Plan Orinda Partially Revised Environmental Impact Analysis

Partially Revised Environmental Impact Report

State Clearinghouse No. 2022010392

prepared by

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List of Attachments

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Reader's Guide

Plan Orinda Partially Revised Environmental Impact Analysis

The purpose of this Reader's Guide is to summarize actions and events that have occurred since January 31, 2023, when the Project (Plan Orinda) was approved and the associated environmental impact report (EIR) was certified, and to explain the scope of additional information provided in the portions of the Draft EIR (Sections 4.14 and 6) being revised and recirculated for public review and comment.

Background

Plan Orinda and Litigation Challenging the EIR

On September 15, 2022, the City issued the draft Plan Orinda Environmental Impact Report (DEIR). The DEIR describes the Project as "Plan Orinda," which consists of three primary components: (1) a 2023-2031 Housing Element Update (Housing Element), (2) a Downtown Precise Plan (DPP), and (3) a Safety Element Update (Safety Element), as well as related general plan, zoning, and other amendments.

The zoning and general plan modifications are aimed at increasing the number of dwelling units allowed in the City to meet its Regional Housing Needs Allocation (RHNA) and comply with State Housing Element Law, Government Code §§ 66580 et seq. The project area studied in the EIR includes the entire City, with the DPP Area delineated separately, but contained within, the rest of the Housing Element Update Plan Area.

The Housing Element Opportunity Sites outside the DPP are identified as HE-1 through HE-5. Overall, the general plan and zoning amendments would allow residential development in the City that would potentially increase residential housing and density by adding up to 2,383 new housing units. The EIR anticipates the new housing could add 6,672 new residents overall, which includes an estimated 4,530 residents in the DPP Area.

On January 31, 2023, the Orinda City Council certified the Final Environmental Impact Report (FEIR) for the Project as having been prepared in compliance with the California Environmental Quality Act (CEQA) and approved the Project. The DEIR and FEIR (collectively "EIR") can be found in their entirety at the City's website: https://www.planorinda.com/.

On March 3, 2023, a CEQA lawsuit was filed in Contra Costa County Superior Court challenging the certification of the FEIR and approval of the Project. (*Orindans For Safe Emergency Evacuation v. City of Orinda*, Contra Costa County Superior Court Case No. N23-0579.) In February 2024, the court issued a Minute Order that held the EIR was inadequate for two limited reasons:

1. Although the EIR had concluded that the Project's wildfire evacuation impacts (Impact WFR-1, Section 4.14) would be significant and unavoidable, its analysis supporting that conclusion was insufficiently clear. In particular, the EIR had not specified which emergency response or evacuation plans would be impaired by the Project and had not provided sufficient information to support the conclusion that the Project would exacerbate existing evacuation constraints.
2. The EIR was ambiguous as to whether Mitigation Measure WFR-1, which required new development to adhere to "shelter-in-place" development standards and prepare a Wildfire Hazard Assessment and Plan, applied to development at all of the sites identified for development in the Housing Element Update (i.e., Housing Element Sites HE-1 through HE-5 and the DPP), or just a subset.

All other aspects of the EIR were upheld. In August 2024, the court issued its judgment and a writ directing the City to correct the above-listed EIR issues. Specifically, the court required the City to take the following steps:

1. Set aside the certification of the EIR.
2. Revise the EIR, including but not limited to Sections 4.14 and 6, to correct the issues identified in the court's February 22, 2024 Minute Order.
3. Recirculate the revised portions of the EIR pursuant to CEQA Guidelines 15088.5.
4. Prepare and certify a revised Final EIR pursuant to CEQA Guidelines 15089 and 15090.

The writ also required the City to set aside its approval of the DPP and revise the mitigation monitoring and reporting program (MMRP), CEQA findings, and statement of overriding considerations. The writ did not require the City to set aside its approvals of the Housing Element Update or Safety Element Update.

The Court required the City to rescind its certification of the entire Plan Orinda EIR, but to correct only those portions of the EIR the Court determined did not comply with CEQA. The doctrine of res judicata thus bars any new claim alleging that any other portion of the EIR is inadequate. (*Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296.) For example, the Court did not find any inadequacy in the EIR's analysis of Impact WFR-2, cumulative wildfire impacts, or alternatives. Nor did the Court find any inadequacy with Mitigation Measures WFR-2 and WFR-3. As a result, the law bars any new claim involving those portions of the EIR.

In compliance with the writ issued by the Court, the City has revised portions of Section 4.14 of the Draft EIR (i.e., the wildfire impacts analysis). This revised analysis is referred to as the "Partially Revised Environmental Impact Analysis (Wildfire)." In particular, the Partially Revised Environmental Impact Analysis (Wildfire) revises and replaces the analysis contained in Sections 4.14.1, 4.14.2, and 4.14.3 (through the discussion of Mitigation Measure WFR-1) of the Draft EIR. These sections of the Draft EIR included descriptions of the environmental and regulatory settings, the analysis of WFR-1, and a description of Mitigation Measure WFR-1. A summary of the revisions made to these sections is provided below. The Draft EIR's analysis of WFR-2, Mitigation Measures WFR-2 and WFR-3, and cumulative wildfire impacts has not been revised, remains the same as in the original Draft EIR, and therefore is not included in the Partially Revised Environmental Impact Analysis (Wildfire). Although the revisions to Section 4.14 did not indicate any new significant impacts, more severe significant impacts, new mitigation, or infeasibility of previously identified mitigation, the City is recirculating the Partially Revised Environmental Impact Analysis (Wildfire) for public review and comment pursuant to CEQA Guidelines Section 15088.5, as required by the writ.

The Court did not find any inadequacies in the Draft EIR's alternatives analysis. Nonetheless, the writ required the City to revise Section 6 of the Draft EIR (i.e., the alternatives analysis). In compliance with this provision, the City has also revised portions of Section 6. In particular, the City prepared a supplemental analysis of the potential evacuation impacts of the three alternatives and revised the "Wildfire" portions of Sections 6.1.2, 6.2.2, and 6.3.2. This revised analysis is referred to as the "Partially Revised Alternatives Analysis." A summary of the revisions made to these sections is provided below. The other portions of the Draft EIR's alternatives analysis have not been revised, remain the same as in the original Draft EIR, and therefore are not included in the Partially Revised Alternatives Analysis. Although the new information added to the EIR by Partially Revised Alternatives Analysis did not indicate any new significant impacts, more severe significant impacts, new mitigation, or infeasibility of previously identified mitigation, the City is recirculating the

Partially Revised Environmental Impact Analysis (Wildfire) for public review and comment pursuant to CEQA Guidelines Section 15088.5, as required by the writ.

Pursuant to CEQA Guidelines Section 15088.5 (f)(2), the City is notifying reviewers that their comments should be limited to the revised portions of the Draft EIR being recirculated for public review and comment. Pursuant to CEQA Guidelines Section 15088.5 (f)(2) (ii), the City need only prepare written responses to comments received regarding the contents of the PRDEIR.

The Court's orders can be found in their entirety at the City's website: https://www.planorinda.com/

Revised EIR Analysis

To address the Court's finding that the EIR's analysis of the Project's impacts to wildfire evacuation was insufficiently clear, the Partially Revised Environmental Impact Analysis (Wildfire) revises Section 4.14 of the EIR in three ways.

First, the Partially Revised Environmental Impact Analysis (Wildfire) clarifies the thresholds of significance. Rather than analyzing all of the Project's evacuation impacts under the threshold of whether the project would "substantially impair an adopted emergency response plan or emergency evacuation plan," the Partially Revised Environmental Impact Analysis (Wildfire) includes an additional threshold: whether the Project would substantially increase emergency evacuation constraints.

Second, the Partially Revised Environmental Impact Analysis (Wildfire) includes a more detailed analysis of whether the Project would substantially impair an adopted emergency response plan or emergency evacuation plan. This more detailed analysis specifically lists each adopted plan and its relevant policies, and concludes that the Project would not substantially impair them.

Third, a supplemental evacuation analysis was prepared to analyze how the buildout under Plan Orinda would impact the City's already constrained intersections during a wildfire emergency evacuation. This supplemental analysis follows the same methodology as the Evacuation Analysis prepared in conjunction with Plan Orinda to comply with Government Code § 65302.15. However, in addition to assessing existing constraints in three different wildfire evacuation scenarios, the supplemental evacuation analysis also analyzes the constraints assuming buildout of Plan Orinda. The Partially Revised Environmental Impact Analysis (Wildfire) clarifies that the Project would have a significant impact under this threshold (i.e., the Project would substantially increase emergency evacuation constraints) if it would cause an increase in the level of service (LOS) constraint (e.g., from LOS D to LOS E, or from Constrained to Very Constrained) at one or more affected intersections utilized for evacuation. In this way, the supplemental evacuation analysis clarifies, confirms, and supports the EIR's conclusion that the Project would have a significant impact on wildfire evacuation.

The Partially Revised Environmental Impact Analysis (Wildfire) also addresses the Court's finding that the scope of Mitigation Measure WFR-1 was ambiguous by clarifying that this measure will be applied to all development under Plan Orinda.

The Partially Revised Alternatives Analysis revises the portions of Section 6 relating to wildfire evacuation to include the results of the supplemental evacuation analysis, which also analyzed how the buildout under the three project alternatives (the No Project Alternative and the two buildout

alternatives) would impact the City's already constrained intersections during a wildfire emergency evacuation. Other minor clarifying edits are made in Sections 4.14 and 6.

Recirculation

The revised EIR sections do not identify any new significant environment impact resulting from the Project or from a new mitigation measure proposed to be implemented; a substantial increase in the severity of an environmental impact; or a feasible project alternative or mitigation measure considerable different from others previously analyzed that would clearly lessen the significant environmental impacts of the project. CEQA Guidelines § 15088.5. Nor was the original EIR "so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." CEQA Guidelines § 15088.5. To the contrary, the inadequacies identified by the Court are quite narrow. As a result, recirculation is not technically required under CEQA Guidelines § 15088.5. However, the Court's writ specifically required the City to recirculate any revised portions of the EIR. For that reason, the City is recirculating the Partially Revised Environmental Impact Analysis (Wildfire) and the Partially Revised Alternatives Analysis for a 45-day period of public review and comment, and will prepare supplemental responses to comment before considering re-certifying the EIR.

Comments must be received by December 9, 2024, at 5:00 p.m., and should reference the Project by name: Plan Orinda, SCH# 2022010392. Comments must be sent to the City of Orinda Planning Department address listed below or via email to: orindaplanning@cityoforinda.org.

City of Orinda Planning Department
Attention: Darin Hughes
22 Orinda Way
Orinda, California 94563

Pursuant to the legal principles described above and CEQA Guidelines Section 15088.5(f)(2), reviewers should limit their comments to only the Partially Revised Environmental Impact Analysis (Wildfire) and the Partially Revised Alternatives Analysis. For additional information, please contact Darin Hughes at: Dhughes@cityoforinda.org, (925) 253-4269.

Files Availability

All referenced files are available on the Planning Department website:
https://www.planorinda.com/

Wildfire

Plan Orinda Partially Revised Environmental Impact Analysis

The following analysis revises and replaces the Draft EIR analysis contained in sections 4.14.1, 4.14.2, and 4.14.3 through the discussion of Mitigation Measure WFR-1. The analysis of WFR-2, Mitigation Measures WFR-2 and WFR-3, and cumulative wildfire impacts has not been revised and remains the same as in the original Draft EIR.

4.14.1 Setting

a. Wildfire Fundamentals

A wildfire is an uncontrolled fire in an extensive area of combustible vegetation. Wildfires differ from other fires in that they take place in areas of grassland, woodlands, brushland, scrubland, peatland, and other wooded areas that act as a source of fuel, or combustible material. Buildings may also become involved if a wildfire spreads. The primary factors that increase an area's susceptibility to wildfire include slope and topography, vegetation type and condition, and weather and atmospheric conditions. Regions of dense dry vegetation, particularly in canyon areas and on hillsides, pose the greatest potential for wildfire risks. Extreme wildfire events are expected to increase in frequency with the effects of increased global temperature, although changes in specific fire-prone areas are difficult to predict with any certainty[1].

The Governor's Office of Land Use and Climate Innovation (LCI), formerly the Governor's Office of Planning and Research, has recognized that although high-density structure-to-structure loss can occur due to wildfire, structures in areas with low- to intermediate-density housing were most likely to burn, potentially due to intermingling with wildland vegetation or difficulty of firefighter access. In general, avoiding low-density, leapfrog development and increasing development density in infill areas decreases risk of wildfire. The risk of loss of human life, property, natural resources, or economic assets from wildfire is highest at the Wildland-Urban Interface (WUI), areas of urban development located adjacent to or even within wildland areas. Today approximately one-third of houses in California are within the WUI area[2]. It is important to note that there are varying definitions of what constitutes a WUI, and some local or regional agencies consider some areas to be WUI that are not defined as Wildland Interface or Intermix zones under the Wildland-Urban Interface Building Standards in Title 24, Part 2 of the California Code of Regulations (CCR); these standards are discussed under *Regulatory Setting* below.

The effects of wildfires can be catastrophic. In addition to stripping the land of vegetation and destroying natural resources, post-fire conditions leave exposed slopes and hillsides vulnerable to surface erosion and runoff. Soil exposed to intense heat may lose its capacity to absorb moisture and support life. Debris flows during post-fire rainy seasons can pose a risk to life and property and occur with little warning. Any storm that has rainfall intensities greater than about 10 millimeters/hour (0.4 inches/hour) poses the risk of producing debris flows[3]. Wildfires also have negative impacts on air quality. Exposure to smoke and particulate matter has immediate and long-term public health impacts; populations may suffer from eye irritations, respiratory problems, and complications to existing lung and heart conditions. Further, wildfires can pose major threats to life and property. Wildfire has three basic elements: how and where its ignition occurred; how and why

[1] United States Forest Service (USFS). 2021. Wildland Fire. https://www.fs.usda.gov/ccrc/topics/wildfire (accessed August 2024)
[2] California Governor's Office of Land Use and Climate Innovation (LCI). 2020. Fire Hazard Planning Technical Advisory. https://opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf (accessed May 2022)
[3] United States Geological Survey. 2018. Post-Fire Flooding and Debris Flow. Last modified October 31, 2018. https://ca.water.usgs.gov/wildfires/wildfires-debris-flow.html (accessed August 2024).

it moves across a landscape from its point of origin; and what the wildfire's nature is upon arrival at a location. In general, a wildfire's nature is defined by eight characteristics:

- Direction of the advance of the fire front
- Speed of the advance of the fire front (rate of spread)
- Mechanism causing the advance
- Duration at any one location
- Structure-related consumption of fuels
- Flame length
- Intensity
- Gaining control

A fire front's direction of travel is primarily determined by direction of prevailing winds, geographic aspect, and condition of the fuels in the advance direction of the fire. The speed of a fire front's advance is a result of conditions at the site of the currently burning material and of lands in the advance direction of the fire. As a fire advances, the overriding influences determining its speed are prevailing wind speed, terrain slope gradient, dominant fuel size classes, and fuel continuity.

Wildfires advance by two principal mechanisms - combustion resulting from radiant heating and remote ignition resulting from ember production. Fire stays at one location primarily due to the size class of the material being consumed. Grass formations are dominated by low volumes of very "fine" fuels and, depending on the level of dryness, can be consumed, with the fire advancing, in a matter of minutes. On the other hand, tree-dominated vegetation has significantly greater volumes of available fuel and a far greater amount of larger-sized fuel components. Fires can remain at these locations for days, often weeks, and sometimes months (on heavily-wooded conifer sites)

Fires burn where fuels are available. Fires in grasslands burn at a level set by the height of the grass, while fires in brushlands can burn surface fuels and typically consume the stems and leafy crowns to the full height of the plants. Fires in tree-dominated vegetation have a much more complex pattern of movement based primarily on the continuity (or "connectedness") of the fuels. In these stands, there are typically three distinct layers of fuels, arranged vertically - surface, stems and trunks, and the crown, which is composed of branches, twigs, and leaves. The continuity of fuels is important to consider in both horizontal and vertical directions. If a fire enters a stand and is advancing only as a surface fire, it will continue this manner of advance if there is high horizontal fuel connectivity. However, if there is also a high degree of vertical continuity (provided by fuels referred to as "ladder fuels"), then a fire can move up into the crown as well as forward across the surface, involving fuels in the entire stand structure.

Flame lengths are generally determined by the volume of fuels burning, the amount of time to total consumption, and the height of the species in the composition. Grassland produces flame lengths typically ranging from one to three feet as they are composed of low volumes of fine materials that are consumed quickly. Flame lengths are at their maximum when the material is dry. Stands of brush can produce flame lengths from 4 to 10 feet. Native oak-dominated hardwood stands can generate 20- to 40-foot flame lengths, and stands of exotics, such as *Eucalyptus globulus or E. cinerea*, or dense conifer stands can generate flame lengths over 100 feet. Flame length is important because it sets the distance over which radiant heating-related combustion can occur.

The temperature achieved in a wildfire is directly related to the amount of cellulosic material available for consumption. Grasslands have very low amounts and attain lower temperatures but

woodlands, characterized by large amounts of highly-concentrated cellulosic material, can attain temperatures on the order of 1,800 degrees Fahrenheit.

Gaining control over a wildfire's behavioral character is the objective of response efforts. Grassland fires, burning in low fuel volume, rapid consumption, and at a single level, are the easiest to bring under control. On the other end, fires that are burning in high fuel volumes, full spectrum size classes, and entire stand structure involvement can require days, weeks, or even months to bring under complete control.

Wildland-Urban Interface

The Wildland-Urban Interface (WUI) is the area where human development meets wildland vegetation, and it is typically characterized by a mix of residential, commercial, and natural land uses. The California Department of Forestry and Fire Protection (CAL FIRE) uses a combination of housing density, Fire Hazard Severity Zone (FHSZ) classification, and vegetation lifeform criteria for mapping WUIs as part of their Fire and Resource Assessment Program. The WUI is particularly vulnerable to wildfire because it combines the presence of human-built structures with the presence of combustible vegetation and other wildfire fuels. Pursuant to CAL FIRE, an area must meet all of the following criteria in order to be considered a WUI[4]:

- Minimum housing density of one unit per 20 acres
- In a moderate, high, or very high FHSZ
- Not dominated by wildland vegetation (herbaceous, hardwood, conifer, shrub)

The Wildland Urban Intermix is a similar term commonly used interchangeably with WUI, although it is typically represented by areas with much higher vegetation density among built infrastructure. Pursuant to CAL FIRE, an area must meet all of the following criteria in order to be considered Wildland Urban Intermix[4]:

- Areas not designated WUI
- Minimum housing density between one unit per 20 acres and one unit per five acres OR greater than one unit per five acres in areas dominated by wildland vegetation
- In a moderate, high, or very high FHSZ
- Includes improved parcels only

CAL FIRE has also identified Wildfire Influence Zones as wildfire-susceptible vegetation up to 1.5 miles from areas designated as a WUI or Wildland Urban Intermix[4]. These zones essentially serve as a buffer to these two designations.

b. Wildfire-Conducive Conditions

The City of Orinda is situated in the San Francisco Bay Area, just east of the East Bay Hills. Due to local topography, vegetation, and weather conditions, the East Bay Hills are conducive to large periodic wildfires. Historically the ranges would have burned on a decadal basis through a patchwork of burned and unburned areas. In more recent years, with fire suppression and inadequate forest management, fuel loads have increased throughout Contra Costa County[5].

[4] California Department of Forestry and Fire Protection (CAL FIRE). 2019a. Wildland Urban Interface. https://frap.fire.ca.gov/media/10300/wui_19_ada.pdf. (accessed August 2024)
[5] Contra Costa County. 2021. Moraga-Orinda Wildfire Action Plan. An Appendix to the Contra Costa Community Wildfire Protection Plan.

The mountainous, highly combustible areas in the East Bay hills have Fire Hazard Severity Zone (FHSZ) rankings of "high" to "very high". The State Route 24 corridor bisecting Orinda has a FHSZ ranking of "very high"[6].

Vegetation

Vegetation is fuel to a wildfire, and it changes over time with seasonal growth and die-back. The relationship between vegetation and wildfire is complex, but generally some vegetation is naturally fire resistant, while other vegetation is extremely flammable. For example, cured grass is much more flammable than standing trees. Grass is considered an open fuel, in which oxygen has free access to promote the spread of fire. Additionally, weather and climate conditions, such as drought, can lead to increasingly dry vegetation with low moisture content and, thus, higher flammability. Some plant types in California landscapes are fire resistant, while others are fire-dependent for their seed germination cycles.

Wildfire behavior depends on the type of fuels present, such as ladder fuels, surface fuels, and aerial fuels. Surface fuels include grasses, logs, and stumps low to the ground. Ladder fuels, such as tall shrubs, young trees, and the lowest branches of mature trees, provide a path for fire to climb upward into the crowns of trees. Aerial fuels include upper limbs, foliage, and branches not in contact with the ground. Ample spacing in between tree crowns and trimming of lower branches close to the ground is effective at preventing fire from either igniting the crown of a tree or spreading from an ignited tree to adjacent trees; conversely, closely packed trees with low branches are especially susceptible to crown ignition and spread[7]. Weather and climate conditions, including drought cycles, can lead to dry vegetation with low moisture content, increasing its flammability.

According to Contra Costa County, the Moraga-Orinda Fire District (MOFD) is located within a "Chaparral Biome".[5] In its natural state, chaparral is characterized by infrequent fires, with intervals ranging between 10 to 15 years, to over a hundred years. Mature chaparral (stands that have survived greater intervals between fires) is characterized by nearly impenetrable, dense thickets. These plants are highly flammable. They grow as woody shrubs with hard and small leaves, are non-leafdropping (non-deciduous), and are drought-tolerant. After the first seasonal rains following a fire, the landscape is dominated by soft-leaved, non-woody annual plants, known as fire followers, which die back with the summer dry period.[5]

Slope, Elevation, and Aspect

Slope can determine how quickly a fire spreads. Fire typically burns faster uphill, because it can pre-heat the fuels above with rising hot air, and upward drafts are more likely to create fire spots[8]. Areas containing steep, rugged terrain can also hinder access and the use of heavy firefighting equipment, posing additional difficulties for firefighting efforts[9]. Following severe wildfires, sloping land is also more susceptible to landslide or flooding from increased runoff during substantial precipitation events. Landslides and surficial slope failure are most likely to occur in areas with more than 25 percent slope (hillside areas) and along steep bluffs.

[6] CAL FIRE. 2024a. Fire Hazard Severity Zones. https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones (accessed August 2024)
[7] CAL FIRE. 2021. Fuels Reduction Guide. https://bof.fire.ca.gov/media/hw3lmvd2/7-cal-fire-fuels-reduction-guide-final-2021_ada.pdf (accessed August 2024)
[8] National Park Service. 2017. Wildland Fire Behavior. Last updated February 16, 2017. https://www.nps.gov/articles/wildland-fire-behavior.htm (accessed August 2024).
[9] CAL FIRE. 2023a. 2023 Strategic Fire Plan Amador El Dorado Unit. https://cdnverify.osfm.fire.ca.gov/media/bsnpzxjd/2023-amador-el-dorado-unit-fire-plan.pdf (accessed August 2024).

Elevation affects fire behavior by influencing the timing and amount of precipitation as well as exposure to prevailing winds. Aspect is the direction a slope faces, which determines how much radiated heat the slope will receive from the sun. Slopes facing south to southwest will receive the most solar radiation; thus, they tend to be warmer and the vegetation drier than on slopes facing a northerly to northeasterly direction, creating a higher potential for wildfire ignition and spread.[10]

Aspect is the direction that a slope faces, and it determines how much radiated heat the slope will receive from the sun. Slopes facing south to southwest will receive the most solar radiation and are warmer and drier than slopes facing a northerly to northeasterly direction, increasing the potential for wildfire ignition and spread.[10]

Climate and Weather

Wind, temperature, and relative humidity are the most influential weather elements in fire behavior and susceptibility.[8] Fire moves faster under hot, dry, and windy conditions. Wind may also blow embers ahead of a fire, causing its spread. Drought conditions lead to extended periods of excessively dry vegetation, increasing the fuel load and ignition potential.

The City of Orinda is located in a Mediterranean Climate, which is characterized by dry, hot summers and wet winters. During the summer months, morning fog is common and typically dissipates by late morning or early afternoon. Afternoon winds are common when the marine layer lifts. Most of the annual rainfall occurs during the winter; snow is very rare.[5]

The wildfire season in Contra Costa County typically lasts from June through November.[11] Most precipitation is received from October through April, with an average annual rainfall of 25 inches. May through September is the driest time of the year and coincides with what has traditionally been considered the fire season in California. However, increasingly persistent drought and climatic changes in California have resulted in drier winters, and fires during the autumn, winter, and spring months are becoming more common. Prevailing winds in Orinda are generally from the west off of the ocean from February to November, and from the north during December and January[12]. The regional "Diablo Wind"[13] conditions often occur in the fall, bringing higher wind speeds with hot and dry weather.[5]

Power Lines

Above-ground power lines have the potential to contribute to wildfire risk, especially when they are near or traverse wilderness areas. In some instances, high winds can blow nearby trees and branches into power lines, sparking fires. Wind can also snap wooden poles, causing live wires to fall onto nearby grass or other fuel, igniting it. While the California Public Utilities Commission (CPUC) estimates only about 10 percent of California's wildfires are triggered by power lines, the frequency

[10] University of California. 2018. Field Operations Manual. Berkeley, CA. Revised November 2018. https://www.ucop.edu/safety-and-loss-prevention/_files/field-research-safety/wildland-fire-safety.pdf (accessed August 2024)
[11] City of Orinda. 2023. Safety Element. https://www.planorinda.com/safety-element. (accessed August 2024)
[12] Weatherspark. 2022. Climate and Average Weather Year Round in Orinda. https://weatherspark.com/y/542/Average-Weather-in-Orinda-California-United-States-Year-Round. (accessed May 2022)
[13] Diablo Wind refers to a northern California wind pattern which starts in high elevations in the east of the state traveling through the valley, getting warmer and drier towards the Pacific Ocean. While they can happen anytime, they typically peak in October and November. Gusts can reach over 80 m.p.h. (AccuWeather. 2019. What are Diablo winds? https://www.accuweather.com/en/severe-weather/what-are-diablo-winds/613878 [accessed May 2022])

and severity of these wildfires has spurred the agency to promulgate new requirements for power line safety practices.[14]

c. Wildfire Hazard Designations

In California, responsibility for wildfire prevention and suppression is shared by federal, state, and local agencies. Federal agencies are responsible for federal lands in Federal Responsibility Areas (FRA). The State of California has determined that some non-federal lands in unincorporated areas are of statewide interest and has classified those lands as State Responsibility Areas (SRA), which are managed by CAL FIRE.[15] SRA is a legal term defining the area where the state has financial responsibility for wildland fire protection and prevention. Lands are removed from SRA when they become incorporated by a city, change in ownership to the federal government, become more densely populated, or are converted to intensive agriculture that minimizes the risk of wildfire.[16] All incorporated areas and unincorporated lands not in FRAs or SRAs are classified as Local Responsibility Areas (LRA).

While nearly all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CAL FIRE is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code Sections 4201-4204 and California Government Code Sections 51175-89). As described above, the primary factors that increase an area's susceptibility to fire hazards include slope, vegetation type and condition, and atmospheric conditions. CAL FIRE maps fire hazards as zones, referred to as Fire Hazard Severity Zones (FHSZ). CAL FIRE maps three levels of severity in SRAs: 1) Moderate FHSZs; 2) High FHSZs; and 3) Very High FHSZs. Only the VHFHSZs are mapped in LRAs, while all three FHSZs are mapped for SRAs. As of January 2022, California law requires CAL FIRE to map the Moderate and High FHSZ in addition to the Very High FHSZ for LRAs. The CAL FIRE FHSZ maps for SRAs were updated and took effect in April 2024. Updates to the CAL FIRE FHSZ maps for LRAs are in progress and expected to be completed in 2024.

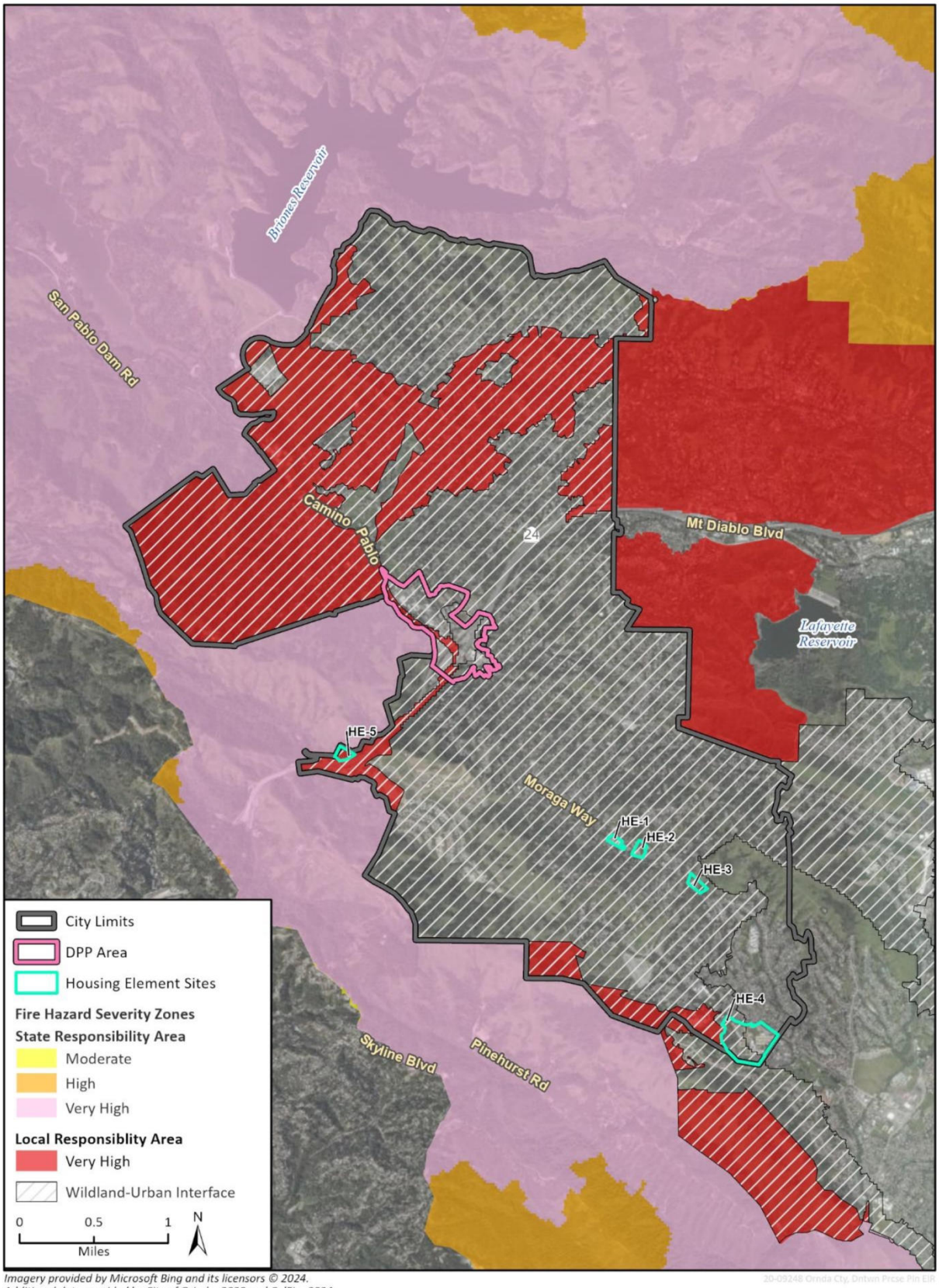
Each of the FHSZs influences how people construct buildings and protect property to reduce risk associated with wildland fires. Under state regulations, areas within VHFHSZs must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life in those areas. However, none of the fire zones specifically prohibit development or construction.

Orinda Fire Hazard Severity Zones

As shown in Figure 4.14-1, SRA VHFHSZs surround city limits to the north, west, and south.[6] Substantial portions of northwestern and central northern Orinda, as well as smaller areas in western and southern Orinda, are located within LRA VHFHSZs. Many of these high-risk areas are also the most difficult to access, as they are at the end of winding roads bordering undeveloped hillsides. LRA VHFHSZs abut Orinda city limits to the immediate east and south in the Cities of Lafayette and Moraga, respectively.[11]

[14] Atkinson, William. 2018. "The Link Between Power Lines and Wildfire." Electrical Contractor Magazine. [online journal]. Published November 2018. https://ecmag.com/section/systems/link-between-power-lines-and-wildfires (accessed August 2022).
[15] United States Department of Agriculture and United States Department of the Interior. 2000. Managing the Impacts of Wildfires on Communities and the Environment: A Report to the President In Response to the Wildfires of 2000.
[16] CAL FIRE. 2023b. Fire Hazard Severity Zones Frequently Asked Questions. Available online: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/2023-fhsz-faqs-march-11-2024.pdf. (accessed October 2024).

Figure 4.14-1 Fire Hazard Severity Zones and Adopted WUI Near Orinda



Imagery provided by Microsoft Bing and its licensors © 2024.
Additional data provided by City of Orinda, 2020 and CalFire 2024.

Nearly all of Orinda is designated by MOFD as a WUI, with the exception of small portions within the DPP Area and in southeastern Orinda. In the DPP Area, the Camino Pablo corridor is mapped within the LRA VHFHSZ, and Housing Element Sites HE-1, HE-2, and HE-5 are mapped as WUI. The western half (approximately) of Housing Element Site HE-4 is located within WUI area, and the eastern half is located outside of WUI area. (See Figure 4.14-2)

Fire History

There is limited detailed information on historic fires in the Orinda area. However, a regional look at the 15 fires in the vicinity of the Caldecott Tunnel from 1923 to 1991 shows a common pattern of ignitions during critical Diablo wind conditions in the fall, occurring every 10 to 20 years.[17, 11]

There is one historical record of a wildfire occurring in Orinda, which was the Sibley Fire #2. The wildfire occurred in 1998 and was the result of arson. In total, the fire burned approximately 200 acres. Although Orinda has not experienced a major wildfire within the city limits, the city is directly east of the Oakland Hills, which in 1991 suffered one of the worst wildland-urban interface firestorm disasters to ever strike the United States, with 25 deaths, 150 injuries, and destruction of 2,900 structures, causing losses in excess of $1.5 billion. In total, the Oakland Hills Tunnel fire burned approximately 1,622 acres. It remains the third deadliest and third-most destructive wildfire in California's recorded history.[11]

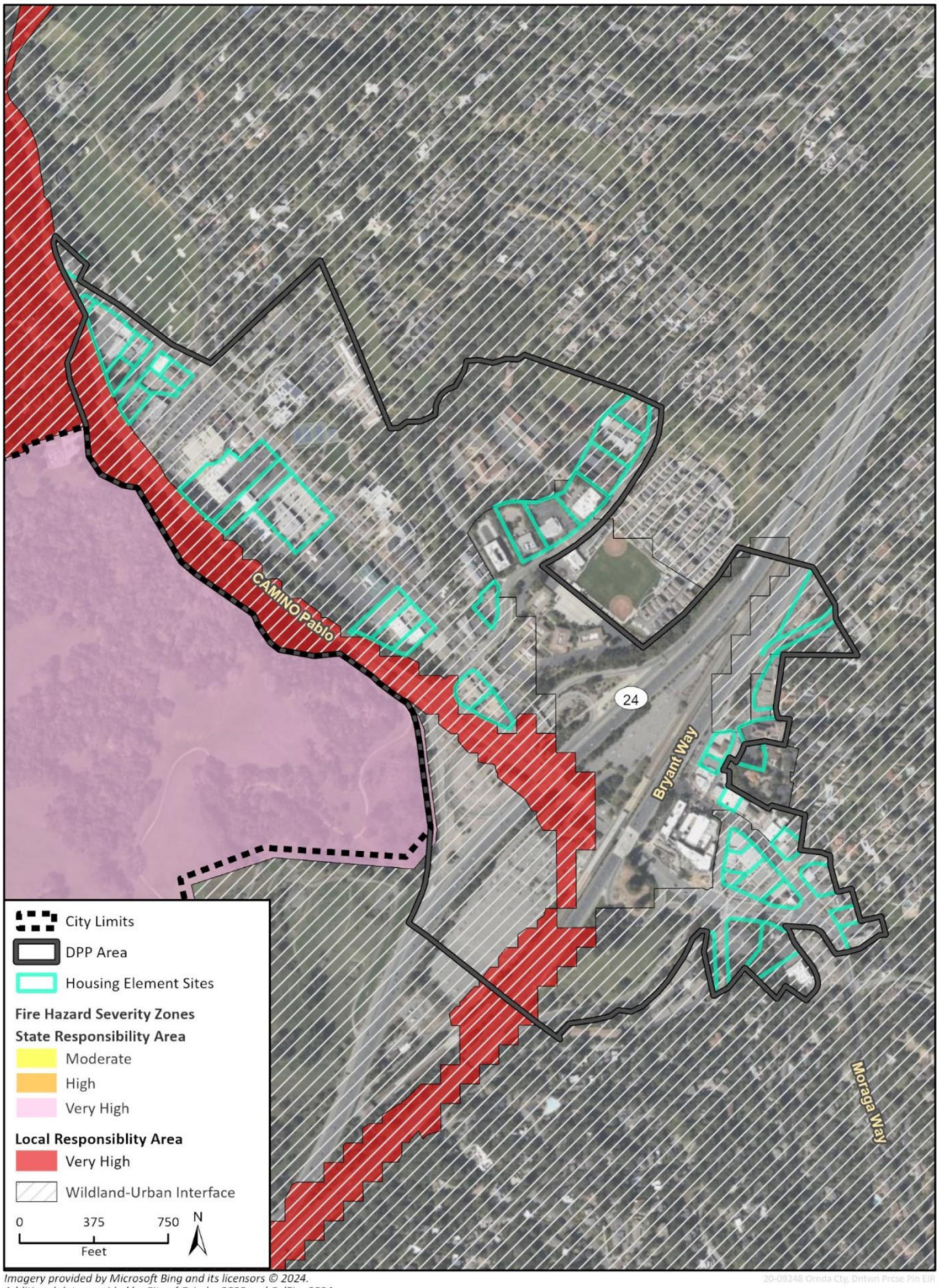
d. Post-fire Slope Instability and Drainage Pattern Changes

Vegetation loss from wildfire scarring of the landscape can result in slope instability in the form of more intensive flooding and landslides. These post-fire slope soils and altered drainage patterns can result in soil creep on downslope sides of foundations and reduce lateral support.

Landslides are a hazard of significant concern in Orinda because of its hilly terrain; Orinda has experienced numerous landslides in the past and as a result, much of Orinda's slopes are unstable. Landslides in the City typically occur in the winter during high precipitation years. In 2005, the City of Orinda declared a local emergency after $1.053 Million in damage occurred as a result of storms between middle to late December. The storms caused mudslides onto public roadways throughout the City. Additionally, there were reports of trees, flooding, and sewer break damage at 22 private properties. Other major landslide events occurred after storm events in Orinda in 2008, 2012, 2017, 2022, and 2023.[18]

[17] CAL FIRE. 2024b. California Fire Perimeters [online dataset]. Updated July 26, 2024. https://gis.data.ca.gov/datasets/CALFIRE-Forestry::california-fire-perimeters-all-1/explore?location=37.866594%2C-122.182644%2C13.65 (accessed August 2024)
[18] Contra Costa County. 2024a. 2024 Hazard Mitigation Plan Contra Costa County, City of Orinda Annex (draft).

Figure 4.14-2 Fire Hazard Severity Zones in DPP Area



Imagery provided by Microsoft Bing and its licensors © 2024.
Additional data provided by City of Orinda, 2020 and CalFire 2024.

e. Fire Protection Services

The City of Orinda is located within the Moraga-Orinda Fire District (MOFD). The MOFD is an "all-risk" fire service agency with 64 regular employees, 6 temporary employees, and 20 volunteers, including the Board of Directors. It encompasses 42 square miles, protecting approximately 38,500 residents in a combination of urban city centers; consisting of a combination of metropolitan, urban, suburban, and rural residential housing-density areas; a major college campus; and a mix of large regional parks, open spaces, reservoirs, and recreation areas. The MOFD includes five fire stations, which house four engine companies, one truck company, four ambulances (three cross-staffed), and one Battalion Chief. MOFD trains in the national incident management systems (NIMS), incident command system (ICS), and the California standardized emergency management system (SEMS) that are used to manage the response to multi-agency, multi-jurisdiction emergencies. Master mutual aid plans and automatic aid agreements also bring together resources from outside of the region.[5]

The CAL FIRE Santa Clara Unit (SCU) provides fire protection for state responsibility areas (SRA) within the MOFD. These include East Bay Regional Park District lands in Wildcat Canyon and Tilden Regional Parks located outside the City of Orinda. SCU also provides fire protection in the SRA of other portions of Contra Costa, Alameda, Santa Clara counties, and a portion of San Joaquin County. In the MOFD, these areas include Bollinger Canyon and the Community of Canyon.[5]

4.14.2 Regulatory Setting

a. Federal Regulations

The Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 requires a state-level mitigation plan as a condition of disaster assistance and provides funding to communities developing their own mitigation plans through the Pre-Disaster Mitigation Grant Program. There are two different levels of state disaster plans: "Standard" and "Enhanced." States that develop an approved Enhanced State Plan can increase the amount of funding available through the Hazard Mitigation Grant Program. The State of California Multi-Hazard Mitigation Plan (SHMP) complies with this act. The Act also established new requirements for local mitigation plans.

National Fire Plan

The National Fire Plan was developed in response to Executive Order 11246 in August 2000, following a historic wildland fire season. Its intent was to establish plans for active response to severe wildland fires and their impacts to communities, while ensuring sufficient firefighting capacity. The plan addresses firefighting, rehabilitation hazardous fuels reduction, community assistance, and accountability. The plan promotes close coordination among local, state, tribal, and federal firefighting resources by conducting training, purchasing equipment, and providing prevention activities on a cost-share basis. To help protect people and their property from potential catastrophic wildfire, the National Fire Plan directs funding to be provided for projects designed to reduce the fire risks to communities. High-risk communities identified in the wildland-urban interface, the area where homes and wildlands intermix, were published in the Federal Register in 2001. At the request of Congress, the Federal Register notice only listed those communities

neighboring federal lands. CAL FIRE incorporates concepts from this plan into state fire planning efforts.[19, 20]

b. State Regulations

California Board of Forestry

The Board of Forestry and Fire Protection (Board), which is a government-appointed body within the California Department of Forestry and Fire Protection (CAL FIRE), is responsible for reviewing the Safety Element under Government Code Section 65302.5. The Board reviews the Safety Element and responds to the City with its findings regarding the uses of land and policies in State Responsibility Areas (SRAs) or Very High Fire Hazard Severity Zones (VHFHSZs) that will protect life, property, and natural resources from unreasonable risks associated with wildfires, and the methods and strategies for wildfire risk reduction and prevention within SRAs or VHFHSZs.[6] In adherence to this requirement, the Board has reviewed the City of Orinda's Safety Element.[11]

In addition, the Board maintains fire safe road regulations, as part of CCR Title 14. This includes requirements for road width, surface treatments, grade, radius, turnarounds, turnouts, structures, driveways, and gate entrances. These regulations are intended to ensure safe access for emergency wildland fire equipment and civilian evacuation.

California Fire and Building Codes (2022)

The California Fire Code (CFC) is Chapter 9 of the California Code of Regulations (CCR) Title 24 Building Code, and is based on the International Fire Code. The CFC establishes the minimum requirements consistent with nationally recognized good practices to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structure, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities.

The CFC and the California Building Code (CBC) use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The provisions of this Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

More specifically, the CFC is included in CCR Title 24. Title 24, Part 9, Chapter 7 addresses fire-resistant-rated construction; Chapter 8 addresses fire related interior finishes; Chapter 9 addresses fire protection systems; and Chapter 10 addresses fire related means of egress, including fire apparatus access road width requirements. Fire Code Section 4906 also contains existing regulations for vegetation and fuel management to maintain clearances around structures. These requirements

[19] United States Department of Agriculture. 2002. Fire Management: National Fire Plan.
[20] CAL FIRE. 2019b. Communities at Risk List. https://files.ceqanet.opr.ca.gov/123569-2/attachment/ad_93T6EyGhVyDAW1Q-eTrE6A5PKHLjkofYmO1dWdxWrny1Vb9-idWNR4V_ctb_CY4N9QElMoU0nGDtI0. (accessed August 2024)

establish minimum standards to protect buildings located in FHSZs within SRAs, LRAs, and WUI Fire Areas. This code includes provisions for ignition-resistant construction standards for new buildings.

MOFD adopted the 2019 California Fire Code with localized amendments to exterior hazard compliance, landscape and defensible space provisions, and roadway widths in Ordinance 20-01, and continues to reaffirm their adoption of the current Fire Codes every three years.[21] In February 2023, Ordinance 20-01 was repealed and replaced by Ordinance 23-01. The fire code for the City of Orinda is based on the 2022 California Fire Code, with specific amendments from the Moraga-Orinda Fire District's Ordinance 23-01. These amendments are necessary due to local climatic, geological, and topographical conditions and have been filed with the California Department of Housing and Community Development. The MOFD fire code and the provisions of the 2022 California Fire Code, as amended by Ordinance 23-01, are enforceable within the city. Chapter 8.20, Fire Safety, aims to regulate construction materials and fire safety features, coordinating development reviews between the city and the Moraga-Orinda Fire District to enhance fire prevention and protection. In case of any conflict with the 2022 California Building Standards Code, Chapter 8.20 prevails. The Moraga-Orinda Fire District is responsible for enforcing this fire code.

California Building Code: Wildland-Urban Interface Building Standards

In addition to the requirements of the California Building Code (CBC), the California Building Standards Commission approved the Office of the State Fire Marshal's emergency regulations amending CCR, Title 24, Part 2, known as the California Building Code (CBC), to include wildland-urban interface standards in September 2007. The wildland-urban interface standards include provisions for ignition-resistant construction standards in the wildland-urban interface and use a hazard classification system to determine what protective measures are required to ensure fire safety and protect lives. Specifically, CBC (Part 2), Chapter 7A addresses materials and construction methods for exterior wildfire exposure. Further, CBC (Part 9), Chapter 49 includes mitigation strategies to reduce the hazards of fire originating within a structure to spread to wildlands, and fire originating in wildlands to spread to structures through development and implementation of fire protection plans, landscape plans, long-term vegetation management, and creation and maintenance of defensible space.

California Code of Regulations, Title 14

The California Code of Regulations (CCR), Title 14, Division 1.5 provides fire safe regulations related to emergency access, address signage, and water standards. These regulations establish minimum wildfire protection standards for construction and development within the SRA and VHFHSZs. The standards include basic emergency access and perimeter wildfire protection measures, signage and building numbering, water supply resources for emergency fire use, and vegetation modification. They also include a minimum setback of 30 feet for all buildings from property lines and/or the center of a road and provide defensible space requirements for areas within 30 feet of a structure (Zone 1) and between 30 and 100 feet from a structure (Zone 2).

California Strategic Fire Plan

The 2024 Strategic Plan prepared by CAL FIRE and the California Natural Resources Agency lays out central goals for reducing the risk and preventing the impacts of fire in the state, and emphasizes four identified core values: integrity, service, community, and diversity. The five-year goals are

[21] Moraga-Orinda Fire District (MOFD). 2020. Ordinance No. 20-01. https://www.mofd.org/home/showpublisheddocument/1418/637364723901230000. (accessed August 2024).

established to meet CAL FIRE's mission to improve its fire prevention efforts, work to make California's forest lands healthier and more resilient after hundreds of years of excluded naturally recurring fire, ensure the state's fire suppression needs to protect lives and property are met, and diversify perspectives through equity and inclusive opportunities focusing on underinvested communities.[22] The most recent version of the plan was released in August 2024 and directs each CAL FIRE Unit to address and meet incremental requirements to achieve six specific goals, including:

1. Attract, hire, and retain quality employees.
2. Ensure all employees understand how the Department's various programs and job duties contribute towards efficiently achieving the CAL FIRE mission.
3. Promote a culture that values equitable access, embraces diverse backgrounds and experiences, and actively removes barriers to cultivate a more inclusive environment.
4. Leverage technology to modernize internal human resources processes and create efficient and effective innovative solutions to promote, support, and enhance the employee experience.
5. Strengthen the Department's physical and digital infrastructure and streamline equitable access to information across core services.
6. Identify core capabilities and strengthen operational capacity.[22]

In addition to the Strategic Plan for California, individual CAL FIRE units develop fire plans, which are strategic documents that establish a set of tools for each CAL FIRE unit for its local area. Updated annually, unit fire plans identify wildfire protection areas, initial attack success, assets and infrastructure at risk, pre-fire management strategies, and accountability in their unit's geographical boundaries. The unit fire plan identifies strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work locally. The unit fire plans include contributions from local collaborators and stakeholders and are aligned with other plans applicable to the area. The unit fire plan applicable to the Project is the CAL FIRE Santa Clara Unit Strategic Fire Plan, which covers the five counties (Santa Clara, Alameda, Contra Costa, San Joaquin, and Stanislaus) of the CAL FIRE Santa Clara Unit.[23]

California Office of Emergency Services

The California Governor's Office of Emergency Services (Cal OES) prepares the SHMP, which identifies hazard risks and includes a vulnerability analysis and a hazard mitigation strategy for the state (Cal OES 2023). The SHMP is required under the Disaster Mitigation Act of 2000 for the State to receive federal funding through the Hazard Mitigation Grant Program and disaster assistance. The SHMP represents the state's primary hazard mitigation guidance document, providing an updated analysis of the state's historical and current hazards, hazard mitigation goals and objectives, and hazard mitigation strategies and actions. The SHMP represents the State's overall commitment to supporting a comprehensive mitigation strategy to reduce or eliminate potential risks and impacts of disasters in order to promote faster recovery after disasters and, overall, a more resilient state. SHMPs are required to meet the elements outlined in the Federal Emergency Management Agency's (FEMA) State Mitigation Plan Review Guide.

[22] CAL FIRE. 2024c. CAL FIRE Strategic Plan 2024. https://www.fire.ca.gov/about/cal-fire-strategic-plan. (accessed October 2024)
[23] CAL FIRE. 2024d. CAL FIRE Santa Clara Unit 2024 Strategic Fire Plan. https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-plan/2024/2024-santa-clara-contra-costa-alameda-west-stanislaus-west-san-joaquin-unit-fire-plan.pdf?rev=96f334ad54b74068acc1735075fce445&hash=6920C472D3A08F34A869826858212619 (accessed August 2024)

Cal OES is responsible for the development and maintenance of the State's plan for hazard mitigation. The State's SHMP was last approved by FEMA as an Enhanced State Mitigation Plan in 2023. The plan is designed to reduce the effects of disasters caused by natural, technological, accidental, and adversarial/human-caused hazards. The SHMP sets the mitigation priorities, strategies, and actions for the state. The plan also describes how risk assessment and mitigation strategy information is coordinated and linked from local mitigation plans into the SHMP and provides a resource for local planners to obtain risk information that may affect their planning area. The State of California is required to review and revise its mitigation plan and resubmit for FEMA approval at least every five years to ensure continued funding eligibility for certain federal grant programs.

State Emergency Plan

The foundation of California's emergency planning and response is a statewide mutual aid system which is designed to ensure that adequate resources, facilities, and other support is provided to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation.

The California Disaster and Civil Defense Master Mutual Aid Agreement (California Government Code Sections 8555–8561) requires signatories to the agreement to prepare operational plans to use within their jurisdiction, and outside their area. These plans include fire and non-fire emergencies related to natural, technological, and war contingencies. The State of California, all State agencies, all political subdivisions, and all fire districts signed this agreement in 1950.

Section 8568 of the California Government Code, the "California Emergency Services Act," states that "the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof." The Act provides the basic authorities for conducting emergency operations following the proclamations of emergencies by the Governor or appropriate local authority, such as a City Manager. The provisions of the Act are reflected and expanded on by appropriate local emergency ordinances. The Act further describes the function and operations of government at all levels during extraordinary emergencies, including war.

The State of California Emergency Plan (SEP) describes how response to natural or human-caused emergencies occurs in California. The plan is a requirement of the California Emergency Services Act and describes methods for conducting emergency operations, the process for rendering mutual aid, emergency services of government agencies, how resources are mobilized, how the public is informed, and how continuity of government is maintained during emergency. The SEP further describes hazard mitigation (actions to reduce risk), as well as preparedness and recovery from disasters.[24] All local emergency plans are extensions of the State of California Emergency Plan. The State Emergency Plan conforms to the requirements of California's Standardized Emergency Management System (SEMS), which is the system required by Government Code 8607(a) for managing emergencies involving multiple jurisdictions and agencies. The SEMS incorporates the functions and principles of the Incident Command System (ICS), the Master Mutual Aid Agreement, existing mutual aid systems, the operational area concept, and multi-agency or inter-agency coordination. Local governments must use SEMS to be eligible for funding of their response-related personnel costs under state disaster assistance programs. The SEMS consists of five organizational levels that are activated as necessary, including: field response, local government, operational area,

[24] California Office of Emergency Services (CalOES). 2017. State of California Emergency Plan. October 2017. https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/California_State_Emergency_Plan_2017.pdf (accessed August 2024).

regional, and state. CalOES divides the state into several mutual aid regions. Contra Costa County is located in Mutual Aid Region II, which includes Del Norte, Humboldt, Mendocino, Sonoma, Lake, Napa, Marin, Solano, San Francisco, San Mateo, Alameda, Santa Clara, Santa Cruz, San Benito, and Monterey counties.[25]

California Public Resource Code

The California Public Resource Code (PRC) Section 4290 establishes minimum wildfire protection standards in conjunction with building, construction, and development in SRAs and VHFHSZs in LRAs. Under PRC Section 4290, the design and construction of structures, subdivisions, and developments in SRAs must provide for basic emergency access and specified perimeter wildfire protection measures. These measures provide for road standards for emergency access, signing and building numbering, water supply reserves, and fuel breaks and greenbelts and are known as the State Minimum Fire Safe Regulations.

California Public Utilities Commission General Order 166

General Order 166 Standard 1.E requires that investor-owned utilities (IOU) providing electricity develop a Fire Prevention Plan which describes measures that the electric utility will implement to mitigate the threat of power-line fires generally. Additionally, this standard requires that IOUs outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning in a high fire threat area. Fire Prevention Plans created by IOUs are required to identify specific parts of the utility's service territory where the conditions described above may occur simultaneously. Standard 11 requires that utilities report annually to the California Public Utilities Commission (CPUC) regarding compliance with General Order 166.[26]

Executive Order N-05-19

On January 9, 2019, Governor Gavin Newsom issued Executive Order N-05-19 to address wildfire in California. Executive Order N-05-19 directs CAL FIRE, in consultation with other state agencies and departments, to recommend immediate-, medium-, and long-term actions to help prevent destructive wildfires. In response, CAL FIRE created the Community Wildfire Prevention and Mitigation Report, which contains recommendations to reduce the damage from wildfires across the state. Specifically, they focus on reducing wildfire fuel (such as vegetation clearing), long-term community protection (creating defensible space in communities), wildfire prevention, and forest health.[9]

Government Code Section 51182

California Government Code Section 51182 sets the requirements for the creation of defensible space zones around residential units building within WUI areas. According to California Government Code Section 51182, a person who owns, leases, controls, operates, or maintains an occupied dwelling or occupied structure in, upon, or adjoining a mountainous area, forest-covered land, brush-covered land, grass-covered land, or land that is covered with flammable material, or land that is in a VHFHSZ shall, at all times, do all of the following:

[25] CalOES. 2021. Coastal Region Operational Area Assignments. https://www.caloes.ca.gov/RegionalOperationsSite/Documents/EMA_ESC_OA_Assignments_Coastal.pdf (accessed August 2024)
[26] California Public Utilities Commission (CPUC). 2017. General Order Number 165. December 2017. http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M209/K552/209552704.pdf (accessed August 2024)

1. Maintain defensible space of 100 feet from each side and from the front and rear of the structure.
2. Remove that portion of trees that extends within 10 feet of the outlet of a chimney or stovepipe.
3. Maintain trees, shrubs, or other plants adjacent to or overhanging a building free of dead or dying wood.
4. Maintain the roof of a structure free of leaves, needles, or other vegetative materials.
5. Prior to constructing a new dwelling or structure that will be occupied or rebuilding an occupied dwelling or occupied structure damaged by a fire in that zone, the construction or rebuilding of which requires a building permit, obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable state and local building standards.

In January 2021, the legislature enacted Assembly Bill 3074, which requires an ember resistant zone, or "Zero Zone", within five feet of residences. As of July 1, 2021, documentation of a compliant Defensible Space Inspection by the jurisdictional fire district is a condition of the sale or transfer of any residential property located in a High FHSZ or VHFHSZ. Further enforcement will occur when the State Fire Marshal approves vegetation clearance requirements, which is anticipated in 2025. Full enforcement for new construction will take effect immediately upon approval of final clearance requirements, anticipated in 2025, and full enforcement on existing structures is anticipated in 2026. Local and regional fire districts are tasked with regulation and inspection of defensible spaces.

Government Code Sections 65302 and 65302.5

California Government Code Section 65302 identifies general plan requirements related to preparation of plan elements including: land use, hazards, circulation, housing, conservation, open space, noise, safety and environmental justice. Specifically, Section 65302 requires identification and annual review of flood-prone areas as mapped by FEMA or the Department of Water Resources, and states that a safety element must protect the community from risks associated with natural hazards, including seismic and geologic hazards, flooding, and fires, with mapping and policies for evacuation routes and public facilities. The safety element must also address climate adaptation and resilience strategies, identifying risks posed by climate change and setting goals and policies to protect the community. It should establish implementation measures for new development and public facilities in at-risk areas.

California Government Code Section 65302.5 states that at least 45 days before adopting or amending the safety element, counties and cities must submit a draft and any technical studies to the California Geological Survey (CGS). The CGS may review the drafts for seismic and geologic hazard information and report findings within 30 days, and these findings must be considered by the legislative body before final adoption unless unavailable within the prescribed time limits. Adopted elements or amendments must also be submitted to the CGS for advisory review. Additionally, at least 90 days before adoption or amendment, the draft must be submitted to the Board of Forestry and Fire Protection (Board) and local fire protection agencies if the area includes state responsibility areas or very high fire hazard severity zones. The Board and local agencies may review and recommend changes within 60 days, focusing on land use and wildfire risk reduction. The board of supervisors or city council must consider these recommendations and explain in writing if they do not accept them. If the Board requests a consultation, it must occur before final approval. If

recommendations are unavailable within the required time, the legislative body may proceed but must consider them during the next amendment.

AB 747 (2019)

AB 747 requires local hazard mitigation plans and safety elements of general plans to be reviewed and updated, as necessary, to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. AB 747 authorizes a city or county that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives to use that information in the safety element of the general plan to comply with this requirement by summarizing and incorporating by reference that other plan or document in the safety element.

SB 1241 (2012)

Senate Bill (SB) 1241 requires cities and counties in SRAs and VHFHSZs to address fire risk in the safety element of their general plans and requires the California Office of Planning and Research to develop guidelines in conjunction with CAL FIRE to ensure wildfire risk is adequately evaluated under CEQA. SB 1241 also resulted in amendments to the CEQA Guidelines in 2018 to include questions related to fire hazard impacts for projects located in or near lands classified as SRAs and VHFHSZs. In adopting these amendments, the California Office of Planning and Research recognized low-density, leapfrog development may create higher wildfire risks than high-density, infill development.[27]

SB 99 (2019)

SB 99 requires that, during the next housing element revision, safety elements of general plans be reviewed and updated to identify residential developments in any hazard area that do not have at least two evacuation routes.

c. Regional and Local Regulations

Moraga-Orinda Wildfire Action Plan/Contra Costa County Community Wildfire Protection Plan

The Contra Costa County Community Wildfire Protection Plan was developed with input from many organizations, including state and local fire departments, federal agencies, community groups, and land management agencies. An appendix to the county-wide plan is the Moraga-Orinda Wildfire Action Plan, which is a local plan specific to the geography covered by MOFD. The purpose of the Community Wildfire Protection Plan is to reduce hazard through increased information and education about wildfires, hazardous fuels reduction, actions to reduce structure ignitibility and other recommendations to assist emergency preparedness and fire suppression efforts. It also works to facilitate a coordinated effort between various stakeholders. The plan describes the wildfire risk and potential throughout the county, designates WUI areas, discusses assets at risk throughout the county, provides mitigation strategies, and discusses resources available.[28] The Action Plan also notes MOFD requires new development projects to create a Wildfire Hazard

[27] "Leapfrog development" describes the construction of new development at a distance from existing developed areas, with undeveloped land between the existing and new development.
[28] Diablo Fire Safe Council. 2019. Contra Costa County Community Wildfire Protection Plan: 2019 Update. http://www.diablofiresafe.org/pdf/2019-Draft_Contra_Costa_County_CWPP_Update.pdf (accessed May 2022)

Assessment and Plan containing area-specific wildfire prevention measures beyond Fire Code requirements.

Moraga-Orinda Fire District

The Moraga-Orinda Fire District (MOFD) was formed in 1997 as an integrated independent special district. MOFD consolidated the Moraga Fire Protection District and the Orinda Fire Protection District to increase efficiency in fire protection and emergency medical services. The MOFD provides services to Moraga, Orinda, and surrounding unincorporated areas such as the community of Canyon (located southwest of the City of Moraga) and Bollinger Canyon (located southeast of the City of Moraga) from five fire stations located in the district.[29] MOFD enforces the California Fire Code and local amendments to the Fire Code. Additionally, MOFD has a Wildfire Prevention Strategic Plan listing seven specific strategies for supporting a sustained, multidisciplinary effort to reduce the risk of a catastrophic wildfire.[30]

Ordinance 23-03

Ordinance 23-03, the MOFD Exterior Hazard Control Ordinance, aims to minimize fire danger by managing hazardous vegetation density and arrangement, preserving beneficial trees and vegetation while removing combustible materials that fuel wildfires. The MOFD Exterior Hazard Control Ordinance aims to reduce fire risk by managing hazardous vegetation and maintaining defensible space, aiding firefighters in controlling wildfires. Property owners must comply with fire code requirements to remove combustible materials and hazardous vegetation.

Contra Costa County Local Hazard Mitigation Plan

The Contra Costa County Local Hazard Mitigation Plan (LHMP) incorporates wildfire hazard mitigation principles and practices into the routine government activities and functions of the County. The County's LHMP includes an annex in Volume 2 of the document that contains a summary and series of hazard planning assessments and tools for individual jurisdictions including the City of Orinda. The City of Orinda annex to the LHMP recommends specific actions that are designed to protect people and community assets from losses due to those hazards that pose the greatest risk. Mitigation programs and activities identified in the LHMP include fuel reduction and vegetation management, public education and outreach programs, increased training for urban firefighters responding to WUI-area fires, and regional consistency of building code standards.[31] The County's LHMP is incorporated by reference into the Safety Element of the General Plan.

Table 18-8 of the County's LHMP includes a list of recommended measures to mitigate wildfire hazards. The applicable recommendations include:

Manipulate the hazard:

- Clear potential fuels on property such as dry underbrush and diseased trees
- Implement best management practices on public lands

[29] MOFD. 2022. District Overview. https://www.mofd.org/our-district/district-overview. (accessed May 2022).
[30] MOFD. 2019. MOFD Wildfire Prevention Strategic Plan.
https://www.mofd.org/home/showpublisheddocument/526/637177117261930000 (accessed July 2022)
[31] Contra Costa County. 2018. Contra Costa County Hazard Mitigation Plan.

Reduce exposure to the hazard:

- Create and maintain defensible space around structures and infrastructure
- Locate outside of hazard area
- Enhance building code to include use of fire resistant materials in high hazard area.

Reduce vulnerability to the hazard:

- Create and maintain defensible space around structures and infrastructure
- Use fire-retardant building materials
- Use fire-resistant plantings in buffer areas of high wildfire threat.
- Consider higher regulatory standards (such as Class A roofing)
- Establish biomass reclamation initiatives
- Reintroduce fire (controlled or prescribed burns) to fire-prone ecosystems
- Manage fuel load through thinning and brush removal

Build local capacity to respond to or be prepared for the hazard:

- More public outreach and education efforts, including an active Firewise program
- Possible weapons of mass destruction funds available to enhance fire capability in high-risk areas
- Identify fire response and alternative evacuation routes
- Seek alternative water supplies
- Become a Firewise community
- Use academia to study impacts/solutions to wildfire risk
- Establish/maintain mutual aid agreements between fire service agencies
- Develop, adopt, and implement integrated plans for mitigating wildfire impacts in wildland-urban interface areas
- Consider the probable impacts of climate change on the risk associated with the wildfire hazard in future land use decisions
- Establish a management program to track forest and rangeland health

City of Orinda Annex

The 2024 Contra Costa County Hazard Mitigation Plan for the City of Orinda Annex[18] is being updated and is currently in the review and approval process as of October 2024.

Table 10-13 of the Hazard Mitigation Plan's Orinda Annex contains a list of actions designed to mitigate various hazards. The actions designated as applicable to wildfire hazards include:

- **OR #2**—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan, Orinda Municipal Code, Capital Improvement Plan, Emergency Operations Plan and Wildfire. Per SB 379, at the time of the next General Plan Housing Element update (2023), update the General Plan Safety Element to incorporate the LHMP.
- **OR #3**—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.

- **OR #10**—Consider hazard mitigation in the annual update to the Capital Improvement Plan. Identify specific unfunded capital improvement projects as high priority based on hazard risk reduction potential and identify grant funding opportunities to fund these projects. . . .
- **OR #19**—Coordinate with MOFD to understand all available options and costs associated with upgrading water pipes to increase water pressure at certain fire hydrants in Orinda.
- **OR #20**—Develop and update worksheets and resources for the public regarding building in high hazard areas, and train permit counter staff to direct the public to these materials.
- **OR #21**—Prepare a Climate Action Plan. Investigate the cost of preparing a Climate Action Plan and identify grant funding opportunities to supplement General Funds. Retain a consultant to update the existing greenhouse gas inventory which was conducted in 2009 based on 2005 data, and use the inventory to prepare a Climate Action Plan.
- **OR #22**—Downtown Development coordination – As guidelines, plans and codes are developed and updated regarding development in downtown Orinda, incorporate hazard mitigation concepts into these Planning documents, especially regarding flood mitigation along San Pablo Creek.
- **OR #24**—Coordinate with Orinda Union School District regarding next update of Local Hazard Mitigation Plan to ensure that agency efforts are synced or complimentary.

Contra Costa County Emergency Operations Plan

The Contra Costa County Office of Emergency Services (OES), a division of the Contra Costa County Office of the Sheriff, is responsible for the planning, outreach, and training related to disaster management and emergency preparedness.

The County's Emergency Operations Plan (County EOP) includes guidance on how to plan for an emergency, the roles of different entities in responding to emergencies, and operational priorities and objectives in emergency response situations and provides the basis for a coordinated response before, during, and after an emergency. The plan facilitates multi-jurisdictional and interagency coordination in emergency operations and serves as the County plan to be used for emergency planning in addition to emergency operations. The plan is to be used in coordination with applicable local, State, and Federal contingency plans and establishes protocols required to effectively respond to, manage and recover from major emergencies and disasters.[32]

Section 3.1 of the EOP establishes the following "goals" for responding to emergency situations:

- Save Lives – The preservation of life is the top priority of emergency managers and first responders and takes precedence over all other considerations.
- Protect Property – Efforts must be made to protect public and private property and resources, including critical infrastructure, from damage during and after an emergency.
- Preserve the Environment – Efforts must be made to preserve Contra Costa County's environment and protect it from damage during an emergency.
- Restore Essential Services – Power, water, sanitation, communication, transportation and other essential services must be restored as rapidly as possible to assist the community in returning to normal daily activities.

[32] Contra Costa County. 2015. Contra Costa County Emergency Operations Plan. https://www.cocosheriff.org/home/showpublisheddocument/168/637284267426930000. (accessed August 2024)

Section 3.2 of the EOP establishes the following "objectives":

- Mitigate Hazards – As soon as practical, suppress, reduce or eliminate hazards and/or risks to persons, property and environment during the disaster response. Lessen the actual or potential effects and/or consequences of future emergencies.
- Meet Basic Human Needs – Supply resources to meet basic human needs, including food, water, shelter, medical treatment and security during the emergency. Provisions will be made for temporary housing, general needs assistance and support.
- Address Needs of People with Disabilities and Others with Access and Functional Needs –People with disabilities and others with access and functional needs may be more vulnerable to harm during and after an emergency. The needs of people with disabilities and others with access and functional needs must be considered and addressed. This includes the elderly, children and those with pets or service animals.
- Support Community and Economic Recovery – After a disaster, it is crucial to restore government, individual/household and economic functions in the community. Recovery involves the development, coordination and implementation of operations, services, infrastructure, facilities and programs. Immediate recovery is typically measured in weeks or months. Long term recovery is measured in the years following the incident.

Bay Area Rapid Transit

Bay Area Rapid Transit (BART) participates in regular mass evacuation exercises within the Bay Area. These exercises require all BART agencies to coordinate with the County to create a Transportation Service Plan in response to the disaster. The plan includes moving evacuated people by bus, rail, and paratransit resources to staging areas, like BART parking lots, before potentially moving to shelters in the Central Valley.[33]

City of Orinda Emergency Operations Plan

The City of Orinda Emergency Operations Plan (Orinda EOP) follows the procedures outlined in the County EOP. The Orinda EOP establishes an Emergency Management Organization, assigns functions and tasks consistent with California's Standardized Emergency Management System, and provides for the integration and coordination of planning efforts of multiple jurisdictions. The Orinda EOP was reviewed and approved by representatives from each City of Orinda department, local special districts with emergency services responsibilities in the City, and the Contra Costa Operational Area Office of Emergency Services. The content is based upon guidance approved and provided by the State of California and FEMA. The intent of the Orinda EOP is to provide direction on how to respond to an emergency from the initial onset, through an extended response, and into the cost recovery process.[34]

City of Orinda Shelter-In-Place Communities

The Orinda communities of Wilder and J&J Ranch in the western and southern part of the city, are shelter-in-place communities. A shelter-in-place community is an entire community or subdivision designed to withstand heat and flames from an approaching wildfire. Attributes of shelter-in-place communities include:

[33] Brill, Michael. 2022. Email Communication between Michael Brill, Manager of Emergency Preparedness, BART Police Department and Drummond Buckley, Planning Director, City of Orinda. August 4, 2022.
[34] City of Orinda. 2018. Orinda Emergency Operations Plan.

- Well-maintained, fire district approved landscape and vegetation management plan
- Adequate roadway and driveway widths, designed to accommodate two-way traffic and large firefighting apparatus
- Adequate water supply and water flow for firefighting efforts.
- Vegetation modification zones surrounding the community
- Homes in the community are built with heavy timber, ignition-resistant eaves, residential fire sprinklers, a Class A ignition-resistant roof, dual pane (one being tempered) glass windows, and chimneys with spark arrestors containing a minimum of 0.5-inch screen.

Each shelter-in-place community has a Wildfire Hazard Assessment and Plan that has been reviewed and approved by MOFD and must maintain these standards. Shelter-in-place communities are still advised to evacuate if they have time and ability; however, they provide a safe place to shelter if evacuation is not possible because of blocked egress, road congestion, or approaching fire and smoke danger.

City of Orinda Tax Measures

The City's voters approved a 0.5 percent Supplemental Sales Tax (Measure L) in 2012 and subsequent bond measures in 2014 (Measure J) and 2016 (Measure L) to fund city services including road maintenance and repair and storm drain repair. In 2020, voters in the City approved Measure R, a 1 percent Supplemental Sales Tax replacing the 0.5 percent tax. This measure generates revenue to fund efforts in Wildfire Risk Reduction, Disaster Planning, and continuing road and storm drain maintenance and repairs. The Supplemental Sales Tax Oversight Commission (SSTOC) was appointed by City Council to review spending plans and propose initiatives for revenue generated through Measure R.[35] Goals and recommendations from the SSTOC regarding wildfire include:

- Hire and train an additional dedicated City staff member to provide "boots on the ground" support for wildfire risk reduction, emergency preparedness, and home hardening efforts.
- Provide roadside fuel reduction and vegetation management, particularly along evacuation routes
- Create a vegetation and structure inventory of City and residential properties in order to utilize novel computer modeling of fire in the Wildland Urban Interface.
- Continue to clear city property to comply with MOFD Fire Code, and budget and plan for annual clearance
- Establish an extensive community education and motivational program regarding Wildfire Risk Reduction, Home Hardening, and Emergency Preparedness
- Define police and other emergency staff required to assist the public during evacuations and assure adequate staffing levels will be available.
- Publicize the existing chipper program and explore implementation of a gridded program
- Explore alternate funding to incentivize residents to achieve fuel reduction, home hardening, and emergency preparedness.
- Expand the pilot program for NO PARKING on red flag days.

[35] Supplemental Sales Tax Oversight Commission. 2022. Annual Report for the Fiscal Year Ending June 30, 2021. https://www.cityoforinda.org/DocumentCenter/View/3757/SSTOC-2022-Annual-Report (accessed August 2022)

City of Orinda Safety Element

The City of Orinda updated its Safety Element in 2023. The current Safety Element includes the following goals and policies relevant to potential wildfire impacts and emergency evacuation:

Goal S-1: A community that effectively minimizes threats to public health, safety, and welfare resulting from natural and human-caused hazards.

Policy S-1: In coordination with the County of Contra Costa, implement and update the Contra Costa County Local Hazard Mitigation Plan, as directed by the California Governor's Office of Emergency Services and the Federal Emergency Management Agency, and maintain mutual-aid agreements with federal, state, and local agencies as well as the private sector, to assist in:

1. Clearance of debris in the event of seismic hazards, collapsed buildings or structures, or other circumstances that could result in blocking emergency access or regress
2. Heavy search and rescue
3. Fire suppression
4. Hazardous materials response
5. Temporary shelter
6. Geologic and engineering needs
7. Traffic and crowd control
8. Building inspection

Policy S-2: Incorporate the Contra Costa County Hazard Mitigation Plan and the City of Orinda Annex, approved by the Federal Emergency Management Agency in 2018, into this Safety Element by reference, as permitted by California Government Code Section 65302.6, to ensure that emergency response and evacuation routes are accessible throughout the city.

Policy S-3: Coordinate with local and State Emergency Management agencies using the Standardized Emergency Management System (S.E.M.S.) and National Incident Management System (N.I.M.S.) to facilitate multiagency emergency response.

Policy S-4: Continue to cooperate with other public agencies to ensure adequate medical and other emergency services, including assessing and projecting future emergency service needs.

Policy S-5: Maintain inter-jurisdictional cooperation and coordination, including automatic aid agreements, with fire protection and suppression agencies in Contra Costa County.

Policy S-6: Ensure that communication, educational and informational materials, assistance in preparedness activities, and evacuation and short-term recovery activities are available in multiple languages and formats appropriate for people with access and functional needs.

Policy S-7: Ensure that communication systems used by emergency responders and key City staff have sufficient redundancy and resiliency to meet City needs during and after a hazard event.

Policy S-8: Ensure that the City is able to prepare for and respond to large-scale disasters through coordination and sharing data, experience, and strategies with other emergency management agencies in state or regional efforts on disaster planning.

Policy S-9: Locate critical facilities outside of known hazard zones, including 100-year and 500-year flood hazard zones, dam inundation zones, very high fire hazard severity zones, and

Wildland-Urban Interface zones. If facilities must be located in these zones, design and site them to minimize potential damage and increase their ability to remain operational during and after hazard events.

Policy S-10: Develop and implement an evacuation assistance program, in coordination with Contra Costa County Transportation Authority, Seniors Around Town, and paratransit and dial-a-ride agencies to help those with limited mobility or lack of access to a vehicle evacuate safely.

Policy S-11: Coordinate with emergency responders, engineers, and Caltrans to identify and maintain additional potential evacuation routes to ensure adequate capacity, safety, and viability of those routes in the event of an emergency, including making improvements to existing roads to support safe evacuations as needed**.**

Policy S-12: Explore expanding contra-flow lanes and red flag parking restrictions to support safe evacuations on critical roadways**.**

Policy S-13: Continue to work with schools, senior care centers, and similar facilities to improve evacuation planning and preparation.

Policy S-14: Continue to revise and improve the Evacuation Analysis and its recommendations as appropriate during future updates to the Safety Element and Hazard Mitigation Plan, including in coordination with surrounding jurisdictions**.**

Policy S-15: Continue to coordinate with MOFD to conduct emergency services training in support of appropriate goals and standards for training efforts.

Goal S-4: A community that seeks to avoid and minimize the risk of loss of life, injury, and property loss from wildfires and urban fires.

Policy S-29: Cooperate with the Moraga-Orinda Fire District (MOFD) in developing additional standards, guidelines, and local ordinances to ensure provision of adequate fire protection and emergency medical service for all persons and property in the community.

Policy S-30: Continue coordination with MOFD to ensure a high level of fire protection to residential and commercial development to avoid or minimize wildfire hazards associated with new land uses, consistent with MOFD standards, including encouraging the location of new development outside of the Very High Fire Severity Zones.

Policy S-31: Coordinate with MOFD and landowners to develop and maintain fuel breaks in dedicated open space and fire-access easements.

Policy S-32: Encourage new development to occur outside of Very High Fire Hazard Severity Zones. Any development that does occur in the Very High Fire Hazard Severity Zones or Wildland-Urban Interface Zones must prepare project-specific fire protection plans, in addition to complying with all applicable state and local building and fire code regulations. Fire protection plans shall include a risk analysis, discussion of fire response capabilities, compliance with fire safety requirements (defensible space, fire protection infrastructure, building ignition resistance, etc.), appropriate mitigation measures and design considerations for any non-conforming fuel modification, maintenance, and education for residents.

Policy S-33: Develop and update programs as needed that ensure recovery and redevelopment after a large fire and that reduce future vulnerabilities to fire hazard risks through site preparation, redevelopment layout design, fire resistant landscape planning, and fire-retarding building design and materials.

Policy S-34: Support and coordinate with MOFD in reviewing development proposals to ensure that new development be located where fire and emergency services have sufficient capacity to meet project needs or require that they be upgraded to provide necessary capacity as part of the proposed development activities.

Policy S-35: Continue to require review by the Planning Department and Moraga-Orinda Fire District prior to the issuance of development permits for proposed construction projects and conceptual landscaping plans in Very High Fire Hazard Severity Zones identified by CAL FIRE and Wildland-Urban Interface Zones. Plans for proposed development in such areas shall include, at a minimum:

1. Site plan, planting plan, planting palette, and irrigation plan to reduce the risk of fire hazards and with consideration to site conditions, including slope, structures, and adjacencies.
2. Development and maintenance of defensible space.
3. Multiple points of ingress and egress to improve evacuation, emergency response, and fire equipment access, and adequate water infrastructure for water supply and fire flow that meets or exceeds standards in the California Fire Safe Regulations.
4. Class A roof materials for new and replacement roofs.
5. Location and source of anticipated water supply.

Policy S-36: Coordinate with the East Bay Municipal Utilities District to maintain an adequate long-term water supply for fire suppression needs for the community.

Policy S-37: Support measures that help firefighting crews and emergency response teams respond to fire hazards or work under low-visibility conditions, such as high-visibility signage for streets and building addresses that meet or exceed the standards in the California Fire Safe Regulations.

Policy S-38: Continue to uphold fire-resistant landscaping requirements for new residential and commercial development. All new residential development must comply with MOFD and California Fire Safe Regulations, as well as Chapter 17.17 (Landscaping) of the Municipal Code, which requires all planted material to conform to the fire-safe vegetation list in the City of Orinda Landscape Guidelines.

Policy S-39: Require proposed development to provide adequate access for fire and emergency vehicles and equipment that meets or exceeds the standards in the California Fire Safe Regulations.

Policy S-40: Identify existing public and private roadways in fire hazard severity zones and the wildland-urban interface (WUI) that are not in compliance with current fire safety regulations, including road standards for evacuation and emergency vehicle access, vegetation clearance, and other requirements of the California Fire Safe Regulations (Sections 1273 and 1274 of the California Code of Regulations - Title 14, Division 1.5, Chapter 7, Articles 2 and 3), to the extent resources are available. Work at retrofitting City-owned roadways as needed to meet current standards and require private property owners to do the same, to the extent feasible and given the absence of other site constraints.

In addition, to the above policies, the current Safety Element also includes several "Implementation Actions" relevant to wildfire:

- **IA-1:** The City shall continue to work with the County to update the Local Hazard Mitigation Plan upon its expiration to ensure that Orinda maintains eligibility for pre-disaster mitigation funding.
- **IA-2:** The City shall continue to maintain agreements with other local, state, and federal agencies to ensure coordinated disaster response.
- **IA-3:** Maintain automatic aid agreements with other fire protection/suppression agencies in Contra Costa County.
- **IA-4:** The City shall evaluate, and as feasible enact, recommendations in the City of Orinda 2022 Evacuation Analysis[36] and other pertinent analyses to improve safe evacuations in Orinda.
- **IA-15:** Coordinate with Moraga-Orinda Fire District to continue implementing a long-term fire protection training program and continue public education efforts, including to at-risk populations, to inform the community of wildland and urban fire hazards and ways to minimize damage caused by fires.
- **IA-16:** The City shall work with CAL FIRE and Moraga-Orinda Fire District to ensure maintenance of existing fuel breaks, vegetation clearance, and emergency access routes for effective fire suppression on public and private roads.
- **IA-17:** Continue to implement the City's and the Moraga-Orinda Fire District's most currently adopted Fire Codes to ensure that development is constructed in a structurally safe manner. To the extent feasible, conduct periodic fire safety inspections to ensure compliance with adopted codes.
- **IA-18:** Identify and improve areas lacking adequate water service for firefighting, including capacity for peak load under a reasonable worst-case wildland fire scenario determined by Moraga-Orinda Fire District. The City shall identify areas lacking adequate water service, including areas where future development may occur.

4.14.3 Impact Analysis

a. Thresholds and Methodology

Significance Thresholds

The following thresholds of significance were used to evaluate impacts related to wildfire associated with implementation of the proposed project. These thresholds, with the exception of Threshold 1b, are based on the CEQA Guidelines Appendix G Checklist. For purposes of this EIR, since the project opportunity sites would be located near (within 2 miles of) an SRA and VHFHSZ, and WUI area, project implementation may have a significant adverse impact if it would do any of the following:

1a. Substantially impair an adopted emergency response plan or emergency evacuation plan;

1b. Substantially increase emergency evacuation constraints;

2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;

[36] The 2022 Evacuation Analysis is referenced herein as the "2023 EA" and the "Supplemental Evacuation Analysis (SEA)"

3. 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;
4. 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; or
5. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Evacuation Threshold

The City, as the Lead Agency under CEQA, has determined that a complete analysis of potential wildfire impacts requires an assessment of whether the project would substantially increase evacuation constraints, in addition to the standard CEQA Guidelines Appendix G thresholds, because a project can substantially increase evacuation constraints while still being consistent with adopted emergency response and evacuation plans. As a result, the EIR utilizes a separate threshold of significance (Threshold 1b) in addition to the Appendix G thresholds to assess this impact.

In order to determine if the project would substantially increase evacuation constraints, a Supplemental Evacuation Analysis (SEA) was prepared (as further described below in Methodology). For the purposes of this EIR Wildfire analysis, the project would substantially increase evacuation constraints if it would cause an increase in the level of service (LOS) constraint (e.g., from LOS D to LOS E, or from Constrained to Very Constrained) at one or more affected intersections utilized for evacuation, such that additional constraint "index points" are assigned to residential parcels in the City (as described in Appendix D of Appendix WFR). According to the SEA, these additional constraint "index points" indicate that residents evacuating from those residential parcels will experience greater congestion at the affected intersections during an evacuation.

Methodology

To assess the project's potential wildfire evacuation and emergency response impacts, this section first assesses the project's consistency with adopted emergency response and evacuation plans (see Impact WFR-1a), and then considers whether the project would substantially increase existing evacuation constraints (see Impact WFR-1b). This section next assesses the remaining CEQA Guidelines Appendix G questions (see Impact WFR-2). CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents (i.e., the environment's impacts on the project). Consequently, the analysis below considers whether the project would impact the existing environment, including whether it would exacerbate existing, adverse environmental conditions.

Evacuation Constraint Analysis

In January 2023, the City finalized an Evacuation Analysis (EA) that assessed existing constraints along likely evacuation routes in Orinda pursuant to Government Code Section 65302.15. This analysis, which is provided as Appendix WFR, evaluated three citywide evacuation scenarios, based on different assumptions about where a wildfire might originate. Scenario 1 assumes only SR-24 and Mount Diablo Boulevard are available; Scenario 2 assumes SR-24, Mount Diablo Boulevard, San Pablo Dam Road, Shepard Canyon Road, and Grizzly Peak Boulevard are available; and Scenario 3 assumes SR-24, Mount Diablo Boulevard, and Shepard Canyon Road are available for emergency evacuation use. The EA was based on probable wildfire origin scenarios. It did not model wildfire behavior. It assessed how "constrained" evacuation is for each residential parcel in the city based on

three factors: how far residents must travel to reach the nearest safe destination; what intersections and roadway segments along Orinda's evacuation routes are expected to be congested and how many congested intersections each household must travel through to reach the nearest safe destination; and demographic characteristics identifying households that may need extra time or that may have specific requirements to evacuate quickly.

To estimate the level of congestion at each intersection, the EA looked at intersection capacities expressed in vehicles per one hour, but noted that "[i]t is much more likely that Orinda residents would have more time than one hour to evacuate, particularly if, for example, a wildfire were to originate further out in the northern Briones or southwest open spaces beyond Orinda City Limits rather than adjacent to or within Orinda. Additionally, a phased evacuation by zone would prevent 'worst-case-scenario' traffic volumes that would likely occur within a one-hour simultaneous evacuation" (Appendix WFR, page B-7).

The results of this constraint analysis are shown in Figures 15-17 of the EA (Appendix WFR, pages B-44 through B-46). These figures show that currently, the most constrained areas, under all three wildfire origin scenarios, are in the southern part of the City. The EA also included a number of recommendations for reducing traffic congestion during evacuation (see Appendix WFR, pages B-31 through B-38) and for evacuating potentially vulnerable populations (see Appendix WFR, page B-42), including guidance for specific intersections.

The 2023 EA focused on *existing* evacuation constraints. While the 2023 EA discussed in general terms the evacuation constraints that would occur with development at the Housing Element Sites and in the DPP Area (see Appendix WFR, page B-1), it did not conduct any additional analysis of how adding the new housing anticipated by Plan Orinda would increase evacuation constraints. Following the decision in *Orindans for Safe Emergency Evacuation v. City of Orinda*, Contra Costa Superior Court Case No. N23-0579, additional analysis was prepared ("Supplemental Evacuation Analysis", included as Appendix WFR).

The Supplemental Evacuation Analysis (SEA) follows the same methodology as the 2023 EA but assumes full buildout of Plan Orinda under all three wildfire origin scenarios. It describes in detail how Plan Orinda would affect Orinda's evacuation conditions and the degree of constraint for residents of all residential parcels as they evacuate to safety. As in the 2023 EA, the SEA describes the level of constraint at intersections along evacuation routes. The extent to which each of these affected intersection's expected vehicle load exceeds its capacity translates to the assigned constraint categories (LOS C, LOS D, LOS E, LOS F, Constrained, Very Constrained, and Severely Constrained), which were used to assign constraint "index points" to residential parcels. For each affected intersection, the additional vehicle load from anticipated Project buildout was added to the baseline number previously calculated for existing conditions. Then, additional constraint index points were assigned to residential parcels where the additional vehicle load at an affected intersection triggered an increase in the intersection's LOS constraint category (e.g., from LOS D to LOS E, or from Constrained to Very Constrained), (see Appendix WFR, pages 7 and 8).

No constraint index points were assigned to residential parcels based on the number of local or collector intersections they must travel through. Residential parcels were assigned index points only based on the number of constrained arterial intersections they must pass through to reach their closest safety gateway. This is for ease and accuracy of calculation, since arterials have a clear flow of traffic in the direction of the nearest safety gateways, whereas the collector intersections and routes typically have alternatives that lead to the same safety gateway.

The SEA is utilized within this EIR to determine whether the proposed project would substantially increase evacuation constraints (as discussed under Impact WFR-1b below). It is also used to assess the potential wildfire impacts of the Project alternatives (see Chapter 6, *Alternatives*).

Threshold:	If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Impact WFR-1a DEVELOPMENT FACILITATED BY THE PROJECT WOULD BE IN AND NEAR A WUI AND/OR VERY HIGH FHSZ, BUT WOULD NOT SUBSTANTIALLY IMPAIR AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN. BUILDOUT UNDER PLAN ORINDA WOULD OCCUR IN ACCORDANCE WITH THE CONTRA COSTA COUNTY EMERGENCY OPERATIONS PLAN, THE CITY OF ORINDA EMERGENCY OPERATIONS PLAN, THE CONTRA COSTA COUNTY HAZARD MITIGATION PLAN AND CONTRA COSTA COUNTY HAZARD MITIGATION PLAN: CITY OF ORINDA ANNEX, AND THE CITY OF ORINDA SAFETY ELEMENT. THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Housing Element Update and Downtown Precise Plan

As shown in Figure 4.14-1, CAL FIRE has mapped large areas surrounding Orinda as VHFHSZs within SRAs, and consistent with CAL FIRE mapping, MOFD has mapped most of Orinda as a WUI-Fire Area and VHFHSZ within a LRA (see Figure 4.14-1). The project would result in the development of Housing Element and DPP Sites with higher-density housing. However, as described in Section 4.10, *Public Services and Recreation*, the project would not result in the need for new or expanded emergency service facilities, including police and fire protection.

Main transportation routes serving Housing Element Sites include SR-24, Camino Pablo, and Moraga Way. The Housing Element Sites would be accessed by preexisting roadways and would not impair the use of emergency evacuation routes through the modification of existing roadways either through elimination, reduction in width, or blockage. Housing Element Site HE-5 would be adjacent to a critical evacuation route, SR-24. The other sites, HE-1, HE-2, HE-3, and HE-4, would generally rely on Moraga Way for potential evacuation.

Main transportation routes serving the DPP area include SR-24, Camino Pablo, and Moraga Way. The DPP Sites would be accessed by preexisting roadways and development would not impair the use of emergency evacuation routes through the modification of existing roadways, either through elimination, reduction in width, or blockage. Orinda's main transportation routes (SR-24, Camino Pablo, and Moraga Way) are in close proximity to all DPP Sites and would be relied on as evacuation routes during a wildfire evacuation (see Figure 2 in the Safety Element[11]).

Consistency with Adopted Emergency Response and Evacuation Plans

The emergency response and evacuation plans applicable to development in Orinda include the Contra Costa County Emergency Operations Plan (County EOP[32]), the City of Orinda Emergency Operations Plan (Orinda EOP[34]), the Contra Costa County Hazard Mitigation Plan[31], Contra Costa County Hazard Mitigation Plan: City of Orinda Annex[18], and the City of Orinda Safety Element[11], which are detailed in Section 4.14.2, *Regulatory Setting,* above.

Emergency Response Plans

CONTRA COSTA COUNTY AND ORINDA EMERGENCY OPERATIONS PLANS

The County EOP and Orinda EOP address responsibilities and approaches related to emergency response and provide a framework for coordinating adaptable response and recovery efforts. The Orinda EOP follows the procedures outlined in the County EOP[34]. The County EOP and Orinda EOP do not include any guidance or mandates regarding where new development should be located, whether new development should be allowed, or whether any improvements or mitigation should be adopted to address emergency response impacts from new development[31, 32]. Instead, Section 3.1 of the EOP establishes the following "goals" for responding to emergency situations:

- Save Lives – The preservation of life is the top priority of emergency managers and first responders and takes precedence over all other considerations.
- Protect Property – Efforts must be made to protect public and private property and resources, including critical infrastructure, from damage during and after an emergency.
- Preserve the Environment – Efforts must be made to preserve Contra Costa County's environment and protect it from damage during an emergency.
- Restore Essential Services – Power, water, sanitation, communication, transportation and other essential services must be restored as rapidly as possible to assist the community in returning to normal daily activities.

Additionally, Section 3.2 of the EOP establishes the following "objectives":

- Mitigate Hazards – As soon as practical, suppress, reduce or eliminate hazards and/or risks to persons, property and environment during the disaster response. Lessen the actual or potential effects and/or consequences of future emergencies.
- Meet Basic Human Needs – Supply resources to meet basic human needs, including food, water, shelter, medical treatment and security during the emergency. Provisions will be made for temporary housing, general needs assistance and support.
- Address Needs of People with Disabilities and Others with Access and Functional Needs- People with disabilities and others with access and functional needs may be more vulnerable to harm during and after an emergency. The needs of people with disabilities and others with access and functional needs must be considered and addressed. This includes the elderly, children and those with pets or service animals.
- Support Community and Economic Recovery – After a disaster, it is crucial to restore government, individual/household and economic functions in the community. Recovery involves the development, coordination and implementation of operations, services, infrastructure, facilities and programs. Immediate recovery is typically measured in weeks or months. Long term recovery is measured in the years following the incident.

Plan Orinda would not substantially impair either EOP because Plan Orinda does not restrict, prohibit or prevent the City from following the EOPs' guidance related to how to prepare for and respond to emergency situations.

CONTRA COSTA COUNTY AND ORINDA ANNEX HAZARD MITIGATION PLANS

The Contra Costa County Hazard Mitigation Plan (2018) and the Contra Costa County Hazard Mitigation Plan: City of Orinda Annex (2024) include best practices for wildfire prevention,

mitigation, and response. This Plan and the City of Orinda Annex are incorporated by reference into the Safety Element (2023).

Section 13.5.1 of the Contra Costa County Hazard Mitigation Plan (Hazard Mitigation Plan) states that "[t]here are no recorded incidents of loss of life from wildfires within the planning area. Given the immediate response times to reported fires, the likelihood of injuries and casualties is minimal" (Hazard Mitigation Plan page 13-13). The Hazard Mitigation Plan further provides, "Urbanization tends to alter the natural fire regime, and can create the potential for the expansion of urbanized areas into wildland areas. The expansion of the wildland urban interface can be managed with strong land use and building codes. The planning area is well equipped with these tools and this planning process has assessed capabilities with regards to the tools. As the planning area experiences future growth, it is anticipated that the exposure to this hazard will remain as assessed or even decrease over time due to these capabilities" (Hazard Mitigation Plan page 13-14).

As shown in Figure 4.14-1 and Figure 4.14-2, most of Orinda is identified as WUI. The Hazard Mitigation Plan, Section 4.5.3, notes that land use planning falls to "municipal planning partners," like the City. "[M]unicipal planning partners have adopted general plans that govern land use decision and policy making for their jurisdictions. Decisions on land use will be governed by these plans" (Hazard Mitigation Plan page 4-12). To ensure that these plans are informed by the natural hazard assessment of the Hazard Mitigation Plan, "[a]ll planning partners will incorporate this hazard mitigation plan in their general plans by reference" (Hazard Mitigation Plan page 4-12). The Hazard Mitigation Plan's assessment of potential wildfire issues further notes, "Future housing growth into interface areas should continue to be managed" (Hazard Mitigation Plan page 13-15). The Project is consistent with this recommendation because all future development in interface areas will be subject to the California Building and Fire Code, including the Wildland-Urban Interface Building Standards, CCR Title 14, PRC Section 4290, Government Code Section 5112, Ordinance 23-03, and the policies and implementation actions outlined in the Safety Element.

As detailed in Section 4.14.2, *Regulatory Setting,* above, Table 18-8 of the Hazard Mitigation Plan includes a list of recommended measures to mitigate wildfire hazards generally. These recommendations include, but are not limited to, clearing and maintaining vegetation, creating and maintaining defensible space, utilizing fire resistant building and plant materials, and establishing fire safety programs and plans with the community and mutual aid agencies. Specifically, these measures include the following:

Manipulate the hazard:

- Clear potential fuels on property such as dry underbrush and diseased trees
- Implement best management practices on public lands

Reduce exposure to the hazard:

- Create and maintain defensible space around structures and infrastructure
- Locate outside of hazard area
- Enhance building code to include use of fire resistant materials in high hazard area.

Reduce vulnerability to the hazard:

- Create and maintain defensible space around structures and infrastructure
- Use fire-retardant building materials
- Use fire-resistant plantings in buffer areas of high wildfire threat.

- Consider higher regulatory standards (such as Class A roofing)
- Establish biomass reclamation initiatives
- Reintroduce fire (controlled or prescribed burns) to fire-prone ecosystems
- Manage fuel load through thinning and brush removal

Build local capacity to respond to or be prepared for the hazard:

- More public outreach and education efforts, including an active Firewise program
- Possible weapons of mass destruction funds available to enhance fire capability in high-risk areas
- Identify fire response and alternative evacuation routes
- Seek alternative water supplies
- Become a Firewise community
- Use academia to study impacts/solutions to wildfire risk
- Establish/maintain mutual aid agreements between fire service agencies
- Develop, adopt, and implement integrated plans for mitigating wildfire impacts in wildland-urban interface areas
- Consider the probable impacts of climate change on the risk associated with the wildfire hazard in future land use decisions
- Establish a management program to track forest and rangeland health

The only one of these measures the project could impair is the recommendation to "locate [development] outside of hazard area[s]" to reduce community exposure to fire hazards. As shown in Figure 4.14-1 and Figure 4.14-2, some of Plan Orinda's anticipated development would be located outside of VHFHSZ and WUI areas (e.g. the eastern half of Housing Element Site HE-4). However, because the vast majority of Orinda is within either a VHFHSZ or WUI area, locating all of Plan Orinda's development outside of the wildfire hazard area is not feasible. While Plan Orinda could impair this one recommended measure to some extent, it would be consistent with, and indeed help implement, the other recommended measures. Thus, any impairment of this plan would be insubstantial.

Emergency Evacuation Plans

CONTRA COSTA COUNTY HAZARD MITIGATION PLAN

As detailed above, the Hazard Mitigation Plan also includes measures related to emergency evacuation, such as "identify fire response and alternative evacuation routes". Orinda Safety Element Policies S-1 through S-15 and S-24 through S-36 would support the implementation of the measures recommended in the Hazard Mitigation Plan. Specifically, Policy S-2 of the Safety Element incorporates the Hazard Mitigation Plan into the City's Safety Element "to ensure that emergency response and evacuation routes remain accessible throughout the city".[18]

ORINDA ANNEX

As detailed in Section 4.14.2 above, Table 10-13 of the Contra Costa County Hazard Mitigation Plan's Orinda Annex contains a list of actions designed to mitigate wildfire hazards, including:

- **OR #2**—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan, Orinda Municipal Code, Capital Improvement Plan, Emergency Operations Plan and Wildfire. Per SB 379, at the time of the next General Plan Housing Element update (2023), update the General Plan Safety Element to incorporate the LHMP.
- **OR #3**—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.
- **OR #10**—Consider hazard mitigation in the annual update to the Capital Improvement Plan. Identify specific unfunded capital improvement projects as high priority based on hazard risk reduction potential and identify grant funding opportunities to fund these projects. . . .
- **OR #19**—Coordinate with MOFD to understand all available options and costs associated with upgrading water pipes to increase water pressure at certain fire hydrants in Orinda.
- **OR #20**—Develop and update worksheets and resources for the public regarding building in high hazard areas, and train permit counter staff to direct the public to these materials.
- **OR #21**—Prepare a Climate Action Plan. Investigate the cost of preparing a Climate Action Plan and identify grant funding opportunities to supplement General Funds. Retain a consultant to update the existing greenhouse gas inventory which was conducted in 2009 based on 2005 data, and use the inventory to prepare a Climate Action Plan.
- **OR #22**—Downtown Development coordination – As guidelines, plans and codes are developed and updated regarding development in downtown Orinda, incorporate hazard mitigation concepts into these Planning documents, especially regarding flood mitigation along San Pablo Creek.
- **OR #24**—Coordinate with Orinda Union School District regarding next update of Local Hazard Mitigation Plan to ensure that agency efforts are synced or complimentary.

Plan Orinda does not substantially impair implementation of any of these recommended actions. For example, in accordance with Orinda Annex OR #22, the City will incorporate hazard mitigation concepts, such as coordinating development conditions for fire prevention and wildfire resilience and educating downtown businesses and residents on emergency response and evacuation procedures (in alignment with DPP Policies 9.1.1 and 9.1.3, respectively), following the zoning amendments needed to implement the DPP. Further, in accordance with the Plan Orinda Safety Element, any development that does occur within the Very High Fire Hazard Severity Zones or Wildland-Urban Interface Zones must prepare project-specific fire protection plans (Policy S-32). The fire protection plan would include, but not be limited to: risk analysis and education for residents on adopted design guidelines, in compliance with Policy S-32; coordination with the Planning Department and MOFD prior to issuance of development permits in accordance with Policy S-34; and fire response capabilities and design considerations such as multiple points of ingress and egress to improve evacuation and emergency response as outlined in Policy S-35.

OTHER CITY ACTIONS

As noted above, the Safety Element Update (Policy S-2) will integrate the County's Hazard Mitigation Plan into the City's General Plan, thus implementing Orinda Annex action OR#2. The City

will incorporate hazard mitigation concepts into downtown development as it updates its zoning code to reflect the development concepts in the DPP. The City can and will continue to work toward implementation of the other suggested actions. While not relevant to this CEQA analysis, which considers whether the Project would substantially impair any adopted emergency response or evacuation plan, it is worth noting that the City has already undertaken and is currently undertaking many of the recommended actions described above separately from Plan Orinda. For example, the City developed *Plants for a Fire-Savvy Landscape*, a 2024 reference guide for fire-safe landscaping plants and practices[37]; Orinda's Fire Evacuation Guide and General Information, a public fire evacuation resource provided in 2024[38]; and the continued effort to consider and adopt design guidelines for development within the downtown areas.

In addition, the Contra Costa Transportation Authority (CCTA) was awarded funding from Caltrans to develop a new Countywide Emergency Evacuation Plan to assess evacuation route capacity, safety, and viability for the county and the 19 cities/towns within it. The new Countywide Emergency Evacuation Plan "will help local agencies identify the most vulnerable communities; determine the amount of time needed to facilitate an evacuation and develop strategies to improve egress during emergencies, helping to promote sustainability for those most at-risk".[39] The project is estimated to cost $1.49 million dollars. One anticipated outcome of this plan is an understanding that climate and other hazard risks (such as wildfire) may result in multi-jurisdictional evacuations using routes that may span several jurisdictions.

In summary, the Project would not substantially impair any adopted emergency response and evacuation plan. To the contrary, the Project would be consistent with those plans and would help implement them (e.g., by incorporating the most recent Hazard Mitigation Plan into the Safety Element).

Threshold:	Would the project substantially increase evacuation constraints?

Impact WFR-1b **DEVELOPMENT FACILITATED BY THE PROJECT WOULD BE IN AND NEAR A WUI OR VERY HIGH FHSZ. BY ADDING ADDITIONAL RESIDENTS TO ALREADY CONSTRAINED EVACUATION ROUTES, THE PROJECT WOULD SUBSTANTIALLY INCREASE EVACUATION CONSTRAINTS. WHILE IMPLEMENTATION OF SAFETY ELEMENT POLICIES AND OTHER MITIGATION WOULD HELP REDUCE THIS IMPACT, THE IMPACT WOULD REMAIN SIGNIFICANT AND UNAVOIDABLE.**

Evacuation Constraints

The Project would facilitate development of an additional 2,383 dwelling units in Orinda. These units will be located at the Housing Element Sites and in the DPP. In case of an emergency, such as a wildfire, some or all of the residents of these new units may need to evacuate the City.

Evacuation Analysis

As detailed above in the Methodology Section, in January 2023, the City finalized an Evacuation Analysis (EA) that assessed existing constraints along possible evacuation routes in Orinda pursuant

[37] City of Orinda. 2024a. Plants for a Fire-Savvy Landscape. https://www.cityoforinda.org/DocumentCenter/View/4624/Orinda-Plant-Guide-2024. (accessed September 2024)
[38] City of Orinda. 2024b. Orinda Fire Evacuation Guide & General Information. https://www.cityoforinda.org/DocumentCenter/View/3830/Fire-Evacuation-Guide-and-General-Information-Flyer. (accessed September 2024)
[39] Contra Costa County. 2024b. Contra Costa Transportation Authority Secures $1.49 Million Caltrans Grant to Develop a New Countywide Emergency Evacuation Plan. Available online: https://ccta.net/wp-content/uploads/2024/08/Final_CCTA-secures-Emergency-Planning-Grant.pdf. (accessed October 2024)

to Government Code Section 65302.15. This analysis, provided as Appendix WFR, assessed how "constrained" evacuation is for each residential parcel in the city, and assigned these parcels "cumulative constraint index scores." While the 2023 EA discussed in general terms the evacuation constraints that would occur with development at the Housing Element Sites and in the DPP (see Appendix WFR, pages 1 and 42), it did not conduct any additional analysis of whether or how adding the new housing anticipated by Plan Orinda would increase evacuation constraints. Following the decision in *Orindans for Safe Emergency Evacuation v. City of Orinda*, Contra Costa Superior Court Case No. N23-0579, additional analysis was prepared ("Supplemental Evacuation Analysis", included as Appendix WFR). This Supplemental Evacuation Analysis (SEA) follows the same methodology as the 2023 EA but assumes full buildout of Plan Orinda under all three wildfire origin scenarios.

The methodology used in the SEA demonstrates how the addition of new residents pursuant to Plan Orinda will affect congestion at intersections along evacuation routes in the event of an evacuation. Both the SEA and EA utilize the conservative assumption that all residents in the City will evacuate at the same time. The methodology is also consistent with the analysis required by Government Code section 65302.15 because it identifies evacuation routes and their capacity, safety, and viability in the event of a wildfire. The threshold of significance utilized in this EIR is also conservative because it finds a project's impacts to be significant if the project would increase congestion at any one intersection on any evacuation route in the City such that that intersection would increase LOS constraint categories (e.g., from LOS D to LOS E, or from Constrained to Very Constrained).

While the SEA evaluates impacts to evacuation constraints under three different wildfire origin scenarios, it does not model wildfire behavior or make any assumptions about the potential timing of when evacuation routes would be impacted. It also does not assess how long it would take residents to evacuate under different wildfire scenario assumptions. Such analyses require numerous assumptions (e.g., wildfire point of origin, weather, vegetation, timing of evacuation) that can lead to speculation and render the analysis unrealistic or misleading. Moreover, some readers might interpret such analysis as guaranteeing them a certain amount of time to evacuate when, in fact, circumstances might require faster action. For these reasons, this EIR utilizes the evacuation constraint analysis in the EA and SEA rather than conducting a different kind of evacuation analysis. In the event of an actual wildfire evacuation, the City will utilize its established communications channels for notifying residents to evacuate consistent with its protocols and procedures.

The SEA concludes that Plan Orinda would measurably worsen the already-constrained evacuation condition in Orinda due to the addition of more evacuees needing to travel through already-congested intersections along their evacuation routes. This increase in evacuation constraints is portrayed in Appendix WFR Figures 1, 2, and 3 (included as Figure 4.14-3a, Figure 4.14-3b, Figure 4.14-4a, Figure 4.14-4b, Figure 4.14-5a, and Figure 4.14-5b below). As seen in these Figures, significant portions of the City change from a lighter shade (representing lower evacuation constraints) to a darker shade (representing more evacuation constraints) with the addition of housing anticipated under Plan Orinda. Those parcels that change from lighter to darker shades will experience increased congestion during wildfire evacuation with the addition of housing under Plan Orinda. The SEA shows that the Project would cause 18 intersections to increase in constraint category (to "constrained" or higher). Residential parcels that need to pass through those intersections to evacuate therefore received additional constraint index points. SEA Table 2 depicts the total affected parcels relative to baseline existing conditions by buildout scenario. Buildout of Plan Orinda would result in 3,499 affected parcels for wildfire Scenario 1; 1,661 affected parcels for

wildfire Scenario 2; and 3,818 affected parcels for wildfire Scenario 3. Thus, the Project would substantially increase evacuation constraints.

SAFETY ELEMENT POLICIES AND SEA RECOMMENDATIONS TO REDUCE EVACUATION CONSTRAINTS

Safety Element

Numerous policies in the Safety Element would help reduce evacuation constraints, such as those listed in Section 4.14.2, *Regulatory Setting*. These policies include:

Goal S-1: A community that effectively minimizes threats to public health, safety, and welfare resulting from natural and human-caused hazards.

> **Policy S-1:** In coordination with the County of Contra Costa, implement and update the Contra Costa County Local Hazard Mitigation Plan, as directed by the California Governor's Office of Emergency Services and the Federal Emergency Management Agency, and maintain mutual-aid agreements with federal, state, and local agencies as well as the private sector, to assist in:
>
> 1. Clearance of debris in the event of seismic hazards, collapsed buildings or structures, or other circumstances that could result in blocking emergency access or regress
> 2. Heavy search and rescue
> 3. Fire suppression
> 4. Hazardous materials response
> 5. Temporary shelter
> 6. Geologic and engineering needs
> 7. Traffic and crowd control
> 8. Building inspection
>
> **Policy S-2**: Incorporate the Contra Costa County Hazard Mitigation Plan and the City of Orinda Annex, approved by the Federal Emergency Management Agency in 2018, into this Safety Element by reference, as permitted by California Government Code Section 65302.6, to ensure that emergency response and evacuation routes are accessible throughout the city.
>
> **Policy S-4**: Continue to cooperate with other public agencies to ensure adequate medical and other emergency services, including assessing and projecting future emergency service needs.
>
> **Policy S-5**: Maintain inter-jurisdictional cooperation and coordination, including automatic aid agreements, with fire protection and suppression agencies in Contra Costa County.
>
> **Policy S-6**: Ensure that communication, educational and informational materials, assistance in preparedness activities, and evacuation and short-term recovery activities are available in multiple languages and formats appropriate for people with access and functional needs.
>
> **Policy S-9**: Locate critical facilities outside of known hazard zones, including 100-year and 500-year flood hazard zones, dam inundation zones, very high fire hazard severity zones, and Wildland-Urban Interface zones. If facilities must be located in these zones, design and site them to minimize potential damage and increase their ability to remain operational during and after hazard events.

Policy S-10: Develop and implement an evacuation assistance program, in coordination with Contra Costa County Transportation Authority, Seniors Around Town, and paratransit and dial-a-ride agencies to help those with limited mobility or lack of access to a vehicle evacuate safely.

Policy S-11: Coordinate with emergency responders, engineers, and Caltrans to identify and maintain additional potential evacuation routes to ensure adequate capacity, safety, and viability of those routes in the event of an emergency, including making improvements to existing roads to support safe evacuations as needed**.**

Policy S-12: Explore expanding contra-flow lanes and red flag parking restrictions to support safe evacuations on critical roadways**.**

Policy S-13: Continue to work with schools, senior care centers, and similar facilities to improve evacuation planning and preparation.

Policy S-14: Continue to revise and improve the Evacuation Analysis and its recommendations as appropriate during future updates to the Safety Element and Hazard Mitigation Plan, including in coordination with surrounding jurisdictions**.**

Goal S-4: A community that seeks to avoid and minimize the risk of loss of life, injury, and property loss from wildfires and urban fires.

Policy S-35: Continue to require review by the Planning Department and Moraga-Orinda Fire District prior to the issuance of development permits for proposed construction projects and conceptual landscaping plans in Very High Fire Hazard Severity Zones identified by CAL FIRE and Wildland-Urban Interface Zones. Plans for proposed development in such areas shall include, at a minimum:

1. Site plan, planting plan, planting palette, and irrigation plan to reduce the risk of fire hazards and with consideration to site conditions, including slope, structures, and adjacencies.
2. Development and maintenance of defensible space.
3. Multiple points of ingress and egress to improve evacuation, emergency response, and fire equipment access, and adequate water infrastructure for water supply and fire flow that meets or exceeds standards in the California Fire Safe Regulations.
4. Class A roof materials for new and replacement roofs.
5. Location and source of anticipated water supply.

Policy S-37: Support measures that help firefighting crews and emergency response teams respond to fire hazards or work under low-visibility conditions, such as high-visibility signage for streets and building addresses that meet or exceed the standards in the California Fire Safe Regulations.

Policy S-40: Identify existing public and private roadways in fire hazard severity zones and the wildland-urban interface (WUI) that are not in compliance with current fire safety regulations, including road standards for evacuation and emergency vehicle access, vegetation clearance, and other requirements of the California Fire Safe Regulations (Sections 1273 and 1274 of the California Code of Regulations - Title 14, Division 1.5, Chapter 7, Articles 2 and 3), to the extent resources are available. Work at retrofitting City-owned roadways as needed to meet current standards and require private property owners to do the same, to the extent feasible and given the absence of other site constraints.

The current Safety Element also includes several "Implementation Actions" relevant to emergency evacuation:

> IA-4: The City shall evaluate, and as feasible enact, recommendations in the City of Orinda 2022 Evacuation Analysis and other pertinent analyses to improve safe evacuations in Orinda.
>
> IA-16: The City shall work with CAL FIRE and Moraga-Orinda Fire District to ensure maintenance of existing fuel breaks, vegetation clearance, and emergency access routes for effective fire suppression on public and private roads.

In addition to these Safety Element policies that are directly related to emergency evacuation, the City would also implement the following goals, policies, and actions to aid in the preparation and coordination for emergency events and alleviate congestion during evacuation events:

Goal S-1: A community that effectively minimizes threats to public health, safety, and welfare resulting from natural and human-caused hazards.

> **Policy S-3:** Coordinate with local and State Emergency Management agencies using the Standardized Emergency Management System (S.E.M.S.) and National Incident Management System (N.I.M.S.) to facilitate multiagency emergency response.
>
> **Policy S-7:** Ensure that communication systems used by emergency responders and key City staff have sufficient redundancy and resiliency to meet City needs during and after a hazard event.
>
> **Policy S-8:** Ensure that the City is able to prepare for and respond to large-scale disasters through coordination and sharing data, experience, and strategies with other emergency management agencies in state or regional efforts on disaster planning.
>
> **Policy S-15:** Continue to coordinate with MOFD to conduct emergency services training in support of appropriate goals and standards for training efforts.

Goal S-4: A community that seeks to avoid and minimize the risk of loss of life, injury, and property loss from wildfires and urban fires.

> **Policy S-29:** Cooperate with the Moraga-Orinda Fire District (MOFD) in developing additional standards, guidelines, and local ordinances to ensure provision of adequate fire protection and emergency medical service for all persons and property in the community.
>
> **Policy S-30:** Continue coordination with MOFD to ensure a high level of fire protection to residential and commercial development to avoid or minimize wildfire hazards associated with new land uses, consistent with MOFD standards, including encouraging the location of new development outside of the Very High Fire Severity Zones.
>
> **Policy S-31:** Coordinate with MOFD and landowners to develop and maintain fuel breaks in dedicated open space and fire-access easements.
>
> **Policy S-32:** Encourage new development to occur outside of Very High Fire Hazard Severity Zones. Any development that does occur in the Very High Fire Hazard Severity Zones or Wildland-Urban Interface Zones must prepare project-specific fire protection plans, in addition to complying with all applicable state and local building and fire code regulations. Fire protection plans shall include a risk analysis, discussion of fire response capabilities, compliance with fire safety requirements (defensible space, fire protection infrastructure, building ignition

resistance, etc.), appropriate mitigation measures and design considerations for any non-conforming fuel modification, maintenance, and education for residents.

Policy S-33: Develop and update programs as needed that ensure recovery and redevelopment after a large fire and that reduce future vulnerabilities to fire hazard risks through site preparation, redevelopment layout design, fire resistant landscape planning, and fire-retarding building design and materials.

Policy S-34: Support and coordinate with MOFD in reviewing development proposals to ensure that new development be located where fire and emergency services have sufficient capacity to meet project needs or require that they be upgraded to provide necessary capacity as part of the proposed development activities.

Policy S-36: Coordinate with the East Bay Municipal Utilities District to maintain an adequate long-term water supply for fire suppression needs for the community.

Policy S-38: Continue to uphold fire-resistant landscaping requirements for new residential and commercial development. All new residential development must comply with MOFD and California Fire Safe Regulations, as well as Chapter 17.17 (Landscaping) of the Municipal Code, which requires all planted material to conform to the fire-safe vegetation list in the City of Orinda Landscape Guidelines.

Policy S-39: Require proposed development to provide adequate access for fire and emergency vehicles and equipment that meets or exceeds the standards in the California Fire Safe Regulations.

IA-1: The City shall continue to work with the County to update the Local Hazard Mitigation Plan upon its expiration to ensure that Orinda maintains eligibility for pre-disaster mitigation funding.

IA-2: The City shall continue to maintain agreements with other local, state, and federal agencies to ensure coordinated disaster response.

IA-3: Maintain automatic aid agreements with other fire protection/suppression agencies in Contra Costa County.

IA-15: Coordinate with Moraga-Orinda Fire District to continue implementing a long-term fire protection training program and continue public education efforts, including to at-risk populations, to inform the community of wildland and urban fire hazards and ways to minimize damage caused by fires.

IA-17: Continue to implement the City's and the Moraga-Orinda Fire District's most currently adopted Fire Codes to ensure that development is constructed in a structurally safe manner. To the extent feasible, conduct periodic fire safety inspections to ensure compliance with adopted codes.

IA-18: Identify and improve areas lacking adequate water service for firefighting, including capacity for peak load under a reasonable worst-case wildland fire scenario determined by Moraga-Orinda Fire District. The City shall identify areas lacking adequate water service, including areas where future development may occur.

SEA Recommendations

As noted above, Safety Element Implementation Action 4 (IA-4) requires the City to "evaluate, and as feasible enact, recommendations in the City of Orinda 2022 Evacuation Analysis and other pertinent analyses to improve safe evacuations in Orinda." Those recommendations, which were also included in the 2024 Supplemental Evacuation Analysis with minor modifications (Appendix WFR pages 31-42), are:

RECOMMENDATIONS FOR MORAGA WAY/CAMINO PABLO NORTHBOUND

1. Consider expanding Red Flag Day parking restrictions to include Moraga Way between Ivy Drive and Camino Pablo, and from Camino Pablo northwest-bound to SR-24 westbound on-ramps.
2. In addition to parking restrictions on the segment of Moraga Way between Ivy Drive and Camino Pablo, study the feasibility of implementing contra-flow lanes that convert the southeast-bound lane on Moraga Way into an additional northwest-bound lane towards SR-24 during an evacuation.
3. Consider implementing an evacuation signal timing plan for the following intersections along Moraga Way and the segment of Camino Pablo south of SR-24 to allow only the northwest-bound through direction as well as turning movements onto Moraga Way and Camino Pablo northwest-bound to SR-24:
   - Brookwood Road/ Camino Pablo
   - Moraga Way/ Camino Pablo
   - Glorietta Boulevard/ Moraga Way
   - El Camino Moraga/ Moraga Way
   - Coral Drive/ Moraga Way
   - Ivy Drive/ Moraga Way
4. In addition to preferential signal timing at the intersections listed in item 3 above, consider stationing staff or volunteers to direct traffic at the above key intersections during an evacuation event, or use automated signals as feasible.
5. Consider staging staff or volunteers where Moraga Way Northbound splits into Moraga Way and Camino Pablo to encourage evacuees in the right-most lane on Moraga Way northbound to use the Moraga Way/Bryant Way SR-24 eastbound ramps instead of continuing to the westbound ramps further north from Camino Pablo.
6. There are two Emergency Vehicle Access (EVA) roads, otherwise known as fire roads, that connect Moraga Way with Wilder Road, and that could be studied for residential access during an evacuation event to relieve traffic pressure along Moraga Way northbound towards SR-24. The northern of these two EVAs connects Brookside Road (at the intersection with Sunrise Hill Road) with Boeger Ranch Road, and the southern of the two EVAs connects Edgewood Road to the southern end of Wilder Road. This report recommends that Orinda staff, in coordination with MOFD, study the feasibility of using both EVAs for residential use during an evacuation to relieve expected traffic pressure on Moraga Way towards SR-24. MOFD has noted that the Edgewood Road/Wilder Road EVA may require significant improvements to safely support residential use during an evacuation, such as grading, paving, and traffic controls, whereas the Brookside Road/Boeger Ranch Road EVA would only require gate removal at the time of evacuation. Any plans to convert EVAs to public access during an evacuation would require

coordination with MOFD to ensure staff provide emergency vehicles with priority access to these routes as necessary before making them publicly accessible.

7. Consider entering into an agreement with unincorporated county, and any other stakeholders to implement contra-flow lanes along San Pablo Dam Road in the northbound direction from Bear Creek Road to the intersection with Valley View Road in El Sobrante.
8. Finally, consider entering into an agreement with Caltrans and other stakeholders to implement contra-flow lanes in the westbound direction along the reversible lanes available on SR-24 in the event of a wildfire in the MOFD jurisdiction.

RECOMMENDATIONS FOR MINER ROAD/CAMINO PABLO SOUTHBOUND

1. In addition to the contra-flow lanes Orinda has already established along Miner Road, consider also implementing contra-flow lanes on Camino Pablo from Miner Road to the SR-24 on-ramps, converting the northbound lanes into additional southbound lanes during an evacuation.
2. Consider implementing an evacuation signal timing plan for the following intersections along Camino Pablo to allow only the southbound through direction as well as turning movements onto Camino Pablo southbound:
   - Miner/ Camino Pablo
   - El Toyonal/Orinda Way/Camino Pablo
   - Camino Sobrante/Camino Pablo
   - Orinda Way/Altarinda/Santa Maria
   - Santa Maria/Camino Pablo
3. There is an additional EVA connecting the northern segment of El Toyonal with Wildcat Canyon Road. This report recommends that Orinda staff coordinate with MOFD to make necessary roadway improvements to this segment of El Toyonal, like bridge upgrades and gate removal, that would make this roadway accessible for public access during an evacuation. This additional access route could enable more residents in the El Toyonal neighborhood to evacuate via Wildcat Canyon Road and potentially relieve additional congestion pressure along Camino Pablo southbound towards SR-24.
4. Finally, consider contra-flow lanes, red flag parking restriction policies, and preferred signal timing on St. Stephens Drive between Las Vegas Road/Via Las Cruces and the SR-24 access ramps during an evacuation event, enabling additional traffic to flow southbound towards SR-24. This roadway segment is adjacent and parallel to Honey Hill Rd/Charles Hill Rd. Implementing contra-flow lanes, red flag parking restrictions, and preferred signal timing on both this segment and on Honey Hill Rd/Charles Hill Rd in the southbound direction could help alleviate potential southbound congestion towards SR-24 access ramps on both streets.

RECOMMENDATIONS FOR COLLECTOR ROADWAYS SERVING AS POTENTIAL EVACUATION ROUTES

Table 3 [included as Table 4.14-1 below] lists minor collector intersections that could be potentially constrained, with 100 or more vehicles traveling through them during the first phases of evacuation as residents exit their homes. Table 3 [Table 4.14-1] describes each intersection, the estimated vehicle count based on the sum of closest households, and associated recommendations for alleviating traffic congestion at these intersections.

Any roadway segment recommended for contra-flow lanes in Table 3 [Table 4.14-1] should also be considered for expansion of red flag parking restriction days other than where Red Flag Day parking

restrictions are implemented already. Current red flag parking restricted areas include Loma Vista Drive and El Toyonal between Camino Pablo and Vista Orinda in the northeast El Toyonal neighborhood of Orinda.

Table 4.14-1 Potentially Constrained Minor Intersections: All Three Wildfire Scenarios

ID	Intersection Name	Intersection Type	Vehicle Count[1]	Proposed Potential Congestion Reduction Measure
L1	Honey Hill Road and Via Las Cruces	Local Street to Collector	265	▪ Consider implementing contra-flow lanes in the southbound direction on Honey Hill Road/Charles Hill Road Southbound towards SR-24. ▪ Consider implementing contra-flow lanes in the eastbound direction on Hidden Valley Road between St Stephens Drive and the SR-24 eastbound on-ramp.
L2	Miner Road and Camino Sobrante	Local Street to Collector	252	▪ If San Pablo Dam Road northbound is not a safe possible evacuation route, then Camino Pablo could be considered for contra-flow in the southbound direction starting from Bear Creek Road. ▪ Consider encouraging residents along Camino Sobrante round the north side of Lake Cascade to evacuate south via Camino Sobrante towards Orinda Way, instead of north to the Miner Road intersection.
L3	Happy Valley Road and Upper Happy Valley Road	Local Street to Collector	163	▪ Same recommendation as L2
L4	Overhill Road and Tara Road	Local Street to Collector	129	▪ Consider implementing contra-flow lane in the westbound direction along Overhill Road between Tara Road and Moraga Way.
L5	Arroyo Drive and Ivy Drive	Local Street to Collector	132	▪ See more general recommendations above for implementing contra-flow lane(s) along Moraga Way in the northwest-bound direction.
L6	Orinda Woods Drive and Kite Hill Road	Local Street to Collector	121	▪ Encourage residents in this area to prepare to check two potential safety destinations to program into mobile direction applications (like Google or Apple Maps): Walnut Creek and Caldecott Tunnel, to evaluate whether SR-24 eastbound or westbound is faster given real-time traffic conditions.
L7	Orinda Woods Drive and Village Gate Road	Local Street to Collector	112	▪ Same recommendation as Intersection L6.

[1]Note: This value is the same in all three scenarios for these routes.

Source: This table is based on Table 3 from the Supplemental Evacuation Analysis (Appendix WFR)

GENERAL RECOMMENDATIONS FOR FACILITATING A CITYWIDE EVACUATION

1. Implementing contra-flow lanes and signal timing preferences along Moraga Way, Miner Road, and Camino Pablo is likely to significantly ease congestion along major arterials leading to SR-24 access ramps by doubling the capacity of these arterials in the direction of evacuation. However, access ramps onto SR-24 from Camino Pablo merge into one lane without shoulders or signal timing infrastructure, which is likely to create bottlenecks even if arterials leading to the access ramps have additional contra-flow lanes. This report therefore recommends that Orinda staff coordinate with Caltrans to study the feasibility of implementing potential capital improvements to the SR-24 westbound on-ramps from Camino Pablo northbound and Southbound, like signal timing infrastructure, that could improve the flow of traffic at these on-ramps.
2. This report also recommends that Orinda staff coordinate with a traffic consultant to identify and study the feasibility of more minor capital improvements that could facilitate increased traffic flow onto SR-24 on-ramps from Camino Pablo during an evacuation. For example, removing part of the concrete median and allowing left turns onto eastbound freeway access ramps from Camino Pablo northbound near Brookwood Road, rather than requiring vehicles traveling northbound on Camino Pablo to use Bryant Way to access SR-24 eastbound on-ramps. Allowing this left turn from Camino Pablo northbound during an emergency could relieve traffic pressure onto the westbound SR-24 on-ramp from Moraga Way/Camino Pablo northbound During an evacuation.
3. Encourage all residents on the east side of Moraga Way (e.g., with mailers or electronic notifications) to be prepared to check traffic (on Google Maps, Apple Maps, Waze, or other mobile direction application) for both directions along SR-24 during an evacuation event. Residents could enter 'Walnut Creek' as their destination and view the routing, travel time, and traffic estimates for the eastbound direction, and then entering 'BART Rockridge' or other equivalent destination to compare conditions in the westbound direction.
4. Consider expanding emergency plans to use dynamic signage (e.g., digital screens at bus stops or along major arterials) that can be used to display messages during an evacuation event directing traffic to alternative routes. Currently, dynamic signage is recommended on Miner Road. For example, a dynamic sign could be deployed at Valley View Drive and Moraga Way encouraging evacuees to use Valley View Drive to Edgewood Fire Road towards SR-24 westbound. Dynamic signage can be temporary and deployed only during the time of evacuation.
5. Finally, this report recommends that any traffic-related interventions like contra-flow lanes should be supplemented with thorough public information dissemination to inform Orinda community members on what to expect when contra-flow lanes and other traffic policies are implemented during an emergency. Public information campaigns can include pages on the Orinda City website like the current web page with information on red flag parking day restrictions, short educational videos hosted on YouTube, and flyers containing relevant information and links hosted electronically on the City website and mailed as hard copies to residents, like the Orinda Fire Evacuation Guide and General Information flyer provided in the appendix of this report. Dynamic signage could also include messaging to reduce confusion when contra-flow lanes are implemented.

RECOMMENDATIONS TO REDUCE OVERALL NUMBER OF VEHICLES EVACUATING CITYWIDE

1. Consider implementing a plan for coordinated car/van/or bus pool evacuation procedures for Miramonte Gardens and other larger multifamily housing developments, especially that are evacuating via Moraga Way in the northwest-bound direction towards SR-24 westbound on-ramps.
2. Coordinate with MOFD to develop fire safe standards as part of the Fire Code for new residential developments in constrained residential areas, such that sheltering in place is a viable alternative plan if evacuation routes become too congested to preclude timely evacuation during an emergency or if other circumstances prevent evacuation, as sheltering in place should only be considered if evacuation is not feasible. Housing Element Opportunity Sites in relatively constrained residential areas (based on their constraint index score) are shown in Figures 14, 15, and 16 and discussed in further detail in the subsection discussing. Design and building requirements related to fire safety are discussed in Chapter 14.4 of the Orinda General Plan EIR, which designates the J&J Ranch and Wilder residential developments as Shelter-in-Place locations based on these standards. Shelter in Place communities are defined in the EIR as 'entire community or subdivision designed to withstand heat and flames from an approaching wildfire'
3. Consider using Orinda Community Center as a potential emergency shelter location, which is also northwest of the SR-24 westbound on-ramps from Camino Pablo northwest-bound. If the west-bound on-ramps to SR-24 from Camino Pablo are severely congested, evacuees can alternatively continue straight and head to the Orinda Community Center.
4. Develop evacuation plan with BART to evacuate workers in the Downtown area. Include potential measures for deploying traffic control personnel in the Orinda BART station area and surrounding intersections to coordinate evacuee transfer to BART stations. Also consider coordinating with commercial property owners near Orinda BART to use parking lots for additional BART parking and disseminate public safety awareness campaigns that encourage Orinda residents to make an alternative plan to evacuate via BART.
5. Consider adopting a phased evacuation approach, using Zonehaven or other applicable tools, that prioritizes improving accessibility along Moraga Way in the northwest-bound direction particularly for residents living in southeast Orinda south of Hall Drive.

RECOMMENDATIONS FOR EVACUATING POTENTIALLY VULNERABLE POPULATIONS

The following are recommendations for evacuating potentially vulnerable populations:

1. Prioritize in-person door knocking to disseminate evacuation notices/orders to residents within the tract where phone and/or internet access is at or lower than the county average.
2. Develop an early evacuation plan for Orinda Senior Village, Monteverde Senior Apartments, the future Countryhouse Memory Care facility at 1 Wilder Road, and any future assisted living facilities or senior living communities. Plans for these locations should include measures for deploying school buses, or paratransit vehicles, or maintaining designated van or bus fleets located on-site to evacuate multiple residents per vehicle.
3. Study the feasibility of designating Orinda Senior Village and Monteverde Senior Apartments as Shelter in Place locations as well as the nearby Orinda Community Center. If Orinda Senior Village and Monteverde are not feasible as shelter-in-place locations, but the nearby Orinda Community Center is, then direct residents of these two residential facilities to the Community Center in the event that early evacuation is not feasible, and develop a shelter plan for the

Community Center that accommodates the needs of sheltering seniors, e.g., that includes measures for procuring and maintaining back-up generators which are capable of powering medical equipment continuously.

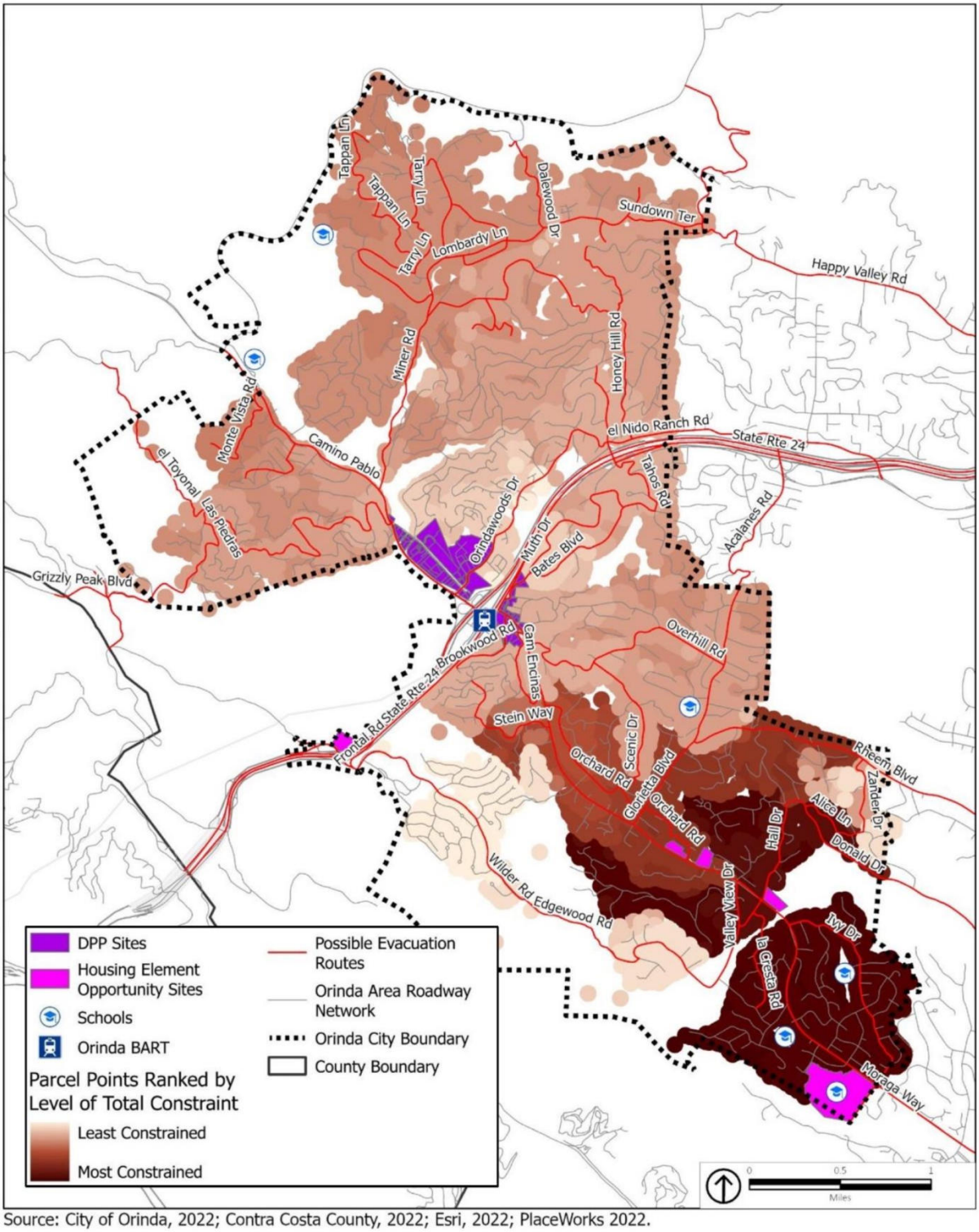
4. Implement Orinda General Plan Safety Element Policy S-10, to develop and implement an evacuation assistance program, in coordination with Contra Costa County Transportation Authority, Seniors Around Town, and paratransit and dial-a-ride agencies to help those with limited mobility or lack of access to a vehicle evacuate safely. Mailers with information about this program can be prioritized for residents in Census Tract 3540.02 (where the highest percentage of residents in Orinda are that do not have access to a vehicle and that do not have phone and/or internet service), and Census Tract 3522.02 in South Orinda.
5. Continue to coordinate and expand on existing efforts with schools to develop emergency operations protocols and early evacuation plans. School buses can be used if evacuation occurs during school hours, but evacuation plans should include coordination with Contra Costa County Transportation Authority and the Contra Costa County Office of Emergency Services to deploy buses and other high-capacity vehicles to evacuate children in schools during time periods when school buses are out picking up or dropping off students

Effect of Safety Element Policies and SEA Recommendations

The Safety Element policies described above would ensure emergency evacuation coordination among federal, state, and local plans and agencies; adequate public and interagency communication during emergency events; and evacuation assistance for those with limited mobility or lack of access to a vehicle for evacuation, which would help reduce potential evacuation constraints. Implementation of the recommendations in the EA/SEA would also help alleviate congestion along evacuation routes during evacuation events, such as continued design and roadway modifications to improve access onto SR 24 and Red Flag Day parking restrictions and enforcement.

However, implementation of many of these policies depends on outside funding (such as funding needed to retrofit roadways) or coordination with other agencies, such as Caltrans. As a result, even with implementation of these policies and recommendations, it is possible the Project could still substantially increase evacuation constraints and therefore result in a significant impact.

Figure 4.14-3a Scenario 1 Existing Conditions



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure 4.14-3b Scenario 1 Plan Orinda Results

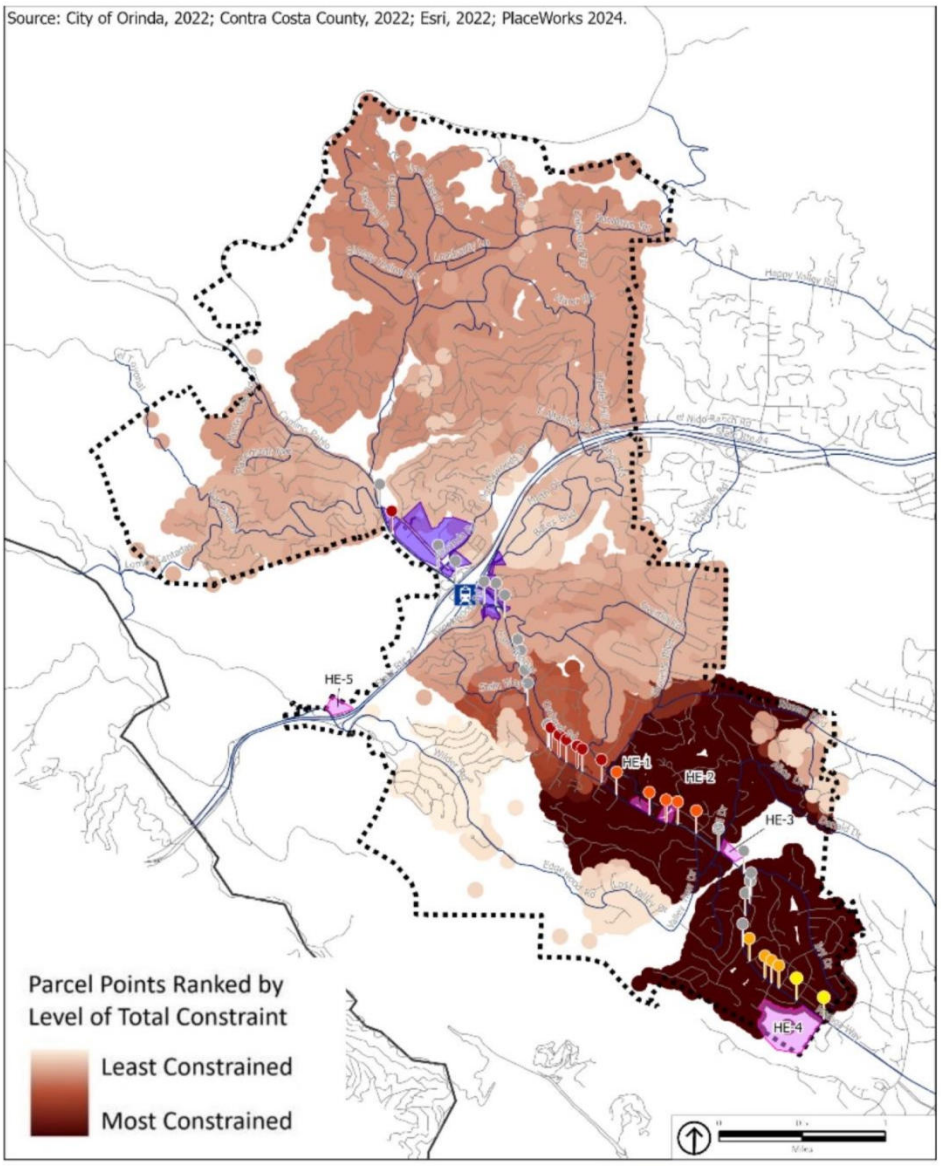
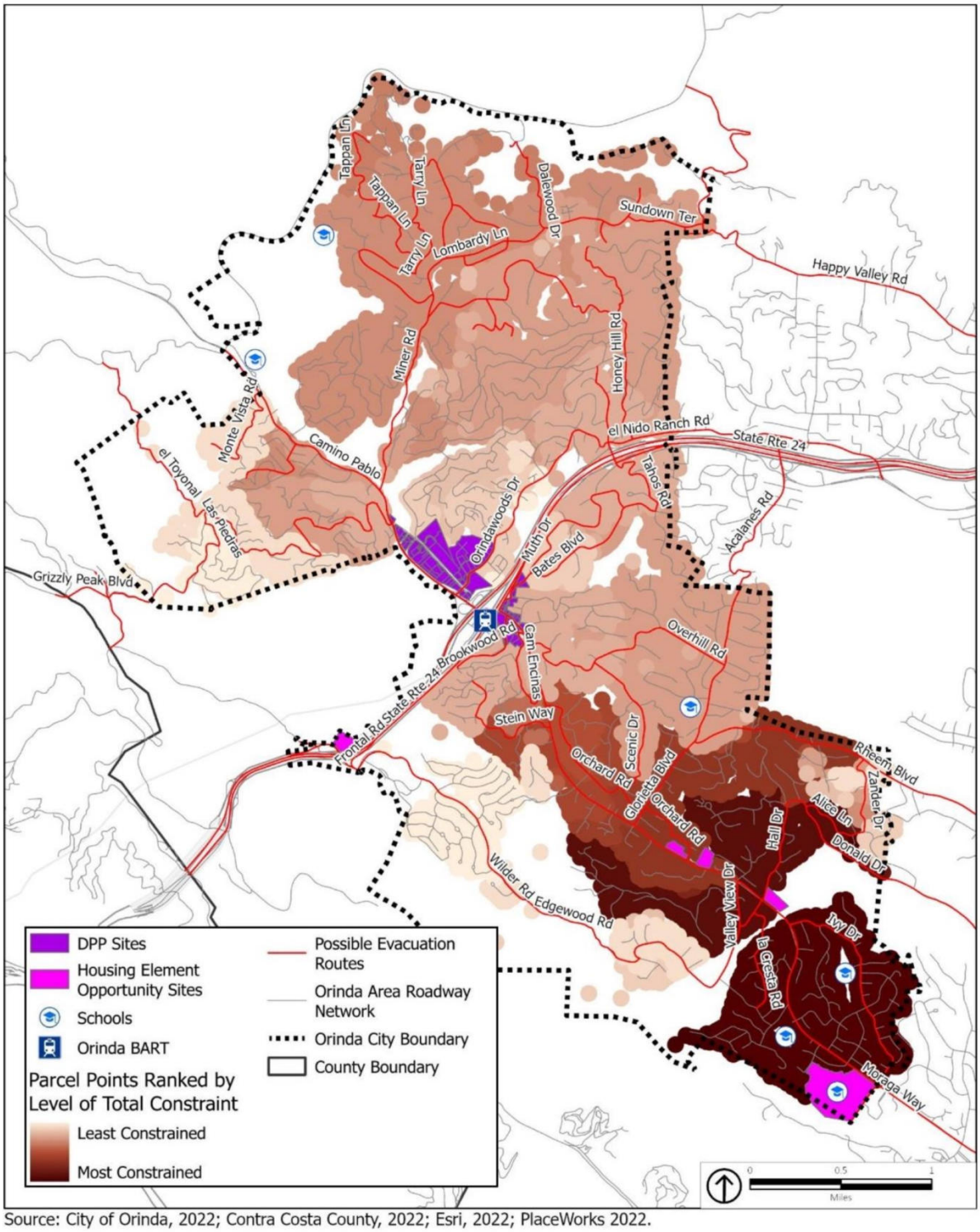


Figure 4.14-4a Scenario 2 Existing Conditions



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure 4.14-4b Scenario 2 Plan Orinda Results

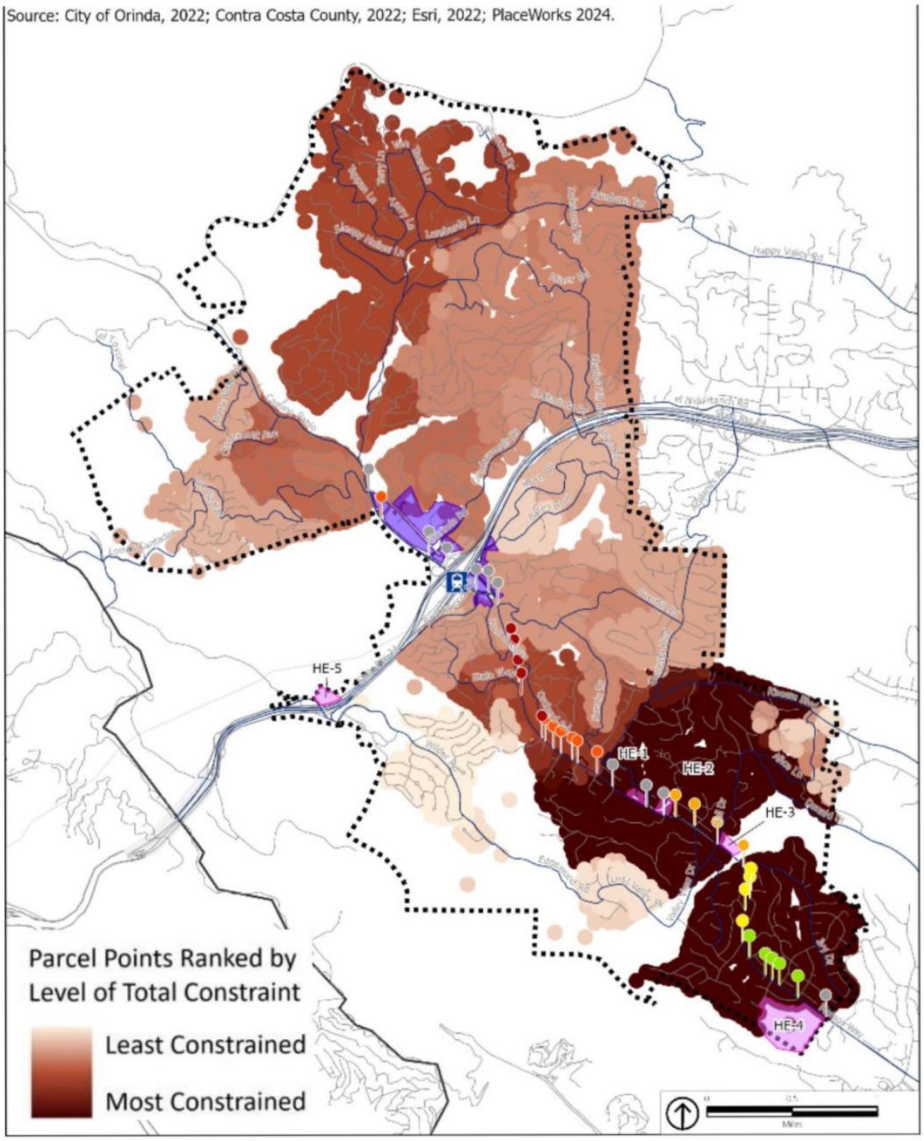
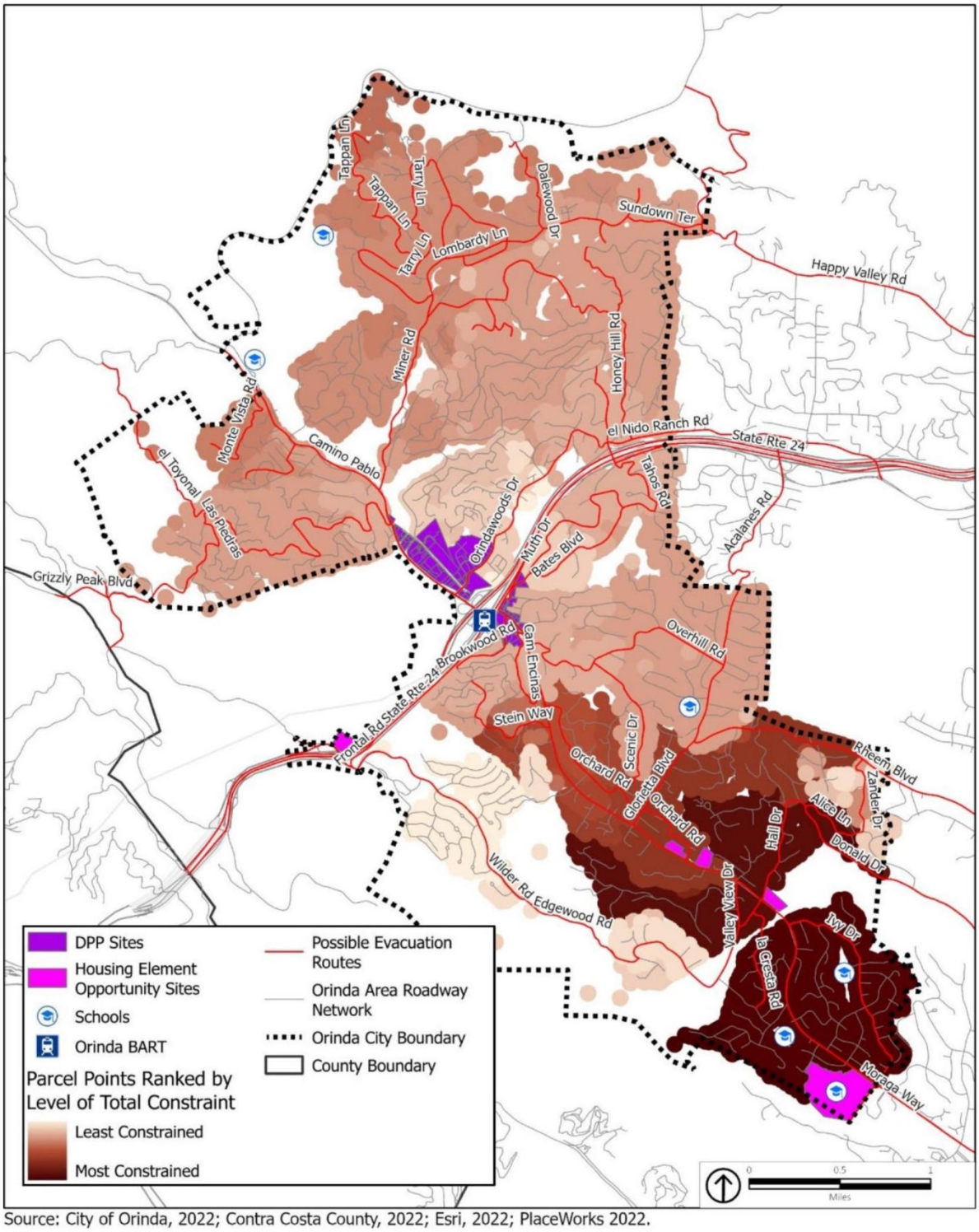
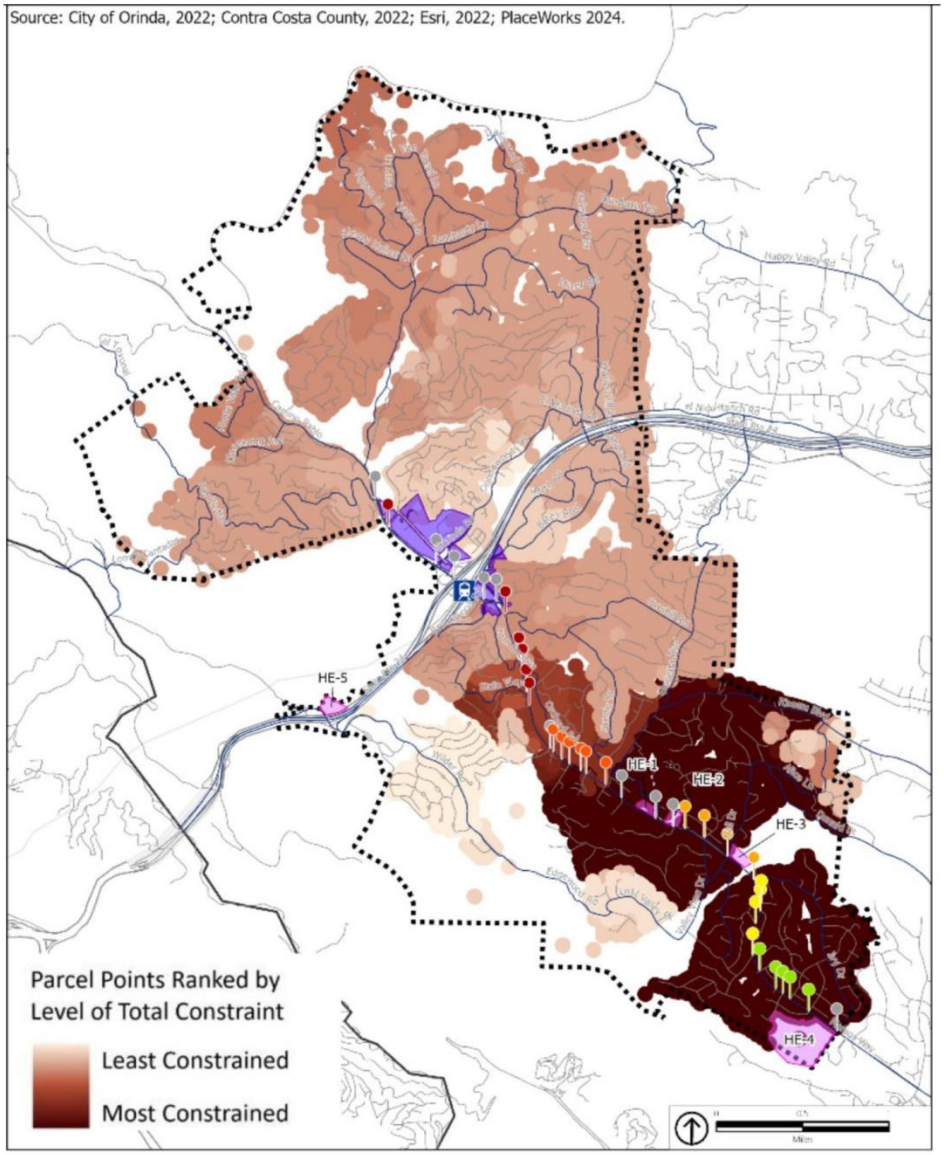


Figure 4.14-5a Scenario 3 Existing Conditions



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure 4.14-5b Scenario 3 Plan Orinda Results



Mitigation Measures

WFR-1 Develop Wildfire Hazard Assessments and Plans Subject to Shelter-In-Place Guidelines

The City shall require the following measures prior to approval of any new development at the Housing Element Sites or in the DPP:

1. A Wildfire Hazard Assessment and Plan shall be developed for the project site.
2. Shelter-in-place design guidelines shall be required for project site development. Guidelines include the following:
   - Well-maintained, fire district approved landscape and vegetation management plan
   - Adequate roadway and driveway widths, designed to accommodate two-way traffic and large firefighting apparatus
   - Adequate water supply and water flow for firefighting efforts.
   - Vegetation modification zones surrounding the community
   - Homes in the community are built with heavy timber, ignition-resistant eaves, residential fire sprinklers, a Class A ignition-resistant roof, dual pane (one being tempered) glass windows, and chimneys with spark arrestors containing a minimum of 0.5-inch screen.
3. Wildfire Hazard Assessment and Plan and site design applying shelter-in-place guidelines must be approved by MOFD.

Significance After Mitigation

With implementation of Mitigation Measure WFR-1, congestion induced from additional residents at the Housing Element Sites and in the DPP during an evacuation may be reduced, since more new housing will be built in a way that would allow residents to shelter in place rather than evacuate during a fire. Additionally, development of a project-specific Wildfire Hazard Assessment and Plan would help identify wildfire hazards of a given site and provide additional risk minimization measures. However, the Board of Directors of the Moraga-Orinda Fire Protection District advises residents to evacuate as the best option in the event of a wildfire, even from recognized shelter in place communities.[40] Thus, Mitigation Measure WFR-1 would not mean that residents would always shelter in place during a fire.

Implementation of the Safety Element Update policies listed above, including the measures recommended in the EA/SEA, will also reduce evacuation constraints by ensuring coordination with federal, state, and local agencies for emergency response and evacuation; providing guidance for implementation of new evacuation and safety programs; requiring minimization of site wildfire hazards through preparation of project-specific fire protection plans and maintenance of defensible space; and enforcing state and local fire regulations. However, many of the Safety Element Update policies depend on cooperation of other agencies or substantial funding, which the City does not currently have and cannot guarantee. As a result, it is not possible to ensure that the project would not substantially increase evacuation constraints, despite implementation of mitigation. Thus, this impact would remain significant and unavoidable.

[40] Moraga-Orinda Fire Protection District. 2022. Resolution No. 22-11. Available online: https://www.mofd.org/home/showpublisheddocument/2359/637872751519900000. (accessed October 2024)

Alternatives

Plan Orinda Partially Revised Environmental Impact Analysis

6.1 Alternative 1: No Project Alternative

6.1.1 Impact Analysis

The following subsection of Section 6 – Alternatives (subsection 6.2.1 – Wildfire) has been revised from the Draft EIR. This revised subsection replaces subsection 6.2.1 – Wildfire in the Draft EIR:

Wildfire		
Would the project:	**Proposed Project**	**Alternative 1: No Project**
WFR-1a: Substantially impair an adopted emergency response plan or emergency evacuation plan?	LTS	LTS
WFR-1b: Substantially increase evacuation constraints?	SU	SU
WFR-2: (a) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (b) 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? (c) 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? (d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	SU	SU
Summary: As the No Project Alternative would entail much less overall development than the proposed project, impacts involving wildfires would be reduced compared to the proposed project. Like the proposed project, the No Project Alternative would not impair an adopted emergency response or evacuation plan. Development under the No Project Alternative would substantially increase evacuation constraints, although the increase would be less than the proposed project. The buildout of the No Project Alternative would exacerbate existing wildfire conditions, albeit less than the proposed project. Given those conditions, existing codes and regulations cannot fully prevent the possibility of wildfires damaging structures or occupants. Thus, impacts would be significant and unavoidable.		

Impact WFR-1a: For the same reasons as the proposed project, detailed in Section 4.14, *Wildfire*, the No Project Alternative also would not impair adopted emergency response and evacuation plans. However, the No Project Alternative would not implement the new Safety Element policies, and thereby would not implement emergency response and emergency evacuation plans to the same extent as the proposed project.

Impact WFR-1b: As described in Appendix WFR, existing residents would largely use the on-ramps to SR-24 westbound from either Moraga Way northbound or Camino Pablo Southbound in each of the wildfire evacuation scenarios.

There are existing evacuation constraints within the City of Orinda, with 29 of the 35 intersections analyzed in the Supplemental Evacuation Analysis (Appendix WFR) assigned a constraint category of "constrained" or higher. New development within the City as described in the No Project Alternative would increase evacuation constraints to some degree. Specifically, development of 270 new dwelling units (as seen in Table 6-1 of the previous Draft EIR) would be allowed on the Housing Element Sites and in the DPP under existing, approved plans and zoning.

Similar to the proposed project, development facilitated under the No Project Alternative would not impair the use of emergency evacuation routes through the modification of existing roadways, and

would be constructed in accordance with federal, state, regional, and local requirements, which are intended to ensure the safety of city residents and structures to the extent feasible. Development would be accessed by preexisting roadways and would not impair the use of emergency evacuation routes through the modification of existing roadways either through elimination, reduction in width, or blockage.

However, an impact to emergency operations and evacuations could occur from construction of future projects if they were to result in temporary road closures, potentially reducing available emergency evacuation routes. Construction of new development could involve temporary lane closures or otherwise block traffic that could impede the ability of emergency vehicles to access the area. This would be limited to the construction duration and only affect streets adjacent to the construction site.

By adding new residents to an already constrained evacuation system, the No Project Alternative would substantially increase evacuation constraints, and therefore have significant impacts, though those impacts would be less than those of the proposed project. Of the 35 intersections analyzed in the Supplemental Evacuation Analysis (SEA; Appendix WFR), 1 intersection would experience a substantial increase in evacuation constraints (i.e., increase in constraint level, resulting in additional constraint index points) under buildout of the No Project Alternative. As detailed in Table 2 of the SEA, the total number of affected parcels under No Project Alternative would be 0 under Scenario 1; 1,502 under Scenario 2; and 0 under Scenario 3. The total number of affected parcels for all three scenarios would be less than under the proposed project. Under the No Project Alternative, the Safety Element Update would not be adopted, and thus the policies and implementation actions that would reduce impacts of the proposed project would not reduce the impacts of the No Project Alternative. Thus, the No Project Alternative would substantially increase evacuation constraints and this impact would remain significant and unavoidable.

Impact WFR-2: CAL FIRE has mapped much of the City of Orinda in a High or Very High Fire Hazard Severity Zone (VHFHSZ), and most of the City is designated by MOFD as being within a Wildland-Urban Interface (WUI) Area. Under the No Project Alternative, development under existing zoning would be allowed on sites that are mapped within or near State Responsibility Areas, VHFHSZs, and WUI areas.

Under the proposed project, Housing Element Site HE-5 would be situated within a VHFHSZ and the other sites would, to varying degrees, be located near the VHFHSZ and in the WUI. The No Project Alternative would not include a program to rezone those sites at higher residential densities, thus impacts associated with developing at higher densities in/near the VHFHSZ/WUI would be reduced.

Additionally, under the proposed project, Housing Element Site HE-5 would require the installation of new power line infrastructure, which would be built above ground under the conservative scenario, and therefore may exacerbate fire risk on that basis. Further, under the proposed project, Housing Element Sites HE-1, HE-2, HE-3, and HE-4 are located in developed areas, but may contain sufficient surface fuels in scattered leaves, branches, and dry grass to form an ignition risk. Consistent with existing zoning, the No Project Alternative includes potential development on certain downtown sites that are in or near WUI areas and Very High Fire Hazard Severity Zones. Development facilitated by the No Project Alternative would therefore involve increased wildfire risks for sites located in or near fire hazard areas. Under both the proposed project and No Project Alternative, maintenance of defensible space may result in ongoing impacts to the environment.

New construction would be subject to and the California Fire Code, which includes safety measures to minimize the threat of fire, including ignition-resistant construction with exterior walls of

noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves and vents to prevent intrusion by flame or embers. Fire sprinklers would be required in residential developments (with some exceptions)pursuant to MOFD Code. Construction would also be required to meet CBC requirements, including CCR Title 24, Part 2, which includes specific requirements related to exterior wildfire exposure. The Board of Forestry, via CCR Title 14, sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply in the VHFHSZ, which help prevent loss of structures or life by reducing wildfire hazards.

Compliance with applicable fire code regulations, California Building Code requirements that pertain to wildfire exposure, and the County's Emergency Operations Plan would reduce the risk of loss, injury, or death from wildfire under all alternatives, including the No Project Alternative. Nevertheless, although reduced under the No Project Alternative, the risk of loss, injury, or death from wildfire would still be significant and unavoidable.

The No Project Alternative would not include updates to the City of Orinda General Plan Safety Element. While implementation of existing Safety Element policies under the No Project Alternative would reduce some impacts related to wildfire, the proposed project's Safety Element Update includes additional goals and policies to reduce more impacts related to emergency evacuation and protections from wildfire hazards. However, Safety Element codes and regulations cannot fully prevent the possibility of wildfires damaging structures or occupants. Although the No Project Alternative would have less overall development compared to the proposed project, compared to existing conditions it would still increase the exposure to risk of loss or damage from wildfire, which would be a significant impact.

6.2 Alternative 2: DPP Plus BART Sites

6.2.2 Impact Analysis

The following subsection of Section 6 – Alternatives (subsection 6.2.2 – Wildfire) has been revised from the Draft EIR. This revised subsection replaces subsection 6.2.2 – Wildfire in the Draft EIR:

Wildfire		
Would the project:	**Proposed Project**	**Alternative 2: DPP Plus BART Sites**
WFR-1a: Substantially impair an adopted emergency response plan or emergency evacuation plan?	LTS	LTS
WFR-1b: Substantially increase evacuation constraints?	SU	SU
WFR-2: (a) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (b) 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? (c) 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? (d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	SU	SU
Summary: Under Alternative 2, impacts involving wildfire would be significant and unavoidable. Like the proposed project, Alternative 2 would not impair an adopted emergency response or evacuation plan. However, Alternative 2 would substantially increase evacuation constraints. As with the proposed project, buildout of Alternative 2 would exacerbate existing wildfire conditions. Given those conditions, existing codes and regulations cannot fully prevent the possibility of wildfires damaging structures or occupants. Impacts would be significant and unavoidable.		

Impact WFR-1a: For the same reasons the proposed project would not substantially impair adopted emergency response and evacuation plans (see Section 4.14, *Wildfire*), Alternative 2 also would not substantially impair these plans.

Impact WFR-1b: As described in Appendix WFR, Housing Element Site HE-4 would rely on Moraga Way northbound between the Orinda City Limit at Ivy Drive and the SR-24 westbound on-ramps; the DPP sites would rely on SR-24, Camino Pablo and Moraga Way; and the BART sites would rely on BART service and SR-24 for emergency evacuation.

Similar to the proposed project, development facilitated under Alternative 2 would not impair the use of emergency evacuation routes through the modification of existing roadways, and would be constructed in accordance with federal, state, regional, and local requirements, which are intended to ensure the safety of city residents and structures to the extent feasible. Development would be accessed by preexisting roadways and would not impair the use of emergency evacuation routes through the modification of existing roadways either through elimination, reduction in width, or blockage.

However, an impact to emergency operations and evacuations could occur from construction of future projects if they were to result in temporary road closures, potentially reducing available emergency evacuation routes. Construction of new development could involve temporary lane

closures or otherwise block traffic that could impede the ability of emergency vehicles to access the area. This would be limited to the construction duration and only affect streets adjacent to the construction site.

By adding new residents to an already constrained evacuation system, Alternative 2 would substantially increase evacuation constraints, and therefore have significant impacts, and those impacts would be slightly greater than those of the proposed project. Of the 35 intersections analyzed in the Supplemental Evacuation Analysis (SEA; Appendix WFR), 18 intersections would experience a substantial increase in evacuation constraints (i.e., increase in constraint level, resulting in additional constraint index points) under buildout of Alternative 2. As detailed in Table 2 of the SEA, the total number of affected parcels under Alternative 2 would be 3,499 under Scenario 1; 2,428 under Scenario 2; and 3,818 under Scenario 3. The total number of affected parcels for Scenario 1 and 3 would be the same as the proposed project, while Scenario 2 would be increased from the proposed project. Similar to the proposed project, while implementation of Safety Element Policies S-1, S-2, S-10, S-11, S-12, S-13, S-14, S-35, and S-40 and Implementation Actions IA-4 and IA-16 would reduce impacts related to emergency evacuation and potential evacuation constraints, Alternative 2 would still substantially increase evacuation constraints and this impact would remain significant and unavoidable.

Impact WFR-2: As noted in Section 4.14.2, *Regulatory Setting*, increases in density in already developed areas, such as site HE-4, have been shown to reduce fire risk. Similarly, both BART Sites are located in highly developed areas. However, HE-4 is located near slopes, known landslide-susceptible areas, and vegetative wildfire fuels. DPP Sites adjacent to Camino Pablo would abut, and may overlap with, the VHFHSZ that covers the roadway. DPP Sites in closest proximity include DPP-8, 9, 11, 12, and DPP-39 through 47. As a result, development under Alternative 2 could exacerbate wildfire risks due to slope, prevailing winds, and other factors, thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. It could also expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Additionally, under the proposed project, Housing Element Site HE-5 would require the installation of new power line infrastructure, which would be built above ground under the conservative scenario, and therefore may exacerbate wildfire risk on that basis. Under both the proposed project and Alternative 2, Housing Element Site HE-4 is located in a developed area, but may contain sufficient surface fuels in scattered leaves, branches, and dry grass to form an ignition risk. However, this risk would be increased under the proposed project due to similar risks associated with development of Housing Element Sites HE-1, HE-2, and HE-3. Under both the proposed project and Alternative 2, maintenance of defensible space may result in ongoing impacts to the environment.

New construction would be subject to Mitigation Measure WFR-1 and the California Fire Code, which includes safety measures to minimize the threat of fire, including ignition-resistant construction with exterior walls of noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves and vents to prevent intrusion by flame or embers. Fire sprinklers would be required in residential developments (with some exceptions) pursuant to the MOFD Code. Construction would also be required to meet CBC requirements, including CCR Title 24, Part 2, which includes specific requirements related to exterior wildfire exposure. The Board of Forestry, via CCR Title 14, sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply in the VHFHSZ, which help prevent loss of structures or life by reducing wildfire hazards. The codes

and regulations would reduce the risk of loss, injury, or death from wildfire associated with new residential developments encouraged by Alternative 2, but not entirely.

Development under this alternative would facilitate future population growth and greater densities on Housing Element Site HE-4 and within the DPP Area, both of which are located adjacent to mapped VHFHSZs, as well as on both BART sites, which contain small portions covered by a VHFHSZ that extends along Camino Pablo.[1]

Similar to the proposed project, goals and policies in the updated Safety Element would mitigate the risk of loss of life, injury, and property loss from wildfires. Policies S-25 through S-28 would ensure that hazards related to slope instability (i.e. landslides, soil failure, uncontrolled runoff) are minimized through geotechnical investigation and reporting, and Policies S-29 through S-38 would maintain MOFD fire protection standards, continue wildfire mitigation strategies such as fuel breaks in open spaces and fire access easements, require proposed development to have adequate access for fire and emergency services, and maintain evacuation routes in the event of an emergency. Additionally, implementation of Mitigation Measures WFR-1 and WFR-2 would reduce the risk of loss of structures, injury, or death due to wildfires; these measures would make structures more fire resistant and less vulnerable to loss in the event of a wildfire, as well as reduce the potential for construction activities to ignite a wildfire.

However, implementation of Mitigation Measures WFR-1 and WFR-2, together with existing codes and regulations, cannot fully prevent the possibility of wildfires damaging structures or occupants. Alternative 2, like the proposed project, would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. This impact would be significant and unavoidable.

[1] California Department of Forestry and Fire Protection. 2024. Fire Hazard Severity Zones. https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones (accessed August 2024)

6.3 Alternative 3: No DPP

6.3.1 Impact Analysis

The following subsection of Section 6 – Alternatives (subsection 6.2.3 – Wildfire) has been revised from the Draft EIR. This revised subsection replaces subsection 6.2.3 – Wildfire in the Draft EIR:

Wildfire		
Would the project:	**Proposed Project**	**Alternative 3: No DPP**
WFR-1a: Substantially impair an adopted emergency response plan or emergency evacuation plan?	LTS	LTS
WFR-1b: Substantially increase evacuation constraints?	SU	SU
WFR-2: (a) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (b) 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? (c) 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? (d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	SU	SU
Summary: Under Alternative 3, impacts involving wildfire would be significant and unavoidable. Like the proposed project, Alternative 3 would not substantially impair an adopted emergency response plan or emergency evacuation plan. However, also similar to the proposed project, buildout under Alternative 3 would result in a substantial increase in evacuation constraints. Development facilitated by Alternative 3 would exacerbate existing wildfire conditions. Given those conditions, existing codes and regulations cannot fully prevent wildfires from potentially damaging structures or occupants. Impacts would be significant and unavoidable.		

WFR-1a: As discussed in the Wildfire analysis for the proposed project and Alternative 2, Alternative 3 would result in a less than significant impact regarding substantial impairment of an adopted emergency response plan or emergency evacuation plan.

WFR-1b: As described in Appendix WFR, Housing Element Site HE-5 would be adjacent to, and have direct access to, SR-24, and the other Alternative 3 sites would generally rely on Moraga Way and Camino Pablo feeding into SR-24 in the event of an evacuation. The BART sites would rely on BART service and SR-24 for emergency evacuation.

Similar to the proposed project and Alternative 2, development facilitated under Alternative 3 would not impair the use of emergency evacuation routes through the modification of existing roadways, and would be constructed in accordance with federal, state, regional, and local requirements, which are intended to ensure the safety of city residents and structures to the extent feasible. Development would be accessed by preexisting roadways and would not impair the use of emergency evacuation routes through the modification of existing roadways either through elimination, reduction in width, or blockage.

However, an impact to emergency operations and evacuations could occur from construction of future projects if they were to result in temporary road closures, potentially reducing available emergency evacuation routes. Construction of new development could involve temporary lane

closures or otherwise block traffic that could impede the ability of emergency vehicles to access the area. This would be limited to the construction duration and only affect streets adjacent to the construction site.

By adding new residents to an already constrained evacuation system, Alternative 3 would substantially increase evacuation constraints, and therefore have significant impacts, though those impacts would be less than those of the proposed project. Of the 35 intersections analyzed in the Supplemental Evacuation Analysis (Appendix WFR), Alternative 3 would result in a substantial increase to evacuation constraints (i.e., increase in intersection constraint level , resulting in additional constraint index points for residential parcels) at 18 intersections. As detailed in Table 2 of the SEA, the total number of affected parcels under Alternative 3 would be 1,342 under Scenario 1; 1,661 under Scenario 2; and 1,661 under Scenario 3. The total number of affected parcels for Scenario 2 would be the same as the proposed project, while Scenarios 1 and 3 would be decreased from the proposed project. Similar to the proposed project, while implementation of Safety Element Policies S-1, S-2, S-10, S-11, S-12, S-13, S-14, S-35, and S-40 and Implementation Actions IA-4 and IA-16 would reduce impacts related to emergency evacuation and potential evacuation constraints, Alternative 3 would still substantially increase evacuation constraints and this impact would remain significant and unavoidable.

WFR-2: As noted in Section 4.14.2, *Regulatory Setting*, increases in density in developed areas, such as Housing Element Site HE-4, have been shown to reduce fire risk. Similarly, both BART Sites are located in highly developed areas. Development on sites located in flatter or developed settings, including Sites HE-1 through HE-3, would not expose people or structures to significant risks, including downslope or downstream flooding or landslides. However, Housing Element Sites HE-4 and HE-5 are located near slopes, known landslide-susceptible areas, and vegetative wildfire fuels. As a result, development under Alternative 2 could exacerbate wildfire risks due to slope, prevailing winds, and other factors, thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. It could also expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Under both the proposed project and Alternative 3, Housing Element Site HE-5 would require the installation of new power line infrastructure, which would be built above ground under the conservative scenario, and therefore may exacerbate wildfire risk on that basis. Further, under both the proposed project and Alternative 3, Housing Element Sites HE-1, HE-2, HE-3, and HE-4 are also located in developed areas, but may contain sufficient surface fuels in scattered leaves, branches, and dry grass to form an ignition risk. Under both the proposed project and Alternative 3, maintenance of defensible space may result in ongoing impacts to the environment.

New construction under Alternative 3 would be subject to MOFD regulations and the California Fire Code, which includes safety measures to minimize the threat of fire, including ignition-resistant construction with exterior walls of noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves and vents to prevent intrusion by flame or embers. Fire sprinklers would be required in residential developments (with some exceptions) pursuant to MOFD Code. Construction would also be required to meet CBC requirements, including CCR Title 24, Part 2, which includes specific requirements related to exterior wildfire exposure. The Board of Forestry, via CCR Title 14, sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply in the VHFHSZ, which help prevent loss of structures or life by reducing wildfire hazards.

Similar to the proposed project, goals and policies in the updated Safety Element would mitigate the risk of loss of life, injury, and property loss from wildfires. Policies S-25 through S-28 would ensure that hazards related to slope instability (i.e. landslides, soil failure, uncontrolled runoff) are minimized through geotechnical investigation and reporting, and Policies S-29 through S-38 would maintain MOFD fire protection standards, continue to implement wildfire mitigation strategies such as fuel breaks in open spaces and fire access easements, require proposed development to have adequate access for fire and emergency services, and maintain evacuation routes in the event of an emergency. Additionally, implementation of Mitigation Measures WFR-1 and WFR-2 would reduce the risk of loss of structures, injury, or death due to wildfires; these measures would make structures more fire resistant and less vulnerable to loss in the event of a wildfire, as well as reduce the potential for construction activities to ignite a wildfire. However, these risks would not be entirely eliminated, and impacts would be significant and unavoidable.

The following subsection of Section 6 – Alternatives (subsection 6.5 – Environmentally Superior Alternative) has been revised from the Draft EIR. This revised subsection replaces subsection 6. – Environmentally Superior Alternative in the Draft EIR:

6.4 Environmentally Superior Alternative

The following table (Table 6-13 Impact Comparison of Alternatives) has been revised from the Draft EIR. This table replaces Table 6-13 Impact Comparison of Alternatives in the Draft EIR:

Table 6-13 Impact Comparison of Alternatives

Issue	Proposed Project	Alternative 1: No Project	Alternative 2: DPP Plus BART Sites	Alternative 3: No DPP
Aesthetics	LTSM	LTS (+)	LTSM (-)	LTSM (-)
Air Quality and Greenhouse Gas Emissions	LTSM	LTS (+)	LTSM (=)	LTSM (=)
Biological Resources	LTSM	LTS (+)	LTSM (=)	LTSM (+)
Cultural Resources	LTSM	LTS (+)	LTMS (=)	LTSM (=)
Geology and Soils	LTSM	LTS (+)	LTSM (+)	LTSM (=)
Hazards and Hazardous Materials	SU	LTS (+)	SU (=)	SU (+)
Land Use and Planning	LTS	LTS (=)	LTS (+)	LTS (=)
Noise	SU	LTS (+)	SU (+)	LTS (+)
Population and Housing	LTS	LTS (-)	LTS (=)	LTS (+)
Public Services and Recreation	LTS	LTS (+)	LTS (=)	LTS (=)
Transportation	SU	LTS (+)	SU (+)	SU (+)
Tribal Cultural Resources	LTSM	LTS (+)	LTSM (=)	LTSM (=)
Utilities and Service Systems	LTSM	LTS (+)	LTS (-)	LTSM (-)
Wildfire	SU	SU (+)	SU (-)	SU (+)

NI = No Impact; LTS = Less than Significant; LTSM = Less than Significant with Mitigation; SU = Significant and Unavoidable

\+ Superior to the proposed project (reduced level of impact)

\- Inferior to the proposed project (increased level of impact)

= Similar level of impact to the proposed project

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Appendix WFR

Supplemental Evacuation Analysis (Placeworks 2024)

MEMORANDUM

DATE October 21, 2024

TO Lashun Cross, Planning Director, City of Orinda

FROM Eli Krispi, Allison Giffin; PlaceWorks

SUBJECT Additional Orinda Evacuation Route Analysis

Dear Lashun,

The following report describes the results of an expanded version of the Plan Orinda Safety Element Update Evacuation Analysis (attached as Appendix B) to evaluate how Plan Orinda and each of three alternatives affect evacuation constraints compared to existing conditions. The original analysis assumed present-day land uses and did not assess quantitatively the effects from buildout of Plan Orinda or other alternatives described in the Plan Orinda Environmental Impact Report. The following report adds to the original analysis by assessing additional potential impacts resulting from Plan Orinda and these three alternatives.

Contents

Introduction

The City of Orinda adopted the Plan Orinda Safety Element on January 31, 2023. The updated Safety Element identified areas of Orinda where evacuations may be constrained given access to roadways, roadway capacity, the availability of roadways under different emergency scenarios, and the density and characteristics of households using the roadway network to evacuate. This work was done in compliance with California Government Code Section 65302.15, as established by California Assembly Bill (AB) 747 in 2019 and amended by AB 1409 in 2021.[1]

Project staff conducted the evacuation analysis for the Plan Orinda Safety Element Update assuming current residential densities derived from Contra Costa County Tax Assessor data in 2022. This report describes how project staff used the same methodology from the original Plan Orinda Evacuation Analysis to evaluate potential evacuation impacts of Plan Orinda and the following alternatives described in the Plan Orinda DEIR, compared to the 2022 existing conditions baseline.

Plan Orinda or Proposed Project Buildout Alternative. This assumes full buildout, or maximum allowable residential densities, of areas designated for land use and zoning changes described in Plan Orinda. Specifically, Plan Orinda includes land use changes within the Downtown Precise Plan (DPP) area, and in the following sites identified in the Plan Orinda Housing Element: HE-1, HE-2, HE-3, HE-4, and HE-5. These land use and zoning changes are described in Tables 2-3 and 2-4 in the Plan Orinda DEIR.

Alternative 1: No Project This is the same as the 'Alternative 1: No Project alternative described on page ES-2 and in Section 6 of the Plan Orinda Draft Environmental Impact Report (DEIR). This alternative assumes an additional 270 units of residential development will occur in the proposed housing and DPP area over the Plan horizon under the current (2020) General Plan Land Use designations, but no further development from the implementation of Plan Orinda.

Buildout Alternative 2. This alternative uses assumptions for population and other growth assuming full buildout of land use changes within the DPP and in Plan Orinda Housing Element Sites HE-4, BART-A and BART-B. This alternative is described on page ES-2 and in Section 6 of the Plan Orinda Draft Environmental Impact Report (DEIR).

Buildout Alternative 3. This alternative uses assumptions for population and other growth assuming full buildout of Plan Orinda Housing Element Sites HE-1 through HE-5, BART-A, and BART-B. This alternative is described on page ES-2 and in Section 6 of the Plan Orinda Draft Environmental Impact Report (DEIR).

[1] The Plan Orinda Safety Element and the associated evacuation analysis are available online at https://www.planorinda.com/safety-element.

For Plan Orinda and each of these alternatives, project staff analyzed roadway capacity and the degree of evacuation constraint assigned to Orinda households in each of three different evacuation scenarios. That analysis was based on the additional households each site is expected to include at full buildout over the Plan horizon. Project staff then compared results from Plan Orinda and each of the alternatives to existing conditions, which were initially evaluated in the Plan Orinda Safety Element update.

Methodology and Assumptions

Project staff started by identifying the magnitude and location of new development under the additional scenarios assessed in this follow-up analysis. Table 1 lists the location of each site, the alternatives that include each site, and the number of expected new housing units as described in the DEIR.

Table 1: Buildout Site Characteristics, All Sites Included in Alternatives

Site #	Site Location	Applicable Buildout Scenarios	Allowable Units Max
No Project	Several parcels in the Downtown area north and south of SR-24.	No Project Alternative	270
DPP (total)	Parcels within the Downtown Precise Plan Area boundary	Plan Orinda, Alternative 2	1,618
HE-1	Holy Shepherd Lutheran Church; 433 Moraga Way	Plan Orinda, Alternative 3	27
HE-2	St. Mark's Church; 451 Moraga Way	Plan Orinda, Alternative 3	56
HE-3	St. John Orthodox Church; 501 Moraga Way	Plan Orinda, Alternative 3	41
HE-4	Miramonte High School; 750 Moraga Way	Plan Orinda, Alternative 2, Alternative 3	234
HE-5	Caltrans – Gateway; California Shakespeare Theater Way	Plan Orinda, Alternative 3	408
BART-A	Caltrans BART - Eastern Lot	Alternative 2, Alternative 3	325
BART-B	Caltrans BART - Western Lot	Alternative 2, Alternative 3	764

Source: Plan Orinda DEIR

The original Safety Element Evacuation Analysis conducted for existing conditions assumed that one housing unit generates one vehicle on the roadway during an evacuation event. Project staff used this same assumption in the current analysis, combined with the maximum allowable units calculated for each site in Table 1 to calculate the expected number of additional vehicles generated by each site during an evacuation at full buildout of each alternative.

Using Geographic Information Systems (GIS), project staff distributed the additional expected vehicle load from the full buildout of Plan Orinda and each alternative (No Project, Alternative 2, and Alternative 3) to the affected intersections along the evacuation network.

Project staff then used the expected additional vehicle load at the affected intersections to calculate the commensurate additional constraint index points (described below) applied to existing residential parcels that also travel through the affected intersections (and therefore would be impacted by the additional vehicles at each intersection).

The number of additional vehicles passing through each intersection varies depending on:

a.) the location and number of housing units included in each of the three buildout alternatives, and
b.) The potentially available and unavailable gateway destinations in each of the three wildfire evacuation scenarios (Scenarios 1, 2, and 3), which were described in the original Evacuation Analysis of existing conditions conducted for the Plan Orinda Safety Element.
    1. Scenario 1: Assumes only SR-24 and Mount Diablo Boulevard available.
    2. Scenario 2: Assumes SR-24, Mount Diablo Boulevard, San Pablo Dam Road, Shepherd Canyon Road, and Grizzly Peak Boulevard available.
    3. Scenario 3: Assumes SR-24, Mount Diablo Boulevard, and Shepherd Canyon Road available.

For Plan Orinda and each alternative, project staff analyzed evacuations under three different wildfire evacuation scenarios (or Scenarios), which differ based on where the wildfire originates and how it moves into Orinda. These are the same three scenarios as the original evacuation analysis prepared as part of Plan Orinda. Project staff therefore evaluated twelve additional buildout alternative/evacuation scenario combinations:

1. Evacuation Scenario 1; No Project Alternative
2. Evacuation Scenario 1; Plan Orinda Buildout Alternative
3. Evacuation Scenario 1; Buildout Alternative 2
4. Evacuation Scenario 1; Buildout Alternative 3
5. Evacuation Scenario 2; No Project Alternative
6. Evacuation Scenario 2; Plan Orinda Buildout Alternative
7. Evacuation Scenario 2; Buildout Alternative 2
8. Evacuation Scenario 2; Buildout Alternative 3

9. Evacuation Scenario 3; No Project Alternative
10. Evacuation Scenario 3; Plan Orinda Buildout Alternative
11. Evacuation Scenario 3; Buildout Alternative 2
12. Evacuation Scenario 3; Buildout Alternative 3.

Distributing the expected additional vehicle counts from each site in the alternatives to the affected intersections along the evacuation network triggers a change in traffic Levels of Service (LOS) for each affected intersection. Increases in the LOS constraint category of each affected intersection result in an increase in the degree of evacuation constraint for all residential parcels that travel through the intersection on their way to safety. The extent to which each intersection's expected vehicle load exceeds the intersection capacity translates to the following constraint categories, which were used to assign constraint index points to residential parcels in the original Plan Orinda Evacuation Analysis and again in this follow-up analysis:

LOS C Index (639 -728 vehicles per hour)

- 0.25 point assigned to a parcel for each intersection traveled through within this range.

LOS D Index (729 – 818 vehicles per hour)

- 0.5 index point assigned to a parcel for each intersection traveled through within this range.

LOS E-F Index: (819 – 999 vehicles per hour)

- 1 index point assigned to a parcel for each intersection traveled through within this range.

Constrained Above LOS F Index (1,000 to 1,499 vehicles per hour)

- 1.5 index points assigned to a parcel for each intersection traveled through that exceeds LOS F by at least 100.

Very Constrained Index (1,500 to 1,899 vehicles per hour)

- 2 index points assigned to a parcel for each intersection traveled through that exceeds LOS F by at least 600.

Severely Constrained Index (1,900+ vehicles per hour)

- 2 index points assigned for intersections that overall exceed 1,900 expected vehicles.

OR

- 2 index points assigned to a parcel for each intersection traveled through that exceeds LOS F by 600 in one direction and has an arterial roadway intersecting at that intersection.[2]

[2] To be conservative, in the original Plan Orinda Evacuation Analysis, the methodology was developed to assign the 'severe constraint' category to intersections that met *either* of these two conditions: (1) 'exceed 1,900 expected vehicles', *or* (2) 'LOS F exceeded by 600 in

For each affected intersection, project staff added the additional vehicle load from anticipated development to the baseline number previously calculated for existing conditions and then assigned the difference in additional constraint index points to residential parcels where the additional vehicle load at an affected intersection triggered a change in the intersection's LOS constraint category described above. In the original Evacuation Analysis, project staff assigned the same number of points (2 points) for all intersections found to be constrained over LOS F, regardless of whether they were found to be 'very constrained' or 'severely constrained' over LOS F. project staff assigned the same number of points for all constraint categories over LOS F because the intent of the analysis was primarily to identify recommendations to facilitate evacuation for all constrained areas, so both categories were weighted the same although they are differentiated for informational purposes in Figures 7, 8, and 9 of the original Evacuation Analysis. That same approach of differentiation for informational purposes is taken in this analysis.

The Results section summarizes the results of conducting this analysis for each of the alternatives in each of the three wildfire evacuation scenarios. It also describes how each of the alternatives impacts intersection constraints compared to existing conditions across the same three wildfire evacuation scenarios that project staff evaluated in the Plan Orinda Safety Element.

Results

Figures 1, 2, 3, 4, 5, and 6 depict the change in LOS constraint category for intersections affected by each alternative in each wildfire evacuation scenario, and the overall constraint score for households resulting from the change in intersection LOS constraint category. Figures 1, 3, and 5 depict existing conditions in Evacuation Scenario 1, 2, and 3, respectively, and Figures 2, 4, and 6 depict the range of future alternatives evaluated against existing conditions. As the figures make clear, under all three wildfire evacuation scenarios, the addition of housing resulting from the alternatives will increase the degree of constraint experienced during evacuation of the entire City.

This impact is apparent from the fact that significant portions of the city change from a lighter shade to a darker shade with the addition of housing, particularly areas south of SR-24 along Moraga Way. Put another way, the fact that more of the City is shaded a darker color under Plan Orinda and the other alternatives than under existing conditions means that, throughout the City, more residents will experience more congestion during wildfire evacuation with the additional housing anticipated under the alternatives than without the additional housing.

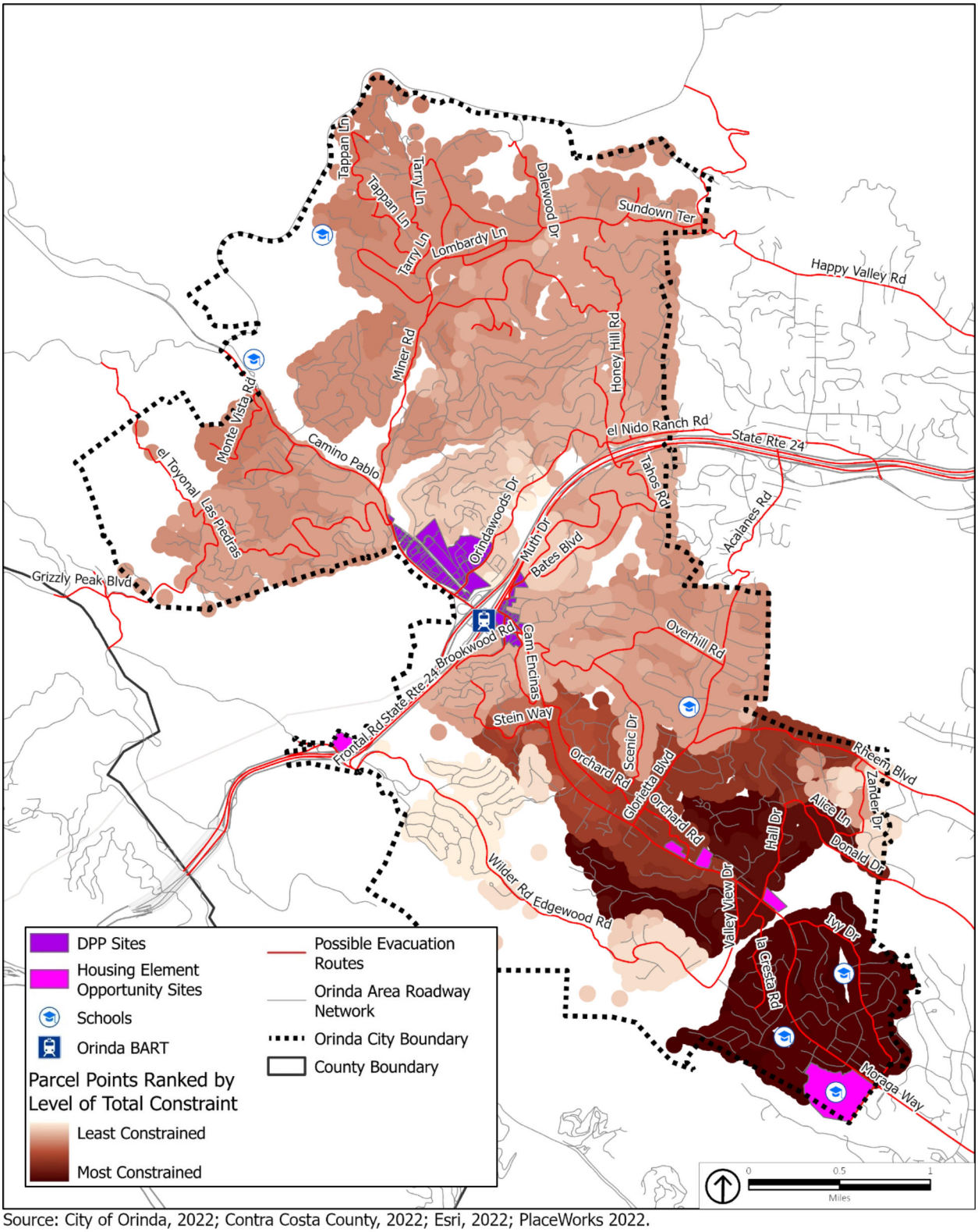
Additionally, the figures include color-coded pins showing how the constraint category will change at specific intersections with the addition of housing. For example, a dark red pin indicates that an

one direction with an intersecting arterial'. Analysis results ultimately showed that all intersections in the second category also met the 'exceed 1,900 expected vehicles'.

intersection will change from the “very constrained” to “severely constrained” with the addition of housing.

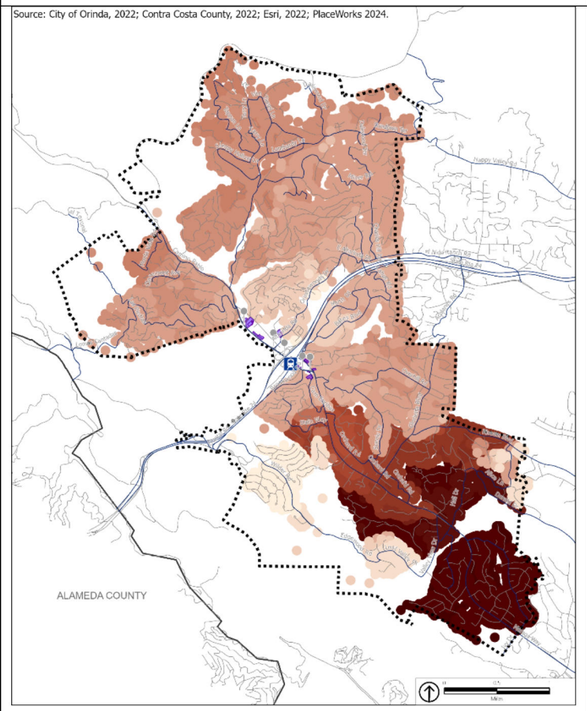
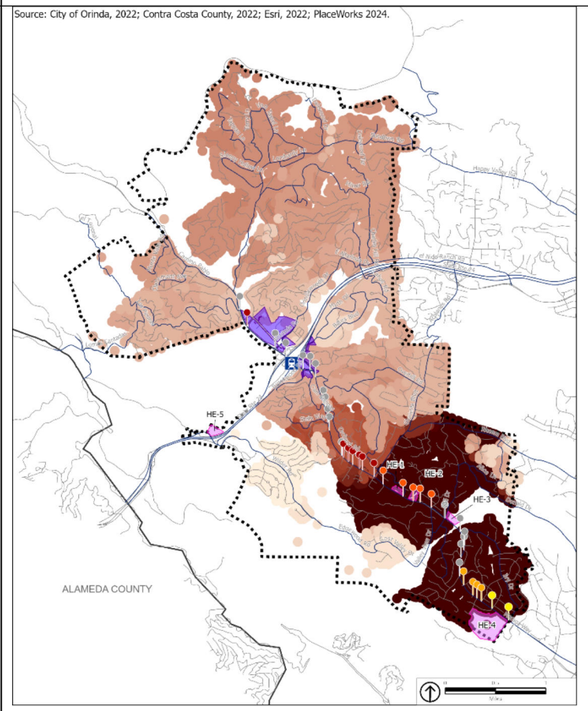
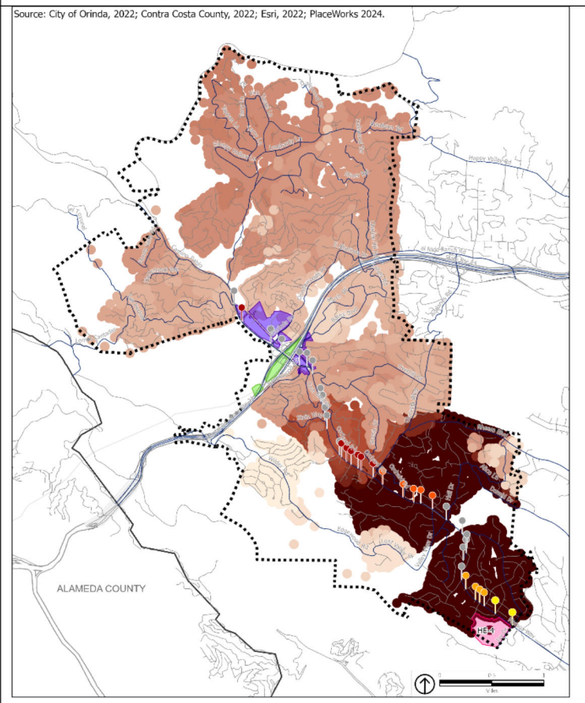
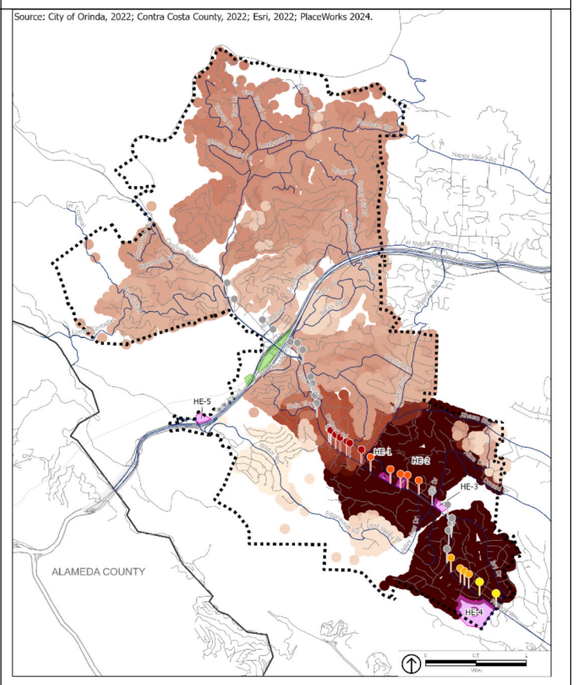
Together with the numerical information presented below, these visuals help illustrate the nature, degree, and location of evacuation impacts. As noted in the original Evacuation Analysis, the approach taken here is consistent with state guidance and provides a useful means for assessing wildfire evacuation impacts. Modeling wildfire evacuation in this way provides useful information to the public and decisionmakers. The approach is conservative (e.g., it assumes everyone evacuates simultaneously) and avoids speculation. This is particularly important given that numerous complex variables can affect wildfire modeling and associated evacuation.

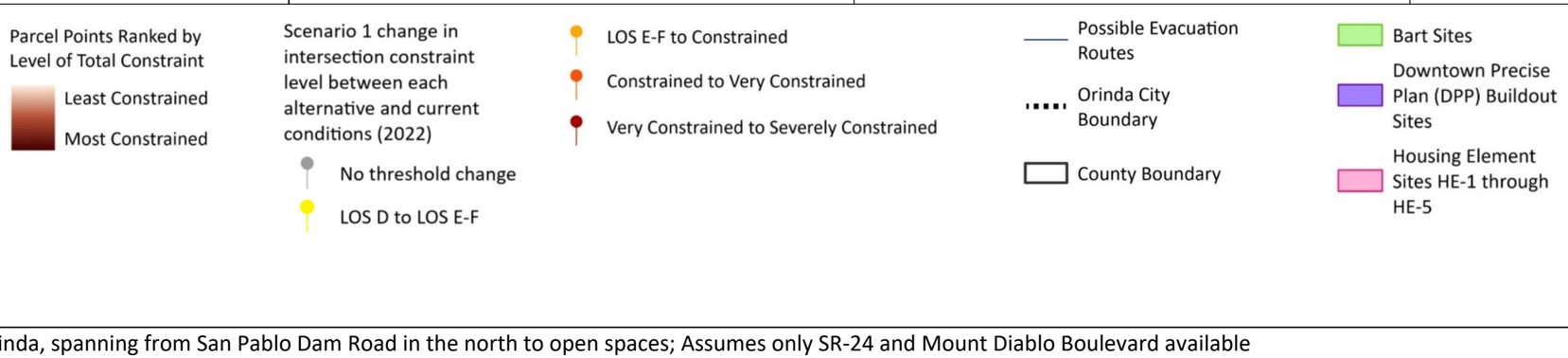
Figure 1: Existing Conditions; Evacuation Scenario 1



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

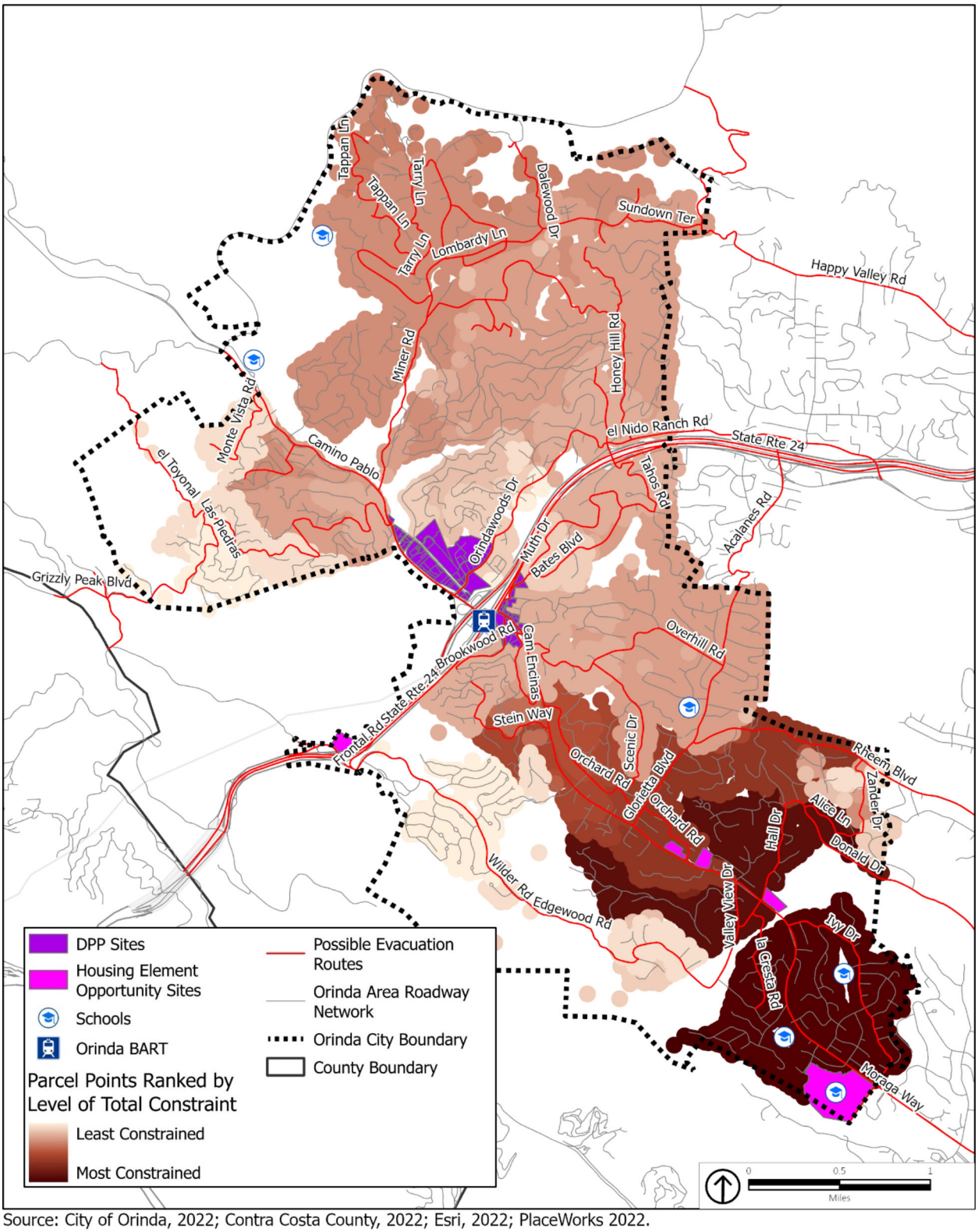
Figure 2: Scenario 1 Results

	No Project	Plan Orinda (Project: Housing Element Sites HE-1 through HE-5 plus DPP)	Alternative 2 (DPP Plus BART & High School Site)	Alternative 3 (Housing Element Sites HE-1 through HE-5 plus BART station, No DPP)
Scenario 1*	 Scenario 1 Constrained Parcels - No Project Alternative	 Scenario 1 Constrained Parcels - Plan Orinda Alternative	 Scenario 1 Constrained Parcels - Buildout Alternative 2	 Scenario 1 Constrained Parcels - Buildout Alternative 3



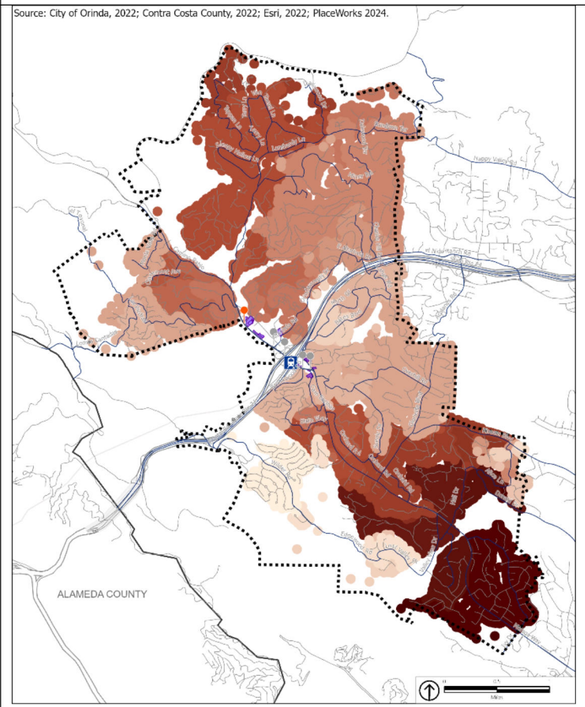
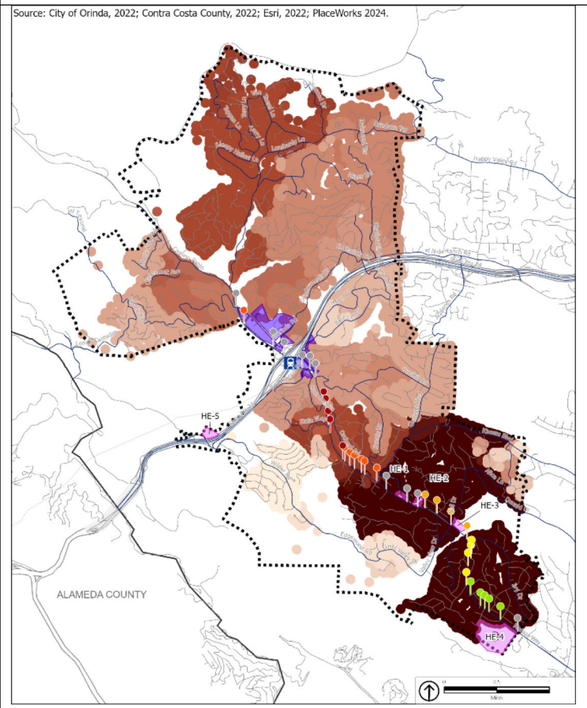
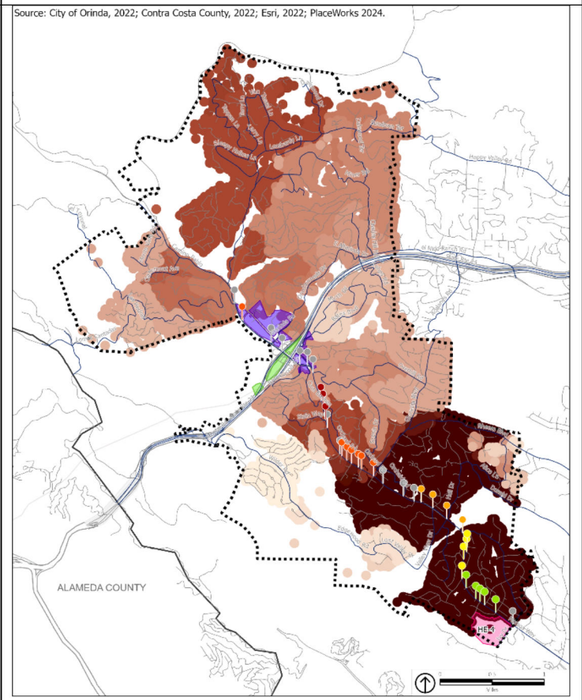
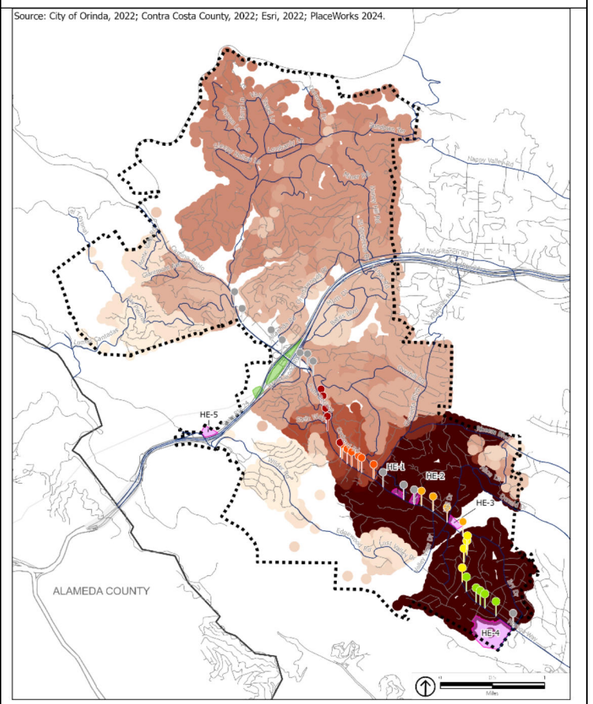
*Hazard area is south or west of Orinda, spanning from San Pablo Dam Road in the north to open spaces; Assumes only SR-24 and Mount Diablo Boulevard available

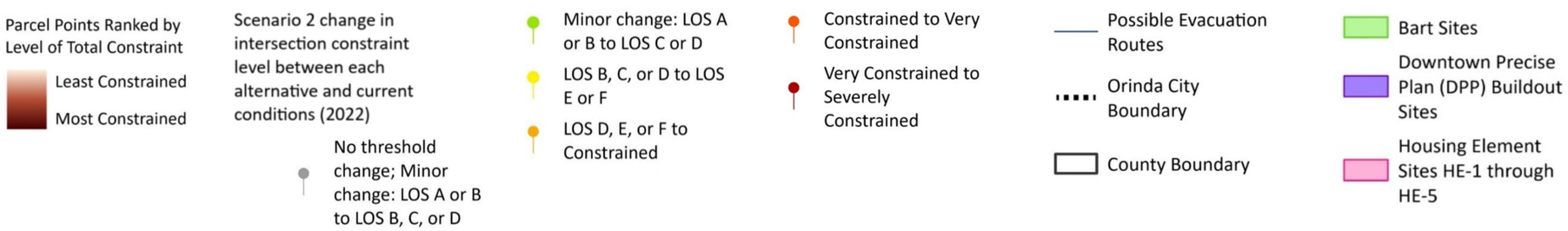
Figure 3: Existing Conditions; Evacuation Scenario 2



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

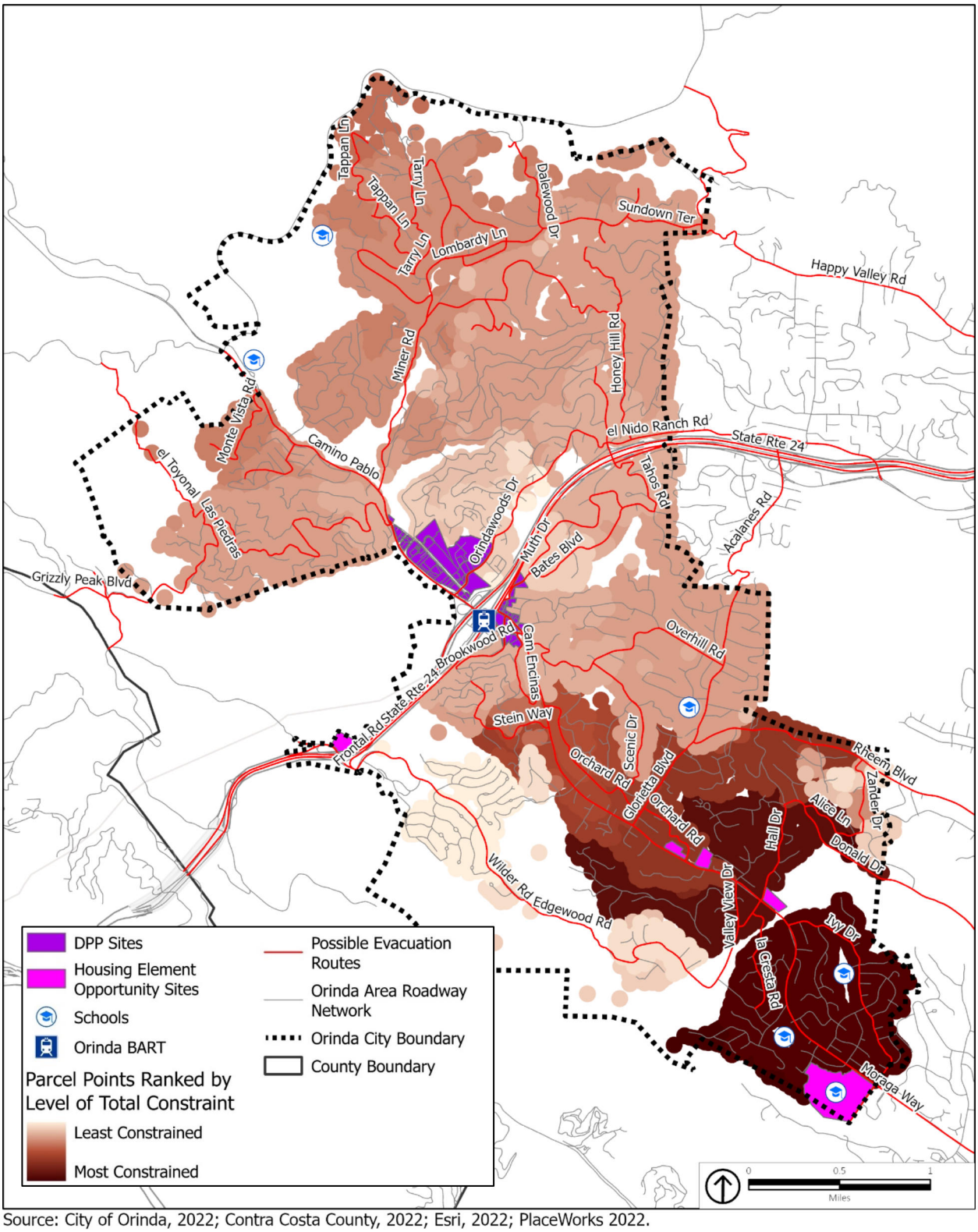
Figure 4: Scenario 2 Results

	No Project	Plan Orinda (Project: Housing Element Sites HE-1 through HE-5 plus DPP)	Alternative 2 (DPP Plus BART & HE-4)	Alternative 3 (Housing Element Sites HE-1 through HE-5 plus BART, No DPP)
Scenario 2	 Scenario 2 Constrained Parcels - No Project Alternative. No Project Future Buildout Sites	 Scenario 2 Constrained Parcels - Plan Orinda Alternative	 Scenario 2 Constrained Parcels - Buildout Alternative 2	 Scenario 2 Constrained Parcels - Buildout Alternative 3



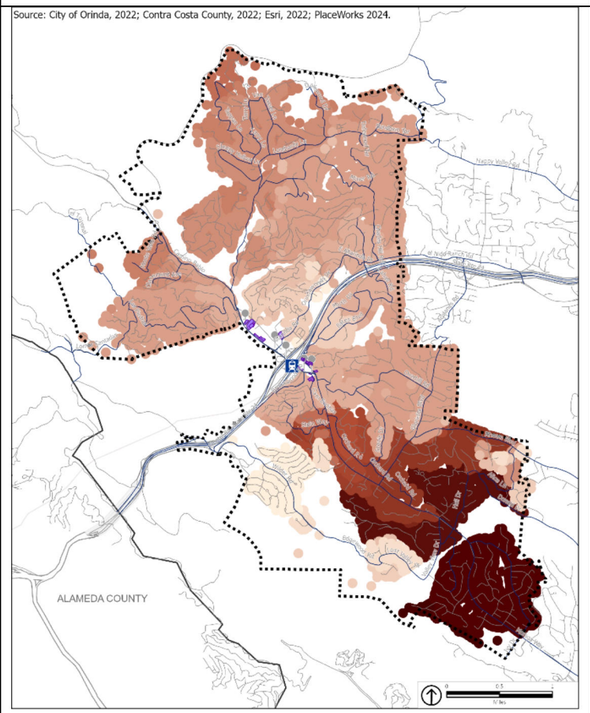
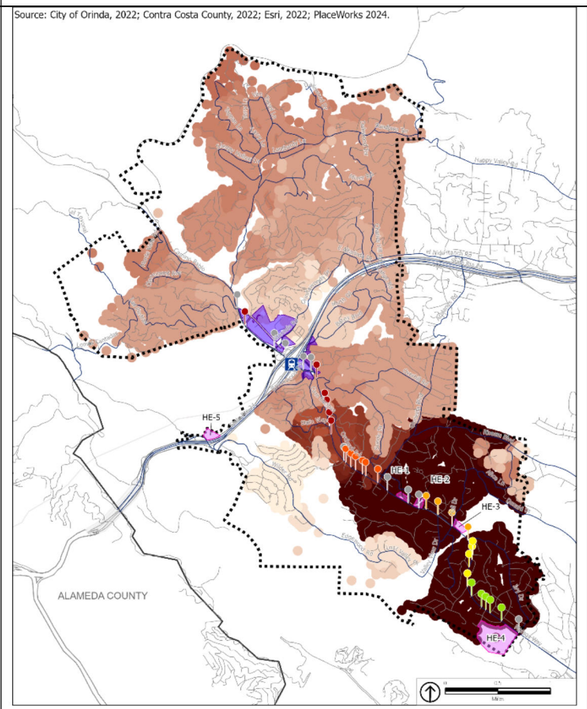
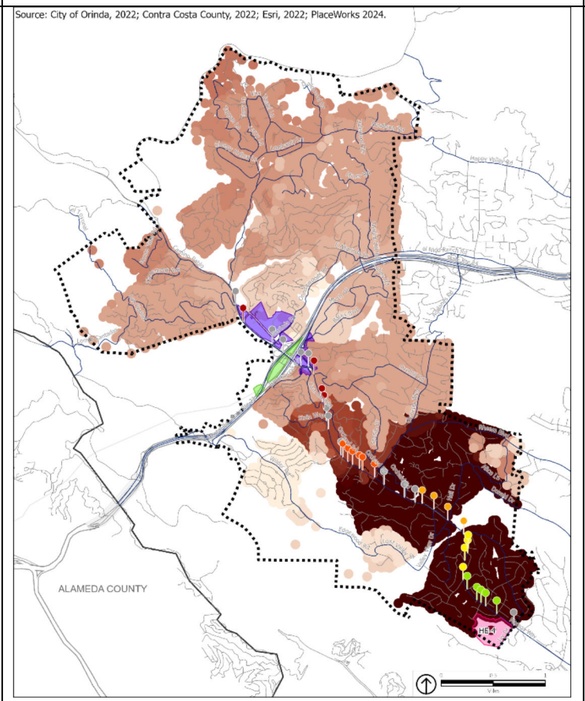
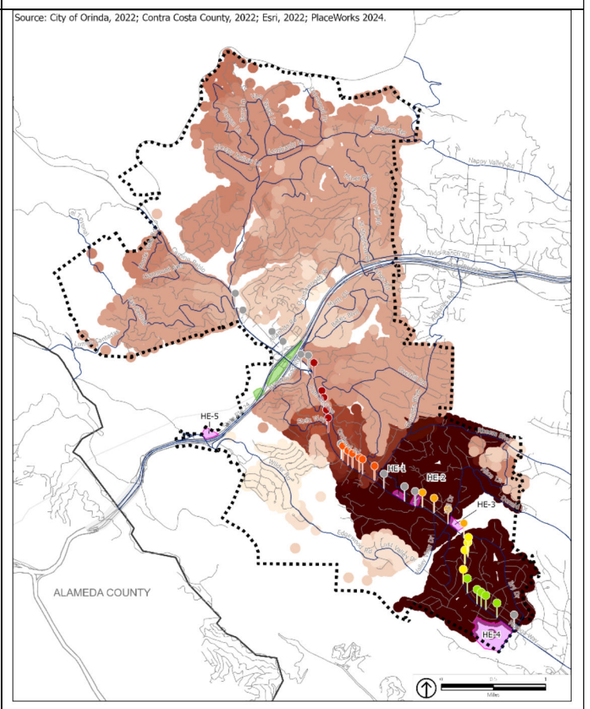
*Hazard area is Lafayette Reservoir immediately east of Orinda; Assumes all evacuation routes are available.

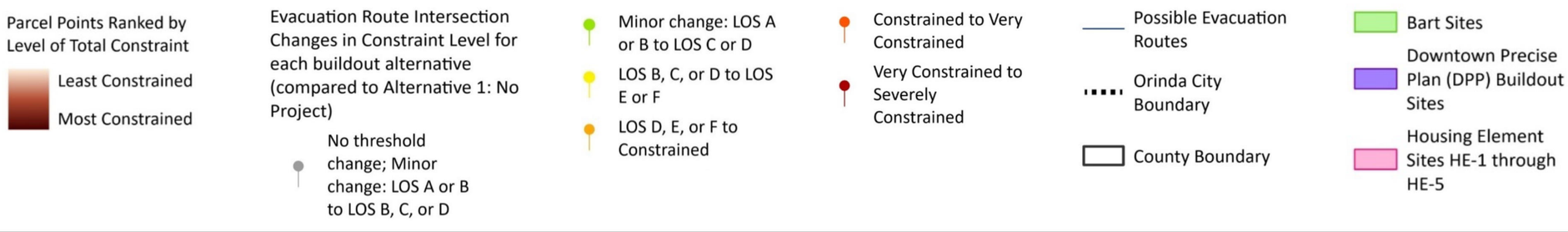
Figure 5: Existing Conditions; Evacuation Scenario 3



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure 6: Evacuation Scenario 3 Results

	No Project	Plan Orinda (Project: Housing Element Sites HE-1 through HE-5 plus DPP)	Alternative 2 (DPP Plus BART & HE-4)	Alternative 3 (Housing Element Sites HE-1 through HE-5 plus BART, No DPP)
Scenario 3*	 Scenario 3 Constrained Parcels - No Project Alternative; No Project Future Buildout Sites	 Scenario 3 Constrained Parcels - Plan Orinda Alternative	 Scenario 3 Constrained Parcels - Buildout Alternative 2	 Scenario 3 Constrained Parcels - Buildout Alternative 3



*Hazard area is north of Orinda, spanning from the Berkeley Hills to Briones Regional Park; Assumes all evacuation routes are available except for Grizzly Peak Blvd and San Pablo Dam Rd north of SR-24.

For all potential housing sites analyzed in all three scenarios, project staff determined the closest evacuation gateway (the point where an evacuating vehicle has safely gotten out of Orinda) to be SR-24 westbound. Except for site HE-5 (Caltrans – Gateway), the potential new housing sites included in all evaluated alternatives are located along one of two evacuation routes:

a) Camino Pablo southbound between Miner Road and the SR-24 westbound on-ramps,
b) Moraga Way northbound between the Orinda City Limit at Ivy Drive and the SR-24 westbound on-ramps.

Sites located north of SR-24 would enter the SR-24 westbound on-ramp from Camino Pablo southbound, and sites located south of SR 24 would enter the SR-24 westbound on-ramp from Moraga Way northbound. Site HE-5 does not affect the Orinda evacuation network since evacuees from this location would have direct access to SR-24 westbound close to the Caldecott Tunnel at the time of evacuation and would not cause or be affected by traffic impacts along the rest of Orinda's evacuation network.

Because the evaluated sites (other than Site HE-5) in all buildout alternatives are located along the two corridors feeding into the SR-24 westbound on-ramps, the affected residential parcels (i.e., those that experience an increase in their evacuation constraint) are those in the western half of Orinda routed towards the SR-24 westbound safety gateway via the SR-24 westbound on-ramps. These affected parcels are shown in purple in Figures 4, 5, and 6 in the original Plan Orinda Evacuation Analysis, included in Appendix A of this report.

Figures 1 through Figure 6 above show that all alternatives increase evacuation constraints for some residential parcels compared to the existing conditions/baseline, and that the Plan Orinda alternative, Alternative 2, and Alternative 3 all increase evacuation constraints for more parcels and to a greater degree than the No Project alternative. Several factors contribute to this result.

HE-4, included in all buildout alternatives except the No Project alternative, would add 234 new units, generating 234 evacuating vehicles at full buildout. Because HE-4 is located far away from the nearest evacuation gateway, it would contribute to increased constraints at numerous intersections in the evacuation network.

BART-A, BART-B, and the DPP sites would add 325, 764, and 1,618 new units respectively, generating that number of evacuating vehicles at full buildout. However, these sites are all located close to SR-24 and therefore would contribute to increased constraints at only one or two intersections before vehicles generated from these sites enter the freeway on-ramps and reach their closest safety gateway. The intersections they affect Downtown are used by nearly all evacuees heading towards the SR-24 westbound evacuation gateway.

HE-1, HE-2, and HE-3, which are included in the Plan Orinda Buildout Alternative and Buildout Alternative 3, would add 27, 56, and 41 new units respectively, generating that number of evacuating vehicles at full buildout. These sites are located between the BART/DPP sites and HE-4.

HE-5 has direct access to SR-24 on the Wilder westbound on-ramp, and thus does not affect any intersections in the evacuation network.

The No Project alternative assumes that 270 new residential units would develop in the Downtown area by 2040. About two-thirds of these are located north of SR-24, primarily near the Camino Sobrante/Camino Pablo intersection and one third are located south of SR-24 between Camino Encinas and the on-ramps.

As previously discussed, the residential parcels that are affected by the development facilitated by the alternatives all use the on-ramps to SR-24 westbound from either Moraga Way northbound or Camino Pablo Southbound in each of the wildfire evacuation scenarios. The number of affected parcels for each alternative depends on which intersections changed from a less constrained LOS category to a more constrained LOS category relative to the existing conditions baseline for each scenario in each alternative. Table 2 below shows the number of residential parcels that are affected by intersections that changed from a lower LOS constraint category to a higher one. These parcels received additional constraint index points in each alternative relative to baseline existing conditions, which is reflected in the color-coding of Figures 2, 4, and 6.

Table 2: Total Affected Parcels Relative to Baseline Existing Conditions by Scenario and Alternative

Scenario	No Project	Plan Orinda (Project): HE-1 through HE-5 + DPP	Alternative 2: HE-4 + BART + DPP	Alternative 3: HE-1 through HE-5 + BART
1	0	+3,499	+3,499	+1,342
2	+1,502	+1,661	+2,428	+1,661
3	0	+3,818	+3,818	+1,661

Table 2 shows the total number of affected residential parcels in each alternative and each wildfire evacuation scenario. Again, “affected residential parcels” are those residential parcels that experience an increase in their evacuation constraint. The degree of constraint for an affected residential parcel depends on the number of constrained intersections that vehicles from a parcel must travel through and how constrained each of those intersections are (e.g., LOS C-F, Constrained, Very Constrained, Severely Constrained). Parcels with a high degree of constraint are depicted in Figures 1 through 6 in dark brown; parcels with a low degree of constraint are depicted in light brown. The affected parcels with the highest constraints under existing conditions as well

as all alternatives are located mostly in the southern part of Orinda close to the border with Moraga and must travel through numerous constrained intersections along Moraga Way northbound to reach the SR-24 on-ramps.

Table 2 and Figures 3 and 4 show that the additional development occurring Downtown under the No Project alternative shift the constraint level of one intersection in one scenario: the Camino Pablo/Camino Sobrante intersection shifts from 'Constrained' to 'Very Constrained' under the No Project alternative in Scenario 2. This increases the overall constraint level for 1,502 households located north of the Camino Pablo/Camino Sobrante intersection relative to both the baseline 'Current Conditions' evaluated in the original Evacuation Report, and Buildout Alternative 3. The No Project alternative has a greater impact on these parcels than Alternative 3 because the growth sites in Alternative 3 affecting these parcels are the BART sites, which impact only the on-ramps to SR-24. The SR-24 on-ramps are already 'Severely Constrained' in all scenarios and all buildout alternatives (see Appendix D), so this does not equate to an increase in constraint points assigned to households that travel through the on-ramps.

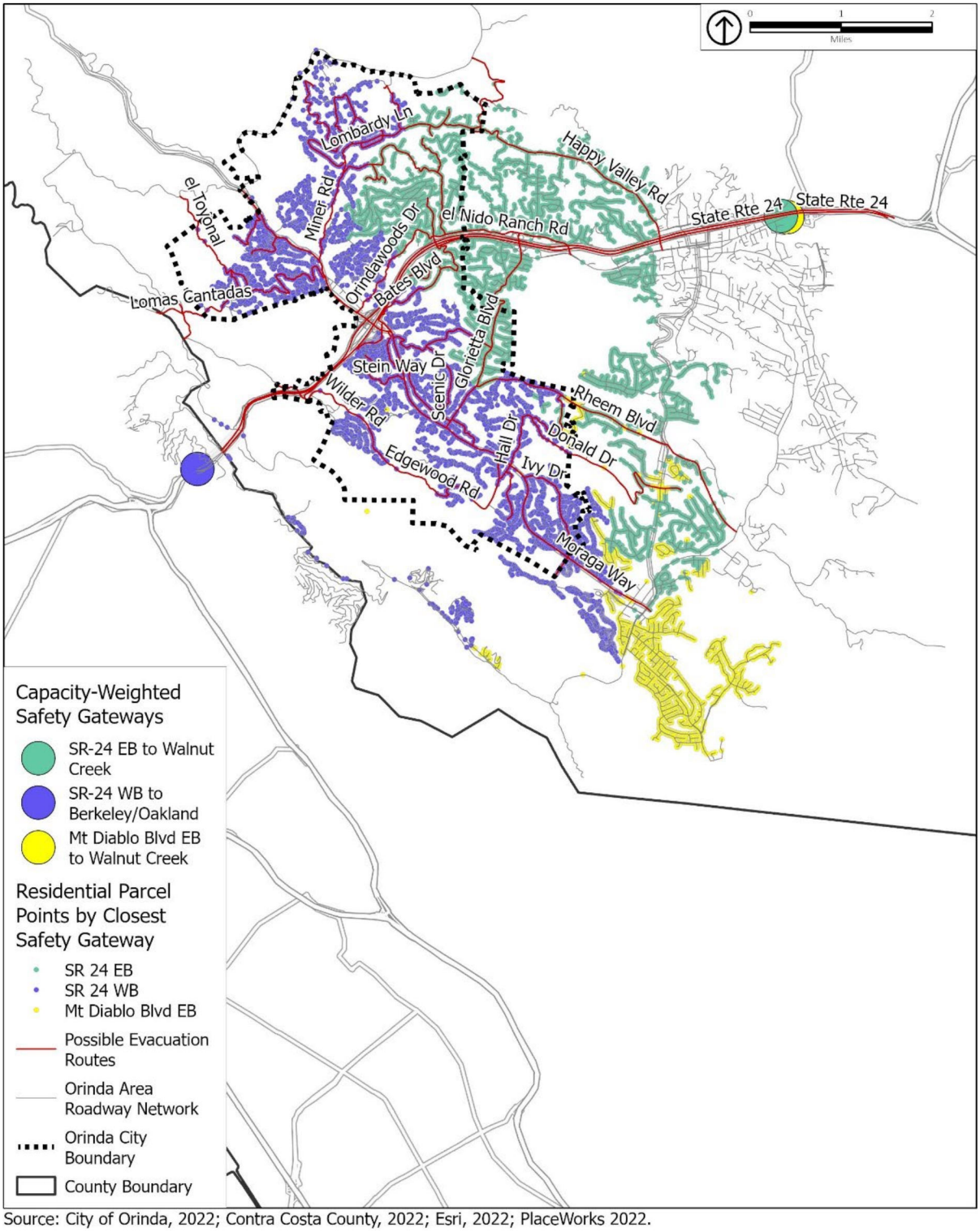
The expected development sites in the No Project alternative are further north of SR-24 than the BART sites, occurring instead around the Camino Pablo/Camino Sobrante intersection, which is 'Constrained' in the Current Conditions alternative and remains 'Constrained' in Buildout Alternative 3 but changes to 'Very Constrained' in the No Project Alternative. In other scenarios, this intersection is already 'Very Constrained' under existing conditions, and either remains 'Very Constrained' or shifts from 'Very Constrained' to 'Severely Constrained'. As previously discussed, no additional points are assigned to households for intersections shifting from 'Very Constrained' to 'Severely Constrained' since these levels were scored the same for impacted households in the original analysis.

The table in Appendix C shows the raw intersection counts and their associated LOS constraint category across all alternatives and all Scenarios, as well as the net change in constraint index points assigned to parcels affected by the change in intersection LOS constraint category (in the right-most column of the table).

The nine tables in Appendix D show the counts of affected parcels and the associated points added for each intersection constraint category change in each alternative and evacuation scenario. The total number of affected parcels at the bottom of Appendix Tables D1 through D9 are the counts summarized in Table 2.

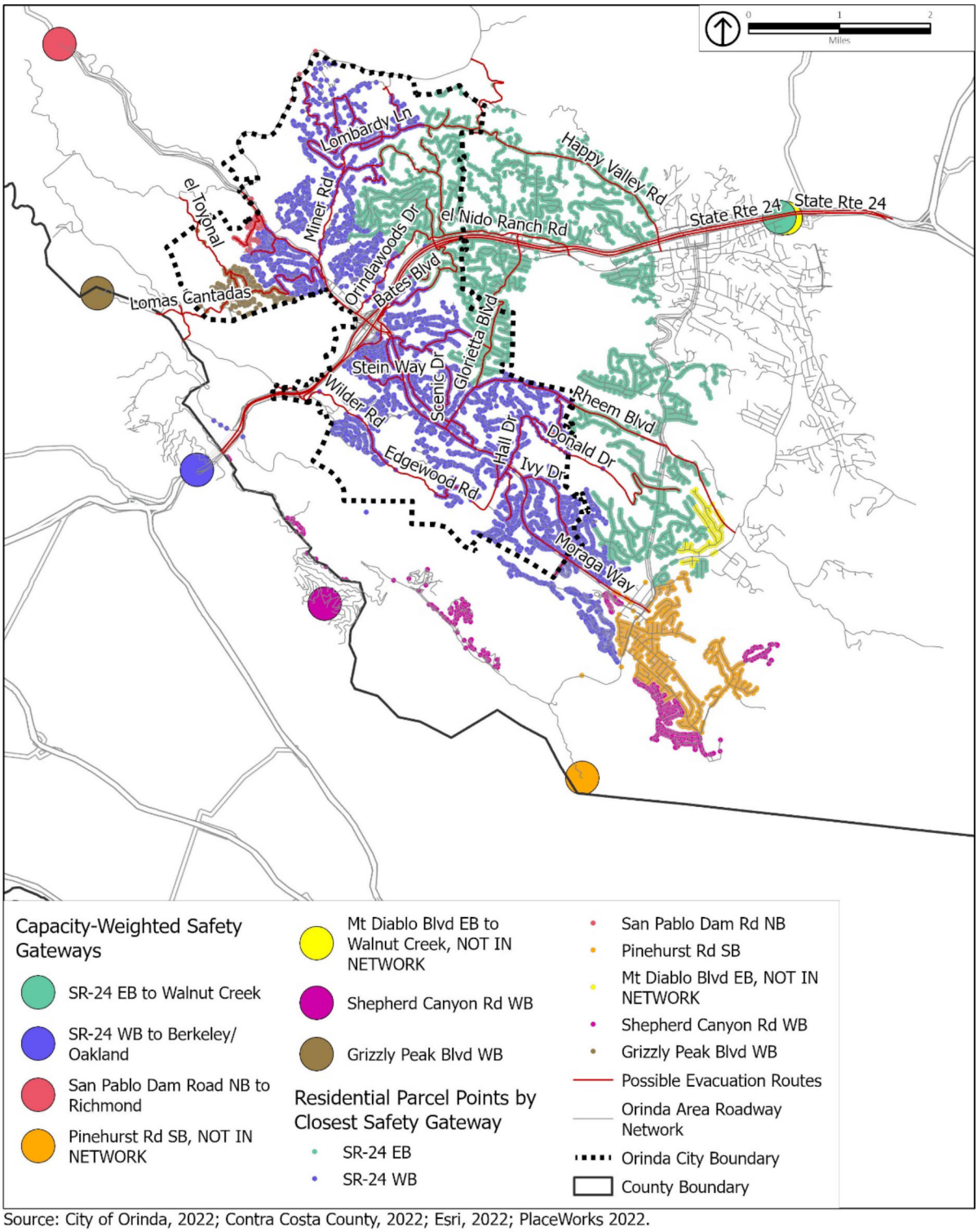
Appendix A: Figures 4, 5, and 6 from the Plan Orinda Safety Element Evacuation Study

Figure A1: Scenario 1 Residential Parcels by Nearest Safety Gateway



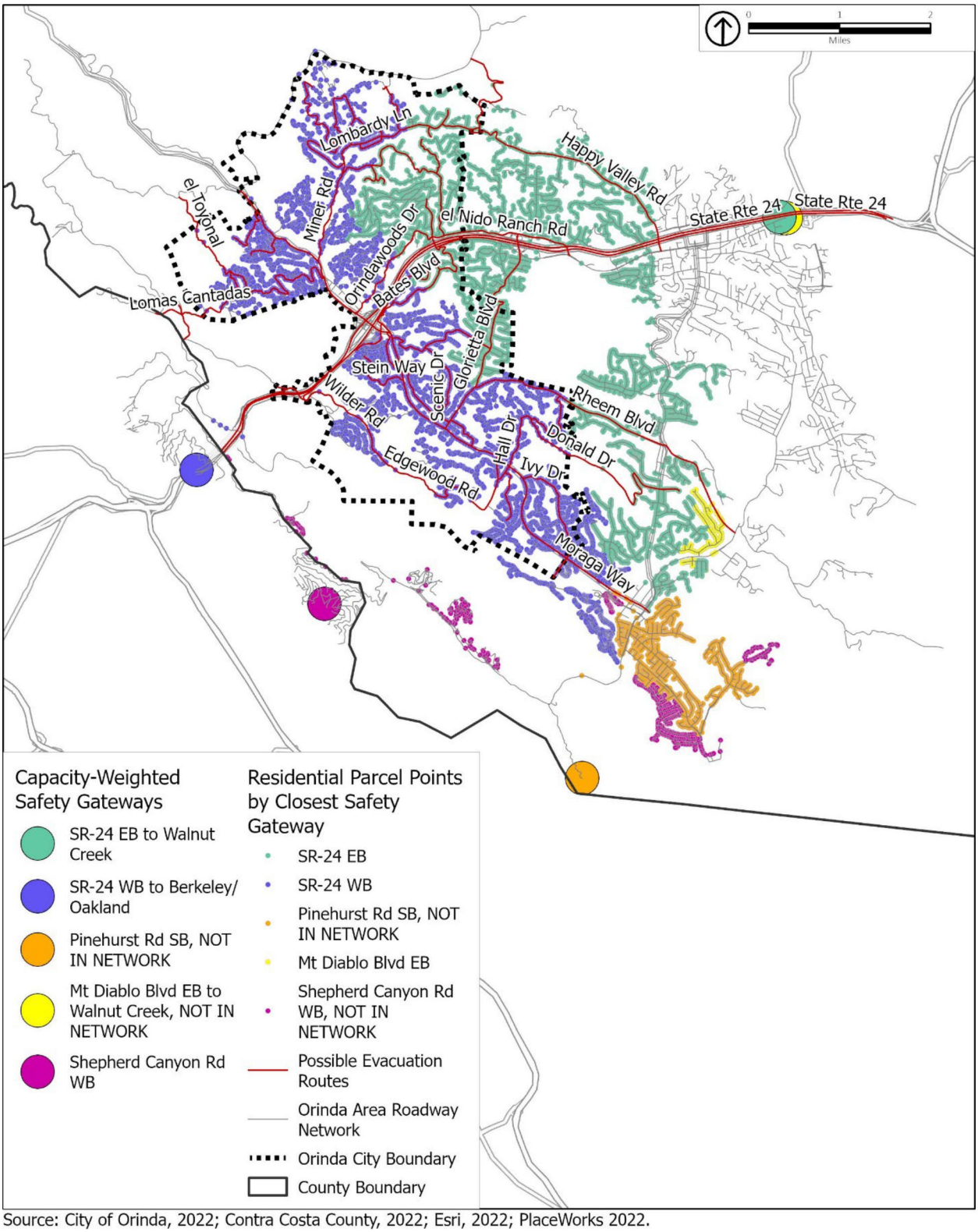
Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure A2: Scenario 2 Residential Parcels by Nearest Safety Gateway



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figure A3: Scenario 3 Residential Parcels by Closest Safety Gateway



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Appendix B: Original Plan Orinda Evacuation Analysis, 2022

City of Orinda

Evacuation Analysis

November 2022

Prepared for:

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22 Orinda Way
Orinda, CA 94563

Prepared by:
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Introduction

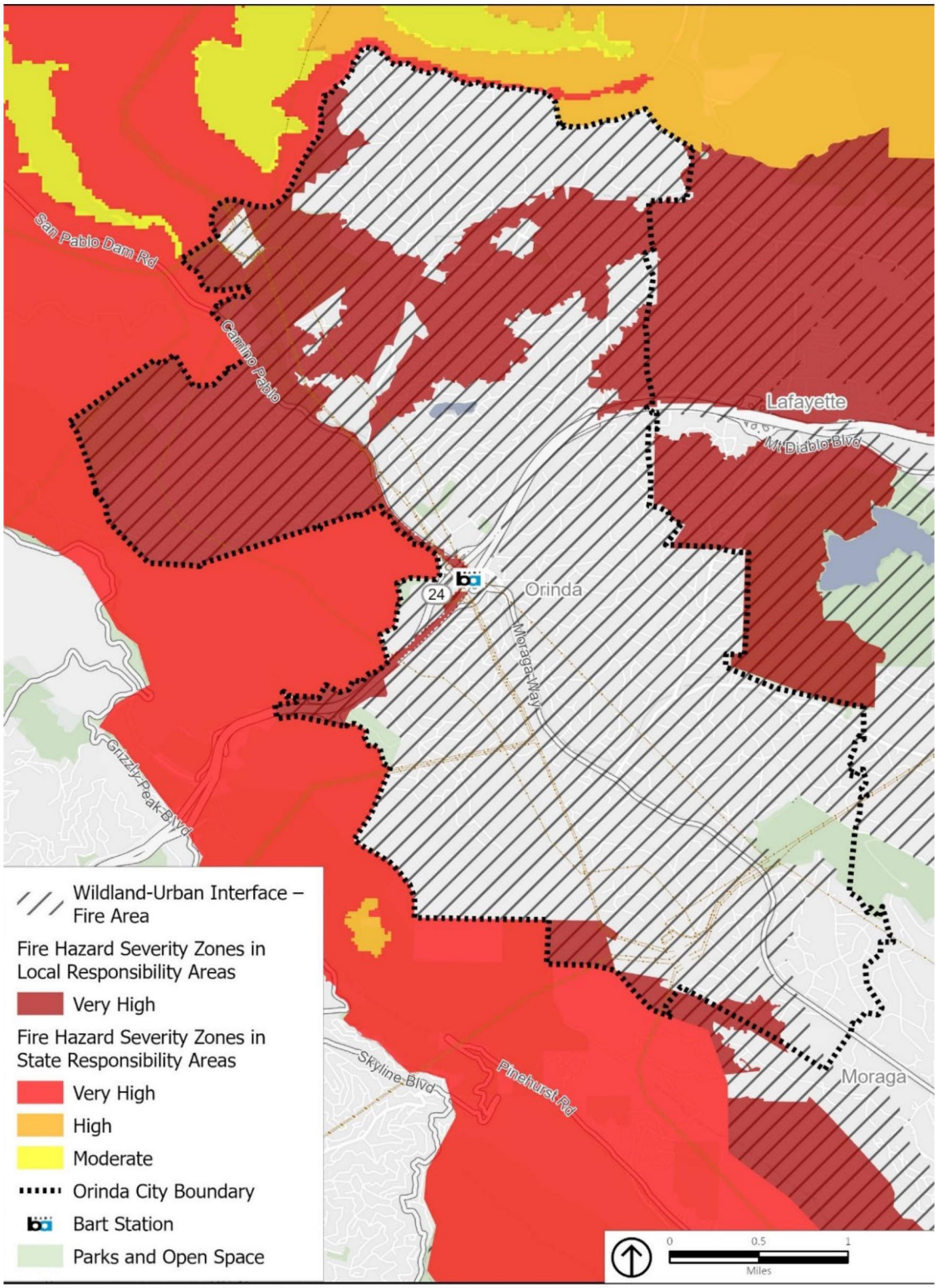
The City of Orinda is updating the Safety Element of the Orinda General Plan. As a part of this work, the City has prepared a study to analyze segments and intersections along identified possible evacuation routes that are likely to be the most congested during an evacuation event, as well as residential areas that are the most vulnerable to traffic congestion along the identified constrained routes. This analysis also considers where there are residents in Orinda who may face other barriers to evacuation due to factors like limited access to a vehicle, internet, or phone service, disabilities, and/or language barriers. The report concludes with recommendations for reducing traffic congestion along congested evacuation route segments and intersections during a city-wide evacuation event, recommendations for evacuating vulnerable populations, and recommendations for reducing landslide risk along evacuation routes. This report also evaluates General Plan Housing Element Opportunity Sites and Downtown Precise Plan sites for evacuation constraints and finds that several Housing Element Sites are potentially constrained during an evacuation event due to expected traffic congestion on Moraga Way northwest-bound, although the increased traffic congestion pressure expected from development at these locations does not significantly change the overall results of the analysis in terms of the level of expected congestion at key intersections and the distribution of relative constraint across residential areas in Orinda. The Opportunity Sites found to be constrained are (in order from most constrained to least constrained): the Housing Opportunity Site on a portion of the Miramonte High School property, the St. John Orthodox Church Housing Opportunity Site, the St. Mark's Church Housing Opportunity Site, and the Holy Shepherd Lutheran Church. Downtown Precise Plan Housing Opportunity Sites are not likely to face substantial evacuation constraints primarily because they are located close to SR-24 entrances. These results and implications are discussed in the Cumulative Constraint Analysis Results and Discussion section.

This analysis is consistent with California Government Code Section 65302.15, which requires that a Safety Element assess possible evacuation routes and their capacity, safety, viability, and evacuation locations under different emergency scenarios. It is important to note that this study is a citywide, programmatic-level assessment of potentially vulnerable areas, and is meant to guide and inform future evacuation planning efforts. This study includes information that can support project-level evacuation and analysis, consistent with direction and guidance from the California Office of the Attorney General and other sources, but this study does not itself constitute an evacuation plan and is not a resource that residents should use for immediate guidance during an actual evacuation event. The City of Orinda, Contra Costa County Office of Emergency Services, Lamorinda Community Emergency Response Team (Lamorinda CERT), and the Moraga-Orinda Fire Department (MOFD) all offer resources to help residents and community members plan for emergencies and be prepared in the event of an evacuation. The Orinda Fire Evacuation Guide and General Information flyer is attached in the appendix of this report.

This analysis evaluates three citywide evacuation scenarios, as well as potential landslide risk along possible evacuation routes. Wildfire is the most likely hazard scenario requiring a citywide evacuation or evacuation of large areas of Orinda, whereas a landslide-related evacuation is likely to be more localized, so methods for evaluating a citywide evacuation in this analysis differ from methods for evaluating evacuation in the event of a landslide. The methodology differs also because the spread of wildfire risk and potential severity are in specific areas in and around Orinda, as shown in Figure 1. By contrast, landslide risk is much more dispersed throughout the entire city and surrounding areas, as shown in Figure 2.

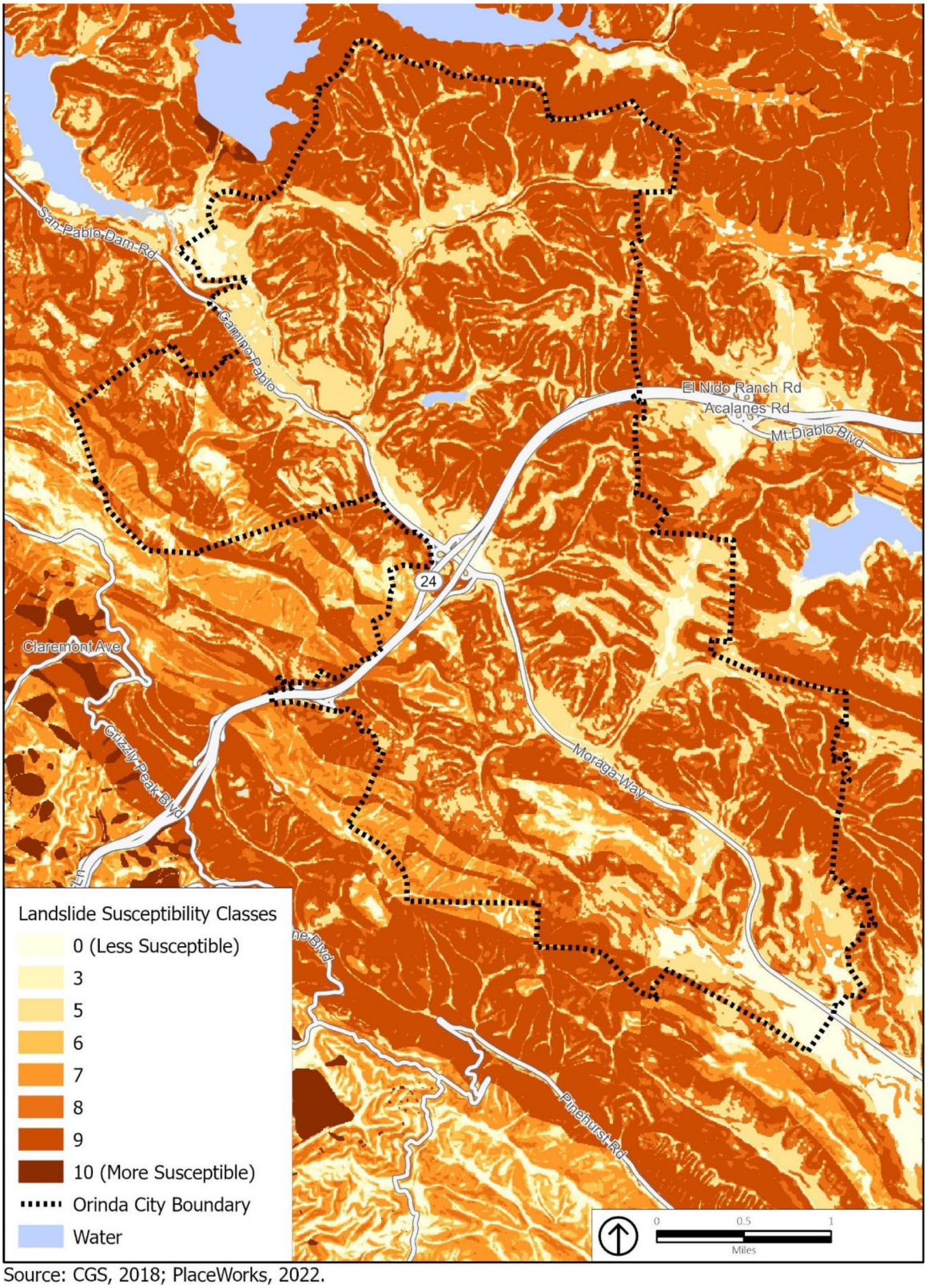
The first sections of this report describe the methodologies used for the citywide evacuation analysis followed by the methodologies used for landslide evacuation analysis. The subsequent sections discuss results and recommendations for the citywide evacuation analysis followed by the results and recommendations for the landslide evacuation analysis.

FIGURE 1: WILDFIRE HAZARD SEVERITY ZONES AND LOCALLY ADOPTED WILDLAND URBAN INTERFACE – FIRE AREA



Source: CalFire, 2009; MOFD, 2020; PlaceWorks, 2022.

FIGURE 2: LANDSLIDE RISK



Source: CGS, 2018; PlaceWorks, 2022.

Citywide Evacuation Analysis Methodology

The goal of this analysis is to identify evacuation routes that are most likely to be congested in a citywide emergency, as well as the residential areas that are likely to face the most evacuation constraints. This section details the method and assumptions used to identify these routes and areas.

Assumptions

The citywide evacuation analysis considers three scenarios which differ in terms of their hazard area location. The generalized hazard area for each scenario is informed primarily from MOFD recommendations of where wildfires that would affect Orinda are most likely to originate, although the hazard area in each scenario is not an specific wildfire origin, spread, or perimeter. Instead, the hazard area in each scenario is defined by which evacuation routes out of Orinda are considered safe to use, based on their proximity to the following three hazard areas:

1. Hazard area is south or west of Orinda, spanning from San Pablo Dam Road in the north to open spaces southwest of Orinda.
2. Hazard area is Lafayette Reservoir immediately east of Orinda.
3. Hazard area is north of Orinda, spanning from the Berkeley Hills to Briones Regional Park.

All three scenarios assume all residents are evacuating out of Orinda, and the analysis does not model wildfire behavior or make any assumptions about the potential timing of when evacuation routes would be impacted. Scenario 1, in which the hazard area spans the open spaces west of Orinda, is the most restrictive. It assumes only SR-24 westbound towards the Caldecott Tunnel, SR-24 eastbound towards Walnut Creek, and Mt. Diablo Boulevard eastbound towards Walnut Creek, are the only safe evacuation routes leading out of Orinda. Under this scenario, San Pablo Dam Road northbound, Grizzly Peak Boulevard westbound, Canyon Road westbound (via Pinehurst Road northbound), and Pinehurst Road southbound are not safe to use. Scenario 2, in which the hazard area covers Lafayette Reservoir open spaces, is the least restrictive in that it assumes any evacuation route leading out of Orinda is safe to use. Scenario 3, in which the hazard area spans the open space areas north of Orinda, strikes the middle between Scenarios 1 and 2, by assuming that San Pablo Dam Road northbound and Grizzly Peak Boulevard westbound are not safe to use, but that Canyon Road and Pinehurst Road are both safe to use. The purpose of these assumptions is to analyze different scenarios where routes may be obstructed and to test how sensitive evacuation outcomes are to the availability of alternative routes to SR-24. Results from previous studies conducted by MOFD in partnership with UC Berkeley researchers indicate that a wildfire starting in Briones Regional Park and open space north of Orinda is most likely, which could obstruct San Pablo Dam Road. MOFD staff have also noted that Pinehurst Road and Canyon Road have high potential for extreme fuel loading and spot fires which may preclude their availability during an actual evacuation event. Scenario 1 captures this by assuming these routes are unavailable.

In addition to Orinda residents, all three scenarios consider residents in Lafayette, Moraga, and unincorporated Contra Costa County that might use the Orinda roadway network to evacuate. The method for considering which households are included in the study area is discussed further in the subsection describing wildfire evacuation analysis methodology steps.

The methodology used in this analysis assigns cumulative constraint index scores to residential areas using Geographic Information Systems (GIS) software based on component indices capturing the following:

- how far Orinda residents must travel through Orinda to reach the nearest safe destination,
- what intersections and roadway segments along Orinda's evacuation route are expected to be congested, and how many congested intersections each household must travel through to reach the nearest safe destination,
- and demographic characteristics identifying households that may need extra time or that may have specific requirements to evacuate quickly.

Project staff ran this analysis assuming one vehicle per household, and again assuming 1.5 vehicles per household. While overall traffic volumes are more severe using the assumption of 1.5 vehicles traveling from each household, the *relative* results in terms of which roadway segments and residential areas are most constrained in Orinda remain the same in both cases. Additionally, there is a large gap in expected vehicle volumes between the most constrained intersections (mostly arterial roadways with many local roads and minor collectors feeding into them) and the second most constrained intersections, which are more minor collector roads with less than half of the expected traffic volumes as the most constrained arterial intersections along evacuation routes (see Figures 7, 8, and 9). Consequently, increasing the assumption of vehicles evacuating per household from 1 to 1.5 does not change which roadway segments and intersections are identified as the most constrained in Orinda based on thresholds for LOS F used in the analysis. Results in this report are discussed using the assumption of one vehicle evacuating per household.

This analysis also uses residential parcels as the source of vehicle trips leaving Orinda in all three evacuation scenarios, which most closely resembles a scenario occurring during the evening or nighttime when Orinda's population is comprised primarily of residents at home. Most non-residential land uses in Orinda, like offices and commercial areas, are concentrated in Downtown Orinda near the on-ramps to SR-24 and around BART. These areas are the least constrained given their proximity to high-capacity routes out of Orinda. Besides commercial or office uses, other non-residential uses include schools, other public facilities like the Orinda Community Center, and residential care facilities. Although the methodology does not include daytime land uses or residential care facilities as evacuation origin points in the constrained intersection analysis, this report includes specific recommendations to address evacuation concerns for these non-residential uses.

Finally, to estimate the level of congestion at intersections, the index-scoring approach uses intersection capacities expressed in vehicles per one hour. It is much more likely that Orinda residents would have more time than one hour to evacuate, particularly if, for example, a wildfire were to originate further out in the northern Briones or southwest open spaces beyond Orinda City Limits rather than adjacent to or within Orinda. Additionally, a phased evacuation by zone would prevent 'worst-case-scenario' traffic volumes that would likely occur within a one-hour simultaneous evacuation. However, evaluating this worst-case scenario produces results that illustrate what the worst-case scenario might look like and therefore how it can be avoided, while still identifying intersections that may be congested even during a phased evacuation. An example of a recent simultaneous evacuation order occurred during the 2018 Camp Fire. The Town of Paradise had an existing phased evacuation plan in the Town's adopted Emergency Plan. By 8:15 a.m. on November 8, 2018, Paradise public safety staff began giving phased evacuation orders to selected evacuation zones after the fire had been burning since approximately 6:15 a.m. By 8:30 a.m., just 15 minutes after the first phase evacuation order was given, Paradise public safety staff deemed the phased evacuation plan in the town's Emergency Plan unworkable and ordered the rest of Paradise to evacuate at the same time regardless of zone, approximately 1 hour and 15 minutes after public safety was first alerted to the wildfire. Although the fire dynamics in Orinda are not the same as in Paradise, to take the conservative approach, and because the scenario in which all residents are simultaneously evacuating is one that has occurred in California in the recent past, this analysis assumes all Orinda residents are evacuating within the same hour. However, the results of this analysis generate drive time contours and groupings of households that are all evacuating towards the same safety gateway in the same direction (e.g., 'traffic-sheds'), which are used to inform recommendations for potential phased evacuation approaches.

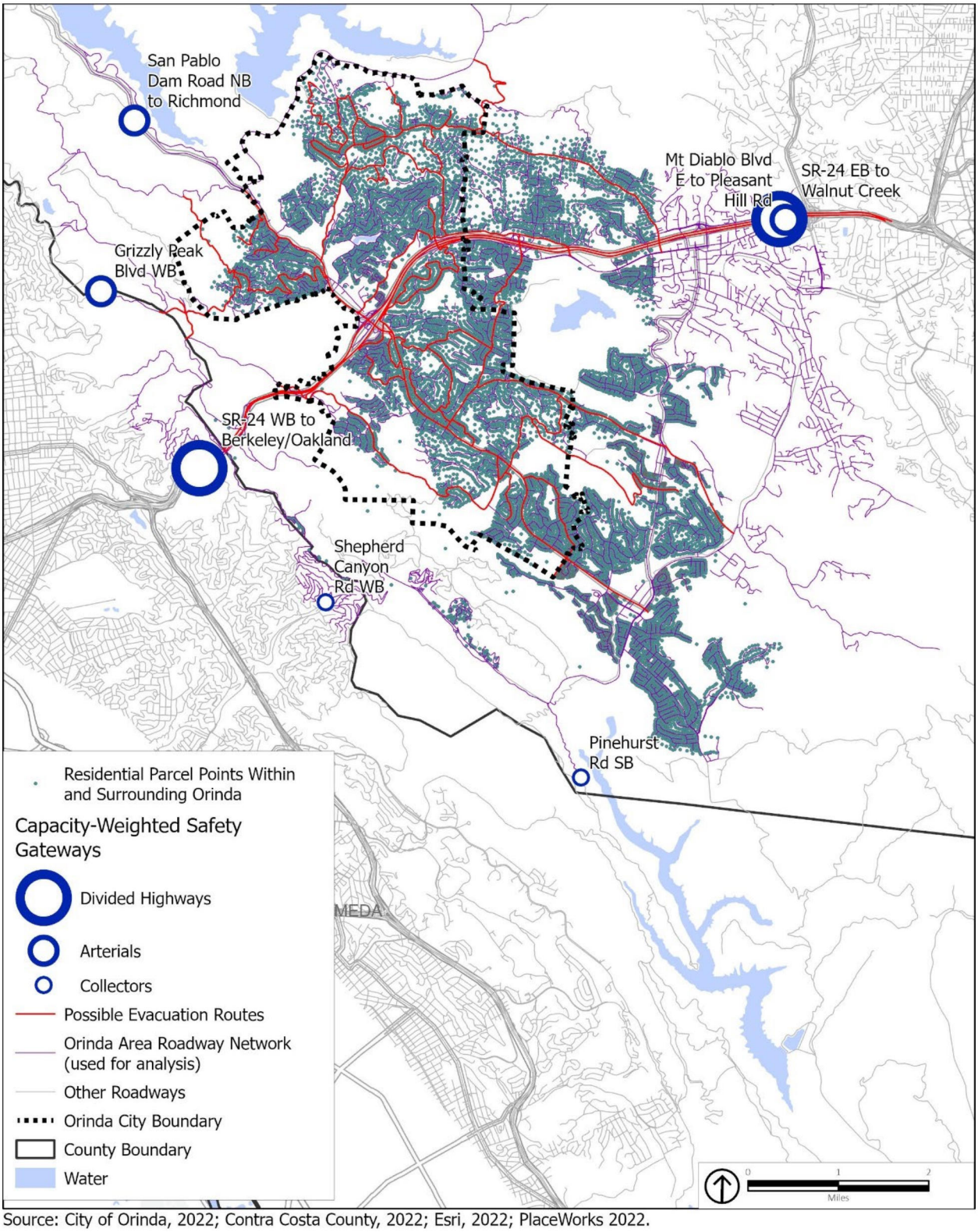
Citywide Evacuation Analysis Methodology Inputs

This analysis begins with the following data inputs, shown in Figure 3:

- The first step in the analysis uses the entire roadway network in Orinda, and the second step focuses specifically on intersections along Orinda's likely evacuation routes, shown in red in Figure 3 below. Likely evacuation routes were developed in coordination with Orinda Police Department and are consistent with the possible evacuation routes included in the Orinda Safety Element. Other roadways in Orinda, besides the possible evacuation routes, are shown in light purple in Figure 3.
- Residential parcel center points representing origin locations of residents for all evacuation scenarios, sourced from the Contra Costa County tax assessor. Note that this initial set of 15,104 parcel origin points encompasses a much larger set of residential parcels surrounding Orinda rather than just those within Orinda city limits. This set of parcels is large enough to encompass *any* households that might use the evacuation network in Orinda (e.g., Moraga and Canyon), such that traffic counts capture potential congestion during an evacuation along Orinda's evacuation roadway network as comprehensively as possible.

- Safety gateways, which are representative points outside of Orinda along evacuation corridors at which evacuees from Orinda can consider themselves safely evacuated. Safety gateways are not ultimate destinations to which evacuees are traveling, but instead are points along roadways where evacuees can consider themselves safely evacuated once they have reached these points, while continuing to travel in any direction after reaching this point. The western mouth of the Caldecott Tunnel is one example: evacuees heading westbound on State Route (SR-) 24 can consider themselves safely evacuated from Orinda once they have crossed this point but would continue to travel in any direction from there to reach ultimate destinations of refuge.

FIGURE 3: ORINDA CITYWIDE EVACUATION ANALYSIS INPUT DATA



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Safety gateways, shown in Figure 3 as blue circles, were chosen based on an evaluation of all roadways with egress out of Orinda, that do not dead-end and that are entirely in the public right-of-way. Each safety gateway was assigned a maximum service flow rate (MSF), which is the number of vehicles that can flow through a point along a roadway during a one-hour period to maintain a traffic level of service (LOS) C, the threshold at which traffic begins to slow due to congestion according to the U.S. Highway Capacity Manual. This weight is expressed in passenger cars per hour per lane (pcphpl), which is derived from the maximum allowable speed and roadway classification for the roadway on which that point lies.

For example, SR-24 has a maximum speed of 65 miles per hour (MPH) and four lanes in either direction. According to the U.S. Highway Capacity Manual, MSF (in pcphpl) to maintain LOS level C at the 65 MPH max speed is 1,548 passenger cars per hour per lane (1,040 to maintain LOS level B, which is completely free-flowing traffic). Therefore, to maintain traffic level C in one direction on SR-24, the capacity is 1,548*4 lanes = 6,192 in each direction over the course of one hour.

Table 1 describes each of the seven safety gateway points shown in Figure 3, and the associated capacity from the U.S. Highway Capacity Manual to maintain LOS C.

TABLE 1: SAFETY GATEWAYS AND ASSOCIATED CAPACITIES TO MAINTAIN LOS LEVEL C

Scenarios Included	Safety Gateway Description	Speed Limit at Point (MPH)	Number of Lanes per Direction	Pcphpl for LOS Level C
1, 2, 3	SR-24 EB to Walnut Creek	65	4	4,160
1, 2, 3	SR-24 WB to Berkeley/Oakland	65	4	4,160
1, 2, 3	Mt Diablo Blvd E to Pleasant Hill Rd	35	2	3,400
2, 3	Pinehurst Rd SB	35	1	1,700
2	Grizzly Peak Blvd WB	35	1	1,700
2	San Pablo Dam Road NB to Richmond	35	1	1,700
2, 3	Canyon Rd WB (via Pinehurst Rd NB)	25	1	850

Citywide Evacuation Analysis Methodology Steps and Results

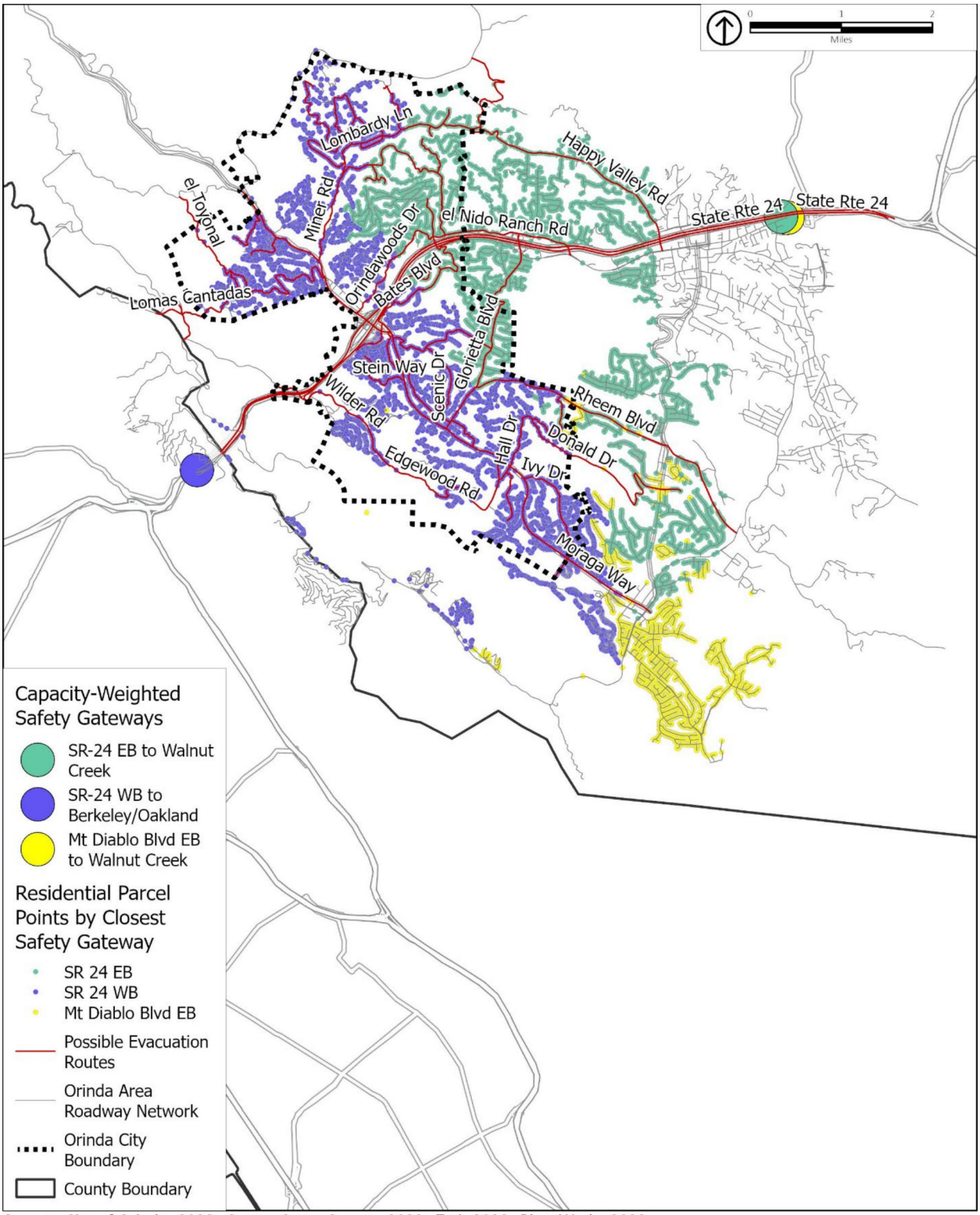
The following steps describe the methodology used to evaluate potentially congested intersections and roadways as well as where households are that are most likely to experience congestion during an evacuation event. The steps described herein are repeated for all three scenarios.

Step One

The first step establishes the closest safety gateway and fastest route for each household along the street network. Figures 4, 5, and 6 show the assignment of household origin points to their

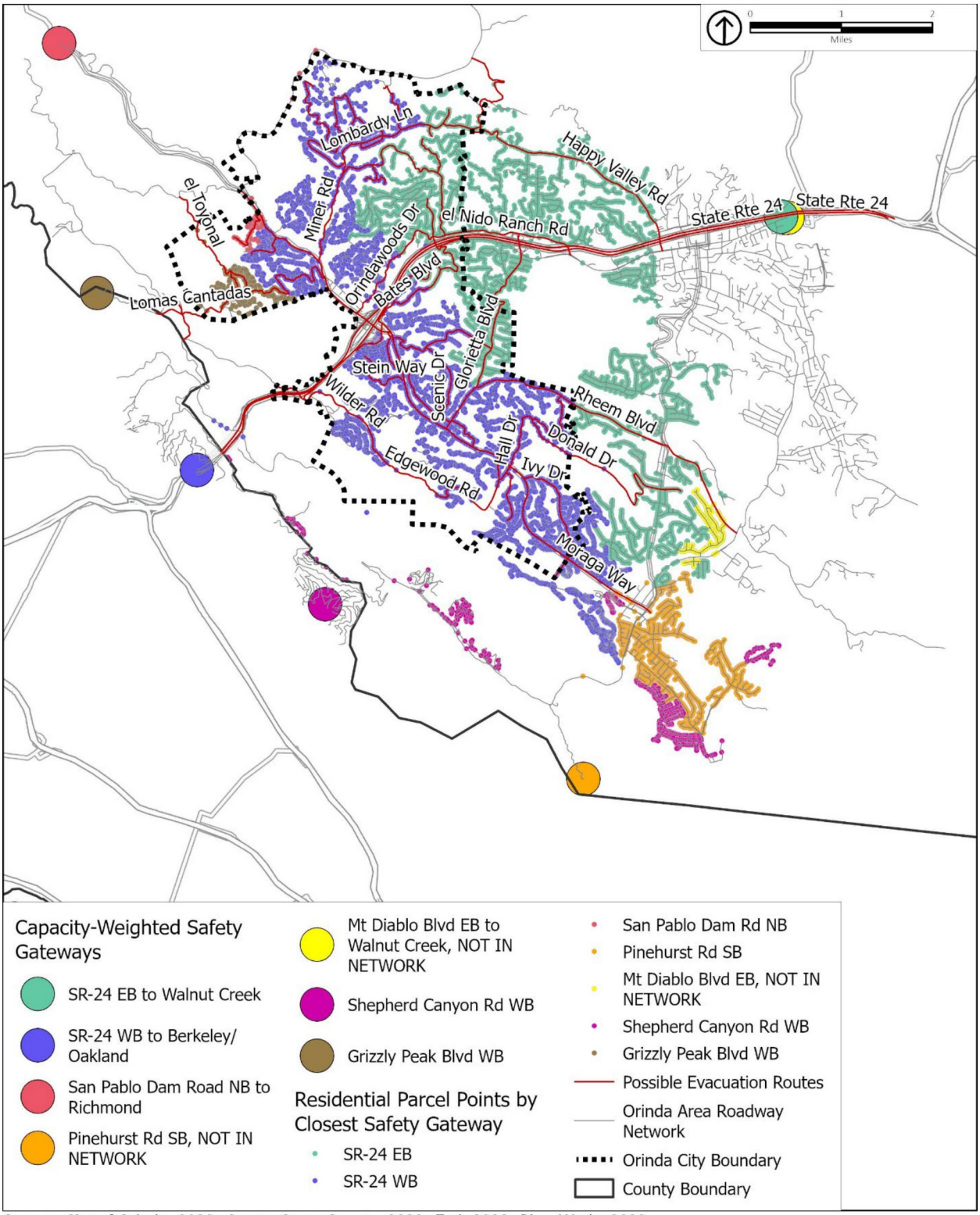
nearest safety gateway in each scenario. The fastest route calculation also establishes which roadways each household would likely travel on to reach their closest safety gateway, which also establishes which households are likely to use Orinda's roadway network to evacuate. The resulting set of households likely to use Orinda's possible evacuation network, regardless of whether they are within Orinda City Limits or not, are then used as inputs to the congested intersection analysis described in subsequent steps.

FIGURE 4: SCENARIO 1, STEP ONE: RESIDENTIAL PARCELS POINTS AND CLOSEST SAFETY GATEWAYS



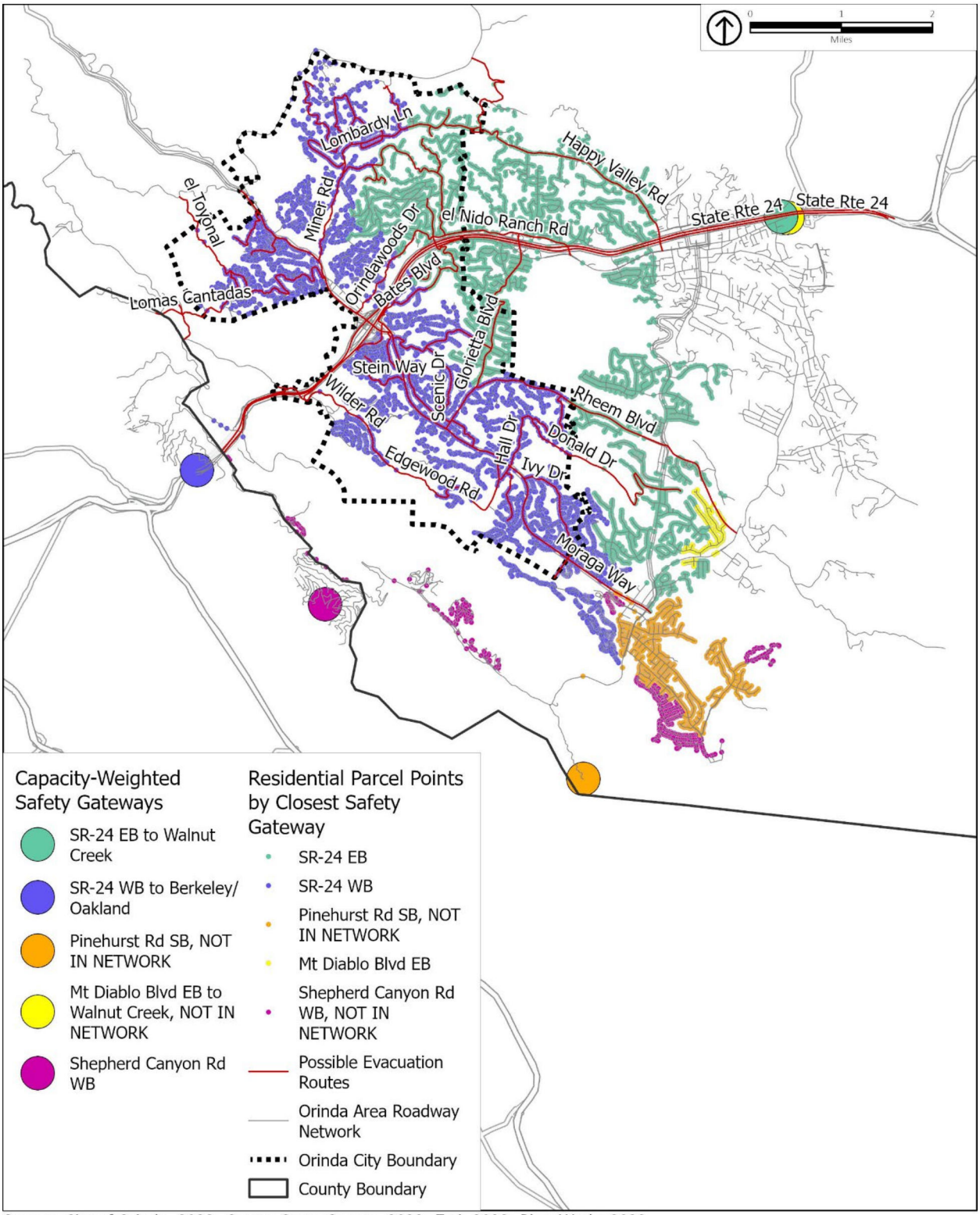
Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 5: SCENARIO 2, STEP ONE: RESIDENTIAL PARCELS POINTS AND CLOSEST SAFETY GATEWAYS



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 6: SCENARIO 3, STEP ONE: RESIDENTIAL PARCELS POINTS AND CLOSEST SAFETY GATEWAYS



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figures 4, 5, and 6 show that in all three scenarios, the fastest route for most Orinda residents from their home to safety is towards SR-24 westbound towards the Caldecott Tunnel, particularly to the westbound on-ramps from Camino Pablo.

The legends in Figures 4, 5, and 6 also label some residential origin points and their corresponding safety gateways as 'NOT IN NETWORK'. These residences do not use the Orinda evacuation network at all. For some safety gateways in some scenarios, any households routed towards them do not use the Orinda roadway network, in which case the gateway itself is also labeled as 'NOT IN NETWORK' in the legend. For example, households routed to Mt. Diablo Boulevard in Scenarios 2 and 3 use Moraga Road, which is not in the Orinda evacuation network, and so these households and the Mt. Diablo Boulevard safety gateway are both labeled 'NOT IN NETWORK' in Figures 5 and 6. Out-of-network residences and safety gateways are not considered further in this analysis for those scenarios. Importantly, however, Figures 4, 5, and 6 show that residents of Moraga Country Club outside of Orinda City Limit boundaries to the south would likely evacuate towards SR-24 via Moraga Way northbound through Orinda, so these households are included in the subsequent steps estimating traffic volumes at intersections along Orinda's possible evacuation routes.

Step Two

The second step sums expected vehicle counts at each intersection in the direction of travel towards the nearest safety destination, resulting in the total cumulative estimated traffic volume for each intersection, which is compared to the intersection's associated capacity to maintain LOS C, the level at which traffic speeds begin to slow due to congestion. The ratio of expected traffic volumes to capacity (Volume-to-Capacity or V/C ratio) to maintain each LOS is summarized in Table 2. Because this report does not model the behavior of any specific hazard (like wildfire) over time, the analysis assumes that if a roadway segment is assumed safe to use in each scenario, then all intersections along that roadway are fully operational during an evacuation, and that there are no partial signal disruptions. Step three analyzes potential drive times assuming 5 mph on all roads to evaluate a potential severe congestion scenario that could be caused by a variety of factors like potential traffic signal disruptions.

TABLE 2: LEVEL OF SERVICE AND ASSOCIATED VOLUME TO CAPACITY RATIO AND DESCRIPTION

LOS	V/C Ratio	Description	Control Delay per Vehicle (sec/veh) Signalized Intersections	Control Delay per Vehicle (sec/veh) Non-Signalized Intersections
A	<0.60	Traffic flows at or above speed limit; complete mobility between lanes	0 - 10	0 - 10
B	>0.61 to 0.70	Slightly more congested than free-flow, with almost no limits to lane-changing mobility	10 - 20	10 - 15
C	>0.71 to 0.80	Stable flow where posted speed is maintained. Ability to pass or change lanes is somewhat limited.	21 - 35	15 - 25
D	>0.81 to 0.90	Approaching unstable flow, speeds somewhat reduced from posted limit with vehicles close together	36 - 55	26 - 35
E	>0.91 to 1.00	Flow becomes unstable (stop and go); consistent with volume to capacity (V/C) ratios of 0.9 and greater	56 - 80	36 - 50
F	>1.00	Stopped traffic idling for up to minutes at a time	>80	>50

Table 2 shows how each Level of Service (A through F) is associated with a range of V/C ratios. Project staff assigned intersection capacity thresholds (the 'C' in V/C ratio) to possible evacuation route intersections based on traffic capacities measured for the Moraga Way and Glorietta Boulevard intersection in a 2015 Transportation Impact Analysis conducted by Abrams Associates Traffic Engineering Inc. for the City of Orinda's 5th Cycle Housing Element. This critical intersection along the Orinda evacuation network is a standard signalized four-way intersection with left and right turns allowed in all directions and is comparable to other arterial intersections along Moraga Way and Camino Pablo that connect to SR-24 with residential streets and minor collectors feeding into it. This AB-747 evacuation study uses the estimated capacity for the Glorietta Boulevard/Moraga Way intersection in the northwest-bound direction towards SR-24 (in the direction of evacuation for all three scenarios) as the baseline traffic capacity for similar intersections along Orinda's possible evacuation network. This is 912 vehicles per hour to maintain LOS C according to the 2015 Abrams Associates study. While the volume of traffic using Orinda intersections (the 'V' in V/C ratio) has very likely increased since 2015, this evacuation analysis only relies on the 2015 study to establish roadway capacity (the

'C' in V/C ratio), which reflects the infrastructural capacity of the intersection and has largely remained constant since 2015. This evacuation analysis generates roadway volume based on 2022 Contra Costa County tax assessor datasets and a network analysis of Orinda's roads.

Project staff assigned LOS thresholds to each arterial intersection in the Orinda evacuation network by applying the V/C ratios listed in the second column of Table 2 to the baseline LOS C capacity of 912 vehicles per hour derived from the 2015 Abrams Associates study. These thresholds are summarized below:

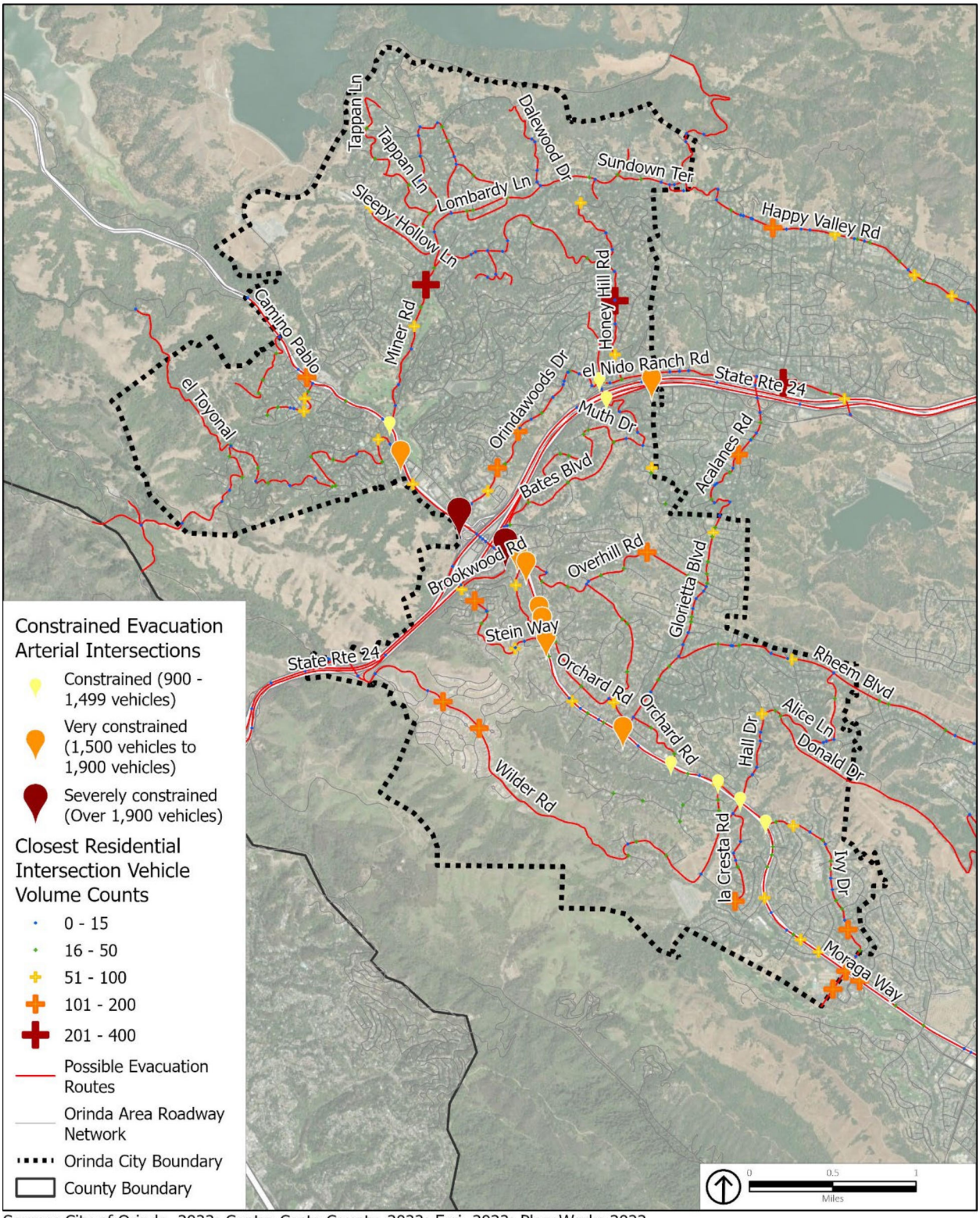
- Less than 549 vehicles = LOS A
- 549 -638 vehicles = LOS B
- 639 -728 vehicles = LOS C
- 729 -818 vehicles = LOS D
- 819 -899 vehicles = LOS E
- Over 900 vehicles = LOS F

One important arterial roadway segment in the Orinda evacuation network, Camino Pablo between Moraga Way and Miner Road, has two lanes in both directions instead of one lane, which could translate to increased capacity along this segment compared to the LOS thresholds derived from Moraga Way at Glorietta Boulevard which has only one lane in each direction. Within the two-lane segment of Camino Pablo, however, evacuees are either heading northwest-bound from Moraga Way to turn right and merge onto the SR-24 cloverleaf on-ramp, or evacuees are heading southbound on Camino Pablo from Miner Road to turn right onto the SR-24 westbound on-ramp from the southbound approach. In both cases, traffic lanes merge from two lanes into one on-ramp with no signal timing infrastructure, which could likely create bottlenecks that decrease the capacity of intersections within this roadway segment as vehicles merge into one lane at the freeway access ramps. For this reason, project staff conservatively assigned the same capacity of 912 vehicles per hour to intersections in this two-lane segment of Camino Pablo. All other intersections at arterials along the Orinda roadway network have the same relevant characteristics and are therefore assigned the same vehicle volume capacities that were observed for the Glorietta Boulevard and Moraga Way intersection.

Project staff estimated traffic volume counts at each intersection in Orinda's possible evacuation roadway network based on the number of households traveling towards each safety gateway depicted in Figures 4, 5, and 6, and the associated fastest route for each household origin point. The methodology aggregates cumulative vehicle counts for arterial intersections along the possible evacuation network and compares them to their assigned capacities of 912 vehicles per hour to estimate LOS. Figures 7, 8, and 9 below depict intersection counts, with plus-sign or cross-shaped symbols showing minor roadway intersection counts, and inverse tear drop-shaped icons showing the cumulative counts for arterial intersections. These figures show arterial intersections expected to meet or exceed 900 vehicles (LOS F) as 'Constrained',

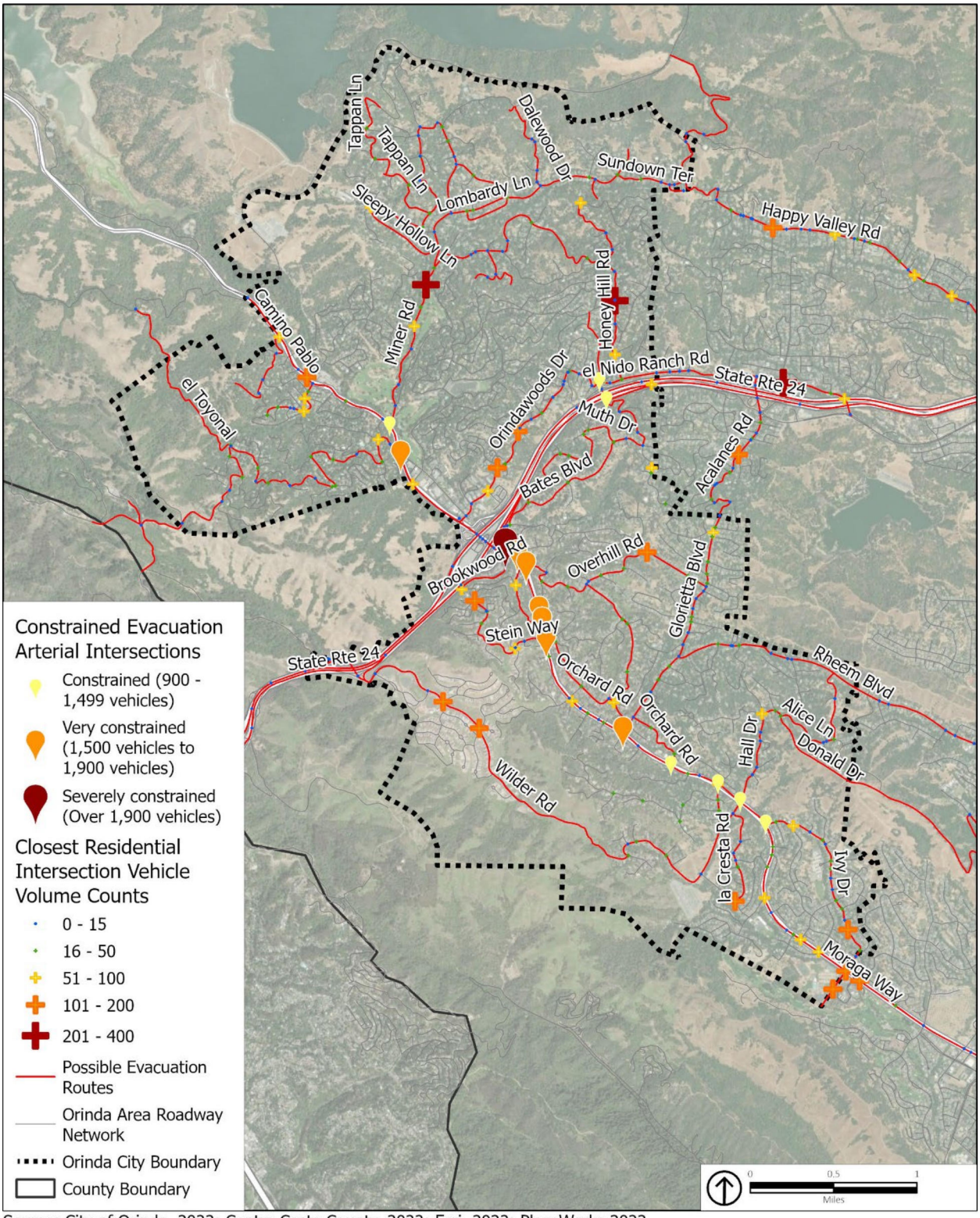
intersections expected to meet or exceed 1,500 vehicles as 'Very Constrained' and intersections expected to meet or exceed 1,900 vehicles as 'Extremely Constrained'.

FIGURE 7: EVACUATION SCENARIO 1, STEP TWO: INTERSECTION COUNTS



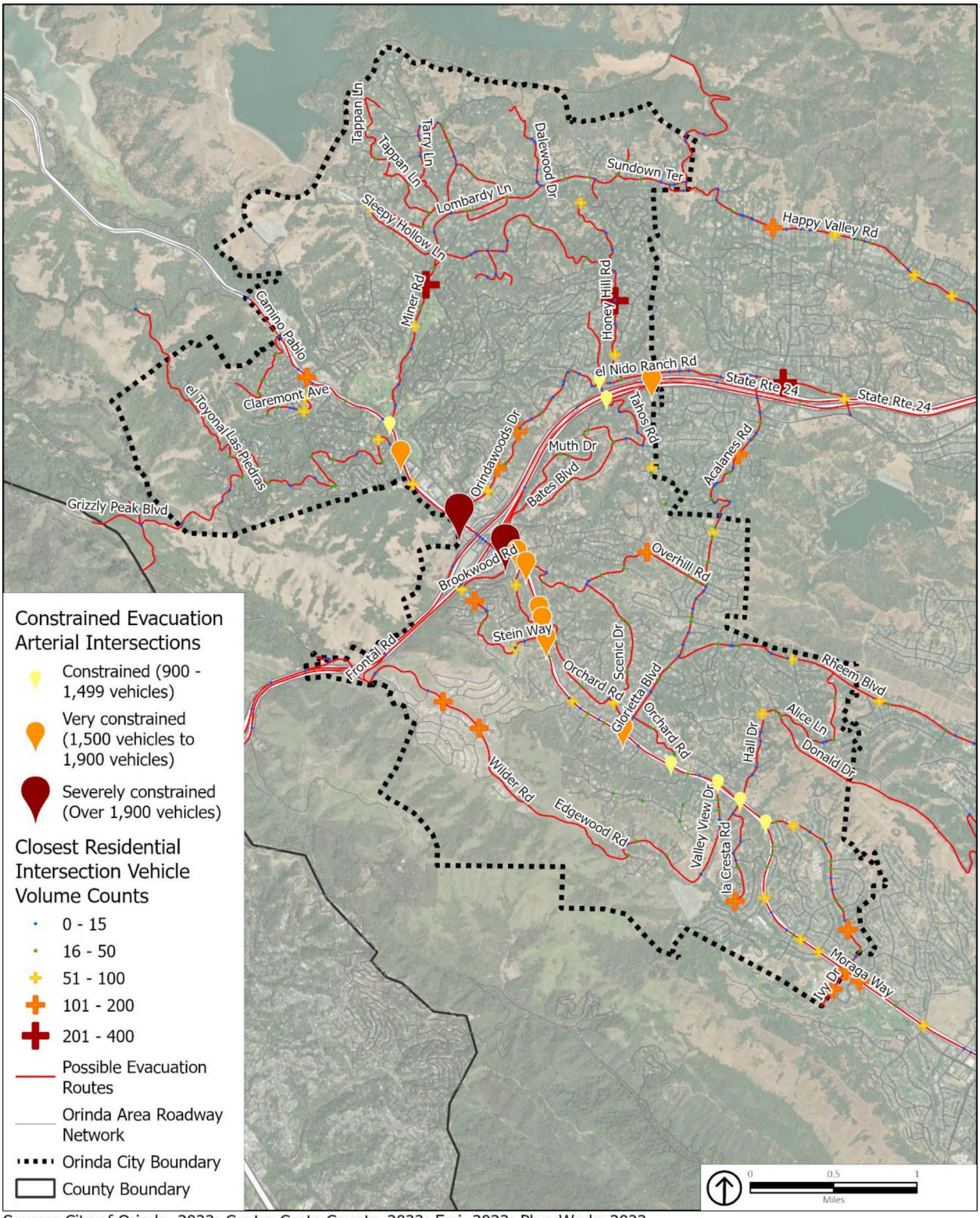
Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 8: EVACUATION SCENARIO 2, STEP TWO: INTERSECTION COUNTS



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 9: EVACUATION SCENARIO 3, STEP TWO: INTERSECTION COUNTS



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Figures 7, 8, and 9 show that several major evacuation arterial routes are likely to be constrained in all three scenarios based on the extent to which expected traffic volumes exceed estimated capacities. These are:

- Moraga Way northbound from Ivy Drive to Camino Pablo and the SR-24 westbound on-ramps from Camino Pablo northbound,
- And Camino Pablo Southbound from Miner Road to the SR-24 westbound on-ramps.

In addition, the following two intersections result in the highest V/C ratio and are therefore considered to be the most constrained intersections:

- Camino Pablo southbound/Santa Maria Way westbound and the SR-24 westbound on-ramps,
- And the Camino Pablo and Brookwood Road intersection, just before the right-turn cloverleaf on-ramp to SR-24 westbound from Camino Pablo Northbound.

The final step in the methodology uses these results to assign increasing 'congestion index' points to households traveling through increasing numbers of constrained arterial intersections shown in Figures 7, 8, and 9, with additional weight for increasing expected cumulative LOS for each intersection beyond level C. The resulting implications for households traveling through these intersections are discussed in more detail in the Wildfire Evacuation Analysis Results and Discussion section.

Step Three

Project staff generated travel distance contours to the closest safety gateways along Orinda's roadway network for each scenario and assigned increasing index points to households based on their location within increasing distance intervals away from the nearest safety gateway. Project staff generated the first set of contours assuming maximum allowable speeds on all roadways to establish the baseline travel times, and then again using an assumption of an average speed of 5 miles per hour (mph) on all roadways to model a potential scenario with significant congestion. While the previous step identifies constraints from traffic congestion, this step identifies constraints based on distance expressed as driving times under the two different speed assumptions. The 5 mph scenario captures the effects of a range of potential external factors that could result in slower traffic speeds but that are not modeled directly due to their specific and dynamic probabilities of occurring. This includes decreased visibility from wildfire smoke, decreased signal functionality due to wildfire or seismic impacts, roadway vehicle accidents, and/or temporary right-of-way yields to emergency vehicles traveling 'upstream' towards hazard areas. Figures 10, 11, and 12 depict baseline drive time contours to the nearest safety gateway side by side with 5 mph scenario drive time contours for all three scenarios.

Under Scenario 1, which has the fewest accessible safety gateways, modeling an average driving speed of 5 mph on all roadways indicates that some residential areas that are furthest away from their nearest safety gateway (e.g., around Miramonte High School) could require up

to two hours (120 minutes) to evacuate, as shown in Figure 10. Under this scenario, the second-furthest areas from their respective safety gateways could require up to 90 minutes to evacuate. Under Scenarios 2 and 3, modeling an average driving speed of 5 mph indicates that all areas in Orinda could likely evacuate within an hour and a half (90 minutes), and most within one hour, as shown in Figures 11 and 12, respectively.

Figures 10, 11 and 12 show 5 mph drive time contours for comparison with the baseline maximum drive times. However, index points for the purposes of cumulative constraint index scoring are assigned to residential parcels based on the baseline maximum speed drive time contours and not the 5 mph contours. This is because Step 2 captures traffic congestion impacts already, such that using the 5 mph contours to assign index points would double-count the effects of traffic congestion.

Step Four

Project staff assigned an additional index point to residential areas with only one point of ingress or egress, based on an earlier analysis conducted for the Orinda General Plan Safety Element Update in compliance with California Senate Bill 99. These are neighborhoods along single-access roads or within a cul-de-sac of 10 or more parcels, shown in Figure 13.

FIGURE 10: WILDFIRE SCENARIO 1, STEP THREE: BASELINE AND CONSTRAINED TRAVEL TIME CONTOURS

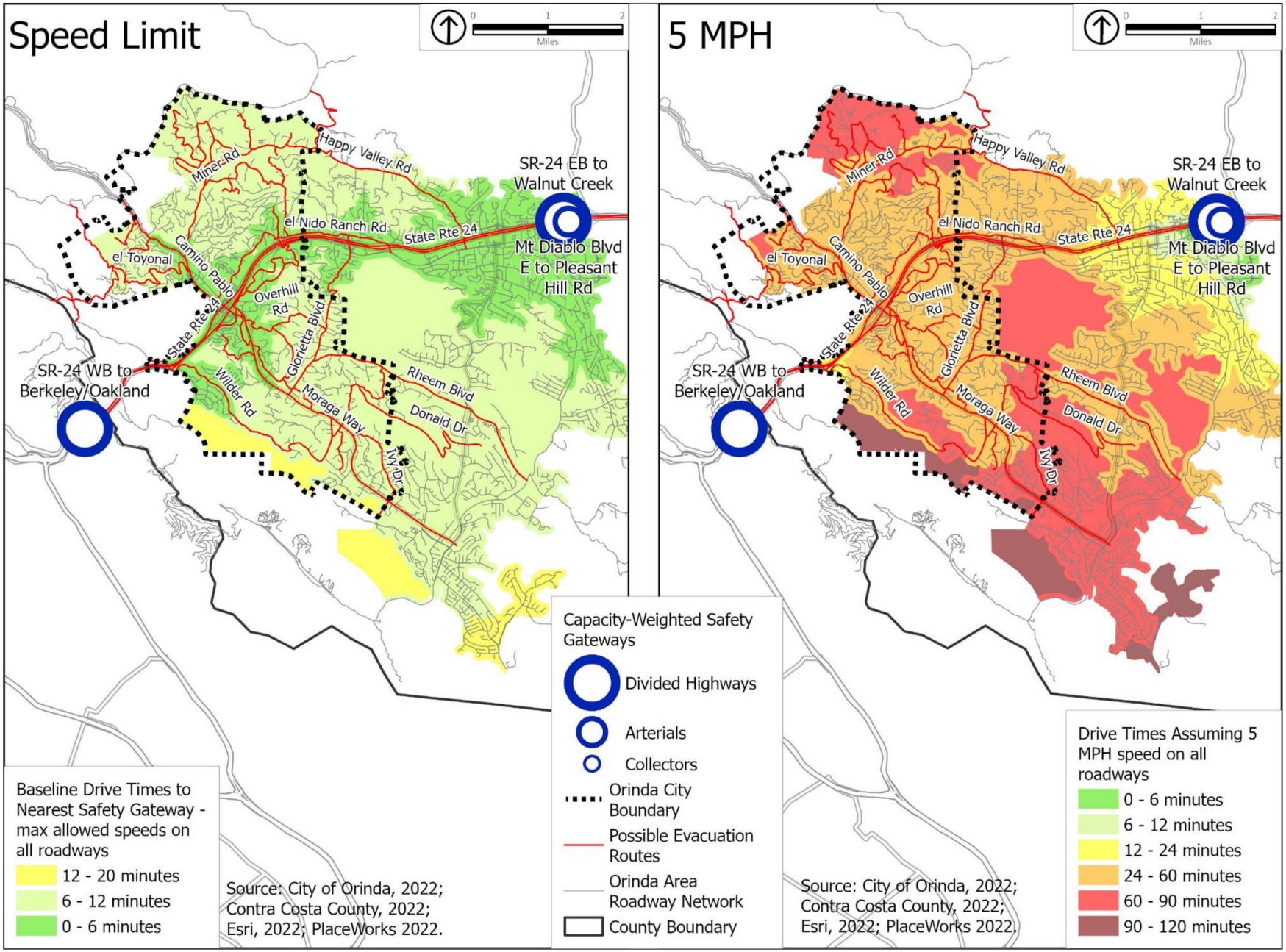


FIGURE 11: WILDFIRE SCENARIO 2, STEP THREE: BASELINE AND CONSTRAINED TRAVEL TIME CONTOURS

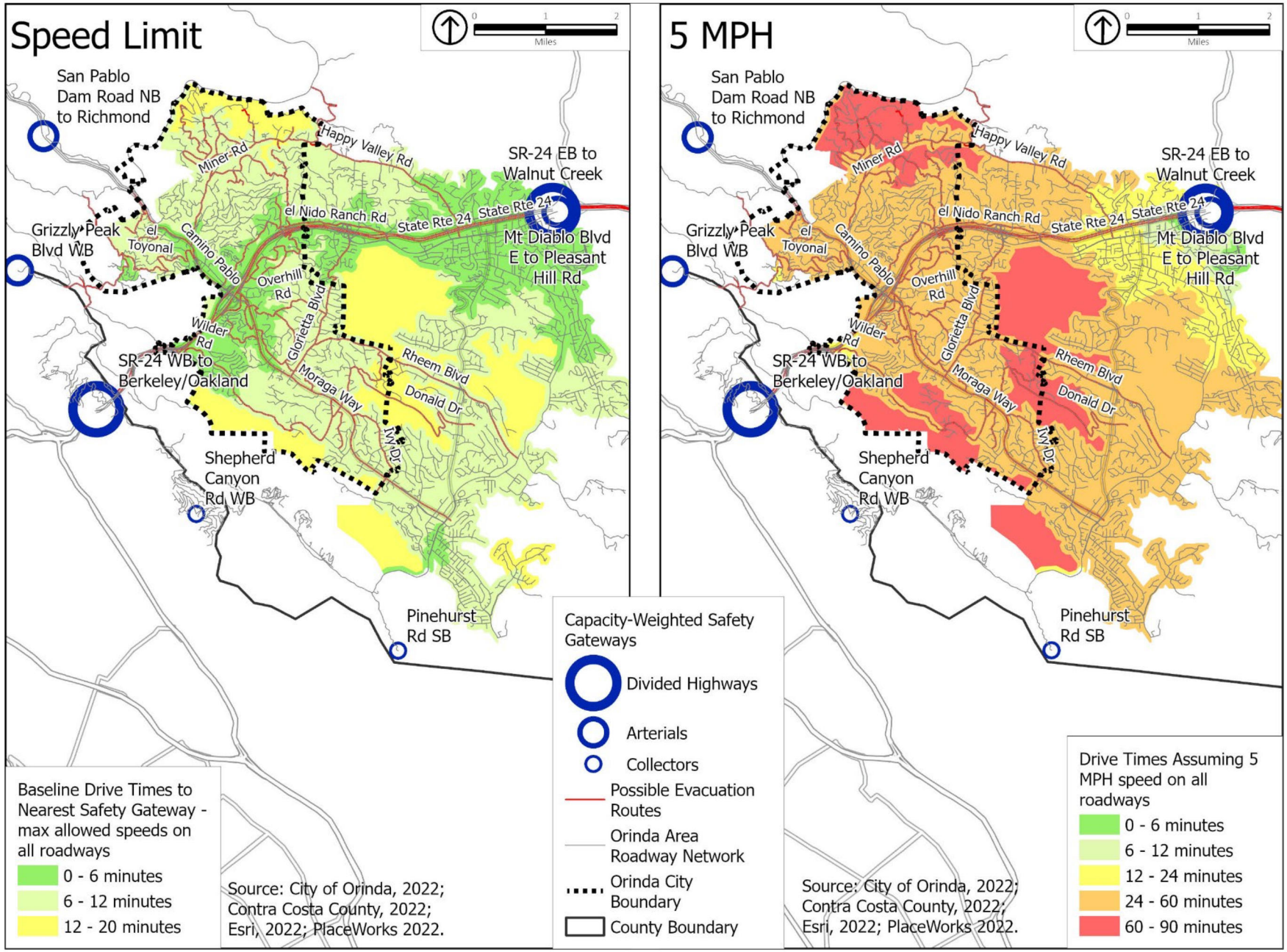


FIGURE 12: WILDFIRE SCENARIO 3, STEP THREE: BASELINE AND CONSTRAINED TRAVEL TIME CONTOURS

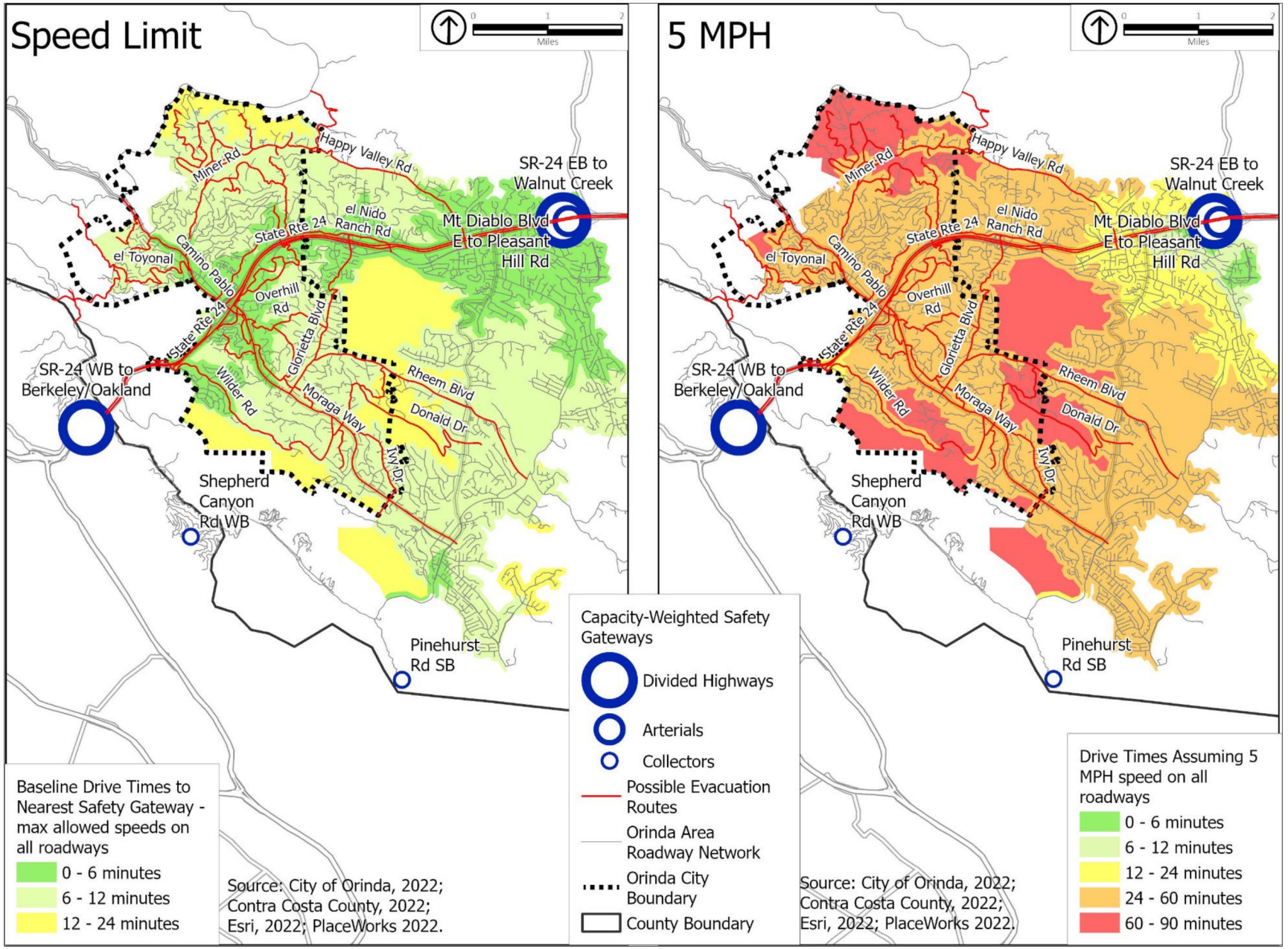
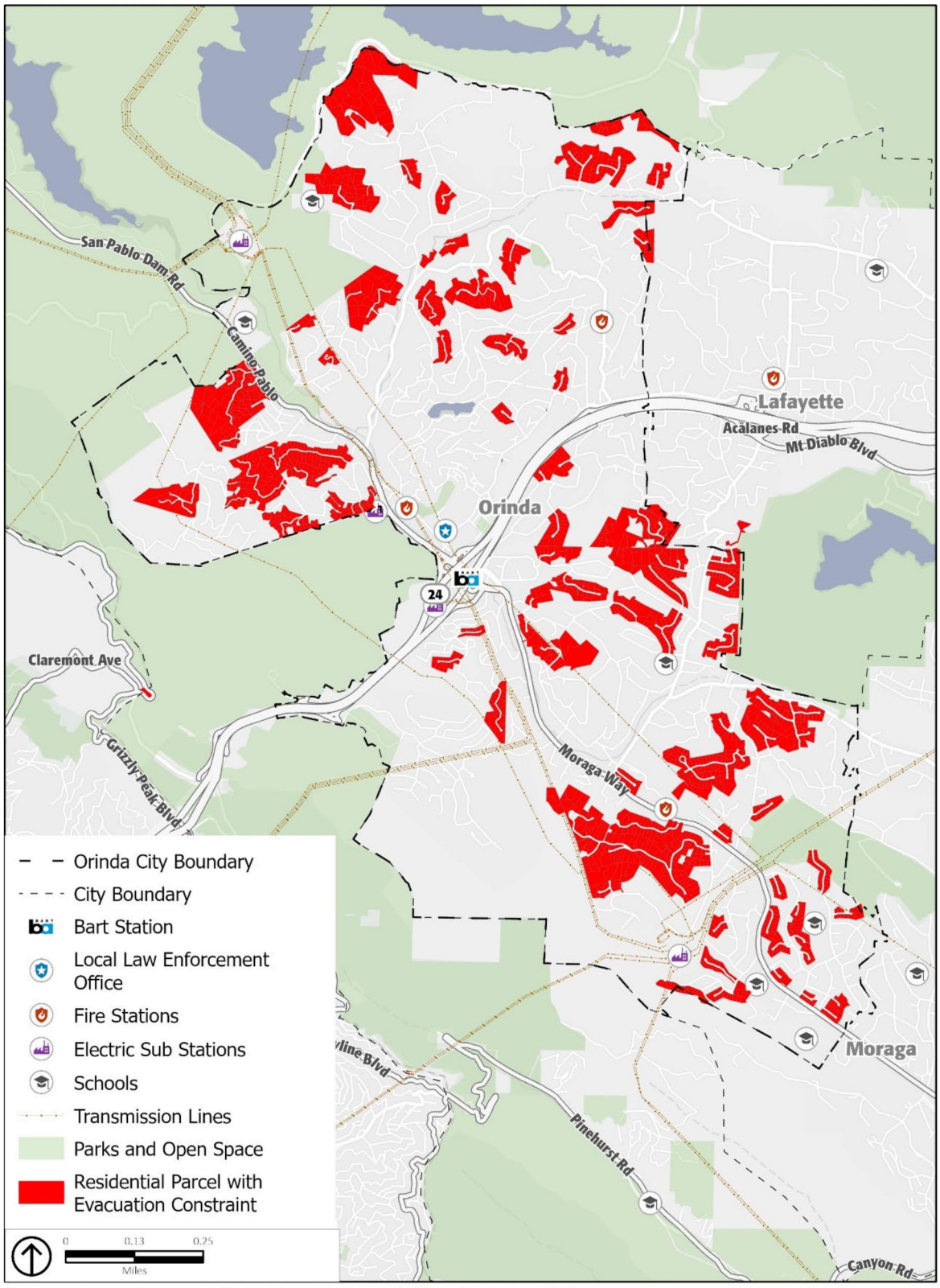


FIGURE 13: STEP FOUR (ALL SCENARIOS): RESIDENTIAL AREAS WITH A SINGLE POINT OF INGRESS OR EGRESS



Source: Evacuation analysis by PlaceWorks and City of Orinda, 2022.

The final step in the wildfire evacuation constraint methodology adds additional constraint index points to the cumulative constraint index score if households are within census tracts with high percentages of populations or households having demographic characteristics that could pose as barriers to evacuating. Specifically, the methodology identifies tracts where the share of the population or households meet or exceed the Contra Costa County average share for the following factors based on American Community Survey (ACS) 2020 data:

- Share of senior citizen (65 years of age or more) householders living alone
- Share of households with adults speaking limited English
- Share of households with limited access to phone and/or internet
- Share of low-income households
- Share of households with children under 6 years of age
- Share of households with limited access to vehicles
- Share of the population with a disability

The project team assigned a demographic vulnerability index point to households within census geographies that meet or exceed the average countywide share for each of these factors, with multiple points assigned to households with multiple characteristics above the countywide average share threshold. The team added this additional demographic evacuation barrier score to households' cumulative traffic constraint score to assess areas in Orinda where households may face both traffic constraints and demographic barriers to evacuation. This report summarizes the demographic analysis separately from the traffic analysis results, since recommendations for mitigating traffic congestion impacts are different than recommendations for assisting specific populations that may face barriers to evacuation. Efforts to reduce traffic congestion may include traffic interventions like contra-flow lanes, which are lanes converted to the opposite direction temporarily to facilitate increased traffic flow in that direction, while evacuation recommendations for specific populations may involve improved notification systems or chartering buses to assist with evacuating people who do not have access to a vehicle. The ACS data is based on households, so it does not include people living in group quarters such as senior citizen nursing facilities. This report includes recommendations to address the specific evacuation needs of senior facilities.

Cumulative Wildfire Evacuation Constraint Index Scoring Summary

The overall constraint scores for residential parcels in a wildfire evacuation event are calculated for each scenario based on the formula discussed above and summarized in the list below.

LOS C Index

- 0.25 point assigned to a parcel for each intersection traveled through with LOS C or D

LOS D Index

- 0.5 index point assigned to a parcel for each intersection traveled through with LOS D or E

LOS E Index

- 1 index point assigned to a parcel for each intersection traveled through with LOS E or F

LOS F Index

- 1.5 index points assigned to a parcel for each intersection traveled through that exceeds LOS F by 100
- 2 index points assigned to a parcel for each intersection traveled through that exceeds LOS F by 600
- 2 index points assigned to a parcel for each arterial intersection traveled through that exceeds LOS F by more than 600 but that has two lanes

Travel Time Contour Index

- 0 index points assigned to a parcel if it is within the 0 – 5-minute baseline drive time contour
- 1 index point assigned to a parcel if it is within the 10 – 15-minute baseline drive time contour
- 2 index points assigned to a parcel if it is within the 16 – 20-minute baseline drive time contour

Limited Egress Index

- 1 index point if parcel is in a limited egress area

Senior Householder (65+) Living Alone Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Limited-English Speaking Household Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Limited Access to Lifelines Index (phone and/or internet)

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Low-Income Household Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Households with Children Under 6 Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Limited Access to a Vehicle Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

Disabled Population Index

- 1 index point assigned to households within census tracts that have a higher percentage than countywide average

The goal of this index weighting approach is to apply relatively equal weight to all constraint factors, plus additional weight to capture the level by which intersections exceed LOS F based on their expected traffic volume-to-capacity ratios. The weighting scale acts as a standardized numeric ranking index that evaluates the relative constraint and vulnerability of residential areas within Orinda compared to each other. This approach is like the vulnerability index score used in the Orinda General Plan Safety Element Vulnerability Assessment in that it is an index of multiple factors with different scales that are standardized into a score and ranked based on the number of factors that apply. However, this approach is targeted more towards assessing vulnerabilities related to traffic and ability to evacuate during an acute emergency in Orinda.

Landslide Evacuation Analysis Methodology

This report uses a different approach to evaluate landslide evacuation scenarios compared to the methods used to evaluate wildfire evacuation scenarios, primarily because the geographic spread of impacts and associated number of people who would need to evacuate immediately during a wildfire could potentially be much larger than the geographic spread of impacts and associated number of immediate evacuees during a landslide. For example, the Zander Drive landslide in 2008 measured 200 feet across, 115 feet in depth, and extended 1,000 feet in length from Zander Drive down the slope to San Pablo Creek, covering almost five acres in surface area. The 1991 Oakland Tunnel and 1998 Sibley Fires, by comparison, had burn areas measuring 1,622 acres and 200 acres, respectively.

Because of the typically more localized nature of landslides compared to wildfires in California, the possible evacuation 'network' for a landslide event is specific to the local area in which it occurs, such that recommendations for evacuation in one localized area or neighborhood are not necessarily relevant for other areas or neighborhoods.

For these reasons, this report evaluates evacuation risk specifically along Orinda's network of possible evacuation routes in GIS by intersecting the possible evacuation routes data layer with the landslide risk data layer shown in Figure 2, and summarizes recommendations based on segments of the possible evacuation network that are at the highest landslide susceptibility class.

Citywide Evacuation Analysis Discussion and Recommendations

As discussed in the introduction, Scenario 1 assumes that alternative evacuation routes to SR-24 spanning the western side of Orinda from south to north are not usable. These include: San Pablo Dam Road northbound, Grizzly Peak Boulevard westbound, Canyon Road westbound (via Pinehurst Road northbound), and Pinehurst Road southbound. Scenario 2, where the hazard area is the open spaces surrounding Lafayette Reservoir, assumes that all evacuation gateways are safe to use. Scenario 3 assumes that evacuation routes in the northern part of Orinda are not safe to use, which include San Pablo Dam Road northbound and Grizzly Peak Boulevard westbound.

Figures 7, 8, and 9 show that both Moraga Way northwest-bound and Camino Pablo southeast-bound are still likely to be congested above LOS F in all three scenarios, even under Scenario 2 with all evacuation gateways available. This is because most residents will still evacuate towards SR-24 because it has a much higher vehicle capacity than any alternative routes (illustrated in Table 1), and Camino Pablo and Moraga Way are the only arterial roadways in Orinda that lead to SR-24 on-ramps, so most traffic bound for SR-24 ultimately travels along these routes.

Recommendations for Reducing Traffic Congestion during Evacuation

Recommendations provided in this report are grouped into themes, based on the major evacuation routes found to be potentially most constrained by traffic congestion in Section 2 of this report. The first set of recommendations focuses on facilitating additional traffic capacity in the northwest-bound direction along Moraga Way/Camino Pablo towards SR-24 access ramps, which the constrained intersection analysis finds likely to be the most congested for all three scenarios. The second set of recommendations focuses on facilitating additional evacuation traffic in the southbound direction along Miner Road towards SR SR-24 on-ramps, which the analysis found likely to be the second most congested in all three scenarios. The third set provides recommendations for reducing traffic congestion along all other roadway segments that have a clear direction of travel towards safety for all three scenarios and that are potentially constrained during an evacuation. The fourth set offers other recommendations to facilitate timely evacuation procedures citywide, particularly at major access ramps to SR-24 from Camino Pablo in both directions. The fifth and final set of recommendations focuses on measures to reduce the number of vehicles evacuating overall.

Many of the recommendations listed below include recommendations for both contra-flow lanes and red flag parking restrictions on specific roadways to facilitate additional travel in specific directions during an evacuation. Contra-flow lanes are roadway lanes converted to the opposite direction temporarily to facilitate increased traffic flow in that direction. The City of Orinda has already implemented policies to allow contra-flow lanes on Miner Road, converting northbound lanes into additional southbound lanes towards SR-24 during an evacuation event. During Red Flag Days, on-street parking and stopping is prohibited to keep roadways clear for

potential evacuation and fire vehicle access. The National Weather Service may declare a Red Flag Day, indicating a high risk of wildfires, given humidity levels, wind speeds, and the possibility of dry lightning. MOFD may also declare a Red Flag Day under similarly dangerous conditions. The City has implemented Red Flag Day parking restrictions along several key evacuation routes, including along El Toyonal and other areas north of SR-24.

Recommendations for Moraga Way/Camino Pablo Northbound

1. Consider expanding Red Flag Day parking restrictions to include Moraga Way between Ivy Drive and Camino Pablo, and from Camino Pablo northwest-bound to SR-24 westbound on-ramps.
2. In addition to parking restrictions on the segment of Moraga Way between Ivy Drive and Camino Pablo, study the feasibility of implementing contra-flow lanes that convert the southeast-bound lane on Moraga Way into an additional northwest-bound lane towards SR-24 during an evacuation.
3. Consider implementing an evacuation signal timing plan for the following intersections along Moraga Way and the segment of Camino Pablo south of SR-24 to allow only the northwest-bound through direction as well as turning movements onto Moraga Way and Camino Pablo northwest-bound to SR-24:
    - Brookwood Road/ Camino Pablo
    - Moraga Way/ Camino Pablo
    - Glorietta Boulevard/ Moraga Way
    - El Camino Moraga/ Moraga Way
    - Coral Drive/ Moraga Way
    - Ivy Drive/ Moraga Way
4. In addition to preferential signal timing at the intersections listed in item 3 above, consider stationing staff or volunteers to direct traffic at the above key intersections during an evacuation event, or use automated signals as feasible.
5. Consider staging staff or volunteers where Moraga Way Northbound splits into Moraga Way and Camino Pablo to encourage evacuees in the right-most lane on Moraga Way northbound to use the Moraga Way/Bryant Way SR-24 eastbound ramps instead of continuing to the westbound ramps further north from Camino Pablo.
6. There are two Emergency Vehicle Access (EVA) roads, otherwise known as fire roads, that connect Moraga Way with Wilder Road, and that could be studied for residential access during an evacuation event to relieve traffic pressure along Moraga Way northbound towards SR-24. The northern of these two EVAs connects Brookside Road (at the intersection with Sunrise Hill Road) with Boeger Ranch Road, and the southern of the two EVAs connects Edgewood Road to the southern end of Wilder Road. This report recommends that Orinda staff, in coordination with MOFD, study the feasibility of using both EVAs for residential use during an evacuation to relieve expected traffic pressure on Moraga Way towards SR-24. MOFD has noted that the Edgewood Road/Wilder Road EVA

may require significant improvements to safely support residential use during an evacuation, such as grading, paving, and traffic controls, whereas the Brookside Road/Boeger Ranch Road EVA would only require gate removal at the time of evacuation. Any plans to convert EVAs to public access during an evacuation would require coordination with MOFD to ensure staff provide emergency vehicles with priority access to these routes as necessary before making them publicly accessible.

7. Consider entering into an agreement with unincorporated county, and any other stakeholders to implement contra-flow lanes along San Pablo Dam Road in the northbound direction from Bear Creek Road to the intersection with Valley View Road in El Sobrante.
8. Finally, consider entering into an agreement with Caltrans and other stakeholders to implement contra-flow lanes in the westbound direction along the reversible lanes available on SR-24 in the event of a wildfire in the MOFD jurisdiction.

Recommendations for Miner Road/Camino Pablo Southbound

1. In addition to the contra-flow lanes Orinda has already established along Miner Road, consider also implementing contra-flow lanes on Camino Pablo from Miner Road to the SR-24 on-ramps, converting the northbound lanes into additional southbound lanes during an evacuation.
2. Consider implementing an evacuation signal timing plan for the following intersections along Camino Pablo to allow only the southbound through direction as well as turning movements onto Camino Pablo southbound:
   - Miner/ Camino Pablo
   - El Toyonal/ Orinda Way/ Camino Pablo
   - Camino Sobrante/ Camino Pablo
   - Orinda Way/ Altarinda/ Santa Maria
   - Santa Maria/ Camino Pablo

3. There is an additional EVA connecting the northern segment of El Toyonal with Wildcat Canyon Road. This report recommends that Orinda staff coordinate with MOFD to make necessary roadway improvements to this segment of El Toyonal, like bridge upgrades and gate removal, that would make this roadway accessible for public access during an evacuation. This additional access route could enable more residents in the El Toyonal neighborhood to evacuate via Wildcat Canyon Road and potentially relieve additional congestion pressure along Camino Pablo southbound towards SR-24.

4. Finally, consider contra-flow lanes, red flag parking restriction policies, and preferred signal timing on St. Stephens Drive between Las Vegas Road/Via Las Cruces and the SR-24 access ramps during an evacuation event, enabling additional traffic to flow southbound towards SR-24. This roadway segment is adjacent and parallel to Honey Hill Rd/Charles Hill Rd. Implementing contra-flow lanes, red flag parking restrictions, and preferred signal timing on both this segment and on Honey Hill Rd/Charles Hill Rd in the southbound direction could help alleviate potential southbound congestion towards SR-24 access ramps on both streets.

Recommendations for Collector Roadways Serving as Potential Evacuation Routes

Table 3 below lists minor collector intersections that could be potentially constrained, with 100 or more vehicles traveling through them during the first phases of evacuation as residents exit their homes. Table 3 describes each intersection, the estimated vehicle count based on the sum of closest households, and associated recommendations for alleviating traffic congestion at these intersections.

Any roadway segment recommended for contra-flow lanes in Table 3 should also be considered for expansion of red flag parking restriction days other than where Red Flag Day parking restrictions are implemented already. Current red flag parking restricted areas include Loma Vista Drive and El Toyonal between Camino Pablo and Vista Orinda in the northeast El Toyonal neighborhood of Orinda.

TABLE 3: POTENTIALLY CONSTRAINED MINOR INTERSECTIONS: ALL THREE WILDFIRE SCENARIOS

ID	Intersection Name	Intersection Type	Vehicle Count[1]	Proposed Potential Congestion Reduction Measure
L1	Honey Hill Road and Via Las Cruces	Local Street to Collector	265	• Consider implementing contra-flow lanes in the southbound direction on Honey Hill Road/Charles Hill Road Southbound towards SR-24. • Consider implementing contra-flow lanes in the eastbound direction on Hidden Valley Road between St Stephens Drive and the SR-24 eastbound on-ramp.
L2	Miner Road and Camino Sobrante	Local Street to Collector	252	• If San Pablo Dam Road northbound is not a safe possible evacuation route, then Camino Pablo could be considered for contra-flow in the southbound direction starting from Bear Creek Road. • Consider encouraging residents along Camino Sobrante round the north side of Lake Cascade to evacuate south via Camino Sobrante towards Orinda Way, instead of north to the Miner Road intersection.
L3	Happy Valley Road and Upper Happy Valley Road	Local Street to Collector	163	• Same recommendation as L2
L4	Overhill Road and Tara Road	Local Street to Collector	129	• Consider implementing contra-flow lane in the westbound direction along Overhill Road between Tara Road and Moraga Way.
L5	Arroyo Drive and Ivy Drive	Local Street to Collector	132	• See more general recommendations above for implementing contra-flow lane(s) along Moraga Way in the northwest-bound direction.
L6	Orinda Woods Drive and Kite Hill Road	Local Street to Collector	121	• Encourage residents in this area to prepare to check two potential safety destinations to program into mobile direction applications (like Google or Apple Maps): Walnut Creek and Caldecott Tunnel, to evaluate whether SR-24 eastbound or westbound is faster given real-time traffic conditions.
L7	Orinda Woods Drive and Village Gate Road	Local Street to Collector	112	• Same recommendation as Intersection L6.

[1]Note: this value is the same in all three scenarios for these routes.

Note that while collector intersections listed in Table 3 were found to have higher traffic volumes than comparable intersections in Orinda, no constraint index points were assigned to residential parcels based on the number of local or collector intersections they must travel through. Residential parcel points were assigned index points only based on the number of constrained *arterial* intersections they must pass through to reach their closest capacity-weighted safety gateway. This is for ease and accuracy of calculation since arterials have a clear flow of traffic in the direction of the nearest safety gateways, whereas the collector intersections and routes typically have alternatives that lead to the same safety gateway.

General Recommendations for Facilitating a Citywide Evacuation

1. Implementing contra-flow lanes and signal timing preferences along Moraga Way, Miner Road, and Camino Pablo is likely to significantly ease congestion along major arterials leading to SR-24 access ramps by doubling the capacity of these arterials in the direction of evacuation. However, access ramps onto SR-24 from Camino Pablo merge into one lane without shoulders or signal timing infrastructure, which is likely to create bottlenecks even if arterials leading to the access ramps have additional contra-flow lanes. This report therefore recommends that Orinda staff coordinate with Caltrans to study the feasibility of implementing potential capital improvements to the SR-24 westbound on-ramps from Camino Pablo northbound and Southbound, like signal timing infrastructure, that could improve the flow of traffic at these on-ramps.
2. This report also recommends that Orinda staff coordinate with a traffic consultant to identify and study the feasibility of more minor capital improvements that could facilitate increased traffic flow onto SR-24 on-ramps from Camino Pablo during an evacuation. For example, removing part of the concrete median and allowing left turns onto eastbound freeway access ramps from Camino Pablo northbound near Brookwood Road, rather than requiring vehicles traveling northbound on Camino Pablo to use Bryant Way to access SR-24 eastbound on-ramps. Allowing this left turn from Camino Pablo northbound during an emergency could relieve traffic pressure onto the westbound SR-24 on-ramp from Moraga Way/Camino Pablo northbound During an evacuation.
3. Encourage all residents on the east side of Moraga Way (e.g., with mailers or electronic notifications) to be prepared to check traffic (on Google Maps, Apple Maps, Waze, or other mobile direction application) for both directions along SR-24 during an evacuation event. Residents could enter 'Walnut Creek' as their destination and view the routing, travel time, and traffic estimates for the eastbound direction, and then entering 'BART Rockridge' or other equivalent destination to compare conditions in the westbound direction.
4. Consider expanding emergency plans to use dynamic signage (e.g., digital screens at bus stops or along major arterials) that can be used to display messages during an evacuation event directing traffic to alternative routes. Currently, dynamic signage is recommended on Miner Road. For example, a dynamic sign could be deployed at Valley View Drive and Moraga Way encouraging evacuees to use Valley View Drive to Edgewood Fire Road towards SR-24 westbound. Dynamic signage can be temporary and deployed only during the time of evacuation.

5. Finally, this report recommends that any traffic-related interventions like contra-flow lanes should be supplemented with thorough public information dissemination to inform Orinda community members on what to expect when contra-flow lanes and other traffic policies are implemented during an emergency. Public information campaigns can include pages on the Orinda City website like the current web page with information on red flag parking day restrictions, short educational videos hosted on YouTube, and flyers containing relevant information and links hosted electronically on the City website and mailed as hard copies to residents, like the Orinda Fire Evacuation Guide and General Information flyer provided in the appendix of this report. Dynamic signage could also include messaging to reduce confusion when contra-flow lanes are implemented.

Recommendations to Reduce Overall Number of Vehicles Evacuating Citywide

1. Consider implementing a plan for coordinated car/van/or bus pool evacuation procedures for Miramonte Gardens and other larger multifamily housing developments, especially that are evacuating via Moraga Way in the northwest-bound direction towards SR-24 westbound on-ramps.
2. Coordinate with MOFD to develop fire safe standards as part of the Fire Code for new residential developments in constrained residential areas, such that sheltering in place is a viable alternative plan if evacuation routes become too congested to preclude timely evacuation during an emergency or if other circumstances prevent evacuation, as sheltering in place should only be considered if evacuation is not feasible. Housing Element Opportunity Sites in relatively constrained residential areas (based on their constraint index score) are shown in Figures 14, 15, and 16 and discussed in further detail in the subsection discussing. Design and building requirements related to fire safety are discussed in Chapter 14.4 of the Orinda General Plan EIR, which designates the J&J Ranch and Wilder residential developments as Shelter-in-Place locations based on these standards. Shelter in Place communities are defined in the EIR as 'entire community or subdivision designed to withstand heat and flames from an approaching wildfire'.
3. Consider using Orinda Community Center as a potential emergency shelter location, which is also northwest of the SR-24 westbound on-ramps from Camino Pablo northwest-bound. If the west-bound on-ramps to SR-24 from Camino Pablo are severely congested, evacuees can alternatively continue straight and head to the Orinda Community Center.
4. Develop evacuation plan with BART to evacuate workers in the Downtown area. Include potential measures for deploying traffic control personnel in the Orinda BART station area and surrounding intersections to coordinate evacuee transfer to BART stations. Also consider coordinating with commercial property owners near Orinda BART to use parking lots for additional BART parking and disseminate public safety awareness campaigns that encourage Orinda residents to make an alternative plan to evacuate via BART.

5. Consider adopting a phased evacuation approach, using Zonehaven or other applicable tools, that prioritizes improving accessibility along Moraga Way in the northwest-bound direction particularly for residents living in southeast Orinda south of Hall Drive.

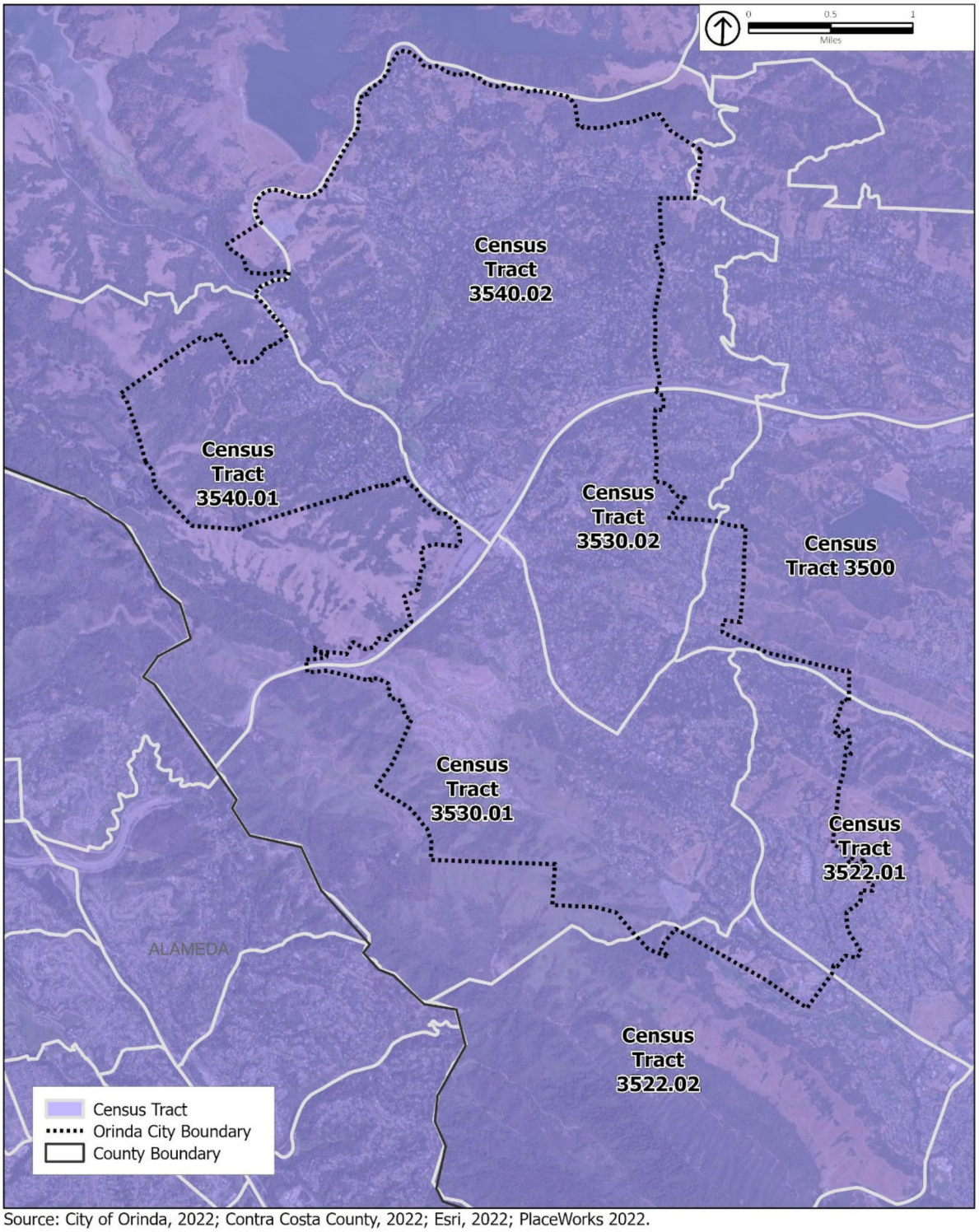
Demographic Analysis Results and Discussion

Even within an area of similar traffic constraints for evacuation, the constraints are not likely to be felt equally. Some community members are likely to need more time to evacuate, particularly given mobility challenges or difficulty getting information. The demographic analysis evaluates the following key demographic characteristics representing potential barriers to evacuation:

- Share of senior citizen (65 years of age or more) householders living alone
- Share of households with adults speaking limited English
- Share of households with limited access to phone and/or internet
- Share of low-income households
- Share of households with children under 6 years of age
- Share of households with limited access to vehicles
- Share of the population with a disability

For each census tract in Orinda shown in Figure 14, the analysis compares the census tract average for each indicator with the countywide average and assigns demographic constraint index points to residential parcels within census tracts that meet or exceed the countywide averages.

FIGURE 14: ORINDA CENSUS TRACTS



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Census Tract 2450.02 in northeast Orinda encompasses the most area in Orinda of any other census tract. This tract includes all neighborhoods bounded by Camino Pablo to the west, SR-24 so the south, and Orinda City Limits to the north and east, including Charles Hill, Orinda Downs, Orinda View, and Sleepy Hollow. It also includes some areas in Lafayette. Census Tract 3540.01 primarily encompasses the El Toyonal neighborhood in northwest Orinda. Census Tract 3530.02 encompasses most of southwestern Orinda south of SR-24 and west of Moraga Way, and includes the Knickerbocker, Lost Valley, and Wilder Neighborhoods. Census Tract 3530.02 encompasses the area bounded by SR-24 to the north, Moraga Way to the southwest, and Glorietta Boulevard to the east. It includes the Northwood Tara and Silverwood neighborhoods. Census Tract 3522.01 encompasses a large sliver in Southeast Orinda and includes the Corliss and Donald neighborhoods but is otherwise mostly within Moraga. Census Tract 3522.02 encompasses only a small sliver of South Orinda that includes Miramonte Gardens, and otherwise is mostly within unincorporated Contra Costa County.

The project team compared these census tracts were to countywide averages for the demographic vulnerability characteristics of interest, listed below.

Senior Householders (65+) Living Alone

- 10.2 percent of households Countywide

Limited-English Speaking Households

- 14.5 percent of adults Countywide

Limited Access to Lifelines (phone and/or internet)

- 5.5 percent of households Countywide

Low-Income Households (living below the Federal Poverty Line or FPL)

- 8.2 percent of households Countywide

Households with Children Under 6

- 19 percent of households Countywide

Households with Limited Access to a Vehicle

- 5.3 percent of households Countywide

Disabled Population

- 11.2 percent Countywide (31 percent for population over 65 years of age)

The following summarizes findings related to each Orinda census track as it compares to the Countywide average for each characteristic.

Census Tract 3522.01

- Highest percentage of the population living below the federal poverty line (9.5 percent), which is greater than the Countywide average of 8.2 percent.

- Highest percentage of adults in limited English-speaking households at nearly 9 percent, which is less than the Countywide average.

Census Tract 3522.02

- Highest percentage of householders over 65 living alone (10.4 percent), which is just over the Countywide average.
- Highest percentage of disabled residents in Orinda (10 percent), which is less than the Countywide average.

Census Tract 3540.01

- No demographic factors exceed the Countywide average for this Census Tract.

Census Tract 3540.02

- Highest percentage of households with no internet access (5.6 percent) and no smartphone, tablet, or computer (5.3 percent), which is at or slightly above the Countywide average.
- Highest percentage of households with no vehicle in Orinda (5.7 percent), which is greater than the countywide average.
- Census Tract 3540.02 also includes Orinda's two senior residential communities: Orinda Senior Village and Monteverde Senior Apartments. These two locations are not included in census definitions of seniors living alone because they are both considered 'group quarters' and not households by the ACS, but recommendations below include

Census Tract 3530.01

- Highest percentage of households with children under 6 in Orinda (15 percent), which is less than the countywide average.

Census Tract 3530.02

- No demographic factors exceed the countywide average for this Census Tract.

Based on these results, households were assigned one demographic constraint index point if they were within Census Tracts 3522.01 or 3530.01, one index point if they were within Census Tract 3522.02, and two index points if they were within Census Tract 3540.02. Households were not assigned any points if they are located within Census Tract 3530.01, because although it contains the highest percentage of families with children under six, the percentage is still below the countywide average of 19%.

Census Tract 3540.02 also includes Orinda's two senior residential communities: Orinda Senior Village and Monteverde Senior Apartments. These two residential facilities are not counted in the population of seniors living alone because they are both considered to be group quarters rather than households by the ACS, but they are home to much of Orinda's senior population who may need extra time or specific assistance during an evacuation. Recommendations

discussed in the section below include potential measures pertaining to these two communities.

Recommendations for Evacuating Potentially Vulnerable Populations

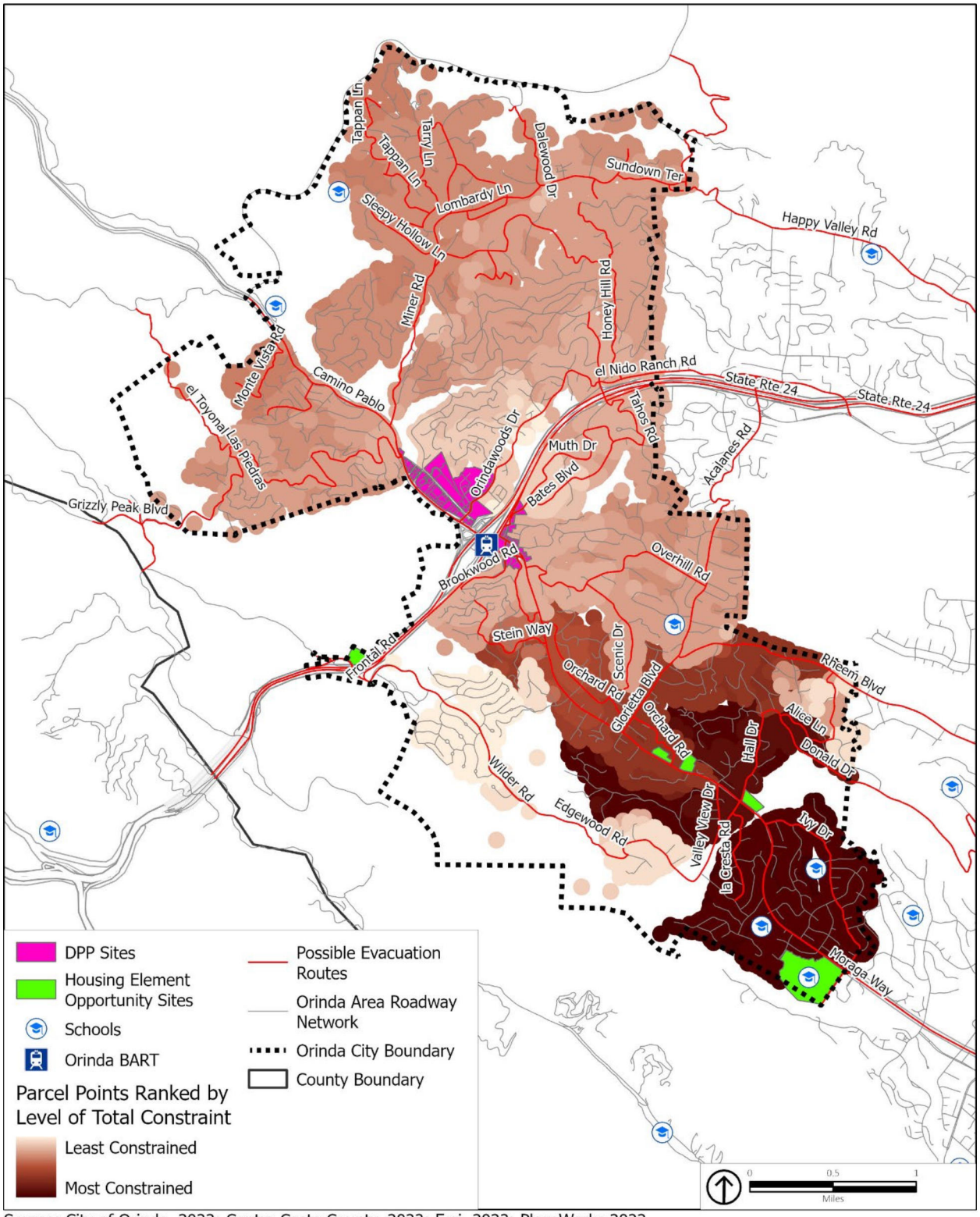
The following are recommendations for evacuating potentially vulnerable populations:

1. Prioritize in-person door knocking to disseminate evacuation notices/orders to residents within the tract where phone and/or internet access is at or lower than the county average.
2. Develop an early evacuation plan for Orinda Senior Village, Monteverde Senior Apartments, the future Countryhouse Memory Care facility at 1 Wilder Road, and any future assisted living facilities or senior living communities. Plans for these locations should include measures for deploying school buses, or paratransit vehicles, or maintaining designated van or bus fleets located on-site to evacuate multiple residents per vehicle.
3. Study the feasibility of designating Orinda Senior Village and Monteverde Senior Apartments as Shelter in Place locations as well as the nearby Orinda Community Center. If Orinda Senior Village and Monteverde are not feasible as shelter-in-place locations, but the nearby Orinda Community Center is, then direct residents of these two residential facilities to the Community Center in the event that early evacuation is not feasible, and develop a shelter plan for the Community Center that accommodates the needs of sheltering seniors, e.g., that includes measures for procuring and maintaining back-up generators which are capable of powering medical equipment continuously.
4. Implement Orinda General Plan Safety Element Policy S-10, to develop and implement an evacuation assistance program, in coordination with Contra Costa County Transportation Authority, Seniors Around Town, and paratransit and dial-a-ride agencies to help those with limited mobility or lack of access to a vehicle evacuate safely. Mailers with information about this program can be prioritized for residents in Census Tract 3540.02 (where the highest percentage of residents in Orinda are that do not have access to a vehicle and that do not have phone and/or internet service), and Census Tract 3522.02 in South Orinda.
5. Continue to coordinate and expand on existing efforts with schools to develop emergency operations protocols and early evacuation plans. School buses can be used if evacuation occurs during school hours, but evacuation plans should include coordination with Contra Costa County Transportation Authority and the Contra Costa County Office of Emergency Services to deploy buses and other high-capacity vehicles to evacuate children in schools during time periods when school buses are out picking up or dropping off students.

Cumulative Constraint Analysis Results and Discussion

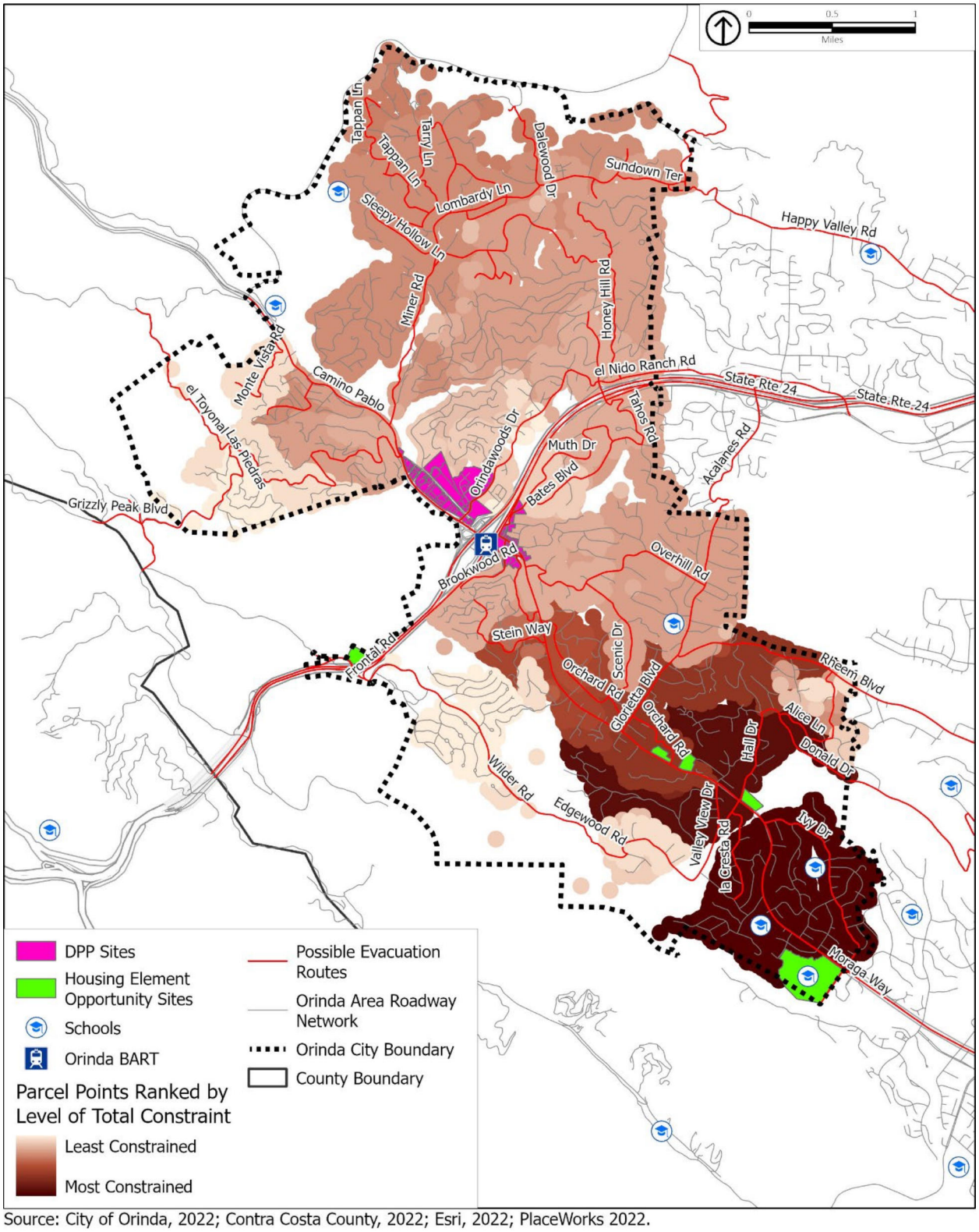
Figures 15, 16, and 17 show cumulative constraint index scores for households as well as Housing Element (HE) Opportunity Sites and Downtown Precise Plan (DPP) sites.

FIGURE 15: CONSTRAINED RESIDENTIAL AREAS—SCENARIO 1



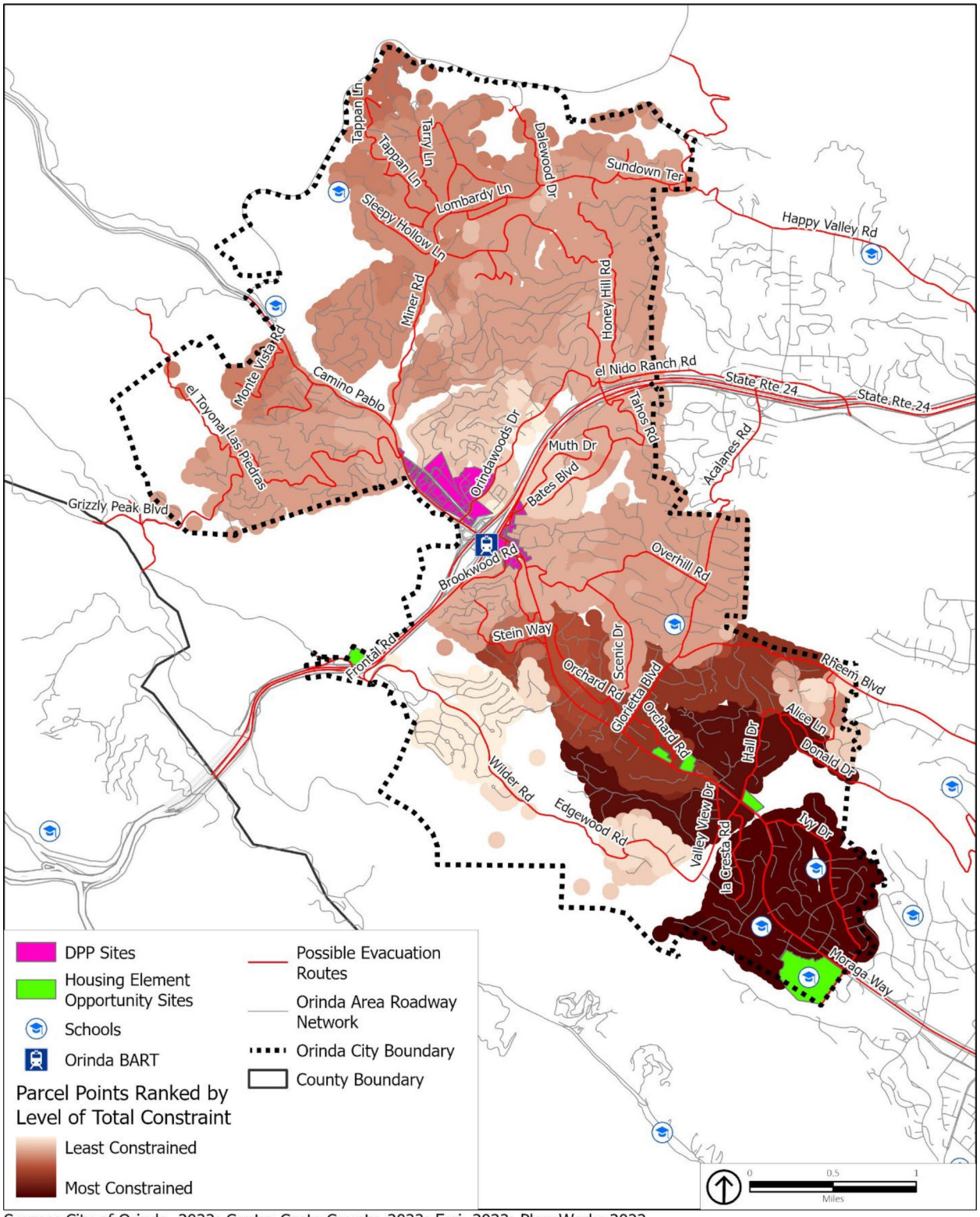
Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 16: CONSTRAINED RESIDENTIAL AREAS—SCENARIO 2



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

FIGURE 17: CONSTRAINED RESIDENTIAL AREAS—SCENARIO 3



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

First, the parcel points ranked by level of constraint layer in figures 15, 16, and 17 show that the constrained areas differ only slightly under the three different scenarios. Residential areas close to San Pablo Dam Road and Grizzly Peak Boulevard are less constrained under Scenario 2 because these roadways can be used for evacuation (although their capacity is limited). Nearly all other households in Orinda maintain the same level of constraint across all three scenarios, consistent with the findings discussed in the constrained intersection analysis results section of this report. The finding that Moraga Way northwest-bound and Miner Road/Camino Pablo southbound towards SR-24 are likely to be congested regardless of the hazard area location emphasizes the importance of timed evacuation procedures.

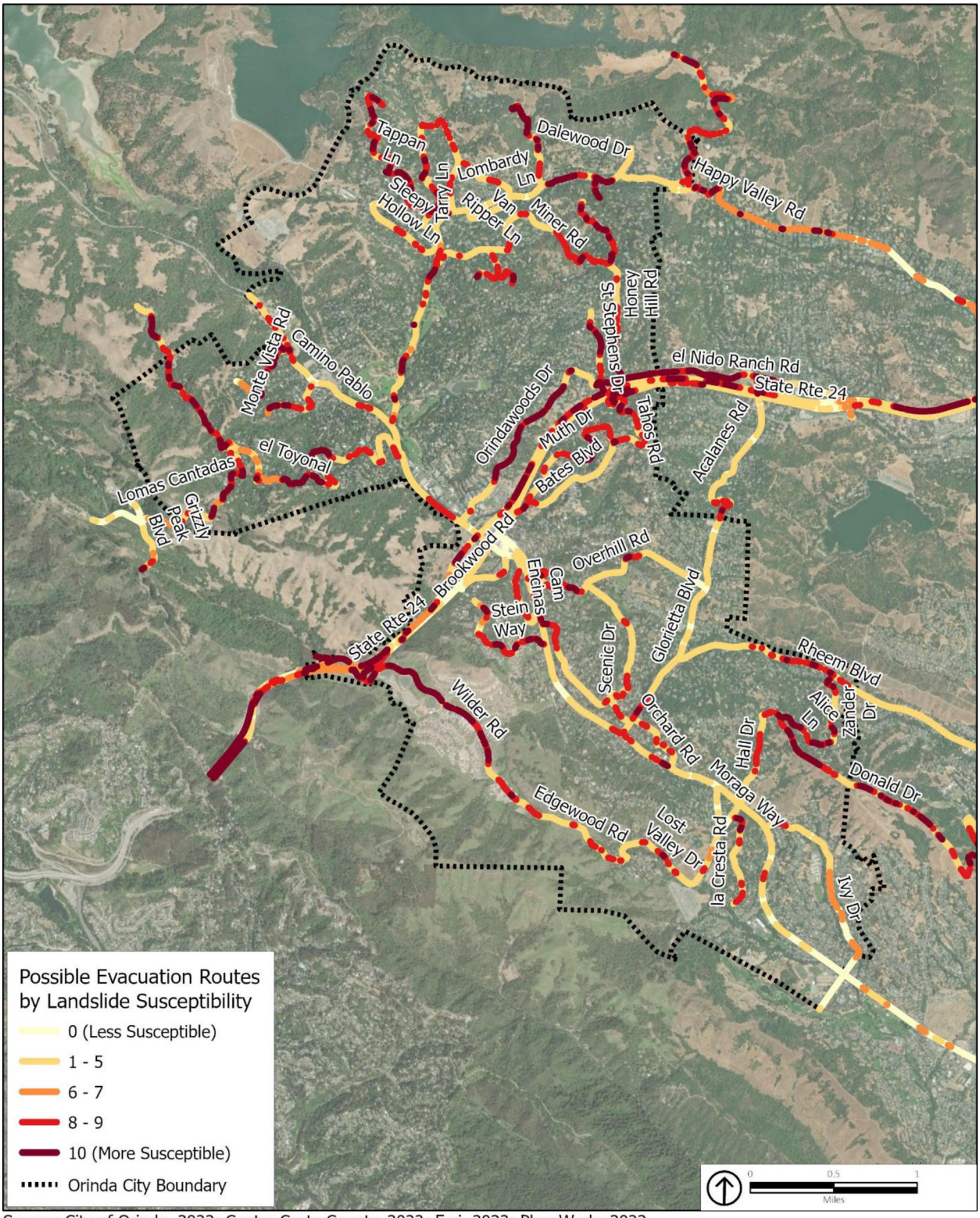
Figures 15, 16, and 17 also show that the sites in the Downtown Precise Plan area as well as the Caltrans gateway site at Shakespeare Theater Way are relatively unconstrained due to their proximity to SR-24 on-ramps. The DPP sites combined constitute the highest capacity for new housing units in Orinda (644 units total at maximum), and the Caltrans gateway site has the highest maximum number of allowed housing units on any single Housing Element Opportunity Site (408 units at maximum). However, the Opportunity Site at Miramonte High School has the second highest maximum allowable units (234 units) and is the most constrained Housing Element Opportunity Site. The Opportunity Site at St. John Orthodox Church (501 Moraga Way) is also highly constrained. The Holy Shephard Lutheran Church and St. Mark's Church Housing Element Opportunity Sites are moderately constrained. Constrained Housing Element Opportunity Sites are all located along Moraga Way and would likely use this arterial to evacuate based on this analysis. These results underscore the potential benefit to allowing public access on the Brookside Road/Boeger Ranch Rd EVA (in the short term), and Edgewood/Wilder EVA (in the long term, if feasible) towards SR-24 from southern Orinda during an evacuation event as an alternative to Moraga Way. Secondly, while evacuees should only shelter in place when evacuation is not feasible, Orinda staff could additionally coordinate with MOFD to establish fire code standards for new developments on any constrained Housing Element Opportunity Site which enable them serve as shelter-in-place locations during a wildfire event only if evacuation becomes infeasible, similarly to the J&J Ranch and Wilder developments discussed in Chapter 4.14 of the Orinda General Plan EIR.

Landslide Evacuation Analysis Results and Discussion

Because of the typically more localized nature of landslides compared to wildfires, particularly in California, the possible evacuation 'network' for a landslide event is specific to the local area in which it occurs, such that recommendations for evacuation in one localized area or neighborhood are not necessarily relevant for other areas or neighborhoods.

For these reasons this methodology analyzes evacuation risk specifically along Orinda's network of possible evacuation routes in GIS and summarizes recommendations based on segments of the possible evacuation network that are at the highest risk of landslide. The results are shown in Figure 18 below.

FIGURE 18: LANDSLIDE SUSCEPTIBILITY ON POSSIBLE EVACUATION ROUTES



Source: City of Orinda, 2022; Contra Costa County, 2022; Esri, 2022; PlaceWorks 2022.

Results indicate that much of Orinda's primary evacuation route: SR-24, is in highly susceptible landslide areas, particularly in the following locations:

- Eastbound and westbound lanes in the Caldecott Tunnel,
- Westbound lanes northwest of the Orinda BART station,
- Large swaths of both eastbound and westbound lanes of the length between Camino Pablo and El Nido Ranch Road, but mostly in the westbound lanes,
- And the following On-Ramps:
  - Wilder Road/Gateway Boulevard eastbound and westbound on-ramps from all approaches
  - Eastbound and westbound lanes in the Caldecott Tunnel
  - On-ramps from Wilder Road, El Nido Ranch Road, and Charles Hill Road

Other segments of Orinda's possible evacuation network located in highly susceptible landslide areas are listed below:

Possible Evacuation Network Segments Susceptible to Landslides South of SR-24

- La Cresta Road southeast of the intersection with Woodland Road
- Donald Drive between Hall Drive and the Orinda city limit
- Alice Lane between Donald Drive and Zander Drive
- Zander Drive just north of the intersection with Alice Lane and between Zander Court and Rheem Boulevard
- Rheem Boulevard between Zander Drive and west of Calvin Drive
- Portions of Lost Valley Drive
- Glorietta Boulevard between Orchard Road and Virginia Drive
- Most of Wilder Road
- Most of Stein Way and Knickerbocker Lane
- Orchard Road between Moraga Way and Oakwood Road
- A portion of Overhill Road between Broadview Terrace and Tara Road
- Tahos Road between Bates Boulevard and north of St. Hill Road
- Muth Drive between Wanda Lane and Warford Terrace
- Portions of Bates Boulevard between Muth Drive and Davis Road
- Gateway Boulevard and Frontal Road on-ramps to SR-24 (westbound and eastbound, respectively)
- Hidden Valley Road between Tahos Road and the SR-24 eastbound on ramp west of Juniper Drive
- The intersection with El Nido Ranch Road, Muth Drive, and Orinda Woods Drive

Possible Evacuation Network Segments Susceptible to Landslides North of SR-24

- El Nido Ranch Road between St. Stephens Drive and the city limit
- East Altarinda Drive between Altarinda circle and St. Stephens Drive
- St Stephens Drive between Aqua Vista and SR-24 overpass to Tahos Road.
- Orinda Woods Drive between East Altarinda Drive and Wild Plum Way
- Happy Valley Road between Orinda View Road and Sundown Terrace
- Most of Dalewood Drive
- Dalewood Terrace
- Tarry Lane between Bear Ridge Road and Tappan Lane
- Most of Tappan Lane
- Valley View Lane
- Miner Road between Sycamore Road and Canyon View Drive, between Lombardy Lane and Camino Sobrante, and sections between Camino Lenada and Camino Don Miguel
- Claremont Avenue between Holly Lane and California Avenue
- Most of Monte Vista Ridge Road and Monte Vista Road
- El Toyonal between the city limit and Vis del Orinda, between La Encinal and Vallecito Lane, and between El Rincon and Loma Vista Drive

It should be noted that the Wilder Ranch neighborhood along Wilder Road is a newer development in Orinda and has a Development Plan from 2005 describing the developer's grading efforts to significantly reduce the landslide risk in the Wilder area and along Wilder Road. These are described in the Development Plan beginning on page 31. Other areas listed above may also have similar interventions, like retaining walls and grading, to reduce the landslide risk along those routes.

Recommendations for Reducing Landslide Risk Along Possible Evacuation Routes

Based on these results, this report recommends that Orinda consider maintaining an inventory (e.g., in excel, or GIS) of evacuation route segments susceptible to landslides, as well as corresponding information about site characteristics, any recommended infrastructure improvements collected through geotechnical studies, and potentially also maintenance and/or development status of existing and planned infrastructure improvements for landslide-susceptible evacuation route segments inventoried in the database.

In addition, this report recommends pursuing policies S-19 through S23 in the Orinda General Plan Safety Element, listed below:

Policy S-20 A geotechnical investigation and report shall be required for all new development in landslide and liquefaction zones. Any other facility that could create a geologic

hazard, such as a road on hillside terrain, must also conduct such an investigation. Evidence of probable geologic hazard shall require a geotechnical study by a registered soil engineer or registered geologist that shall be reviewed by geotechnical consultants selected by the City.

Policy S-21 Require new development in areas prone to geologic hazards (e.g., landslides, steep topography, slope instability), including the Orinda Geologic Hazard Abatement District, to be designed to adequately reduce these hazards, including minimizing the loss of native vegetation. Grading plans; environmental assessments; engineering and geologic technical reports; and irrigation and landscaping plans, including ecological restoration and revegetation plans, shall be required as appropriate to ensure the adequate demonstration of a project's ability to mitigate these potential impacts.

Policy S-22 Require new development in hillside areas to prepare drainage plans to direct runoff and drainage away from potentially unstable slopes.

Policy S-23 Encourage retrofits to existing buildings that improve resiliency to geologic and seismic hazards.

ORINDA FIRE EVACUATION
Guide & General Information

For life threatening emergencies, call:
911

Non-emergency numbers:

Orinda Police (925) 254-6820	www.cwsalerts.com (Contra Costa County)
Moraga-Orinda Fire District (925) 933-1313	www.nixle.com (use zip code 94563)
Contra Costa Animal Control (925)-608-8400	www.cityoforinda.org (use the Notify Me button)
Red Cross (415) 427-8000	www.nextdoor.com

Know Your Zone!
Go online to **Community.Zonehaven.com** & search for your address.

EVACUATING

> **If you feel you are in danger,** don't wait for an evacuation order—leave immediately.

> **If you need extra time,** evacuate at the time of an evacuation warning—don't wait for an evacuation order.

Primary evacuation point:
Highway 24, then leave the Lamorinda area.

> **When evacuations are ordered,** quickly depart the area with your Go-Bag.

> **Take only one vehicle.**

> **Make room for emergency personnel,** such as fire engines, ambulances, and law enforcement. Follow directions of Public Safety Officers, City Staff, or other Emergency Services Workers during the evacuation process.

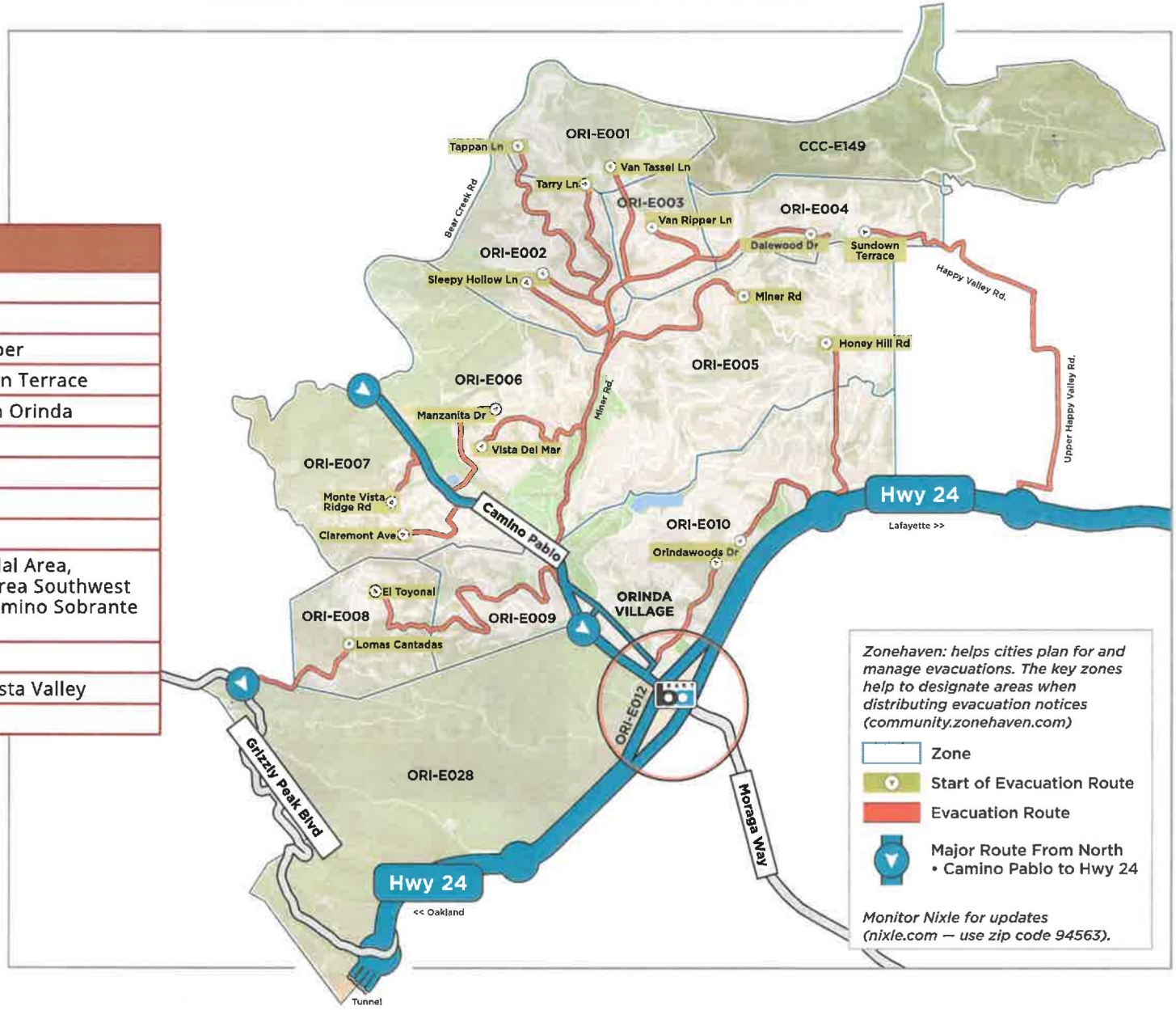
> **Residents should plan ahead for primary and contingency routes** to the freeway for use during an evacuation. Find your direct route from your portion of the neighborhood to the primary evacuation point, Highway 24.

KNOW YOUR ZONE!

Use the QR code (or go online to Community.Zonehaven.com) and enter your address to find your zone. Your zone shows status, evacuation information, and more.

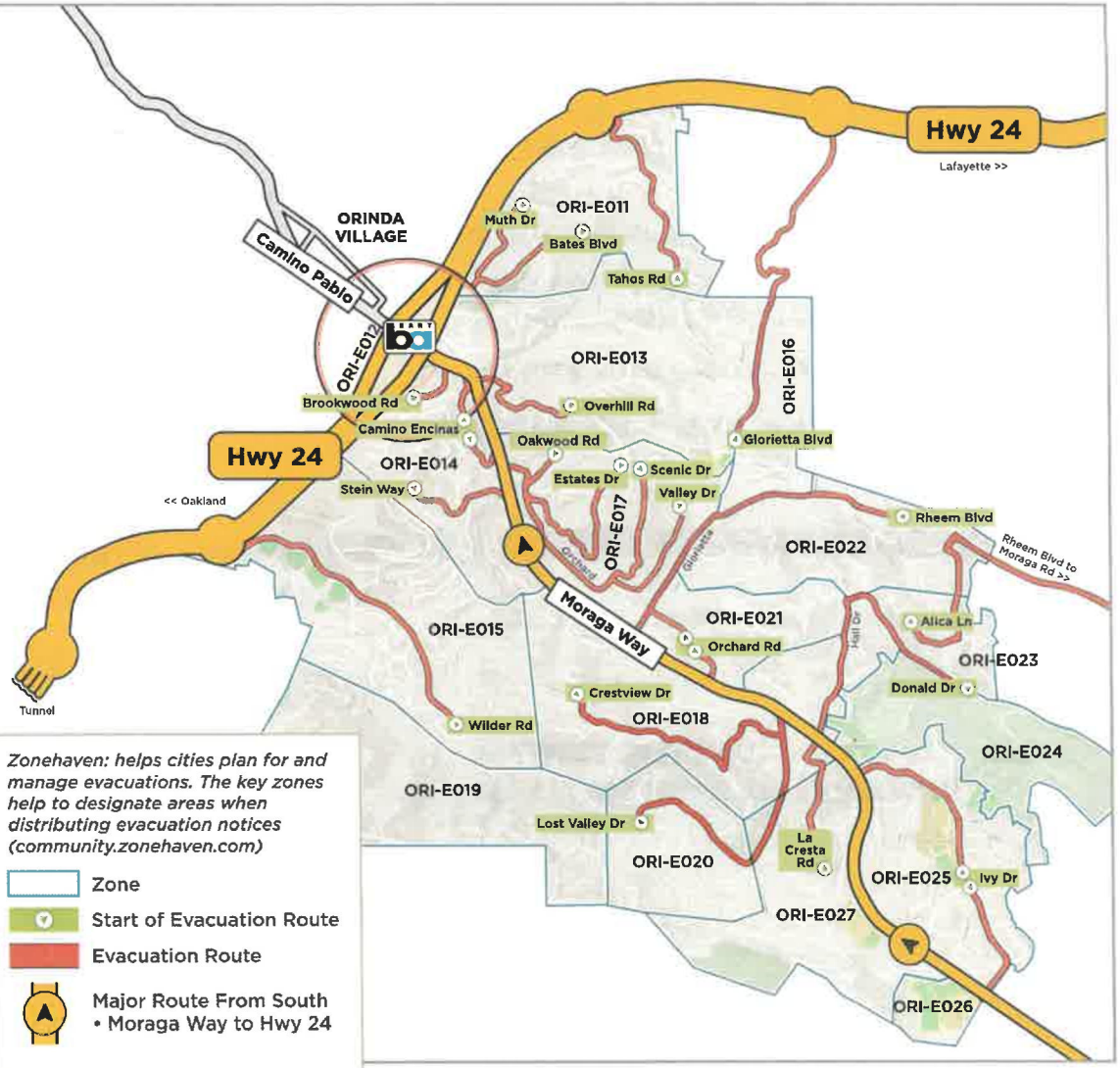
NORTH

Areas commonly known as:	
ORI-E001	Sand Hill/Sunnyside
ORI-E002	Sleepy Hollow
ORI-E003	Lombardy Lane/Van Ripper
ORI-E004	Dalewood Drive/Sundown Terrace
ORI-E005	Upper Miner Road/North Orinda
ORI-E006	Manzanita Dr
ORI-E007	Monte Vista
ORI-E008	Upper El Toyonal
ORI-E009	Lower El Toyonal
ORI-E010	Orinda Village Commercial Area, Orinda Woods and the area Southwest of Lake Cascade from Camino Sobrante to Charles Hill Rd
ORI-E012	Orinda BART Station
ORI-E028	De Laveaga Trail and Siesta Valley
CCC-E149	Orinda View



SOUTH

Areas commonly known as:	
ORI-E011	North East Orinda, South of HWY 24 including Tahos Rd, Bates Blvd, Muth Dr to the Orinda Cross Roads Area.
ORI-E012	Orinda BART Station
ORI-E013	Overhill Rd and Tara Rd
ORI-E014	Brookwood Rd, and Stein Way area East of HWY 24
ORI-E015	Wilder Development
ORI-E016	Northern portion of Glorietta Blvd to Lafayette Reservoir Boundary
ORI-E017	Orchard Rd, Estates Dr, Scenic Dr
ORI-E018	Crestview Drive, Central Moraga Way
ORI-E019	Eastern Sibley Volcanic Regional Park
ORI-E020	Lost Valley
ORI-E021	West Donald Drive and Orchard Rd
ORI-E022	Western portion of Rheem Blvd to the Hall roundabout
ORI-E023	Donald Dr to Mulholland Ridge and Hall Dr
ORI-E024	Orinda Oaks Open Space and Mulholland Ridge
ORI-E025	Ivy Drive
ORI-E026	Miramonte High School
ORI-E027	La Cresta Rd and Don Gabriel Way



Zonehaven: helps cities plan for and manage evacuations. The key zones help to designate areas when distributing evacuation notices (community.zonehaven.com)

- Zone
- Start of Evacuation Route
- Evacuation Route
- Major Route From South • Moraga Way to Hwy 24

Monitor Nixle for updates (nixle.com — use zip code 94563).

CITY OF ORINDA

GET CONTRA COSTA COUNTY ALERTS

Register online at: www.CWSalerts.com

Safety tip: add CWS Alerts "925-655-0195" to your phone's "Do Not Disturb" bypass settings.

BEING PREPARED

Be prepared to evacuate with a go bag based on weather and other advisories.

Don't delay, leave immediately!

GETTING READY TO LEAVE

Do not let these actions delay your departure.

- Gather valuables and important documents in your vehicle.
- Close all shutters, windows, and curtains in your home. Remove flammables from around your house. Turn on exterior lights.
- Post your "EVACUATED" sign where first-responders can see it.

IF YOU FAIL TO EVACUATE IN A TIMELY MANNER:

- Heavy traffic may slow your evacuation or block roads.
- Smoke from the wildfire can obscure vision, cause accidents and block escape routes.
- Downed power lines can block roads and make escape on foot deadly.
- Firefighting equipment can block in vehicles behind the fire.
- High winds can cause fire-weakened trees to fall and block roads.
- First responders may not be available to assist you.

Leave early to avoid these hazards. Don't make your evacuation part of the emergency.

EVACUATION ZONE FOR THIS ADDRESS:

(search address online at: Community.Zonehaven.com)

☐☐☐-☐☐☐☐

OUT-OF-AREA EMERGENCY CONTACT PERSON IS:

Name: _____

Relationship: _____

Phone 1: _____

Phone 2: _____

Email: _____

WHEN WE HAVE TO EVACUATE, WE WILL MEET AT:

_____

_____

IF YOU ARE TRAPPED...

...in your home:

- Stay indoors until fire passes.
- Close all exterior doors and windows; keep doors unlocked and lights on.
- Close heavy drapes but remove sheer curtains that could ignite from radiant heat.
- Move flammable items away from vents and windows.

...in your car:

- Park away from vegetation.
- Roll up windows, don't run your AC.
- Cover self with blanket or jacket.
- If flames surround your car, remain inside until the fire passes.
- Don't drive if smoke obscures the roadway.

After fire has passed:

- Make sure everyone is okay.
- Check roof and exterior of your home and extinguish all sparks and embers.
- Check attic and crawlspace for hidden embers.
- Check yard for burning wood piles, trees, and other materials.
- Leave the area when safe to do so.
- Check evacuation and re-entry status at Community.Zonehaven.com

Appendix C: Orinda Fire Evacuation Guide & General Information

BEING PREPARED

Get Ready to Leave

- Pre-pack important documents, medication, water and other necessities in a ready to **"go-bag."**
- Keep your vehicle fueled during high fire danger periods.
- Prepare to take durable medical goods, oxygen and any other special needs with you.

★ If you need help getting out of your home in an emergency, be proactive and plan ahead. Find multiple, responsible friends or neighbors to help.

Do not rely on First Responders. During an emergency firefighters, police, or EMS may not be able to reach you in time.

EVACUATION TIPS

Grab Your Go-Bag(s)

Have a **Go-Bag** for each member of the household stored near your vehicle with at least:

- A change of clothes and a jacket.
- Medications for a week.
- Spare eyeglasses and sunglasses.
- Electronics cables (cellphone, laptop, etc.)

Animals

Have pet food in a **Pet Go-Bag** with leashes, poop-bags, water dish, food, medications, kennel/carrier.

Communicate

Text. Don't Call.

Send a text message to your out-of-state-contact when evacuating, indicating destination. Follow up when you arrive at your destination.

Neighbors

Know who in your neighborhood will need help to evacuate.

Coordinate responsibilities for children, those who need extra help and animals. Have a back-up plan.

CONTRAFLOW

For a Contraflow system to work safely and efficiently take the following action:

DO obey posted signage, slow down and follow the flow of traffic at a safe distance.

DON'T make right or left turns where "Reverse Lane in Effect" signs are posted. This will interrupt the reverse lane flow, and is the same as turning the wrong way on a one-way street.

Ignoring the contraflow route is incredibly dangerous, (even during a practice exercise,) and may keep those who need to evacuate form being able to do so.

RED-FLAG-DAY NO PARKING

DO follow posted signage and these communication channels for updates:

- Nixle alerts for real-time updates from Orinda Police Department
- CWSalerts for Contra Costa County alerts and notification
- National Weather Service (NWS) website

DON'T park within 5 feet from the edge of the City paved roadway while red flag warnings are in effect in the designated neighborhoods where the above signs are present.

- Vehicles are allowed five minutes of active loading and unloading in residential neighborhoods with Red Flag parking restrictions if necessary.

EMERGENCY CONTACT

- Predesignate an out-of-state contact and program the contact's cell number into each family member's cell phone.
- The out-of-state-contact will be the clearinghouse for your family's text messages. This prevents too many texts or calls in and out of the local area, freeing up lines for emergency responders.

Out-Of-State Emergency Contact Person

Name: _____

Phone 1: _____

Phone 2: _____

Email: _____

When we evacuate, we will meet at:

_____

_____

For more useful information on evacuations, please review the **Lamorinda Residents Guide to Wildfire Preparedness and Evacuation.**

ORINDA FIRE EVACUATION

Guide & General Information

For life threatening emergencies, call:

911

Orinda Police Non-Emergency Line **(925) 254-6820**	**www.cwsalerts.com** (Contra Costa County)
Moraga-Orinda Fire District **(925) 258-4599**	**www.nixle.com** text your zipcode to # 888777
Contra Costa Animal Control **(925)-608-8400**	**www.cityoforinda.org** (use the Notify Me button)
Red Cross **(415) 427-8000**	**www.nextdoor.com**

Know Your Zone! Go online to **Protect.Genasys.com** and search for your address.

• Zonehaven Aware is now Genasys Protect •

EVACUATING

Plan ahead! Identify **primary** and **contingency routes** to use during an evacuation. Find the direct routes from your home or neighborhood to a primary evacuation point.

Don't wait for the evacuation **order**. Get ready to leave at, or before, an offical **warning**.

When evacuations are ordered...

Take only **one** vehicle.**Leave room** on the road for emergency vehicles.
-Fire engines, ambulances, and police cruisers-

Follow **directions** given by police officers, City of Orinda staff or other emergency response officials during the evacuation process.

NORTH

Areas commonly known as:	
ORI-E001	Sand Hill/Sunnyside
ORI-E002	Sleepy Hollow
ORI-E003	Lombardy Lane/Van Ripper
ORI-E004	Dalewood Drive/Sundown Terrace
ORI-E005	Upper Miner Road/North Orinda
ORI-E006	Manzanita Dr
ORI-E007	Monte Vista
ORI-E008	Upper El Toyonal
ORI-E009	Lower El Toyonal
ORI-E010	Orinda Village Commercial Area, Orindawoods and the area Southwest of Lake Cascade from Camino Sobrante to Charles Hill Rd
ORI-E012	Orinda BART Station
ORI-E028	De Laveaga Trail and Siesta Valley
CCC-E149	Orinda View

Contraflow during evacuations. In the areas designated, one lane of traffic will be strategically moved in the opposite direction to facilitate emergency response and evacuations downhill on Miner Road. For the system to work safely and efficiently, the public must follow posted signage and evacuation orders.

No parking or stopping on Red Flag Days. In the designated areas, observe parking restrictions when a Red Flag Warning has been issued by the National Weather Service or the Moraga-Orinda Fire District.

SOUTH

Areas commonly known as:	
ORI-E011	North East Orinda, South of HWY 24 including Tahos Rd, Bates Blvd, Muth Dr to the Orinda Cross Roads Area.
ORI-E012	Orinda BART Station
ORI-E013	Overhill Rd and Tara Rd
ORI-E014	Brookwood Rd, and Stein Way area East of HWY 24
ORI-E015	Wilder Development
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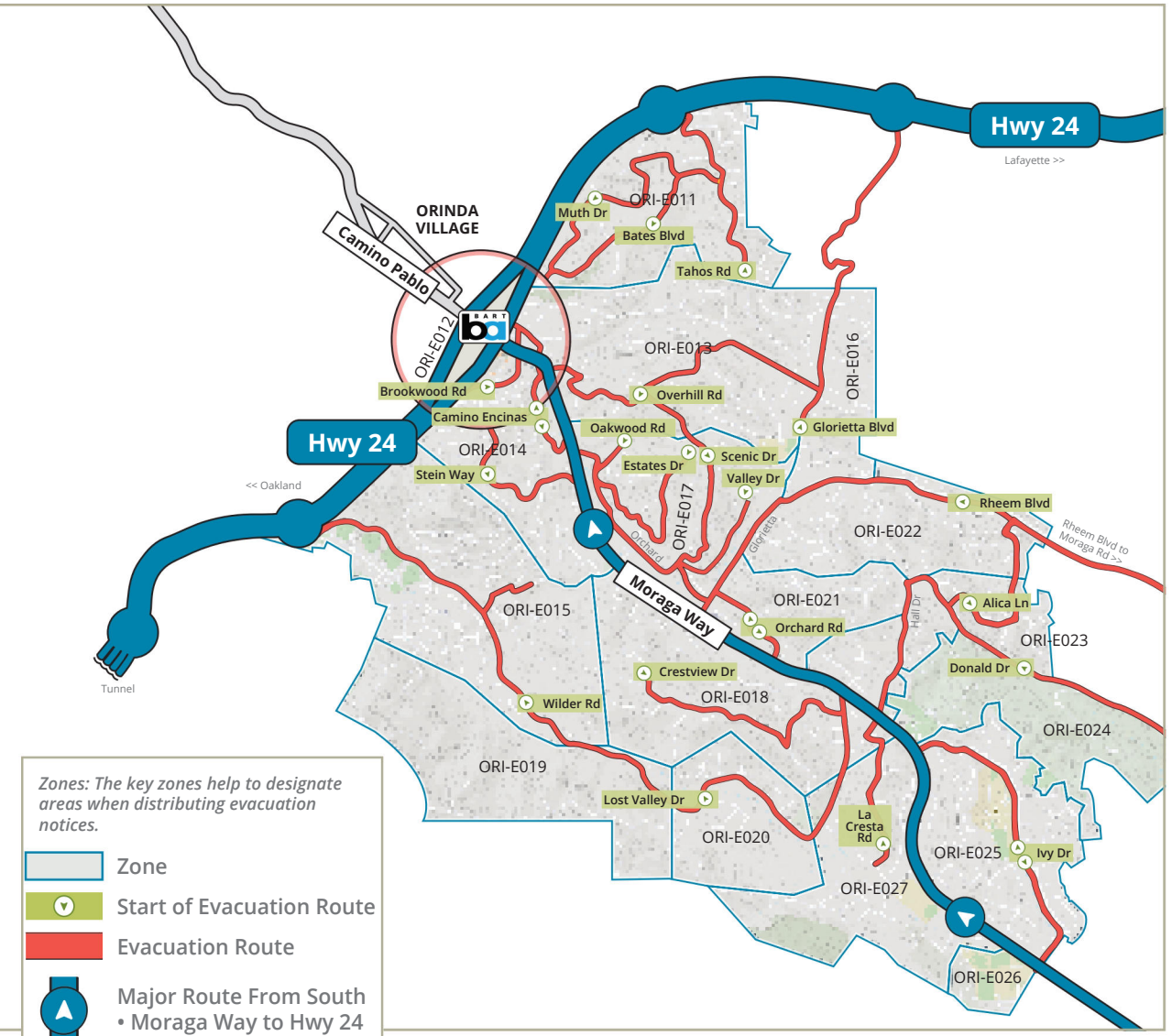
ORI-E024	Orinda Oaks Open Space and Mulholland Ridge
ORI-E025	Ivy Drive
ORI-E026	Miramonte High School
ORI-E027	La Cresta Rd and Don Gabriel Way



Zones: The key zones help to designate areas when distributing evacuation notices.

- Zone
- Start of Evacuation Route
- Evacuation Route
- Major Route From South
  - Moraga Way to Hwy 24

CITY OF ORINDA

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Appendix D: Intersection Counts and LOS Constraint Category for all Scenarios (1, 2, and 3) and All Buildout Alternatives (No Project, Plan Orinda, 2, and 3)

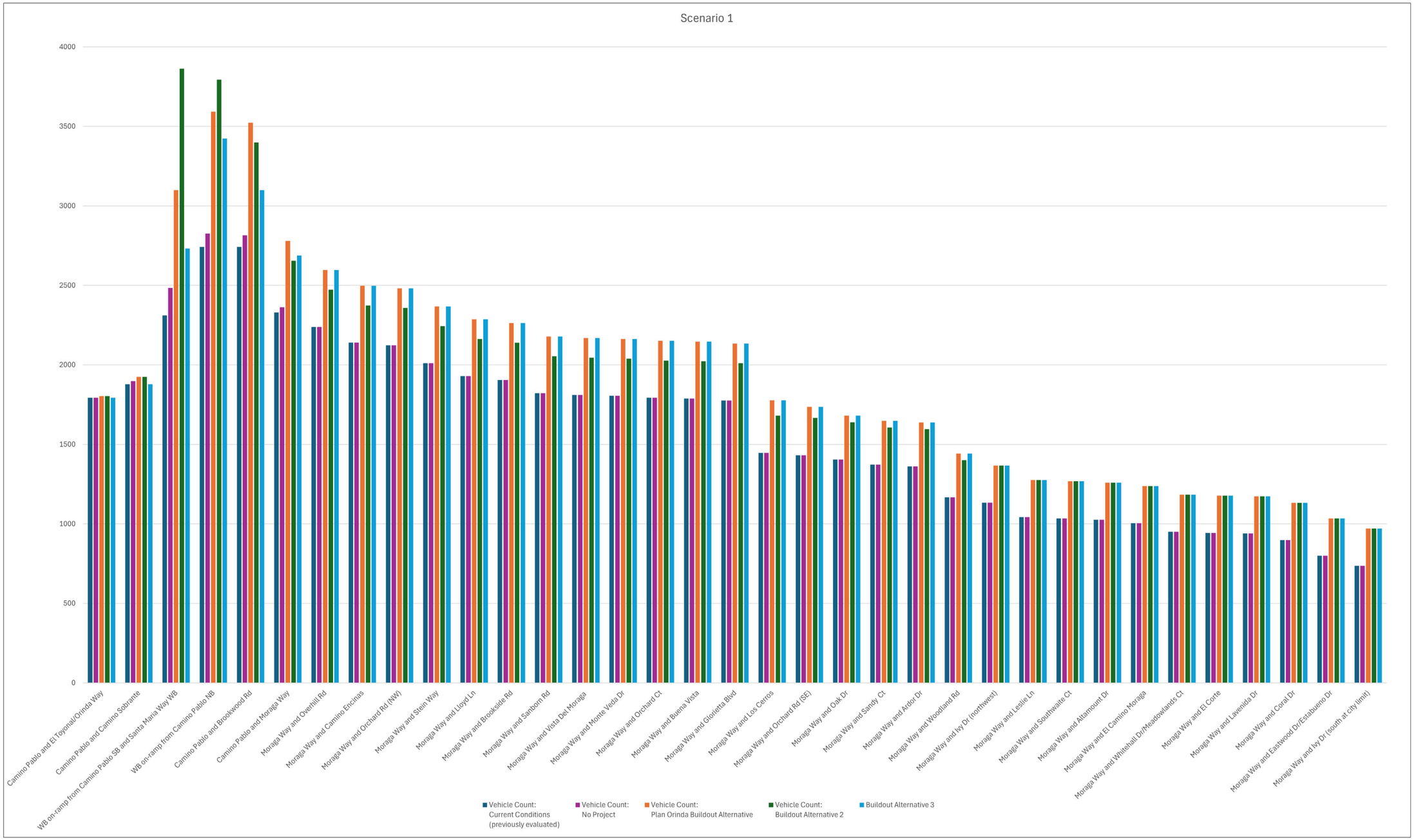
The table in Appendix D shows the raw intersection counts and their associated LOS constraint category across all buildout alternatives and all scenarios, as well as the net change in constraint index points assigned to parcels affected by the change in intersection LOS constraint category (in the right-most column of the table).

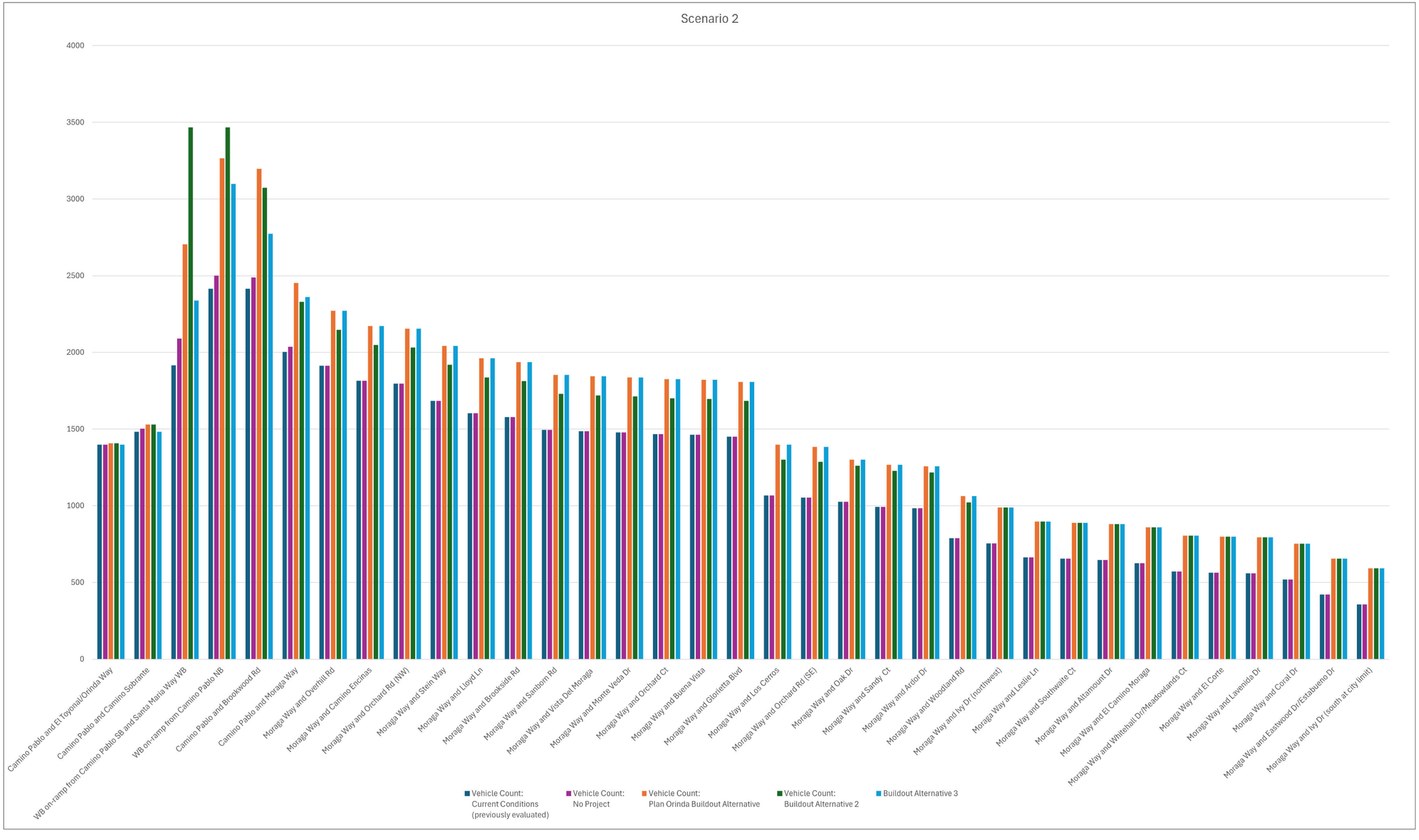
Intersection	Vehicle Count: Existing Conditions (2022)	Vehicle Count: Alternative 1 (No Project, Future)	Vehicle Count: Plan Orinda Buildout Alternative	Vehicle Count: Buildout Alternative 2	Vehicle Count: Buildout Alternative 3	Additional Constraint Index Points Added to Parcels that Pass through this Intersection
Camino Pablo and El Toyonal/Orinda Way	S1: 1,793 Very Constrained S2: 1,398 Constrained S3: 1,793 Very Constrained	S1: 1,793 Very Constrained S2: 1,398 Constrained S3: 1,793 Very Constrained	S1: 1,803 Very Constrained S2: 1,408 Constrained S3: 1,803 Very Constrained	S1: 1,803 Very Constrained S2: 1,408 Constrained S3: 1,803 Very Constrained	S1: 1,793 Very Constrained S2: 1,398 Constrained S3: 1,793 Very Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Camino Pablo and Camino Sobrante	S1: 1,878 Very Constrained S2: 1,483 Constrained S3: 1,878 Very Constrained	S1: 1,897 Very Constrained S2: 1,502 Very Constrained S3: 1,897 Very Constrained	S1: 1,925 Severely Constrained S2: 1,530 Very Constrained S3: 1,925 Severely Constrained	S1: 1,925 Severely Constrained S2: 1,530 Very Constrained S3: 1,925 Severely Constrained	S1: 1,878 Very Constrained S2: 1,483 Constrained S3: 1,878 Very Constrained	S1: 0 pts added S2: 0.5 pts added (except Alt. 3) S3: 0 pts added
WB on-ramp from Camino Pablo SB and Santa Maria Way WB	S1: 2,311 Severely Constrained S2: 1,916 Severely Constrained S3: 2,311 Severely Constrained	S1: 2,484 Severely Constrained S2: 2,089 Severely Constrained S3: 2,484 Severely Constrained	S1: 3,099 Severely Constrained S2: 2,704 Severely Constrained S3: 3,099 Severely Constrained	S1: 3,863 Severely Constrained S2: 3,468 Severely Constrained S3: 3,863 Severely Constrained	S1: 2,732 Severely Constrained S2: 2,337 Severely Constrained S3: 2,732 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
WB on-ramp from Camino Pablo NB	S1: 2,741 Severely Constrained S2: 2,415 Severely Constrained S3: 2,362 Severely Constrained	S1: 2,826 Severely Constrained S2: 2,500 Severely Constrained S3: 2,447 Severely Constrained	S1: 3,593 Severely Constrained S2: 3,267 Severely Constrained S3: 3,214 Severely Constrained	S1: 3,794 Severely Constrained S2: 3,468 Severely Constrained S3: 3,415 Severely Constrained	S1: 3,424 Severely Constrained S2: 3,098 Severely Constrained S3: 3,045 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Camino Pablo and Brookwood Rd	S1: 2,741 Severely Constrained S2: 2,415 Severely Constrained S3: 2,362 Severely Constrained	S1: 2,815 Severely Constrained S2: 2,489 Severely Constrained S3: 2,436 Severely Constrained	S1: 3,523 Severely Constrained S2: 3,197 Severely Constrained S3: 3,144 Severely Constrained	S1: 3,399 Severely Constrained S2: 3,073 Severely Constrained S3: 3,020 Severely Constrained	S1: 3,099 Severely Constrained S2: 2,773 Severely Constrained S3: 2,270 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Camino Pablo and Moraga Way	S1: 2,329 Severely Constrained S2: 2,003 Severely Constrained S3: 1,950 Severely Constrained	S1: 2,363 Severely Constrained S2: 2,037 Severely Constrained S3: 1,984 Severely Constrained	S1: 2,779 Severely Constrained S2: 2,453 Severely Constrained S3: 2,400 Severely Constrained	S1: 2,655 Severely Constrained S2: 2,329 Severely Constrained S3: 2,276 Severely Constrained	S1: 2,687 Severely Constrained S2: 2,361 Severely Constrained S3: 2,308 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Overhill Rd	S1: 2,239 Severely Constrained S2: 1,913 Severely Constrained S3: 1,860 Very Constrained	S1: 2,239 Severely Constrained S2: 1,913 Severely Constrained S3: 1,860 Very Constrained	S1: 2,597 Severely Constrained S2: 2,271 Severely Constrained S3: 2,218 Severely Constrained	S1: 2,473 Severely Constrained S2: 2,147 Severely Constrained S3: 2,094 Severely Constrained	S1: 2,597 Severely Constrained S2: 2,271 Severely Constrained S3: 2,218 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Camino Encinas	S1: 2,140 Severely Constrained S2: 1,814 Very Constrained S3: 1,761 Very Constrained	S1: 2,140 Severely Constrained S2: 1,814 Very Constrained S3: 1,761 Very Constrained	S1: 2,498 Severely Constrained S2: 2,172 Severely Constrained S3: 2,119 Severely Constrained	S1: 2,374 Severely Constrained S2: 2,048 Severely Constrained S3: 1,995 Severely Constrained	S1: 2,498 Severely Constrained S2: 2,172 Severely Constrained S3: 2,119 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Orchard Rd (NW)	S1: 2,123 Severely Constrained S2: 1,797 Very Constrained S3: 1,744 Very Constrained	S1: 2,123 Severely Constrained S2: 1,797 Very Constrained S3: 1,744 Very Constrained	S1: 2,481 Severely Constrained S2: 2,155 Severely Constrained S3: 2,102 Severely Constrained	S1: 2,357 Severely Constrained S2: 2,031 Severely Constrained S3: 1,978 Severely Constrained	S1: 2,481 Severely Constrained S2: 2,155 Severely Constrained S3: 2,102 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Stein Way	S1: 2,010 Severely Constrained S2: 1,684 Very Constrained S3: 1,631 Very Constrained	S1: 2,010 Severely Constrained S2: 1,684 Very Constrained S3: 1,631 Very Constrained	S1: 2,368 Severely Constrained S2: 2,042 Severely Constrained S3: 1,989 Severely Constrained	S1: 2,244 Severely Constrained S2: 1,918 Severely Constrained S3: 1,865 Very Constrained	S1: 2,368 Severely Constrained S2: 2,042 Severely Constrained S3: 1,989 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Lloyd Ln	S1: 1,929 Severely Constrained S2: 1,603 Very Constrained S3: 1,550 Very Constrained	S1: 1,929 Severely Constrained S2: 1,603 Very Constrained S3: 1,550 Very Constrained	S1: 2,287 Severely Constrained S2: 1,961 Severely Constrained S3: 1,908 Severely Constrained	S1: 2,163 Severely Constrained S2: 1,837 Very Constrained S3: 1,784 Very Constrained	S1: 2,287 Severely Constrained S2: 1,961 Severely Constrained S3: 1,908 Severely Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Brookside Rd	S1: 1,905 Severely Constrained S2: 1,579 Very Constrained S3: 1,526 Very Constrained	S1: 1,905 Severely Constrained S2: 1,579 Very Constrained S3: 1,526 Very Constrained	S1: 2,263 Severely Constrained S2: 1,937 Severely Constrained S3: 1,884 Very Constrained	S1: 2,139 Severely Constrained S2: 1,813 Very Constrained S3: 1,760 Very Constrained	S1: 2,263 Severely Constrained S2: 1,937 Severely Constrained S3: 1,884 Very Constrained	S1: 0 pts added S2: 0 pts added S3: 0 pts added
Moraga Way and Sanborn Rd	S1: 1,821 Very Constrained S2: 1,495 Constrained S3: 1,442 Constrained	S1: 1,821 Very Constrained S2: 1,495 Constrained S3: 1,442 Constrained	S1: 2,179 Severely Constrained S2: 1,853 Very Constrained S3: 1,800 Very Constrained	S1: 2,055 Severely Constrained S2: 1,729 Very Constrained S3: 1,676 Very Constrained	S1: 2,179 Severely Constrained S2: 1,853 Very Constrained S3: 1,800 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added

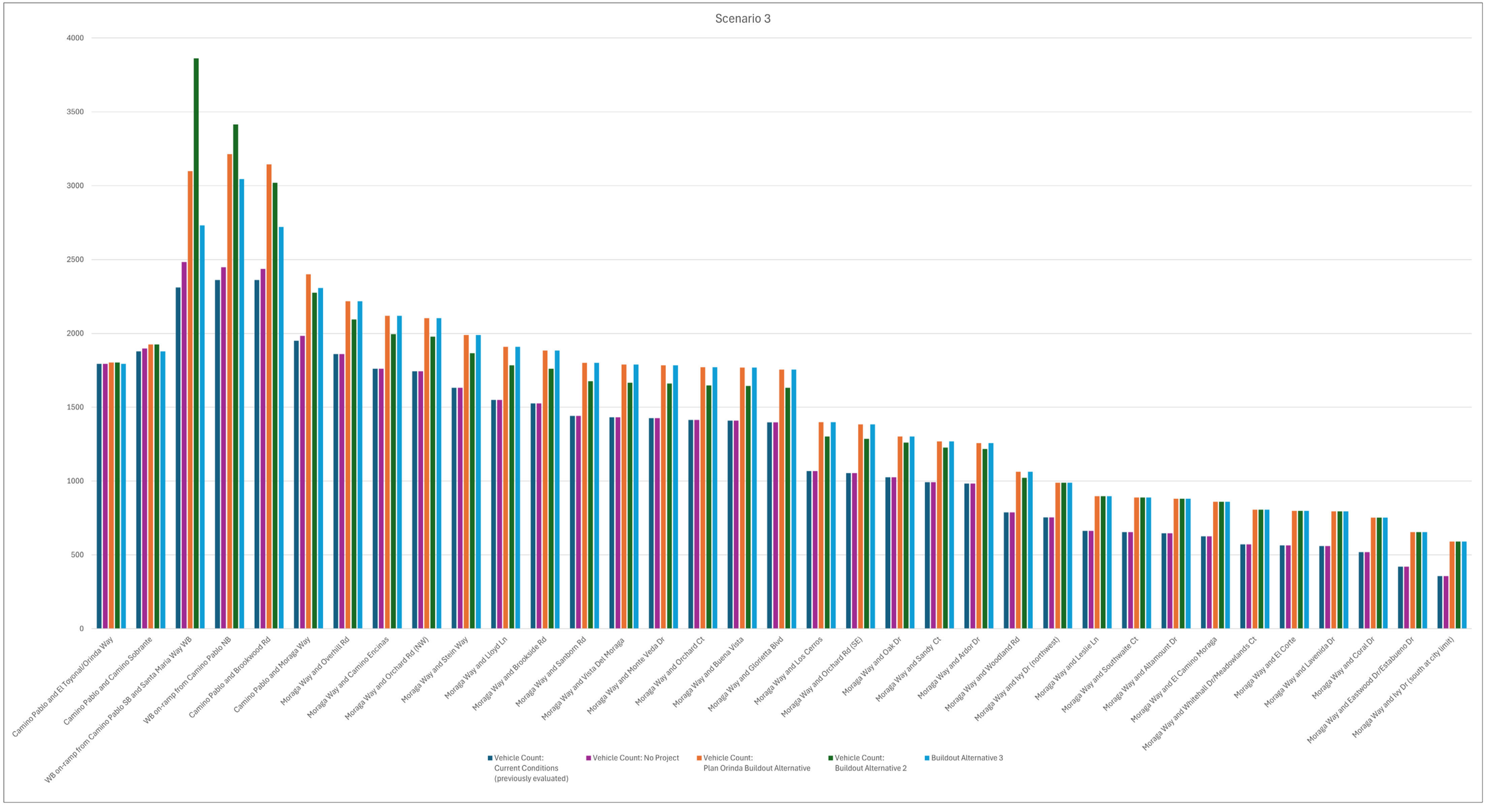
Moraga Way and Vista Del Moraga	S1: 1,811 Very Constrained S2: 1,485 Constrained S3: 1,432 Constrained	S1: 1,811 Very Constrained S2: 1,485 Constrained S3: 1,432 Constrained	S1: 2,169 Severely Constrained S2: 1,843 Very Constrained S3: 1,790 Very Constrained	S1: 2,045 Severely Constrained S2: 1,719 Very Constrained S3: 1,666 Very Constrained	S1: 2,169 Severely Constrained S2: 1,843 Very Constrained S3: 1,790 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Monte Veda Dr	S1: 1,805 Very Constrained S2: 1,479 Constrained S3: 1,426 Constrained	S1: 1,805 Very Constrained S2: 1,479 Constrained S3: 1,426 Constrained	S1: 2,163 Severely Constrained S2: 1,837 Very Constrained S3: 1,784 Very Constrained	S1: 2,039 Severely Constrained S2: 1,713 Very Constrained S3: 1,660 Very Constrained	S1: 2,163 Severely Constrained S2: 1,837 Very Constrained S3: 1,784 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Orchard Ct	S1: 1,793 Very Constrained S2: 1,467 Constrained S3: 1,414 Constrained	S1: 1,793 Very Constrained S2: 1,467 Constrained S3: 1,414 Constrained	S1: 2,151 Severely Constrained S2: 1,825 Very Constrained S3: 1,772 Very Constrained	S1: 2,027 Severely Constrained S2: 1,701 Very Constrained S3: 1,648 Very Constrained	S1: 2,151 Severely Constrained S2: 1,825 Very Constrained S3: 1,772 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Buena Vista	S1: 1,789 Very Constrained S2: 1,463 Constrained S3: 1,410 Constrained	S1: 1,789 Very Constrained S2: 1,463 Constrained S3: 1,410 Constrained	S1: 2,147 Severely Constrained S2: 1,821 Very Constrained S3: 1,768 Very Constrained	S1: 2,023 Severely Constrained S2: 1,697 Very Constrained S3: 1,644 Very Constrained	S1: 2,147 Severely Constrained S2: 1,821 Very Constrained S3: 1,768 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Glorietta Blvd	S1: 1,776 Very Constrained S2: 1,450 Constrained S3: 1,397 Constrained	S1: 1,776 Very Constrained S2: 1,450 Constrained S3: 1,397 Constrained	S1: 2,134 Severely Constrained S2: 1,808 Very Constrained S3: 1,755 Very Constrained	S1: 2,010 Severely Constrained S2: 1,684 Very Constrained S3: 1,631 Very Constrained	S1: 2,134 Severely Constrained S2: 1,808 Very Constrained S3: 1,755 Very Constrained	S1: 0 pts added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Los Cerros	S1: 1,446 Constrained S2: 1,067 Constrained S3: 1,067 Constrained	S1: 1,446 Constrained S2: 1,067 Constrained S3: 1,067 Constrained	S1: 1,777 Very Constrained S2: 1,398 Constrained S3: 1,398 Constrained	S1: 1,680 Very Constrained S2: 1,301 Constrained S3: 1,301 Constrained	S1: 1,777 Very Constrained S2: 1,398 Constrained S3: 1,398 Constrained	S1: 0.5 pt added S2: 0 pts added S3: 0 pts added
Moraga Way and Orchard Rd (SE)	S1: 1,432 Constrained S2: 1,053 Constrained S3: 1,053 Constrained	S1: 1,432 Constrained S2: 1,053 Constrained S3: 1,053 Constrained	S1: 1,736 Very Constrained S2: 1,384 Constrained S3: 1,384 Constrained	S1: 1,666 Very Constrained S2: 1,287 Constrained S3: 1,287 Constrained	S1: 1,736 Very Constrained S2: 1,384 Constrained S3: 1,384 Constrained	S1: 0.5 pt added S2: 0 pts added S3: 0 pts added
Moraga Way and Oak Dr	S1: 1,405 Constrained S2: 1,026 Constrained S3: 1,026 Constrained	S1: 1,405 Constrained S2: 1,026 Constrained S3: 1,026 Constrained	S1: 1,680 Very Constrained S2: 1,301 Constrained S3: 1,301 Constrained	S1: 1,639 Very Constrained S2: 1,260 Constrained S3: 1,260 Constrained	S1: 1,680 Very Constrained S2: 1,301 Constrained S3: 1,301 Constrained	S1: 0.5 pt added S2: 0 pts added S3: 0 pts added
Moraga Way and Sandy Ct	S1: 1,372 Constrained S2: 993 LOS F S3: 993 LOS F	S1: 1,372 Constrained S2: 993 LOS F S3: 993 LOS F	S1: 1,647 Very Constrained S2: 1,268 Constrained S3: 1,268 Constrained	S1: 1,606 Very Constrained S2: 1,227 Constrained S3: 1,227 Constrained	S1: 1,647 Very Constrained S2: 1,268 Constrained S3: 1,268 Constrained	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Ardor Dr	S1: 1,362 Constrained S2: 983 LOS F S3: 983 LOS F	S1: 1,362 Constrained S2: 983 LOS F S3: 983 LOS F	S1: 1,637 Very Constrained S2: 1,258 Constrained S3: 1,258 Constrained	S1: 1,596 Very Constrained S2: 1,217 Constrained S3: 1,217 Constrained	S1: 1,637 Very Constrained S2: 1,258 Constrained S3: 1,258 Constrained	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Woodland Rd	S1: 1,167 Constrained S2: 788 LOS D S3: 788 LOS D	S1: 1,167 Constrained S2: 788 LOS D S3: 788 LOS D	S1: 1,442 Constrained S2: 1,063 Constrained S3: 1,063 Constrained	S1: 1,401 Constrained S2: 1,022 Constrained S3: 1,022 Constrained	S1: 1,442 Constrained S2: 1,063 Constrained S3: 1,063 Constrained	S1: 0 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Ivy Dr (northwest)	S1:1,133 Constrained S2: 754 LOS D S3: 754 LOS D	S1:1,133 Constrained S2: 754 LOS D S3: 754 LOS D	S1: 1,367 Constrained S2: 988 Constrained S3: 988 Constrained	S1: 1,367 Constrained S2: 988 Constrained S3: 988 Constrained	S1: 1,367 Constrained S2: 988 Constrained S3: 988 Constrained	S1: 0 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Leslie Ln	S1: 1,042 Constrained S2: 663 LOS C S3: 663 LOS C	S1: 1,042 Constrained S2: 663 LOS C S3: 663 LOS C	S1: 1,276 Constrained S2: 897 LOS E S3: 897 LOS E	S1: 1,276 Constrained S2: 897 LOS E S3: 897 LOS E	S1: 1,276 Constrained S2: 897 LOS E S3: 897 LOS E	S1: 0 pt added S2: 0.75 pts added S3: 0.75 pts added
Moraga Way and Southwaite Ct	S1: 1,034 Constrained S2: 655 LOS C S3: 655 LOS C	S1: 1,034 Constrained S2: 655 LOS C S3: 655 LOS C	S1: 1,268 Constrained S2: 889 LOS E S3: 889 LOS E	S1: 1,268 Constrained S2: 889 LOS E S3: 889 LOS E	S1: 1,268 Constrained S2: 889 LOS E S3: 889 LOS E	S1: 0 pt added S2: 0.75 pts added S3: 0.75 pts added
Moraga Way and Altamount Dr	S1: 1,025 Constrained S2: 646 LOS C S3: 646 LOS C	S1: 1,025 Constrained S2: 646 LOS C S3: 646 LOS C	S1: 1,259 Constrained S2: 880 LOS E S3: 880 LOS E	S1: 1,259 Constrained S2: 880 LOS E S3: 880 LOS E	S1: 1,259 Constrained S2: 880 LOS E S3: 880 LOS E	S1: 0 pt added S2: 0.75 pts added S3: 0.75 pts added

Moraga Way and El Camino Moraga	S1: 1,004 Constrained S2: 625 LOS B S3: 625 LOS B	S1: 1,004 Constrained S2: 625 LOS B S3: 625 LOS B	S1: 1,238 Constrained S2: 859 LOS E S3: 859 LOS E	S1: 1,238 Constrained S2: 859 LOS E S3: 859 LOS E	S1: 1,238 Constrained S2: 859 LOS E S3: 859 LOS E	S1: 0 pt added S2: 1 pts added S3: 1 pts added
Moraga Way and Whitehall Dr/Meadowlands Ct	S1: 950 LOS F S2: 571 LOS B S3: 571 LOS B	S1: 950 LOS F S2: 571 LOS B S3: 571 LOS B	S1: 1,184 Constrained S2: 805 LOS D S3: 805 LOS D	S1: 1,184 Constrained S2: 805 LOS D S3: 805 LOS D	S1: 1,184 Constrained S2: 805 LOS D S3: 805 LOS D	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and El Corte	S1: 943 LOS F S2: 564 LOS B S3: 564 LOS B	S1: 943 LOS F S2: 564 LOS B S3: 564 LOS B	S1: 1,177 Constrained S2: 798 LOS D S3: 798 LOS D	S1: 1,177 Constrained S2: 798 LOS D S3: 798 LOS D	S1: 1,177 Constrained S2: 798 LOS D S3: 798 LOS D	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Lavenida Dr	S1: 939 LOS F S2: 560 LOS B S3: 560 LOS B	S1: 939 LOS F S2: 560 LOS B S3: 560 LOS B	S1: 1,173 Constrained S2: 794 LOS D S3: 794 LOS D	S1: 1,173 Constrained S2: 794 LOS D S3: 794 LOS D	S1: 1,173 Constrained S2: 794 LOS D S3: 794 LOS D	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Coral Dr	S1: 898 LOS E S2: 519 LOS A S3: 519 LOS A	S1: 898 LOS E S2: 519 LOS A S3: 519 LOS A	S1: 1,132 Constrained S2: 753 LOS D S3: 753 LOS D	S1: 1,132 Constrained S2: 753 LOS D S3: 753 LOS D	S1: 1,132 Constrained S2: 753 LOS D S3: 753 LOS D	S1: 0.5 pt added S2: 0.5 pts added S3: 0.5 pts added
Moraga Way and Eastwood Dr/Estabueno Dr	S1: 800 LOS D S2: 421 LOS A S3: 421 LOS A	S1: 800 LOS D S2: 421 LOS A S3: 421 LOS A	S1: 1,034 Constrained S2: 655 LOS C S3: 655 LOS C	S1: 1,034 Constrained S2: 655 LOS C S3: 655 LOS C	S1: 1,034 Constrained S2: 655 LOS C S3: 655 LOS C	S1: 1 pt adde S2: 0.25 pts added S3: 0.25 pts added
Moraga Way and Ivy Dr (south at city limit)	S1: 736 LOS D S2: 357 LOS A S3: 357 LOS A	S1: 736 LOS D S2: 357 LOS A S3: 357 LOS A	S1: 970 LOS F S2: 591 LOS B S3: 591 LOS B	S1: 970 LOS F S2: 591 LOS B S3: 591 LOS B	S1: 970 LOS F S2: 591 LOS B S3: 591 LOS B	S1: 0.5 pt added S2: 0 pts added S3: 0 pts added

Appendix E: Alternatives Comparison Graphs


Scenario 1
4000
3500
3000
2500
2000
1500
1000
500
0
Camino Pablo and El Toyonal/Orinda Way
Camino Pablo and Camino Sobrante
WB on-ramp from Camino Pablo SB and Santa Maria Way WB
WB on-ramp from Camino Pablo NB
Camino Pablo and Brookwood Rd
Camino Pablo and Moraga Way
Moraga Way and Overhill Rd
Moraga Way and Camino Encinas
Moraga Way and Orchard Rd (NW)
Moraga Way and Stein Way
Moraga Way and Lloyd Ln
Moraga Way and Brookside Rd
Moraga Way and Sanborn Rd
Moraga Way and Vista Del Moraga
Moraga Way and Monte Veda Dr
Moraga Way and Orchard Ct
Moraga Way and Buena Vista
Moraga Way and Glorietta Blvd
Moraga Way and Los Cerros
Moraga Way and Orchard Rd (SE)
Moraga Way and Oak Dr
Moraga Way and Sandy Ct
Moraga Way and Ardor Dr
Moraga Way and Woodland Rd
Moraga Way and Ivy Dr (northwest)
Moraga Way and Leslie Ln
Moraga Way and Southwaite Ct
Moraga Way and Altamount Dr
Moraga Way and El Camino Moraga
Moraga Way and Whitehall Dr/Meadowlands Ct
Moraga Way and El Corte
Moraga Way and Lavenida Dr
Moraga Way and Coral Dr
Moraga Way and Eastwood Dr/Estabueno Dr
Moraga Way and Ivy Dr (south at city limit)
Vehicle Count: Current Conditions (previously evaluated)
Vehicle Count: No Project
Vehicle Count: Plan Orinda Buildout Alternative
Vehicle Count: Buildout Alternative 2
Buildout Alternative 3


Scenario 2
4000
3500
3000
2500
2000
1500
1000
500
0
Camino Pablo and El Toyonal/Orinda Way
Camino Pablo and Camino Sobrante
WB on-ramp from Camino Pablo SB and Santa Maria Way WB
WB on-ramp from Camino Pablo NB
Camino Pablo and Brookwood Rd
Camino Pablo and Moraga Way
Moraga Way and Overhill Rd
Moraga Way and Camino Encinas
Moraga Way and Orchard Rd (NW)
Moraga Way and Stein Way
Moraga Way and Lloyd Ln
Moraga Way and Brookside Rd
Moraga Way and Sanborn Rd
Moraga Way and Vista Del Moraga
Moraga Way and Monte Veda Dr
Moraga Way and Orchard Ct
Moraga Way and Buena Vista
Moraga Way and Glorietta Blvd
Moraga Way and Los Cerros
Moraga Way and Orchard Rd (SE)
Moraga Way and Oak Dr
Moraga Way and Sandy Ct
Moraga Way and Ardor Dr
Moraga Way and Woodland Rd
Moraga Way and Ivy Dr (northwest)
Moraga Way and Leslie Ln
Moraga Way and Southwaite Ct
Moraga Way and Altamount Dr
Moraga Way and El Camino Moraga
Moraga Way and Whitehall Dr/Meadowlands Ct
Moraga Way and El Corte
Moraga Way and Lavenida Dr
Moraga Way and Coral Dr
Moraga Way and Eastwood Dr/Estabueno Dr
Moraga Way and Ivy Dr (south at city limit)
Vehicle Count: Current Conditions (previously evaluated)
Vehicle Count: No Project
Vehicle Count: Plan Orinda Buildout Alternative
Vehicle Count: Buildout Alternative 2
Buildout Alternative 3


Scenario 3
4000
3500
3000
2500
2000
1500
1000
500
0
Camino Pablo and El Toyonal/Orinda Way
Camino Pablo and Camino Sobrante
WB on-ramp from Camino Pablo SB and Santa Maria Way WB
WB on-ramp from Camino Pablo NB
Camino Pablo and Brookwood Rd
Camino Pablo and Moraga Way
Moraga Way and Overhill Rd
Moraga Way and Camino Encinas
Moraga Way and Orchard Rd (NW)
Moraga Way and Stein Way
Moraga Way and Lloyd Ln
Moraga Way and Brookside Rd
Moraga Way and Sanborn Rd
Moraga Way and Vista Del Moraga
Moraga Way and Monte Veda Dr
Moraga Way and Orchard Ct
Moraga Way and Buena Vista
Moraga Way and Glorietta Blvd
Moraga Way and Los Cerros
Moraga Way and Orchard Rd (SE)
Moraga Way and Oak Dr
Moraga Way and Sandy Ct
Moraga Way and Ardor Dr
Moraga Way and Woodland Rd
Moraga Way and Ivy Dr (northwest)
Moraga Way and Leslie Ln
Moraga Way and Southwaite Ct
Moraga Way and Altamount Dr
Moraga Way and El Camino Moraga
Moraga Way and Whitehall Dr/Meadowlands Ct
Moraga Way and El Corte
Moraga Way and Lavenida Dr
Moraga Way and Coral Dr
Moraga Way and Eastwood Dr/Estabueno Dr
Moraga Way and Ivy Dr (south at city limit)
Vehicle Count: Current Conditions (previously evaluated)
Vehicle Count: No Project
Vehicle Count: Plan Orinda Buildout Alternative
Vehicle Count: Buildout Alternative 2
Buildout Alternative 3