Appendix N
Wildfire Evacuation Plan

DRAFT

Wildfire Evacuation Plan

Aquabella Specific Plan Update

SEPTEMBER 2023

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ARC	American Red Cross
CAL FIRE	California Department of Forestry and Fire Protection
CALTRANS	California Department of Transportation
CERT	Community Emergency Response Team
CHP	California Highway Patrol
City	City of Moreno Valley
County	County of Riverside
DAS	Department of Animal Services
EAS	Emergency Alert System
EMD	County of Riverside Emergency Management Department
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
IC	Incident Command
IFTSA	International Fire Service Training Association
MVFD	Moreno Valley Fire Department
MVPD	Moreno Valley Police Department
NIMS	National Incident Command System
NWFCG	National Wildland Fire Coordinating Groups
OA	Operational Area
Project	Aquabella Specific Plan Update Project
RCFD	Riverside County Fire Department
RCSD	Riverside County Sheriff's Department
SCAG	Southern California Association of Governments
SEMS	State Emergency Management System
TRA	Temporary Refuge Area
VOAD	Volunteers Active in Disasters
VoIP	Voice over Internet Protocol
WEP	Wildfire Evacuation Plan
WUI	Wildland-Urban Interface

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Quick Reference - Wildfire Preparedness

The Quick Reference Guide provides helpful tips and educational resources, so occupants are prepared in the event of a wildland fire evacuation.

Figure 1 illustrates the emergency evacuation routes potentially available to the Aquabella Specific Plan Update Project and surrounding communities. Figure 2 displays the Project's vicinity location and Figure 3 is the Project's site plan.

The Project's evacuation routes for all occupants (e.g., residents, employees, visitors) of the Project are detailed in Section 4 and illustrated in Figure 1. Occupants should know available routes, stay informed, and follow directions provided by law enforcement or fire agencies, news media, and other credible sources. Do not rely on navigation apps that may inadvertently lead persons toward the approaching wildfire.

Nearest Medical Facilities

Hospitals:

Kaiser Permanente Moreno Valley Medical Center (0.7 miles)

27300 Iris Ave,
Moreno Valley, CA

Directions:
Head south on Nason Street
Turn left onto Iris Avenue
Turn left onto Kaiser Hospital
Continue to hospital.

Riverside University Health System Medical Center (0.3 miles)

1117 E Devonshire Ave,
Hemet, CA 92543

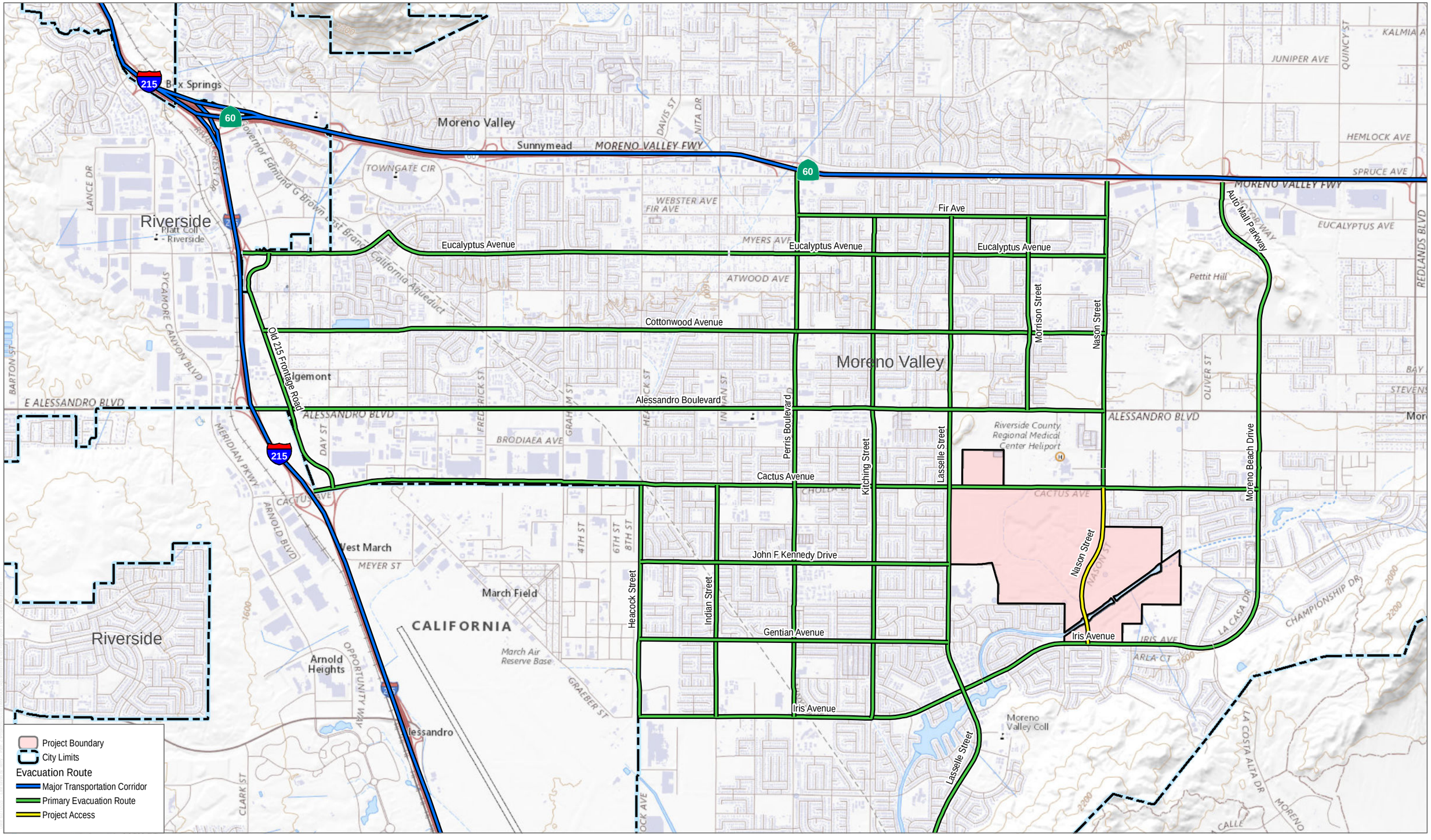
Directions:
Head north on Nason Street
Turn left on Cactus Avenue
Turn right on South Hospital Road
Continue to Hospital

Urgent Care Facilities:

Apple Urgent Care – Moreno Valley
6350 W Ramsey Street,
Moreno Valley, CA 92220

Concentra Urgent Care
16420 Perris Blvd STE Q,
Moreno Valley, CA 92551

Moreno Beach Urgent Care
27640 Eucalyptus Ave,
Moreno Valley, CA 92555



SOURCE: ESRI Imagery Service 2023; Maxar 2022

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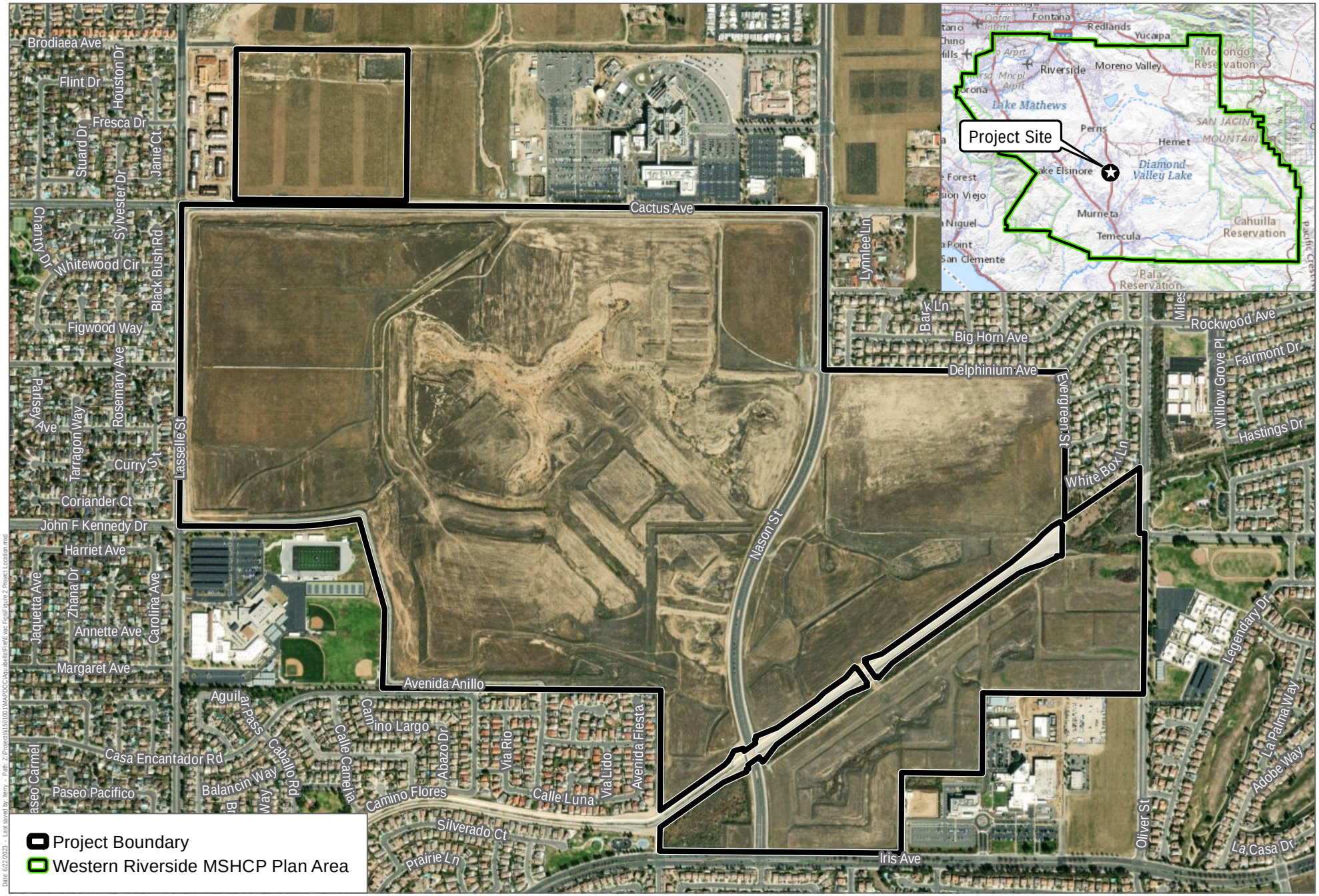
0 1,500 3,000 Feet

FIGURE 1

Evacuation Routes

Fire Evacuation Plan for the Aquabella Specific Plan Update



SOURCE: USGS National Map 2023; Maxar 2022

FIGURE 1

Project Location

Fire Evacuation Plan for the Aquabella Specific Plan Update

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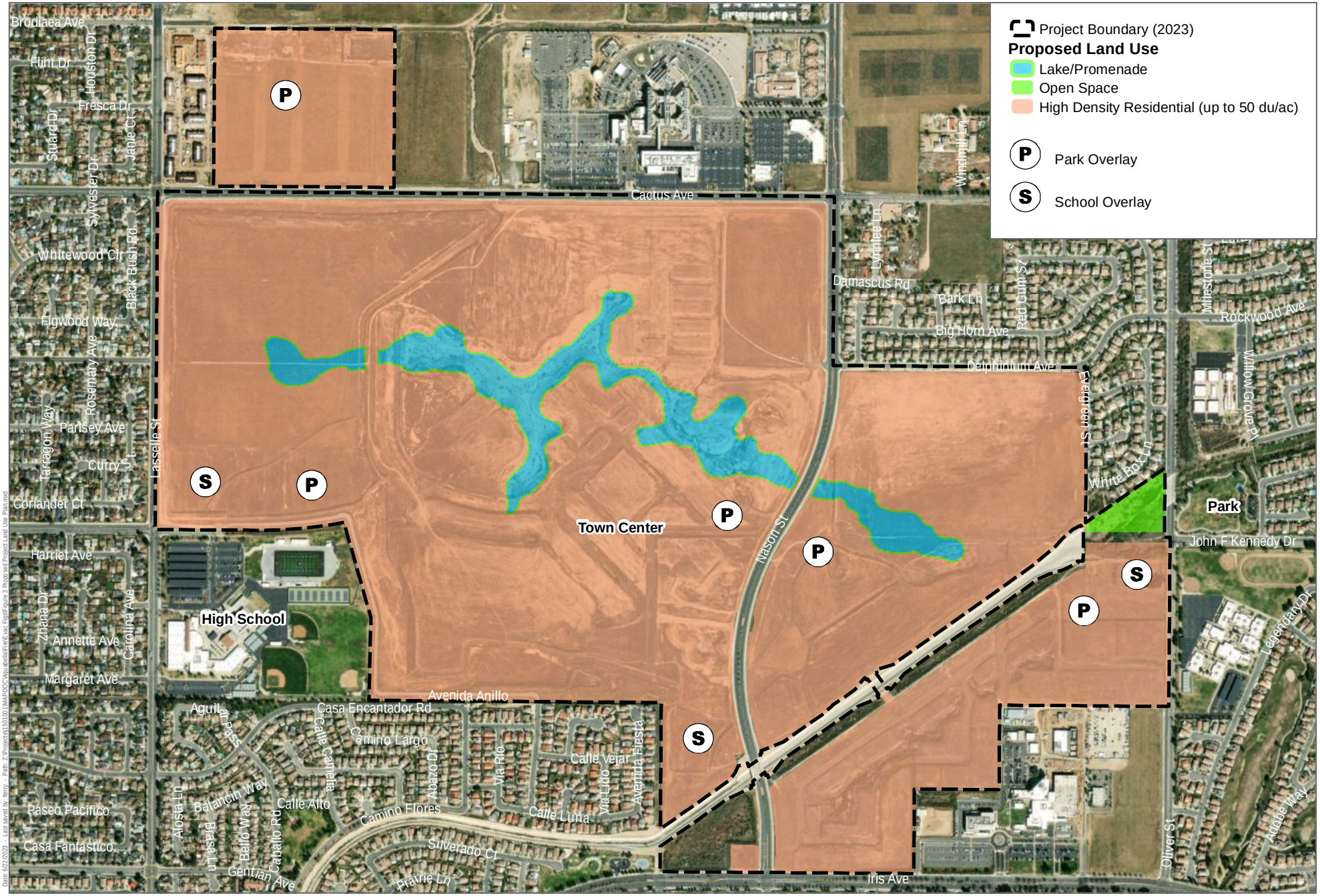

SOURCE: Maxar 2022

FIGURE 3

Proposed Project Land Use Plan

Fire Evacuation Plan for the Aquabella Specific Plan Update

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0 500 1,000 Feet

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Register to Receive Emergency Alerts

The City of Moreno Valley (City) utilizes Alert MoVal for its Community Emergency Notification System. Alert MoVal is a mass communications hub platform that allows the City to provide secure, reliable, and relevant information to residents in real-time. Moreno Valley Police Department is responsible for activating Alert MoVal within the City. Additionally, residents can sign up for Alert RivCo, which is a regional asset managed by the County of Riverside Emergency Management Department (EMD). In the event of a wildfire within the City limits, the Incident Command (IC), Riverside County Fire Department (RCFD) or other City departments will contact coordinate with MVPD and/or the Riverside County Sheriff's Department (RCSD) to release emergency communications to affected populations. The RCSD has the responsibility to release an emergency notification to affected population via the Alert RivCo system. Therefore, all occupants of the Aquabella Specific Plan Update Project are strongly advised to register all land lines, mobile phone numbers and email addresses with Alert MoVal (https://Moreno Valleyca.gov/540/City-of-Moreno Valley-Alerts) and Alert RivCo system (https://rivcoready.org/alert-rivco) in order to receive emergency evacuation instructions. The occupants of Aquabella Specific Plan Update Project are part of the greater Los Angeles-Palm Springs media market and the media outlets will also be a good source of information, via television and radio, on overall emergency situations and how occupants should respond. In addition, the Riverside Emergency Alert System (EAS) is county-wide and broadcasts emergency information via six radio stations: KFI 640 AM, KFWB 980 AM, KNX 1070 AM, KFRG 95.1 FM, KVCR 91.9, and KXFG 92.9 FM. The following television stations will provide information during an emergency:

- Press Enterprise - https://www.pe.com/
- ABC7 - https://abc7.com/
- NBC4 - https://www.nbclosangeles.com/
- KTLA - https://ktla.com/
- FOX LA - http://www.foxla.com/

Social media provides another outlet for news:

City of Moreno Valley

- https://twitter.com/CityofMoVal

Riverside County Sheriff Department

- https://www.facebook.com/RCSD.Official/
- https://twitter.com/rso

CAL FIRE, Riverside County

- https://www.facebook.com/CALFIRERRU/

Get Involved in Community Readiness

Residents and employees of the Aquabella Specific Plan Update Project are encouraged to obtain Community Emergency Response Team (CERT) training through the City of Moreno Valley Emergency Management Department (https://moval.gov/departments/fire/emergency-cert.html). The respective HOAs and Property Managers of all future developments within the Specific Plan Area will each organize annual meeting and send annual notices regarding wildfire and evacuation preparedness to all occupants, as well as maintain a fire safe page on the development's website, to include this Wildfire Evacuation Plan and links to important preparedness information.

This Wildfire Evacuation Plan is prepared specifically for the Aquabella Specific Plan Update Project and focuses on wildland fire evacuations, although many of the concepts and protocols will be applicable to other emergency situations. Ultimately, this WEP should be used by occupants for awareness of evacuation approaches during wildfires and other similar emergencies. It is important for occupants to understand the importance of being prepared, so if/when the time comes where evacuation is necessary, they will be able to calmly implement their individual or household evacuation plan. Some actions occupants can take in advance include:

- Follow the "Ready, Set, Go!" model developed for wildfire evacuations.
  - Occupants should create an individual, household or business evacuation plan, and share it with all members of the household or business.
  - All occupants should know the available evacuation routes, stay informed and follow directions provided by credible sources.
  - No occupant should rely on navigation apps that may inadvertently lead them toward an approaching fire.
  - All occupants should be encouraged to prepare a go-kit or car emergency kit, including cell phone charger, flashlight, jumper cables, water, clothes, first aid, and food.

Sample emergency preparedness resources available to the Aquabella Specific Plan Update Project occupants are provided in Appendices A-1 through A-2 (Wildfire Safety Checklist and "Ready, Set, Go!" Wildland Fire Action Guide) and B1 through B4 (Family Disaster Plan and Personal Survival Guide), and occupants are encouraged to become familiar with the concepts detailed at the following websites:

1. "Ready, Set, Go!" Personal Wildland Fire Action Guide:

   https://www.readyforwildfire.org/prepare-for-wildfire/ready-set-go/

2. Red Cross Emergency Planning:

   http://www.redcross.org/get-help/how-to-prepare-for-emergencies/make-a-plan

3. Hazardous Materials Emergency Preparedness:

   https://www.ready.gov/hazardous-materials-incidents

4. Building a disaster kit:

   http://www.redcross.org/get-help/prepare-for-emergencies/be-red-cross-ready/get-a-kit

5. FEMA Ready Business How-To Guide:

   https://www.ready.gov/sites/default/files/2020-04/ready_business_how-to-guide.pdf

Evacuation Plan Purpose and Limitations

Wildfire and other emergencies are often dynamic events and the need for evacuations are typically determined by on-scene first responders or by a collaboration between first responders and designated emergency response teams, including County EMD and the IC established for larger emergency events. As such, and consistent with all emergency evacuation plans, this Wildfire Evacuation Plan is to be considered a tool that supports existing pre-plans and provides for occupants who are familiar with the evacuation protocol but is subservient to emergency event-specific directives provided by agencies managing the event.

1 Introduction

This Wildfire Evacuation Plan (WEP) was prepared based on the City of Moreno Valley Emergency Operations Plan (EOP) (City of Moreno Valley 2019). The format of this WEP is also consistent with the recommendations of the County of Riverside Emergency Operations Plan (County of Riverside 2019) and Emergency Support Function 16, Evacuation and Re-entry, of the. A complete copy of the City of Moreno Valley's EOP and Riverside County's EOP can be downloaded from the respective links below:

City of Moreno Valley EOP: http://moval.org/departments/fire/pdf/MV-EOP-2019.pdf

County of Riverside EOP: https://rivcoready.org/about-emd/plans

Evacuation is a process by which people are moved from a place where there is immediate or anticipated danger, to a place of safety, and offered appropriate temporary shelter facilities. When the threat to safety is gone, evacuees are able to return to their normal activities, or to make suitable alternative arrangements. The overarching goal of evacuation planning is to maximize the preservation of life while reducing the number of people that must evacuate and the distance, they must travel to seek safe refuge. The purpose of the City of Moreno Valley Emergency Operations Plan is to provide an overview of evacuation functions, agency roles and responsibilities, and overall guidelines for the evacuation of people and animals from hazardous areas to areas of safety in incidents with and without warning (City of Moreno Valley 2019).

This Wildfire Evacuation Plan will outline strategies, procedures, recommendations, and organizational structures that can be used to implement a coordinated evacuation effort in the case of a wildfire emergency effecting the Aquabella Specific Plan Update Project. It is noted, that the on-set of a wildfire or other emergency is generally unplanned, and, more often than not, occupants will be faced with decisions that need to be made quickly and determined by on-scene first responders or by a collaboration between first responders and designated emergency response teams. Therefore, this WEP is to be considered a tool that supports existing pre-plans and provides for occupants who are familiar with the evacuation protocol but is subservient to emergency event-specific directives provided by agencies managing the event.

1.1 Project Description

The applicant proposes the Aquabella Specific Plan Update (Amendment 2 to the Specific Plan) to comprehensively update the existing Moreno Valley Field Station Specific Plan. The Aquabella Specific Plan Update provides comprehensive plans and a new vision to guide the continued implementation of the Aquabella development project and bring significant public benefits, housing, and economic growth to the City and the region. The proposed Project contains the updated land use and other plans, site development standards, design guidelines, and implementation measures necessary to implement the new vision for the Aquabella mixed-use planned community. As described further in this chapter, the proposed Project would include land use and other changes to accommodate 15,000 multi-family and workforce housing options; a 49,000 square feet (sf) mixed-use commercial and retail town center with a 300-room hotel; 80 acres of park space comprised of a 40-acre lake, a 15-acre lake promenade encircling the lake, and an

additional 25 acres of parkland; 40 acres of schools with up to three elementary school sites and one middle school site; public services and facilities; infrastructure improvements; and other amenities.

1.2 Applicable Regulations, Standards and Planning Tools

1.2.1 Federal

1.2.1.1 Disaster Mitigation Act

The Disaster Mitigation Act of 2000 requires that a state mitigation plan, as a condition of disaster assistance, add incentives for increased coordination and integration of mitigation activities at the state level through the establishment of requirements for two different levels of state 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 Disaster Mitigation Act also established a new requirement for local mitigation plans.

1.2.1.2 National Incident Management System (NIMS)

The NIMS guides all levels of government, nongovernmental organizations and the private sector to work together to prevent, protect against, mitigate, respond to and recover from incidents. NIMS provides community members with a shared vocabulary, systems and processes to successfully deliver the capabilities described in the National Preparedness System. The National Preparedness System is a Presidential Policy Directive establishing a common goal to create a secure and resilient nation associated with prevention, protection, mitigation, response and recovery to address the greatest risks to the nation. One core area is fire management and suppression.

NIMS defines operational systems that guide how personnel work together during incidents.

1.2.1.3 Pet Evacuation and Transportation Standards Act

The Pets Evacuation and Transportation Standards Act of 2006 amends the Stafford Act, and requires evacuation plans to take into account the needs of individuals with household pets and service animals, prior to, during, and following a major disaster or emergency.

1.2.2 State

1.2.2.1 Fire Hazard Severity Zones

To assist each fire agency in addressing its responsibility area, California Department of Forestry and Fire (CAL FIRE) uses a severity classification system to identify areas or zones of severity for fire hazards within the state. CAL FIRE is required to map these zones for State Responsibility Areas and identify Very High Fire

Hazard Severity Zones (VHFHSZ) for Local Responsibility Areas (LRA). The Project is not designated as a VHFHSZ within the LRA.

1.2.2.2 California Wildland-Urban Interface Code

On September 20, 2005, the California Building Standards Commission approved the Office of the State Fire Marshal's emergency regulations amending the California Building Code (CBC) (California Code of Regulations [CCR] Title 24, Part 2). Section 701A of the CBC includes regulations addressing materials and construction methods for exterior wildfire exposure and applies to new buildings located in State Responsibility Areas or Very High Fire Hazard Severity Zones in Local Response Areas.

1.2.2.3 California Fire Code

The 2022 California Fire Code (CCR Title 24, Part 9) establishes regulations to safeguard against the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety for and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas. The City of Moreno Valley has adopted the 2022 California Fire Code as Chapter 8.16, as amended, including appendices addressing fire-flow requirements for buildings.

1.2.2.4 California Emergency Services Act

The California Emergency Services Act (California Government Code §8550, et seq.), provides for the creation of an Office of Emergency Services, assign and coordinate functions and duties to be performed during an emergency, facilitate mutual aid, and assign resources (including manpower and facilities) throughout the state for dealing with any emergency that may occur.

1.2.2.5 California Office of Emergency Services

The California Office of Emergency Services (OES) is responsible for the coordination of overall state agency response to disasters. Assuring the state's readiness to respond to, recover from all hazards and assisting local governments in their emergency preparedness, response, recovery and mitigation.

1.2.2.5.1 Standardized Emergency Management System (SEMS)

SEMS is the cornerstone of California's emergency response system and the fundamental structure for the response phase of emergency management. The system unifies all elements of California's emergency management community into a single integrated system and standardizes key elements. SEMS incorporates:

- Incident Command System (ICS) - A field-level emergency response system based on management by objectives
- Multi/ Inter-agency coordination - Affected agencies working together to coordinate allocations of resources and emergency response activities
- Mutual Aid - A system for obtaining additional emergency resources from non-affected jurisdictions.
- Operational Area Concept - County and its sub-divisions to coordinate damage information, resource requests and emergency response.

1.2.2.6 Attorney General Guidance

The California Office of the Attorney General issued (October 2022) guidance (Guidance) outlining best practices for analyzing and mitigating wildfire impacts of development projects under the California Environmental Quality Act (CEQA). The Guidance is intended to help local governments' evaluation and approval considerations for development projects in fire-prone areas, and to help project design in a way that minimizes wildfire ignition and incorporates emergency access and evacuation measures. Importantly, the Guidance does not impose additional legal requirements on local governments, nor does it alter any applicable laws or regulations.

The Guidance states that evacuation modeling and planning should be required for all projects located in HFHSZ/ VHFHSZ that present an increased risk of ignition and/or evacuation impacts. It further states that local jurisdictions should require evacuation modeling and planning to be developed prior to project approval to provide maximum flexibility in design modifications necessary to address wildfire risks and impacts. The Project is in an area designated as a VHFHSZ within a LRA and is adjacent to open space areas, which is why this Wildfire Evacuation Plan was prepared for the Project and includes the analysis of several evacuation scenarios, including existing and with Project conditions.

The Guidance further states that evacuation modeling and analysis must augment existing information when necessary to include adequate analysis of the following:

- Evaluation of the capacity of roadways to accommodate project and community evacuation and simultaneous emergency access. Existing and future roadway capacities are analyzed in Section 4 of this Wildfire Evacuation Plan.
- Assessment of the timing for evacuation. Analysis of evacuation timing is detailed in Section 4.2.
- Identification of alternative plans for evacuation. Alternative plans for evacuation (e.g., shelter-in-place) would be feasible due to the high ignition resistance level of Project structures.
- Evaluation of the Project's impacts on existing evacuation plans. Existing evacuation plans do not exist for the area. The Project would utilize primary evacuation routes that would be available to other evacuees. This Wildfire Evacuation Plan is based on the City's Emergency Operations Plan

and the County's Emergency Operations Plan, including Emergency Support Function 16, Evacuation and Re-entry.

- Consideration of the adequacy of emergency access, including the Project's proximity to existing fire services and the capacity of existing services. Emergency access is provided that is consistent with the fire code requirements.

- Traffic modeling to quantify travel times under various likely scenarios. This Wildfire Evacuation Plan conducted simulations using Vissim, a microscopic, multimodal traffic flow modeling software used to simulate different traffic conditions. In Vissim simulations, roadway capacity is accounted for and each vehicle in the traffic system is individually tracked through the model and comprehensive measures of effectiveness, such as average vehicle speed and queueing, are collected on every vehicle during each 0.1-second of the simulation.

In consideration of the above, the AG Guidance encourages local jurisdictions to develop thresholds of significance for evacuation times based on community-wide standards. Any conclusion that an increase in evacuation times is a less than significant impact should be based on a threshold of significance that reflects community-wide goals and standards. Thresholds should also consider consistency with an adopted emergency operations or evacuation plan, a safety element updated to integrate wildfire and evacuation concerns, or recommendations developed by CAL FIRE relating to safety of subdivisions. The Project also has the potential to minimize on-road traffic when it is considered necessary and/or safer by temporarily providing refuge on-site in protected structures, which offers a contingency not available to all communities/developments and assists in providing flexibility and options for emergency managers.

At the time this WEP was prepared, there are no established thresholds for evacuation times for this community or any California community to the knowledge of the authors. This is primarily because every location and fire scenario are unique. While it may take one community 20 minutes to evacuate safely, it is not a valid assumption to consider a 3-hour evacuation for another community as unsafe. The 3-hour evacuation can be very safe while the 20-minute evacuation may be unsafe due to the conditions and exposures along the evacuation routes. Therefore, the Project does not utilize a threshold, but does compare its evacuation times with that of other evacuation plans relying on the FEMA 90-minute timeframe as a reasonable timeframe for most communities to evacuate. Accordingly, as detailed in Section 4, under the most conservative scenario, the Project would evacuate in 4 hours and 46 minutes, and changes in evacuation times are minor for Land Use Areas A through E, with a maximum 31-minute increase in evacuation time with the Project. Given the location of the Project in a urban setting, it is unlikely that a full evacuation of the Project would occur as a result of wildfire.

1.2.3 Local

1.2.3.1 Riverside County Multi-Jurisdictional Local Hazard Mitigation Plan

The purpose of the County's Multi-Jurisdictional Local Hazard Mitigation Plan (County Riverside 2018) is to identify the County's hazards, review and assess past disaster occurrences, estimate the probability of

future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made hazards. An important Riverside County Multi-Jurisdictional Hazard Mitigation Plan component is the Community Emergency Response Team (CERT), which educates community members about disaster preparedness and trains them in basic response skills, including fire safety.

1.2.3.2 Riverside County Emergency Operations Plan

The 2019 Riverside County Emergency Operations Plan (EOP) describes a comprehensive emergency management system that provides for a planned response to disaster situations associated with natural disasters, technological incidents, terrorism, and nuclear-related incidents. It delineates operational concepts relating to various emergency situations, identifies components of the Emergency Management Organization, and describes the overall responsibilities for protecting life and property and providing for the overall well-being of the population. The plan also identifies the sources of outside support that might be provided (through mutual aid and specific statutory authorities) by other jurisdictions, state and federal agencies, and the private sector.

1.2.3.3 City of Moreno Valley Emergency Operations Plan

The primary objective of the City of Moreno Valley Emergency Operations Plan (EOP) from 2019 is to integrate and synchronize all City facilities and personnel into a streamlined structure capable of promptly and efficiently addressing any emergency situation, including the need for evacuations. The EOP outlines the functions of the City of Moreno Valley Emergency Operations Center (EOC), which serves as the central administrative body responsible for overseeing and harmonizing the emergency response efforts of different City departments and external agencies. The purpose of the plan is to promote collaboration and coordination among multiple agencies and jurisdictions, specifically fostering effective communication and cooperation between the City of Moreno Valley, Riverside County, special districts, volunteer groups, and state agencies during emergency operations.

1.2.3.3 City of Moreno Valley Fire Code

The City of Moreno Valley Fire Code consists of MVMC Chapter 8, Article 36, Sections 36.010 through 36.060, which adopts the 2022 California Fire Code with some modifications, and applicable sections of the CCR. Provisions of the California Fire Code are described under State Regulations, above.

1.2.3.4 City of Moreno Valley Annex Local Hazard Mitigation Plan

The City's 2023 Local Hazard Mitigation Plan (LHMP) is an Administrative Regulation adopted to facilitate to identification the City's hazards, review, and assessment of past disaster occurrences, estimate the probability of future occurrences and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and man-made hazards.

1.2.3.5 City of Moreno Valley Building Code

The City's Building Code (MVMC Chapter 8, Article 20, Section 8.010) is intended to regulate the construction of applicable facilities and encompasses (and formally adopts) associated elements of the CBC. Specifically, this includes regulating the "regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, use, height, area and maintenance of all structures and certain equipment therein."

1.2.3.6 City of Moreno Valley Hazardous Vegetation and Rubbish Abatement Standards

The City's Hazardous Weed Abatement Standards are intended to minimize wildland fire hazards through prevention activities and programs. These regulations follow Government code sections 39501 and 39502 and give responsibility to property owners, leasers, and occupants of the property to ensure that the prevention and abatement of public nuisances caused by weeds, hazardous vegetation, or rubbish on or about any parcel.

Chapter 49 of the CFC, as adopted by the City, establishes vegetation management requirements for development within areas identified as High or Very High FHSZ, which includes 100 feet of fuel modification on publicly or privately-owned lands adjacent to native or naturalized vegetation. The city requires Fuel Modification Plans for all new development, which are intended to reduce the risk of significant loss, injury, or death involving wildland fires.

2 Background

This Aquabella Specific Plan Update Project Wildfire Evacuation Plan was prepared based on the City of Moreno Valley EOP and the County of Riverside EOP.

To establish a framework for implementing well-coordinated evacuations, the City, like most California emergency operations agencies, has adopted evacuation procedures in accordance with the State of California's Standardized Emergency Management System (SEMS) and the National Incident Command System (NIMS). Large-scale evacuations are complex, multi-jurisdictional efforts that require coordination between many agencies and organizations. Emergency services and other public safety organizations play key roles in ensuring that an evacuation is effective, efficient, and safe.

Evacuation is a process by which people are moved from a place where there is immediate or anticipated danger, to a safer place, and offered temporary shelter facilities. When the threat passes, evacuees are able to return to their normal activities, or to make suitable alternative arrangements.

Evacuation during a wildfire is not necessarily directed by the fire agency, except in specific areas where fire personnel may enact evacuations on-scene. The City of Moreno Valley Police Department would be the primary law enforcement agency responsible for evacuations within the City's jurisdiction. As detailed in the City's EOP, MVPD would staff the Law Enforcement Branch, which manages the Evacuation & Reentry Unit. If the evacuation requires coordination with other jurisdictions, or MVPD need additional support to conduct an evacuation, the Riverside County Sheriff's Department Operations Center (DOC) will coordinate evacuation and re-entry activities and overall Riverside County Sheriff's Department emergency response. During any evacuation event that exceeds normal Riverside County Sheriff's Department capacity, the County's Operational Area (OA) 's Emergency Operations Center (EOC) will be activated. In the event the EOC is activated, the EOC Law Enforcement Branch will activate the Evacuation Re-Entry Unit to coordinate the countywide evacuation and re-entry functions. Incident information and resource needs will be communicated from the Sheriff's DOC to the OA EOC Law Enforcement Branch.

The County Sheriff's DOC works closely with other organizations including RCFD, with the DOC being in charge of coordinating RCFD activities. Additionally, the Law Enforcement branch will link the OA EOC to many resources including the Sheriff's DOC, IC for incidents under the management of law enforcement services, as appropriate, Evacuation teams, Shelters, Transportation agencies, and other Supporting agencies.

Every evacuation scenario will include some level of unique challenges, constraints, and fluid conditions that require interpretation, fast decision making, and alternatives. For example, one roadway incident that results in blockage of evacuating vehicles may require short-term or long-term changes to the evacuation process. Risk is considered high when evacuees are evacuating late, and fire encroachment is imminent. This hypothetical scenario highlights the importance of continuing to train responding agencies, model various scenarios, educate the public, provide contingency plans, and take a very conservative approach to evacuation decision timelines.

Equally as important, the evacuation procedures should be regularly updated with lessons learned from actual evacuation events, as they were following the 2022 Riverside County fires. The authors of this Wildfire Evacuation Plan recommend that occasional updates are provided, especially following lessons learned from actual incidents, as new technologies become available that would aid in the evacuation process, and as changing landscapes and development patterns occur within and adjacent to the Project site that may impact how evacuation is accomplished. This Aquabella Specific Plan Update Project Wildfire Evacuation Plan is consistent with the city evacuation planning standards and can be integrated into a county or regional evacuation plan and other pre-plans when and if the area officials and stakeholders (CAL FIRE, RCFD, OES, Riverside Sheriff's Department, and others) complete one.

As demonstrated during large and localized evacuations occurring throughout Riverside County historically, an important component to successful evacuation is early assessment of the situation and early notification via managed evacuation declarations. The city utilizes early warning and informational programs to help meet these important factors. Among the methods available to citizens for emergency information are Alert MoVal, a mass communications hub platform that allows the city to provide secure, reliable, and relevant information to residents in real-time, in addition to radio, television, social media/internet, neighborhood City patrol car or County Sheriff patrol car, and aerial public address notifications, and Reverse 9-1-1 or Alert RivCo. The County of Riverside instituted this regional notification system that is able to send telephone notifications to occupants and businesses within Riverside County impacted by, or in danger of being impacted by, an emergency or disaster. This system, called Alert RivCo, is used by emergency response personnel to notify homes and businesses at risk with information on the event and/or actions (such as evacuation, shelter-in-place, gas leak, missing person, etc.) they are advised to implement. The system utilizes the region's 9-1-1 database, provided by the local telephone company(ies), and thus is able to contact landline telephones whether listed or unlisted. It is TTY/TDD capable.

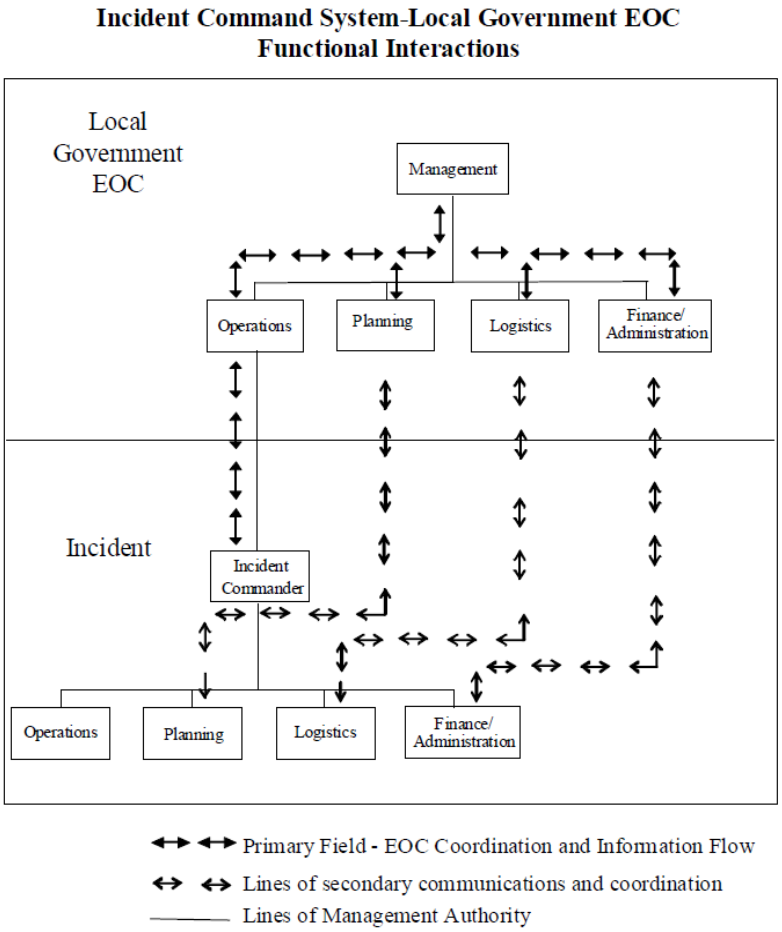
Because the system uses the 9-1-1 database, only landline numbers are in the system. If you have a Voice over IP (VoIP) or cellular telephone and would like to be notified over that device, or if you would like an email notification, you must register those telephone numbers and/or email address for use by the system to receive voice, text, and email messages.

3 City of Moreno Valley and Riverside County Evacuation Planning

This Wildfire Evacuation Plan incorporates concepts and protocols practiced throughout the City and Riverside County. The City follows basic protocols set forth the County's EOP and California Master Mutual Aid Agreement, which dictate who is responsible for an evacuation effort and how regional resources will be requested and coordinated.

First responders are responsible for determining initial protective actions before EOCs and emergency management personnel have an opportunity to convene and gain situational awareness. Initial protective actions are shared/communicated to local EOCs and necessary support agencies as soon as possible to ensure an effective, coordinated evacuation. Figure 4 summarizes the functional interactions of local government EOCs under the Incident Command System.

Figure 4. Incident Command System Local Government EOC Functional Interactions



The Riverside County Sheriff's Department (RCSD) is the lead agency for executing evacuations of the unincorporated areas of Riverside County. In the incorporated cities, local law enforcement (or the Sheriff in contracted cities) will be the lead agency for executing evacuations. The RCSD, as part of Unified Command, assesses and evaluates the need for evacuations, and orders evacuations according to established procedures. During an evacuation effort, the EOC Law Enforcement Branch Director supports the development of alert and warning messages and provides intelligence regarding road closures and evacuations, this position is staffed by the RCSD. The RCSD will be assisted by other law enforcement and support agencies. Law enforcement agencies, highway/road/street departments, and public and private transportation providers will conduct evacuation operations as directed by the OA EOC. Procurement, regulation, and allocation of resources will be accomplished by those designated. Evacuation operations will be conducted by the following agencies:

- Riverside Emergency Animal Rescue System (REARS)
- Riverside County Emergency Management Department (EMD)
- Riverside University Health System-Public Health (RUHS-PH)
- Riverside University Health System - Behavioral Health (RUHS-BH)
- Riverside County Department of Environmental Health (DEH)
- Riverside County Office on Aging
- Riverside County Agricultural Commissioner's Office
- Cal OES Law Enforcement Mutual Aid Region VI
- American Red Cross (ARC)
- Volunteers Active in Disasters (VOAD)
- California Highway Patrol (CHP)
- Transportation agencies
- Other County and state agencies, as needed

The following overview contains information from the Riverside County EOP Emergency Support Annex 16.

3.1 Evacuation Objectives

MVPD is the lead agency for evacuations of areas within the city, including the proposed Aquabella Specific Plan Update Project. The MVPD, as part of a Unified Incident Command System, assesses and evaluates the need for evacuations, and orders evacuations according to established procedures. Additionally, as part of the Unified Incident Command System, the MVPD identifies available and appropriate evacuation routes and coordinate evacuation traffic management with Caltrans, CHP, other supporting agencies, and all impacted jurisdictions.

The decision whether to evacuate or shelter-in-place must be carefully considered with the timing and nature of the incident. This decision is made by first responders in the field by the established Incident Command (IC) or Unified Command (UC). An evacuation effort involves an organized and supervised effort to relocate people from an area

of danger to a safe location. Tactical decisions, such as detailed evacuation areas, specific routes, road closures and temporary evacuation points are decided in the field by IC or UC based upon the dynamics of the incident.

3.2 Evacuation Coordination Process

If the emergency only impacts the City, MVPD will make the decision to evacuate:

- Based on the information gathered, local jurisdictions will generally make the determination on whether to evacuate communities as the need arises, on a case-by-case scenario basis.
- The decision to evacuate will depend entirely upon the nature, scope, and severity of the emergency; the number of people affected; and what actions are necessary to protect the public.
- Local jurisdictions may activate their EOC and conduct evacuations according to procedures outline in their EOP.
- The OA EOC may make recommendations on whether a community should evacuate and may help coordinate the evacuation effort.
- The Evacuation Annex is automatically activated when an incident occurs requiring an evacuation effort that impacts two or more jurisdictions within the OA.

If the emergency impacts multiple jurisdictions within the OA:

- All impacted jurisdictions may activate the EOCs and the OA EOC will be activated, including the OA EOC JIC.
- The OA EOC will being obtaining situational awareness, understanding the severity of the incident.
- The OA EOC will coordinate with fire, law enforcement, public health, and other relevant support agencies to obtain recommendations on protective actions.
- The OA EOC will coordinate with jurisdictional EOCs, emergency management personnel and other public safety personnel. The Policy Group within the EOC will coordinate with jurisdictions leaders across the OA to identify command decisions, including:
    - Gaining regional situational awareness
    - Determining response status
    - Reviewing status of initial protective actions
    - Considering additional protective actions
    - Evaluating public information needs
    - Determining next steps
    - Establishing a regular schedule for internal and external updates
- The OA EOC JIC will coordinate emergency public information to citizens in accordance with procedures established within the Joint Information System (JIS) annex of the OA EOP.

- The OA EOC may support coordinating the evacuation response according to the OA EOP, including:
    - Providing transportation for those who need assistance through the activation of emergency transportation services agreements;
    - Provide support for individuals with disabilities and others with access and functional needs during the evacuation process, which may include, but is not limited to, providing assistance with wayfinding, supervision, and language interpretation;
    - Coordinate and communicate with the private sector, community-based organizations, and faith-based organizations to utilize services and resources available to support the response;
    - Coordinate the provision of accessible care and shelter services.

3.3 Evacuation Response Operations

An evacuation of any area requires significant coordination among numerous public, private, and community/non-profit organizations. Wildfire evacuations will typically allow time for responders to conduct evacuation notification in advance of an immediate threat to life safety; giving occupants time to gather belongings and make arrangements for evacuation. On the other hand, other threats, including wildfires igniting nearby, may occur with little or no notice and certain evacuation response operations will not be feasible (for example, establishing contra flow requires between 24 to 72 hours to be implemented; a no-notice event will not allow for contra flow to be established). Evacuation assistance of specific segments of the population may also not be feasible.

3.3.1 Evacuation Points and Shelters

When the MVPD or Incident Command (IC) implements an evacuation order, they coordinate with the responding fire and rescue agency, the EOC, and others, to decide on locations to use as a Temporary Evacuation Point (TEP). The MVPD will provide emergency alerts through the Alert MoVal platform to direct evacuees to the established TEPs or shelters. These evacuation points will serve as temporary safe zones for evacuees and will provide basic needs such as food, water, and restrooms. Possible shelters and assembly areas that can provide at least short-term refuge and that would be designated by emergency managers during an evacuation near the Project include:

- La Jolla Elementary School
- Vista Del Lago High School
- Hendrick Ranch Elementary School
- Other refuge sites are available within developed communities primarily to the north and west the Project site.

If there are occupants unable to evacuate or in need of transportation assistance to get to a TEP or shelter, the MVPD or IC may establish transportation points to collect and transport people without transportation resources to evacuation points. These transportation points should be large, well-known sites such as shopping centers, libraries, and schools. Transportation should be accessible to all populations, including people with disabilities and other access and functional needs.

3.3.2 Pet Evacuations

The Pets Evacuation and Transportation Standards Act of 2006 amends the Stafford Act, and requires evacuation plans to take into account the needs of individuals with household pets and service animals, prior to, during, and following a major disaster or emergency.

The Riverside County Department of Animal Services (DAS) has plans in place to transport and shelter pets in a disaster under ESF 20 of the OA EOP. Domestic animals in need of housing will be accepted at and/or transported to animal shelters used by DAS; these may include County animal shelters and/or partner agency shelters, such as Animal Friends of the Valley. DAS will provide provisions for service animals at human shelters to include food, water, relief area identification and any other provisions needed to support the animal. Depending on the severity of the imminent or actual event, it may be necessary to prepare for and operate additional animal shelters. If ARC shelters are open for human evacuees, a determination will be made regarding the feasibility of co-locating animals at shelters. In most cases, humans and animals (not including service animals) cannot be co-located at the same shelter site due to concerns with allergies, bites, etc. Service animals are permitted at human shelters at all times and in every circumstance. If colocation is an option, animal response teams will be dispatched to ARC shelter sites and arrangements will be made to obtain emergency supplies and any specialized equipment needed to care for the animals.

If co-location is not an option, or if the animal is not a service animal, existing animal shelter sites will be utilized as noted above, DAS will provide for the pick-up and transport of animals from human shelter sites to animal shelter sites. Animals at shelter sites will be provided for with shelter, food, water and other necessary provisions. DAS has a professional system they use to identify and re-unify animals with their owners.

3.3.3 Shelter-in-Place (County EOP Discussion)

As stated in the County EOP, sheltering-in-place advises people to stay secure at their current location. This tactic shall only be used if an evacuation will cause a higher potential for loss of life. Consideration should be given to assigning incident personnel to monitor the safety of citizens remaining in place. The concept of shelter-in-place is an available option in those instances where physical evacuation is impractical. This procedure may be effective for residential dwellings in the immediately impacted areas, or for large facilities that house a high percentage of non-ambulatory persons (e.g., hospitals and convalescent homes). Sheltering-in-place attempts to provide a safe haven within the impacted area.

The decision on whether to evacuate or shelter-in-place is carefully considered with the timing and nature of the incident (Riverside County 2019). Sheltering-in-place is the preferred method of protection for people that are not directly impacted or in the direct path of a hazard. This will reduce congestion and transportation demand on the major transportation routes for those that have been directed to evacuate by police or fire personnel. The Specific Plan Area is proposed within a highly urbanized area of the City, with minimal exposure to unmaintained open space in the southeast. As such, the entire Specific Plan Area would not likely be evacuated as the result of a wildfire. Further, more vulnerable developments, closer to unmaintained open space, could use the Project site for temporary refuge.

3.4 P.A.C.E. Evacuation Planning

P.A.C.E. evacuation planning is based on a military concept focused on mitigating risk by developing a strong primary evacuation plan along with three back up plans. If the Primary plan is compromised, the Alternate plan would be triggered. If the Alternate is considered not functional or not safe, the Contingency Plan is implemented. If that does not mitigate the risk, then the evacuation reverts to the Emergency plan. P.A.C.E. Planning is a simple and effective tool used to accomplish evacuations with flexibility and redundant contingencies.

A PACE Evacuation Plan provides the following:

(1) Based on and includes a documented, facility-based and community-based risk assessment, utilizing hazard analysis approach.

(2) Include strategies for addressing emergency events identified by the risk assessment.

(3) Address participant population, including, but not limited to, the type of services the PACE organization has the ability to provide in an emergency; and continuity of operations, including delegations of authority.

(4) Include a process for cooperation and collaboration with emergency preparedness officials' efforts to maintain an integrated response during a disaster or emergency situation.

Primary: This is the overall preferred plan of action to use based on the most likely and most damaging scenario resulting from hazard analysis.

Alternate: The Alternate plan should be as viable as your Primary plan. That isn't always the case, but that should be the goal whenever possible. Alternate plans are needed because unforeseen circumstances arise during emergency evacuations.

Developing the Alternate plan includes analyzing the most likely problems that could cause your primary plan to fail and then come up with a plan that fits with your situation that won't be affected by those problems. Whenever possible, come up with a few to several vulnerabilities in your primary plan and find an alternate that's just as good but covers all those bases.

Contingency: The contingency evacuation plan is the action that will be implemented if you cannot implement either the Primary or the Contingency action due to compromised safety. The contingency isn't always (or isn't usually) as preferred as the others, but is a viable option that doesn't rely on the same actions as the Primary and Alternate.

Emergency: This is the action that is implemented if all three of the previous actions fail. In some respects, it is a last resort that is the least preferred option, but is a viable and safe option, nonetheless. The goal is to utilize an Emergency plan that's independent from reliance on the types of actions in the first three options, is a flexible plan, has the highest probability of succeeding, and offers a reliable option with little potential for compromise.

An emergency plan may not be the most convenient or preferred plan and may include components that are uncomfortable to visitors, but it should be as foolproof as possible.

The Aquabella Specific Plan Update Project PACE Evacuation Plan is summarized in Table 1 and must be maintained, reviewed, and updated at least every 2 years.

Table 1. P.A.C.E Evacuation Plan for Aquabella Specific Plan Area

1. Primary: Project will evacuate via the primary evacuation route(s) early after receiving evacuation notice utilizing the primary evacuation route(s) as directed by law enforcement/emergency managers.
2. Alternate: Project will follow evacuation instructions which may include an alternate plan to utilize secondary routes or to relocate to nearby urban areas based on congested traffic conditions. Notifications that this alternate plan is being implemented will be provided via the notification systems or on-site emergency personnel, media and social media.
3. Contingency: Due to primary and alternate options being compromised or undesirable, the contingency plan of evacuating smaller, highest vulnerability populations will be implemented. For the Project, this may include evacuating until direction is provided to cease evacuation and initiate on-site sheltering of a smaller on-site population.
4. Emergency: When the wildfire or other emergency dictates that off-site evacuation is not advised by the primary or alternate evacuation routes, and conditions are such that open air exposure would be unhealthy or unsafe, the Aquabella Specific Plan Update population will be directed to shelter in place. Sheltering in place is possible due to the urbanized location of the Project site. Sheltering in place may also be the preferred option for other emergencies, e.g., active shooter, earthquake. Persons sheltering in place are advised to remain aware of the situation and move out of the building to a designated safe zone if directed to do so or otherwise necessitated.

4 Evacuation Road Network

As evidenced by historical mass evacuations in Riverside County and throughout Southern California, even with roadways that are designed to the code requirements, it may not be possible, or even the best response, to move large numbers of persons at the same time as part of a mass-evacuation. Instead, informed, phased evacuations enable more streamlined evacuations where those at highest risk are moved first. Road infrastructure throughout the United States, and including Riverside County, is not designed to accommodate a short-notice, mass evacuation without some level of congestion (FEMA 2008). The need for evacuation plans, pre-planning, and tiered or targeted and staggered evacuations becomes very important for improving evacuation effectiveness. Among the most important factors for successful evacuations in urban settings is control of intersections downstream of the evacuation area. If intersections are controlled by law enforcement, barricades, signal control, and other means, potential backups and slowed evacuations can be minimized. Multiple evacuation points enable more evacuees the ability to evacuate with less impact on roadways.

Wildfires that occur on non-extreme weather days behave in a much less aggressive manner and pose fewer dangers to life and property because they include less aggressive fire behavior and are easier to control. However, there can be on-shore wind conditions that can lead to aggressive fire behavior. Terrain and fuel are typically the wildfire drivers. During these non-extreme weather days, vegetation is much more difficult to ignite and does not spread fire as rapidly. In these situations, firefighters have a very high success rate of controlling fires and keeping them under 10 acres. The historical fire record shows that most vegetation fires occur during normal, onshore weather conditions and that such fires account for only a proportionally small amount of the land area burned. Conversely, a small number of wildfires that occur during extreme fire weather account for most of the land area burned. These data highlight that the most dangerous fire conditions are those related to a fire that moves rapidly due to high winds and low humidity, whereas under normal conditions fires are likely to be controlled with no evacuation or possibly limited extent, focused evacuations.

Given the lack of large areas of unmaintained fuels west of the Specific Plan Area an evacuation of the Project resulting from a fire driven by onshore wind (i.e., from the west) would be highly unusual. Moreover, due to the reduced fire behavior during normal weather periods, the evacuation would not be expected to be a large-scale evacuation. Instead, most of the Project area population would be anticipated to remain at their locations and within their communities, with a more targeted evacuation being ordered, if needed.

If a wildfire ignited closer to the Project site during weather that facilitates rapid fire spread, a different evacuation approach would need to be considered. Because it is preferred to evacuate long before a wildfire is near, and in fact, history indicates that most human fatalities from wildfires are due to late evacuations when evacuees are overtaken on roads, it is prudent to consider a contingency option. For example, if a wildfire is anticipated to encroach upon the Project area in a timeframe that is shorter than would be required to evacuate all occupants, then options available to responding fire and law enforcement personnel should include 1) partial relocation where occupants are temporarily relocated to nearby shelter sites or areas, or 2) temporary shelter in place where occupants are instructed to remain in protected on-site structures or at a designated site, while firefighters perform their structure protection function.

The Project site is not located within an area that is subject to wildfires and based on the adjacent land uses and open space in the vicinity, the wildfire potential is considered low. The fire intensity would be expected to be low

within the post-Project's footprint due to the highly urbanized areas surrounding the Specific Plan Area. The reduced fire behavior onsite would be expected to facilitate evacuations as well as potential sheltering-in-place contingencies within structures, if considered safer than a short-notice evacuation. Although not a designated shelter-in-place site, Project structures aren't exposed to large areas of unmaintained fuels, and it is likely that a majority of the Project site would not be evacuated in the event of a wildfire. Evacuation of the Project due to wildfire would likely be limited to those structure in the southeast portion of the Specific Plan Area.

The Project roads and adjacent road circulation system will be able to effectively handle average daily trips generated by the Project. However, as evidenced by mass evacuations in Riverside and elsewhere, even with roadways that are designed to the code requirements, it may not be possible, or even necessary to move large numbers of persons at the same time. Road infrastructure throughout the United States, and including in Moreno Valley, is not designed to accommodate a short-notice, mass evacuation (FEMA 2008). The need for evacuation plans, pre-planning, and tiered or targeted and staggered evacuations becomes very important for improving evacuation effectiveness.

Among the most important factors for successful evacuations in populated settings is control of intersections downstream of the evacuation area. If intersections are controlled by law enforcement, barricades, signal control, firefighters or other means, potential backups and slowed evacuations can be minimized. Another important aspect of successful evacuation is a managed and phased evacuation declaration. Evacuating in phases, based on vulnerability, location, or other factors, enables the subsequent traffic surges on major roadway to be smoothed over a longer time frame and can be planned to result in traffic levels that flow better than when mass evacuations include large evacuation areas at the same time. This WEP defers to Law Enforcement and EOC to appropriately phase evacuations and to consider the vulnerability of communities when making decisions. For example, newer development in the area, including the Project, will offer its occupants a high level of fire safety on-site, along with options for firefighter safety zones and temporary on-site refuge as a contingency, as discussed further in this WEP.

4.1 Evacuation Assumptions and Scenarios

This evacuation analysis was performed for the Project to determine how long it would take for occupants of the Project and the surrounding communities to evacuate to nearby urban areas/freeway access in case of a fire emergency. Current evacuation practice typically targets the scope of the evacuation only to the area in immediate danger and placing a larger area on standby for evacuation. This practice allows for better evacuation operations, reduces gridlock, and reserves sufficient travel way for emergency vehicles. It is assumed that first responders or law enforcement will direct traffic at all major downstream intersections during the evacuation process.

Given the Project's location in a highly urbanized area surrounded primarily by residential and recreational uses, this examination assumes an evacuation directive on a Saturday afternoon when most residents are expected to be at home and the Rancho Del Sol golf Club is fully occupied. Since the evacuation is on a Saturday, it is further assumed that Vista del Lago High School would not be in session. The analysis also assumes that the Kaiser Permanente Medical Complex would be at full buildout and out of an abundance of caution, the Kaiser Permanente Medical Complex Incident Commander would order a full evacuation of the hospital. The estimation of vehicles evacuating from the Project's site was derived by multiplying the number of households by the average vehicle ownership per household in the vicinity. Similarly, for the surrounding residential areas, the number of evacuating vehicles was determined using land use information from Parcel Quest parcel map data in conjunction with the average vehicle ownership data provided by the US Census Bureau. For a reasonable analysis, these scenarios

assumed that two percent (2%) of the evacuating vehicles are heavy vehicles (trucks with trailers). Two percent is the nationally acceptable ratio of heavy vehicles to all vehicles.

Note: Although this evacuation analysis considers the full evacuation of the Kaiser Permanente Medical Complex, it is unlikely that a full evacuation of the hospital would be ordered. It is more likely that a partial evacuation of the hospital would occur, starting first with all visitors and non-emergent cases, then escalating to the evacuation of critical patients, as the situation requires. Given the nature of hospitals, these structures are typically designed to withstand potential disasters, and have redundancies built into the systems to keep critical infrastructure (e.g., power and water) functioning.

Saturday Afternoon Evacuation; full operation, all residents are home

CRA presumes that the evacuation would transpire on a Saturday afternoon, a time when residents from the Project and nearby communities are home, meaning all residential vehicles would be required to evacuate. Additionally, it is assumed that the parking demand for the Rancho Del Sol Golf Club would be fully occupied, thus the vehicles associated with the golf club would evacuate at the same time as the Project and other residential land uses. Since the evacuation is on a Saturday, the analysis assumes Vista del Lago High School would not be in session. Additionally, the analysis assumes that the Kaiser Permanente medical complex would be at full buildout, and out of an abundance of caution the Kaiser Permanente medical complex incident commander would order a full evacuation of the hospital. In an actual evacuation scenario, the total number of vehicles needing to evacuate may actually be less. The Operation Area commander would prioritize evacuation of land uses located closest to the area with immediate risk, depending on the location of the fire.

Primary Evacuation Routes

CRA assumed that traffic evacuating from both the Project and nearby communities/land uses would use the closest evacuation routes to leave the area. Evacuation routes were selected based upon review of the Project's site, available evacuation routes, and the quickest way to leave areas located adjacent to the available vegetative fuels. Evacuations during large wildfire events would focus on removing threatened populations from the area to a more urbanized area. These routes are indicated in Figure 4.

No contraflow lanes were assumed to provide access for first responders and law enforcement. Two-way travel was assumed, with evacuating vehicles traveling outbound to the Safe Zone. It is assumed that first responders or law enforcement will direct traffic at all major intersections during the evacuation process. Should evacuation managers determine that contraflow is preferred or necessary, evacuation capacity would increase while evacuation times would decrease.

Safe Zone

Based on Dudek's review of the area's fire history, fires have halted along areas adjacent to wildland fuels and have not historically progressed into the more densely urbanized, irrigated, and hardscaped areas. Specifically, none of the historical fires encroached beyond the periphery areas within the wildland urban interface area of the City of Moreno Valley. Recent fires such as the Jerry Fire (2019), Merwin Fire (2015), Lago Fire (2011) were all stopped prior to reaching the urbanized area. Thus, it is assumed that evacuees are considered to reach a safe area once they are within the more developed areas.

Evacuation Scenarios

A total of five evacuation scenarios were analyzed:

- **Scenario 1 – Existing Land Uses:** This scenario estimates the evacuation time for the existing land uses within the study area (Area A through E).
- **Scenario 2 – Proposed Project Only:** This is the only scenario in which the analysis considers a full evacuation from the Project site due to its vast size. However, the likelihood of this occurrence during a wildfire is low as the surrounding land uses offer some protective buffer for the Project. Nevertheless, this scenario is evaluated to ascertain the duration needed for a complete site evacuation.
- **Scenario 3 – Existing Land Uses with Proposed Project:** This scenario is identical to Scenario 1, but it also includes the Project. This refers to land use situated within the potential fire spotting zone, which is .7 miles away from the closest open space boundary, as indicated by the fire modeling from Dudek.
- **Scenario 4 – Existing Land Uses with Cumulative Projects:** *Existing Land Uses with Cumulative Growth*[1]: This mirrors Scenario 1, but with the addition of cumulative projects from the traffic study, along with a 5% ambient growth factor to account for unplanned changes in land use like Accessory Dwelling Units (ADUs).
- **Scenario 5 – Existing Land Uses with Cumulative Projects and the Proposed Project:** This scenario mirrors Scenario 5, but also includes the Project. This refers to land use situated within the potential fire spotting zone, which is .7 miles away from the closest open space boundary, according to the Dudek fire modeling.

Evacuating Vehicles

The projected number of vehicles evacuating from the study area is based on a combination of various data sources: Parcel Quest's parcel map data for land use, vehicle ownership averages from the US Census Bureau, aerial imagery from Nearmap, and relevant environmental documents. Here's a breakdown of the calculations for evacuating vehicles:

Existing Residential: This is obtained by multiplying the total number of households (from Parcel Quest parcel map data) with the average vehicle ownership, which stands at 2.31 vehicles per household as per the US Census Bureau.

Rancho Del Sol Golf Club: It's assumed that the parking lot is at full capacity and that all vehicles would commence evacuation simultaneously.

Kaiser Permanente Medical Complex: It's assumed that the 2,550 parking spaces[2] associated with the complex would be fully occupied and that all vehicles would commence evacuation simultaneously. However, as highlighted earlier, hospital emergency plans often entail the use of shuttles, ambulances, and other mass transit options for evacuating patients. This would likely result in fewer vehicles evacuating from the Kaiser Permanente Medical Complex site.

[2] https://ceqanet.opr.ca.gov/2018111051/3/Attachment/ZJ66JD

Proposed Project: This is calculated by multiplying the quantities of land use by the parking rate derived from the Institute of Transportation Engineer (ITE) Parking Generation Manual.[3]

Cumulative Projects: Although none of the cumulative projects noted in the Aquabella Traffic Impact Study are expected to utilize the same evacuation routes as the proposed Project, a conservative analysis assumes a 5% ambient growth across all land uses in the study area.

This approach ensures a comprehensive and conservative analysis of potential evacuation scenarios. For a reasonable analysis, these scenarios assumed that two percent (2%)[4] of the evacuating vehicles are heavy vehicles (trucks with trailers). Two percent is the nationally acceptable ratio of heavy vehicles to all vehicles.

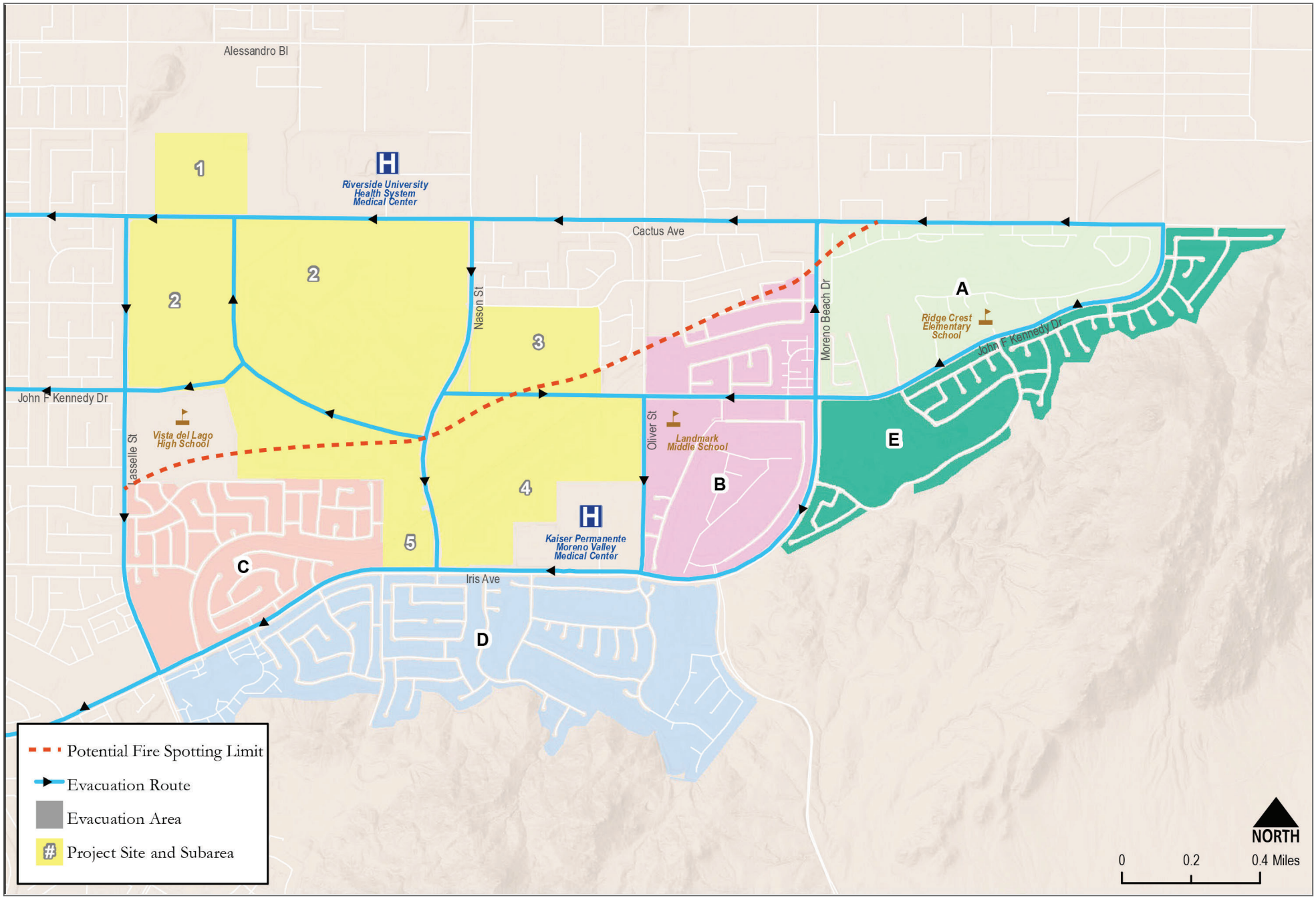
Average vehicle ownership, residential units, and evacuating vehicles calculations are provided in Attachment A of Appendix C. **Table 2** displays the number of vehicles evacuating under each scenario.

Table 2. Evacuating Vehicles

Scenario	Number of Evacuating Vehicles						
	Nearby Land Uses (Area)					Project	Total
	A	B	C	D	E		
Scenario 1 – Existing Land Uses	1,290	3,290	1,620	2,730	1,531	0	10,461
Scenario 2 –Project Only	0	0	0	0	0	19,042	19,042
Scenario 3 – Existing Land Uses w/ Project	1,290	3,290	1,620	2,730	1,531	3,722	14,183
Scenario 4 – Existing Land Uses w/ Cumulative Projects	1,360	3,330	1,710	2,870	1,610	0	10,880
Scenario 5 – Existing Land Uses w/ Cumulative Projects w/ the Project	1,360	3,330	1,710	2,870	1,610	3,722	14,602

[3] Given that the proposed Project comprises high-density mixed-use land types, it significantly deviates from the socio-economic profiles of existing land uses in the City of Moreno Valley. For all non-residential land uses, the number of vehicles expected to evacuate was determined by multiplying each land use amount by the average parking rate sourced from the ITE Parking Generation Manual. For residential land uses, the evacuation vehicle count was derived by multiplying the number of dwelling units by the maximum value of the 95% confidence interval parking rate, also taken from the ITE Parking Generation Manual.

[4] https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_599.pdf (p.5).



SOURCE: C+R 2023

FIGURE 5

Nearby Land Uses

Fire Evacuation Plan for the Aquabella Specific Plan Update

DUDEK

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4.2 Potential for Project Evacuation Impact on Existing Conditions

The potential occurrence of a simultaneous, large evacuation event including evacuation of a large area of existing populations is minimal, but possible. In this case, the existing populations for potential evacuation in the area would be associated with a variety of populations including residential, nearby commercial/office uses, recreational and other uses. To analyze the evacuation events, CRA conducted simulations using Vissim, a microscopic, multimodal traffic flow modeling software used to simulate different traffic conditions. In Vissim simulations, roadway capacity is accounted for and each vehicle in the traffic system is individually tracked through the model and comprehensive measures of effectiveness, such as average vehicle speed and queueing, are collected on every vehicle during each 0.1-second of the simulation. This software enables drivers' behaviors during an evacuation to be replicated. A total of 20 simulations were conducted to yield a reasonable sample size to determine the performance of the study area roadways and impacts during evacuation scenarios. To be conservative, CRA assumed a worst-case scenario in which all vehicles belonging to households in the study area would be used in the evacuation, instead of the necessary number of vehicles needed to evacuate the impacted population. Detailed evacuation analysis information is provided in Attachment B of Appendix C.

Based upon review of previous fires and evacuation orders, evacuation modeling considered traffic evacuating from both the Project and nearby developments. A summary of the evacuation time for each scenario is provided below, and shown in Table 3:

- **Scenario 1:** It would take between 50 minutes and 1 hour and 9 minutes to evacuate the existing land uses.
- **Scenario 2:** It would take 2 hours and 24 minutes to evacuate the entire Project site.
- **Scenario 3:** It would take between 51 minutes and 1 hour and 50 minutes to evacuate the existing land uses and the proposed Project. Under this scenario, the Project would affect the evacuation time for the following areas:
    - Area A – increase of 18 minutes
    - Area B – increase of 10 minutes
    - Area C – increase of 1 minute
    - Area D – increase of 5 minutes
    - Area E – increase of 2 minutes
- **Scenario 4:** It would take between 1 hour and 8 minutes and 1 hour and 11 minutes to evacuate the nearby land uses under the cumulative scenario.
- **Scenario 5:** It would take between 56 minutes and 1 hours and 55 minutes to evacuate the cumulative land uses and the proposed Project. Under this scenario, the Project would affect the evacuation time for the following areas:
    - Area A – increase of 19 minutes.
    - Area B – increase of 13 minutes.
    - Area C – increase of 2 minutes.

- Area D – increase of 6 minutes.
- Area E – increase of 4 minutes.

Table 3. Evacuation Time Summary

Scenario	Total Evacuation Vehicles	Evacuation Time					
		Nearby Land Uses					*Project*
		A	*B*	*C*	*D*	*E*	
Scenario 1 – Existing Land Uses	10,461	1:09	1:07	0:50	1:05	0:57	N/A
Scenario 2 –Project Only	19,042	N/A	N/A	N/A	N/A	N/A	2:24
Scenario 3 – Existing Land Uses with Proposed Project	14,183	1:27	1:17	0:51	1:10	0:59	1:50
Scenario 4 – Existing Land Uses w/ Cumulative Projects	10,880	1:11	1:10	0:54	1:10	1:03	N/A
Scenario 5 – Existing Land Uses w/ Cumulative Projects w/ the Project	14,602	1:32	1:23	0:56	1:16	1:07	1:55

As noted in Table 3, evacuation traffic generated by the Project would not significantly increase the average evacuation travel time or result in unsafe evacuation timeframes. Although there is a potential increase in evacuation times of up to 19 minutes for existing communities, it is anticipated that the longest evacuation times would be associated with the Project vehicles. In a likely evacuation scenario, existing residents east of the Project site would be located downstream of Project traffic because they are closer to the evacuation routes and destinations and would be able to evacuate prior to Project traffic reaching the same location.

Study of evacuation timeframes and potential increases in evacuation time with a proposed project are relatively new CEQA focus areas. Public safety, not time, is generally the guiding consideration for evaluating impacts related to emergency evacuation. Consistent with CEQA Guidelines Appendix G, a Project's impact on evacuation is significant if the Project will significantly impair or physically interfere with implementation of an adopted emergency response or evacuation plan.

In any populated area, safely undertaking large-scale evacuations may take several hours or more and require moving people long distances to designated areas. Further, evacuations are fluid and timeframes may vary widely depending on numerous factors, including, among other things, the number of vehicles evacuating, the road capacity to accommodate those vehicles, residents' awareness and preparedness, evacuation messaging and direction, and on-site law enforcement control. The "Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act"[5] guidance from the California Office of the Attorney General suggests that jurisdictions set benchmarks of significance based on past successful evacuations or on those from communities in similar situations.

[5] https://oag.ca.gov/system/files/attachments/press-docs/2022.10.10%20-%20Wildfire%20Guidance.pdf

A recent study titled "Review of California Wildfire Evacuation from 2017 to 2019[6]" provides more insights on the topic. This research involved interviews with 553 individuals (297 evacuees affected by various fires) including the Creek Fire, Rye Fire, Skirball Fire, and Thomas Fire. The study aimed to understand the decision-making processes of these individuals during the fires, such as whether to evacuate or stay, when to leave, the paths taken, chosen shelters, destinations, and modes of transportation. According to this research, the time it took for evacuations ranged from under 30 minutes to over 10 hours. From this dataset[7], the average evacuation time for the Creek Fire was found to be 3 hours and 40 minutes, involving 115,000 people[8]. For the Thomas Fire, the average time was 4 hours and 25 minutes, impacting 104,607 individuals.

California fire and law enforcement agencies have integrated training, experience, and technology to assist in successful evacuations, which focus on moving persons at risk to safer areas before a wildfire encroaches on a populated area. Timeframes for moving people vary by site specifics, population, road capacities and other factors and there is no one threshold that would be appropriate to all locations. There are no established thresholds for evacuation times for this Project or at the time of this plan's preparation, for any California community, to the knowledge of the authors. This is primarily because every location and fire scenario are unique. While it may take one community 20 minutes to evacuate safely, it is not a valid assumption to consider a 3-hour evacuation for another community as unsafe. The 3-hour evacuation can be very safe while the 20-minute evacuation may be unsafe due to the conditions and exposures along the evacuation routes.

Notwithstanding evacuation challenges and variables, the City/County in safely managing both mass and targeted evacuations to great success, for example the 2017 Palmer Fire resulted in evacuation of several neighborhood[9] resulted in zero fatality[10]. It should be noted that other variables can impact the number of fatalities during an evacuation. For instance, some individuals may choose to stay behind to defend their property or adopt a wait-and-see approach[11]. Such decisions could delay their evacuation to a point where it becomes too late to leave safely[12].

Technological advancements and improved evacuation strategies learned from prior wildfire evacuation events have resulted in a system that is many times more capable of managing evacuations. With the technology in use today, evacuations are more strategic and surgical than in the past, evacuating smaller areas at highest risk and phasing evacuation traffic so that it flows more evenly and minimizes the surges that may slow an evacuation. Mass evacuation scenarios where large populations are all directed to leave simultaneously, resulting in traffic delays, are thereby avoided, and those populations most at risk are able to safely evacuate. While mass evacuation scenarios are avoided with the technology in use today, the evacuation simulations conducted in this report are based on mass evacuation scenarios to provide a worst-case scenario, as described previously.

As indicated previously, the evacuation simulations conducted herein represent mass evacuations in the project vicinity to provide extremely worst-case scenarios. In a probable evacuation scenario, individuals in the existing

[6] https://escholarship.org/uc/item/5w85z07g
[7] 2018 Carr Wildfire Evacuation Survey Data | Zenodo
[8] https://abc7.com/sylmar-brush-fire-creek-kagel-canyon/2740550/
[9] https://ktla.com/news/local-news/mandatory-evacuations-ordered-as-palmer-fire-in-beaumont-spreads-to-500-acres/
[10] Palmer Fire | CAL FIRE
[11] Preparing for wildfire evacuation and alternatives: Exploring influences on residents' intended evacuation behaviors and mitigations (https://doi.org/10.1016/j.ijdrr.2021.102177) Table 2 indicates that the majority of the surveyed individuals strongly agree with the stay and defend statements.
[12] National Institute of Standards and Technology – Department of Commerce – WUI Fire Evacuation and Sheltering Consideration Assessment, Planning, and Execution (August 2023) – Evacuation Alternatives

surrounding land uses would have the opportunity to evacuate before the users of the Project even reach their vehicles in the parking structures, thereby giving priority to the existing land uses. The Incident Commander would direct a focused evacuation of zones situated near the wild urban interface, which are at higher risk. Areas that are not in immediate danger would likely not be provided with an evacuation notice initially and may be instructed to remain in place to prioritize the evacuation of vehicles from areas under direct threat. This would result in phasing evacuation traffic so that it flows more evenly and minimizes the surges that may slow an evacuation. Therefore, evacuation flow would be able to be effectively managed and would not likely lead to mass evacuations, as simulated in this report.

4.2.1 Mass Evacuation Vehicle Traffic

Mass evacuation events have become less common as wildfire evacuation technology and capabilities have improved dramatically in the last 15 years. Wildfire evacuations are managed to move smaller populations in a successive phasing to minimize traffic surges. Populated areas are evacuated in phases based on proximity to the event and risk levels. For example, it is anticipated that wildfire evacuations of the Project area will likely include the relocation of residential populations that are closest to open space, along with employees and visitors of the Project first, and then additional populations based on exposure to the wildfire in successive fashion rather than mass evacuating the entire Moreno Valley area. The result of this type of evacuation is that occupants that may be in locations that would be closest to a wildfire burning in open space areas are temporarily moved from the vicinity and vehicle congestion on evacuation routes is minimized, enabling a more efficient evacuation. Under this evacuation approach, the evacuation would include a much smaller population and would be implemented in a surgical way. The evacuation time would be even lower and would have very little impact on the existing communities.

PHASED EVACUATION The purpose of a phased evacuation is to reduce congestion and transportation demand on designated evacuation routes by controlling access to evacuation routes in stages and sections. This strategy can also be used to prioritize the evacuation of specific populations that are in proximity to the immediate danger. A phased evacuation effort will need to be enforced by law enforcement agencies and coordinated with the EOC and affected jurisdictions.

Dept of Homeland Security (2019) provides supporting data for why jurisdictions have moved to the surgical evacuation approach that leverages the power of situation awareness to support decision making. According to their Planning Considerations: Evacuation and Shelter in Place document, they indicate that delineated zones provide benefits to the agencies and community members. Evacuation and shelter-in-place zones promote phased, zone-based evacuation targeted to the most vulnerable areas, which allows jurisdictions to prioritize evacuation orders to the most vulnerable zones first and limit the need to evacuate large areas not under the threat. Zones help:

- Jurisdictions to understand transportation network throughput and capacity, critical transportation and resource needs, estimated evacuation clearance times, and shelter demand.
- Planners to develop planning factors and assumptions to inform goals and objectives.
- Community members to understand protective actions to take during an emergency.
- Shelters to limit traffic congestion and select locations suitable for the evacuated population.

The amount of time needed to evacuate the Project would vary by the type of incident, the number of evacuation routes utilized, the amount of mobilization time, actual areas at risk, and other factors. It has also been established herein that the targeted approach would minimize the size of the area being evacuated and use a phased approach, which may further reduce the evacuation time estimates.

There is no evacuation timeframe threshold that Projects must meet in order to avoid a CEQA impact or to be consistent with codes, regulations or policies. Regardless, the Project has provided a comprehensive evacuation evaluation, and the evacuation time results are comparable to similar sized populations under a mass evacuation.

Further, any additional time does not necessarily generate a greater safety risk. Emergency personnel who issue evacuation orders can consider the additional time needed to implement an evacuation when determining when and where to issue evacuation orders. Risk to nearby development, including the Project or existing communities, is assessed on a regular basis in a wildfire event. Hours or days of lead time may be available to assess risk and make evacuation determinations. Further, peak occupancy conditions like those assumed in the modeling typically do not occur as all residents are not typically at home while maximum occupancy at industrial, commercial and office uses is also occurring. Further, drifting smoke, awareness of the risk, road closures, or other factors result in people avoiding the area in a fire event. Additionally, the Project' location in in a highly urbanized area would allow people to shelter-in-place or take temporary refuge within the Project site, which could reduce evacuating traffic from the site.

The potential occurrence of a large evacuation event including evacuation of existing populations is minimal, but possible. In this case, the existing populations for the Project would be existing residential and mixed uses to the east and south. During a large wildfire moving from north/south or east to west, it is most likely, that evacuations would be directed to the SR-60 or SR-215 freeway, depending on the fire location and movement. The vehicle capacity estimates utilized for this evacuation plan are based the current Highway Capacity Manual methodology for calculating adjusted saturation flow rates and are discounted for various assumed traffic-related slowing, such as higher volume and downstream bottlenecks; therefore, the discounted vehicle capacity includes capability to absorb additional vehicles.

In an actual evacuation scenario, a phased evacuation would be implemented where orders are given to evacuate based on vulnerability, location, and/or other factors, which enables the subsequent traffic surges on major roadways to be smoothed over a longer time frame and improve traffic flow. A phased strategy can also be used to prioritize the evacuation of certain communities that are in proximity to the immediate danger. The limitations of the model used for this analysis are such that it cannot accurately reflect phased evacuation conditions; hence, a worst-case mass evacuation scenario was assumed.

This WEP assumes that law enforcement personnel are controlling downstream intersections to maintain traffic flow out of the area. If traffic flow is not maintained, then the estimated evacuation times would be expected to increase, potentially substantially, as is the case in any urban area. Additionally, this analysis assumes that all existing populations within the Project area and the Project are evacuating simultaneously.

4.3 Evacuation Route Determination

Typically, fire and law enforcement officials will identify evacuation points before evacuation routes are announced to the public. Evacuation routes are determined based on the location and extent of the incident and its spread

rate and direction and include as many pre-designated transportation routes as possible. However, field conditions and shifting fire behavior may result in real-time changes to predetermined routes. Having additional evacuation route options is considered critical in these conditions. Evacuees are considered to reach a safe area once they are within the more densely urban areas such as the area west of North Alessandro Street.

5 Wildfire/Evacuation Awareness

The Aquabella Specific Plan Update Project should be active in its outreach to all occupants regarding fire safety and general evacuation procedures. There are aspects of fire safety and evacuation that require a significant level of awareness by all occupants in order to reduce and/or avoid problems with an effective evacuation. Mitigating potential impediments to successful evacuations requires focused and repeated information through a strong educational outreach program. The Aquabella Specific Plan Update Project should engage occupants and coordinate with local fire agencies for fire safety awareness through a variety of methods.

The focus of the "Ready, Set, Go!" program is on public awareness and preparedness, especially for those living and/or working in wildland-urban interface (WUI) areas. The program is designed to incorporate the local fire protection agency as part of the training and education process in order to ensure that evacuation preparedness information is disseminated to those subject to the potential impact from a wildfire. There are three components to the program:

- **"READY" – Preparing for the Fire Threat**: Take personal responsibility and prepare long before the threat of a wildfire so you and your home or place of business are ready when a wildfire occurs. Residents should prepare household evacuation plans and employees should assemble an emergency kit for their car. All occupants should confirm registration of cellular numbers for Reverse 911, Alert MoVal and Alert RivCo.

- **"SET" – Situational Awareness When a Fire Starts**: If a wildfire occurs and there is potential for it to threaten the Project site and surrounding communities, be ready to evacuate. Stay aware of the latest news from local media and your local fire department for updated information on the fire. If you are uncomfortable, leave the area.

- **"GO!" – Leave Early!** Leaving early, well before a wildfire is threatening the Project area, provides you with the least delay and results in a situation where, if a majority of neighboring developments also leave early, firefighters are now able to better maneuver, protect and defend structures, evacuate other occupants who couldn't leave early, and focus on citizen safety.

"Ready, Set, Go!" is predicated on the fact that being unprepared and attempting to flee an impending fire late (such as when the fire is physically close to your community) is dangerous and exacerbates an already confusing situation. This Wildfire Evacuation Plan provides key information that can be integrated into the individual evacuation plans, including the best available routes to use in the event of an emergency evacuation.

Situation awareness requires a reliable information source. The City of Moreno Valley utilizes Alert MoVal for its Community Emergency Notification System, and all occupants should be encouraged to register for emergency alerts. Additionally, the Riverside EMD operates the Reverse 911 notification system that provides a recorded message over land line telephone systems relating to evacuation notices. Further, Riverside EMD operates a program known as Alert RivCo that has the capability to send emergency notifications over both land lines as well as to cell phones and via text messages. It is up to individual employees to register their cell phones for Alert RivCo. The registration of cell phones can be done online at https://rivcoready.org/alert-rivco In addition, the Riverside

County Emergency Alert System (EAS) is county-wide and broadcasts emergency information via six radio stations: KFI 640 AM,KFWB 980 AM, KNX 1070 AM, KFRG 95.1 FM, KVCR 91.9 and KXFG 92.9 FM.

As part of the Project, this Wildfire Evacuation Plan will be accessible on the website (e.g. HOA or Property Management) for all future developments. It is also recommended that all future HOAs or Property Management Companies identify a Fire Safety Coordinator that is responsible for:

1. Preparing and distributing the annual reminder notice that shall be provided to each occupant encouraging them to review this WEP and be familiar with community evacuation protocols.

2. Coordination with local fire agencies to hold an annual fire safety and evacuation preparedness informational meeting for occupants. The meeting should be attended by representatives of appropriate fire agencies and important fire and evacuation information should be reviewed.

3. Maintaining fire safety information on the development's website, including the WEP and materials from the "Ready, Set, Go!" Program.

For non-residential uses, Fire Safety Coordinators should also be responsible for:

4. The Fire Safety Coordinator(s) will coordinate an annual fire evacuation drill/fire exercise to ensure proper safety measures have been implemented, facility awareness and preparation of a facility-wide "Ready, Set, Go!" plan. The Fire Safety Coordinator will also organize employee training and awareness through various practices:

    a. New hire fire awareness and evacuation training

    b. Ongoing staff training

    c. Facility sweeps by trained staff

    d. Strategically placed fire safety and evacuation/sheltering protocol information, as determined by the Fire Safety Coordinator.

6 Evacuation Procedures

6.1 Relocation/Evacuation

It is estimated that the conservatively calculated minimum amount of time needed to move the exiting population at Project buildout to urbanized and/or designated evacuation areas may require up to 1 hour and 22 minutes for Land Uses A through E, under varying constraints that may occur during an evacuation. This does not include additional allowances for the time needed to detect and report a fire, for fire response and on-site intelligence, for phone, patrols, and aerial based notifications, and for notifying special needs citizens.

Wolshon and Marchive (2007) simulated traffic flow conditions in a computer derived WUI under a range of evacuation notice lead times and housing densities. To safely evacuate more people, they recommended that emergency managers (1) provide more lead time to evacuees and (2) control traffic levels during evacuations so that fewer vehicles are trying to exit at the same time.

Wildfire emergency response procedures will vary depending on the type of wildfire and the available time in which decision makers (IC, MVPD, RCFD, CAL FIRE, RCSD, and/or EMD) can assess the situation and determine the best course of action. Based on the Aquabella Specific Plan Update Project and surrounding communities, its road network, and the related fire environment, the first and primary type of evacuation envisioned is an orderly, pre-planned evacuation process where people are evacuated to more urban areas further from an encroaching wildfire (likely to urban areas west) well before fire threatens. This type of evacuation must include a conservative approach to evacuating, i.e., when ignitions occur and weather is such that fires may spread rapidly, evacuations should be triggered on a conservative threshold that includes time allowances for unforeseen, but possible, events that would slow the evacuation process.

Evacuation is considered by many to offer the highest level of life protection to the public, but it can result in evacuees being placed in harm's way if the time available for evacuation is insufficient (Cova et al. 2011). The second type of evacuation is a short-notice evacuation, which from a public safety perspective is highly undesirable. This type of evacuation occurs when fire ignites close to vulnerable communities. This type of situation is inherently dangerous because there is generally a higher threat to persons who are in a vehicle on a road when fire is burning in the immediate area than in a well-defended, ignition-resistant home. Conditions may become so poor that the vehicle drives off the road or crashes into another vehicle, and flames and heat overcome the occupants. A vehicle offers little shelter from a wildfire if the vehicle is situated near burning vegetation or catches fire itself. This type of evacuation must be considered a very undesirable situation by law and fire officials in all but the rarest situations where late evacuation may be safer than seeking temporary refuge in a structure (such as when there are no nearby structures, the structure[s] is/are already on fire, or when there is no other form of refuge). Temporary refuge would be possible within the Aquabella Specific Plan Update Project site, but structures within surrounding communities, as previously discussed, are less desirable due to their higher vulnerability to ignition.

The third potential type of evacuation is a hybrid of the first two. In cases where evacuation is in process and changing conditions result in a situation that is considered unsafe to continue evacuation, it may be advisable to direct evacuees to pre-planned temporary refuge locations, including their own home if it is ignition-resistant and defensible, such as those within Aquabella Specific Plan Update Project. As with the second type of evacuation discussed above, this situation is considered highly undesirable, but the evacuation pre-planning must consider these potential scenarios and

prepare decision makers at the IC level and at the field level for enacting a contingency to evacuation when conditions dictate.

Indications from past fires and related evacuations, in Riverside County and throughout Southern California, which have experienced increasingly more frequent and larger fires, are that evacuations are largely successful, even with a generally unprepared populace. It then stands to reason that an informed and prepared populace would minimize the potential evacuation issues and related risk to levels considered acceptable from a community perspective.

Evacuation orders or notifications are often triggered based on established and pre-determined model buffers, which are based on topography, fuel, moisture content of the fuels and wind direction. Evacuations are initiated when a wildfire reaches or crosses one of these pre-determined buffers. Evacuations can also be very fluid. The IC, law enforcement and EMD would jointly enact evacuations based on fire behavior.

6.2 Project Evacuation Baseline

For purposes of this Wildfire Evacuation Plan, the first and most logical choice for all of the occupants within the boundaries of Aquabella Specific Plan Update Project is to adhere to the principles and practices of the "Ready, Set, Go!" Program previously mentioned in this document. As part of this program, it is important that educational and training programs, organized by future HOAs and Property Managers, are available to all occupants. In addition, it is imperative that the "Ready, Set, Go!" program information be reviewed on a routine basis along with the accompanying maps illustrating evacuation routes, temporary evacuation points and pre-identified evacuation points. It must be kept in mind that conditions may arise that will dictate a different evacuation route than the normal roads used on a daily basis.

Occupants are urged to evacuate as soon as they are notified to do so or earlier if they feel uncomfortable. Directions on evacuation routes will be provided in most cases, but when not provided, employees of the Project will proceed according to known available routes away from the encroaching fire as detailed in the Quick Reference section of this WEP. Occupants are cautioned not to rely on navigation aid apps which may inadvertently lead them toward an oncoming fire. Depending on the type of emergency and the resulting evacuation, it could take approximately up to 1 hour and minutes to complete an evacuation of Existing Land Uses, based on road capacities and competing use of the roads by occupants from other areas.

Note: This Wildfire Evacuation Plan will require adjustment and continued coordination by the future HOAs and Property Managers and fire/law enforcement agencies during each of the construction phases. With each phase, the evacuation routes may be subject to changes with the addition of both primary and secondary evacuation routes.

6.3 Civilian and Firefighter Evacuation Contingency

As of this document's preparation, no community in California has been directed to shelter-in- place during a wildland fire. This is not to say that people have not successfully sheltered-in-place during wildfire, where there are numerous examples of people sheltering in their homes, in hardened structures, in community buildings, in swimming pools, and in cleared or ignition-resistant landscape open air areas. The preference will always be early evacuation following the "Ready, Set, Go!" model, but there exists the potential for unforeseen civilian evacuation issues, and having a contingency plan will provide direction in these situations that may result in saved lives.

Potential problems during wildfire evacuation from the Project area include:

- Inadequate time to safely evacuate;
- Fire evacuations during rush hour traffic or when large events are occurring;
- Blocked traffic due to accidents or fallen tree(s) or power pole(s);
- The need to move individuals who are unable to evacuate.

It is recommended that local law enforcement and fire agencies conduct concerted pre-planning efforts focusing on evacuation contingency planning for civilian populations when it is considered safer to temporary seek a safer refuge than evacuation. Due to its location in a highly urbanized area, Aquabella Specific Plan Update' structures would allow for the possibility of temporary sheltering, while structures in surrounding communities closer to unmaintained open space might not be considered defensible or safe and therefore, not appropriate for temporary refuge.

6.3.1 Safety Zones

The International Fire Service Training Association (IFTSA; Fundamentals of Wildland Fire Fighting, 3rd Edition) defines "safety zones" as areas mostly devoid of fuel, which are large enough to assure that flames and/or dangerous levels of radiant heat will not reach the personnel occupying them. Areas of bare ground, burned over areas, paved areas, and bodies of water can all be used as safety zones. The size of the area needed for a safety zone is determined by fuel types, its location on slopes and its relation to topographic features (chutes and saddles) as well as observed fire behavior. Safety zones should never be located in topographic saddles, chutes or gullies. High winds, steep slopes or heavy fuel loads may increase the area needed for a safety zone.

The National Wildland Fire Coordinating Groups (NWFCG), Glossary of Wildland Fire Terminology provides the following definitions for safety zones:

> *Safety Zone*. An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuel breaks; they are greatly enlarged areas, which can be used with relative safety by firefighters and their equipment in the event of blowup in the vicinity.

According to NWFCG, safety zone(s):

- Must be survivable without a fire shelter
- Can include moving back into a clean burn
- May take advantage of natural features (rock areas, water, meadows)
- Can include constructed sites (clear-cuts, roads, helispots)
- Are scouted for size and hazards
- Consider the topographic location (larger if upslope)
- Should be larger if downwind
- Should not include heavy fuels

- May need to be adjusted based on site-specific fire behavior

The definition for a safety zone includes provisions for separation distance between the firefighter and the flames of at least four times the maximum continuous flame height. Distance separation is the radius from the center of the safety zone to the nearest fuels.

The Specific Plan Area is considered an infilled development and is in a highly urbanized area. It is likely that the Specific Plan Area could be used by firefighters as a safety zone. Identification of other potential safety zones will require additional focused study by RCFD and other fire and law enforcement agencies.

6.3.2 Temporary Firefighter Refuge Areas

Firescope California (Firefighting Resources of Southern California Organized for Potential Emergencies) was formed by legislative action to form a partnership between all facets of local, rural, and metropolitan fire departments, CAL FIRE and federal fire agencies. Firescope defines a contingency plan when it is not possible to retreat to a safety zone. This contingency includes establishment of firefighter temporary refuge areas (TRAs), which are defined as:

> *A preplanned area where firefighters can immediately take refuge for temporary shelter and short-term relief without using a fire shelter in the event that emergency egress to an established safety zone is compromised.*

Examples of a TRA may include the lee side of a structure, inside of a structure, large lawn or parking areas, or cab of a fire engine, amongst others. Differences between a TRA and a Safety Zone is that TRAs are closer to the immediate firefighting area, are considered a contingency to being able to get to a safety zone, do not include a requirement for a large area set back four times the flame lengths of adjacent fuels, and cannot be feasibly pre-planned until firefighters arrive on-scene and size up the situation.

Firescope appropriately notes that although safety zones and viable escape routes shall always be identified in the WUI environment, they may not be immediately available should the fire behavior increase unexpectedly. Often a TRA is more accessible in the WUI environment. A TRA will provide temporary shelter and short-term relief from an approaching fire without the use of a fire shelter and allow the responders to develop an alternate plan to safely survive the increase in fire behavior.

The major difference between a TRA and a safety zone is that a TRA requires another planned tactical action; i.e., TRAs cannot be considered the final action, but must include self-defense and a move out of the area when the fire threat subsides. A TRA should be available and identified on site at a defended structure. TRAs are NOT a substitute for a safety zone. TRA pre-planning is difficult, at best because they are very site- and fire behavior-specific. As stated above, the Project is in a highly urban area and would likely serve as a safety zone. It is unlikely a TRA would need to be identified within the Specific Plan Area as there is no significant areas of unmaintained open space adjacent to the Specific Plan Area. Unmaintained fuels nearest the Specific Plan Area are to the south/south east for which Iris Avenue/Moreno Beach Drive serves as a fuel break.

The entire Project site would be developed and paved surfaces, such as the parking areas, are considered potential TRAs. This is an important concept because it offers last-resort, temporary refuge of firefighters, and in a worst-case condition, occupants. This approach would be consistent with Firescope California (2013), which indicates that

firefighters must determine if a safe evacuation is appropriate and if not, to identify safe refuge for those who cannot be evacuated, including civilians.

Because there is the possibility that evacuation of the Project and surrounding communities may be less safe than temporarily refuging on site, such as during a fast-moving, wind-driven fire that ignites nearby, including temporary refuge within some properly designed, constructed and maintained structures onsite is considered a contingency plan for the Aquabella Specific Plan Update Project. This concept is considered a component of the "Ready, Set, Go!" model as it provides a broader level of "readiness" should the ability to execute an early evacuation be negated by fire, road congestion, or other unforeseen issues.

Note: This approach would be considered a last-resort contingency during wildfire with the primary focus being on early evacuation. The decision for evacuation or temporarily refuging on site will be made by responding law enforcement and/or fire personnel.

6.4 Social Aspects of Wildfire Evacuation

Orderly movement of people is the result of planning, training, education, and awareness, all of which are promoted in Riverside County. Evacuation has been the standard term used for emergency movement of people and implies imminent or threatening danger. The term "evacuation" in this Wildfire Evacuation Plan, and under the "Ready, Set, Go!" concept, indicates that there is a perceived threat to persons and movement out of the area is necessary, but will occur according to a pre-planned and practiced protocol, reducing the potential for panic.

Citizen reactions may vary during an evacuation event, although several studies indicate that orderly movement during wildfire and other emergencies is not typically unmanageable. Evacuation can be made even less problematic through diligent public education and emergency personnel training and familiarity. Social science research literature indicates that reactions to warnings follow certain behavior patterns that are defined by people's perceptions (Aguirre 1994; Drabek 1991; Fitzpatrick and Mileti 1994; Gordon 2006; Collins 2004) and are not unpredictable. In summary, warnings received from credible sources by people who are aware (or have been made aware) of the potential risk, have the effect of an orderly decision process that typically results in successful evacuation. This success is heightened when evacuations are not foreign to occupants (Quarantelli and Dynes 1977; Lindell and Perry 2004) as will occur within the Specific Plan Area. Further, in all but the rarest circumstances, evacuees will be receiving information from credible sources during an evacuation. It would be anticipated that law enforcement and/or fire personnel would be on site to help direct traffic and would be viewed by evacuees as knowledgeable and credible. The importance of training these personnel cannot be overstated and annual education and training regarding fire safety and evacuation events will be essential for successful future evacuations.

6.4.1 Evacuation of Special Populations

Vogt (1990 and 1991) defines special populations as those groups of people who, because of their special situations or needs, require different planning strategies from those of the general population. Special needs populations in Aquabella Specific Plan Update Project include the hearing or visually impaired, foreign speaking, and temporary visitors such as customers or day workers.

Temporary visitors or guests may not have knowledge of the area's fire hazard, they may not know how to react in a fire emergency, and they may not understand what they are being told to do. Conversely, this segment of the population would typically be easier to evacuate quickly as they have no possession or pets that they would need to prepare. They can get in their cars and be directed out of the area quickly.

The reasons why special needs populations may fail to respond to warnings to take protective actions is that they may require special transportation, while others require different types of warnings or technologies to receive an alert. Some groups must rely on caregivers to understand the warning and respond.

Senior citizens face unique challenges during wildfire evacuations. Mobility problems and chronic health conditions are more likely to impact older individuals. Further, care providers and support services may be temporarily unavailable during a wildfire emergency. Evacuation concerns are exacerbated through the presence of vision and hearing problems and cognitive impairment, all of which are more likely to impact senior citizens and limit the ability to understand and respond to emergency evacuations.

Project Approach:

The Fire Safety Coordinator will include information to occupants regarding how to notify the Moreno Valley Fire Department and/or County EMD of special needs, so that accommodations for their notification, transportation, or other special requirements can be provided during an emergency evacuation. Occupants will be advised of their options during an emergency by law enforcement or fire officials.

6.4.2 Animal Evacuations

Animal evacuations present a host of challenges that may affect the overall successful movement of people and their possessions out of harm's way. For example, livestock owners do not always have the means to load and trailer their livestock out of the area. Further, most wildfire evacuation relief shelters or commercial lodging facilities do not allow people to bring in pets or other animals. Sorensen and Vogt (2006) indicate that an issue receiving increasing attention is what evacuees do with pets or other animals, such as livestock, when they leave their homes and whether having pets or animals impacts their decision to evacuate.

The Project would not accommodate livestock onsite. However, household pets would be a common occurrence.

6.4.3 Re-Entry Procedures

An important component of evacuations is the citizen re-entry process. The Evacuation & Reentry Unit under Law Enforcement Branch is responsible for the coordination of re-entry of evacuated populations as detailed in the City's EOP. If the evacuation required coordination with the County, the County's EOP Re-Entry Protocol establishes guidance and procedures to ensure a coordinated, safe, and orderly re-entry into impacted communities following an incident.

In the event the City's EOC is activated, the EOC Law Enforcement Branch will activate the Evacuation & Re-Entry Unit to coordinate the evacuation and re-entry functions. The EOC Law Enforcement Branch will serve as the primary agency re-entry activities with support from other agencies including RCSD, Riverside EMD, Cal OES Law Enforcement Mutual Aid Region VI, ARC, VOAD, CHP, and more. In most cases, the EOC will remain activated until

full re-entry is complete. In the event that the EOC has been deactivated, the IC or the Liaison Officer of the Incident Management Team will initiate re-entry procedures.

The IC will designate a Re-Entry Coordinator and the Operations Section Chief of the EOC will coordinate with and support the Re-Entry Coordinator. The Re-Entry Coordinator is responsible for coordinating the re-entry procedures with all involved agencies and ensuring effective communication.

These re-entry procedures are similar to those established in the County's EOP and would apply if the County was managing re-entry in coordination with the City.

The impacted areas must be thoroughly investigated to ensure it is safe for occupants to return and normal operations have been restored.

The public will be notified of the re-entry status through emergency broadcast radio, television, press releases, internet, 211, Alert MoVal, Alert RivCo, community briefings, and informational updates at shelters. Once evacuees are permitted to return, it is important that procedures are established to properly identify occupants and critical support personnel, as well as ensure the legitimacy of contractors, insurance adjustors, and other personnel. Re-entry points should be staffed by law enforcement personnel.

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7 Implementing Conditions

1. All developments within the Aquabella Specific Plan Area will include a proactive wildfire education program utilizing a multi-pronged approach to fire safety following the **"Ready, Set, Go!"** approach to wildfire evacuation, to include, but not limited to:

    i. Annual wildfire and evacuation safety awareness meeting in coordination with local fire agencies.

    ii. Annual reminder notices will be provided to each employee encouraging them to review this WEP and be familiar with evacuation protocols.

    iii. The development's website will host a webpage dedicated to wildfire and evacuation education and awareness, which should include a copy of this Wildfire Evacuation Plan and the resources provided herein.

2. All HOAs and Property Managers for developments within the Aquabella Specific Plan Area will designate a Fire Safety Coordinator(s) to oversee implementation of the wildfire education program. The Fire Safety Coordinator(s) will:

    a. Prepare and distribute the annual reminder notice that shall be provided to each occupant encouraging them to review this WEP and be familiar with community evacuation protocols.

    b. Coordinate with local fire agencies to hold an annual fire safety and evacuation preparedness informational meeting for occupants. The meeting should be attended by representatives of appropriate fire agencies and important fire and evacuation information should be reviewed.

    c. Maintaining fire safety information on the development's website, including the WEP and materials from the "Ready, Set, Go!" Program.

    For non-residential uses, Fire Safety Coordinators will also:

    d. Coordinate an annual fire evacuation drill/fire exercise to ensure proper safety measures have been implemented, facility awareness and preparation of a facility-wide "Ready, Set, Go!" plan. The Fire Safety Coordinator will also organize employee training and awareness through various practices:

        (i) New hire fire awareness and evacuation training

        (ii) Ongoing staff training

        (iii) Facility sweeps by trained staff

    e. Strategically place fire safety and evacuation/sheltering protocol information

3. The Project includes a contingency plan for the rare occurrence that evacuation is not safe that includes occupants sheltering in place within onsite structures.

8 Limitations

This Wildfire Evacuation Plan incorporates concepts and protocols consistent with industry standards and has been developed based on City of Moreno Valley and Riverside County wildfire and evacuation standards per the City's EOP and the County's EOP documents and is specifically intended as a guide for evacuations for the Aquabella Specific Plan Update Project. This Wildfire Evacuation Plan provides basic evacuation information that will familiarize occupants of the Project with the evacuation route options that may be available to them during an emergency. However, because emergencies requiring evacuation have many variables and must be evaluated on a case-by-case basis, real-time law enforcement and fire personnel/agencies' decision-making and direction during an emergency requiring evacuation would supersede this WEP.

This WEP analyzes the existing community's evacuation times currently and with the proposed Aquabella Specific Plan Update Project. The estimated evacuation times are based on several assumptions as detailed in this WEP. However, actual evacuation times may be faster or slower than the estimates, depending on the type of emergency, the extent of the evacuation, the time of day, and other factors. A collective, community –wide evacuation of existing populations and the proposed population from the Project would include congested roads in its existing condition that are improved, but still congested, with the Aquabella Specific Plan Update Project. Congested roads are normal in any urban setting when a large evacuation is declared unless it is managed and evacuation areas are staggered to reduce the potential traffic surges that can significantly impact evacuations. Therefore, there would likely still be congestion and delays.

This Wildfire Evacuation Plan promotes the "Ready, Set, Go!" model, adopted by RCFD, CAL FIRE, and many fire agencies statewide. The goal is to raise agency and citizen awareness of potential evacuation issues and get a majority of the public "Ready" by taking a proactive stance on preparedness, and evacuation planning efforts. The Aquabella Specific Plan Project populace will be "Set" by closely monitoring the situation whenever fire weather occurs and/or when wildland fire occurs and elevating pre-planned protocol activities and situation awareness. Lastly, officials will implement the plan and mandate that populations "Go" by executing pre-planned evacuation procedures in a conservative manner (i.e., evacuation will occur based on conservative decision points). The preferred alternative will always be early evacuation. However, there may be instances when evacuation is not possible, is not considered safe, or is not an option based on changing conditions. For example, should a fire occur and make evacuation from the Project area ill advised, a contingency plan for employees should be available. This contingency would include moving people to pre-designated TRAs until it is safe to evacuate or the threat has been mitigated.

Ultimately, it is the intent of this Wildfire Evacuation Plan to guide the implementation of evacuation procedures such that the process of evacuating people from the Aquabella Specific Plan Update Project is facilitated in an efficient manner and according to a pre-defined evacuation protocol as well as providing a contingency option of temporarily refuging onsite, if evacuation is considered less safe. The Project's occupants should be aware of this Wildfire Evacuation Plan and components of it shall be posted on all future HOA and Property Management websites. It is also recommended that the HOAs and Property Managers provide reminders to occupants on at least an annual basis. This educational outreach will result in a populace that understands the potential for evacuations and the routes and options that may be presented to them.

During extreme fire weather conditions, there are no guarantees that a given structure will not burn or that evacuations will be successful all the time. Wildfires may occur in the area that could damage property or harm persons. However, successful implementation of the procedures outlined in this Wildfire Evacuation Plan will provide for an informed populace regarding evacuations.

This WEP does not provide a guarantee that all persons will be safe at all times because of the procedures discussed. There are many variables that may influence overall safety. This WEP provides a summary for implementation of standard evacuation protocols and public outreach, which should result in reduced wildfire related risk and hazard. Even then, fire can compromise the procedures through various, unpredictable ways. The goal is to reduce the likelihood that the system is compromised through implementation of the elements of this WEP and regular occurring program maintenance and updates.

It is recommended that the evacuation process is carried out with a conservative approach to fire safety. This approach must include embracing a "Ready, Set, Go!" stance on evacuation. Accordingly, evacuation of the wildfire areas should occur as soon as they receive notice to evacuate, which may vary depending on many environmental and other factors. Fire is a dynamic and somewhat unpredictable occurrence, and it is important for anyone living at the wildland-urban interface to educate themselves on practices that will improve safety.

Limitations

The underlying planning principle for fire preparedness, given the dynamic nature of a fire, is to demonstrate the availability of multiple route alternatives and response strategies to permit emergency professionals to manage their response according to the specific circumstances. The Study Area provides ample route and response alternatives. Emergency responders will coordinate the safest possible evacuation based on the dynamic circumstances of the actual event, including the appropriate phasing of the evacuation, and utilization of the most appropriate ingress and egress routes for area residents and emergency responders.

The breadth of route alternatives and response strategies available to emergency professionals to manage a potential fire in this region cannot and should not be evaluated using the CRA's Evacuation Analysis – Technical Memorandum alone. A comprehensive view of Project fire safety is gained by understanding this memo, the Project's Wildfire Evacuation Plan, along with the standard protocols and "in-the-field" decision making of emergency responders.

This Wildfire Evacuation Plan presents a reasonable vehicle travel time estimate based on professional judgments made by CRA with input from Dudek. Changing any number of these assumptions can lengthen or shorten the average vehicle travel time.

For instance, a situation could arise in which professionals *may* choose to utilize additional roadways for evacuation not utilized in the Dudek/CRA analysis, and *may also* choose to send more vehicle trips to certain evacuation routes, and *may also* choose to guide vehicle trips to more or different route permutations relative to what has been modeled in this the Dudek/CRA analysis.

The net result of changing the variables selected could yield an average evacuation travel time shorter or longer than the results detailed in the Dudek/CRA analysis. Many factors can shorten or lengthen the vehicle time from the results shown herein. For example:

1. Changing the evacuation area affected by the evacuation order would affect the results. For Instance, emergency managers could order an early evacuation of land uses located in higher risks area, such as the Southern Oaks community. Thus, by the time an evacuation order is established for the proposed Project, there would be less vehicles on the road.
2. Increasing or decreasing the number of path permutations and percentage of the population utilizing each route that leads out of the immediate area could shorten or lengthen vehicle travel time relative to the results shown herein.
3. Emergency professionals electing to reserve certain road lanes for emergency vehicle ingress for portions of time could affect the travel time relative to the results shown herein.
4. Assuming evacuees utilize fewer or more vehicles to evacuate from the Project or surrounding communities relative to the Vehicle Utilization Rate selected in the analysis would shorten or lengthen vehicle travel time relative to the results shown herein.
5. Changing the mix of vehicle trips allocated to each evacuation route could shorten or lengthen vehicle travel time relative to the results shown herein.
6. Assuming a different road capacity adjustment factors could shorten or lengthen the vehicle travel time relative to the results shown herein.
7. Assuming fewer people are at home when the evacuation notice is given would reduce the number of vehicle trips and shorten vehicle travel time relative to the results shown herein. For instance, an evacuation during daytime hours would typically result in fewer outbound trips than assumed in this analysis.
8. Assuming some portion of vehicle trips are made in advance of the evacuation notice would reduce the number of vehicle trips relative to the results shown herein.
9. Assuming some homeowners and their families are not in the Study Area when evacuation notice is given (most likely in a daytime evacuation event), could reduce the number for vehicle trips relative to the results shown herein.

The evacuation time analysis is necessarily limited in scope given the numerous variables inherent in a wildfire and evacuation event. However, as discussed above, it is not anticipated that the Project will significantly impact evacuation of the proposed or existing surrounding communities based on evacuation times and other qualitative considerations.

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Appendix A1-A2

Wildfire Safety Checklist

"Ready, Set, Go!" Wildland Fire Action Guide

CALIFORNIA WILDFIRE HOME SAFETY CHECKLIST

• HOW COMMON ARE CALIFORNIA WILDFIRES? •

At least 6,284 wildfires occurred in California in 2018, according to the California Department of Forestry and Fire Protection (CAL FIRE). These fires burned approximately 876,147 acres of land.

• WHAT TO DO BEFORE A CALIFORNIA WILDFIRE •

Separate your home from flammable materials

Create at least 30 feet of space between your home and flammable vegetation and materials.

Trim trees and shrubs

Ensure trees and shrubs do not come into contact with electrical wires or hang over your home's chimney.

Clean your home's roof

Remove pine needles, leaves and other debris from your home's roof.

Store combustible materials properly

Store combustible or flammable materials in approved containers.

Pick up battery-operated flashlights and radios

Keep battery-operated flashlights and radios with additional fresh batteries in a safe, easy-to-access location in your home.

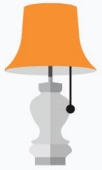
• WHAT TO DO DURING A CALIFORNIA WILDFIRE •

Stay up to date

Use a TV or radio to receive wildfire emergency updates.

Set up hoses and water

If possible, fill buckets with water and set up hoses outside your home.



Turn on the house lights

Activate the lights in each room of your home.

Remove flammable drapes or curtains

Take down flammable drapes or curtains in your home.

Get ready to evacuate

Prepare all family members and pets to evacuate your home.

• WHAT TO DO AFTER A CALIFORNIA WILDFIRE •

Contact local fire officials

Check in with local fire officials to find out if it is safe to return home.

Look for hot spots

Check the ground for smoldering stumps and other hot spots and use buckets of water on these spots as needed.

Examine your home's exterior

Look for sparks and embers across your home's roof and exterior areas.

Evaluate your home's interior

Keep an eye out for hidden burning in each room of your home.

9-1-1

Call 911

Contact 911 if you identify any potential dangers.

How much do you know about wildfires?

True or False:

1. An average of 7 million acres of US woodland burn every year.
2. 1 in 5 wildfires are caused by humans.
3. Wildfires move faster downhill.
4. Some species of trees and shrubs require fire to reproduce.
5. The 'fuel' (trees, plants, etc.) you see burning isn't really on fire.
6. There are three broad types of fire spread: Subterranean, Surface and Crown fires.
7. Only YOU can prevent wildfires.

1. True: Across the US, including Alaska, approximately 7 million acres of federal, tribal, state and private land burns annually.

2. False: More than 4 out of 5 wildfires are caused by humans.

3. False: Fire moves faster uphill. The steeper the slope, the faster the fire travels.

4. True: Species such as Ceanothus and many types of closed-cone coniferous trees require heat to germinate.

5. True: The fuel itself is not on fire, but rather, is being converted into a gas. It's the gas produced by the fuel that is actually burning.

6. False: The three types of fire spread are: Ground - organic material in the soil is burning; Surface - leaf litter, fallen braches, etc. on the ground are burning; Crown - the top layer of foliage from trees is burning.

7. True:!

WILDFIRE IS COMING.
ARE YOU READY?

WILDFIRE ACTION PLAN

BE PREPARED

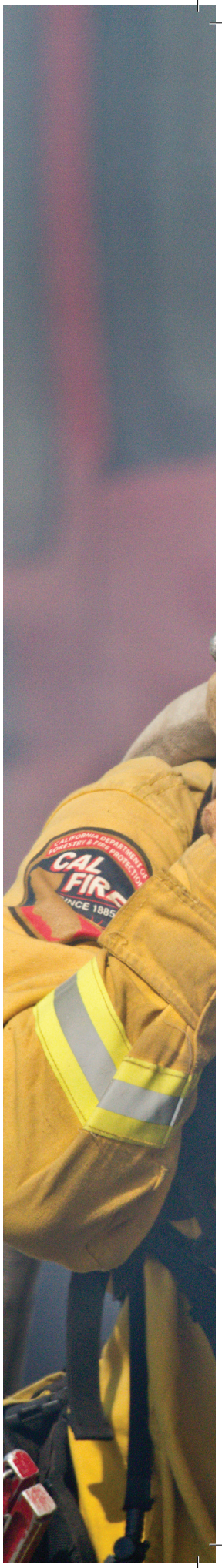
Wildfires are a fact of life in California. It's not a question of if they will occur, but when. Catastrophic wildfires are increasing in our state, encroaching further into populated areas. It is extremely important that Californians be prepared when wildfire strikes.

By preparing your home and property for wildfire, and knowing what to do if evacuation is necessary, you can dramatically increase your safety and the survivability of your home. It is your responsibility to prepare yourself, your family, and your home for when wildfire strikes.

This guide illustrates the importance of creating and maintaining Defensible Space and hardening your home by retrofitting it with ignition-resistant or noncombustible materials to protect against the threat of flying embers, direct flame contact, and radiant heat exposure. It also provides information about the preparations and precautions to make in order to evacuate early and safely.

If you need more information about preparing for wildfire or any other disaster, contact your nearest fire station or visit us at ReadyforWildfire.org.

These counties receive funding from the state to provide fire protection and prevention services to State Responsibility Area lands within their boundaries.



CONTENTS

GET READY

GET SET

GO!


GET
REA

There are three ways your home can be exposed to wildfire: through flying embers, direct flame contact, and radiant heat exposure.

Embers are the main cause of homes igniting during a wildfire. Wind can blow embers up to a mile ahead of a wildfire. These flying embers can directly ignite materials on, or attached to, a home. They can also ignite vegetation or combustible materials near the home, resulting in a subsequent fire that spreads to the home through direct flame contact or radiant heat.

Direct flame contact to the home can be the result of nearby vegetation or combustible materials catching on fire due to embers, or from the wildfire burning unchecked directly to the building.

Radiant heat exposure occurs when there are materials, vegetation, or other combustibles, that are burning close to the home—for a long enough period of time—and generate enough heat to directly ignite a combustible component of the home.

Getting ready for wildfire begins with two very important efforts: **Home Hardening** and **Defensible Space.** Hardening your home is retrofitting it with fire-resistant materials. Defensible Space is creating and maintaining a buffer between buildings and vegetation to slow wildfire. While not a guarantee that your home will survive a wildfire, these efforts give it the best chance.

HARDENING YOUR HOME

Now is the time to retrofit your home—before a wildfire strikes. California Building Code Chapter 7A requires specific construction materials and methods for the building of new homes in wildfire-prone areas. These same materials and methods are also the minimum standards recommended when retrofitting a home. Retrofitting prepares your home for the exposure it will experience during a wildfire. Here's what you can do to harden your home:

ROOF

Your roof is the most vulnerable part of your home. Homes with wood shake or shingle roofs are at high risk of being destroyed in a wildfire.

- Replace wood shake or shingle roofs with a Class A fire-rated roof, using materials such as composition, metal, or tile.
- Inspect your roof and maintain it by removing debris and plugging gaps.

VENTS

Vents on homes create openings for flying embers.

- Avoid storing combustible items near attic or crawl space vents.
- Inspect vents to ensure they are in good condition with no tears or large openings.
- Cover all vent openings with 1/16 inch to 1/8 inch corrosion-resistant metal mesh screen.
- Consider replacing screened vents with ember and flame-resistant vents.

EAVES AND SOFFITS

Eaves and soffits are a point of entry for flying embers from fires up to a mile away or flames from nearby vegetation or other material burning.

- Plug or caulk gaps greater than 1/8 inch in size with durable caulk.
- Enclose eaves with ignition-resistant or noncombustible materials if possible.

WINDOWS

Heat from a wildfire can cause windows to break before the home ignites, allowing embers to enter and start fires inside. Single-paned and large windows are particularly at risk.

- Install dual or multi-paned windows with at least one pane being tempered glass.
- Consider limiting the size and number of windows that face large areas of vegetation.
- Install metal mesh screens on openable windows to increase ember resistance and reduce radiant heat exposure.

DECKS

Surfaces within 10 feet of the building should be built with ignition-resistant, noncombustible, or other approved materials.

- Remove all combustible items from underneath deck.
- Limit combustible items on top of deck. Bring these items inside the home or move them away from the home when wildfire threatens.

EXTERIOR WALLS

Wood products such as boards, panels, or shingles are common siding materials. However, they are combustible and not good choices for wildfire prone areas.

- Use noncombustible materials such as stucco, metal, or fiber cement, or use ignition-resistant siding.
- Be sure to extend materials from the foundation to the roof.
- Plug or caulk gaps and joints with openings greater than 1/8 inch.

RAIN GUTTERS

Screen or enclose rain gutters with noncombustible corrosion-resistant materials to prevent accumulation of plant debris.

PATIO COVERS

Consider using noncombustible material within eight feet of buildings.

CHIMNEYS

Cover chimney or stovepipe outlet with a noncombustible corrosion-resistant metal mesh screen with openings between 3/8 inch and 1/2 inch in size. Close the fireplace flue during fire season when the fireplace is not in use.

FENCES

Construct fences using noncombustible materials within eight feet of your home.

GARAGES

Install weather stripping to eliminate gaps around garage doors. Add a battery back-up to automatic garage door openers so the garage can easily be opened if the power is out.

DRIVEWAYS

Ensure that access to your home complies with local fire codes.

WATER SUPPLY

Have multiple garden hoses long enough to reach all areas of your house.

ADDITIONAL HOME FIRE SAFETY RESOURCES

HOME HARDENING INFORMATION GUIDE

ReadyforWildfire.org

CALIFORNIA BUILDING CODE CHAPTER 7A

codes.iccsafe.org

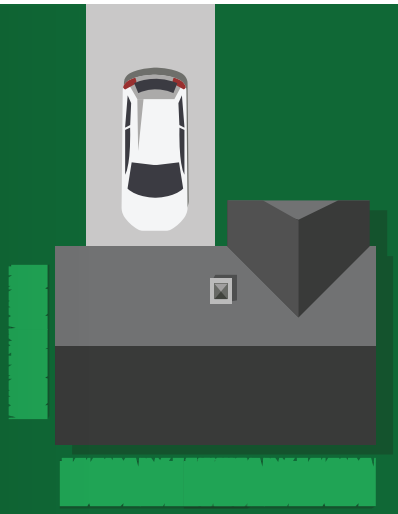
WILDFIRE HOME RETROFIT GUIDE

ReadyforWildfire.org

BUILDING MATERIALS LISTING

osfm.fire.ca.gov

DEFENSIBLE SPACE



Creating and maintaining Defensible Space is essential to reducing the impact of wildfire on your home and property. Defensible Space is the buffer created between a building on your property and the plants, brush, trees, or other combustible items in the near vicinity. This buffer helps to keep wildfire away from your home by reducing the fire's intensity and slowing or halting the spread of wildfire. The less there is to burn near your home, the less exposure your home will have to wildfire. Creating this space also provides protection for the firefighters defending your home.

CREATING AND MAINTAINING YOUR DEFENSIBLE SPACE

Within the 100-foot perimeter of a home, there is a need for more intense reduction of wildfire fuels. Start at the home and work your way out 100 feet or to your property line, whichever is closer.

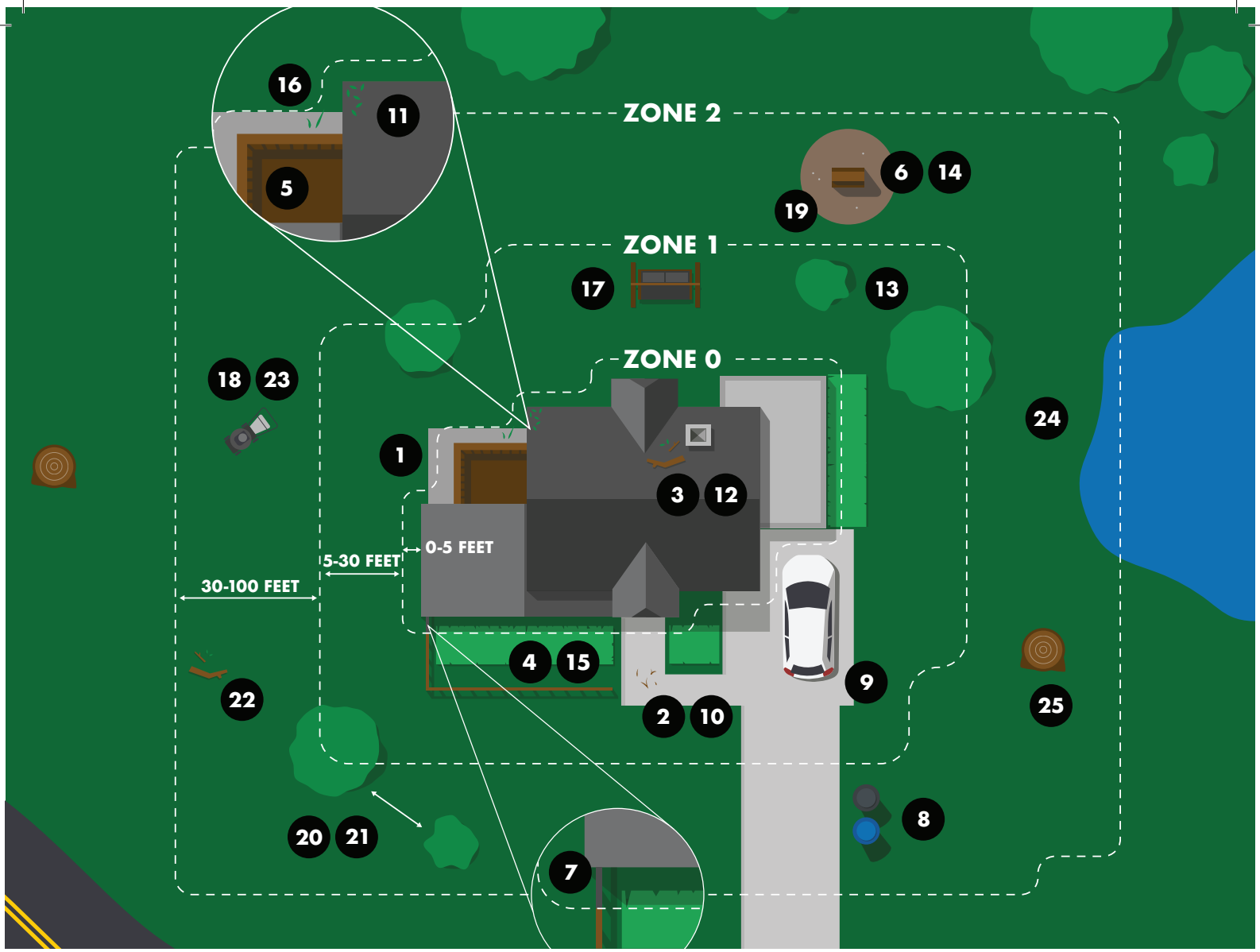
KNOW THE LAW - BE FIRE SMART

One hundred feet of Defensible Space is required under the Public Resources Code (PRC) 4291. Zones 1 and 2 currently make up the 100 feet of Defensible Space required by law. Assembly Bill 3074, passed into law in 2020, requires an ignition-resistant Zone 0 for Defensible Space.

Many local government agencies have ordinances for Defensible Space. These local ordinances will often be more stringent than the state of California's minimum requirement in PRC 4291. Check with your local fire department or fire protection district for any additional Defensible Space requirements. **fire.ca.gov/dspace**

Zone 0 extends from zero to five feet from buildings, structures, decks, etc.

1. Use hardscape like gravel, pavers, concrete, and other noncombustible mulch materials. No combustible bark or mulch.
2. Remove all dead and dying weeds, grass, branches, and vegetative debris. Check your roofs, gutters, decks, porches, stairways, etc.
3. Remove all branches within 10 feet of any chimney or stovepipe outlet.
4. Limit plants in this area to low growing, nonwoody, properly watered, and maintained plants.
5. Limit combustible items (outdoor furniture, planters, etc.) on top of decks.
6. Relocate firewood and lumber to Zone 2.
7. Replace within Zone 0 combustible fencing, gates, and arbors attached to the home with noncombustible alternatives.



8. Relocate garbage and recycling containers outside this zone.
9. Relocate boats, RVs, vehicles, and other combustible items outside this zone.

Zone 1 extends five to 30 feet from buildings, decks, and other structures.

10. Remove all dead plants, grass, and weeds (vegetation).
11. Remove dead or dry leaves and pine needles from your yard, roof, and rain gutters.
12. Remove branches that hang over your roof and keep dead branches 10 feet away from your chimney or stovepipe outlet.
13. Trim trees regularly to keep branches a minimum of 10 feet from other trees.
14. Relocate exposed wood piles outside of Zone 1.
15. Remove or prune flammable plants and shrubs near windows.
16. Remove vegetation and items that could catch fire from around and under decks.
17. Create a separation between trees, shrubs, and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

Zone 2 extends from 30 feet to 100 feet from buildings, structures, decks, etc.

18. Cut or mow annual grasses to a maximum height of four inches.
19. All exposed wood piles must have a minimum of 10 feet clearance around them, down to bare mineral soil, in all directions.
20. Create horizontal space between shrubs and trees. (See diagram on page 11)
21. Create vertical space between grass, shrubs, and trees. (See diagram on page 11)
22. Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of three inches.

All zones

23. Mow before 10 a.m., but never when it's windy or excessively dry.
24. Protect water quality. Do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion—especially on steep slopes.
25. Logs or stumps embedded in the soil must be removed in Zone 0. In Zones1and 2 they need to be removed or isolated from other vegetation.

It takes the combination of both Defensible Space and Home Hardening to give your home and property the best chance of surviving a wildfire. Below are examples of low-risk and high-risk scenarios:

HIGH RISK

UNENCLOSED EAVES

UNSCREENED VENTS

DEFENSIBLE SPACE NONCOMPLIANT

LOW RISK

ENCLOSED EAVES

SCREENED VENTS

DEFENSIBLE SPACE COMPLIANT

FIRE SMART LANDSCAPING

While some plants are characterized as "fire-safe" or "fire-resistant," all plants will burn under the right conditions, regardless of how they are classified. The environment the plant grows in, how it is maintained, and its placement and spacing near other vegetation and combustibles will generally have more influence on the flammability of the plant than how it is characterized. Taking these items into consideration is crucial to reduce the spread of wildfire to your home. Scan the QR code below for more information.

FIRE SMART LANDSCAPING
ReadyforWildfire.org/fire-smart-landscaping

MINIMUM VERTICAL SPACING BETWEEN TREES AND SHRUBS

Eliminate opportunities for a vertical "fire ladder":

- Remove branches beneath large trees for a six-foot minimum clearance.
- Create proper vertical spacing between shrubs and the lowest branches of trees. See adjacent diagrams.

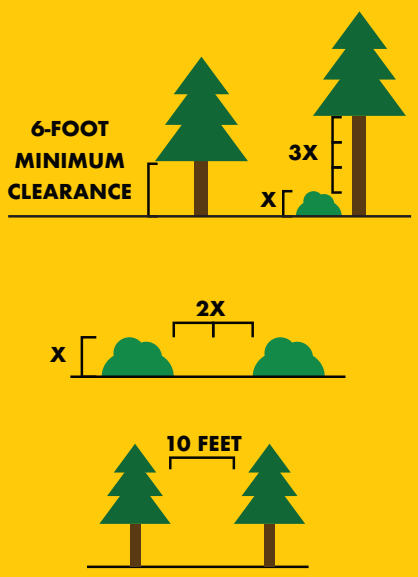
MINIMUM HORIZONTAL SPACING BETWEEN TREES AND SHRUBS

Horizontal spacing depends on the slope of the land and the height of the shrubs or trees. See adjacent diagrams.

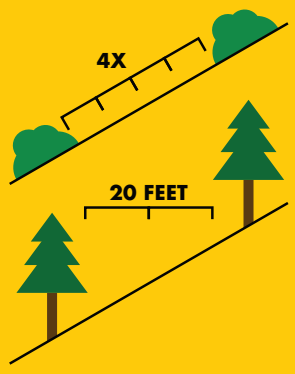
DEAD TREE REMOVAL

If you have dead or dying trees on your property, the entire tree needs to be removed to reduce wildfire risk. Scan the QR code below to learn about permit requirements.

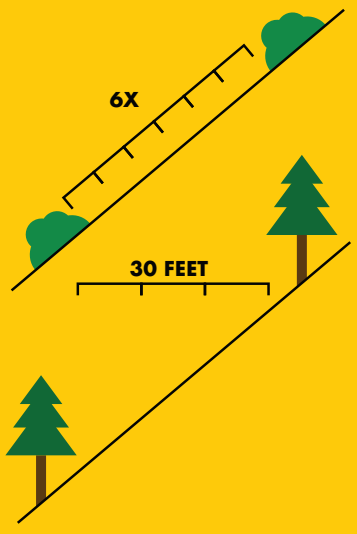
PERMIT REQUIREMENTS
ReadyforWildfire.org/dead-tree-removal



Flat to mild slope (<20%)



Mild to moderate slope (20%–40%)



Moderate to steep slope (>40%)


GET
SET

It is important that you are prepared **before** wildfire strikes. In an emergency it is easy to become confused or panicked.

Getting Set requires three main preparation actions:

- Creating a Wildfire Action Plan
- Creating an Emergency Supply Kit
- Creating a Family Communication Plan

Preparing these items in advance will help keep you focused and able to act quickly when evacuation is anticipated or needed.

Use this guide to complete these actions to prepare in advance of wildfire.

READY FOR WILDFIRE INCIDENT APP

Scan the QR code below to access accurate updates about active wildfires near you with our web-based Ready for Wildfire Incident App.

ACTION PLAN CHECKLIST

CREATE A WILDFIRE ACTION PLAN

Your Wildfire Action Plan must be prepared and familiar to all members of your household well in advance of a wildfire. Use the checklist below to help create your plan. Each family's plan will be different, depending on a variety of issues, needs, and situations.

Create an evacuation plan that includes:

- ○ A designated emergency meeting location outside the fire or hazard area. This is critical to determine who has safely evacuated from the affected area.
- ○ Identification of several different escape routes from your home and community. Practice these routes often so everyone in your family is familiar with them in case of emergency. Go to page 18 to write down your evacuation routes.
- ○ An evacuation plan for pets and large animals such as horses and other livestock.
- ○ A Family Communication Plan that designates an out-of-area friend or relative as a point of contact to act as a single source of communication among family members in case of separation. It is easier to call or message one person and let them contact others than to try and call everyone when phone, cell, and internet systems can be overloaded or limited during a disaster and under a stressful situation. See page 18 for a Family Communication Plan form.

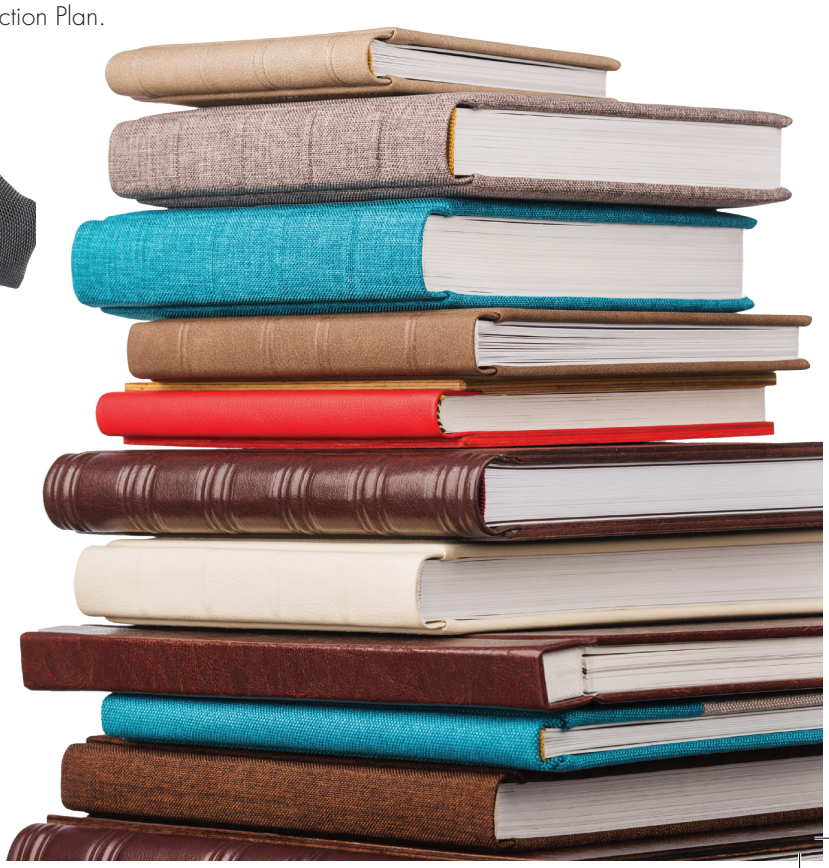
Be prepared:

- ○ Have fire extinguishers on hand and make sure everyone in the family knows how to use them. Many fire extinguishers have expiration dates, so make sure to check yours.
- ○ Ensure you and your family know where the home's gas, electric, and water main shut-off controls are located and how to safely shut them down in an emergency.
- ○ Assemble an Emergency Supply Kit for each person, as recommended by the American Red Cross. See Emergency Supply Kit on page 16 for details.
- ○ Maintain a list of emergency contact numbers in your cell phone, posted near your home phone, and in your Emergency Supply Kit.
- ○ Keep an extra Emergency Supply Kit in your car in case you cannot get to your home because of fire or other emergency.
- ○ Have a portable radio or scanner, or follow the Ready for Wildfire App so you can stay updated on wildfires. Follow local law enforcement notifications for any evacuation information. Visit incidents.ReadyforWildfire.org or scan QR code on page 13 to view the incident app.
- ○ Tell your neighbors about Ready, Set, Go! and your Wildfire Action Plan.

THE SIX Ps

Remember the "Six Ps" and keep them ready in case immediate evacuation is required:

- ○ People and pets
- ○ Papers, phone numbers, and important documents
- ○ Prescriptions, vitamins, and eyeglasses
- ○ Pictures and irreplaceable memorabilia
- ○ Personal computer, hard drive, and disks
- ○ "Plastic" (credit cards, ATM cards) and cash



EMERGENCY SUPPLY KIT

Put together your Emergency Supply Kit—also called a "go bag"—before a wildfire or other disaster occurs and keep it easily accessible so you can take it with you when you evacuate. Backpacks work great for storing these items (except food and water) and are quick to grab. Storing food and water in a tub or chest on wheels will make it easier to transport. Keep it light enough to be able to lift it into your car.

Emergency Supply Kit Contents:

- ○ Face masks or coverings
- ○ Three-day supply of non-perishable food and three gallons of water per person
- ○ Map marked with at least two evacuation routes
- ○ Prescriptions or special medications
- ○ Change of clothing, including a cotton long-sleeved shirt and pants
- ○ Extra eyeglasses or contact lenses
- ○ An extra set of car keys, phone charger, credit cards, cash, or traveler's checks
- ○ First aid kit
- ○ Flashlight
- ○ Battery-powered radio and extra batteries
- ○ Sanitation supplies
- ○ Copies of important documents (birth certificates, passports, insurance, etc.)
- ○ Food, water, and medications for pets
- ○ Can opener

Items to take if time allows:

- ○ Easily carried valuables
- ○ Family photos and other irreplaceable items
- ○ Personal computer information on hard drives and disks
- ○ Extra cell phone chargers, laptops, etc.

Always keep a sturdy pair of shoes and a flashlight near your bed handy in case of a sudden evacuation at night.

OUR FAMILY'S ADDITIONAL SUPPLY KIT MUST HAVES ARE:

BE PREPARED FOR POWER OUTAGES

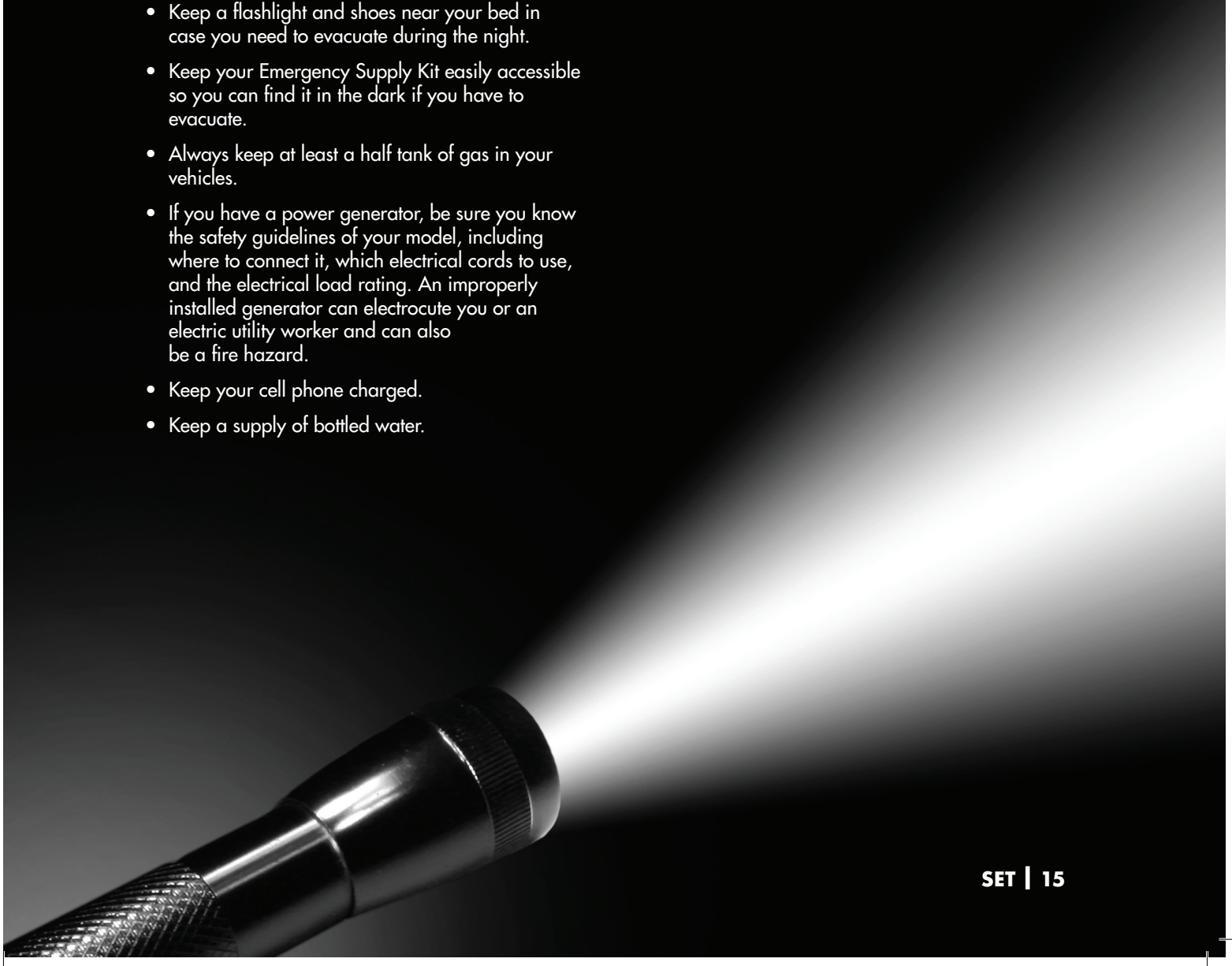
Power outages may occur before and during the threat of a wildfire. It's important to be prepared and know what actions to take when leaving your home during a power outage.

- Learn how to manually open your automatic garage doors or gates—this is extremely important!
- Be familiar with your home's utility shutoffs (electricity, water, and gas).
- Keep a flashlight and shoes near your bed in case you need to evacuate during the night.
- Keep your Emergency Supply Kit easily accessible so you can find it in the dark if you have to evacuate.
- Always keep at least a half tank of gas in your vehicles.
- If you have a power generator, be sure you know the safety guidelines of your model, including where to connect it, which electrical cords to use, and the electrical load rating. An improperly installed generator can electrocute you or an electric utility worker and can also be a fire hazard.
- Keep your cell phone charged.
- Keep a supply of bottled water.

DURING A POWER OUTAGE

If the power goes out, follow these steps:

- Keep your refrigerator and freezer doors closed.
- Shut off the gas and other combustibles such as propane tanks.
- If wildfire is within your area, keep informed with a battery-powered radio or your cell phone.
- Stay at least 10 feet away from both overhead power lines and electrical facilities, and never approach or touch overhead power lines or any person or object in contact with the lines.



SAVE THIS FAMILY COMMUNICATION PLAN

Fill out this form and place it in a location where it can easily be found by everyone in your household. Copy the form and keep it in your Emergency Supply Kit. This will allow all family members to have access to this key information in case you get separated.

WHEN WE HAVE TO EVACUATE, WE WILL MEET AT:

_____

OUR OUT-OF-AREA EMERGENCY CONTACT PERSON IS:

Name: _____

Home Phone #: _____

Relationship: _____

E-mail: _____

Cell Phone #: _____

OTHER IMPORTANT NUMBERS ARE:

Emergency 911: _____

Local Police: _____

Local Fire Department: _____

Other: _____

Other: _____

Other: _____

OUR TWO EVACUATION ROUTES ARE (DESCRIBE BELOW):

_____ _____

_____ _____

_____ _____

_____ _____

INSURANCE PREPAREDNESS

A home is generally your largest asset. Protect it.

Insurance is the critical back-up plan enabling you to rebuild your home after a wildfire. Follow these tips as part of your Ready, Set, Go! Wildfire Action Plan:

Conduct an annual insurance checkup

- Call your agent or insurance company annually to discuss your policy limits and coverage. Make sure your policy reflects the correct square footage and features in your home. Consider purchasing building code upgrade coverage.

Know what your policy covers

- Know if you have a replacement-cost policy that pays to replace all of your items at current market price, or if you have an actual cash value policy that takes depreciation into account and pays less for aged items.

Update your policy to cover home improvements

- If you make home improvements, be sure to call your agent or company to update your coverage. Make sure your insurer knows about the changes, so that new countertops, floors, rooms, etc., are covered if you must rebuild.

Maintain insurance

- If your home is paid off, be sure to maintain homeowner insurance. Without insurance, costs to repair or replace a home or structure is the responsibility of a homeowner.

Get renters insurance

- Renters can lose everything in a fire and be left to start over. Many insurers bundle renters insurance coverage with an auto insurance policy at affordable prices.

Make a home inventory

- Document the contents of your home before a wildfire occurs. Use your cell phone to video your belongings or a camera to take photos. Store the inventory list and photos at a location away from the property and/or in a cloud internet server. Include the cost of items and note important or expensive items. If possible, keep receipts for major purchases.
- Don't forget to include items inside the home, inside the garage, and outside of the home.


GO

Give your household the best chance of surviving a wildfire by being ready to go and evacuating early.

Being ready to go means following pre-evacuation steps, knowing when to evacuate, preparing possible evacuation routes, and knowing what to do if you become trapped.

Be safe and don't wait until it's too late! Use these checklists to help prepare you and your family to be ready to evacuate if wildfire strikes.

It is also important to learn what to expect after a wildfire and what you should do before returning home. The danger is not over after the flames are put out.

KNOW THE LAW—BE READY TO EVACUATE

California law authorizes officers to restrict access to any area where a menace to public health or safety exists due to a calamity such as flood, storm, fire, earthquake, explosion, accident, or other disaster. Refusal to comply is a misdemeanor. (Penal Code 409.5)

PRE-EVACUATION STEPS

When evacuation is anticipated, follow these checklists (if time allows):

Outside

- ○ Gather flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, trash cans, etc.) or place them in your pool.
- ○ Turn off propane tanks.
- ○ Move propane BBQ appliances away from structures.
- ○ Connect garden hoses to outside water valves or spigots for use by firefighters. Fill water buckets and place them around the house.
- ○ Turn off sprinklers and running water; leaving them on can affect critical water pressure.
- ○ Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night.
- ○ Put your Emergency Supply Kit in your vehicle.
- ○ Back your car into the driveway with vehicle loaded and all doors and windows closed. Carry your car keys with you.
- ○ Have a ladder available and place it at the corner of the house for firefighters to quickly access your roof.
- ○ Seal attic and ground vents with pre-cut fire-resistant boards or commercial seals.
- ○ Monitor your property and the fire situation. Don't wait for an evacuation order if you feel threatened and need to leave.
- ○ Check on neighbors and make sure they are preparing to leave.

Inside the House

- ○ Shut all windows and doors, leaving them unlocked.
- ○ Remove flammable window shades and curtains. Close metal shutters.
- ○ Move flammable furniture to the center of the room, away from windows and doors.
- ○ Shut off gas at the meter or tank. Turn off pilot lights.
- ○ Leave your lights on so firefighters can see your house under smoky conditions.
- ○ Shut off the air conditioning or heater.

Animals

- ○ Locate your pets and keep them nearby.
- ○ Prepare livestock for transport and consider moving them to a safe location early.

READY | SET | GO

EVACUATION STEPS

- ○ Review your Evacuation Checklist.
- ○ Ensure your Emergency Supply Kit is in your vehicle.
- ○ Cover up to protect against heat and flying embers. Wear long pants, a long-sleeved shirt, heavy shoes/boots, cap/hat, a dry bandana for face cover, goggles, or glasses. Clothing made of 100% cotton is preferable.
- ○ Locate your pets and take them with you.

WHEN TO EVACUATE

Leave when evacuation is recommended by fire officials to avoid being caught in fire, smoke, or road congestion. You don't need to wait to be ordered by authorities to evacuate. In an intense wildfire, emergency personnel may not have time to knock on every door. If you feel you are in danger, the best course of action is to evacuate. If you are advised to leave, don't hesitate!

Officials will determine the areas to be evacuated and escape routes to use depending upon the fire's location, behavior, winds, terrain, etc.

Law enforcement agencies are typically responsible for enforcing an evacuation order. Follow their directions promptly.

You will be advised of potential evacuations as early as possible. You must take the initiative to stay informed and aware. Listen to your radio/TV for announcements from law enforcement and emergency personnel.

You may be directed to temporary assembly areas to await transfer to a safe location.

The terms "Warning" and "Order" are used to describe evacuation orders. However, local jurisdictions may use other terminology such as "Precautionary" and "Immediate Threat." These terms are used to alert you to the significance of the danger. All evacuation instructions provided by officials should be followed immediately for your safety.

ANIMAL EVACUATION

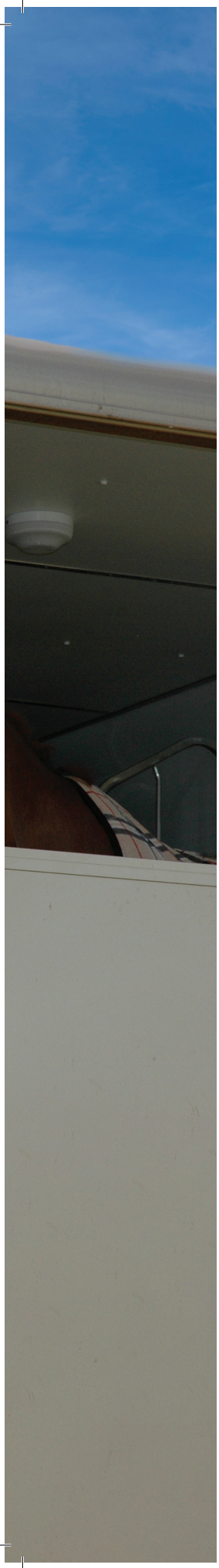
You've taken steps to help keep your family and home fire safe. Don't forget your pets and livestock. With some advanced planning, you can increase their chances of surviving a wildfire.

1. Clear Defensible Space around your barns, pastures, and property just as you do your home.
2. Contact your local fairgrounds, stockyards, equestrian centers, friends, etc. about their policies and ability to temporarily take livestock in an emergency.
3. Have vaccination/medical records, registration papers, and photographs of your animals (proof of ownership).
4. If you must leave your animals, leave them in a pre-selected, cleared area. If appropriate, leave enough hay for 48 to 72 hours.
   - Leave water for your animals. Do not rely on automatic watering systems, as a power outage could occur or the water system become compromised.
5. Arrange in advance for a neighbor to check on or transport your pets in case you are not home when disaster strikes.
   - Make sure your neighbors have your contact numbers (cell phone, work, home, etc.).
6. Make sure that each animal has its own pet carrier, as appropriate.
   - Birds, rodents, and reptiles should be transported in cages covered with a light sheet or cloth to minimize their fear.
7. Make sure your pets are always wearing properly fitted collars with personal identification, rabies and license tags.
8. Plan where you will take your pets and select an alternate prearranged location as well.
   - In the event of evacuation, pets may not be allowed inside human emergency shelters.
9. Prepare your livestock disaster preparedness kit.
10. Prepare your pet disaster preparedness kit.

Scan the QR code below to find what items to include in your livestock and pet disaster preparedness kit.

LIVESTOCK AND PET DISASTER PREPAREDNESS KIT INSTRUCTIONS

ReadyforWildfire.org/animal-evacuation



WHAT TO DO IF TRAPPED

WHILE IN YOUR VEHICLE:

- Stay calm.
- Park your vehicle in an area clear of vegetation.
- Close all vehicle windows and vents. If possible, cover inside of windows with a wool or cotton blanket to minimize radiant heat.
- Cover yourself with a wool or cotton blanket or jacket.
- Lie on vehicle floor.
- Use your cell phone to contact officials—**Call 911**

WHILE ON FOOT:

- Stay calm.
- Go to an area clear of vegetation, a ditch, or depression on level ground, if possible.
- Lie face down and cover up your body.
- If near a body of water—pool, creek, pond, lake, etc.—seek safety in the water or use it to keep distance away from the fire. Be careful not to be swept away by moving water or get too deep.
- Use your cell phone to contact officials—**Call 911**

WHILE IN YOUR HOME:

- Stay calm and keep your family together.
- **Call 911** and inform authorities of your location.
- Fill sinks and tubs with cold water.
- Keep doors and windows closed but unlocked.
- Stay inside your house.
- Stay away from outside walls and windows.
- Turn on lights so emergency officials know you are inside.

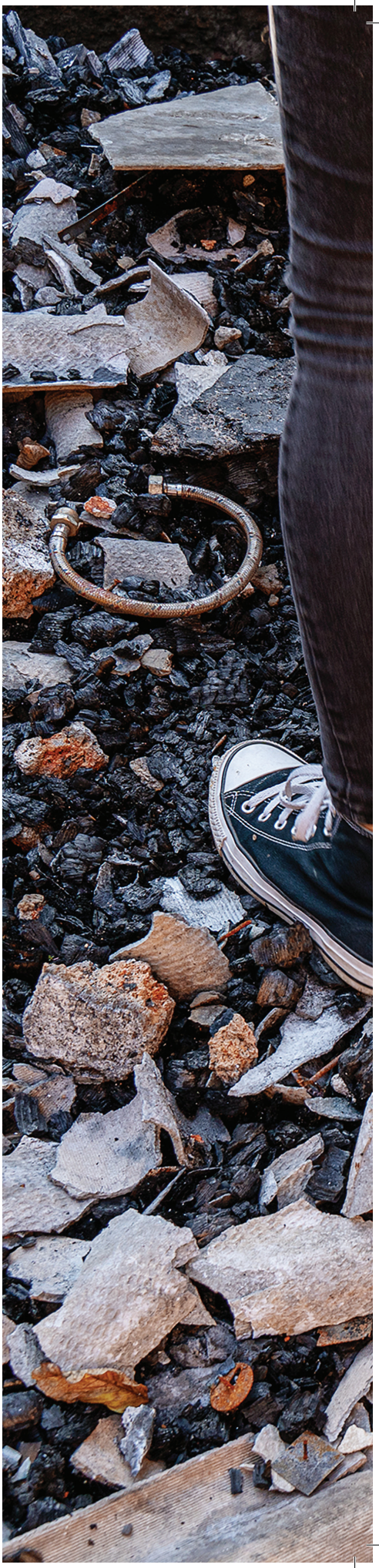
RETURNING HOME AFTER A WILDFIRE

ALWAYS check with officials before attempting to return to your home after a wildfire. Once home, check for the following:

- ○ **Call 911** if any danger is perceived.
- ○ Before inspecting your home, first check for the smell of gas. Turn off power until you've completed your inspection. Use a battery-powered flashlight to inspect a damaged home.
- ○ Check grounds for hot spots, smoldering stumps, and vegetation.
- ○ Check the roof and exterior areas for sparks or embers.
- ○ Check the attic and throughout your house for any hidden burning sparks or embers.
- ○ Check for fire damage to your home, turn off all appliances, and make sure the meter is not damaged before turning on the main circuit breaker.
- ○ Check the well or pump house to ensure it is in working order.
- ○ Do not drink or use water from the faucet until emergency officials say it is okay.
- ○ Discard any food that has been exposed to heat, smoke, or soot.
- ○ Consult local experts on the best way to restore and plant your land with fire smart landscaping.

Be aware of the following dangers that exist after a wildfire:

- Flash floods are a very real and potentially deadly hazard when rain occurs in heavily burned areas after a wildfire. Stay away from burned forests, storm channels, and natural drainages.
- Use extreme caution around trees, power poles, and other tall objects or structures that may have lost stability during the fire.




ReadyforWildfire.org
CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
CAL FIRE
SINCE 1885

Appendix B1- B4

Family Disaster Plan and Personal Survival Guide

Additional Items to Consider Adding to an Emergency Supply Kit:

- ❑ **Prescription medications and glasses**
- ❑ **Infant formula and diapers**
- ❑ **Pet food and extra water for your pet**
- ❑ **Important family documents such as copies of insurance policies, identification and bank account records in a waterproof, portable container**
- ❑ **Cash or traveler's checks and change**
- ❑ **Emergency reference material such as a first aid book or information from www.ready.gov**
- ❑ **Sleeping bag or warm blanket for each person. Consider additional bedding if you live in a cold-weather climate.**
- ❑ **Complete change of clothing including a long sleeved shirt, long pants and sturdy shoes. Consider additional clothing if you live in a cold-weather climate.**
- ❑ **Household chlorine bleach and medicine dropper** – When diluted nine parts water to one part bleach, bleach can be used as a disinfectant. Or in an emergency, you can use it to treat water by using 16 drops of regular household liquid bleach per gallon of water. Do not use scented, color safe or bleaches with added cleaners.
- ❑ **Fire Extinguisher**
- ❑ **Matches in a waterproof container**
- ❑ **Feminine supplies and personal hygiene items**
- ❑ **Mess kits, paper cups, plates and plastic utensils, paper towels**
- ❑ **Paper and pencil**
- ❑ **Books, games, puzzles or other activities for children**

Ready

Prepare. Plan. Stay Informed.®

Emergency Supply List

FEMA

www.ready.gov

Recommended Items to Include in a Basic Emergency Supply Kit:

- **Water, one gallon of water per person per day for at least three days, for drinking and sanitation**
- **Food, at least a three-day supply of non-perishable food**
- **Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert and extra batteries for both**
- **Flashlight and extra batteries**
- **First aid kit**
- **Whistle to signal for help**
- **Dust mask, to help filter contaminated air and plastic sheeting and duct tape to shelter-in-place**
- **Moist towelettes, garbage bags and plastic ties for personal sanitation**
- **Wrench or pliers to turn off utilities**
- **Can opener for food (if kit contains canned food)**
- **Local maps**

Through its *Ready* Campaign, the Federal Emergency Management Agency educates and empowers Americans to take some simple steps to prepare for and respond to potential emergencies, including natural disasters and terrorist attacks. *Ready* asks individuals to do three key things: get an emergency supply kit, make a family emergency plan, and be informed about the different types of emergencies that could occur and their appropriate responses.

All Americans should have some basic supplies on hand in order to survive for at least three days if an emergency occurs. Following is a listing of some basic items that every emergency supply kit should include. However, it is important that individuals review this list and consider where they live and the unique needs of their family in order to create an emergency supply kit that will meet these needs. Individuals should also consider having at least two emergency supply kits, one full kit at home and smaller portable kits in their workplace, vehicle or other places they spend time.

Ready

FEMA

Federal Emergency Management Agency
Washington, DC 20472

BE SMART. TAKE PART. CREATE YOUR FAMILY EMERGENCY COMMUNICATION PLAN

Join with others to prepare for emergencies and participate in America's PrepareAthon! | ready.gov/prepare

Creating your *Family Emergency Communication Plan* starts with one simple question: "What if?"

"What if something happens and I'm not with my family?" "Will I be able to reach them?" "How will I know they are safe?" "How can I let them know I'm OK?" During a disaster, you will need to send and receive information from your family.

Communication networks, such as mobile phones and computers, could be unreliable during disasters, and electricity could be disrupted. Planning in advance will help ensure that all the members of your household—including children and people with disabilities and others with access and functional needs, as well as outside caregivers—know how to reach each other and where to meet up in an emergency. Planning starts with three easy steps:

1. COLLECT.

Create a paper copy of the contact information for your family and other important people/offices, such as medical facilities, doctors, schools, or service providers.

2. SHARE.

Make sure everyone carries a copy in his or her backpack, purse, or wallet. If you complete your *Family Emergency Communication Plan* online at ready.gov/make-a-plan, you can print it onto a wallet-sized card. You should also post a copy in a central location in your home, such as your refrigerator or family bulletin board.

3. PRACTICE.

Have regular household meetings to review and practice your plan.

TEXT IS BEST!

If you are using a mobile phone, a text message may get through when a phone call will not. This is because a text message requires far less bandwidth than a phone call. Text messages may also save and then send automatically as soon as capacity becomes available.

The following sections will guide you through the process to create and practice your *Family Emergency Communication Plan*.

HOUSEHOLD INFORMATION

Write down phone numbers and email addresses for everyone in your household. Having this important information written down will help you reconnect with others in case you don't have your mobile device or computer with you or if the battery runs down. If you have a household member(s) who is Deaf or hard of hearing, or who has a speech disability and uses traditional or video relay service (VRS), include information on how to connect through relay services on a landline phone, mobile device, or computer.

SCHOOL, CHILDCARE, CAREGIVER, AND WORKPLACE EMERGENCY PLANS

Because a disaster can strike during school or work hours, you need to know their emergency response plans and how to stay informed. Discuss these plans with children, and let them know who could pick them up in an emergency. Make sure your household members with phones are signed up for alerts and warnings from their school, workplace, and/or local government. To find out more about how to sign up, see *Be Smart. Know Your Alerts and Warnings* at http://1.usa.gov/1BDloze. For children without mobile phones, make sure they know to follow instructions from a responsible adult, such as a teacher or principal.

OUT-OF-TOWN CONTACT

It is also important to identify someone outside of your community or State who can act as a central point of contact to help your household reconnect. In a disaster, it may be easier to make a long-distance phone call than to call across town because local phone lines can be jammed.

EMERGENCY MEETING PLACES

Decide on safe, familiar places where your family can go for protection or to reunite. Make sure these locations are accessible for household members with disabilities or access and functional needs. If you have pets or service animals, think about animal-friendly locations. Identify the following places:

- ☐ *Indoor*: If you live in an area where tornadoes, hurricanes, or other high-wind storms can happen, make sure everyone knows where to go for protection. This could be a small, interior, windowless room, such as a closet or bathroom, on the lowest level of a sturdy building, or a tornado safe room or storm shelter.
- ☐ *In your neighborhood*: This is a place in your neighborhood where your household members will meet if there is a fire or other emergency and you need to leave your home. The meeting place could be a big tree, a mailbox at the end of the driveway, or a neighbor's house.
- ☐ *Outside of your neighborhood*: This is a place where your family will meet if a disaster happens when you're not at home and you can't get back to your home. This could be a library, community center, house of worship, or family friend's home.

- [ ] *Outside of your town or city*: Having an out-of-town meeting place can help you reunite if a disaster happens and:
    - You cannot get home or to your out-of-neighborhood meeting place; or
    - Your family is not together and your community is instructed to evacuate the area.

    This meeting place could be the home of a relative or family friend. Make sure everyone knows the address of the meeting place and discuss ways you would get there.

OTHER IMPORTANT NUMBERS AND INFORMATION

You should also write down phone numbers for emergency services, utilities, service providers, medical providers, veterinarians, insurance companies, and other services.

SHARE

MAKE SURE EVERYONE HAS THE INFORMATION

- [ ] Make copies of your *Family Emergency Communication Plan* for each member of the household to carry in his or her wallet, backpack, or purse. Post a copy in a central place at home. Regularly check to make sure your household members are carrying their plan with them.
- [ ] Enter household and emergency contact information into all household members' mobile phones or devices.
- [ ] Store at least one emergency contact under the name "In Case of Emergency" or "ICE" for all mobile phones and devices. This will help someone identify your emergency contact if needed. Inform your emergency contact of any medical issues or other requirements you may have.
- [ ] Create a group list on all mobile phones and devices of the people you would need to communicate with if there was an emergency or disaster.
- [ ] Make sure all household members and your out-of-town contact know how to text if they have a mobile phone or device, or know alternative ways to communicate if they are unable to text.
- [ ] Read *Be Smart. Know Your Alerts and Warnings* at http://1.usa.gov/1BDloze and sign up to receive emergency information.

NOW IT'S TIME TO PRACTICE!

Once you have completed your *Family Emergency Communication Plan*, made copies for all the members of your household, and discussed it, it's time to practice!

Here are some ideas for practicing your plan:

- [ ] Practice texting and calling. Have each person practice sending a text message or calling your out-of-town contact and sending a group text to your mobile phone group list.
- [ ] Discuss what information you should send by text. You will want to let others know you are safe and where you are. Short messages like "I'm OK. At library" are good.

- [ ] Talk about who will be the lead person to send out information about the designated meeting place for the household.
- [ ] Practice gathering all household members at your indoor and neighborhood emergency meeting places. Talk about how each person would get to the identified out-of-neighborhood and out-of-town meeting places. Discuss all modes of transportation, such as public transportation, rail, and para-transit for all family members, including people with disabilities and others with access and functional needs.
- [ ] Regularly have conversations with household members and friends about the plan, such as whom and how to text or call, and where to go.
- [ ] To show why it's important to keep phone numbers written down, challenge your household members to recite important phone numbers from memory—now ask them to think about doing this in the event of an emergency.
- [ ] Make sure everyone, including children, knows how and when to call 911 for help. You should only call 911 when there is a life-threatening emergency.
- [ ] Review, update, and practice your *Family Emergency Communication Plan* at least once a year, or whenever any of your information changes.

To help start the conversation or remind your family why you are taking steps to prepare and practice, you may want to watch the 4-minute video, *It Started Like Any Other Day*, about families who have experienced disaster, at www.youtube.com/watch?v=w_omgt3MEBs. Click on the closed captioning (CC) icon on the lower right to turn on the captioning.

After you practice, talk about how it went. What worked well? What can be improved? What information, if any, needs to be updated? If you make updates, remember to print new copies of the plan for everyone.

OTHER IMPORTANT TIPS FOR COMMUNICATING IN DISASTERS[1]

- [ ] Text is best when using a mobile phone, but if you make a phone call, keep it brief and convey only vital information to emergency personnel and/or family or household members. This will minimize network congestion, free up space on the network for emergency communications, and conserve battery power. Wait 10 seconds before redialing a number. If you redial too quickly, the data from the handset to the cell sites do not have enough time to clear before you've re-sent the same data. This contributes to a clogged network.
- [ ] Conserve your mobile phone battery by reducing the brightness of your screen, placing your phone in airplane mode, and closing apps you do not need. Limit watching videos and playing video games to help reduce network congestion.
- [ ] Keep charged batteries, a car phone charger, and a solar charger available for backup power for your mobile phone, teletypewriters (TTYs), amplified phones, and caption phones. If you charge your phone in your car, be sure the car is in a well-ventilated area (e.g., not in a closed garage) to avoid life-threatening carbon monoxide poisoning.

[1] Federal Communications Commission, Public Safety and Homeland Security Bureau. (n.d.) *Tips for communicating in an emergency.* Retrieved from http://transition.fcc.gov/pshs/emergency-information/tips.html

- [ ] If driving, do not text, read texts, or make a call without a hands-free device.
- [ ] Maintain a household landline and analog phone (with battery backup if it has a cordless receiver) that can be used when mobile phone service is unavailable. Those who are Deaf or hard of hearing, or who have speech disabilities and use devices and services that depend on digital technology (e.g., VRS, Internet Protocol [IP] Relay, or captioning) should have an analog phone (e.g., TTY, amplified phone, or caption phone) with battery backup in case Internet or mobile service is down.
- [ ] If you evacuate and have a call-forwarding feature on your home phone, forward your home phone number to your mobile phone number.
- [ ] Use the Internet to communicate by email, Twitter, Facebook, and other social media networks. These communication channels allow you to share information quickly with a widespread audience or to find out if loved ones are OK. The Internet can also be used for telephone calls through Voice over Internet Protocol. For those who are Deaf or hard of hearing, or who have speech disabilities, you can make calls through your IP Relay provider.
- [ ] If you do not have a mobile phone, keep a prepaid phone card to use if needed during or after a disaster.
- [ ] Use a pay phone if available. It may have less congestion because these phones don't rely on electricity or mobile networks. In some public places, you may be able to find a TTY that can be used by those who are Deaf or hard of hearing, or who have speech disabilities.

America's PrepareAthon! is a grassroots campaign for action to get more people prepared for emergencies. Make your actions count at ready.gov/prepare.

The reader recognizes that the Federal Government provides links and informational data on various disaster preparedness resources and events and does not endorse any non-Federal events, entities, organizations, services, or products.

10 WAYS TO PARTICIPATE IN AMERICA'S PrepareAthon!℠

Access Alerts and Warnings

Test Communication Plans

Assemble or Update Supplies

Drill or Practice Emergency Response

Participate in a Class, Training, or Discussion

Plan with Neighbors

Conduct an Exercise

Make Property Safer

Document and Insure Property

Safeguard Documents

FAMILY EMERGENCY COMMUNICATION PLAN

HOUSEHOLD INFORMATION

Home #: .....
Address:.....

Name: ..... Mobile #: .....
Other # or social media: .....
Email: .....
Important medical or other information: .....
.....

Name: ..... Mobile #: .....
Other # or social media: .....
Email: .....
Important medical or other information: .....
.....

Name: ..... Mobile #: .....
Other # or social media: .....
Email: .....
Important medical or other information: .....
.....

Name: ..... Mobile #: .....
Other # or social media: .....
Email: .....
Important medical or other information: .....
.....

SCHOOL, CHILDCARE, CAREGIVER, AND WORKPLACE EMERGENCY PLANS

Name: .....
Address:.....
Emergency/Hotline #: .....
Website: .....
Emergency Plan/Pick-Up: .....

SCHOOL, CHILDCARE, CAREGIVER, AND WORKPLACE EMERGENCY PLANS

Name: .....
Address:.....
Emergency/Hotline #: .....
Website: .....
Emergency Plan/Pick-Up: .....

Name: .....
Address:.....
Emergency/Hotline #: .....
Website: .....
Emergency Plan/Pick-Up: .....

Name: .....
Address:.....
Emergency/Hotline #: .....
Website: .....
Emergency Plan/Pick-Up: .....

IN CASE OF EMERGENCY (ICE) CONTACT

Name: ..... Mobile #: .....
Home #: .....Email: .....
Address: .....

OUT-OF-TOWN CONTACT

Name: ..... Mobile #: .....
Home #: .....Email: .....
Address: .....

EMERGENCY MEETING PLACES

Indoor: .....
Instructions: .....
Neighborhood: .....
Instructions: .....

Out-of-Neighborhood: .....
Address:.....
Instructions: .....

Out-of-Town: .....
Address:.....
Instructions: .....

IMPORTANT NUMBERS OR INFORMATION

Police: ..... Dial 911 or #: .....
Fire: ..... Dial 911 or #: .....
Poison Control: .....#: .....
Doctor: .....#: .....
Doctor: .....#: .....
Pediatrician: .....#: .....
Dentist: .....#: .....
Hospital/Clinic: .....#: .....
Pharmacy: .....#: .....
Medical Insurance: .....#: .....
Policy #: .....
Medical Insurance: .....#: .....
Policy #: .....
Homeowner/Rental Insurance: .....
#: .....
Policy #: .....
Flood Insurance: .....#: .....
Policy #: .....
Veterinarian: .....#: .....
Kennel: .....#: .....
Electric Company: .....#: .....
Gas Company: .....#: .....
Water Company: .....#: .....
Alternate/Accessible Transportation: .....
#: .....
Other: .....#: .....
Other: .....#: .....
Other: .....#: .....

AMERICA'S PrepareAthon!
BE SMART. TAKE PART. PREPARE.

Ready

Write your family's name above

Family Emergency Communication Plan

IN CASE OF EMERGENCY (ICE) CONTACT

Name: ..... Mobile #: .....
Home #: ..... Email: .....
Address: .....

OUT-OF-TOWN CONTACT

Name: ..... Mobile #: .....
Home #: ..... Email: .....
Address: .....

FOLD HERE

HOUSEHOLD INFORMATION

Home #: .....
Address: .....

Name: ..... Mobile #: .....
Other # or social media: ..... Email: .....
Important medical or other information: .....

Name: ..... Mobile #: .....
Other # or social media: ..... Email: .....
Important medical or other information .....

FOLD HERE

Name: ..... Mobile #: .....
Other # or social media: ..... Email: .....
Important medical or other information: .....

Name: ..... Mobile #: .....
Other # or social media: ..... Email: .....
Important medical or other information: .....

FOLD HERE

SCHOOL, CHILDCARE , CAREGIVER, AND WORKPLACE EMERGENCY PLANS

Name: .....
Address: .....
Emergency/Hotline #: ..... Website: .....
Emergency Plan/Pick-Up: .....

Name: .....
Address: .....
Emergency/Hotline #: ..... Website: .....
Emergency Plan/Pick-Up: .....

FOLD HERE

Name: .....
Address: .....
Emergency/Hotline #: ..... Website: .....
Emergency Plan/Pick-Up: .....

Name: .....
Address: .....
Emergency/Hotline #: ..... Website: .....
Emergency Plan/Pick-Up: .....

EMERGENCY MEETING PLACES

Indoor: .....
Instructions: .....
.....

Neighborhood: .....
Instructions: .....
.....

Out-of-Neighborhood: .....
Address: .....
Instructions: .....
.....

Out-of-Town: .....
Address: .....
Instructions: .....
.....

IMPORTANT NUMBERS OR INFORMATION

Police: ..... Dial 911 or #: .....
Fire: ..... Dial 911 or #: .....
Poison Control: ..... #: .....
Doctor: ..... #: .....
Doctor: ..... #: .....
Pediatrician: ..... #: .....
Dentist: ..... #: .....
Medical Insurance: ..... #: .....
Policy #: .....
Medical Insurance: ..... #: .....
Policy #: .....
Hospital/Clinic: ..... #: .....

Pharmacy: ..... #: .....
Homeowner/Rental Insurance: ..... #: .....
Policy #: .....
Flood Insurance: ..... #: .....
Policy #: .....
Veterinarian: ..... #: .....
Kennel: ..... #: .....
Electric Company: ..... #: .....
Gas Company: ..... #: .....
Water Company: ..... #: .....
Alternate/Accessible Transportation: ..... #: .....
Other: .....
Other: .....

American Red Cross

Family Disaster Plan

Family Last Name(s) or Household Address: **Date:**

Family Member/Household Contact Info (If needed, additional space is provided in #10 below):

Name	Home Phone	Cell Phone	Email:

Pet(s) Info:

Name:	Type:	Color:	Registration #:

Plan of Action

1. The disasters most likely to affect our household are:

2. What are the escape routes from our home?

3. If separated during an emergency, what is our meeting place near our home?

4. If we cannot return home or are asked to evacuate, what is our meeting place outside of our neighborhood?

_____

What is our route to get there and an alternate route, if the first route is impassible?

_____

_____

5. In the event our household is separated or unable to communicate with each other, our emergency contact outside of our immediate area is:

Name	Home Phone	Cell Phone	Email:

After a disaster, let your friends and family know you are okay by registering at "Safe and Well" at https://safeandwell.communityos.org/cms// or by calling 1-800-733-2767. You can also give them a call, send a quick text or update your status on social networking sites.

6. If at school/daycare, our child(ren) will be evacuated to:

Child's Name:	Evacuation Site (address and contact info):

7. Our plan for people in our household with a disability or special need is:

Person's Name:	Plan:

8. During certain emergencies local authorities may direct us to "shelter in place" in our home. An accessible, safe room where we can go, seal windows, vents and doors and listen to emergency broadcasts for instructions, is:

_____

9. Family Member Responsibilities in the Event of a Disaster

Task	Description	Family Member Responsible
Disaster Kit*	Stock the disaster kit and take it if evacuation is necessary. Include items you might want to take to an evacuation shelter. Remember to include medications and eye glasses.	
Be informed	Maintain access to NOAA or local radio, TV, email or text alerts for important and current information about disasters.	
Family Medical Information	Make sure the household medical information is taken with us if evacuation is necessary.	
Financial Information	Obtain copies of bank statements and cash in the event ATMs and credit cards do not work due to power outages. Bring copies of utility bills as proof of residence in applying for assistance.	
Pet Information	Evacuate our pet(s), keep a phone list of pet-friendly motels and animal shelters, and assemble and take the pet disaster kit.	
Sharing and Maintaining the Plan	Share the completed plan with those who need to know. Meet with household members every 6 months or as needs change to update household plan.	

**What supplies and records should go in your disaster kit? Visit www.redcross.org*

10. Other information, if not able to be included above.

Congratulations on completing your family disaster plan! Please tell others: "We've made a family disaster plan and you can, too, with help from the American Red Cross."

Get the facts about what you should do if an emergency or disaster occurs at www.redcross.org

Appendix C
Evacuation Modeling Results

TO:	Michael Huff; Dudek
FROM:	Phuong Nguyen, PE; CR Associates (CRA)
DATE:	September 8, 2023
RE:	Aquabella Fire Evacuation Analysis – Technical Memorandum

The purpose of this technical memorandum is to assess the time required for emergency evacuation under several scenarios, assuming a wind-driven fire that results in an evacuation affecting the Aquabella Project ("Project") and surrounding communities.[1] The following discussion of evacuation traffic simulations is not intended to be an Evacuation Plan, nor include elements typically found in an Evacuation Plan. The sole purpose of the traffic simulations is to focus on the vehicle travel times in simulated evacuation events.

Background and Purpose

This memorandum provides a summary of the traffic simulations conducted for evacuation of the Project and surrounding community due to a wildfire. The simulations have been conducted for a variety of evacuation scenarios described below. Modeling potential evacuation traffic impacts requires that numerous assumptions be made to address many variables that will impact a real-life evacuation scenario, including the number of existing vehicles in the community, the number of Project vehicles that will need to evacuate, the roadway capacities and whether enhancements are provided (e.g., extra lanes, lane widening, signaling intersections), the total number of intersections and how they will be operating, the final destination, the targeted evacuation area, the total mobilization time, vegetation communities, weather and wind, fire spread rates, humidity, topography, risk to homes, locations of ignitions and new fire starts, and lead time needed, etc. There are many hundreds or thousands of potential model scenarios, and every fire scenario poses variations that regularly change and are reassessed "real-time" during a wildfire. Agencies involved in implementing an evacuation order would not rely on a project-specific evacuation plan, but on situational awareness and agency created wildfire pre-plans, which act as operational tools to provide high-level fire assessments and assets at risk, preferred evacuation approaches, and safety information to inform evacuation decision-making.

The following analysis is intended to present representative evacuation scenarios using available information, conservative assumptions, and an industry-based modeling technology. In an actual emergency, Unified Command will take into account numerous factors including fire location and spread rates, wind speeds and direction, humidity, topography, fuel loading, emergency access routes, evacuation routes, shelter-in-place options, time needed to evacuate, and other variables, and will issue specific evacuation or shelter-in-place directives consistent with the process and protocols outlined in the City of Moreno Valley Emergency Operation Plan and the County of Riverside Emergency Operations Plans. During a wildfire, nearby residents and the Project's residents should comply with those directives from authorities and first responders conducting the evacuation or emergency response. The evacuation traffic model used herein is appropriate for planning and comparison purposes but will likely not be relied on by first responders and should not be relied on by Incident Commander in time of an emergency; however, it provides useful information that will be provided to agencies and emergency managers and may inform strategic response plans in terms of evacuation timeframes and contingency options.

[1] This memorandum was prepared with technical fire behavior input from Dudek's Urban Forestry + Fire Protection team..

The roadway network and vehicle input assumptions also have been selected to simulate a "worst-case" evacuation scenario that would occur during a weekend day (Saturday) when the Project's residents are home, and nearby homes are likely to be fully occupied. While evaluation of the "worst-case" scenario is not required by law, out of an abundance of caution, the Project has opted to consider this scenario. The assumption that a mass evacuation would occur when the Project is in operation at full buildout and all residents in the surrounding community are at home when the evacuation order is provided represents an extreme, worst-case condition. In an actual wildfire event, it is most likely that phased evacuation orders would be given to provide for a more orderly evacuation. It is also likely that fewer residents would be present nearby if the evacuation happened during a time that the Project not at full occupancy such as a weekday afternoon.

The wildfire evacuation scenarios selected for this analysis were based on a comprehensive approach that included review of fire history, review of recent fires (e.g., 2017 Blaine Fire and 2019 Jerry Fire), fire behavior science, area topography, fuel types and the evolved approach to evacuations which have become increasingly more surgical instead of large, area-wide. Accordingly, given the highest probability wildfire scenarios that would result in evacuation, it is anticipated that specific neighborhoods and communities would be evacuated in a phased approach. The construction of the Project will adhere to the most recent building and fire code standards. This includes suitable fire safety precautions for properties situated outside the Fire Hazard Severity Zone. However, during a wildfire, the Project site's population would likely be evacuated as a precautionary measure. This may be combined with targeted evacuations within existing communities near the Lake Perris State Recreation Area. This type of evacuation is consistent with management of recent wildfires throughout southern California, City of Moreno Valley, and Riverside County, where the phased evacuation practice has been implemented with great success and continues to be refined through real-time application.

Project Description

The proposed Aquabella Specific Plan Amendment (Project), which is located on Cactus Avenue and Nason Street, east of Laselle Street, north of Iris Avenue, west of Oliver Street, and south of Brodiaea Street in the City of Moreno Valley consist of the following land uses:

- 7,500 multifamily low-rise residential dwelling units (DUs)
- 7,500 multifamily mid-rise residential DUs
- 4 acres of commercial (49,900 sq. ft.)
- 300-room hotel
- Three elementary schools (3,995 students)
- One middle school/junior high school (2,049 students)
- 15 acres of Park and Lake Promenade
- 25 acres of Active Sports Park

Figure 1 displays the proposed Project location and study area, and **Figure 2** displays the proposed Project site plan. **Figure 3** displays the Fire Hazard Severity Zone in relation to the Project's site and evacuation routes.

Assumptions

This evacuation analysis was performed for the Project to determine how long it would take for occupants (e.g., residents, employees, visitors, etc.) of the Project and the occupants surrounding communities to evacuate to nearby urban areas/freeway access in case of a fire emergency. Current evacuation practice typically targets the scope of the evacuation only to the area in immediate danger and placing a larger area on standby for evacuation. This practice allows for better evacuation operations, reduces gridlock, and reserves sufficient travel way for emergency vehicles. It is assumed

that first responders or law enforcement will direct traffic at all major downstream intersections during the evacuation process.

During the evacuation process, wildfire spread, and encroachment may be slowed by fire-fighting efforts that would likely include significant fixed wing and helicopter fire-fighting assets. Hand crews would also be deployed toward containment. None of the evacuation scenarios assumed contraflow (reverse) lanes, as these lanes are reserved for first responders, law enforcement, and fire fighters in case of unforeseen circumstances.

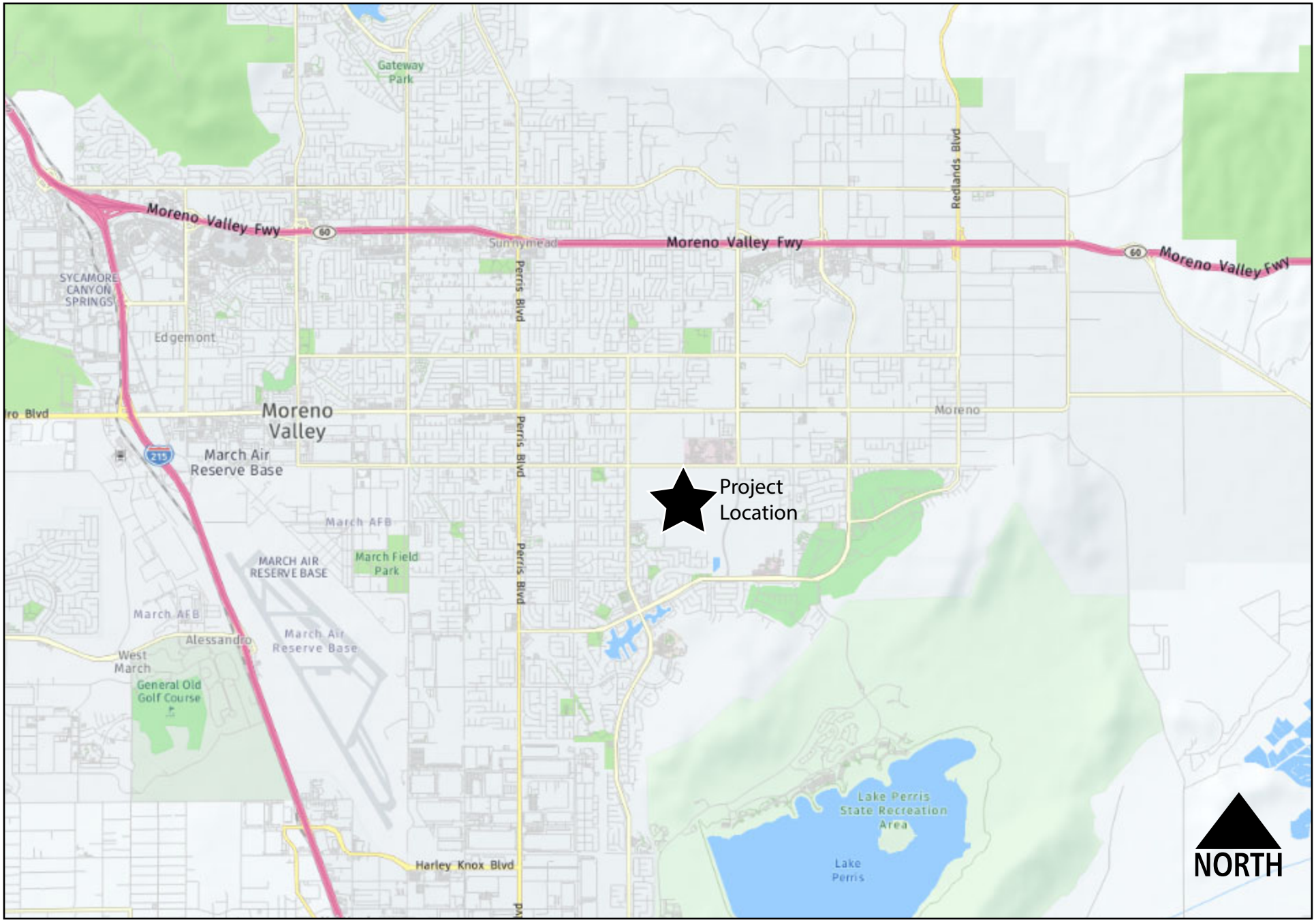
Given the Project's location in a highly urbanized area surrounded primarily by residential and recreational land uses, this analysis considers a hypothetical evacuation scenario on a Saturday afternoon, when it is anticipated that all residents within the Project and neighboring evacuation areas will be home, and the Rancho Del Sol Golf Club is at full occupancy. Since the evacuation is on a Saturday, it is assumed that Vista del Lago High School would not be in session. The analysis also assumed that the Kaiser Permanente medical complex would be fully buildout and that out of an abundance of caution, the Kaiser Permanente medical complex incident commander would order a full evacuation of the site. In an actual evacuation scenario, the total number of vehicles needing to evacuate may actually be less. The Unified Command would prioritize evacuation of land uses located closest to the area with immediate risk, depending on the location of the fire.

Additionally, the Project is not situated within the Wildland Urban Interface (WUI) and would likely not be evacuated at the same time or before individuals located within or adjacent to the WUI. Nevertheless, in a worst-case scenario, it is assumed that a portion of the Project might need evacuation during such an event. This assumption stems from fire modeling by Dudek. The analysis showed that if a wildfire were to occur in the Lake Perris State Recreation Area, embers could travel as far as 0.7 miles from the closest Wildland Urban Interface boundary. Consequently, areas 4 and 5 would need evacuation, with a partial evacuation of area 3, as detailed in Figure 3. By assuming a "worst case scenario," the modeling accounts for any other vehicles that may be on the road and/or voluntarily evacuating from other areas., such as potential shadow evacuees (population that are located outside of an "evacuation order" area.

The estimation of vehicles evacuating from the Project's site was derived by multiplying the number of households by the average vehicle ownership per household in the vicinity. Similarly, for the surrounding residential areas, the number of evacuating vehicles was determined using land use information from Parcel Quest parcel map data in conjunction with the average vehicle ownership data provided by the US Census Bureau.

For a reasonable analysis, these scenarios assumed that two percent (2%)[2] of the evacuating vehicles are heavy vehicles (trucks with trailers). Two percent is the nationally acceptable ratio of heavy vehicles to all vehicles.

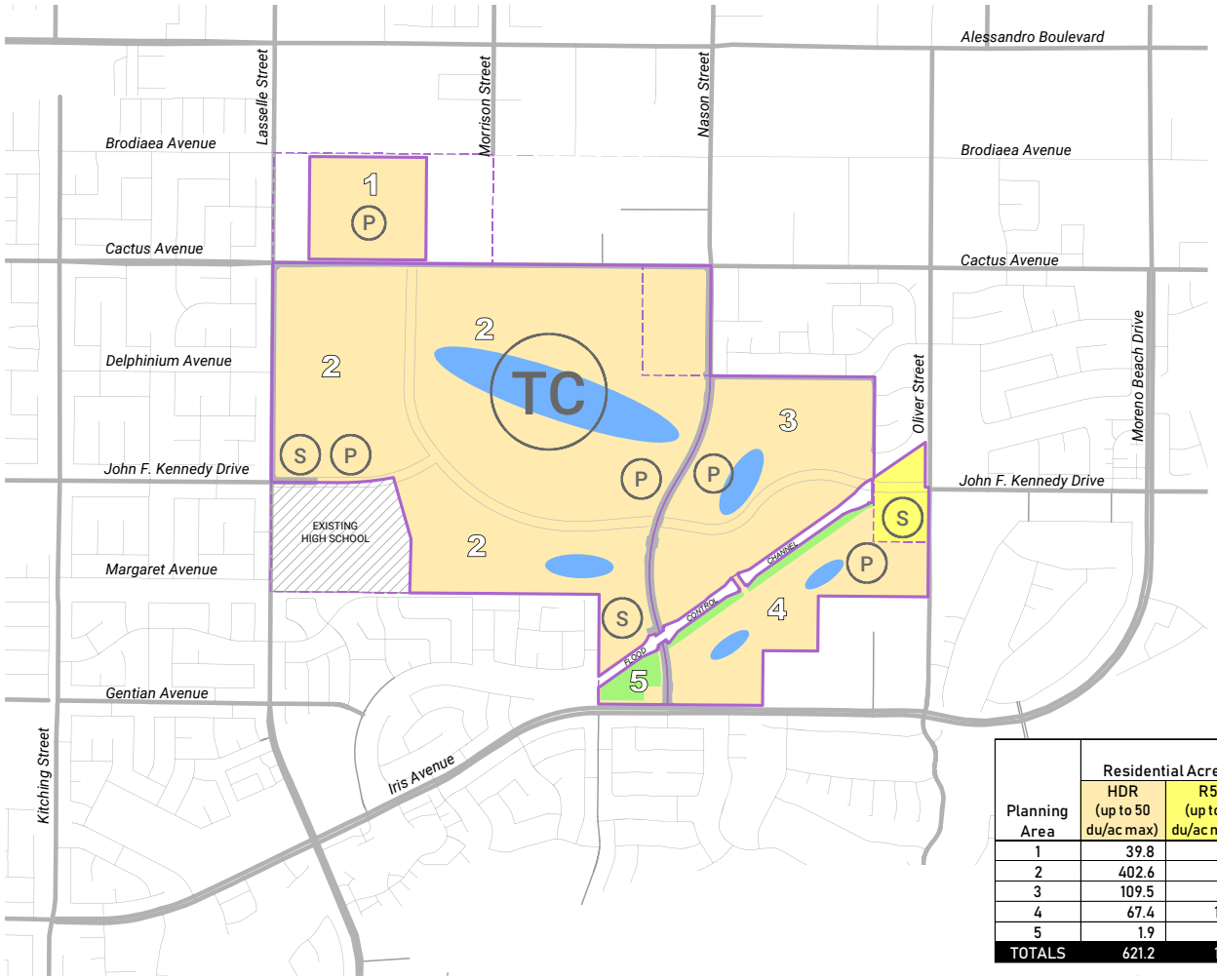
[2] https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_599.pdf (p.5).



Aquabella Evacuation Analysis

Figure 1
Project Location

C+R



Legend:

- High Density Residential (HDR) (up to 50 du/ac)
- R5 Residential (R5) (up to 5 du/ac)
- Open Space
- Existing Roads
- Specific Plan Boundary

Overlays:

Lake Overlay	40 Acres*	80 Acres
Park Overlay	40 Acres*	
Town Center Overlay	25 Acres*	
School Overlay	40 Acres*	
Conceptual Circulation	30 Acres*	

Notes:
*Approximate acreage for various "Floating Land Uses" (area within High Density Residential)

SUMMARY TABLE

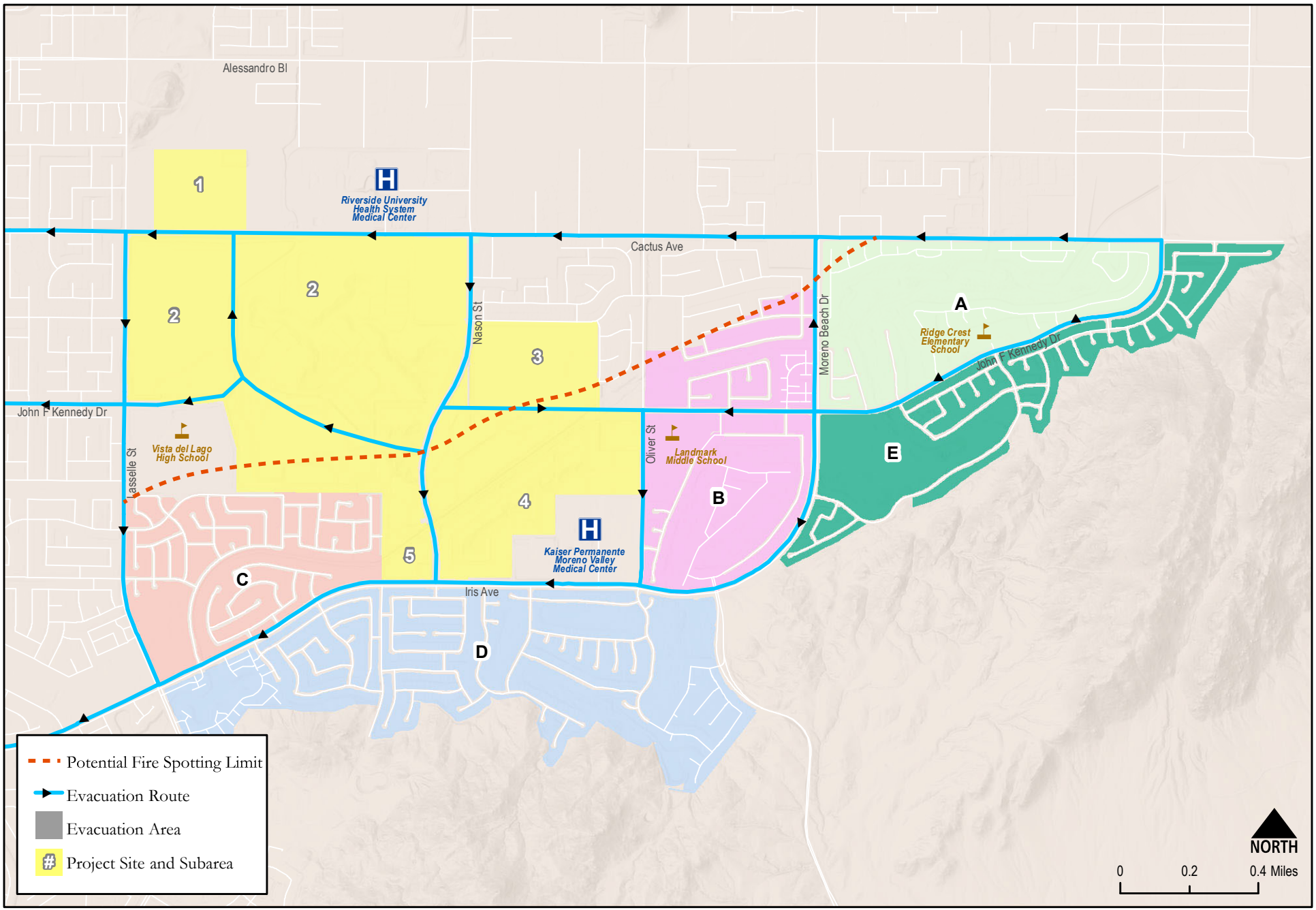
Planning Area	Residential Acres		Dwelling Units* (all units 100 % transferable)		Existing Open Space	Existing Roads	Total Project Acres
	HDR (up to 50 du/ac max)	R5 (up to 5 du/ac max)	HDR (up to 50 du/ac max)	R5 (up to 5 du/ac max)			
1	39.8		2,000				39.8
2	402.6		12,000			15.5	418.1
3	109.5		5,500			6.8	116.3
4	67.4	14.6	3,730	70	6.9	1.0	89.9
5	1.9		100		6.2	1.0	9.1
TOTALS	621.2	14.6	15,000 max		13.1	24.3	673.2

NORTH

Aquabella Evacuation Analysis

Figure 2
Project Site Plan

C+R



Aquabella Evacuation Analysis

Figure 3
Fire Evacuation Area and Routes

Primary Evacuation Routes

CRA assumed that traffic evacuating from both the Project and nearby communities/land uses would use the closest evacuation routes to leave the area. Evacuation routes were selected based upon review of the Project's site, available evacuation routes, and the quickest way to leave areas located adjacent to the available vegetative fuels. Evacuations during large wildfire events would focus on removing threatened populations from the area to a more urbanized area. These routes are indicated in Figure 3.

No contraflow lanes[3] were assumed to provide access for first responders and law enforcement. Two-way travel was assumed, with evacuating vehicles traveling outbound to the designated Safe Zone. It is assumed that first responders or law enforcement will direct traffic at all major intersections during the evacuation process. Should evacuation managers determine that contraflow is preferred or necessary, evacuation capacity would increase while evacuation times would decrease.

Safe Zone

Based on Dudek's review of the area's fire history[4], fires have halted along areas adjacent to wildland fuels and have not historically progressed into the more densely urbanized, irrigated, and hardscaped areas. Specifically, none of the historical fires encroached beyond the periphery areas within the wildland urban interface area of the City of Moreno Valley. Recent fires such as the Jerry Fire (2019), Merwin Fire (2015), Lago Fire (2011) were all stopped prior to reaching the urbanized area. Thus, it is assumed that evacuees are considered to reach a safe area once they are within the more developed areas.

A total of five evacuation scenarios were analyzed:

- **Scenario 1** – *Existing Land Uses*: This scenario estimates the evacuation time for the existing land uses within the study area (Area A through E).
- **Scenario 2** – *Proposed Project Only*: This is the only scenario in which the analysis considers a full evacuation from the Project site due to its vast size. However, the likelihood of this occurrence during a wildfire is low as the surrounding land uses offer some protective buffer for the Project. Nevertheless, this scenario is evaluated to ascertain the duration needed for a complete site evacuation.
- **Scenario 3** – *Existing Land Uses with the proposed Project*: This scenario is identical to Scenario 1, but it also includes the Project. This refers to land use situated within the potential fire spotting zone, which is .7 miles away from the closest open space boundary, as indicated by the fire modeling from Dudek.
- **Scenario 4** – *Existing Land Uses with Cumulative Growth*[5]: This mirrors Scenario 1, but with the addition of cumulative projects from the traffic study, along with a 5% ambient growth factor to account for unplanned changes in land use like Accessory Dwelling Units (ADUs).

[3] Contraflow or lane reversal involves directing traffic to use lanes coming from the source of a hazard to move people away from the hazard. Such a strategy can be used to eliminate bottlenecks in communities with road geometries that prevent efficient evacuations or to facilitate traffic flow out of a major urban area. Among the considerations in planning emergency contraflow are whether sufficient traffic control officers are available, potential negative impact on responding fire apparatus, access management, merging, exiting, safety concerns, and labor requirements. Contraflow configurations must be carefully planned based on on-site factors and should not be implemented in an *ad-hoc* fashion. Dudek July 2014. "Wildland Fire Evacuation Procedures Analysis" for City of Santa Barbara, California, page 65.

[4] Simi Valley and Piru Wildfires 2003 After Action Analysis and Reports, 2017 Thomas Fire After Action Review.

- **Scenario 5** – *Existing Land Uses with Cumulative Projects with the proposed Project*: This scenario mirrors Scenario 5, but also includes the Project. This refers to land use situated within the potential fire spotting zone, which is 0.7 miles away from the closest open space boundary, according to the Dudek fire modeling.

Evacuating Vehicles

The projected number of vehicles evacuating from the study area is based on a combination of various data sources: Parcel Quest's parcel map data for land use, vehicle ownership averages from the US Census Bureau, aerial imagery from Nearmap, and relevant environmental documents. Here's a breakdown of the calculations for evacuating vehicles:

Existing Residential: This is obtained by multiplying the total number of households (from Parcel Quest parcel map data) with the average vehicle ownership, which stands at 2.31 vehicles per household as per the US Census Bureau.

Rancho Del Sol Golf Club: It's assumed that the parking lot is at full capacity and that all vehicles would commence evacuation simultaneously.

Kaiser Permanente Medical Complex: It's assumed that the 2,550 parking spaces[6] associated with the complex would be fully occupied and that all vehicles would commence evacuation simultaneously. However, as highlighted earlier, hospital emergency plans often entail the use of shuttles, ambulances, and other mass transit options for evacuating patients. This would likely result in fewer vehicles evacuating from the Kaiser Permanente Medical Complex site.

Proposed Project: This is calculated by multiplying the quantities of land use by the parking rate derived from the Institute of Transportation Engineer (ITE) Parking Generation Manual.[7]

Cumulative Projects: Although none of the cumulative projects noted in the Aquabella Traffic Impact Study are expected to utilize the same evacuation routes as the proposed Project, a conservative analysis assumes a 5% ambient growth across all land uses in the study area.

This approach ensures a comprehensive and conservative analysis of potential evacuation scenarios. For a reasonable analysis, these scenarios assumed that two percent (2%)[8] of the evacuating vehicles are heavy vehicles (trucks with trailers). Two percent is the nationally acceptable ratio of heavy vehicles to all vehicles.

Average vehicle ownership, residential units, and evacuating vehicles calculations are provided in **Attachment A. Table 1** displays the number of vehicles evacuating under each scenario.

[6] https://ceqanet.opr.ca.gov/2018111051/3/Attachment/ZJ66JD

[7] Given that the proposed Project comprises high-density mixed-use land types, it significantly deviates from the socio-economic profiles of existing land uses in the City of Moreno Valley. For all non-residential land uses, the number of vehicles expected to evacuate was determined by multiplying each land use amount by the average parking rate sourced from the ITE Parking Generation Manual. For residential land uses, the evacuation vehicle count was derived by multiplying the number of dwelling units by the maximum value of the 95% confidence interval parking rate, also taken from the ITE Parking Generation Manual.

[8] https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_599.pdf (p.5).

Table 1 – Evacuating Vehicles

Scenario	Number of Evacuating Vehicles						
	Nearby Land Uses (Area)					Project	Total
	A	B	C	D	E		
Scenario 1 – Existing Land Uses	1,290	3,290	1,620	2,730	1,531	0	10,461
Scenario 2 – Proposed Project Only - Full Site Evacuation	0	0	0	0	0	19,042	19,042
Scenario 3 – Existing Land Uses with Proposed Project	1,290	3,290	1,620	2,730	1,531	3,722	14,183
Scenario 4 – Existing Land Uses with Cumulative Projects	1,360	3,330	1,710	2,870	1,610	0	10,880
Scenario 5 – Existing Land Uses with Cumulative Projects with the proposed Project	1,360	3,330	1,710	2,870	1,610	3,722	14,602

Source: CR Associates (2023), US Census Bureau (2023), Google Maps (2023).

Mass Evacuation

A mass evacuation scenario was modeled in which all area occupants would evacuate at the same time. This assumption presents a worst-case scenario as all traffic would be directed to the evacuation roadways at once. Mass evacuation events can overwhelm a roadway's capacity, which, when reaching a threshold traffic density, begins to decrease traffic flow.

In an actual "real-life" wildfire event, a phased evacuation would be implemented where orders are given to evacuate based on vulnerability, location, and/or other factors, which reduces or prevents traffic surges on major roadways and improves traffic flow. The phased evacuation strategy also prioritizes the evacuation of residents in proximity to the immediate danger, giving emergency managers the ability to monitor the fire situation and decide in real time based on changing conditions whether to order additional evacuations as needed, or not.

Extreme Wildfire Event

The evacuation analysis set forth below assumes a Santa Ana-wind driven fire from east of the study area and travels in a westerly and southerly direction, similar to the 2019 Jerry Fire. This fire condition is the one most likely to require a large-scale evacuation, and the one that creates the most risk to property and humans.

In California, wildfire-related large-scale evacuations are almost exclusively associated with wildfires that occur on extreme fire weather days, also known as "Red Flag Warning" days. These days occur when relative humidity drops to low levels and strong winds from the north/northeast are sustained. With climate change, periods in which such wildfires occur may increase. During Red Flag Warning days, vegetation is more likely to ignite and fire spread is more difficult to control. In the greater Los Angeles region, these extreme weather days typically occur during limited periods in the late summer, fall and, occasionally, in the spring, but may occur at other times on a less frequent basis. Currently, it is not common to experience more than 10 to 15 Red Flag Warning days in a typical year. Wildfires that occur during these periods of extreme weather are driven by winds – referred to as "Santa Ana" winds – that come from the north or east and blow toward the south or west. Fires driven by these winds move very quickly, making them difficult to control. In response to such fires, emergency managers typically activate pre-planned evacuation triggers that require down-wind communities to sequentially be notified to evacuate and move to nearby urbanized areas prior to the fire's encroachment.

Wildfires that occur on non-extreme weather days typically behave in a much less aggressive manner and pose fewer dangers to life and property because they include less aggressive fire behavior and are easier to control. Terrain and fuel are typically the wildfire drivers during these conditions. During these non-extreme weather days, vegetation is much more difficult to ignite and does not spread fire as rapidly. In these situations, firefighters have a very high success rate of controlling fires and keeping them under 10 acres. CALFIRE estimates that 90% of all vegetation fires occur during normal, onshore weather conditions and that such fires account for only 10% of the land area burned. Conversely, the 10% of wildfires that occur during extreme fire weather account for 90% of the land area burned. This data highlights that the most dangerous fire conditions are those related to a fire that moves rapidly due to high winds and low humidity, whereas under normal conditions fires are likely to be controlled with no evacuation or possibly limited extent, focused evacuations.

While it is possible that a fire driven by onshore wind (i.e., from the west) could require evacuation of the Project, such an event would be unusual. Moreover, due to the reduced fire behavior during normal weather periods, the evacuation would not be expected to be a large-scale evacuation of large areas.

Analysis Methodology

The analysis methodology utilized the following equation for determining evacuation time:

Evacuation Time = (Evacuation Population / Average Vehicle Occupancy) / Roadway Capacity

To analyze the evacuation events, CRA conducted simulations using *Vissim*, a microscopic, multimodal traffic flow modeling software used to simulate different traffic conditions. In *Vissim* simulations, roadway capacity is accounted for and each vehicle in the traffic system is individually tracked through the model and comprehensive measures of effectiveness, such as average vehicle speed and queueing, are collected on every vehicle during each 0.1-second of the simulation. This software enables drivers' behaviors during an evacuation to be replicated. A total of 20 simulations were conducted to yield a reasonable sample size to determine the performance of the study area roadways and impacts during evacuation scenarios. To be conservative, CRA assumed a worst-case scenario in which all vehicles belonging to households in the study area would be used in the evacuation, instead of the necessary number of vehicles needed to evacuate the impacted population. Detailed evacuation analysis information is provided in **Attachment B**.

Evacuation Analysis & Results

Based on the analysis methodology described above, **Table 2** reflects evacuation times for each scenario.

Table 2 – Evacuation Time Summary – All Scenarios

Scenario	Total Evacuation Vehicles	Evacuation Time					
		Nearby Land Uses					Project
		A	B	C	D	E	
Scenario 1 – Existing Land Uses	10,461	1:09	1:07	0:50	1:05	0:57	N/A
Scenario 2 – Proposed Project Only - Full Site Evacuation	19,042	N/A	N/A	N/A	N/A	N/A	2:24
Scenario 3 – Existing Land Uses with Proposed Project	14,183	1:27	1:17	0:51	1:10	0:59	1:50
Scenario 4 – Existing Land Uses with Cumulative Projects	10,880	1:11	1:10	0:54	1:10	1:03	N/A
Scenario 5 – Existing Land Uses with Cumulative Projects with the proposed Project	14,602	1:32	1:23	0:56	1:16	1:07	1:55

Source: CR Associates (2023).

A summary of the evacuation time for each scenario is provided below:

- Scenario 1: It would take between 50 minutes and 1 hour and 9 minutes to evacuate the existing land uses.
- Scenario 2: It would take 2 hours and 24 minutes to evacuate the entire Project site.
- Scenario 3: It would take between 51 minutes and 1 hour and 50 minutes to evacuate the existing land uses and the proposed Project. Under this scenario, the Project would affect the evacuation time for the following areas:
  - Area A – increase of 18 minutes.
  - Area B – increase of 10 minutes.
  - Area C – increase of 1 minute.
  - Area D – increase of 5 minutes.
  - Area E – increase of 2 minutes.
- Scenario 4: It would take between 1 hour and 8 minutes and 1 hour and 11 minutes to evacuate the nearby land uses under the cumulative scenario.
- Scenario 5: It would take between 56 minutes and 1 hours and 55 minutes to evacuate the cumulative land uses and the proposed Project. Under this scenario, the Project would affect the evacuation time for the following areas:
  - Area A – increase of 19 minutes.
  - Area B – increase of 13 minutes.
  - Area C – increase of 2 minutes.
  - Area D – increase of 6 minutes.
  - Area E – increase of 4 minutes.

Analysis and Conclusion

Study of evacuation timeframes and potential increases in evacuation time with a proposed project are relatively new CEQA focus areas. Public safety, not time, is generally the guiding consideration for evaluating impacts related to emergency evacuation. Consistent with CEQA Guidelines Appendix G, a Project's impact on evacuation is significant if the Project will significantly impair or physically interfere with implementation of an adopted emergency response or evacuation plan.

In any populated area, safely undertaking large-scale evacuations may take several hours or more and require moving people long distances to designated areas. Further, evacuations are fluid and timeframes may vary widely depending on numerous factors, including, among other things, the number of vehicles evacuating, the road capacity to accommodate those vehicles, residents' awareness and preparedness, evacuation messaging and direction, and on-site law enforcement control. The "Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act"[9] guidance from the California Office of the Attorney General suggests that jurisdictions set benchmarks of significance based on past successful evacuations or on those from communities in similar situations.

A recent study titled "Review of California Wildfire Evacuation from 2017 to 2019[10]" provides more insights on the topic. This research involved interviews with 553 individuals (297 evacuees affected by various fires) including the Creek Fire, Rye Fire, Skirball Fire, and Thomas Fire. The study aimed to understand the decision-making processes of these individuals during the fires, such as whether to evacuate or stay, when to leave, the paths taken, chosen shelters, destinations, and modes of transportation. According to this research, the time it took for evacuations ranged from under 30 minutes to over 10 hours. From this dataset[11], the average evacuation time for the Creek Fire was found to be 3 hours and 40 minutes, involving 115,000 people[12]. For the Thomas Fire, the average time was 4 hours and 25 minutes, impacting 104,607 individuals.

California fire and law enforcement agencies have integrated training, experience, and technology to assist in successful evacuations, which focus on moving persons at risk to safer areas before a wildfire encroaches on a populated area. Timeframes for moving people vary by site specifics, population, road capacities and other factors and there is no one threshold that would be appropriate to all locations. There are no established thresholds for evacuation times for this Project or at the time of this plan's preparation, for any California community, to the knowledge of the authors. This is primarily because every location and fire scenario are unique. While it may take one community 20 minutes to evacuate safely, it is not a valid assumption to consider a 3-hour evacuation for another community as unsafe. The 3-hour evacuation can be very safe while the 20-minute evacuation may be unsafe due to the conditions and exposures along the evacuation routes.

Notwithstanding evacuation challenges and variables, the City/County in safely managing both mass and targeted evacuations to great success, for example the 2017 Palmer Fire resulted in evacuation of several neighborhood[13] resulted in zero fatality[14]. It should be noted that other variables can impact the number of fatalities during an evacuation. For instance, some individuals may choose to stay behind to defend their property or adopt a wait-and-see approach[15]. Such decisions could delay their evacuation to a point where it becomes too late to leave safely[16].

[9] https://oag.ca.gov/system/files/attachments/press-docs/2022.10.10%20-%20Wildfire%20Guidance.pdf
[10] https://escholarship.org/uc/item/5w85z07g
[11] 2018 Carr Wildfire Evacuation Survey Data | Zenodo
[12] https://abc7.com/sylmar-brush-fire-creek-kagel-canyon/2740550/
[13] https://ktla.com/news/local-news/mandatory-evacuations-ordered-as-palmer-fire-in-beaumont-spreads-to-500-acres/
[14] Palmer Fire | CAL FIRE
[15] Preparing for wildfire evacuation and alternatives: Exploring influences on residents' intended evacuation behaviors and mitigations (https://doi.org/10.1016/j.ijdrr.2021.102177) Table 2 indicates that the majority of the surveyed individuals strongly agree with the stay and defend statements.
[16] National Institute of Standards and Technology – Department of Commerce – WUI Fire Evacuation and Sheltering Consideration Assessment, Planning, and Execution (August 2023) – Evacuation Alternatives

Technological advancements and improved evacuation strategies learned from prior wildfire evacuation events have resulted in a system that is many times more capable of managing evacuations. With the technology in use today, evacuations are more strategic and surgical than in the past, evacuating smaller areas at highest risk and phasing evacuation traffic so that it flows more evenly and minimizes the surges that may slow an evacuation. Mass evacuation scenarios where large populations are all directed to leave simultaneously, resulting in traffic delays, are thereby avoided, and those populations most at risk are able to safely evacuate. While mass evacuation scenarios are avoided with the technology in use today, the evacuation simulations conducted in this report are based on mass evacuation scenarios to provide a worst-case scenario, as described previously.

As indicated previously, the evacuation simulations conducted herein represent mass evacuations in the project vicinity to provide extremely worst-case scenarios. In a probable evacuation scenario, individuals in the existing surrounding land uses would have the opportunity to evacuate before the users of the Project even reach their vehicles in the parking structures, thereby giving priority to the existing land uses. The Incident Commander would direct a focused evacuation of zones situated near the wild urban interface, which are at higher risk. Areas that are not in immediate danger would likely not be provided with an evacuation notice initially and may be instructed to remain in place to prioritize the evacuation of vehicles from areas under direct threat. This would result in phasing evacuation traffic so that it flows more evenly and minimizes the surges that may slow an evacuation. Therefore, evacuation flow would be able to be effectively managed and would not likely lead to mass evacuations, as simulated in this report.

Due to its location, the Project would also provide the responding emergency managers (e.g., incident commander, Riverside County Sheriff, and/or Riverside County Fire Department) the alternative option of recommending that all or a portion of the onsite population shelter in place. This on-site sheltering option is a contingency plan, but an important option in the scenario when evacuation is considered infeasible or the less safe option. This would provide emergency managers with a safer alternative to risking a late evacuation.

This information will be provided to law enforcement and fire agencies for use in pre-planning scenarios to better inform in the field decisions made pursuant to adopted Emergency Response Plans. Emergency personnel who issue an evacuation order may consider these time estimates in determining when and where to issue evacuation orders. In a real evacuation scenario, emergency managers may use alternative actions/options to further expedite evacuation. Such actions may include providing additional lead time in issuing evacuation orders, prioritizing area at higher risks, providing alternative signal control at downstream intersections, utilizing additional off-site routes or directing traffic to roadways with additional capacity, implementing contra-flow lanes, issuing “shelter-in-place” orders when determined to be safer than evacuation, or considering the possibility of a delayed evacuation where parts of the population could be directed to remain on-site until the fire burns through the fuels around the evacuation route. These options require “in the field” determinations of when evacuations are needed and how they are phased to maximize efficiency. Overall, safe evacuation of the Project and surrounding community is possible in all modeled scenarios.

Limitations

In coordination with fire professionals at Dudek, CRA has presented a conservative analysis simulating evacuation during an extreme wildfire event. However, as discussed above, wildfires are variable events. The underlying planning principle for fire preparedness, given the dynamic nature of a fire, is to demonstrate the availability of multiple route alternatives and response strategies to permit emergency professionals to manage their response according to the specific circumstances. The Project area provides ample route and response alternatives that were not considered in this model.

Emergency responders will coordinate the safest possible evacuation based on the dynamic circumstances of the actual event, including the appropriate phasing of the evacuation, and utilization of the most appropriate ingress and egress routes for area residents and emergency responders.

The breadth of route alternatives and response strategies available to emergency professionals to manage a potential fire in the City/County cannot and should not be evaluated using this evacuation analysis alone. A comprehensive view of Project fire safety is gained by understanding this memorandum, the Project's Wildfire Evacuation Plan (Dudek 2023), along with the standard protocols and "in-the-field" decision making of emergency responders as detailed in the County[17] and nearby cities Emergency Response Plans documents.

This travel time analysis presents a reasonable vehicle travel time estimate based on professional judgment made by CRA, Dudek, and fire operations experts with experience participating in evacuations in Southern California. Changing any number of these assumptions can lengthen or shorten the average vehicle travel time.

For instance, a situation could arise in which professionals *may* choose to utilize additional roadways for evacuation not utilized in the analyses and *may also* choose to guide vehicle trips to more or different route permutations relative to what has been modeled in this analysis. A phased evacuation is also likely to be implemented, which improves the orderly flow of traffic in an evacuation scenario.

The net result of changing the variables selected could yield an average evacuation travel time shorter or longer than the results detailed in the analysis. Many factors can shorten or lengthen the vehicle time from the results shown herein. For example:

1. Changing the evacuation area affected by the evacuation order would affect the results. For Instance, emergency managers could order an early evacuation of land uses located in higher risks area, such as the Southern Oaks community. Thus, by the time an evacuation order is established for the proposed Project, there would be less vehicles on the road.

2. Increasing or decreasing the number of path permutations and percentage of the population utilizing each route that leads out of the immediate area could shorten or lengthen vehicle travel time relative to the results shown herein.

3. Emergency professionals electing to reserve certain travel lanes for emergency vehicle ingress for periods of time could affect the travel time relative to the results shown herein.

4. Assuming evacuees utilize fewer or more vehicles to evacuate from their homes relative to the vehicle utilization rate selected in the analysis would shorten or lengthen vehicle travel time relative to the results shown herein.

5. Changing the mix of vehicle trips allocated to each evacuation route could shorten or lengthen vehicle travel time relative to the results shown herein.

6. Assuming different road condition adjustment factors could shorten or lengthen the vehicle travel time relative to the results shown herein.

7. Assuming fewer people are at home when the evacuation notice is given would reduce the number of vehicle trips and shorten vehicle travel time relative to the results shown herein.

[17] County of Riverside Emergency Operation Plan: http://riversidecountyca.iqm2.com/Citizens/Detail_LegiFile.aspx?Frame=&MeetingID=2048&MediaPosition=3715.315&ID=10490&CssClass=
County of Riverside Emergency Management Plan: chrome- https://rivcoready.org/sites/g/files/aldnop181/files/EMD%202022-2025%20Strategic%20Plan.pdf

For instance, an evacuation during daytime hours could result in fewer outbound trips than assumed in this analysis

8. Assuming some portion of vehicle trips are made in advance of the evacuation notice would reduce the number of vehicle trips relative to the results shown herein.

9. Assuming emergency professionals elect to implement contraflow on certain roadways to open up additional lanes for emergency evacuation egress could reduce the travel time results shown herein.

This evacuation time analysis is necessarily limited in scope given the numerous variables inherent in a wildfire and evacuation event. However, as discussed above, it is not anticipated that the Project will significantly impact evacuation of the proposed or existing surrounding communities based on evacuation times and other qualitative considerations.

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Attachment A
Evacuating Vehicles Calculation

Vehicle Ownership Calculation

VE	VEH	Census Tract 425.17, Riverside County, California	Census Tract 487, Riverside County, California	Census Tract 489.01, Riverside County, California
Label		Estimate	Estimate	Estimate
Total:		872	1016	1001
Owner occupied:		669	867	794
No vehicle available	0	4	0	5
1 vehicle available	1	66	109	96
2 vehicles available	2	164	212	326
3 vehicles available	3	209	226	170
4 vehicles available	4	226	164	152
5 or more vehicles available	5	0	156	45
Renter occupied:		203	149	207
No vehicle available	0	7	0	0
1 vehicle available	1	96	36	4
2 vehicles available	2	59	70	114
3 vehicles available	3	35	0	46
4 vehicles available	4	0	43	3
5 or more vehicles available	5	6	0	40
Total Veh		2274	2995	2673
		2.115348837	2.570815451	2.212748344
Total Vehicles		7942		
Total Households		3448		
Average Vehicles per HH		2.31		

Evacuation Vehicles Calculation

Zone	A	B	C	D	E	Project	Project Full Evacuation
Residential	556	318	698	1179	581	-	-
Average Vehicle Ownership	2.31	2.31	2.31	2.31	2.31	-	-
Total Veh (Residential) - Round up Nearest 10	1290	740	1620	2730	1350	7,451	38,266
Golf Club					181		
Total Evacuating Passenger Veh	1290	740	1620	2730	1531	7451	38266

Cumulative

Area	ID	Land Use	Amount	TYPE	ITE Rate or Average Rate	Total
B	13	TR31590 Single Family Detached Residential	96	DU	2.31	222
A	14	Rocas Grandes Multifamily Housing (Low-Rise)	420	DU	2.31	971
A	15	TR38236 Single Family Detached Residential	204	DU	2.31	472
B	16	TR38237 Single Family Detached Residential	67	DU	2.31	155
A	19	PM 37942 - 7 Commercial Lots Medical-Dental Office	32	TSF	3.23	104
A	19	General Office	40	TSF	2.56	103
A	19	Gas Station w/ Market	12	VFP	0	0
A	19	Fast-Food with Drive-Thru	5.6	TSF	8.66	49
A	19	High-Turnover Sit-Down Restaurant	3.5	TSF	9.44	34
A	19	Retail	4.5	TSF	1.13	6

Attachment B
Evacuation Analysis Worksheets

Existing

Start Zone	Start Gate	Start Time	End Zone	End Gate	End Time	Elapse Seconds	Elapse Time
A	1	904.2	AEX	8	3675.865	2771.665	0:46
B	2	904.2	BEX	9	3548.6	2644.4	0:44
C	3	904.2	CEX	10	3854.485	2950.285	0:49
D	4	904.2	DEX	11	4266.59	3362.39	0:56
E	5	904.2	EEX	12	3755.17	2850.97	0:47

Project

Start Zone	Start Gate	Start Time	End Zone	End Gate	End Time	Elapse Seconds	Elapse Time
Project	1	904.2	AEX	8	18092.5	17188.3	4:46

Existing + Project

Start Zone	Start Gate	Start Time	End Zone	End Gate	End Time	Elapse Seconds	Elapse Time
A	1	904.2	AEX	8	4137.385	3233.185	0:53
B	2	904.2	BEX	9	5288.675	4384.475	1:13
C	3	904.2	CEX	10	3862.65	2958.45	0:49
D	4	904.2	DEX	11	4920.125	4015.925	1:06
E	5	904.2	EEX	12	3900.495	2996.295	0:49
Project	7	904.2	Project Evac	14	7732.385	6828.185	1:53

Cumulative

Start Zone	Start Gate	Start Time	End Zone	End Gate	End Time	Elapse Seconds	Elapse Time
A	1	904.2	AEX	8	3885.595	2981.395	0:49
B	2	904.2	BEX	9	3998.88	3094.68	0:51
C	3	904.2	CEX	10	4024.035	3119.835	0:52
D	4	904.2	DEX	11	4934.05	4029.85	1:07
E	5	904.2	EEX	12	3967.2	3063	0:51

Cumulative + Project

Start Zone	Start Gate	Start Time	End Zone	End Gate	End Time	Elapse Seconds	Elapse Time
A	1	904.2	AEX	8	4472.115	3567.915	0:59
B	2	904.2	BEX	9	5868.955	4964.755	1:22
C	3	904.2	CEX	10	4152.2	3248	0:54
D	4	904.2	DEX	11	5722.585	4818.385	1:20
E	5	904.2	EEX	12	4252.525	3348.325	0:55
Project	7	904.2	Project Evac	14	7827.22	6923.02	1:55