation, this would result in a significant impact. Mitigation Measure HAZ-5 would prohibit the use of herbicides within 0.25 mile of a school. Additionally, this measure would require that the lowest recommended rates of herbicides be used in all instances. Herbicide product labels typically include measures to prevent off-site drift of herbicides and require that herbicide products are not applied in a way to contact people, either directly or through drift. Additionally, Mitigation Measure HAZ-4 would include measures to prevent off-site drift and public exposure to herbicides specifically in the context of the VMP.

Given the above measures, chemical treatment methods involving spraying of herbicides within 0.25 mile of a school would not create a significant hazard. Cut-and-daub chemical application methods would not reasonably create emissions or volatilized/airborne herbicide particles, and thus would not pose such a hazard if conducted in proximity to a school.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-4:

Mitigation Measure HAZ-4: Measures to Avoid or Minimize Adverse Effects on People, Pets, or Other Non-Target Organisms from Use of Herbicides

See text in Impact HAZ-1 above.

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Impact HAZ-1 above.

Conclusion

While several treatment techniques under the VMP could create hazardous emissions and be located within 0.25 mile of a school, the emissions would be relatively minor and temporary and/or would be minimized through implementation of Mitigation Measures HAZ-4 and HAZ-5 and compliance with existing laws and regulations. Therefore, this impact would be **less than significant with mitigation.**

Impact HAZ-5: Be Located on a Site that Is Included on a List of Hazardous Materials Sites Compiled Pursuant to California Government Code Section 65962.5, and as a Result, Create a Significant Hazard to the Public or the Environment *(Less than Significant with Mitigation)*

As indicated in Table 3.8-1**Table 3.8-1.** Public Schools within 0.25 Mile of VMP Treatment Projects

School			Distance to VMP Areas (feet)
Name	**Address**	**Grades**	
East Bay Innovation Academy	3400 Malcolm Avenue	6-12	82.6
Castlemont High	8601 MacArthur Boulevard	8-12	291.8
LPS Oakland R & D Campus	8601 MacArthur Boulevard	9-10	313.6
Castlemont Primary Academy	8711 MacArthur Boulevard	K-5	300.9
Castlemont Junior Academy	8711 MacArthur Boulevard	6-8	308.0
Hillcrest Elementary	30 Marguerite Drive	K-8	0.0
Bay Area Technology	8251 Fontaine Street	6-12	278.1
Rudsdale Continuation	8251 Fontaine Street	10-12	246.0
Independent Study, Sojourner Truth	8251 Fontaine Street	1-12	258.6
Montclair Elementary	1757 Mountain Boulevard	K-5	131.3
Glenview Elementary	4215 La Cresta Avenue	K-5	964.3
Parker Elementary	7929 Ney Avenue	K-5	1,046.0
Grass Valley Elementary	4720 Dunkirk Avenue	K-5	554.9
Chabot Elementary	6686 Chabot Road	K-5	701.3
Conservatory of Vocal/Instrumental Arts	3800 Mountain Boulevard	K-9	811.2
Community School for Creative Education	8755 Fontaine Street	K-4	258.2
Howard Elementary	8755 Fontaine Street	K-5	244.3
Kaiser Elementary	25 South Hill Court	K-5	544.8
Community Day	4917 Mountain Boulevard	9-12	0.0
Oakland Community Day Middle	4917 Mountain Boulevard	7-8	0.0
Francophone Charter School of Oakland	9736 Lawlor Street	K-8	118.5
Carl B. Munck Elementary	11900 Campus Drive	K-5	219.1
Joaquin Miller Elementary	5525 Ascot Drive	K-5	506.4
Montera Middle	5555 Ascot Drive	6-8	516.6
Burckhalter Elementary	3994 Burckhalter Avenue	K-5	329.5
Redwood Heights Elementary	4401 39th Avenue	K-5	150.6

, no VMP treatments are currently proposed to be located on open/active known hazardous materials cleanup sites. Several Liquid Underground Storage Tank (LUST) sites are located on or within proposed VMP treatment areas, but cleanup of these sites has been completed. Hazardous materials contamination generally is contained in soil or groundwater. As such, treatment methods that involve ground-disturbance would have the greatest potential to release contaminants to the environment and expose workers. To the extent that future VMP activities could be located on known active or open hazardous materials sites, **Mitigation Measure HAZ-7 (Review Proximity of Proposed Treatment Sites to Known Hazardous Materials Clean-up Sites and Implement Safety Measures)** would be implemented. This mitigation measure would substantially reduce the potential hazards to workers, the public, and the environment from conducting VMP activities on known hazardous materials sites.

In addition to known hazardous materials cleanup sites, it is also possible for VMP treatment activities to encounter unknown hazardous contaminants, including discarded household hazardous items (e.g., oil, batteries, paint cans, etc.). Implementation of **Mitigation Measure HAZ-8 (Existing Hazardous Materials)** would reduce potential impacts to workers and the public from encountering these types of materials. Additionally, to prevent or minimize potential impacts from ground-disturbing VMP treatment activities (e.g., disking, grading) encountering unknown sources of contaminated soil or groundwater, **Mitigation Measure HAZ-9 (Proper Handling and Disposal of Contaminated Soil and Groundwater)** would be implemented.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-4:

Mitigation Measure HAZ-7: Review Proximity of Proposed Treatment Sites to Known Hazardous Materials Clean-up Sites and Implement Safety Measures

The City of Oakland and/or its contractors shall evaluate the proximity of proposed treatment sites to known hazardous material cleanup sites. This review shall include examination of the planned treatment activity footprint in relation to records of hazardous materials sites in the State Water Resources Control Board's GeoTracker database and the Department of Toxic Substances Control’s EnviroStor database.

If the proposed treatment activity is located on or within 100 feet of a documented hazardous material contamination site, for which cleanup activities have not been completed or successful, the City of Oakland and/or its contractors shall commission a Phase I Environmental Site Assessment to more full characterize the past land uses and potential for soil and/or groundwater contamination to occur at or in close proximity to the site.

If the Phase I Environmental Site Assessment demonstrates a reasonable likelihood that contamination remains within the proposed treatment activity’s area of disturbance, the City of Oakland and/or its contractors shall commission a Phase II Environmental Site Assessment, including soils testing, to characterize the extent of the contamination and develop ways to avoid the contaminated areas during treatment activities. Alternatively, if the Phase I Environmental Site Assessment demonstrates no potential for soil vapor off-gassing of hazardous gases, then non-ground-disturbing treatment methods may be used on the site. The City of Oakland shall follow all recommendations

of the Phase II Environmental Site Assessment and conduct the proposed treatment to avoid areas of contamination, to the extent feasible. In the event that it is not feasible to avoid all areas of contamination, the City of Oakland and/or its contractors shall follow all applicable laws regarding management of hazardous materials and wastes. This includes proper disposal of any contaminated soil in a hazardous waste landfill, and ensuring that workers are provided with adequate personal protective equipment to prevent unsafe exposure.

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

The City and its contractors shall implement the following measures:

- If previously unknown hazardous contaminants, including oil, batteries, or paint cans, are encountered during vegetation management work, City personnel will carefully remove and dispose of hazardous materials at an appropriate hazardous waste disposal facility. In the event that hazardous contaminates are discovered that are beyond the means of the City's disposal capabilities, then the City will contact Alameda County Public Health Department to determine what measures need to be implemented to address the hazardous materials and ensure that the work site is safe for people and the environment.

- City personnel will wear proper protective gear when handling hazardous materials. All contaminated materials will be stored in appropriate hazardous waste containers for transport and disposal at a permitted hazardous waste facility.

Mitigation Measure HAZ-9: Proper Handling and Disposal of Contaminated Soil and Groundwater

Prior to initiating ground-disturbing activities (e.g., disking, grading, etc.), the City of Oakland or its contractors will inspect the soil or groundwater (if readily observable) for the presence of possible contamination. If indicators of contamination (e.g., foul odor, staining or sheen, etc.) are found, the City of Oakland or its contractors will then test the soil or groundwater. If the lab results confirm contamination is present, the soil or groundwater will be treated as hazardous and any contaminated materials will be disposed of at an approved hazardous waste disposal facility. In removing potentially contaminated soil or groundwater, workers will wear protective clothing and equipment to limit their exposure.

Conclusion

Although no VMP treatment activities are currently proposed on known hazardous materials sites, future VMP treatment sites could potentially be located on or in close proximity to known or unknown hazardous materials sites. Implementation of Mitigation Measures HAZ-7 through HAZ-9 would ensure that VMP workers, the public, or the environment are not subjected to a significant hazard from location of treatment activities on hazardous materials sites. Therefore, this impact would be **less than significant with mitigation.**

Impact HAZ-6: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan (*Less than Significant with Mitigation*)

One of the primary goals of the VMP is to reduce wildfire hazard along critical access and egress routes within the City's VHFHSZ. Through the proposed VMP activities, the City of Oakland would reduce wildfire hazards along these critical routes, and thus increase the potential emergency vehicles and personnel to access the VHFHSZ in the event of a fire or other emergency in the area. As such, implementation of the VMP would have a beneficial long-term effect on emergency response and evacuation.

In the short-term, certain VMP activities would have the potential to interfere with an adopted emergency response plan or emergency evacuation plan. As described in Section 3.8.2, many of the roads proposed for treatment in the VMP are also identified evacuation routes in the City of Oakland's General Plan, Safety Element. Operation of heavy mechanical equipment, haul or transport trucks, or chemical spray equipment and vehicles along these roadways during treatment activities could temporarily limit the mobility of emergency response vehicles or cause congestion for residents attempting to evacuate the area. Although full road closures are not anticipated, temporary lane closures may be required for certain VMP activities, which could further hinder emergency response and public vehicle mobility along critical routes. While these effects would not be dissimilar from those potentially caused by any other type of roadway construction project, the impact would be exacerbated if proper traffic management measures are not implemented.

Implementation of **Mitigation Measure TRA-1 (Maintain Traffic Flow)** and **Mitigation Measure TRA-2 (Traffic Control and Public Safety)** would reduce the potential effects of the VMP on emergency response and evacuation by requiring that the City implement traffic management and control measures during applicable activities, including maintaining two-way traffic flow where possible, limiting heavy equipment and haul traffic in residential areas, and implementing measures to guide traffic (e.g., signage and flaggers) and provide safe passage of vehicles. See Section 3.12, "Transportation," for additional discussion of the VMP's potential effects on transportation and traffic.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact HAZ-5:

Mitigation Measure TRA-1: Maintain Traffic Flow

See text in Section 3.12, "Transportation."

Mitigation Measure TRA-2: Traffic Control and Public Safety

See text in Section 3.12, "Transportation."

Conclusion

The VMP would have a largely beneficial effect on emergency response and evacuation, as it would reduce wildfire hazard along critical ingress/egress routes within the City of Oakland's VHFHSZ. Certain VMP treatment activities could temporarily hinder emergency vehicle

movement and public evacuation mobility, but these effects would be minimized through implementation of Mitigation Measures TRA-1 and TRA-2. As a result, this impact would be **less than significant with mitigation.**

3.9 HYDROLOGY AND WATER QUALITY

This section presents the environmental setting, regulatory setting, and potential impacts of the VMP related to hydrology and water quality. The impact analysis describes the methodology used to evaluate significance and then presents the impact evaluation.

3.9.1 Environmental Setting

Climate and Precipitation

The VMP area is located in the San Francisco Bay Hydrologic Region. This hydrologic region occupies parts of 10 counties, extending from southern Santa Clara County north to Tomales Bay in Marin County, and inland to the confluence of the Sacramento and San Joaquin rivers (California Department of Water Resources [DWR] 2009). The eastern boundary follows the crest of the Coast Range, the highest peaks of which are more than 4,000 feet above sea level. Streams in the region flow into the bay estuary or the Pacific Ocean (DWR 2009). The San Francisco Bay estuary is fed by freshwater from the Sacramento and San Joaquin rivers, which interacts with salt water from the ocean.

The climate of the San Francisco Bay region is generally cool and foggy along the coast, with warmer Mediterranean-like weather in the inland valleys (DWR 2009). The Oakland area experiences warm, dry summers with maximum daily temperatures averaging 72 to 75 degrees Fahrenheit (°F), and moderate winters with minimum daily temperatures averaging 45 °F to 47 °F. This area receives an average of 23 inches of precipitation per year (Western Regional Climate Center 2020). The VMP area averages from 5-7 hours of fog per day in summer months with areas closer to the Bay experiencing more fog and areas at higher elevations and farther from the bay being less foggy (USGS 2016). Fog drip can be an important source of water for many ecosystems in the Bay Area and contributes to soil moisture during the dry summer months of June through September (USGS 2020), though it contributes less moisture in the late summer and early fall months of September through November, when the fire risk increases.

Surface Water

Multiple surface water features are located in immediate proximity to the VMP area (see Figure 3.4-2 and Table 3.4-5 in Section 3.4, “Biological Resources”). Significant surface water features include (from North to South): Claremont Creek, Temescal Creek, Shephard Creek, Palo Seco Creek, Sausal Creek, Peralta Creek, Courtland Creek, Lion Creek, Horseshoe Creek, Rifle Range Branch, Arroyo Viejo, Elmhurst Creek, Lake Chabot, and San Leandro Creek. These features drain into the San Francisco Bay, which is located roughly 2 to 5 miles southwest of VMP sites. Of these water bodies, Sausal Creek, San Leandro Creek, Lake Chabot, and San Francisco Bay are listed on the CWA 303(d) list of impaired water body segments for multiple contaminants, including chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, furin compounds, invasive species, mercury, polychlorinated biphenyls (PCBs), and trash (San Francisco Bay RWQCB 2020). **Table 3.9-1** below, provides additional information on 303(d) listed waterbodies in the VMP area and their associated TMDL development status.

Table 3.9-1. 303(d) Listed Waterbodies in the VMP Area

Waterbody	Impairment	TMDL Completed?
Lake Chabot	Chlordane, DDT, Dieldrin, Mercury, PCBs	No
San Leandro Creek	Diazinon, Trash	For Diazinon. Trash being addressed by action other than TMDL.
Sausal Creek	Trash	Addressed by action other than TMDL.
San Francisco Bay, Central	Chlordane, DDT, Dieldrin, Dioxin compounds, Furan compounds, Invasive species, Mercury, PCBs, Selenium, Trash	For Mercury, PCBs, & Selenium

Source: San Francisco Bay RWQCB 2020.

Groundwater

The VMP area is located in the Oakland Hills which serve as a recharge area for the East Bay Plain Subbasin portion of the Santa Clara Valley Groundwater Basin – (2-009.04). The East Bay Plain Subbasin is a northwest trending alluvial plain bounded on the north by San Pablo Bay, on the east by the contact with Franciscan Basement rock, and on the south by the Niles Cone Groundwater Basin (DWR 2003). The East Bay Plain Subbasin extends beneath San Francisco Bay to the west. Historic water levels in the deep aquifer in the basin have varied between 10 and 140 feet below mean sea level since the early 1950s (DWR 2003). The low water level was reached in roughly 1962. Water levels rose about 5 feet per year between 1965 and 1980, and have been rising continuously since then, although at a less rapid rate. As of 2000, water levels were very near surface in all aquifers (DWR 2003).

Flooding

While the VMP area is situated largely in upland areas, small portions of some priority treatment areas are located within FEMA flood hazard zones, including areas around Sausal Creek in Dimond Park, Temescal Creek just upstream of Lake Temescal, and Peralta Creek in Peralta Creek Park.

3.9.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Clean Water Act

The CWA (33 USC Section 1251 et seq.) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The key sections pertaining to water quality regulation for the VMP are CWA Sections 303, 401, 402, and 404.

Section 303(d) — Listing of Impaired Water Bodies

Under CWA Section 303(d), states are required to identify "impaired water bodies" (those not meeting established water quality standards); identify the pollutants causing the impairment; establish priority rankings for waters on the list; develop TMDLs for these waters; and develop a schedule for the development of control plans to improve water quality. A TMDL includes a calculation of the maximum amount of a pollutant that can be present in a waterbody and still meet water quality standards. USEPA then approves the state's recommended list of impaired waters or adds and/or removes waterbodies.

Section 401 – Water Quality Certification

Section 401 of the CWA requires an evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. In California, the SWRCB and its nine RWQCBs issue water quality certifications. Each RWQCB is responsible for implementing Section 401 in compliance with the CWA and its water quality control plan (also known as a Basin Plan). Applicants for a federal license or permit to conduct activities that may result in a discharge to waters of the U.S. (including wetlands or vernal pools) must also obtain a Section 401 water quality certification to ensure that any such discharge will comply with the applicable provisions of the CWA.

Section 402—National Pollution Discharge Elimination Service Permits for Stormwater Discharge

CWA Section 402 regulates stormwater discharges of pollutants to surface waters through the NPDES, which is officially administered by USEPA. In California, USEPA has delegated its authority to the SWRCB, which, in turn, delegates implementation responsibility to the nine RWQCBs, as discussed below in reference to the Porter-Cologne Water Quality Control Act.

The NPDES program provides for both general (those that cover a number of similar or related activities) and individual (activity- or project-specific) permits.

General Permit for Construction Activities: Most projects that disturb 1.0 or more acre(s) of land are required to obtain coverage under SWRCB's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). The general permit requires that the applicant file a public notice of intent to discharge stormwater and prepare and implement a SWPPP. The SWPPP must include a site map and a description of the proposed activities, demonstrate compliance with relevant local ordinances and regulations, and present a list of BMPs that will be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Permittees are further required to monitor construction activities and report compliance to ensure that BMPs are correctly implemented and are effective in controlling the discharge of construction-related pollutants.

Section 404 – Discharges to Waters of the U.S.

Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the U.S., which includes all navigable waters, their tributaries, lakes and ponds, and impoundments of jurisdictional waters, as well as some wetlands adjacent to the aforementioned waters

(33 CFR Section 328.3). Areas typically not considered to be jurisdictional waters include ephemeral features, diffuse stormwater runoff and directional sheet flow over upland, non-tidal drainage and irrigation ditches excavated on dry land, prior converted cropland, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial waterbodies such as swimming pools, vernal pools, water-filled depressions, stormwater control features, groundwater recharge structures, water reuse and wastewater recycling structures, and waste treatment systems (33 CFR Section 328.3). Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of the USACE under the provisions of CWA Section 404. Activities involving placement of fill into jurisdictional waters of the U.S. are regulated by USACE through permit requirements. No USACE permit is effective in the absence of state water quality certification pursuant to Section 401 of CWA.

State Laws, Regulations, and Policies

Porter-Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act, California Water Code Section 13000 et seq. (known as the Porter–Cologne Act), passed in 1969, dovetails with CWA (see discussion of the CWA above). It established SWRCB and divided the state into nine regions, each overseen by an RWQCB. SWRCB is the primary State agency responsible for protecting the quality of the state's surface water and groundwater supplies; however, much of the SWRCB's daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 401, 402, and 303[d]. In general, SWRCB manages water rights and regulates statewide water quality, whereas RWQCBs focus on water quality within their respective regions. The City of Oakland is under the jurisdiction of the SFBRWQCB.

The Porter–Cologne Act requires RWQCBs to develop water quality control plans (also known as basin plans) that designate beneficial uses of California's major surface-water bodies and groundwater basins and establish specific narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Basin plan standards are primarily implemented by regulating waste discharges so that water quality objectives are met. Under the Porter–Cologne Act, basin plans must be updated every 3 years.

The San Francisco Bay Water Quality Control Plan (2017), also known as the Basin Plan, lists the following beneficial uses for waterbodies (or watersheds) in the VMP area, as presented in **Table 3.9-2**.

Table 3.9-2. Beneficial Uses in the Alameda County Watersheds

Creek	AGR	MUN	FRSH	IND	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPAWN	WARM	WILD	REC-1	REC-2	NAV
South Bay Basin (north to south)																	
Claremont Creek													E	E	E	E	
Temescal Creek							E						E	E	E	E	
Sausal Creek and Tributaries Shephard Creek & Palo Seco Creek							E				E	E	E	E	E	E	
Peralta Creek and Tributary Courtland Creek													E	E	E	E	
Lion Creek and Tributary Horseshoe Creek							E						E	E	E	E	
Rifle Range Branch													E	E	E	E	
Arroyo Viejo							E						E	E	E	E	
Lake Chabot		E			E		E					E	E	E	E*	E	
San Leandro Creek (Lower)			E				E			E	E	E	E	E	E	E	

Notes:

E = Existing Beneficial Use: Indicates an existing beneficial use actually attained in the surface or ground water.

AGR = agricultural supply ; MUN= municipal and domestic water supply; FRSH = freshwater replenishment; IND = industrial service supply; COMM = commercial and sport fishing; SHELL = shellfish harvesting; COLD = cold freshwater habitat; EST = estuarine habitat; MAR = marine habitat; MIGR = fish migration; RARE = preservation of rare and endangered species; SPAWN = fish spawning; WARM = warm freshwater habitat; WILD = wildlife habitat; REC-1 = water contact recreation; REC-2= noncontact water recreation; NAV = navigation.

Source: San Francisco Bay RWQCB 2017.

The Basin Plan contains qualitative and quantitative water quality objectives for bacteria, dissolved oxygen, oil and grease, pH, salinity, sediment and suspended material, tastes and odors, temperature, and other criteria to protect beneficial uses. The following key water quality objectives established in the Basin Plan apply to the proposed program. Where multiple water quality objectives existed, the most conservative metric was selected.

- Dissolved oxygen in non-tidal waters: coldwater habitat – 7.0 milligrams per liter (mg/L); warmwater habitat – 5.0 mg/L
- Temperature: The temperature of any cold or warm freshwater habitat shall not be increased by more than 5 degrees Fahrenheit (°F) (2.8 degrees Celsius [°C]) above the natural receiving water temperature
- Turbidity: Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 Nephelometric Turbidity Units (NTU)

- pH: The pH shall not be depressed below 6.5 or raised above 8.5, which encompasses the pH range usually found in waters within the basin; controllable water quality factors shall not cause changes greater than 0.5 unit in normal ambient pH levels

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act, California Water Code Section 10720 et seq. (SGMA), passed in 2014, became law in 2015 and created a legal and policy framework to locally manage groundwater sustainably. SGMA allows local agencies to customize groundwater sustainability plans to their regional economic and environmental conditions and needs, and establish new governance structures, known as Groundwater Sustainability Agencies (GSAs). SGMA requires that a groundwater sustainability plan (GSP) be adopted for high and medium priority groundwater basins in California by 2020 for basins with critical overdraft. Low and very low priority basins are not required to adopt GSPs. GSPs are intended to facilitate the use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results (e.g., chronic lowering of groundwater levels).

The Santa Clara Valley Groundwater Basin – East Bay Plain Subbasin, within which the VMP is located, is designated as a very low priority basin under SGMA (California Department of Water Resources [DWR] 2018). Therefore, a GSP is not required for this basin.

Local Laws, Regulations, and Policies

Applicable local plans, policies, regulations, and ordinances are presented below.

City of Oakland General Plan

The following objectives, policies, and actions from the City of Oakland General Plan Open Space, Conservation, and Recreation Element, Conservation Chapter (City of Oakland 1996) are relevant to the VMP:

Objective CO-5: Water Quality – To minimize the adverse effects of urbanization on Oakland's groundwater, creeks, lakes, and nearshore waters.

> **Policy CO-5.1: Protection of Groundwater Recharge** – Encourage groundwater recharge by protecting large open space areas, maintaining setbacks along creeks and other recharge features, limiting impervious surfaces where appropriate, and retaining natural drainage patterns within newly developing areas.
>
> **Policy CO-5.2: Improvements to Groundwater Quality** – Support efforts to improve groundwater quality, including the use of non-toxic herbicides and fertilizers, the enforcement of anti-litter laws, the clean-up of sites contaminated by toxics, and on-going monitoring by the Alameda County Flood Control and Water Conservation District.
>
> **Policy CO-5.3 Control of Urban Runoff –** Employ a broad range of strategies, compatible with the Alameda Countywide Clean Water Program, to: (a) reduce water pollution associated with stormwater runoff; (b) reduce water pollution associated with hazardous spills, runoff from hazardous material areas, improper disposal of household hazardous wastes, illicit dumping, and marina “live-aboards”; and (c) improve water

quality in Lake Merritt to enhance the lake's aesthetic, recreational, and ecological functions.

Objective CO-6: Surface Waters – To protect the ecology and promote the beneficial uses of Oakland's creeks, lakes, and nearshore waters.

Policy CO-6.1: Creek Management – Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.

City of Oakland Creek Protection Ordinance

The purpose and intent of the City of Oakland's Creek Protection Ordinance (Oakland Municipal Code Chapter 13.16) is as follows:

- Safeguarding and preserving creeks and riparian corridors in a natural state;
- Preserving and enhancing creekside vegetation and wildlife;
- Preventing activities that would contribute significantly to flooding, erosion or sedimentation, or that would destroy riparian areas or would inhibit their restoration;
- Enhancing recreational and beneficial uses of creeks;
- Controlling erosion and sedimentation;
- Protecting drainage facilities; and
- Protecting the public health and safety, and public and private property.

The ordinance includes permitting guidelines for development and construction projects taking place in or near creeks. This includes the clearing of vegetation for wildfire hazard reduction purposes. Vegetation management activities on any creekside property would require a Creek Protection Permit. Creekside properties are defined as properties located within Oakland, as identified by the Watershed Programs Manager, which have a creek or riparian corridor crossing the property and/or are contiguous to a creek or riparian corridor. Creekside properties within the VMP area are shown on Figure 3.4-2 in Section 3.4, "Biological Resources." The intent of the ordinance is to assure that any work done will avoid or limit, to the extent feasible, negative impacts to creeks. The primary measure to minimize impacts to creeks and other water courses in the VMP area is avoidance of work in the vicinity of these features. For vegetation management activities conducted within creekside properties, OFD shall obtain a Creek Protection Permit, as outlined in Oakland Municipal Code Chapter 13.16. A Creek Protection Plan is required for a Creek Protection Permit when the work falls within Categories III and IV as defined in Oakland Municipal Code Section 13.16.130, and the Creek Protection Plan includes BMPs to protect the creek. Category III includes work that may adversely impact the creek, beyond the 20-foot setback from the top of bank of the creek, and is within 100 feet of the centerline of the creek. Category IV includes work that is conducted from the centerline of the creek to the 20-foot setback from the top of bank of the creek.

North Oakland Hill Area Specific Plan

The North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes a vegetation management prescription and specific policies and mitigation measures to reduce erosion and sedimentation within the North Oakland hill area. The approach and goals addressed by these policies and mitigation measures have, in many cases, been incorporated into the City's General Plan and elements of the Draft VMP.

3.9.3 Impact Analysis

Methodology

Potential short-term and long-term impacts to hydrology and water quality were assessed qualitatively, based on the degree to which the VMP activities could result in violations of water quality standards, impairment of beneficial uses, or water quality conditions that could be harmful to aquatic life or human health. Each of these potential impacts is discussed below.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland CEQA Thresholds of Significance, it was determined that the VMP would result in a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- Substantially deplete groundwater supplies or interfere 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 proposed uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area (including through the alteration of the course of a stream or river or through the addition of impervious surfaces) in a manner which would result in substantial erosion, siltation, or flooding, both on- or off- site;
- Result in substantial erosion or siltation;
- Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

- Risk release of pollutants due to project inundation should the project be located in a flood hazard, tsunami, or seiche zone(s);
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;
- Otherwise substantially degrade water quality;
- 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, that would impede or redirect flood flows;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a substantial risk of loss, injury, or death involving flooding;
- Expose people or structures to a substantial risk of loss, injury, or death as a result of inundation by seiche, tsunami, or mudflow; or
- Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect hydrologic resources. [Note: Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek, (b) significantly modifying the natural flow of the water or capacity, (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability, or (d) substantially endangering public or private property or threatening public health or safety.]

Issues Not Evaluated Further

Due to the nature of the VMP, there would be no impacts related to the following significance criteria:

- **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, that would impede or redirect flood flows; or place within a 100-year flood hazard area structures which would impede or redirect flood flows.** The VMP does not propose construction of housing or other structures, or development within a 100-year flood hazard area.
- **Expose people or structures to a substantial risk of loss, injury, or death as a result of inundation by seiche or tsunami.** The VMP does not propose work or construction in areas at risk of seiches or tsunamis.

Environmental Impacts

Impact HYD/WQ-1: Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Water Quality or Conflict with or Obstruct the Implementation of a Water Quality Control Plan or Conflict with the City of Oakland Creek Protection Ordinance through Hand Labor, Herbicide Application, or Mechanical Techniques (*Less than Significant with Mitigation*)

Hand labor and mechanical techniques have the potential to loosen and disturb soils or expose soil through removal of surface litter. Without adequate protection measures in place, such activities could lead to temporary effects on water quality in nearby waterways due to erosion, sedimentation, and siltation. The City would minimize vegetation management within 100 feet of streams, but some vegetation management would still be needed near creeks to reduce fire hazard. A Creek Protection Permit would be required for any projects in creekside parcels. See Table 3.4-4 in Section 3.4, "Biological Resources," for a list of VMP priority projects within creekside parcels. The use of herbicides has the potential to affect water quality through transportation through the air and in runoff (the VMP does not include any direct herbicide treatment within creek corridors or aquatic waterways). Leaks and spills associated with the operation and maintenance of motorized equipment present another potential risk to water quality.

Implementation of the following mitigation measures would reduce the VMP's potential for impacts to water quality. Implementation of **Mitigation Measure HYD/WQ-1 (Work Windows)** would limit vegetation treatment to periods without significant rainfall, limit herbicide use to the dry season, and limit work in waterbodies. Implementation of **Mitigation Measure GEO-1 (Minimize Soil Disturbance)** would limit ground disturbance to the minimum footprint necessary to meet objects, leave stumps intact, and minimize heavy equipment use on steep slopes. Implementation of **Mitigation Measure GEO-2 (Erosion and Sediment Control Measures)** would require the use of erosion and sediment controls. Implementation of **Mitigation Measure HAZ-1 (Vehicle and Equipment Maintenance), Mitigation Measure HAZ-2 (Vehicle and Equipment Fueling), Mitigation Measure HAZ-3 (On-Site Hazardous Materials Management)**, **Mitigation Measure HAZ-5 (Standard Herbicide Use Requirements), Mitigation Measure HAZ-6 (Spill Prevention and Response), and Mitigation Measure HAZ-8 (Existing Hazardous Materials),** would ensuring proper handling and use of herbicides and other hazardous materials, and maintaining vehicles to prevent spills and leaks.

Mitigation Measures

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

The City and its contractors shall implement the following measures:

- Hand pruning and hand removal of vegetation may occur year-round, except when wheeled or tracked equipment needs to access a site by crossing a creek, ponded area, or secondary channel.

- When wheeled or tracked equipment needs to access the site by crossing a creek, ponded area, or secondary channel, this shall occur only when the appropriate permits have been obtained from the City, CDFW, and the RWQCB and only when there is no flow in the creek, or when the width of the wet creek is less than 3 feet (typically June 1 – October 15).

- Vegetation treatment shall not occur within 48 hours of significant rainfall (0.25-inch of rain within a 12-hour period or greater).

- Herbicide applications (if selected as a vegetation management technique) shall only occur between June 15 and November 15, with an extension through December 31 or until the first occurrence of local rainfall greater than 0.5 inch is forecasted within a 24-hour period following planned application events.

- Work shall occur during daylight hours, except in the case of emergency.

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materialsv."

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

See text in Section 3.8, "Hazards and Hazardous Materials."

Conclusion

Hand labor and mechanical techniques have the potential to loosen, disturb, and expose soils which could result in erosion, sedimentation, and siltation. Herbicide application has the

potential to affect water quality through transportation in air or runoff. The use of motorized equipment presents another potential risk to water quality in the form of leaks and spills.

With implementation of Mitigation Measures HYD/WQ-1, GEO-1, GEO-2, HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, and HAZ-8, the VMP would not conflict with the Basin Plan, the City of Oakland's General Plan, or the City of Oakland's Creek Protection Ordinance. Therefore, impacts on water quality would be **less than significant with mitigation.**

Impact HYD/WQ-2: Violate Water Quality Standards or Waste Discharge Requirement or Otherwise Substantially Degrade Water Quality or Conflict with or Obstruct the Implementation of a Water Quality Control Plan or Conflict with the City of Oakland Creek Protection Ordinance through Grazing (*Less than Significant with Mitigation*)

Grazing activities have the potential to denude vegetation, compact soils, and create livestock trails and areas of bare soil which could result in gullies and erosional features that impact water quality. Grazing animals could congregate near water sources and degrade water quality through the accumulation of manure and urine.

Implementation of **Mitigation Measure BIO-5 (Grazing)** would reduce the VMP's potential for impacts to water quality by erosion impacts from grazing by monitoring livestock and rotating grazing areas to ensure over-grazing does not occur, generally excluding livestock from riparian areas, and requiring contractors to provide alternative water sources to avoid livestock concentration and reliance on natural water sources. Implementation of Mitigation Measure GEO-1 (Minimize Soil Disturbance) would limit ground disturbance to the minimum footprint necessary to meet objects, leave stumps intact, and minimize heavy equipment use on steep slopes. Implementation of Mitigation Measure GEO-2 (Erosion and Sediment Control Measures) would require the use of erosion and sediment controls.

Mitigation Measures

Mitigation Measure BIO-5: Grazing (VMP BMP BIO-6)

See text in Section 3.4, "Biological Resources."

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Conclusion

Grazing livestock may denude vegetation, create livestock trails and areas of bare soil, and degrade water sources with their waste. With the implementation of Mitigation Measure BIO-5, which would protect riparian areas and prevent over-grazing, and Mitigation Measures GEO-1

and GEO-2, which would minimize soil disturbance and protect waterways from erosion and sedimentation, this impact would be **less than significant with mitigation**.

Impact HYD/WQ-3: Substantially Alter Existing Drainage Pattern of Site or Area, or Create or Contribute Runoff Water that Exceeds Capacity of Stormwater Systems, or Results in Substantial Erosion or Exposes People or Structures to a Substantial Risk of Loss, Injury, or Death as a Result of Flooding or Inundation by Mudflow (*Less than Significant with Mitigation*)

Implementation of the VMP would involve the use of hand tools, mechanical equipment, herbicide application, and grazing to manage vegetation and reduce fire risks. Leaving large cut trees on the ground and the creation of livestock trails could potentially alter site drainage patterns. As described in Section 2.3.3, "Vegetation Management Standards," of Chapter 2, *Project* Description*,* tree trunks that would be removed, would be chipped and spread on-site and stumps from some trees will be left in the ground to minimize erosion. While VMP activities could decrease the interception of precipitation by trees, shrubs, and grasses, any impact on surface runoff flows, flooding, and mudflow risk would be minimal. As discussed in Impacts HYD/WQ-1 and HYD/WQ-2, these activities have the potential to loosen soil or create areas of bare soil that would be susceptible to erosion.

Implementation of Mitigation Measures BIO-5, GEO-1, GEO-2, HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, HAZ-8, and HYD/WQ-1 would reduce the VMP's potential for resulting in substantial erosion and altering existing drainage patterns and runoff flows. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measures

Mitigation Measure BIO-5: Grazing (revised from VMP BMP BIO-6)

See text in Section 3.4, "Biological Resources."

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-2: Vehicle and Equipment Fueling (VMP BMP GEN-9)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-3: On-Site Hazardous Materials Management (VMP BMP GEN-5)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-5: Standard Herbicide Use Requirements (VMP BMP VEG-2)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-6: Spill Prevention and Response (VMP BMP GEN-7)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HAZ-8: Existing Hazardous Materials (VMP BMP GEN-6)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure HYD/WQ-1: Work Windows (VMP BMP GEN-1)

See text in Impact HYD/WQ-1 above.

Conclusion

While VMP activities have potential for substantial erosion and altering of site drainage patterns and runoff flows, implementation of Mitigation Measures BIO-5, GEO-1, GEO-2, HAZ-1, HAZ-2, HAZ-3, HAZ-5, HAZ-6, HAZ-8, and HYD/WQ-1 would reduce the VMP's effect to **less than significant with mitigation**.

Impact HYD/WQ-4: Substantially Decrease Groundwater Supplies or Interfere with Groundwater Recharge Such That There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level *(Less than Significant)*

VMP activities would include the use of hand tools, motorized equipment, herbicide application, and grazing to manage vegetation and reduce fire risks. Taking into account the BMPs included in the VMP (refer to **Appendix A**, *Draft Vegetation Management Plan,* of this DEIR), in some areas, the removal of vegetation and plant debris would result in greater groundwater recharge due to decreased interception, uptake, and evapotranspiration. While a decrease in shade from removed vegetation could increase soil temperatures and surface water loss from evaporation, chipping and mulching would limit soil moisture declines. In some cases, soils present in portions of the VMP area may experience minor surficial ground compaction due to vegetation removal activities. Such soil compaction could reduce precipitation infiltration potential in these areas. However, the application of chipping and mulching would offset this effect by enhancing infiltration capacity. Reductions in infiltration and deeper groundwater percolation are not anticipated due to vegetation management practices. Additionally, the VMP does not propose use of groundwater supplies or the creation of impervious surfaces that could interfere with groundwater recharge. Therefore, this impact would be **less than significant** and no mitigation is required.

3.10 NOISE AND VIBRATION

This section describes the existing noise environment in the vicinity of the VMP area, presents relevant noise and vibration regulations, identifies sensitive noise and vibration receptors that could be affected by the VMP, and evaluates the noise and vibration impacts of the VMP. Mitigation measures are prescribed to reduce significant noise and vibration impacts. Technical information used in preparing this section is provided in **Appendix F**, *Noise and Vibration*, of this DEIR.

3.10.1 Environmental Setting

Study Area

For the purposes of this noise and vibration analysis, the study area is defined as the area within 100 feet of the VMP treatment areas.

Noise Principles and Descriptors

Noise Background

In the CEQA context, noise can be defined as unwanted sound. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level, or sound intensity. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive, creating the A-weighted decibel (dBA) scale.

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terminology used in this chapter.

- **Decibel (dB)** is a measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude.
- **A-weighted decibel (dBA)** is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Maximum sound level (L_{max})** is the maximum sound level measured during a given measurement period.
- **Minimum sound level (L_{min})** is the minimum sound level measured during a given measurement period.

- **Equivalent sound level (L_{eq})** is the equivalent steady-state sound level that, in a given period, would contain the same acoustical energy as a time-varying sound level during that same period.

- **Day-night sound level (L_{dn})** is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. (typical sleeping hours). This weighting adjustment reflects the elevated sensitivity of individuals to ambient sound during nighttime hours.

- **Community noise equivalent level (CNEL)** is the energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the A-weighted sound levels between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. **Table 3.10-1** presents approximate noise levels for common noise sources, measured adjacent to the source.

Table 3.10-1. Examples of Common Noise Levels

Common Outdoor Activities	Noise Level (dBA)
Jet flyover at 1,000 feet	110
Gas lawnmower at 3 feet	100
Diesel truck at 50 feet traveling 50 miles per hour	90
Noisy urban area, daytime	80
Gas lawnmower at 100 feet, commercial area	70
Heavy traffic at 300 feet	60
Quiet urban area, daytime	50
Quiet urban area, nighttime	40
Quiet suburban area, nighttime	30
Quiet rural area, nighttime	20

Notes: Caltrans = California Department of Transportation; dBA = A-weighted decibel.

Source: Caltrans 2013a, 2013b

Vibration Background

Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum," of many frequencies. The normal frequency range of most groundborne vibrations that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak particle velocity (PPV),

measured in inches per second, or of the vibration level measured with respect to root-mean-square vibration velocity in decibels (VdB), with a reference quantity of 1 micro-inch per second.

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations attenuate much more rapidly than do those characterized by low frequencies, so that in a far-field zone distant from a source, the vibrations with lower frequency amplitudes tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, a ground-to-foundation coupling loss usually results but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces also can be radiated as sound and heard as a low-frequency rumbling noise, known as groundborne noise.

Groundborne vibration is generally limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough groundborne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events or the greater the duration, the more annoying it becomes.

Existing Noise Environment

The major noise sources in Oakland are transportation-related including vehicle traffic on highways and major roads, rail operations including Bay Area Rapid Transit (BART), and aircraft operations at Oakland International Airport (City of Oakland 2005). In the vicinity of the VMP area, the primary sources of noise are Interstate 580, Highway 13, and BART. Many VMP parcels are in or adjacent to parks and single-family residential areas, where common noise sources include equipment used for landscaping and yardwork such as lawnmowers. Similarly, many VMP areas are open spaces or recreational areas that generally have less ambient noise, and no permanent or substantial onsite noise sources. On-site uses in some parks such as Oakland Zoo, Chabot Science Center, sport fields, or amphitheaters constitute additional potential noise source in the VMP area. The City of Oakland Noise Element Update Environmental Noise Background Report (2004) includes noise level information for multiple sites in the vicinity of the VMP area (**Table 3.10-2** and **Table 3.10-3**).

Table 3.10-2. Measured Long-term Noise Levels in VMP Vicinity

Site	Location	Date	Measured Noise Levels		
			Daytime Noise Levels	Nighttime Noise Levels	L_{dn}
LT-2	~20 ft from the centerline of Skyline Pkwy at 7293 Skyline Parkway	8/17/04 to 8/19/04	55 to 68	32 to 58	61-63
LT-4	~87 ft from the centerline of Skyline Parkway at Mott Place	8/17/04 to 8/19/04	52 to 61	42 to 55	57-58

Table 3.10-3. Measured Short-term Noise Levels in VMP Vicinity

Site	Location	Date	Measured Noise Levels		
			L_{max}	L_{min}	L_{eq}
ST-3	At the intersection of Grand View and Gravatt	8/18/2004 11:40 AM	66	39	53
ST-6	~63 ft from the centerline of Shepard Canyon Road at Paso Robles	8/18/2004 2:00 PM	77	41	59
ST-11	~71 ft from the centerline of Golf Links Rd at Dunkirk Ave	8/24/2004 12:40 PM	73	39	58

Sensitive Receptors

According to the City of Oakland's General Plan, sensitive receptors include residences, schools, churches, hospitals, elderly care facilities, hotels, libraries, and certain types of passive recreational open space[8] (City of Oakland 2005). As stated above under Existing Noise Environment, VMP project sites are generally located in the Oakland Hills and border residential areas and open spaces. **Table 3.10-4** includes information on the sensitive receptors closest to the major VMP Treatment Project areas. Smaller parcels, which are not included in the table, often include, or are adjacent to, single-family residences.

[8] Passive recreational areas tend to be largely undeveloped and have no specific designated uses. Passive recreational activities, such as walking, bird watching, and picnicking can be negatively impacted by noise.

Table 3.10-4. Sensitive Receptors Near VMP Treatment Areas

VMP Treatment Project	Sensitive Receptor	Distance in Feet to Nearest Receptor from Project Area (center/edge)
Garber Park	Multiple Residences along Alvarado Road, Evergreen Lane, Siler Place, and Rispin Drive	215 / 0
	Claremont Hotel	1,600 / 600
Grizzly Peak Open Space	Multiple Residences along Tunnel Road, Bay Forest Drive, Buckingham Boulevard, and Westmoorland Drive	290 / 0
North Oakland Sports Field	Residences along Gwin Road, Fairlane Drive, Swainland Road, and Skyline Boulevard	1,100 / 300
Skyline Boulevard	Multiple Single-Family Residences along Skyline Boulevard	30 (from road center) / 0
Shepherd Canyon	Shepherd Canyon Park, Shepherd Canyon Trail, and Montclair Park	0 / 0
	Single-Family Residences along Magellan Drive, Cortereal Avenue, Snake Road, Drake Drive, Zinn Drive, Cortez Court, Bishop Court, Westover Drive, Pelham Place, Scarborough Drive	425 / 0
	First Church of Christ Scientist	2,800 / 350
Dimond Canyon Park	Single-Family Residences along Leimert Boulevard, Monterey Boulevard, Bridgeview Drive, Arden Place, Clemens Road, Oakmore Road, Park Boulevard, Hanly Road, El Centro Avenue, Lyman Road, Canon Avenue, Vista Street	220 / 0
	The Renaissance International School, Corpus Christi School, Glenview Elementary School	415 / 100
	Dimond Branch Oakland Public Library	4,000 / 670
	Zion Lutheran Church, Corpus Christi Church	415 / 85
Joaquin Miller Park	Residences along Joaquin Miller Road, Burdeck Court, Butters Drive, Robinson Drive, Skyline Boulevard, Castle Drive, Waybridge Court, Castle Park Way, Mastlands Drive, Joaquin Miller Court, Woodcrest Circle	1,500 / 0
	Joaquin Miller Park, Chabot Space and Science Center	0 / 0
	A Child's House – Preschool	1,800 / 150
	Church of Jesus Christ of LDS	4,500 / 1,200

VMP Treatment Project	Sensitive Receptor	Distance in Feet to Nearest Receptor from Project Area (center/edge)
Leona Heights Park	Residences along Redwood Road, Geranium Place, Berneves Court, Mountain Boulevard	280 / 0
	East Hills Community Church	1,700 / 330
	Mountain Boulevard Montessori School, Chatham Nursery School, Carl B Munck Elementary School, Merritt College	640 / 5
	Sunrise of Oakland Hills (Assisted Living Facility)	2,100 / 1,350
King Estate Open Space Park	Residences along Greenly Drive, Sterling Drive, McCormick Avenue, Sunkist Drive, 82nd Avenue, El Monte Avenue, Aster Avenue, Ney Avenue, Fontaine Street, Blandon Road, Sarazen Avenue, Castlewood Street, Calandria Avenue, Murillo Avenue, Crest Avenue	550 / 0
	Sojourner Truth School, Charles P. Howard Elementary School	410 / 0
	Bethany Home Care, E.E. Cleveland Manor (Assisted Living Facilities)	2,400 / 750
	United Lutheran Church of Oakland, Center of Hope Community Church, Masjid Al-Islam	1,040 / 10
Knowland Park	Residences along Golf Links Road, Anza Avenue, Burgos Avenue, Sigourney Avenue, Orinda Vista Drive, Royal Oak Road, Elysian Fields Drive, Riviera Court, Pebble Beach Drive, Fox Hills Court, Scotia Avenue, Merlin Court, Cotter Street, Key Court, Caloden Lane, Fallbrook Way, Malcolm Avenue, Elvessa Street, Ettrick Street, Lochard Street, Cameron Avenue, Snowdown Avenue, Edgemont Way, Maggiora Drive, Hellman Street, Stella Street, Mark Street, Hood Street, 106th Avenue, Sheldon Street, Broadmoor View, Stanley Avenue	920 / 0
	St. Paschal Baylon Catholic Church, Northern Light School, Grass Valley Elementary School, BJ's Daycare Center	2,800 / 210
	Oakland Zoo, Knowland Park	0 / 0
	Sunny Care Home, Bethany Home Care, D'Nalor Care Homes (Assisted Living Facilities)	3,535 / 120
	Harris Motel, Commodore Hotel, Premier Inn & Suites, Starlite Motel, Welcome Inn, Crown Lodge Motel, Travis Lodge Motel 16	5,800 / 1,350

VMP Treatment Project	Sensitive Receptor	Distance in Feet to Nearest Receptor from Project Area (center/edge)
Lake Chabot Golf Course	Residences along Sun Valley Drive, Golf Links Road, Turner Avenue, Lochard Street	1,200 / 10
	East Bay Bible Church	2,650 / 1,325
	Sheffield Village Open Space	1,100 / 0
Sheffield Village Open Space	Residences along Cranford Way, Revere Avenue, Marlow Drive, Malcolm Avenue, Broadmoor View, Daniels Drive, Sylvan Circle, Lochard Street	725 / 0
	East Bay Innovation Academy	3,650 / 10
	Fairhaven Bible Chapel, Creekside Community Church	2,580 / 650
	Dunsmuir Hellen Historic Estate, Lake Chabot Golf Course	1,100 / 0
	D'Nalor Care Homes	5,550 / 1,890

3.10.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies for construction-related noise and vibration apply to the VMP. However, the Federal Transit Administration (FTA) *Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment* state that, for evaluating daytime construction noise impacts in outdoor areas, a noise threshold of 90 dBA L_{eq} and 100 dBA L_{eq} should be used for residential and commercial/industrial areas, respectively (FTA 2018).

For construction vibration impacts, the FTA guidelines use an annoyance threshold of 80 VdB for infrequent events (fewer than 30 vibration events per day) and a damage threshold of 0.12 inch per second (in/sec) PPV for buildings susceptible to vibration damage (FTA 2018).

State Laws, Regulations, and Policies

California requires each local government entity to implement a noise element as part of its general plan. California Administrative Code, Title 4, presents guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The state land use compatibility guidelines are listed in **Table 3.10-5**.

Local Laws, Regulations, and Policies

City of Oakland General Plan

The City of Oakland General Plan Noise Element contains the following goals and policies that may be relevant to the VMP (City of Oakland 2005):

Goal: To protect Oakland's quality of life and the physical and mental well-being of residents and others in the City by reducing the community's exposure to noise

> **Policy 2:** Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources.
>
> Land use compatibility noise standards are listed in Figure 6 of the General Plan Noise Element, which include:
>
> - Normally acceptable noise standard of 60 dB Ldn or CNEL for residential land uses.
> - Normally acceptable noise standard of 65 dB Ldn or CNEL for neighborhood parks.

Table 3.10-5. State Land Use Compatibility Standards for Community Noise Environment

Land Use Category	Community Noise Exposure - L_{dn} or CNEL (dB)						
	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Homes							
Residential – Multi-Family							
Transient Lodging – Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arenas, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable	New construction or development generally should not be undertaken.

Notes: CNEL = community noise equivalent level; dB = decibel; L_{dn} = day-night sound level.

Source: California Governor's Office of Planning and Research 2017

City of Oakland Noise Ordinance

The City of Oakland Noise Ordinance contains the following laws and standards that may be relevant to the VMP (City of Oakland 2020a):

8.18.010 – Excessive and annoying noises prohibited.

A. It is unlawful for any person to create or allow to be created any excessive or annoying noise as defined herein. Any violation of the regulations specified herein shall be punishable as an infraction.

B. Definitions.

"Annoying noise" means noise with a repetitive pattern, shrill frequencies, and/or static-like sounds, including loud music and noise attributable to, but not limited to, leaf blowers, alarms, engines, barking dogs, and other animals.

"Excessive noise" means any unnecessary noise which persists for ten minutes or more; such period of noise need not be witnessed by enforcement personnel if the occupants of two or more separate housing or commercial units certify that they have experienced such period of noise and describe with particularity the source.

C. Excessive and Annoying Noises a Nuisance. The following acts, and the causing or permitting thereof, shall be considered disturbing the peace and shall constitute an infraction.

9. Domestic Power Tools, Machinery. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool between nine p.m. and six a.m. so as to create a noise disturbance across a real property line or at any time to violate the applicable noise provisions of the Oakland Planning Code

10. Sensitive Uses. Creation of any noise within or adjacent to a hospital or medical care facility, nursing home, school, court, day care, church, or similar facility, so as to interfere with the functions of such activity

8.18.020 – Persistent noises a nuisance. The persistent maintenance or emission of any noise or sound produced by human, animal or mechanical means, between the hours of nine p.m. and seven a.m. next ensuing, which, by reason of its raucous or nerve-racking nature, shall disturb the peace or comfort, or be injurious to the health of any person shall constitute a nuisance.

Failure to comply with the following provisions shall constitute a nuisance.

A. All construction equipment powered by internal combustion engines shall be properly muffled and maintained.

B. Unnecessary idling of internal combustion engines is prohibited.

C. All stationery noise-generating construction equipment such as tree grinders and air compressors are to be located as far as is practical from existing residences.

D. Quiet construction equipment, particularly air compressors, are to be selected whenever possible.

E. Use of pile drivers and jack hammers shall be prohibited on Sundays and holidays, except for emergencies and as approved in advance by the Building Official.

City of Oakland Planning Code

The City of Oakland Planning Code contains laws and standards that may be relevant to the VMP, in particular Section 17.120.050, Noise, and Section 17.120.060, Vibration. In addition, Section 17.120.04 from the City's Planning Code (provided in this section as **Table 3.10-6**) establishes allowable noise level standards (City of Oakland 2020b).

17.120.050 – Noise.

G. Temporary Construction or Demolition Which Exceed the Following Noise Level Standards.

1. The daytime noise level received by any Residential, Commercial, or Industrial land use which is produced by any nonscheduled, intermittent, short-term construction or demolition operation (less than ten (10) days) or by any repetitively scheduled and relatively long-term construction or demolition operation (ten (10) days or more) shall not exceed the maximum allowable receiving noise levels described in Table 17.120.04 [Table 3.10-6 of the VMP DEIR].

Table 3.10-6. Maximum Allowable Receiving Noise Level Standards*

	Daily 7 a.m. to 7 p.m.	**Weekends 9 a.m. to 8 p.m.**
Short-Term Operation		
Residential	80 dBA	65 dBA
Commercial, Industrial	85 dBA	70 dBA
Long-Term Operation		
Residential	65 dBA	55 dBA
Commercial, Industrial	70 dBA	60 dBA

* Receiving noise levels are measured at a position or positions at any point on the receiver's property (Section 17.150.050[F]).

Note: dBA = A-weighted decibel.

Source: Table 17.120.04 in Section 17.120.050, Noise, of the City of Oakland Planning Code (City of Oakland 2020b).

17.120.060 – Vibration. Ground vibration caused by motor vehicles, trains, and temporary construction or demolition work is exempted from this standard.

Airport Land Use Compatibility Plan

The VMP does not fall within any Airport Influence Areas or CNEL contours described in any of Alameda County's airport land use compatibility plans. At the nearest point, VMP sites are 3.3 miles east of Oakland International Airport, 4.8 miles north of Hayward Executive Airport, and more than 14 miles from both San Francisco International Airport and Livermore Municipal Airport.

3.10.3 Impact Analysis

Methodology

Noise Analysis

Noise sources from VMP treatment activities would include various pieces of heavy machinery and other noisy equipment (e.g., chippers, grinders, chainsaws). Impacts from activities that use heavy machinery and loud equipment are evaluated quantitatively in this analysis, while those that do not involve the use of these noise sources are evaluated qualitatively.

To establish an estimate of noise levels, FTA recommends that the noisiest two pieces of equipment be used to analyze the anticipated noise levels at sensitive receptors, assuming the following:

- full power operation for a full 1 hour,
- no obstructions to the noise travel paths,
- typical noise levels from construction equipment, and
- both pieces of equipment operate at the center of the work area.

Using these assumptions, the noise levels at specific distances can be obtained using the following equation:

$$L_{eq}(equip) = EL_{50ft} - 20log_{10}(D/50)$$

Where:

L_{eq} (equip) = the noise emission level at the receiver at distance D over 1 hour

EL_{50ft} = noise emission level of a particular piece of equipment at a reference distance of 50 feet

D = the distance from the receiver to the piece of equipment, in feet

To add the two noisiest pieces of equipment together, the following equation applies:

$$L_{total} = 10\ log_{10}(10^{\frac{L1}{10}} + 10^{\frac{L2}{10}})$$

Where:

L_{total} = the noise emission level of two pieces of equipment combined

L_1 = the noise emission level of equipment type 1

L_2 = the noise emission level of equipment type 2

These equations were used to compare VMP maintenance activities to the noise emission limits described in the City Planning Code. The following assumptions were used to evaluate noise effects of VMP maintenance activities:

- While the above calculations apply to VMP treatment equipment, truck traffic to and from VMP treatment sites could generate additional noise impacts for residences and commercial establishments located along haul routes.
- Using typical equipment noise emission levels from Table 9.1 of the Federal Highway Administration's (FHWA's) *Construction Noise Handbook* (FHWA 2020) and Table 3.9-3 of the Marin Municipal Water District's (MMWD's) *Draft Program Environmental Impact Report for the Biodiversity, Fire, and Fuels Integrated Plan* (MMWD 2019), the noisiest pieces of equipment used would be a chainsaw (during hand labor treatments) and an excavator and chipper (during mechanical treatments). Each of these pieces of equipment produces a similar noise level (85 dBA at 50 feet).
- Using the equations described above, the estimated distance between hand labor sites and the nearest sensitive receptors would need to be at least 89 feet to meet the City's short-term operation weekday noise level threshold of 80 dBA. For mechanical treatment sites, the estimated distance to meet this threshold would be 126 feet.
- It was assumed that most work would take no longer than 1-5 days at any one maintenance site.

Vibration Analysis

Construction activity associated with the operation of heavy equipment may generate localized groundborne vibration and noise. Vibration from ground-disturbing construction activity is typically below the threshold of perception when the activity is more than 50 feet from the receiver.

Potential vibration impacts from VMP maintenance activities were evaluated qualitatively for the following reasons:

- No pieces of equipment, such as bulldozers, vibratory rollers, and pile drivers, that are major sources of groundborne vibration would be used during VMP treatment activities.
- The City Planning Code exempts motor vehicles and temporary construction and demolition activities from the vibration standard.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and the City of Oakland *CEQA Thresholds of Significance Guidelines*, the VMP would have a significant impact related to noise if it would meet any of the following conditions:

- Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code section 17.120.050) regarding construction noise, except if an acoustical analysis is performed that identifies recommended measures to reduce potential impacts;
- Generate noise in violation of the City of Oakland nuisance standards (Oakland Municipal Code section 8.18.020) regarding persistent construction-related noise;
- Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code section 17.120.050) regarding operational noise;
- Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3 dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project);
- Expose persons to interior Ldn or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories, and long-term care facilities (and may be extended by local legislative action to include single-family dwellings) per California Noise Insulation Standards (Cal. Code Regs. Part 2, Title 24);
- Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval;
- Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of OSHA);
- Generate a substantial temporary, periodic, or permanent increase in ambient noise levels in the vicinity of VMP treatment areas in excess of standards established in the City of Oakland General Plan or noise ordinance or in the applicable standards of other agencies;
- During either project construction or project operation expose persons to or generate groundborne vibration that exceeds the criteria established by the FTA; or
- Be located within the vicinity of a private airstrip or an airport land use plan area, or, where such a plan has not been adopted, be within 2 miles of a public airport or public-use airport, such that people residing or working in the VMP treatment area are exposed to excessive noise levels.

Issues Not Evaluated Further

Due to the nature of the VMP, there would be no impacts related to the following significance criteria for the reasons described below:

- **Generate Substantial Permanent Increase in Ambient Noise Levels.** VMP treatments would be temporary at any given location, would not involve the installation of any stationary noise sources, and therefore, would not generate a permanent increase in ambient noise levels.

- **Be Located within the Vicinity of a Private Airstrip or Airport Land Use Plan, or within 2 Miles of an Airport Such that People Working or Residing in the VMP Treatment Area Are Exposed to Excessive Noise Levels.** The VMP area does not fall within any Airport Influence Areas or CNEL contours described in any of Alameda County's airport land use compatibility plans. There are no public airports or private airstrips within 2 miles of any VMP treatment areas.

Environmental Impacts

Impact NOI-1: Generate Substantial Temporary or Periodic Increase in Ambient Noise Levels; or Generate Noise in Violation of the City of Oakland Municipal Code, in Excess of General Plan Standards, California Noise Insulation Standards, or Applicable Standards Established by a Regulatory Agency (*Significant and Unavoidable*)

Noise levels from VMP maintenance activities would be caused primarily by the various treatment activities themselves. Mechanical treatments would involve the use of motorized equipment such as excavators, chippers, masticators, and mowing equipment (see Table 2-6 in Chapter 2, *Project* Description). Hand labor treatments largely involve the use of hand tools such as chainsaws. In other instances, most of the resulting noise would be generated by trucks and vehicles transporting equipment and workers to and from the site. Grazing activities would involve noise from trucks delivering livestock, along with sounds from the animals themselves. Herbicide treatments would involve the use of backpack sprayers, which are relatively quiet.

VMP maintenance activities are operational in nature because they would be recurring throughout the VMP area over the entire period of plan approval. However, noise analysis of operational impacts typically assumes that the sound being evaluated is continuous and generated over an extended period at a given location (e.g., traffic, HVAC equipment). Analysis of construction noise levels, in contrast, assumes that the generating source is intermittent and temporary (e.g., daily use of construction equipment for a limited number of days, weeks, or months). The assumptions for construction noise more accurately explain the nature of noise levels generated by VMP maintenance activities because VMP activities would be of short duration (1-5 days) in any given area. Therefore, this analysis relies on the City's significance thresholds specified in Oakland Planning Code Section 17.120.050(G)(1) for "daytime noise levels received by any Residential, Commercial, or Industrial land use which is produced by any nonscheduled, intermittent, short-term construction or demolition operation (less than ten (10) days)."

Grazing and Herbicide Treatments

Noise from grazing activities would initially involve temporary noise from trucks delivering the livestock and, during grazing activities, sounds generated by livestock (i.e., goats). Electric fencing would be powered by small batteries and would not be anticipated to be an additional noise source during grazing activities. Livestock noise would have a minimal impact on ambient noise levels since grazing at any given location is temporary and infrequent. Grazing animals are anticipated to generate noise of about 35 dBA, a very low noise level (Weeks 2008). Herbicide application would be done using backpack sprayers and would not be a major noise source. At any given sensitive receptor, noise impacts from herbicide application and delivery of livestock to treatment areas would be brief and infrequent. Therefore, the impact from grazing and herbicide treatments would be less than significant and no mitigation is required.

Hand Labor Treatments

Hand labor treatments largely involve the use of hand tools that would not be a major source of noise. Therefore, for this treatment type, only one piece of equipment was modeled. Quantitative analysis (Appendix F) shows that chainsaws produce a noise level of 85 dBA at 50 feet and would exceed the City of Oakland's 80 dBA weekday daytime threshold at a distance of 89 feet. Due to the nature and purpose of the VMP, some hand labor treatment work would necessarily take place immediately adjacent to structures, including sensitive receptors. Therefore, the noise levels at these closest receptors (i.e., less than 90 feet from treatment locations) would exceed the City's threshold, and the impact from hand labor treatments would be potentially significant. Implementation of **Mitigation Measures NOI-1 (Limit Work Near Sensitive Receptors)** and **NOI-2 (Notify Sensitive Receptors Near Treatment Areas)** would reduce the impact by limiting the frequency and duration of chainsaw use within 90 feet of sensitive receptors and by notifying sensitive receptors at least one week prior to commencement of treatment work. However, even with these measures, the use of chainsaws would still exceed the City of Oakland's thresholds set by Section 17.120.050 at the closest sensitive receptors.

Additional mitigation measures would be required to reduce the noise levels at the closest sensitive receptors. Temporary noise barriers could be installed between sensitive receptors and treatment areas; however, hand labor treatments are short-term activities that take place over periods of a few days in any given location, and the cost and time to install barriers would be prohibitive for the brief period of use. As indicated in Section 17.120.050 of the City's Noise Ordinance, an acoustical analysis could be conducted to identify additional acoustical engineering measures to reduce noise levels; however, as with the temporary barriers, the cost and time to conduct such an analysis would be prohibitive and impractical for each specific treatment area. For these reasons, the additional measures that could further reduce the significant impact to a less-than-significant level are infeasible. The available, feasible mitigation measures will mitigate the impact, but not to a less-than-significant level. Therefore, the impact remains significant and unavoidable.

Mechanical Treatments

Mechanical treatments involve the use of motorized equipment (see Table 2-6 in Chapter 2, *Project* Description) such as excavators, chippers, masticators, and mowing equipment. The two loudest pieces of equipment (excavator and chipper) produce a combined noise level of 88 dBA

at 50 feet and exceed the City's 80 dBA weekday daytime threshold at a distance of 126 feet. Due to the nature and purpose of the VMP, mechanical treatment work would necessarily take place immediately adjacent to structures including sensitive receptors. Therefore, the impact from mechanical treatments would be significant and unavoidable. Implementation of Mitigation Measures NOI-1 and NOI-2 would reduce the impact by limiting frequency and duration of excavator and chipper use within 130 feet of sensitive receptors and by notifying sensitive receptors at least one week prior to commencement of treatment work. However, even with these measures the use of chainsaws would still exceed the City of Oakland's thresholds set by Section 17.120.050 and the measures will not mitigate the impact, but not to a less-than-significant level. Therefore, the impact remains significant and unavoidable.

Mitigation Measures

Mitigation Measure NOI-1: Limit Work Near Sensitive Receptors

To reduce noise levels below the City's 80 dBA weekday daytime threshold, in areas within 90 feet of sensitive receptors, minimize the frequency and duration of chainsaw use during hand labor treatment activities. In areas within 130 feet of sensitive receptors, minimize the use of mechanical treatments (excavator, chipper).

Mitigation Measure NOI-2: Notify Sensitive Receptors Near Treatment Areas

Notify sensitive receptors located within 150 feet of treatment areas at least one week prior to commencement of treatment work.

Conclusion

Mechanical treatment activities and the use of chainsaws during hand labor treatments have the potential to expose sensitive receptors to noise levels above the City's daytime weekday threshold of 80 dBA. Work near individual sensitive receptors would be temporary and infrequent. Implementation of Mitigation Measures NOI-1 and NOI-2 would limit the frequency and duration of noise-producing activities near sensitive receptors and provide receptors advance notification of work. While implementation of Mitigation Measures NOI-1 and NOI-2 would help minimize noise impacts, the use of noise-producing equipment in close proximity to residences and other sensitive receptors may be necessary in order to reduce fire risk at those receptors and in adjacent VMP treatment areas.

There is no additional feasible mitigation that could be implemented to decrease noise levels at receptors. The use of temporary sound barriers between construction activity and the sensitive receptors is a common construction-related noise mitigation measure. However, this strategy is not feasible to implement for VMP management activities because of the location, nature, and pace of the treatment activities. Installing temporary sound barriers in the VMP area would often be a hazard to workers, the public, and nearby structures or buildings because of the hilly, vegetated, and undeveloped terrain, and sound barriers could inhibit wildlife movement in the area. Establishing a distance from residences within which noise-generating treatments or hand-operated power tools and heavy equipment would be prohibited is another potential mitigation strategy. However, prohibiting or reducing the effectiveness of treatments near residences would prevent the City from accomplishing the primary objective of the VMP. Therefore, these potential mitigation strategies are not feasible. For the reasons described above, even with

implementation of Mitigation Measures NOI-1 and NOI-2, temporary increases in ambient noise levels at VMP treatment areas would be **significant and unavoidable.**

Impact NOI-2: Generate Groundborne Vibration or Groundborne Vibration Levels that Exceed FTA Criteria (*Less than Significant*)

VMP treatment activities would involve the use of equipment including trucks used for hauling away material or transporting equipment and livestock that may generate groundborne vibration. At any given sensitive receptor, groundborne vibration from equipment and trucks hauling away material or transporting equipment and livestock, would be limited in duration and infrequent. Section 17.120.060 of the City of Oakland Planning Code exempts motor vehicles and temporary construction and demolition activities from the vibration standard. Therefore, the generation of groundborne vibration from VMP activities would be **less than significant** and no mitigation is required.

3.11 RECREATION

This section presents an overview of recreational resources adjacent to the VMP treatment areas and elsewhere within the VMP area. This section also summarizes regulations and policies related to recreation and evaluates the potential impacts of the VMP on recreational resources.

3.11.1 Environmental Setting

The VMP area includes multiple parks and open spaces areas, as shown in Figure 2-2. **Table 3.11-1** summarizes recreational features and proposed vegetation management activities at each City park and open space area.

Table 3.11-1. Parks and Open Spaces in the VMP Area

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
Garber Park	Claremont Hills	14.3-acre wildland park with several miles of hiking trails, including a one-mile self-guided hike. Garber Park is known for its stands of big leaf maple, California buckeyes, and coast live oak woodland habitat.	Maintain vegetation along adjacent roads and near trailheads/entry points Mange vegetation within 10 feet of south and east property boundary line Remove eucalyptus trees from two locations along southern park boundary
Dimond Canyon Park	Oakmore	74.7-acre park situated along Sausal Creek connects the Dimond, Glenview, Oakmore, Montclair, and Piedmont Pines neighborhoods. The Park is known for its lush forest of oaks, buckeyes, willows, bay laurels, and redwoods. This park has approximately 3 miles of hiking trails, a public pool, and a playground.	Mange vegetation along adjacent roads and near trailheads/entry points Manage vegetation within 10 feet of property boundary line where park abuts residential structures Manage vegetation in the area between the parking lot located east of the pool and adjacent residential structures
Shepherd Canyon Park	Shepherd Canyon	57.9-acre park situated along Shepherd Creek in Shepherd Canyon with approximately 0.5 miles of hiking and biking trails in the upper portion of Sausal Creek watershed.	Manage vegetation within 100 feet of structures and within 150 feet of access gate Manage vegetation along roads Implement brush and tree thinning measures in areas exhibiting extreme fire behavior and within 300 feet of structures Manage vegetation via grazing throughout the park

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
Leona Heights Park	Leona Heights	42.3-acre park with the only old growth redwood in the East Bay. Much of this park is inaccessible due to steep terrain.	Manage vegetation within 100 feet of structures, 300 feet of ridgelines, and within the current 9-acre management area Manage vegetation along adjacent roads Implement brush and tree thinning measures in areas exhibiting extreme fire behavior and within 300 feet of structures
Beaconsfield Canyon	Piedmont Pines	4.3-acre park with 0.1 mile of multi-use trails	Manage vegetation within 100 feet of structures Implement brush and tree thinning measures in areas exhibiting extreme fire behavior and within 300 feet of structures
North Oakland Regional Sports Field	Hiller Highlands	53.6-acre property south of the Caldecott Tunnel with hiking trails and sports fields.	Manage vegetation within 30 feet of the dirt access roads, 300 feet of ridgelines, 150 feet of the access gate and within the existing managed area north of the ball fields and parking areas. Implement thinning in the eucalyptus stand Remove eucalyptus trees and other highly flammable and invasive plants from oak woodland communities

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
Grizzly Peak Open Space	Claremont Hills	64.5-acre open space area.	▪ Manage vegetation within 100 feet of structures, 300 feet of ridgelines, and 30 feet of Tunnel Road and Bay Forest Drive ▪ Implement brush and tree thinning recommendations in areas exhibit extreme fire behavior and within 300 feet of structures ▪ Remove eucalyptus tree and other highly flammable and invasive plants from oak woodlands ▪ Manage vegetation via grazing through the property
Sheffield Village Open Space	Chabot Park	455.4-acre area that includes the Lake Chabot Golf Course and historic Dunsmuir Estate.	▪ Manage vegetation within 100 feet of structures including the Dunsmuir Estates portion of the property and within 150 feet of park access gates ▪ Manage vegetation within 300 feet of structures that exhibit extreme fire behavior ▪ Manage vegetation via grazing throughout the remainder of the park

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
Knowland Park and Arboretum	Grass Valley	473.5-acre property that includes the Oakland Zoo and open space area with hiking trails.	▪ Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 300 feet of ridgelines ▪ Manage vegetation along adjacent roads ▪ Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior ▪ Manage vegetation within 100 feet of on-site structures in the zoo portion of the property and within 100 feet of the zoo/open space interface ▪ Manage vegetation via grazing through the park
Joaquin Miller Park	Piedmont Pines	454.9-acre park that includes hiking and biking trails, parking areas, picnic areas, the Woodminster Amphitheater, a dog park, a nursery, and several other structures (e.g., Community Center, Ranger Station, the historic Joaquin Miller house, Sequoia Lodge, Sequoia Arena, and the Metropolitan Horseman's Association Clubhouse).	▪ Manage vegetation within 100 feet of on and off-site structures, within 300 feet of ridgelines, within 150 feet of park access gates and within 30 feet of known human congregation/activity areas along Skyline Boulevard and the top of Woodside Glen Court. ▪ Manage vegetation along adjacent roads ▪ Implement brush and tree thinning measures in areas exhibiting extreme fire behavior and within 300 feet of structures ▪ Manage vegetation via grazing in flashy flue areas

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
King Estate Open Space Park	Eastmont Hills	81.3-acre open space parcel with hiking trails and known for native grasses and wildflowers.	▪ Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 30 feet of Fontaine Street and Crest Avenue ▪ Manage vegetation via grazing through the park
Tunnel Road Open Space	Claremont Hills	4-acre open space area along Tunnel Road, west of State Route 24. Includes the Oakland Hills Fire Memorial.	▪ Manage vegetation via grazing throughout the property
Marjorie Saunders Park	Shepherd Canyon	3.6-acre park along Ascot Drive, southeast of Shepherd Park.	▪ Manage vegetation within 100 feet of structures ▪ Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures
Oak Knoll	Oak Knoll	15.7-acre property northeast of Mountain Boulevard and south of Keller Avenue.	▪ Manage vegetation within 100 feet of structures ▪ Manage vegetation via grazing through the park
Blue Rock Court	Caballo Hills	15.4-acre area located north of I-580, northwest of Blue Rock Court.	▪ Manage vegetation within 100 feet of structures and within 30 feet of fire access road along southern property edge ▪ Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures ▪ Implement thinning recommendations in the property's eucalyptus stand

City Parks/ Open Space	Community or Neighborhood	Recreational Features	Proposed VMP activities
City Stables	Caballo Hills	7.4-acre property located along Skyline Boulevard that offers activities for inner-city youth including horseback riding, arts and crafts, and sustainable agriculture.	This property is currently leased to a private contractor who is responsible for vegetation management activities.
Leona Street	Leona Heights	1.9-acre open space area that is a road extension at the east end of Leona Street.	▪ Manage vegetation within 100 feet of structures
McDonnel Avenue	Leona Heights	1.1-acre open space area that is the road extension at the east end of McDonnel Avenue	▪ Manage vegetation within 100 feet of structures

3.11.2 Regulatory Setting

No federal, state, or regional laws or regulations apply to recreational resources within the VMP area.

Local Laws, Regulations, and Policies

City of Oakland General Plan – Open Space, Conservation, and Recreation Element, Open Space Chapter

Applicable goals, objectives, and policies from the City of Oakland General Plan (City of Oakland 1996) Open Space, Conservation, and Recreation Element, Open Space Chapter that are relevant to the VMP include the following:

- **Objective OS-1:** To conserve and appropriately manage undeveloped areas in Oakland which have high natural resource value, scenic value, or natural hazards which preclude safe development.
    - **Policy OS-1.1:** Conserve existing City and Regional Parks characterized by steep slopes, large groundwater recharge areas, native plant and animal communities, extreme fire hazards, or similar conditions. These areas are included in Figure 4 as Potential Resource Conservation Areas. Manage such areas to protect public health and safety and conserve natural resources.
    - **Objective OS-2:** To maintain an urban park, schoolyard, and garden system which provides open space for outdoor recreation, psychological and physical well-being, and relief from the urban environment.

3.11.3 Impact Analysis

Methodology

This section describes the VMP's potential impacts on recreation. Impacts were evaluated qualitatively, based on the potential for the VMP to disrupt access to and use of existing recreational facilities. Generally, VMP treatment activities may result in a short-term loss of recreational opportunities by disrupting use of or access to recreation areas or facilities. A long-term effect could occur if a recreational opportunity were eliminated as a result of long-term maintenance activities.

Secondary effects on recreational opportunities due to temporary disturbances associated with proposed vegetation management activities (e.g., construction noise, dust and air pollutant emissions, and traffic) are described in other sections of this DEIR. Please refer to Section 3.2, "Aesthetics," for a discussion of the visual changes in the landscape from vegetation management activities; Section 3.3, "Air Quality," for discussion of the VMP's emissions of air pollutants; Section 3.10, "Noise and Vibration," for discussion of the VMP's construction noise effects; and Section 3.12, "Transportation," for discussion of the VMP's temporary effects on traffic flow.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines and City of Oakland CEQA Thresholds of Significance, the VMP would result in a significant impact on recreation if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- In addition, for the purposes of this analysis, the VMP would result in a significant impact on recreational resources if it would:
- Result in the loss of available public recreational opportunities.

Issues Not Evaluated Further

The following significance criterion is not discussed further:

- Include Recreational Facilities or Require the Construction or Expansion of Recreation Facilities Which Might Have an Adverse Physical Effect on the Environment. While some vegetation treatment activities would occur at recreational areas throughout Oakland, the VMP would not involve construction or expansion of recreational facilities that could have a physical adverse effect on the environment.

Environmental Impacts

Impact REC-1: Increased Use of Recreational Facilities Such that Substantial Physical Deterioration Would Occur (*Less than Significant*)

Various treatment activities would occur at City parks or near public trails, which may require temporary closure of these facilities. Most vegetation management activities would not require any trail closures and/or most trail closures could be avoided through the installation of temporary signage to alert recreational users of work and spotting. However, some trail closures may be needed within the following parks/open space areas depending on the treatment techniques employed: Dimond Canyon Park, Garber Park, Joaquin Miller Park, King Estate Open Space Park, Knowland Park and Arboretum, North Oakland Sports Field, Sheffield Village Open Space, and Shepherd Canyon Park. For example, brush and tree thinning along trails in Shepherd Canyon Park and Joaquin Miller Park, eucalyptus removal near trails in Garber Park and North Oakland Regional Sports Field, and vegetation management activities near structures in Joaquin Miller Park, Knowland Park and Arboretum, and Sheffield Village Open Space would require temporary trail closures. It should be noted that vegetation management activities would not require the complete closure of City parks or open space areas. In addition, trails may be temporarily closed to provide access for maintenance crews to treatment sites. Such closures would be localized and temporary, typically between 1 to 5 days. However, at the North

Oakland Regional Sports Field, proposed treatments may require temporary closure of the dirt access road/trail for 2 to 4 weeks. While it is possible that these temporary closures could temporarily increase use of other recreational facilities in Oakland, the projects conducted under the VMP would not necessarily occur simultaneously but rather would be phased and prioritized over a 10-year timeframe. In addition, due to the number of City parks/open space areas and other recreational facilities, the VMP would not substantially increase the demand of other recreational facilities such that substantial deterioration would occur.

Conclusion

For the reasons stated above, this impact would be **less than significant** and no mitigation is required.

Impact REC-2: Temporary Disruption of the Use of, or Access to, Recreational Facilities (*Less than Significant with Mitigation*)

As shown in Table 3.11-1, a number of City parks and open space areas require vegetation management in the VMP area. Access to these facilities would occur via existing access roads, City roads, and public trails. Recreational users of roads and trails could experience temporary disruptions during active vegetation management activities. As a result, there is a limited potential for significant impacts to recreational facilities.

As described under Impact REC-1, some treatment activities occurring in the following parks/open space areas may require temporary trail closures: Dimond Canyon Park, Garber Park, Joaquin Miller Park, King Estate Open Space Park, Knowland Park and Arboretum, North Oakland Sports Field, Sheffield Village Open Space, and Shepherd Canyon Park, depending on the treatment techniques employed. In addition, trails may be temporarily closed to provide access for maintenance crews to vegetation treatment sites. Such closures would be temporary, typically between 1 to 5 days, but possibly up to several weeks for work at the North Oakland Sports Field, to maximize public safety during active vegetation management work. Depending on the treatment activity and extent of work area, such closures could temporarily impede recreational use and access. For treatment activities necessitating trail closures in the parks/open space areas listed above, the City would be required to notify the public of any closures as specified in **Mitigation Measure REC-1 (Provide Notification of Temporary Trail Closures)**. The likelihood of significant impacts without mitigation is very low; however, Mitigation Measure REC-1 is included out of an abundance of caution and to facilitate communication with the public. In addition, all closures would be localized and alternative recreational opportunities throughout Oakland would continue to be available.

Mitigation Measures

Mitigation Measure REC-1: Provide Notification of Temporary Trail Closures.

If a treatment project requires temporary trail closures, the City and its contractors will implement the following measures:

- Provide signage at trailheads at least one week prior to temporary trail closure indicating the location and period of closure as well as any trail detours. Notification of treatment activity and trail closure will also be posted on the City's website. All signage will be removed once work is complete.

- Provide road guards to usher recreationalists around hazardous areas where activities impede on a road or trail.
- Provide fencing around the active work area to protect recreationalists, as necessary.

Conclusion

With implementation of Mitigation Measure REC-1, the City would provide signage, road guards, fencing, and detours so that temporary access disruptions or safety hazards caused by vegetation management activities would be minimized. Thus, with implementation of Mitigation Measure REC-1, this impact would be **less than significant with mitigation.**

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3.12 TRANSPORTATION

This section summarizes the environmental and regulatory setting related to transportation and traffic in the context of the VMP. This section also presents the impact methodology and evaluates the potential traffic impacts associated with the VMP.

3.12.1 Environmental Setting

Regional Access

Regional access to the VMP area is available via I-580, SR 24, and SR 13, all of which are part of the California State Highway System. I-580 extends east/west from the US-101 junction in San Rafael to the I-5 junction in the Central Valley. A portion of I-580 runs parallel to the western edge of the VMP area, beginning at Lake Chabot Regional Park. SR 13 is entirely within Alameda County and extends from I-580 near Mills College in Oakland to the I-80/ Ashby Avenue interchange in Berkeley. SR 13 spans the majority of the VMP area. SR 24 is within Alameda and Contra Costa Counties and extends east/west from the I-580/I-890 interchange in Oakland to the I-680 junction in Walnut Creek. A segment of SR 24 bisects the northern portion of the VMP area between the SR 13 junction and Fish Ranch Road.

Local Roadway Network

Access to the VMP area is also provided through a number of arterial, collector and residential/local streets (City of Oakland Department of Transportation [OakDOT] 2020a). Portions of roads that are classified by the City as both arterial and collector streets that run through the VMP area include Grizzly Peak Boulevard (Blvd), Skyline Blvd, Claremont Avenue (Ave), Moraga Ave, Mountain Blvd, Park Blvd, Joaquin Miller Road (Rd), Redwood Rd, Keller Ave, and Golf Links Rd (Figure 2-2, sheets 1 through 10).

Grizzly Peak Blvd runs the eastern perimeter of the VMP area from east of Claremont Canyon Region Reserve until it merges with Skyline Blvd near the Sibley Park Main Staging Area. Skyline Blvd continues on the eastern perimeter of the VMP area until it turns south and extends through Joaquin Miller Park and eventually through the central portion of the VMP area on the western edge of Redwood Regional Park. Claremont Ave runs southwest to northeast between SR 13/Tunnel Rd and Grizzly Peak Rd. The portion of Moraga Ave within the VMP area parallels northbound SR 13 until it meets Mountain Blvd. Mountain Blvd begins near the SR 13/SR 24 junction to the north and parallels northbound SR 13 to the south until it terminates at Joaquin Miller Rd and then resumes just north of Redwood Road. Joaquin Miller Rd begins at the SR 13/Lincoln Ave junction and travels east and south until it merges with Skyline Blvd. Redwood Rd, Keller Ave, and Golf Links Rd extend from Mountain Blvd to the west and run northeast until each merge with Skyline Blvd. Park Blvd runs north/south and flanks the western edge of Dimond Park until its intersection with Mountain Blvd.

Important collector and residential/local streets throughout the VMP area include Broadway, Shepard Canyon Rd, Thornhill Rd, Ascot Drive (Dr), and Snake Rd. Broadway runs just south of SR 24 roughly between SR 13 and Skyline Blvd. Thornhill Dr extends from Moraga Ave to the west and runs northeast until it merges with Snake Rd. Snake Rd extends from Mountain Blvd to the

west and runs northeast until it merges with Skyline Blvd. Ascot Dr extends from Mountain Blvd to the west and runs northeast until it merges with Skyline Blvd.

Public Transit

Alameda-Contra Costa Transit District (AC Transit) is the principal public transit operator in the VMP Area. AC Transit operates three bus routes throughout the VMP area, including the 33, 46, and 339 lines. Paratransit services are provided through East Bay Paratransit and Oakland Paratransit, which is funded by the City and Alameda County Transportation Commission (CTC).

Pedestrian, Bicycle, and Equestrian Access

As discussed in Section 3.11, "Recreation," public recreational access for pedestrians and bicyclists is available throughout the VMP area and include: Beaconsfield Canyon, Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, Grizzly Peak Open Space, City Stables, Sheffield Village Open Space, Knowland Park and Arboretum, King Estates Open Space Park, Joaquin Miller Park, Tunnel Road Open Space, Marjorie Saunders Park, and Oak Knoll. For additional information on these recreation areas, see Table 3.11-1, "Parks and Open Spaces in the VMP Area."

Bicycle access on surface streets and arterials throughout the VMP is provided through 16 miles of bike routes along Skyline Blvd, Grizzly Peak Road, Mountain Blvd, Monterey Blvd, and Golf Links Road. Additionally, the Montclair Railroad Trail serves as a shared and protected bicycle/pedestrian trail along Shephard Canyon Road (OakDOT 2018, 2020b). Equestrian access within the VMP area is provided at the City Stables and Joaquin Miller Park.

3.12.2 Regulatory Setting

State Laws, Regulations, and Policies

California Streets and Highways Code

The California Streets and Highways Code provides the standards for administering the statewide system of streets and highways. Designated state route and interstate highway facilities are under the jurisdiction of Caltrans, except where facility management has been delegated to the county transportation authority.

According to Section 660 of the California Streets and Highways Code, permits must be obtained for all proposed activities related to the placement of encroachments within, under, or over the State highway rights of way. Examples of the type of work that may require an encroachment permit include utilities, excavations, vegetation planting or trimming, and surveys (Caltrans 2018a).

California Vehicle Code

Caltrans has discretionary authority with respect to highways under its jurisdiction and may issue a special permit to operate or move a vehicle or combination of vehicles or special mobile equipment of a size or weight of vehicle or load exceeding the maximum limitations specified in the California Vehicle Code (Caltrans 2018b).

Local Laws, Regulations, and Policies

Alameda County Congestion Management Program

The Alameda County Congestion Management Program (CMP) outlines strategies to measure and improve the performance of Alameda County's multimodal transportation system; address roadway congestion and ultimately reduce greenhouse gas emissions. The CMP is updated every two years by the Alameda CTC and is required to include five elements: level of service monitoring of a designated roadway network; a multimodal performance element; a travel demand management element; a land use analysis program; and a capital improvement program. The 2019 CMP describes the work performed by Alameda CTC and progress towards implementation of the major CMP elements since the 2017 update. (Alameda CTC 2019, 2020a).

Alameda Countywide Transportation Plan

The Alameda Countywide Transportation Plan (CTP) is a long-ranging policy document that guides future transportation projects, programs, and policies in Alameda County, and ultimately feeds into the "Plan Bay Area," the region's long-range transportation plan. Updated every four years, the CTP addresses capital, operating, and maintenance activities for all transportation modes. The 2020 CTP supports multi-modal and integrated planning with an emphasis on defining projects that can be pursued over the next ten years. (Alameda CTC 2016, 2020b).

City of Oakland General Plan

Applicable objectives and policies from the City of Oakland General Plan's Land Use and Transportation Element (City of Oakland 1998) that are relevant to the VMP include the following:

Objective T1.5: Reduce truck traffic impacts on residential neighborhoods.

> **Policy T3.5:** The City should include bikeways and pedestrian walks in the planning new, reconstructed, or realized streets, wherever possible.

Objective T6: Make streets safe, pedestrian accessible and attractive.

> **Policy T6.2:** Improving Streetscapes: The city should make major efforts to improve the visual quality of streetscapes, particularly in neighborhoods and commercial centers, should be pedestrian-oriented and include lighting, directional signs, trees, benches, and other support facilities.
>
> **Policy T6.5:** The City should protect and encourage the enhancement of the distinctive character of scenic routes within the city, through prohibition of billboards, design review, and other means.

Oakland Department of Transportation's Strategic Plan

The Oakland Department of Transportation (OakDOT) developed its inaugural Strategic Plan in 2016 to provide a data-driven and trackable summary of OakDOT's commitments and to guide the development of future planning on Oakland streets. The Plan's primary goals include equitable jobs and housing; holistic community safety; vibrant sustainable infrastructure; and

responsive trustworthy government. Each goal includes a number of strategies and along with the one- and three-year benchmarks the agency will use to guide their efforts. (OakDOT 2016).

Applicable goals from the OakDOT's Strategic Plan that are relevant to the VMP include the following:

Holistic Community Safety

1. Adopt a Vision Zero policy and pledge to eliminate traffic injuries and fatalities

3. Incorporate safe and Complete Street designs into the design process:

    - Ensure that safer designs and safety interventions are integrated into routine maintenance and operations, and into all projects

Vibrant Sustainable Infrastructure

2. Plan and develop capital projects in an equitable, timely, efficient and coordinated manner:

    - Create an interdisciplinary, interagency team that develops, coordinates and prioritizes capital projects based on city policies and programs, community proposals, specific plans, private development, utility company projects and identified maintenance needs

12. Green Oakland's streets to improve air and water quality

3.12.3 Impact Analysis

Methodology

Traffic and transportation impacts associated with implementation of the VMP were evaluated using a qualitative analysis due to the temporary nature of the effects on traffic operations; bicycle, pedestrian, and transit facilities; emergency access; and vehicle miles traveled (VMT). The analysis is based on proposed vegetation treatment activities, the equipment utilized for treatments, and methods for transporting equipment and materials. The criteria for determining the significance of potential impacts are outlined below.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines, City of Oakland CEQA Thresholds of Significance, and Transportation Impact Study Guidelines, the VMP would result in a significant impact on transportation or traffic if it would:

- Conflict with a program applicable plan, ordinance, or policy addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay);

- Cause substantial additional VMT per capita, per service population, or other appropriate efficiency measure;

- The following are thresholds of significance related to substantial additional VMT:
  - For residential projects, a project would cause substantial additional VMT if it exceeds existing regional household VMT per capita minus 15 percent.
  - For office projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per employee minus 15 percent.
  - For retail projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per capita minus 15 percent.
- Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network;
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b):

  (b) Criteria for Analyzing Transportation Impacts.

  1) *Land Use Projects*. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

  2) *Transportation Projects*. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.

  3) *Qualitative Analysis.* If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

  4) *Methodology*. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and

explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Result in inadequate emergency access.

Issues Not Evaluated Further

Due to the nature of the VMP, there would be no impacts related to the following significance criterion:

- **Substantially Induce Additional Automobile Travel by Increasing Roadway Capacity or Adding New Roadways to the Network:** The VMP would not increase physical roadway capacity or add new roadways to the network. All vehicle trips associated with VMP activities would utilize existing roadways or maintenance roads previously established by the City of Oakland.

Environmental Impacts

Impact TRA-1: Conflict with a Program Applicable Plan, Ordinance or Policy Addressing the Circulation System, Including Transit, Roadway, Bicycle and Pedestrian Facilities (*Less than Significant with Mitigation*)

Proposed vegetation treatment activities would generate worker and maintenance vehicle trips, which could require temporary lane closure along roadways in the VMP area. VMP-related vehicular traffic could also require temporary re-routing of bicycle routes along Skyline Blvd, Grizzly Peak Rd, Mountain Blvd, Monterey Blvd, and Golf Links Rd. Additionally, temporary closure of sidewalks or parking areas adjacent to City facilities and open spaces could also occur throughout the VMP area, such as along Skyline Blvd.

As described in Chapter 2, *Project* Description, the estimated number of personnel required at each project site could range from a single worker for treatment activities such as grass removal to upwards of 18 workers for tree removal activities (see Table 2-4 for estimated number of personnel required by each VMP treatment type). While vegetation management activities would occur year-round (and potentially more than once annually), it is not yet known which and how many treatment projects would be conducted in a given year. However, maximum annual acreages of treatment activities have been developed (see Table 2-7). It can be assumed that more frequent worker and maintenance trips would occur in treatment areas that encompass larger areas and involve more labor-intensive treatment techniques (i.e., hand removal of trees). As such, the potential for impacts on the circulation system, including transit, roadway, bicycle, and pedestrian facilities, during vegetation treatment would differ by treatment area type as well as vegetation management activity. Additionally, the VMP would prioritize vegetation treatment areas into three different categories, with implementation of Priority 1 and Priority 2 projects taking precedence, and Priority 3 projects being implemented as budget is available. The City would likely treat priority roadsides (Priority 1 treatment areas)

at least every 3 years and possibly more frequently. It is anticipated that the remaining roadside areas (Priority treatment 2 areas) would be treated every 3-5 years.

The following sections discuss potential impacts to the circulation system by treatment area type. This analysis focuses on impacts to the circulation system from VMP treatments along roadsides or near roadsides, as these activities are anticipated to have the greatest potential impact on the circulation system. Impacts to the circulation system from non-roadside VMP treatments such as those occurring within open spaces, parks, trails or on private parcels would involve increased worker and hauling trips but would not be expected to significantly alter traffic flow or result in partial lane closures. The potential for increased vehicle miles traveled (VMT) as a result of the VMP is addressed in Impact TRA-2.

Roadside Treatment Areas and Medians

Roadside treatment includes areas within 30 feet from roadside edges (including City-owned medians) along major access/egress routes. Under the baseline condition, the City currently conducts approximately 400 acres of roadside treatment activities annually using a combination of hand labor and mechanical methods, which requires 10-15 workers and one employee from OFD. Work occurring in roadside treatment areas and medians under the VMP would encompass all roads in the VMP area (308 miles). Similar to current practices, typical activities for VMP treatments would include reducing ladder fuels, controlling highly flammable species, maintaining fuel loads, reducing ignitable surface fuels, and pruning tree canopies. Priority 1 activities would focus on approximately 30 miles of main access/egress routes in the VMP area as well as manual treatment (grass and tree removal) on 5.8 acres of medians.

Under the VMP, the City would conduct approximately 500 acres of roadside treatment activities annually using a combination of hand labor and mechanical methods. Thus, roadside treatment would increase beyond the City's current baseline by approximately 100 acres. The typical number of workers at any given treatment site would be similar to baseline conditions (10-15 workers) but a maximum of 18 workers may be needed to conduct individual roadside treatment activities under the VMP. Assuming that a maximum of 18 workers would be required at roadside and median treatment areas, the VMP would result in increased worker and maintenance vehicle trips. These activities would likely occur every three years in the case of Priority 1 roadside treatment areas and every 3-5 years for Priority 2 areas. As a result, any additional vehicle trips would not have an appreciable effect on traffic flow and would be unlikely to permanently affect transit, bicycle, and pedestrian facilities beyond baseline conditions. However, VMP treatment activities may result in temporary lane closures, temporary rerouting of bicycle routes, and temporary closure of sidewalks or parking areas; these temporary effects on the transportation system would conflict with City and County policies related to safety during routine maintenance activities and reducing truck traffic impacts in residential neighborhoods, which would be a significant impact. Implementation of traffic and safety protocols would be necessary to avoid these temporary impacts. Implementation of **Mitigation Measure TRA-1 (Maintain Traffic Flow)** would maintain two-way traffic flow to the extent feasible. In the event of temporary lane closures, implementation of **Mitigation Measure TRA-2 (Traffic Control and Public Safety)** would include measures to guide traffic; safeguard construction workers; provide safe passage of vehicles, pedestrians, and bicyclists; and maintain public transit access.

Ridgetop Areas

Ridgetop areas include the North Oakland Regional Sports Field, Grizzly Peak Open Space, and City Stables (although no specific projects have been identified on this property at this time) and encompass approximately 130.2 acres of City-owned land. With the exception of City Stables, management practices in ridgetop areas currently involve a combination of grazing and roadside treatment activities (e.g., hand labor and mechanical techniques). Priority 1 roadside activities under the VMP would be expanded to Tunnel Road and additional segments of Bay Forest Drive (an additional 28.5 acres of treatment area) and would require crews of up to 18 workers. The approximate duration of these activities would be approximately 17 days. Thus, VMP-related vehicular activity associated with ridgetop areas would amount to an increase over baseline conditions, although impacts would be short term in duration, similar to conditions under the City's current vegetation management activities. VMP treatment activities may result in temporary lane closures, temporary rerouting of bicycle routes, and temporary closure of sidewalks or parking areas; these temporary effects on the transportation system would conflict with City and County policies related to safety during routine maintenance activities and reducing truck traffic impacts in residential neighborhoods, which would be a significant impact. Implementation of traffic and safety protocols would be necessary to avoid these temporary impacts. Implementation of Mitigation Measures TRA-1 and TRA-2 would maintain traffic flow; provide safe passage of vehicles, pedestrians, and bicyclists; and maintain public transit access.

Canyon Areas

Canyon areas, including Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, and Beaconsfield Canyon, encompass approximately 188.7 acres. With the exception of Beaconsfield Canyon, these areas currently include roadside treatment activities, which would be expanded to additional Priority 1 roadway areas including: manual treatment (grass removal) along Claremont Ave (1.34 acres); manual treatment (tree removal) along Park Boulevard, Monterey Boulevard, Leimert Boulevard and El Centro Avenue (3.42 acres); manual treatment (tree removal) along Shepherd Canyon Road, Escher Drive, Snake Road, and Bagshotte Drive (9.26 acres); and manual treatment (tree removal) along Campus Drive (1.86 acres). These activities would require crews of up to 18 workers, resulting in increased worker and maintenance vehicle trips. Additionally, the approximate duration for these management activities would be 15 days. Thus, VMP-related vehicular activity associated with Canyon Areas would amount to an increase over current conditions, although impacts would be short term in duration, similar to conditions under the City's current vegetation management activities. VMP treatment activities may result in temporary lane closures, temporary rerouting of bicycle routes, and temporary closure of sidewalks or parking areas; these temporary effects on the transportation system would conflict with City and Alameda County policies related to safety during routine maintenance activities and reducing truck traffic impacts in residential neighborhoods, which would be a significant impact. Implementation of traffic and safety protocols would be necessary to avoid these temporary impacts. Implementation of Mitigation Measures TRA-1 and TRA-2 would maintain traffic flow; provide safe passage of vehicles, pedestrians, and bicyclists; and maintain public transit access.

City Parks and Open Space Areas

City parks and open space areas, including Sheffield Village Open Space, Knowland Park and Arboretum, Joaquin Miller Park, King Estate Open Space Park, and other small City-owned

parcels (see Table 2-4), encompass approximately 1,552.9 acres. Current vegetation management practices include a combination of roadside treatment through the use of hand labor or mechanical techniques, grazing, trail maintenance and vegetation management around parking lots and structures through hand labor. Priority 1 roadside activities would be expanded by approximately 100 acres per year of mechanical and manual treatment compared to baseline conditions. These activities would occur along portions of Skyline Blvd, Golf Links Road, Woodside Glen Court, Joaquin Miller Road, Mountain Boulevard, Fontaine Street, and Crest Avenue. These activities would require crews of up to 18 workers, resulting in increased worker and maintenance vehicle trips. Additionally, the approximate duration for these management activities would be 98 days. Thus, VMP-related vehicular activity associated with City parks and open space areas would amount to an increase over current conditions, although impacts would be short term in duration, similar to conditions under the City's current vegetation management activities. VMP treatment activities may result in temporary lane closures, temporary rerouting of bicycle routes, and temporary closure of sidewalks or parking areas; these temporary effects on the transportation system would conflict with City and Alameda County policies related to safety during routine maintenance activities and reducing truck traffic impacts in residential neighborhoods, which would be a significant impact. Implementation of traffic and safety protocols would be necessary to avoid these temporary impacts. Implementation of Mitigation Measures TRA-1 and TRA-2 would maintain traffic flow; provide safe passage of vehicles, pedestrians, and bicyclists; and maintain public transit access.

Urban and Residential Parcels

City-owned urban and residential parcels include manual vegetation management and grazing and collectively encompass 47.5 acres. These activities would continue under the VMP, lasting approximately 19 days and requiring crews of up to 18 workers, which would increase worker and maintenance vehicle trips relative to baseline conditions. However, VMP-related vehicular activity related to urban and residential parcels would not amount to an appreciable increase over current conditions, and roadside treatment would be limited to the portions of these parcels which abut roadways. The impact would be less than significant and no mitigation is required.

Other Areas

This classification includes 43 properties (e.g., parking lots, playground, urban parks) encompassing 24.5 total acres. No current vegetation management activities are conducted on these parcels by OFD and no additional vegetation management treatments are identified for these parcels, which are considered Priority 3. The impact would be less than significant and no mitigation is required.

Mitigation Measures

Mitigation Measure TRA-1: Maintain Traffic Flow

The City and its contractors will implement the following measures:

- To the extent feasible, work will be staged and conducted in a manner that maintains two-way traffic flow on roadways in the vicinity of the work site.

- Heavy equipment and haul traffic will be avoided in residential areas to the greatest extent feasible. When no other route to and from the site is available, heavy equipment and haul traffic through residential areas shall be restricted to the hours of 8 a.m. to 5:30 p.m., Monday through Friday.

- If heavy equipment or hauling is required beyond the hours above, the City or its contractor will provide notice to adjacent property owners 48 hours in advance of such activities.

Mitigation Measure TRA-2: Traffic Control and Public Safety

The City and its contractors will implement the following measures:

- In the event that work activities require the temporary closure of any traffic lanes, the City will implement measures to guide traffic (such as signage and flaggers), safeguard construction workers, provide safe passage of vehicles, and minimize traffic impacts through the duration of work activities. The City also will notify local emergency service providers regarding any planned lane closures.

- For any other work within or near the roadway that could pose a hazard to the public, the City will install/implement appropriate measures, such as fences, barriers, flagging, guards, and/or signs, to give adequate warning and provide protection from the potentially dangerous condition.

- For work activities along or near roadways with sidewalks and bike routes/lanes, the City will implement measures to ensure the safe passage of pedestrians and bicyclists around the work site.

- Public transit access and routes will be maintained in the vicinity of the work site. If public transit will be affected by temporary road closures and require detours, the City will consult affected transit authorities and keep them informed of project activities.

Conclusion

The VMP would have a beneficial effect on the circulation system through the removal of hazardous trees and vegetation along roadsides, and any impacts to roadways would be temporary in nature. However, there is still the potential for reduced lane capacity in the local roadway network from treatment activities. Implementation of Mitigation Measure TRA-1 would maintain two-way traffic flow to the extent feasible. In the event of temporary lane closures, implementation of Mitigation Measure TRA-2 would include measures to guide traffic; safeguard construction workers; provide safe passage of vehicles, pedestrians, and bicyclists; and maintain public transit access. Therefore, this impact would be **less than significant with mitigation**.

Impact TRA-2: Result in Substantial Increase in Vehicle Miles Traveled (*Less than Significant*)

Under current vegetation management activities, the City treats approximately 1,300 acres annually, which includes 900 acres of grazing and 400 acres of hand labor and mechanical treatment of roadsides, small city parcels and open space areas. While the VMP would include many of the same practices already in place, it would expand and introduce new activities throughout nearly all treatment area types, for an annual total of approximately 1,600 acres. It is not yet known which and how many treatment projects would be conducted in a given year, although maximum annual acreages of treatment activities have been developed (see Table 2-7). It is estimated that total annual VMT per capita would be approximately 0.12 mile (or annual VMT of 52,958 miles), compared to approximately 0.08 mile (or annual VMT of 35,986 miles) under the City's current vegetation management practices (see Appendix C, *Air Quality/Greenhouse Gas Calculations*, of this DEIR for calculations). As such, the increase in treatment acreage under the VMP would result in an increase in VMT over baseline conditions due to additional maintenance vehicle trips, worker trips and vegetation hauling.

According to the California Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact, absent substantial evidence indicating otherwise (OPR 2018). Similarly, the City of Oakland CEQA Thresholds of Significance and Transportation Impact Study Guidelines indicates that small projects generating fewer than 100 vehicle trips per day are also generally assumed to cause a less-than-significant transportation impact. As discussed in Impact TRA-1, current activities would require a maximum of 15 workers per project. Under the VMP, this would increase to a maximum of 18 workers across all activities. The addition of 3 workers would result in 6 additional daily vehicle trips[9] beyond the City's current activities for the duration of each project. Thus, even with two crews employed simultaneously with maximum personnel (i.e., two crews of 18 yielding a total of 72 trips), the increase in daily VMT (approximately 65 miles) would result in vehicle trips below the City's threshold of 100 trips per day and OPR's threshold of 110 trips per day. Given that the small (0.04 mile per capita or 16,972 miles) annual increase in VMT does not exceed City or state criteria, this impact would be less than significant and no mitigation is required.

Conclusion

The VMP would increase VMT per capita by 0.04 mile per capita per year, which would not be a substantial increase in VMT per capita. The increase of up to 6 vehicle trips per day to conduct VMP treatment activities would not exceed the aforementioned thresholds of 100 and 110 vehicle trips per day. Therefore, this impact would be **less than significant** and no mitigation is required.

[9] It is assumed that each worker represents a trip to and from the worksite (i.e., two vehicle trips).

Impact TRA-3: Substantially Increase Hazards due to a Design Feature or Incompatible Uses (*Less than Significant with Mitigation*)

The VMP would not change the design of any roadway or intersection. Roadside and median treatments conducted throughout the VMP area would have the benefit of maintaining site distances for motorists, thereby minimizing potentially hazardous conditions resulting from overgrowth of roadside vegetation. However, treatment activities could pose hazards to motorists, bicyclists, and pedestrians due to incompatible uses such as operation of maintenance vehicles on roadsides, ad-hoc parking along roadsides, and operation of vegetation management equipment. There is a small likelihood that these uses would substantially increase hazards, which would be a significant impact. Implementation of Mitigation Measure TRA-1 restrict the hours of heavy equipment and haul traffic through residential areas to the extent feasible. Implementation of Mitigation Measure TRA-2 would minimize the potential for the presence of vehicles and heavy equipment to result in adverse impacts through the use of signage and flaggers, as well as public notification of any planned lane closures.

Mitigation Measures

Mitigation Measure TRA-1: Maintain Traffic Flow

See text in Impact TRA-1 above.

Mitigation Measure TRA-2: Traffic Control and Public Safety

See text in Impact TRA-1 above.

Conclusion

Implementation of the avoidance measures described in the VMP as well as Mitigation Measures TRA-1 and TRA-2 would minimize the potential for design features or incompatible uses in the VMP area to result in increased roadway hazards. Therefore, this impact would be **less than significant with mitigation**.

Impact TRA-4: Result in Inadequate Emergency Access (*Less than Significant with Mitigation*)

The VMP would not include any activities that would permanently block or constrain publicly accessible roadways or emergency access routes. Rather, in the long term, the VMP would reduce fuel loads and clear roadside vegetation, which would improve emergency access for first responders and firefighters, and residents needing to evacuate in case of a wildfire or other emergency.

During some roadside/median treatment activities, partial lane closure may be required on a short-term basis. As discussed in Section 3.8, “Hazards and Hazardous Materials,” many of the roads proposed for treatment in the VMP are also identified evacuation routes in the City of Oakland’s General Plan, Safety Element. Operation of heavy mechanical equipment, haul or transport trucks, or vehicles along these roadways during treatment activities could temporarily limit the mobility of emergency response vehicles or cause congestion for residents attempting to evacuate the area. Although any lane closures would be temporary in nature, this would be a significant impact. Implementation of Mitigation Measure TRA-1 would maintain two-way traffic

flow to the extent feasible during treatment activities, and implementation of Mitigation Measure TRA-2 would include measures to guide traffic, safeguard construction workers, provide safe passage of vehicles, and notify local emergency service providers regarding any planned lane closures.

Mitigation Measures

The City would implement the following mitigation measures to reduce Impact TRA-4:

Mitigation Measure TRA-1: Maintain Traffic Flow

See text in Impact TRA-1 above.

Mitigation Measure TRA-2: Traffic Control and Public Safety

See text in Impact TRA-1 above.

Conclusion

VMP activities would have a beneficial effect on emergency response in the long term by ensuring that emergency vehicle and evacuation access is maintained along roadsides through vegetation clearance and fuel reduction. While emergency access may be hindered temporarily as a result of treatment activities, implementation of the Mitigation Measures TRA-1 and TRA-2 would minimize these effects. Therefore, this impact would be **less than significant with mitigation**.

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3.13 TRIBAL CULTURAL RESOURCES

This section summarizes the environmental and regulatory setting related to tribal cultural resources (TCRs) in the context of the VMP. This section also presents the impact methodology and evaluates the potential impacts on TCRs associated with the VMP. Detailed information about Native American consultation for the VMP is provided in **Appendix G**, *Tribal Cultural Resources*, of this DEIR.

3.13.1 Environmental Setting

The prehistory, ethnography, and history of the VMP area are described in Section 3.5, "Cultural Resources." As described in that section, an APE would be established for each individual project conducted under the VMP that requires a federal permit. Each APE would encompass the project's area of direct impact and a 20-foot buffer, as well as construction staging areas and access improvements, as necessary.

3.13.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Federal law does not address TCRs, as these resources are defined in the California Public Resources Code. However, similar resources called tribal cultural properties (TCPs), fall under the purview of Section 106 of the NHPA, as described in Section 3.5, "Cultural Resources." TCPs are locations of cultural value that are historic properties. A place of cultural value is eligible as a TCP "because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990, rev. 1998). A TCP must be a tangible property, meaning that it must be a place with a referenced location, and it must have been continually a part of the community's cultural practices and beliefs for the past 50 years or more. Unlike TCRs, TCPs can be associated with communities other than Native American tribes, although the resources are usually associated with tribes. By definition, TCPs are historic properties; that is, they meet the eligibility criteria as a historic property for listing in the NRHP. Therefore, as historic properties, TCPs must be treated according to the implementing regulations found in 36 CFR Section 800, as amended in 2001.

State Laws, Regulations, and Policies

AB 52 requires that state lead agencies consult with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if requested by the tribe. The bill, chaptered in Pub. Res. Code Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

As defined in Pub. Res. Code Section 21074(a), TCRs are:

(1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources; or

(B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

TCRs are further defined in Pub. Res. Code Section 21074 as follows:

(b) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to newly chaptered Pub. Res. Code Section 21080.3.2 or according to Section 21084.3. Section 21084.3 identifies mitigation measures than include avoidance and preservation of TCRs and treating TRCs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

Local Laws, Regulations, and Policies

The City of Oakland does not have any laws, regulations, or policies for tribal cultural resources.

3.13.3 Impact Analysis

Methodology

An email request was made to the NAHC on August 12, 2019, to review its files for the presence of recorded sacred sites in the VMP area. The NAHC responded on August 16, 2019, stating that no significant resources have been filed in the vicinity of the VMP area as a result of a search of their files. The NAHC also provided a list of seven tribes with a traditional and cultural affiliation with the VMP area.

When the NOP was issued for the VMP, the City had not received any requests from tribes for project notification pursuant to Pub. Res. Code Section 21080.3.1(b)(1). However, in the spirit of AB 52, the City emailed project notification letters, dated August 19, 2019, to all seven tribes identified by the NAHC. An email follow-up was forwarded to those tribes that had not responded on May 4, 2020. **Table 3.13-1** lists all those contacted and summarizes the results of the consultation.

Table 3.13-1. Native American Consultation

Organization/Tribe	Name of Contact	Emailed Letter Date	Email Follow-up	Responses
Amah Mutsun Tribal Band	Valentine Lopez, Chairperson	August 19, 2019	n/a	**09/02/2019:** Chairperson Lopez responded that the VMP area is outside their traditional tribal territory.
Amah Mutsun Tribal Band of Mission San Juan Bautista	Irenne Zwierlein, Chairperson	August 19, 2019	May 4, 2020	No response, to date.
Indian Canyon Mutsun Band of Costanoan	Ann Marie Sayers, Chairperson	August 19, 2019	May 4, 2020	No response, to date.
Muwekma Ohlone Indian Tribe of the SF Bay Area	Charlene Nijmeh, Chairperson	August 19, 2019	May 4, 2020	No response, to date.
North Valley Yokuts Tribe	Katherine Erolinda Perez, Chairperson	August 19, 2019	May 4, 2020	No response, to date.
The Confederated Villages of Lisjan	Corrina Gould, Chairperson	August 19, 2019	June 29, 2020	**09/17/19:** Chairperson Gould acknowledged receipt of the documents and said she would review them. **06/29/2020:** Horizon reached out to Chairperson Gould to see if she had any comments.
The Ohlone Indian Tribe	Andrew Galvin	August 19, 2019	June 15, 2020	**09/08/2019:** Mr. Galvin asked if a record search or survey had been completed, and asked for copies if they were available. **09/09/2019:** Mr. Galvin was informed that a record search would be completed once the NOP was filed and that copies would be sent to him when available. **06/15/2020:** Horizon forwarded the record search results to Mr. Galvin.

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines, the VMP would result in a significant impact on tribal cultural resources if it would:

- Cause a substantial adverse change in the significance of a TCR, defined in Pub. Res. 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:
  - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Pub. Res. Code Section 5020.1(k), or
  - 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 Pub. Res. Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Pub. Res. Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Environmental Impacts

Impact TCR-1: Substantial Adverse Change in the Significance of a Tribal Cultural Resource (*Less than Significant with Mitigation*)

No tribal cultural resources have been reported by the NAHC, and none of the contacted tribes have provided information about TCRs; therefore, there would be no impact on such resources. However, if archaeological sites are discovered during VMP activities, they could be determined to be TCRs. This is particularly true of resources with human remains. Therefore, this is a potentially significant impact. However, application of **Mitigation Measure CUL-1 (Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity)** would provide City and volunteer workers with information about identifying archaeological resources that could be TCRs, assess treatment areas for archaeological sensitivity, and inspect areas of high and highest sensitivity for the presence of archaeological resources that could be TCRs **Mitigation Measure CUL-2 (Avoid Use of Techniques That Cause Ground Disturbance within Known Archaeological Historical Resources)** would ensure that archaeological sites that are TCRs would be protected from disturbance by VMP techniques. **Mitigation Measure CUL-3 (Response Measures for Potential Unknown Archaeological Resources and Tribal Cultural Resources)** would ensure that archaeological resources discovered during implementation of the VMP would be protected in place or evaluated, and that Native American tribes would be consulted if the discovered site is of Native American origin and determined to be a TCR. **Mitigation Measure CUL-4 (Stop Work if Human Remains Are Unearthed during Project Activities)** would reduce potential disturbance of human remains by ensuring compliance with the California Health and Safety Code. Implementation of Mitigation Measures CUL-1 through CUL-4 would ensure that potential effects on archaeological and historical resources in VMP treatment areas would be reduced to a less-than-significant level.

Mitigation Measures

The following mitigation measures would be implemented to reduce Impact TCR-1 to a less-than-significant level:

Mitigation Measure CUL-1: Provide Sensitivity Training, Assess Archaeological Sensitivity, and Survey Areas of High or Highest Sensitivity

See text in Section 3.5, "Cultural Resources."

Mitigation Measure CUL-2: Avoid Use of Techniques That Cause Ground Disturbance within Known Archaeological Historical Resources

See text in Section 3.5, "Cultural Resources."

Mitigation Measure CUL-3: Stop Work if Cultural Remains Are Unearthed and Work with Local Native American Tribes if the Site Is Determined to Be a Tribal Cultural Resource

See text in Section 3.5, "Cultural Resources."

Mitigation Measure CUL-4: Stop Work if Human Remains Are Unearthed during Project Activities

See text in Section 3.5, "Cultural Resources."

Conclusion

No tribal cultural resources have been identified within the VMP area. However, VMP activities could have a significant impact on inadvertently discovered archaeological remains, particularly human remains, that could be determined to be tribal cultural resources. Implementation of Mitigation Measures CUL-1 through CUL-4 would reduce impacts to a less-than-significant level. As a result, potential effects on archaeological and historical resources in VMP treatment areas would be **less than significant with mitigation.**

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3.14 WILDFIRE

This section summarizes the environmental and regulatory setting related to wildfire in the context of the VMP. This section also presents the impact methodology and evaluates the potential wildfire impacts associated with the VMP.

3.14.1 Environmental Setting

The VMP is located within the City's VHFHSZ, as designated by CAL FIRE and defined in Section 4904.3 of the Oakland Fire Code (Oakland Municipal Code Chapter 15.12) (**Figure 3.14-1**). The pattern of development and land uses within the VMP area (and VHFHSZ) creates conditions that can be described as representing either a WUI or an Intermix.

The Oakland Hills present a complex wildfire environment that presents a significant risk to public and firefighter safety and to the built and natural environment. The region has been subject to numerous damaging wildland fires, is influenced by local extreme wind and weather conditions (including Diablo wind events), has steep and varied terrain, and encompasses a wide range of different vegetation types. This area is one of the highest risk areas in the country for devastating WUI fires. It is also the location of one of the state's most destructive historic wildfires, the 1991 Tunnel Fire which destroyed 2,900 structures, injured more than 150 people, and killed 25 people (CAL FIRE 2020). Most wildfires in Oakland have burned in the months of September, October, or November when vegetation has lower fuel moistures and Diablo winds return to the VMP area.

Of the variables that comprise the wildland fire environment (weather, terrain, and fuels or vegetation), vegetation is the only variable that can be managed. The goal of vegetation management in the VMP is not the wholesale removal of all vegetation, but targeted vegetation management activities to minimize the potential for ignitions, crown fires, and extreme fire behavior. This is accomplished by reducing and maintaining reduced fuel loads and altering the structure, composition, and spacing of retained vegetation.

Current and Recent Vegetation Management Activities Led by OFD

OFD's Fire Prevention Bureau currently operates a vegetation inspection program that covers approximately 26,000 public and private property inspections annually in the VHFHSZ portion of the City. Inspections are mandated by City of Oakland Ordinance No. 11640. On an annual basis, fire companies and vegetation management inspectors inspect these properties to identify those that are out of compliance with the City's defensible space standards. Repeat inspections are conducted until properties are brought to compliance.

OFD has been actively managing vegetation on City-owned property since 2003 to minimize wildfire hazard in the VMP area, utilizing various techniques including grazing, hand crews, and limited mechanical treatments. Approximately 3,000 goats have been utilized annually (typically between May and August) to manage fine fuels on approximately 600-700 acres of City-owned property, typically on larger City park land and open space (e.g., King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Sheffield Village Open Space, Shepherd Canyon, and London Road). Goats have been used in large treatment areas where manual labor is cost-

prohibitive to treat vegetation in areas that are inaccessible to mowing equipment or in areas too steep for hand crews. In addition, OFD has historically used hand labor for managing vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas. OFD annually contracts with private contractors to manage vegetation on urban and residential parcels. The use of hand labor is focused on reducing ladder fuels, controlling highly flammable/rapidly spreading species (e.g., broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Lastly, mechanical equipment is used on an as-needed basis to grade or disk fire trails, reduce ladder fuels (e.g., small tree removal), control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing grasses), chip and spread trimmings and down material, thin vegetation, and maintain reduced or target fuel loads.

Between 2004 and 2017, OFD conducted vegetation management activities throughout the WPAD, a City-funded special assessment district that coincides with the City's VHFHSZ, which financed the costs and expenses related to vegetation management, yard waste disposal, wildfire prevention education and fire patrols in the Oakland hills. The WPAD was disbanded in June 2017. Since 2017, OFD has continued to conduct vegetation management activities on City properties and along roads albeit at a lesser degree than when the WPAD was in place due to funding constraints.

Climate Change

Increased wildfire risk and severity are anticipated throughout California due to the progression of climate change (Westerling 2018, Krawchuk et al. 2009). Ten of the most destructive fires in California have occurred since 2015 (CAL FIRE 2020), and California is facing a dramatic increase in the number and severity of wildfires. The Fourth Climate Assessment (Bedsworth et al. 2018), projects that California's wildfire burn area likely will increase by 77 percent by the end of the century. As identified in Governor Newsom's Strike Force report (State of California 2019), the growing risk of catastrophic wildfires has created an imperative for the state to act urgently and swiftly to expand fire prevention efforts. The VMP anticipates an increase in wildfire potential due to climate change, and seeks to manage fuels such that wildfire impacts are reduced.

3.14.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations related to wildfire risk and prevention apply to the VMP.

State Laws, Regulations, and Policies

2018 Strategic Fire Plan for California

The Strategic Fire Plan, developed by the State Board of Forestry and Fire Protection, provides direction and guidance to CAL FIRE and its 21 field units. The 2018 Plan sets forth a number of goals focused on fire prevention, natural resource management, and fire suppression efforts, and are summarized here:

a. Improve the availability and use of consistent, shared information on hazard and risk assessment;

b. Promote the role of local planning processes, including general plans, new development, and existing developments, and recognize individual landowner/ homeowner responsibilities;

c. Foster a shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPPs);

d. Increase awareness and actions to improve fire resistance of man-made assets at risk;

e. Increase awareness and actions to improve fire resistance of man-made assets at risk and fire resilience of wildland environments through natural resource management;

f. Integrate implementation of fire and vegetative fuels management practices consistent with the priorities of landowners or managers;

g. Determine and seek the needed level of resources for fire prevention, natural resource management, fire suppression, and related services; and

h. Implement needed assessments and actions for post-fire protection and recovery.

California Public Resources Code

The Public Resources Code includes fire safety regulations restricting the use of certain equipment that could produce sparks or flames, and specifies requirements for the safe use of gasoline-powered tools in fire hazard areas. City staff and contractors must comply with the following requirements in the PRC during VMP activities at any sites with forest-, brush-, or grass-covered land:

a. Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Pub. Res. Code Section 4442).

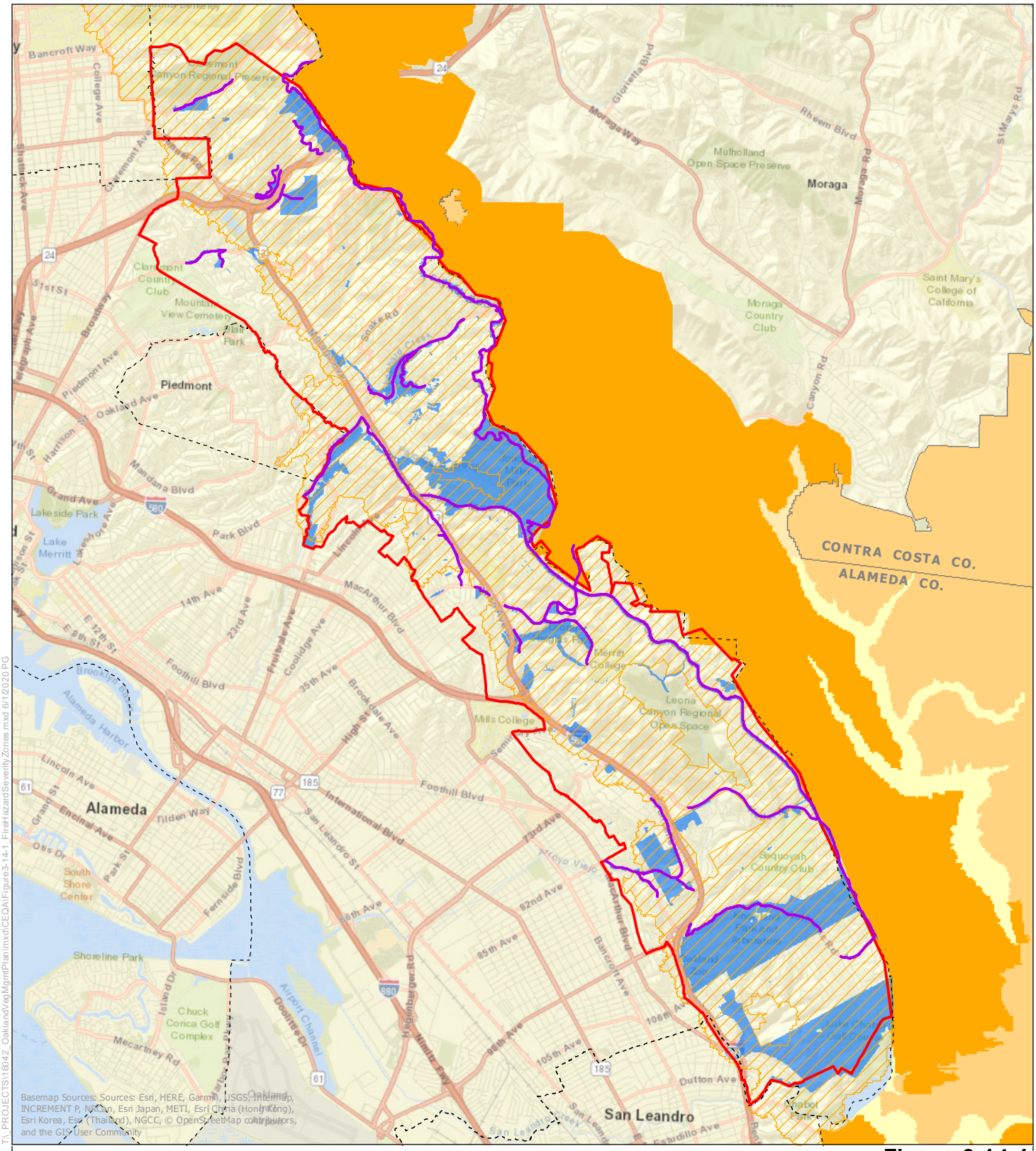


Figure 3.14-1
Fire Hazard Severity Zones

Vegetation Management Plan
Draft Environmental Impact Report

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a. Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (Pub. Res. Code Section 4428).

b. On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire-suppression equipment (Pub. Res. Code Section 4427).

c. On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (Pub. Res. Code Section 4431).

Local Laws, Regulations, and Policies

City of Oakland General Plan

The following policies and objectives from the City of Oakland General Plan Open Space, Conservation, and Recreation Element are relevant to the VMP:

- **Objective CO-10: Vegetation Management** – To manage vegetation so that the risk of catastrophic wildfire is minimized.
    - **Policy CO-10.1: Flammable Vegetation Control –** Subject to the availability of City resources and at the discretion of the City Council and applicable City departments, control flammable vegetation on public and private open space lands in the Oakland Hills to reduce wildfire hazard.
    - **Policy CO-10.2: Fire Prevention Measures** – As determined necessary by the City, require individual property owners and developers in high hazard areas to reduce fire hazards on their properties through a range of preventative measures. Landscaping and site planning in these high hazard areas should minimize future wildfire hazards.

The following policy from Chapter 4, Fire Hazards, of the Safety Element is also relevant to the VMP:

- **Policy FI-3:** Prioritize the reduction of the wildfire hazard, with an emphasis on prevention.

Oakland Fire Code

Oakland Municipal Code Chapter 15.12 (Oakland Fire Code) and its amendments establish regulations regarding the hazard of fire and explosion arising from the storage, handling, or use of structures, materials or devices; conditions hazardous to life, property or public welfare in the occupancy of structures, or premises; fire hazards in the structure or on the premises from occupancy or operation; matters related to fire suppression or alarm systems; and conditions affecting the safety of firefighters and emergency responders during emergency operations.

The Oakland Fire Code also includes Chapter 49 (Wildland-Urban Interface Areas), which defines the City's VHFHSZ and outlines requirements for defensible space, hazardous vegetation

management, electrical distribution line clearances, fire apparatus access, water supply, ignition source control, and combustible materials storage, among others. Specifically, Section 4906.3 of the Oakland Fire Code states that vegetation around all applicable buildings and structures within the VHFHSZ shall be maintained in accordance with California Public Resources Code Section 4291, California Code of Regulations Title 14 – Natural Resources, Division 1.5 – Department of Forestry and Fire Protection, "General Guideline to Create Defensible Space," and California Government Code Section 51182.

North Oakland Hill Area Specific Plan

The North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes a vegetation management prescription and specific policies and mitigation measures to reduce fire hazard risk within the North Oakland hill area. The approach and goals addressed by these policies and mitigation measures have, in many cases, been incorporated into the City's General Plan and elements of the Draft VMP.

3.14.3 Impact Analysis

Methodology

This impact analysis considers whether implementation of the VMP would result in significant adverse impacts related to wildfires. The analysis focuses on reasonably foreseeable effects of the VMP as compared with baseline conditions. The potential direct and indirect effects of the VMP are described and evaluated according to significance criteria from Appendix G of the CEQA Guidelines (below).

Criteria for Determining Significance

Based on Appendix G of the CEQA Guidelines, if the VMP area is located near state responsibility areas or lands classified as very high fire severity zones, the VMP would result in a significant impact related to wildfire if it would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan;
- Exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors;
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Issues Not Evaluated Further

Criteria that are dismissed from the analysis include:

- **Substantial Impairment of Adopted Emergency Response Plan or Emergency Evacuation Plan**. This topic is addressed in Section 3.8, "Hazards and Hazardous Materials," and Section 3.12, "Transportation."

- **Require the Installation or Maintenance of Infrastructure that May Exacerbate Fire Risk.** While the VMP involves installation or maintenance of fuel breaks, the temporary and ongoing impacts associated with this activity are described throughout Chapter 3 of this EIR. The VMP does not involve installation or maintenance of roads, emergency water sources, power line or other utilities that may exacerbate wildfire risks or ongoing impacts to the environment.

Environmental Impacts

Impact WLD-1: Substantially Exacerbate Wildfire Risk and Expose People to Uncontrolled Spread of a Wildfire (*Less than Significant with Mitigation*)

The VMP was developed to meet the goals of reducing wildfire hazard on City-owned land and along critical access/egress routes, reducing the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety, avoiding or minimizing impacts to natural resources, and contributing to regional efforts to reduce wildfire hazard in the Oakland Hills. VMP activities would not involve placement of people or habitable structures in areas without adequate fire protection. Additionally, VMP activities would not result in the creation of new wildland areas which could increase fire dangers.

The VMP area is one of the highest risk areas in the country for devastating WUI fires, due to factors such as local extreme wind and weather events, topography, and vegetation types. It is also the location of the 1991 Tunnel Fire, one of the state's most destructive historic wildfires. Implementation of the VMP would reduce fuel load and fire risk in the VHFHSV through the targeted vegetation management activities described in Chapter 2, and would thus help protect people, structures, and habitat from wildfire risks.

Because certain VMP activities (e.g., mechanical treatment techniques) would be conducted during the dry summer months when fire danger is the highest, there is a potential for an accidental ignition of a wildland fire during implementation of VMP activities. Use of vehicles and equipment for implementation of VMP projects could ignite a fire through generation of sparks or heat. Accidental ignition of a wildfire would be considered a significant impact. This potential is temporary and limited to periods when VMP activities are being implemented. In the long-term, the VMP will reduce wildfire risk.

Implementation of **Mitigation Measure HAZ-1 (Vehicle and Equipment Maintenance)** and **Mitigation Measure WLD-1 (Fire Prevention)** would reduce potential impacts, by requiring on-site fire suppression equipment, spark arrestors on all equipment with internal combustion engines, restricting activities on high fire danger days, and require that all equipment and vehicles are checked for leaking oil and fluids.

Mitigation Measures

Mitigation Measure HAZ-1: Vehicle and Equipment Maintenance (VMP BMP GEN-8)

See text in Section 3.8, "Hazards and Hazardous Materials."

Mitigation Measure WLD-1: Fire Prevention

The City and its contractors shall implement the following measures:

- All vegetation management and portable equipment with internal combustion engines shall be equipped with spark arrestors.
- Work crews shall not conduct vegetation treatment activities during Red Flag Day and Fire Weather Watch warnings, except in the case of emergency.
- During the high fire danger period (April 1–December 1), work crews shall:
  - Have appropriate fire suppression equipment available at the work site.
  - Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame.
  - Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area).

Conclusion

Although some VMP treatment projects (e.g., those involving mechanical techniques) could result in the risk of accidental ignition of a wildfire, implementation of Mitigation Measures HAZ-1 and WLD-1 would reduce these impacts to a level that is **less than significant with mitigation**. The VMP, overall, would have a beneficial effect as it would substantially reduce wildfire risks.

Impact WLD-2: Expose People or Structures to Substantial Risks Related to Post-Fire Landslides or Flooding (*Less than Significant with Mitigation*)

VMP activities would not involve placement of people or habitable structures in areas with risks related to post-wildfire flooding or landslides. Moderate to high severity wildfire can greatly increase the likelihood of debris sliding and debris flows (Haas et al. 2017). Rainstorms after wildfire can result in flash floods and debris flows, which can impact people or structures that are located below an area that has burned. Implementation of the VMP would reduce risks of fire, especially catastrophic fire, and thus reduce risk of post-fire landslides or flooding. This would be a beneficial impact compared to existing conditions.

However, implementation of some VMP treatment projects, such as those located on steep slopes, would result in increased potential for surface erosion and a low likelihood of increasing the risk of landslides due to vegetation removal. Removal of vegetation during VMP treatment projects could affect the root structure in treated areas such that the stability of slopes and soils could decrease, which would increase the risk of erosion. Removal of vegetation can also affect soil moisture content by reducing evapotranspiration, keeping more moisture in the soil. However, complete removal of vegetation in treatment areas under the VMP would not occur.

Vegetation treatments and vegetation removal activities are guided by the VMP's standards which define vegetation removal and cover densities. Vegetation treatments within the VMP area (see **Appendix A**, *Draft Vegetation Management Plan*, of this DEIR for more details) include leaving a minimum number of trees per acres in each vegetation type and guidance on spacing between retained trees. The vegetation standards of the VMP would minimize the potential for these impacts. Areas with steeper slopes and where previous landslides have occurred would be at higher risk of landslides. These issues are discussed in more detail in v Section 3.6, "Geology, Soils, and Seismicity."

The VMP covers a 10-year timeframe, and VMP projects would be spread across the landscape during that time. Thus, impacts related to landslides would be dispersed both temporally and spatially.

Mechanical Treatments

Mechanical treatments are anticipated to have the greatest potential for increasing surface erosion, slope instability and landslides, due to ground disturbance from tracked equipment. Implementation of **Mitigation Measure GEO-1 (Minimize Soil Disturbance)** and **Mitigation Measure GEO-2 (Erosion and Sediment Control Measures)** would minimize the potential for landslides by minimizing the area of ground disturbance and implementing erosion control BMP to stabilize slopes. Implementation of **Mitigation Measure GEO-3 (Geotechnical Evaluation**) would reduce the potential for landslides by requiring a geotechnical evaluation that considers the potential for future landslides associated with VMP treatments in areas where landslide potential is increased.

Hand Labor Treatments

Hand labor treatments are anticipated to have low impacts on the potential for surface erosion and landslides, due to the minimal potential for ground disturbance. However, implementation of Mitigation Measures GEO-1 and GEO-2 would further minimize the potential for landslides by minimizing the area of ground disturbance and implementing erosion control BMP to stabilize slopes.

Grazing

Grazing treatments are anticipated to have a low impact on the potential for surface erosion and landslides.

Herbicides

Herbicide treatments are anticipated to have a low impact on the potential for surface erosion and landslides, due to the minimal potential for ground disturbance.

Mitigation Measures

Mitigation Measure GEO-1: Minimize Soil Disturbance (VMP BMP GEN-2)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-2: Erosion and Sediment Control Measures (VMP BMP GEN-3)

See text in Section 3.6, "Geology, Soils, and Seismicity."

Mitigation Measure GEO-3: Geotechnical Evaluation

See text in Section 3.6, "Geology, Soils, and Seismicity."

Conclusion

While some proposed VMP treatment projects would incrementally increase the potential for surface erosion and landslides and associated flooding (particularly in steep areas), implementation of Mitigation Measures GEO-1, GEO-2, and GEO-3 would reduce potential risks related to post-fire landslides or flooding to a level that is **less than significant with mitigation**. The VMP, overall, would have a beneficial effect as it would substantially reduce wildfire risks and thereby reduce the potential for post-fire surface erosion, landslides, and flooding.

Chapter 4
Other Statutory Considerations

4.1 INTRODUCTION

This chapter describes other statutory considerations and potential impacts of the VMP that have not already been described, as required by the CEQA Guidelines. This chapter includes a discussion of irreversible impacts, significant but mitigable impacts, growth-inducing impacts, and cumulative impacts of the VMP.

4.2 IRREVERSIBLE IMPACTS

CEQA Guidelines Section 15126.2(d) requires that an EIR must identify any irreversible impacts (also referred to as irreversible environmental changes) that may be caused by a proposed project, such as current or future commitments to using nonrenewable resources, secondary impacts, and growth-inducing impacts that commit future generations to similar uses. Section 15126 of the CEQA Guidelines states that significant, irreversible environmental changes associated with a proposed project may include:

- use of non-renewable resources during the initial and continued phases of the project that may be irreversible because a large commitment of such resources makes removal or non-use thereafter unlikely;
- primary impacts and, particularly, secondary impacts (such as a highway improvement that provides access to a previously inaccessible area) that commit future generations to similar uses; and
- irreversible damage that may result from environmental accidents associated with the project.

An irreversible commitment of nonrenewable resources would occur as a result of the VMP through the temporary use of heavy equipment, which would require the use of fossil fuels. However, the vegetation management practices implemented under the VMP would likely reduce the need for larger and more complex vegetation management projects that could be required over time if routine maintenance activities were deferred. In addition, failure to implement vegetation treatment activities under the VMP would increase the risk of wildfire within the VMP area, which could result in a catastrophic and uncontrolled commitment of nonrenewable resources. With implementation of the mitigation measures identified in this EIR, the VMP is not anticipated to have secondary impacts that would commit future generations to similar uses or result in irreversible damage, and it would not involve expansion of existing facilities.

4.3 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15126.2(c) of the CEQA Guidelines requires an EIR to describe any significant impacts that cannot be mitigated to a less than significant level. The following impacts are considered significant and unavoidable environmental impacts that cannot be avoided. Refer to Section 3.10, "Noise and Vibration," of this DEIR for a full description of this impact.

- Impact NOI-1: Generate Substantial Temporary or Periodic Increase in Ambient Noise Levels; or Generate Noise in Violation of the City of Oakland Municipal Code, in Excess of General Plan Standards, California Noise Insulation Standards, or Applicable Standards Established by a Regulatory Agency

4.4 GROWTH INDUCEMENT

Section 15126.2(e) of the CEQA Guidelines requires an EIR to include a detailed statement of a proposed project's anticipated growth-inducing impacts. The analysis of growth-inducing impacts must discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the project area. The analysis also must address project-related actions that, either individually or cumulatively, would remove existing obstacles to population growth. A proposed project is considered growth inducing if it would induce growth directly (through the construction of new housing or increasing population) or indirectly (by increasing employment opportunities or eliminating existing constraints on development). Under CEQA, growth is not assumed to be either beneficial or detrimental.

The VMP would neither involve the construction of new housing nor directly or indirectly result in population growth. Similarly, implementation of the VMP would not result in significant increases in employment, given modest increases in crew sizes and the relative frequency of vegetation management activities. Therefore, the VMP would not result in growth-inducing impacts.

4.5 CUMULATIVE IMPACTS

A cumulative impact refers to the combined effect of "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Cumulative impacts reflect the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable (i.e., probable) future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355[b]).

CEQA Guidelines Section 15130(a) requires that an EIR address the cumulative impacts of a proposed project when:

- the cumulative impacts are expected to be significant; and

- the project's incremental effect is expected to be cumulatively considerable, or significant, when viewed in combination with the effects of past, current, and probable future projects.

An EIR does not need to discuss cumulative impacts that do not result in part from the project evaluated in the EIR.

CEQA Guidelines Section 15130 requires an analysis of cumulative impacts to contain the following elements:

- Either a list of past, present, and probable future projects producing related cumulative impacts or a summary of projections contained in an adopted local, regional, or statewide plan that describes or evaluates conditions contributing to the cumulative effect;

- A definition of the geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limitation used;

- A summary of the environmental effects expected to result from those projects with specific reference to additional information stating where that information is available; and

- A reasonable analysis of the combined (cumulative) impacts of the relevant projects.

The discussion of cumulative impacts is not required to provide as much detail as the discussion of effects attributable to the project alone. Rather, the level of detail should be guided by what is practical and reasonable. In addition, Section 15130(e) of the CEQA Guidelines directs that, if a cumulative impact is adequately addressed in a previous EIR for a general plan and the proposed project is consistent with that general plan, the project EIR need not analyze that cumulative impact further.

4.5.1 Methods Used in this Analysis

As described above, Section 15130 of the CEQA Guidelines provides two recommended approaches for analyzing and preparing an adequate discussion of significant cumulative impacts:

- the *list approach*, which involves listing past, present, and probable future projects that would produce related or similar impacts, including those projects outside the control of the lead agency; or

- the *projection approach*, which utilizes a summary of projections contained in an adopted general plan, a related planning document, or an adopted environmental document that evaluated regional or area-wide conditions contributing to the cumulative impact.

The discussion of cumulative impacts in this DEIR uses a combination of the list approach and the projection approach. Section 4.5.2 identifies other past, present, and reasonably foreseeable future projects involving vegetation and wildfire management that could affect resources similar

to those affected by the VMP. Section 4.5.3 describes aspects of relevant planning documents that reflect the City's past, present, and reasonably foreseeable future development conditions in the VMP area. Using this combined approach, the cumulative impact analysis focuses on environmental resources that could be affected by the VMP in conjunction with other past, present, and reasonably foreseeable future projects.

4.5.2 Activities with Potential to Affect Resources Similar to the VMP

Chabot Space and Science Center Vegetation Management Implementation Plan

The City of Oakland prepared and is implementing a Vegetation Management Implementation Plan at the Chabot Space and Science Center (CSSC) (WRA 2013). The plan includes recommendations to reduce fuel loads on approximately 7.93 acres of land to the southwest of the CSSC, bounded by the CSSC driveways to the northwest and southeast and by Skyline Boulevard to the southwest.

Chabot Space and Science Center Pallid Manzanita Habitat Enhancement and Conservation Plan

The Pallid Manzanita Habitat Enhancement and Conservation Plan (CSSC 2015) was prepared to fulfill mitigation measures established in the 1995 CSSC EIR. These mitigation measures were designed to avoid and minimize impacts to pallid manzanita (*Arctostaphylos pallida*), a plant species federally listed as threatened and state listed as endangered, located in the vicinity of the CSSC. The habitat enhancement and conservation plan describes performance standards and habitat enhancement and restoration measures to restore the species to previous numbers (at a minimum) and protect the plants into the future. The plan sets forth a monitoring regimen to take place each spring to document the success of habitat enhancement and restoration efforts.

EBRPD East Bay Hills Wildfire Hazard Reduction, Resource Management Plan

The EBRPD East Bay Hills Wildfire Hazard Reduction and Resource Management Plan (LSA 2009) provides long-term strategies to reduce fuel loads and manage vegetation within the EBRPD's Study Area parks. The resource management plan includes goals for wildfire hazard reduction and resource management to minimize the risk of Diablo wind-driven catastrophic wildfire along the WUI while maintaining and enhancing ecological habitat values within the EBRPD's jurisdiction. To achieve these goals, the EBRPD established a vegetation management plan that describes vegetation types and characteristics within the EBRPD's Study Area; identifies fire hazard reduction and resource management goals; and sets forth fuel treatment methods. The vegetation management plan also discusses fuel reduction methods and allows for a feedback process to improve implementation.

East Bay Municipal Utility District East Bay Watershed Fire Management Plan

The EBMUD Fire Management Plan (EBMUD 2000) guides the implementation of fire protection and preparedness activities that meet key watershed management objectives. Using an integrated GIS-based fire-planning process, the fire management plan is periodically updated to reflect current scientific information, federal and state regulations, and natural resource constraints. The plan presents implementation strategies and tactics for fire assessment, reduction, and management.

East Bay Municipal Utility District Low Effect East Bay Habitat Conservation Plan

The EBMUD Low Effect East Bay Habitat Conservation Plan (EBMUD 2008) specifies the potential impacts of activities associated with the take of listed species occurring within the HCP area. General goals include managing maintenance of existing covered species habitat types and educating EBMUD personnel regarding identification and avoidance of sensitive species. Species-specific goals include protecting individuals and habitats of covered species on EBMUD watershed land and working toward general species recovery within the HCP area.

Alameda County Community Wildfire Protection Plan

The Alameda County Community Wildfire Protection Plan (Diablo Fire Safe Council 2015) provides an overview of wildfire hazards and risk in the WUI areas of Alameda County, California. The CWPP follows the format established by the federal Healthy Forest Restoration Act by identifying and prioritizing opportunities for fuel reduction within the county, addressing structural ignitability, and encouraging collaboration with stakeholders. The CWPP aims to aid stakeholders in preventing and reducing the threat of wildfire in the county by increasing education about wildfires, reducing hazardous fuels and structural ignitability, and assisting with emergency preparedness and fire suppression efforts. Action plan summaries identify implementation steps, leaders and partners, timeframes, and funding needs to facilitate the implementation of mitigation efforts.

Fire Hazard Mitigation Program and Fuel Management Plan for the East Bay Hills (1995)

The *Fire Hazard Mitigation Program and Fuel Management Plan* (East Bay Hills Vegetation Management Consortium 1995) covers a study area of approximately 37,000 acres from Berkeley to Oakland and summarizes the efforts of nine public agencies collectively referred to as the Vegetation Management Consortium (VMC), to mitigate fire risk. The plan was funded by grants from FEMA and the California Office of Emergency Services matched by funding from local agencies. The plan identifies high fire hazard areas and prioritizes fuel treatment areas based on those ratings. In addition, the plan identifies vegetation management prescriptions by dominant vegetation type.

Resource Management Plan for the Caldecott Wildlife Corridor

The *Resource Management Plan for the Caldecott Wildlife Corridor* (Caldecott Corridor Committee 1998) covers the area of land above the Caldecott Tunnel, a significant habitat linkage across SR 24. The plan outlines the ecology, ownership, and fire environment of the study area and outlines management goals and objectives intended to improve wildlife habitat value and reduce wildfire hazard. The plan recommends management actions focused on fuel management, habitat restoration, power line management, public education, and road closure.

UC Berkeley Wildland Vegetative Fuel Management Plan

The University of California at Berkeley's (UC Berkeley) proposed Wildland Vegetative Fuel Management Plan (WVFMP) covers the University's Hill Campus (Plan Area) and aims to reduce wildfire risk and minimize the potential for harmful effects of wildfire on people, property, and natural resources in the Plan Area, as well as on adjacent public and private land. The WVFMP includes five different vegetation treatment activities: 1) manual treatment, 2) mechanical treatment, 3) prescribed broadcast burning, 4) managed herbivory (livestock grazing), and 5) targeted ground application of herbicides. UC Berkeley would implement vegetation treatment activities on an average of 200 acres per year within the Plan Area. UC Berkeley is also proposing nine identified treatment projects (two fuel break projects, four temporary refuge areas, and three fire hazard reduction projects) in the Plan Area. (UC Berkeley 2020)

4.5.3 Planning Documents Considered for Cumulative Impact Analysis

City of Oakland General Plan

The Safety Element of the City of Oakland's General Plan (City of Oakland 2004) provides an overview of five specific environmental hazards (public safety, geologic hazards, fires, hazardous materials, and flooding), including the institutional framework and policy actions related to those hazards. In particular, Chapter 4, "Fire Hazards," analyzes the city's risk from wildfires and structural fires, as well as the city's firefighting capabilities, water supply and roadway standards, and emergency routes. It also addresses the City's response to the 1991 Oakland/Berkeley Hills Fire, which included special development requirements for new construction in wildfire-hazard areas, vegetation management, and fire suppression and public education programs in the Oakland Hills.

The Open Space, Conservation, and Recreation Element of the City's General Plan (City of Oakland 1996) is the official policy document addressing the management of open land, natural resources, and parks in Oakland. The element contains chapters that address City goals and policies to protect open space, soil, water, plant and animal, air, and energy resources.

City of Oakland 2016-2021 Local Hazard Mitigation Plan

The City of Oakland's *2016-2021 Local Hazard Mitigation Plan* (City of Oakland 2016) is an amendment to the City's General Plan Safety Element and an annex to the Association of Bay Area Governments (ABAG) multi-jurisdictional Local Hazard Mitigation Plan. The plan identifies the natural and human-caused hazards the City faces, assesses residents' vulnerability, and identifies specific actions that can be taken to reduce the risk. The fire prevention mitigation strategies that the City committed to include reauthorizing Wildfire Prevention Assessment

District (WPAD), establishing a Defensible Space Vegetation Program to reduce wildfire hazards, and amending the Oakland Planning Code to adopt a "Fire-safe Combining Zone" for future construction.

Oakland 2030 Equitable Climate Action Plan

The City's recently adopted 2030 ECAP (City of Oakland 2020) contains goals and actions that apply to activities within the city, with a GHG reduction target for the year 2030 of 56 percent below 2005 levels. Actions relevant to the VMP include reducing wildfire risk, expanding and protecting tree canopy cover, and rehabilitating riparian and open space areas.

North Oakland Hill Area Specific Plan

The North Oakland Hill Area Specific Plan (City of Oakland 1986) is a document addressing land use, infrastructure, zoning, and development in a portion of the Oakland hills. The area covered by this specific plan is generally located along the ridgeline northwest of Shepherd Canyon Road. This specific plan includes a vegetation management prescription and specific policies and mitigation measures to reduce fire hazard risk within the North Oakland hill area.

Plan Bay Area 2040

Plan Bay Area 2040 is the latest update to the long-range Regional Transportation Plan and Sustainable Communities Strategy for the nine-county San Francisco Bay Area. Prepared by ABAG and the Metropolitan Transportation Council (MTC) in 2017, the plan discusses growth in the Bay Area through 2040 and identifies transportation and land use strategies to enable a more sustainable, equitable, and economically vibrant future. Starting with the current state of the region, Plan Bay Area 2040 identifies goals, a proposed growth pattern and supporting transportation investment strategy, and key actions to address ongoing and long-term regional challenges. **Table 4-1** provides the plan's estimates of population growth in the Bay Area and population in the VMP area.

Table 4-1. Projected Population and Housing Growth for the VMP Area for 2020–2030

Jurisdiction	Population		Projected Annual Population Growth (%)
	2020	2030	
City of Oakland[1]	480,270	554,325	1.4
VMP Area	8,425[2]	9,690[3]	

Sources: (1) ABAG and MTC 2017; (2) U.S. Census Bureau 2018; (3) calculated.

4.5.4 Resource Topics Considered and Dismissed for Cumulative Impacts Analysis

Based on the significance thresholds in Appendix G of the CEQA Guidelines, the City of Oakland CEQA Thresholds of Significance Guidelines (City of Oakland 2013), and City of Oakland Transportation Impact Review Guidelines (City of Oakland 2017), several resource sections of the environmental analysis in Chapter 3 of this DEIR include some level of evaluation of the VMP for its potential to make a considerable contribution to cumulative impacts. These resource

topics are air quality, biological resources, greenhouse gases, and transportation. The VMP's contribution to cumulative air quality impacts is addressed in Section 3.3, "Air Quality." Greenhouse gas emissions are inherently a cumulative issue and are addressed in Section 3.7, "Greenhouse Gas Emissions, Climate Change, and Energy." Therefore, these topics are not discussed further in this section. Cumulative impacts on biological resources and noise are evaluated to a limited degree and are included below.

Table 4-2 describes resource topics for which significant cumulative impacts do not exist or the VMP would not have the potential to make a considerable contribution to any significant cumulative impacts. These resource topics have been dismissed from consideration in the analysis of cumulative impacts and are not discussed further.

Table 4-2. Resource Topics Eliminated from Further Consideration in the Analysis of Cumulative Impacts

Resource Topic	Rationale for Elimination
Aesthetics	Impacts related to aesthetics from other vegetation management and conservation plans in the Oakland Hills would be site specific and dependent upon the type of activity proposed. Several of these plans would involve similar activities to the VMP in contiguous areas. Similar to the VMP, treatment activities under the cumulative projects would be phased over multiple years, and the likelihood of any one vegetation management activity occurring over a large enough area to have a substantial adverse effect on a scenic vista or view from a scenic highway is minimal. Impacts of the VMP related to short-term degradation of public views as a result of large equipment would be mitigated, and clearance of roadside vegetation would generally improve visual conditions for most viewers as a result of implementation of the VMP. Impacts of the VMP related to long-term degradation of public views from recreational trails and scenic vistas as a result of tree removal would be reduced through implementation of Mitigation Measure AES-1, which requires a visual reconnaissance, potential relocation of tree removal actions, thinning of surrounding vegetation or screening of treatment areas that are publicly visible. For these reasons, the VMP would not contribute to a cumulatively significant impact related to aesthetics. Therefore, this resource topic is dismissed from further analysis.

Resource Topic	Rationale for Elimination
Cultural Resources and Tribal Cultural Resources	Impacts related to cultural and tribal cultural resources from other vegetation management and conservation plans in the Oakland Hills would be site specific. Similar to the VMP, cumulative project proponents would be required to assess the presence of such resources (e.g., consultation with Native American tribes) before conducting plan-related activities. If such resources are identified on a given project site, projects would be required to implement standard measures to avoid impacts to cultural resources (similar to the cultural resources mitigation measures identified in Sections 3.5 and 3.13 of this DEIR). In addition, state-mandated protocols for unanticipated discoveries found during construction would also be required. For these reasons, the VMP would not contribute to a cumulatively significant impact related to cultural or tribal cultural resources. Therefore, these resource topics are dismissed from further analysis.
Geology, Soils, and Seismicity	Impacts related to geology, soils, and seismicity from other vegetation management and conservation plans in the Oakland Hills would be site specific. Similar to the VMP, cumulative project proponents would be required to comply with state law to avoid destruction of paleontological resources or unique geologic features. Additionally, other plans would be required to implement standard measures to avoid impacts from erosion, loss of topsoil, and landslides. For these reasons, the VMP would not contribute to a cumulatively significant impact regarding geology, soils and seismicity. Therefore, this resource topic is dismissed from further analysis.
Hazards and Hazardous Materials	Impacts related to hazards and hazardous materials from other vegetation management and conservation plans in the Oakland Hills would be site specific. Similar to the VMP, cumulative project proponents would be required to comply with federal, state, and local requirements to minimize impacts related to hazardous materials. For these reasons, the VMP would not contribute to a cumulatively significant impact regarding hazards and hazardous materials. Therefore, this resource topic is dismissed from further analysis.
Hydrology and Water Quality	Similar to the VMP, other vegetation management and conservation plans in the Oakland Hills would be required to comply with state and local permit requirements and implement stormwater management BMPs aimed at reducing pollutants of concern and minimizing the volume and velocity of stormwater runoff from a project site. Similar to the VMP, cumulative project proponents would also be required to implement measures to avoid violation of water quality standards from erosion, sedimentation, and siltation from treatment activities. For these reasons, the VMP would not contribute to a cumulatively significant impact related to hydrology and water quality. Therefore, this resource topic is dismissed from further analysis.

Resource Topic	Rationale for Elimination
Recreation	The VMP would not result in increased use of recreational facilities in the VMP area that would lead to physical deterioration or permanently disrupt use of or access to recreational facilities. Similar to the VMP, impacts to recreational facilities and open spaces from other vegetation management and conservation plans within the Oakland Hills would be localized and temporary. Mitigation in the VMP requires that public notification would be provided in the event of a temporary trail closure. For these reasons, the VMP would not contribute to a cumulatively significant impact related to recreation. Thus, this resource topic is dismissed from further analysis.
Transportation	The VMP would not result in a significant increase in VMT because the various project sites and treatment activities would take place over a 10-year period, with minimal increases in daily trips (up to 18-48). Similar to the VMP, other vegetation management and conservation plans would involve periodic maintenance and treatment activities conducted by small crews, resulting in limited increases in daily trips. For these reasons, the VMP would not contribute to a cumulatively significant impact related to transportation. Thus, this resource topic is dismissed from further analysis.
Wildfire	The VMP would reduce the risk of wildfire in the treatment area through targeted vegetation and fuel management activities conducted along roadsides, medians, trails, open spaces, and urban/residential parcels in the Oakland Hills. Similar to the VMP, other vegetation management and conservation plans would be required to implement fire safety measures such that projects would not exacerbate wildfire risks. For these reasons, the VMP would not contribute to a cumulatively significant impact related to wildfire. Thus, this resource topic is dismissed from further analysis.

4.5.5 Cumulative Impacts

Cumulative Impact BIO-1: Cumulative Effects on Biological Resources (*Less than Significant with Mitigation)*

VMP activities and ongoing activities conducted under regional vegetation management and conservation plans could result in the loss of wetlands and water features. These outcomes could potentially lead to direct take or loss of habitat for both common and special-status species, including the Alameda whipsnake and California red-legged frog. The VMP area contains a wide variety of sensitive natural communities that support many special-status species, including brittle leaf – woolly leaf manzanita chaparral, bush monkeyflower scrub, California bay forest, freshwater emergent wetland, needle grass – melic grass grassland, redwood forest, red alder forest, and valley/foothill riparian. As a result, anticipated growth and development in Oakland, along with other vegetation management and conservation plans contiguous to the VMP area, could result in cumulative effects on special-status species and sensitive habitats.

Ground-disturbing activities associated with the other vegetation management and conservation plans could disturb or directly injure or kill special-status species or result in permanent loss of habitat, all of which would be significant impacts. However, it is expected that

other plans contiguous to the VMP area would be required to implement the same types of mitigation measures to offset their adverse effects on special-status species and other sensitive biological resources as those identified for the VMP. Some cumulative projects in the VMP area would have long-term direct benefits to specific species in the area, such as the CSSC Vegetation Management Implementation Plan and CSSC Pallid Manzanita Habitat Enhancement and Conservation Plan, which are designed improve habit conditions for pallid manzanita. Additionally, the EDMUD Low Effect East Bay HCP identifies general and species-specific biological goals regarding identification and avoidance of sensitive species. However, the Alameda County Plan Bay Area 2040 and the City of Oakland General Plan anticipate population and housing growth over the next 10 years; this ongoing development would also contribute to significant impacts on biological resources. Overall, the potential to adversely affect special-status species, wetlands, and water features would result in a significant cumulative impact.

As described in Section 3.4, "Biological Resources," the VMP would involve vegetation management activities in various locations that could impact special-status plants and wildlife, as well as wetlands and water features. If left unmitigated, these impacts would result in a considerable contribution to a cumulative impact. However, adherence to Mitigation Measures BIO-1 through BIO-16 identified in Section 3.4 would mitigate impacts of the VMP to special-status species, wetlands, and water features to a less than significant level. Considering that the VMP would not convert large areas of sensitive habitat and would avoid, minimize, or mitigate temporary and permanent effects to the maximum extent practicable with implementation of the above-mentioned mitigation measures, the VMP's contribution to cumulative impacts on biological resources would not be considerable. Therefore, this impact would be **less than significant with mitigation**.

Cumulative Impact NOI-2: Cumulative Effects Related to Noise (*Significant and Unavoidable)*

As described in Section 3.10, "Noise and Vibration," VMP treatment activities would involve the use of equipment, including trucks used for hauling away material or transporting equipment and livestock, that may generate groundborne vibration. At any given site near sensitive receptors, groundborne vibration from equipment and trucks would be limited in duration and infrequent. Similar conditions would apply to other vegetation management and conservation plans in or near the VMP area. In addition, Section 17.120.060 of the City of Oakland Planning Code exempts motor vehicles and temporary construction and demolition activities from the vibration standard. Therefore, the generation of groundborne vibration from VMP activities and other cumulative projects would be less than significant.

The major noise sources in the Oakland area are transportation-related, including vehicle traffic on highways and major roads, BART and rail operations, and aircraft operations at Oakland International Airport. In and around the VMP area, the primary sources of noise are Interstate 580, SR 13, and BART. Many parcels targeted by vegetation management plans are in or adjacent to parks and single-family residential areas, where common noise sources include equipment used for landscaping and yardwork. Similarly, many of these areas are open spaces or recreational areas that generally have less ambient noise and no permanent or substantial onsite noise sources. On-site uses in active recreation areas such as Oakland Zoo, Chabot Science Center, sport fields, or amphitheaters constitute additional potential noise sources. These sites are generally located in the Oakland Hills, either within or bordering residential areas

and open spaces, which are designated as sensitive receptors in the City of Oakland General Plan. Therefore, anticipated growth and development in Oakland, along with other contiguous vegetation management and conservation plans, could result in cumulative effects related to noise.

Mechanical treatment activities and vehicles associated with other vegetation management and conservation plans would result in increased noise levels in areas adjacent to the VMP area. Although these increases would likely be temporary, they would affect sensitive receptors in residential areas and open spaces that are the targets of the plans. In addition, the Alameda County Plan Bay Area 2040 anticipates population growth of approximately 1.4 percent per year over the next 10 years; this ongoing development would also contribute to significant impacts related to noise. Overall, the increases in noise levels would result in a significant cumulative impact.

VMP activities would be temporary at any given site. Activities would be phased over multiple years, and the likelihood of any individual management activity occurring over a large enough area to have a substantial adverse noise effect in the long term would be minimal. In general, noise levels are considered a localized issue. While implementation of Mitigation Measures NOI-1 and NOI-2 would help minimize noise impacts, the use of noise-producing equipment near residences and other sensitive receptors may be necessary in order to reduce fire risk at those receptors and in adjacent VMP treatment areas.

There is no additional feasible mitigation that could be implemented to decrease noise levels at receptors. The use of temporary sound barriers between construction activity and the sensitive receptors is a common construction-related noise mitigation measure. However, this strategy is not feasible to implement for VMP management activities because of the location, nature, and pace of the treatment work. Installing temporary sound barriers in the VMP area would often be a hazard to workers, the public, and nearby structures or buildings because of the hilly, vegetated, and undeveloped terrain, and sound barriers could inhibit wildlife movement in the area. Establishing a distance from residences within which noise-generating treatments or hand-operated power tools and heavy equipment would be prohibited is another potential mitigation strategy. However, prohibiting or reducing the effectiveness of treatments near residences would prevent the City from accomplishing the primary objective of the VMP. Therefore, these potential mitigation strategies are not feasible. For the reasons described above, even with implementation of Mitigation Measures NOI-1 and NOI-2, the VMP would make a considerable contribution to the cumulative temporary increases in ambient noise levels in VMP treatment areas; this cumulative impact would be **significant and unavoidable.**

Chapter 5
Alternatives

5.1 INTRODUCTION

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the project that would feasibly attain most of the identified project objectives but would avoid or substantially lessen one or more of the project's significant impacts. This chapter describes the alternatives to the VMP that were considered and evaluated for their potential environmental impacts. The CEQA requirements for consideration of alternatives are presented. The chapter then continues with a description of the alternative development process and an analysis of the alternatives carried forward. The chapter concludes with identification of the environmentally superior alternative.

5.2 CEQA REQUIREMENTS FOR ALTERNATIVES EVALUATION

The CEQA Guidelines require that an EIR evaluate a reasonable range of alternatives to a proposed project, including an alternative where no project would be developed. Although no clear rule exists for determining a "reasonable range," the CEQA Guidelines provide direction on defining the range of alternatives for consideration in the environmental document.

The range of alternatives to be developed under CEQA is governed by the "rule of reason," which requires that the EIR examine only alternatives that could feasibly attain most of the project's objectives and would avoid or substantially lessen one or more of the significant environmental impacts of the project. The range of feasible alternatives should be selected and presented in a manner that will foster public participation and informed decision making (CEQA Guidelines Section 15126.6[f]). In determining whether an alternative is feasible, lead agencies are guided by the general definition of feasibility found in CEQA Guidelines Section 15364: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

In accordance with CEQA Guidelines Section 15126.6(f)(1), the lead agency may consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and the proponent's control over alternative sites in determining the range of alternatives to be evaluated in an EIR. An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the lead agency relied on in making the selection. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process, and briefly explain the reason for their exclusion (CEQA Guidelines Section 15126[c]).

A "No Project Alternative" also must be considered. The No Project Alternative is the "existing conditions at the time the Notice of Preparation is published" as well as "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based

on current plans" (CEQA Guidelines Section 15126.6[e][2].). The No Project Alternative does not need to feasibly attain most of the project objectives or avoid or substantially lessen one or more of the significant environmental impacts of the project. "When the project involves revision of an existing plan, policy, or ongoing operation, the no-project alternative should reflect continuation of the existing plan, policy, or operation." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) Section 15.19, citing CEQA Guidelines Section 15126.6[e][3][A].) "In such a situation, the no-project alternative should be described as a continuation of the existing operation." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) Section 15.20, citing *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 234 Cal.App.4th 214, 254.) "The no-project analysis reflects whether failure to approve the project would preserve existing environmental conditions or instead would lead to other changes to the environment." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2020) Section 15.19, citing CEQA Guidelines Section 15126.6[e][2].) The intent of the No Project Alternative is to allow decision makers to compare the impacts of approving the project against the impacts of not approving the project (CEQA Guidelines Section 15126[e][1]).

5.3 ALTERNATIVES DEVELOPMENT PROCESS

Public and stakeholder comments received during the public outreach process associated with development of the VMP and this EIR provided guidance on the consideration of alternatives. In addition, the VMP's goals and objectives and significant environmental impacts identified in this EIR were also considered while developing suitable alternatives that aim to achieve the primary project goals and objectives and avoid or substantially lessen significant environmental effects compared to the VMP.

5.3.1 Public Meetings and Comments

During development of the VMP, numerous public and stakeholder engagement meetings were conducted, including six workshops/meetings in 2017 and 2018 and 12 group meetings in spring 2019 (refer to Section 2.2.2 for more information). As part of the DEIR process to provide the public and responsible and trustee agencies an opportunity to ask questions and submit comments on the VMP and the scope of the DEIR, the City also held a public scoping meeting on November 20, 2019, during the public scoping period. The City received 41 public comments during the public scoping period for the DEIR, including several comments on the consideration of different alternatives.

5.3.2 Project Goals and Objectives

The following goals have been identified for the VMP:

- Reduce wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ;
- Reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety;

- Implement practices to avoid or minimize impacts to natural resources;
- Maintain an active role in regional efforts to reduce wildfire hazard in the Oakland hills.

The objectives of the VMP are as follows:

- Reduce the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuel loads, and modifying fuel arrangements on City-owned lands.
- Reduce the likelihood of extreme fire behavior within the VMP area.
- Identify and define vegetation management actions that consider site-specific vegetation type, fuel hazard, treatment effectiveness, and ongoing maintenance requirements.
- Identify and prioritize fuel treatment areas based on fuel loads and arrangements, terrain, topographic exposure, and proximity to roads and structures.
- Retain vegetation where feasible to reduce wind exposure, retain soil and surface fuel moisture, and reduce the potential for soil erosion.
- Develop management recommendations that enable OFD to make informed, adaptive decisions on an annual basis (or more often as necessary) regarding vegetation management within the VMP area, considering the benefits of treatment, potential environmental effects, and treatment costs.
- Avoid, minimize, and/or reduce potential adverse effects of vegetation management on sensitive biological resources, water resources, aesthetics, soils, and slope stability.
- Increase the ability of OFD and other responding agencies to suppress wildfire in the VMP area in order to minimize wildfire impacts to VMP area resources.
- Routinely evaluate the effectiveness and implementation frequency of vegetation management actions within the VMP area.

5.3.3 Significant and Unavoidable Environmental Impact of the VMP

The VMP would result in one significant and unavoidable impact related to generating substantial temporary or periodic increase in ambient noise in violation of the City of Oakland noise thresholds (Section 3.10, Impact NOI-1). Mechanical treatment activities and the use of chainsaws during hand labor treatments would expose sensitive receptors to noise levels above the City's daytime weekday noise threshold of 80 dBA, resulting in a significant and unavoidable impact.

5.4 ALTERNATIVES CONSIDERED

The following alternatives were considered based on public input and because they would meet most of the VMP objectives, may be feasible, and would avoid or substantially reduce significant and unavoidable impacts of the VMP:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Vegetation Management Activities Alternative
- Alternative 3: No Herbicide Use Alternative
- Alternative 4: Reduced Herbicide Use Alternative

Aside from these four alternatives, no other alternatives were considered or dismissed.

5.4.1 Alternative 1: No Project Alternative

Characteristics of this Alternative

Under the No Project Alternative, the City would not implement a VMP to guide and direct targeted vegetation management activities to minimize the potential for ignitions, crown fire, and extreme fire behavior on City-owned land and along access/egress routes. Instead, the City would continue to conduct vegetation management activities consistent with existing (2017 and 2018) operations (refer to Table 3.1-1 for a summary of vegetation management activities conducted over the last 15 years). Under the No Project Alternative, the City would conduct approximately 1,100 acres of goat grazing and approximately 152 acres of roadside treatment and other activities each year, using a combination of hand labor and mechanical techniques. Similar to existing conditions, no chemical techniques (i.e., herbicides) would be used.

It is important to note that the underlying need for increased targeted vegetation management activities proposed under the VMP—to reduce wildfire risk in the City portions of the VHFHSZ—would remain unaddressed with implementation of the No Project Alternative. Without implementation of the VMP, the City would only be able to address a limited number of vegetation management activities annually based on the Public Works/OFD annual budget. By reducing the acreage of treatment that occurs in a given year compared to annual treatment acreages under the VMP, the No Project Alternative would fail to meet VMP goals and objectives. These goals and objectives, established in the midst of the region's pattern of catastrophic wildfires, include reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ; reducing the likelihood of ignitions and extreme fire behavior; implementing practices to avoid or minimize impacts to natural resources; reducing the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuels loads, and modifying fuel arrangements on City-owned lands; and avoiding adverse effects to sensitive resources. The No Project Alternative would not meet the following VMP objectives: identifying site-specific vegetation management actions based on vegetation type, fuel hazard, treatment effectiveness, and requirements; identifying and prioritizing fuel treatment areas based on fuel load arrangements, terrain, topographic exposure, and proximity to roads and structures; developing management recommendations so that OFD can make informed

vegetation management decisions that consider the benefits of treatment, environmental effects, and costs; routinely evaluating the effectiveness of the VMP; and increasing the ability of the OFD and responding agencies to suppress wildfire.

As mentioned above, consideration of a No Project Alternative is required under CEQA Guidelines Section 15126(e)(1).

Impact Analysis

Annual goat grazing activities under the No Project Alternative would be consistent with the acreage treated under the proposed VMP. However, the area subject to hand labor and mechanical treatment techniques each year would be less than under the VMP, treating approximately 152 acres compared to an annual maximum of 555 acres of hand labor and mechanical treatment under the VMP. Thus, the No Project Alternative would have no impact related to construction in comparison to the VMP. Because no additional vegetation management activities would be completed under the No Project Alternative, no construction-related effects (e.g., air quality/GHG emissions, noise, traffic, and biological resources effects) would result because no additional construction-related vehicle trips, equipment operations, or ground disturbance would take place.

Goat grazing activities would occur primarily between May and August, while hand labor and the use of mechanical equipment would occur year-round as needed. Under the No Project Alternative, OFD's Fire Prevention Bureau would continue to operate an annual vegetation inspection program on public and private property in the VHFHSZ portion of the City, as mandated by City of Oakland Ordinance No. 11640. The inspection program identifies properties that are out of compliance with the City's defensible space standards and requires that inspections be conducted until properties are brought into compliance. Without approval of the VMP, the inspection program and vegetation management activities would continue, dependent upon the Public Works/OFD annual budget and consistent with past OFD vegetation management activities.

Under the No Project Alternative, OFD would continue to conduct vegetation management activities using current equipment and techniques. The City of Oakland Planning Code contains laws and standards that may be relevant to the VMP, in particular Section 17.120.050, Noise, and Section 17.120.060, Vibration. In addition, Section 17.120.04 from the City Planning Code establishes allowable noise level standards (City of Oakland 2020a). Because no changes in operation would take place, the No Project Alternative would result in no additional noise impact compared to the VMP, which would have a significant and unavoidable impact related to sensitive receptors.

The Oakland Hills is one of the highest risk areas in the country for devastating WUI fires. Because no additional acreage of vegetation management activities would be conducted under the No Project Alternative compared to the VMP, the wildfire risk throughout the VHFHSZ would not be reduced and fire hazard conditions would likely worsen. As indicated in recent risk assessments (Dudek 2019), without improved vegetation management practices, fuel loads and fire risk will continue to increase (Stephens et al. 2012), and future catastrophic wildfires in the region are likely to result in greater impacts to life, property, and the environment.

Additionally, the No Project Alternative would not include the requirements established in the VMP for close coordination between OFD and local volunteer and stewardship groups active in the VMP area. Without clear communication protocols in place between OFD and local stewardship groups, locally sponsored projects may conflict with City plans or goals for vegetation management, potentially resulting in greater environmental impacts.

In conclusion, the No Project Alternative would not meet any of the goals or objectives of the VMP, particularly reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ. Although it would reduce the VMP's significant and unavoidable noise impact on sensitive receptors and other significant impacts related to biological resources and other environmental resources, it would also fail to address the need for wildfire risk reduction identified by the City, OFD, stakeholders, and members of the public throughout the years-long VMP development process.

Under the No Project Alternative, the City would fail to comply with the following plans and policies related to wildlife risk reduction and fuel management:

- Governor Newsom's Strike Force report (State of California 2019), which stated that the growing risk of catastrophic wildfires has created an imperative for the state to act urgently and swiftly to expand fire prevention efforts;
- CAL FIRE's 2018 Strategic Fire Plan for California, which sets forth sets forth goals focused on fire prevention, improved natural resource management, and increased fire suppression efforts (CAL FIRE 2018);
- policies and objectives from the City of Oakland General Plan Open Space, Conservation, and Recreation Element (City of Oakland 1996);
- goals and objectives of the California Forest Carbon Plan to reduce GHG and other carbon emissions associated with management activities, conversion, wildfire events, and other disturbances (Forest Climate Action Team 2018);
- the BAAQMD's 2017 Bay Area Clean Air Plan and Regional Climate Protection Strategy, which provide a road map for the BAAQMD's future efforts to reduce air pollution (BAAQMD 2017); and
- policies related to wildfire risk reduction from the City's 2030 Equitable Climate Action Plan (City of Oakland 2020b).

5.4.2 Alternative 2: Reduced Vegetation Management Activities Alternative

Characteristics of this Alternative

Alternative 2 is a modified version of the VMP with reduced annual treatment acreage. Under Alternative 2, the City would conduct approximately 1,100 acres of goat grazing and approximately 300 acres of roadside treatment and other activities using a combination of hand labor, mechanical treatments, and herbicide treatments. Additionally, no vegetation

management activities would occur on urban and residential treatment areas, which total 47.5 acres. While vegetation treatment activities would still occur in close proximity to sensitive uses, the use of equipment generating noise of 85 dBA at 50 feet (such as chainsaws) would be prohibited within 90 feet of sensitive receptors, and the use of equipment generating noise of 88 dBA at 50 feet (such as a chipper or excavator) would be prohibited within 130 feet of sensitive receptors.

By reducing the acreage of treatment that occurs in a given year, vegetation would be more likely to become overgrown, resulting in a greater wildfire risk in the City portion of the VHFHSZ than under the VMP. Additionally, urban and residential treatment areas are considered Priority 1 treatment areas; eliminating vegetation management activities adjacent to these structures would result in a greater risk of catastrophic wildfires affecting structures than under the VMP and would conflict with the City's defensible space guidelines.

Alternative 2 was selected as an alternative to the VMP based on public input and because the restriction on equipment use near sensitive receptors would reduce significant and unavoidable noise impacts associated with mechanical treatment activities and the use of chainsaws during hand labor treatments.

Project Objectives

Alternative 2 would only partially meet VMP goals and objectives, such as reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ; reducing the likelihood of ignitions and extreme fire behavior; reducing the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuels loads, and modifying fuel arrangements on City-owned lands; identifying and prioritizing fuel treatment areas based on fuel loads arrangements, terrain, topographic exposure, and proximity to roads and structures; and increasing the ability of the OFD and responding agencies to suppress wildfire.

Impact Analysis

Goat grazing activities under Alternative 2 would be conducted consistent with the acres treated under the VMP; however, hand labor, mechanical, and herbicide techniques would be reduced from VMP levels, treating approximately 300 acres annually compared to 590 acres under the VMP, with no treatment occurring in urban and residential parcels. Compared to the VMP, this alternative would reduce construction-related impacts associated with the VMP, including air pollutant and GHG emissions from operating equipment, traffic from vehicle and truck trips, and noise. The restrictions on the operation of loud construction equipment near sensitive receptors during hand labor treatments (i.e., chainsaws) and mechanical treatments (i.e., excavators and chippers) near sensitive receptors, noise levels would not exceed the City's weekday daytime threshold of 80 dBA. Thus, Impact NOI-1 would be reduced from a significant and unavoidable impact under the VMP to a less-than-significant level. Similarly, Alternative 2 would result in fewer impacts to sensitive habitats and nesting birds as a result of reducing the number of projects and overall ground disturbance relative to the VMP.

Reducing the acreage of vegetation treatment conducted on an annual basis would delay the reduction of fuel loads in individual treatment areas, however, resulting in an increased likelihood of ignition and catastrophic wildfires in the VHFHSZ compared with the VMP. A future wildfire in the region would likely be more damaging and result in greater impacts to life,

property, and the environment than under the VMP. Additionally, deferring vegetation management projects could result in the need for emergency work that tends to be addressed without adequate planning. Further, because fewer projects would occur under this alternative and no activities would occur on urban and residential parcels, Alternative 2 may result in additional impacts not identified for the VMP, such as increased public safety risks. For example, without the increased level of inspection and management proposed in the VMP, the potential exists for fallen branches and trees located on City property to damage utility lines or existing structures (i.e., residences) on private property.

In conclusion, Alternative 2, the Reduced Vegetation Management Activities Alternative, would meet some of the goals or objectives of the VMP; however, the reduced annual acreage of treatment would slow OFD's progress in addressing wildfire risk concerns. Although it would reduce the VMP's significant and unavoidable noise impact on sensitive receptors and other significant impacts related to biological resources and other environmental resources, it would fail to fully address the need for wildfire risk reduction to the level identified by the City, OFD, stakeholders, and members of the public.

5.4.3 Alternative 3: No Herbicide Use Alternative

Characteristics of this Alternative

Alternative 3 is a modified version of the VMP that excludes the use of herbicides for vegetation management. Other vegetation management methods described in the VMP (i.e., grazing, hand labor techniques, and mechanical techniques) would be used in lieu of herbicides. Under Alternative 3, the City would conduct approximately 1,100 acres of goat grazing and approximately 555 acres of roadside treatment and other activities using a combination of hand labor and mechanical techniques. Under this alternative, no herbicides would be used (compared to an annual maximum of 35 acres of proposed herbicide treatment under the VMP). All other maintenance activities described in Chapter 2, *Project* Description, of this EIR would be conducted as described in the VMP.

As background, in 2005, the City adopted Resolution 79133, which directed staff to evaluate the selective use of glyphosate and triclopyr for managing vegetation to reduce wildfire hazard in the City's Wildfire Prevention Assessment District. To date, herbicides have not been used for vegetation management on City-owned property or along roadsides in the VMP area. This VMP EIR process evaluates the potential environmental effects of herbicide use. However, the City also received feedback from the public during the VMP development and scoping process to consider a "no herbicide" alternative to address concerns about the potential impacts of herbicide use in the City. As such, Alternative 3 reflects public input on early drafts of the VMP.

Project Objectives

By eliminating herbicide treatment, Alternative 3 would be more likely to allow vegetation to become overgrown, increasing the wildfire risk and the potential for a catastrophic wildfire that would affect existing structures. Alternative 3 would only partially meet VMP goals and objectives such as reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ; reducing the likelihood of extreme fire behavior and catastrophic wildfires by limiting ignition potential, reducing fuels loads, and modifying fuel

arrangements on City-owned lands; identifying and prioritizing fuel treatment areas based on fuel load arrangements, terrain, topographic exposure, and proximity to roads and structures; and increasing the ability of the OFD and responding agencies to suppress wildfire.

Impact Analysis

Alternative 3 would require additional follow-up vegetation management activities involving a combination of grazing, hand removal techniques, and mechanical removal in some areas due to rapid regrowth of certain highly flammable vegetation types when removed and not treated with herbicide. Under Alternative 3, certain types of vegetation may be even more difficult to control without herbicides, resulting in persistent degraded habitat conditions. Because grazing, hand removal, and mechanical vegetation removal techniques may be less effective than herbicides, this alternative may also require the City to remove certain rapidly spreading/high fire risk plants, including such plants as eucalyptus, acacia, French broom, Scotch broom, pampas grass, and jubata grass, on a more frequent basis. As such, an increase in use of mechanical vegetation removal techniques across a greater area and on a more frequent basis would result in greater air pollutant emissions and more truck trips; in addition, greater noise effects could result, as this alternative would entail more worker trips and greater use of equipment, potentially in close proximity to sensitive uses. Accordingly, this alternative would result in more potentially significant environmental impacts than the VMP.

Alternative 3 would eliminate potential effects related to accidental spills, use of herbicides, and other risks associated with herbicide use. However, impacts related to hazards and hazardous materials are not identified as significant and unavoidable impacts of the VMP because all such impacts associated with the VMP would be mitigated to a less-than-significant level. Significant and unavoidable noise impacts associated with mechanical treatment activities and the use of chainsaws during hand labor treatments identified for the VMP would remain with Alternative 3.

Feasibility

Due to the need for increased frequency of vegetation removal, under this alternative, the City and OFD would require a larger number of employees and many more hours to treat a similar area compared to herbicide use and would be less effective, requiring more frequent treatment. It is estimated that if the City were to rely on hand removal and mechanical treatments in place of herbicide, it would cost the City up to 40 times more to treat these areas than under the VMP. The cost for herbicide treatments, not including any associated physical treatments, is approximately $250-$500 per acre. This reflects a range of potential vegetation conditions, vegetation types, and densities. The cost for hand removal and mechanical treatments is estimated at approximately $1,000-$4,000 per acre, using the same range of site-specific conditions.

A key difference in comparing costs of herbicide treatment to hand removal and mechanical treatment is the reduced effectiveness of these treatments, requiring repeated applications up to five times to achieve the effectiveness of a single herbicide treatment (DiTomaso, Kyser, et al. 2013) (as shown in Appendix D, *Biological Resources Information*, of this DEIR). Accounting for the need to conduct five work cycles with hand removal and mechanical treatments, the estimated treatment cost increases to $5,000-$20,000 per acre for hand removal and mechanical treatments compared to herbicide treatment.

Over the course of the 10-year planning timeframe for the VMP, these differences in effort and increased costs by not using herbicide treatment would result in an added cost ranging from $1,660,000 to $6,825,000 by using hand removal and mechanical treatments in place of herbicide to achieve a similar level of vegetation management. Accordingly, even though this alternative would achieve some of the project objectives, the substantial increase in cost compared to the proposed VMP renders this alternative infeasible (Pub. Res. Code Section 21061.1.).

In conclusion, Alternative 3, the No Herbicide Use Alternative, would meet some of the goals or objectives of the VMP; however, the elimination of herbicide use as an available vegetation management treatment would slow progress toward reducing fuel loads in the VMP area. This alternative would result in additional costs and staffing needs to conduct follow-up treatments in areas where mechanical and hand removal treatments are less effective than herbicide treatments. The significant and unavoidable noise impact of the VMP related to sensitive uses would not be reduced with this alternative and would likely be more severe than under the VMP because of the need for repeated hand labor or mechanical treatments in some locations.

5.4.4 Alternative 4: Reduced Herbicide Use Alternative

Characteristics of this Alternative

Alternative 4 is a modification of the VMP that would reduce, but not eliminate, herbicide application in the VMP area compared to the proposed VMP. Under Alternative 4, annual herbicide use would be reduced to a maximum of 10 acres of treatment for trees and 7.5 acres of treatment for shrubs (compared to the annual maximum of 20 acres of treatment for trees and 15 acres of treatment for shrubs under the VMP). Additionally, no herbicide application would occur within 100 feet of any creeks (which is 40 feet larger than the no-herbicide-use buffer from creeks proposed in Mitigation Measure HAZ-5). Further, under this alternative, the City would use only non-Roundup™ formulations of glyphosate. In contrast, the VMP allows non-Roundup™ formulations of glyphosate as well as triclopyr and imazapyr. Alternative 4 would only allow application of herbicides using the cut-and-daub application method with a hand brush or sponge; no hand spraying would be conducted under this alternative. The City would conduct approximately 1,100 acres of goat grazing, as with the VMP, along with approximately 572.5 acres of roadside treatment and other activities (a reduction from 590 acres with the VMP) using a combination of hand labor, mechanical, and herbicide techniques.

As described above for Alternative 3, in 2005, the City adopted Resolution 79133, which directed staff to evaluate the selective use of glyphosate and triclopyr for managing vegetation to reduce wildfire hazard in the City's Wildfire Prevention Assessment District. To date, herbicides have not been used for vegetation management on City-owned property or along roadsides in the VMP area. This VMP EIR process evaluates the potential environmental effects of herbicide use. However, the City also received feedback from the public during the VMP development and scoping process to consider a "reduced herbicide" alternative to address concerns about the potential impacts of herbicide use in the City. As such, Alternative 4 reflects public input on early drafts of the VMP.

Project Objectives

By reducing the acreage of herbicide treatment that occurs in a given year, vegetation would be more likely to become overgrown, increasing the wildfire risk and the potential for a catastrophic wildfire that would affect existing structures. Alternative 4 would only partially meet VMP goals and objectives such as reducing wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ; reducing the likelihood of ignitions and extreme fire behavior; reducing the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuels loads, and modifying fuel arrangements on City-owned lands; identifying and prioritizing fuel treatment areas based on fuel loads arrangements, terrain, topographic exposure, and proximity to roads and structures; and increasing the ability of the OFD and responding agencies to suppress wildfire.

Impact Analysis

Annual goat grazing, hand labor, and mechanical treatments activities under Alternative 4 would be consistent with the acreage treated under the VMP, for a total of 555 acres. However, the area subject to herbicide techniques each year would be less than under the VMP, treating approximately 17.5 acres annually, compared to an annual maximum of 35 acres, with no herbicide treatment occurring within 100 feet of creeks. Compared to the VMP, this alternative would reduce potential effects to biological resources and water quality by limiting herbicide application to occur at least 100 feet from a creek (i.e., outside of riparian areas) and prohibit spraying which may result in drift. Further, although impacts related to hazards and hazardous materials are not identified as significant impacts of the VMP, Alternative 4 would reduce potential effects related to accidental spills, chemicals, and other risks associated with herbicide use.

Reducing the acreage treated with herbicides on an annual basis would delay the reduction of fuel loads in individual treatment areas, however, increasing the likelihood of ignition and catastrophic wildfires in the VHFHSZ as vegetation conditions worsen. Under Alternative 4, certain types of vegetation may be more difficult to control with reduced herbicides, resulting in persistent degraded habitat conditions. Additionally, under this alternative, OFD would only use glyphosate and would be prohibited from using hand sprayers (only hand brushing or sponging would be conducted), which would reduce overall treatment options and effectiveness and increase costs. Glyphosate may not be as effective to treat certain types of vegetation as other herbicides (e.g., triclopyr, imazapyr), and excluding these herbicides may require the City to remove certain types of vegetation on a more frequent basis. As such, an increase in the frequency of herbicide application would result in more truck trips and air quality emissions, as well as more frequent ground disturbance.

Feasibility

Hand brushing or sponging under the cut-and-daub method is time consuming, requiring more labor, thereby increasing time and labor requirements for the City. As described in Alternative 3, areas proposed for herbicide treatment under the VMP if treated only with hand removal and mechanical treatments would require up to five additional treatment cycles to match the effectiveness of herbicide treatment (DiTomaso, Kyser, et al. 2013) (see Appendix D of this DEIR for more information). Using the same methodology as described in Alternative 3 above, over the course of the 10-year planning timeframe for the VMP these differences in effort and

increased costs result in an added cost ranging from $831,250 to $3,412,500 for not using herbicide and using hand removal and mechanical treatments in place of herbicide to achieve a similar level of vegetation management. Accordingly, this alternative is financially infeasible.

In conclusion, Alternative 4, the Reduced Herbicide Use Alternative, would meet some of the goals or objectives of the VMP; however, restrictions on the types and amounts of herbicide use as an available vegetation management treatment would slow progress toward improvement of fuel loads in the VMP area compared to the proposed VMP. This alternative would result in additional costs and staffing needs to conduct follow-up treatments in areas where mechanical and hand removal treatments are less effective than herbicide treatments. The significant and unavoidable noise impact of the VMP related to sensitive uses would not be reduced with this alternative and would likely be more severe because of the need for repeated hand labor or mechanical treatments in some locations.

5.5 COMPARISON OF ALTERNATIVES

In accordance with CEQA Guidelines Section 15126.6(e)(2), this section compares the EIR alternatives and identifies the environmentally superior alternative among the alternatives.

Table 5-1 compares the acres treated among the VMP and the four alternatives. The VMP, Alternative 3 (No Herbicide Alternative), and Alternative 4 would treat nearly the same acreage of vegetation (1,100 acres of goat grazing; 590 acres of roadside and parcels for VMP, 555 acres for Alternative 3, and 572.5 acres for Alternative 4). Alternative 1 (No Project Alternative) would treat the least amount of vegetation, reflecting what the City's current vegetation management practices. Alternative 2 (Reduced Vegetation Management Activities Alternative) would treat of the least vegetation but less than the VMP due to reduced vegetation management activities.

Table 5-1. Comparison of Acres Treated Among the VMP and Alternatives

Vegetation Management Activities	Acres of Treatment				
	VMP	Alternative 1: No Project Alternative	Alternative 2: Reduced Vegetation Management Activities Alternative	Alternative 3: No Herbicide Alternative	Alternative 4: Reduced Herbicide Use Alternative
Goat Grazing	1,100	1,100	1,100	1,100	1,100
Roadside and Parcel Treatments using Hand Labor, Mechanical, and Chemical Treatment Techniques	590	152	300	555	572.5

Alternative 1 (No Project Alternative) was not identified as the environmentally superior alternative because, although it would provide a reduction in vegetation management activities in the City portion of the VHFHSZ and thereby largely reduce construction-related impacts (e.g., air and GHG emissions, noise, traffic, biological resources) of the VMP, it would substantially increase the risk of wildfires in the region, resulting in greater impacts to life, property, and the environment.

Alternative 3 (No Herbicide Use) was not identified as environmentally superior because it would not reduce any significant and unavoidable impacts associated with the VMP. Alternative 3 would however, result in an incremental increase in truck trips, air pollutant emissions, and noise effects because this alternative would involve greater use of hand labor and mechanical techniques for vegetation management. Using hand labor and mechanical treatments in some locations may not be as effective at controlling highly flammable vegetation, particularly in areas that are difficult to access, and is anticipated to require additional follow-up treatments. Additionally, the increased use of hand labor and mechanical treatments would require more City staff, increasing costs, which would not be feasible for the City. This alternative would be fairly similar to the VMP and would avoid potential water quality impacts such as accidental spills and other impacts associated with herbicide use. In conclusion, Alternative 3 was not deemed environmentally superior because it would not reduce significant and unavoidable impacts associated with the VMP; would result in an increase in air quality emissions, truck trips, and noise effects adjacent to sensitive uses; may not be as effective at controlling vegetation.

Both Alternative 2 (Reduced Vegetation Management Activities Alternative) and Alternative 4 (Reduced Herbicide Use Alternative) would reduce the acreage of vegetation treatment completed in a given year, thereby resulting in less construction-related emissions, traffic on local roads, and other potential effects on biological resources. Between these two alternatives, Alternative 4 would result in less adverse effects to biological resources and water quality by limiting herbicide application to a maximum of 17.5 acres annually, limit herbicide application from occurring within 100 feet of a creek, limiting the City to the use of only one herbicide, and prohibiting spraying and allowing only hand brushing and sponging for herbicide application throughout the VMP area. The cut-and-daub method is time consuming, requiring more labor, thereby increasing costs for the City. Additionally, because hand removal and mechanical treatments may still occur adjacent to sensitive receptors, significant and unavoidable noise effects would still occur under Alternative 4. Alternative 2, on the other hand, would prohibit the use of loud equipment near sensitive receptors, avoiding a significant and unavoidable noise impact on sensitive receptors. For this reason, Alternative 2 is considered the environmentally superior alternative of the alternatives to the VMP evaluated in this chapter.

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Considering the issues described above, the VMP is considered to be environmentally superior to the other identified alternatives. In comparison to the alternatives, the VMP provides the most appropriate balance of reducing wildfire hazard through limiting ignition potential, reducing fuel loads, and modifying vegetation in an effective manner; avoiding and minimizing impacts to the natural environment through implementation of practices; prioritizing management needs based on fuel loads, terrain, and proximity to roads and structures; and ensuring vegetation management needs are addressed in a reasonable timeframe to protect life

and property and reduce public safety and wildfire hazards. The VMP would also ensure that vegetation management activities are conducted consistently in compliance with the methods and approaches identified in the VMP to reduce effects to natural resources and prevent excess and unnecessary vegetation removal. The VMP would also increase the ability of OFD to suppress wildfire in the VMP area, further protecting VMP area resources and require the routine evaluation of effectiveness of vegetation management activities.

Chapter 6
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Chapter 3 Environmental Setting, Impacts, and Mitigation Measures

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Chapter 7
Report Preparation

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