SAFETY ELEMENT

INTRODUCTION

The quality of life in Rancho Santa Margarita is directly impacted by the sense of security of its residents and businesses. Addressing and reducing the risks associated with natural and human-induced hazards will further the City's overall goal to provide a safe and enjoyable environment for its citizens. The Safety Element focuses on understanding the hazards and safety issues that affect the community and ensuring public safety concerns are adequately addressed.

Purpose of the Safety Element

The purpose of the Safety Element is to identify and address those features or characteristics existing in or near Rancho Santa Margarita that represent a potential hazard to the community's citizens, sites, structures, public facilities, and infrastructure. This Element addresses the following key issues related to safety, and establishes goals and policies to regulate existing and proposed development in hazard-prone areas:

1) Citywide safety and education;
2) Seismic and geologic hazards;
3) Flood hazards;
4) Wildland fire hazards;
5) Human activity hazards; and
6) Crime risk and prevention.

Scope and Content of the Safety Element

The Safety Element satisfies the requirements of State planning law and is a mandated component of the General Plan. Government Code Section 65302(g) identifies the hazards and associated risks, as they pertain to conditions in the City, that are required to be addressed in the Safety Element, which include:

- Seismically induced ground shaking, surface rupture, ground failure, tsunami, seiche, and dam failure;
- Slope instability leading to mudslides and landslides, subsidence, liquefaction, and other seismic and geologic hazards;
- Flooding;
- Wildland and urban fires; and
- Evacuation routes.

State law allows communities to add additional safety issues to this list. The City has chosen to address the following safety issues within this Element:

- Crime and public safety; and
- Hazardous materials.

The Safety Element is comprised of three sections:

1) Introduction;
2) Issues, Goals, and Policies; and
3) the Safety Plan.

The Introduction provides an overview of the Safety Element. The Issues, Goals, and Policies section identifies issues pertaining to hazardous conditions and safety that could potentially affect the City and establishes related goals and policies. The goals are overall statements of the City's desires and consist of broad statements of purpose and direction pertaining to the community's safety. The policies serve as guidelines for reducing the risk and vulnerability associated with natural and human activity hazards and directs and maximizes community emergency preparedness. The ~~Safety Element also~~Safety Plan section explains how natural and human-induced hazards are addressed within the community and how the goals and policies will be achieved and implemented.

Relationship to Other General Plan Elements

The Safety Element must be consistent with the other General Plan elements. Furthermore, the goals and policies must address issues that are the primary subjects of other elements. The Safety Element most closely relates to the Land Use, Circulation, and Open Space/Conservation Elements. Policies and plans in the Safety Element are designed to protect existing and planned land uses identified in the Land Use Element (and associated persons and properties) from potential natural and man-made hazards. Potential hazards are identified in the Safety Element and associated action programs are established to avoid or mitigate impacts to public safety. Concurrently, the Land Use Element contains policies to ensure that environmental conditions, including hazards, are considered in all land use decisions. The distribution of residential and other sensitive land uses on the Land Use Policy Map is designed to avoid areas where hazardous conditions have been identified. Similarly, the Circulation Element provides the policy framework for a safe and efficient circulation system, which is critical during response to an emergency or in the event an evacuation is necessary. The Open Space/Conservation Element also identifies the protection of open space areas that may also contain hazardous conditions, such as wildland fires and landslides.

ISSUES, GOALS, AND POLICIES

Certain natural conditions and human activities in Rancho Santa Margarita create risks to individuals and properties within the community. Excessive risk from such hazards can be reduced or avoided through implementation of the Safety Element. The Goals and Policies within this Element reflect the community's intent to provide and foster a safe community for all of its residents, that include:

1) Protecting and preparing the community for natural and man-made hazards;
2) Reducing risks associated with geologic conditions and seismic activity;
3) Protecting the community from flooding;
4) Protecting the community from wildfires;
5) Reducing risks to the community from air pollution, hazardous materials, and ground transportation; and
6) Protecting the community from criminal activity.

Citywide Safety and Education

Major emergencies can occur periodically in all communities. Proper preparation for emergencies, and the mitigation of risks and vulnerabilities specific to Rancho Santa Margarita, are essential to minimize disruption, personal injury, and property damage associated with such events. Preventative measures and preparatory responses before an emergency occurs will reduce the time and cost of recovery from these emergencies.

The City adopted a Local Hazard Mitigation Plan in December 2019 that addresses the potential impacts of changing weather patterns and contains the information

required pursuant to Gov. Code § 65302(g)(4)(C). Changing weather patterns is not a stand-alone hazard, but it may change the characteristics of the hazards that affect the community, such as frequency and intensity. The Local Hazard Mitigation Plan identifies natural and human-induced hazards that threaten the community and provides resources, information, and strategies to reduce these threats, resulting in overall risk reduction.

Goal 1: Protect and prepare the community for natural and man-made hazards.

Policy 1.1: Support the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations consistent with the National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS).

Policy 1.2: Maintain and update the City's Emergency Operations Plan to ensure consistency and relevancy of conditions and issues within the City.

Policy 1.3: Update the City's Local Hazard Mitigation Plan in conjunction with the General Plan Safety Element every five years, to ensure consistency and relevancy of hazards and issues within the City, and to maintain consistency with Assembly Bill 2140, Senate Bill 379, and applicable subsequent State and/or federal legislation. The Rancho Santa Margarita Local Hazard Mitigation Plan is incorporated by reference as part of this Safety Element and should be consulted when addressing hazards in order to ensure the general health and safety of the community.

Policy 1.4: Educate City staff, residents, and businesses regarding appropriate actions to safeguard life and property before, during, and immediately following emergencies.

Policy 1.5: Coordinate with local, State, and federal agencies to evaluate the capacity, safety, and viability of evacuation routes under a range of emergency scenarios, and update plans as necessary.

Policy 1.6: Monitor changing weather patterns with local, regional, State, and/or federal partners to evaluate effectiveness of existing essential infrastructure and programs.

Seismic and Geologic Hazards

Due to its geographic location in a seismically active region and geologic conditions, Rancho Santa Margarita is subject to seismic and geologic hazards, such as earthquake-induced ground shaking, liquefaction, landslides, and erosion. This risk of exposure can be reduced through appropriate land use planning, development engineering, and building construction practices.

Goal 2: Reduce the risk to the community from hazards related to geologic conditions and seismic activity.

Policy 2.1: Reduce the risk of impacts from geologic and seismic hazards by applying and enforcing development standards and building construction codes to meet minimum State standards for seismic safety.

Policy 2.2: Incorporate design and development techniques to avoid or minimize and mitigate development of areas that are particularly susceptible to erosion and sediment loss.

Policy 2.3: Protect the community from flooding hazards by providing and maintaining flood control facilities and limiting development within the floodplain.

Policy 2.4: Reduce the risk of wildfire hazards by working with Homeowner Associations, Business Park Associations, and community foundations to maintain fire retardant landscaping and buffer zones in areas of high wildfire risk.

Policy 2.5: Participate in local, regional, State, and federal programs that educate residents and businesses about how to protect themselves and their property from hazards.

Flood Hazards

Natural drainage features traverse the City, providing opportunities for flooding to occur during severe weather conditions, such as prolonged rain events. Flooding conditions could threaten public safety and result in property damage. The City is comprised of areas subject to 100-year and 500-year flood events. The risk of flood exposure can be reduced through land use planning, proper assessment of flood hazards, and adequate sized and properly maintained storm drain facilities.

Goal 3: Protect the community from injury or loss of life and damage due to flooding hazards.

Policy 3.1: Work with OC Flood Control District to ensure flood control facilities are provided and maintained.

Policy 3.2: Work with local, State, and federal agencies to update, monitor, and maintain the most current flood hazard and floodplain information.

Policy 3.3: Require evaluation of potential flood hazards and identify methods to minimize flood risk and damage associated with new redevelopment/revitalization projects located in flood hazard zones.

Policy 3.4: Require essential public facilities to be located and designed to minimize potential flood risk.

Wildland Fire Hazards

Rancho Santa Margarita's location in proximity to wildland areas can result in destructive fires, especially during Santa Ana wind conditions. The risk of, and potential for, wildland fires to spread to urbanized areas and result in loss and damage can be reduced through land use planning, adherence to building and fire codes, and the implementation of adequate evacuation routes.

Goal 4: Protect the community from loss of life or injury and damage to property due to wildfire hazards.

Policy 4.1: Reduce the risk of wildfire hazards by working with Homeowner Associations, Business Park Associations, ~~and~~ other property owners, and Orange County Fire Authority (OCFA) to maintain fire retardant landscaping, ~~and~~ buffer zones, community fire breaks, and private road and public road clearance in areas of high wildfire risk.

Policy 4.2: Work with local, State, and federal agencies to update, monitor, and maintain the most current fire hazard and fire protection information to disseminate to the public.

Policy 4.3: Identify methods to avoid or minimize wildfire risk and damage associated with new land uses.

Policy 4.4: Require essential public facilities to be located and designed to minimize potential wildfire risk, including locating outside of high fire hazard severity zones when feasible.

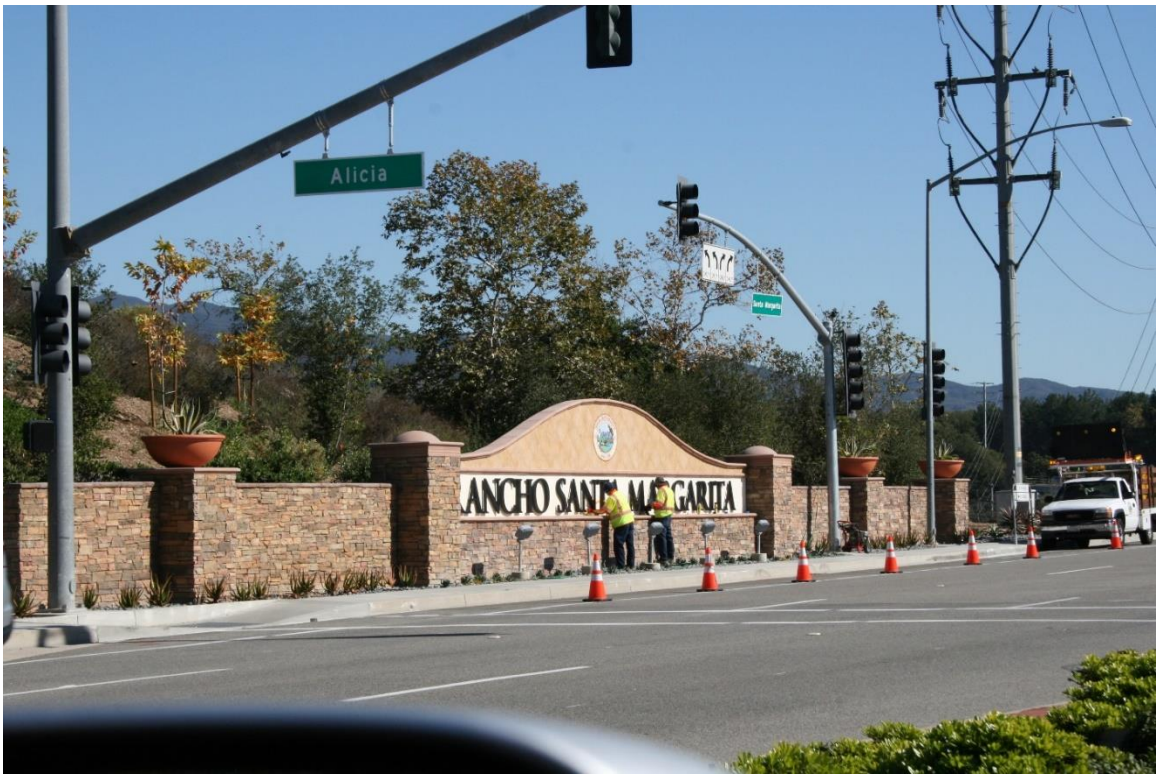
Policy 4.5: Reduce wildfire risks through adoption and implementation of triennial updates to the California Fire Code.

Policy 4.6: Require new development to be located, designed, and constructed to provide adequate defensibility and fuel modification zones, and minimize the risk of loss resulting from fires through:

- ~~-~~pre-development review by OCFA,
- ~~and through~~ on-going implementation of OCFA Fire Prevention Programs,
- minimizing development in VHFHSZs when feasible, and
- evaluating re-development after a large fire.

Policy 4.7: In coordination with OCFA, encourage all new developments to incorporate fire safe design, including sufficient ingress/egress, evacuation routes, emergency vehicle access, defensible space, visible home addressing and signage, and fuel modification zones.

Policy 4.8: Coordinate with OCFA, Santa Margarita Water District, and Trabuco Canyon Water District to ensure adequate infrastructure for water supply and fire flow in new and existing developments.



Human Activity Hazards

Rancho Santa Margarita is subject to many of the same human-related hazardous conditions that are encountered in other communities. Certain human activities such as use of cars and other gasoline powered vehicles, use of hazardous or toxic materials, and use of combustibles expose the population of Rancho Santa Margarita to risk. The risk of exposure to these hazards can be reduced to acceptable levels through proper planning and regulation of human activity.

Goal 5: Protect the community from hazards related to air pollution, hazardous materials and ground transportation.

Policy 5.1: To reduce the risk posed by air pollution, work with responsible federal, State and county agencies to decrease air pollution emissions occurring within the air basin.

Policy 5.2: Coordinate with Southern California Edison and other State agencies to ensure the complete decommission and reduction of residual radioactivity at the San Onofre Nuclear Generating Station.

Policy 5.3: Cooperate with responsible federal, State, and county agencies to minimize the risk to the community from the use, transportation, disposal, and storage of hazardous materials through the City.

Policy 5.4: Participate in local and regional programs that facilitate the proper disposal and reduce the per capita production of household hazardous waste in Rancho Santa Margarita in concert with the County of Orange plans for reducing hazardous waste.

Crime Risk and Prevention

Occasionally, residents, businesses, and visitors to Rancho Santa Margarita are exposed to criminal activity. Creating and maintaining a safe environment requires not only traditional policing activities, but also programs that address the source of criminal activity. The risk of exposure to criminal activity can be reduced through proper planning, education methods, and regulation of human activity. Additionally, proper design and effective use of the built environment can lead to a reduction in fear and the incidence of crime, thus improving the quality of life and helping create a sense of community.

Goal 6: Protect citizens and businesses from criminal activity.

Policy 6.1: Utilize the services of local, State, and federal law enforcement agencies to reduce the risk of criminal activity.

Policy 6.2: Promote after school programs, volunteer programs, and Business and Neighborhood Watch programs to help maintain a safe environment.

Policy 6.3: Continue to implement existing programs that promote a peaceful, non-violent problem-solving approach for conflict resolution within the community.

Policy 6.4: Work with the Orange County Sheriff's Department to identify and incorporate new techniques and technological advances that create a community in which the residents feel safe.

Policy 6.5: Facilitate collaborative partnerships between the Orange County Health Care Agency, Orange County Sheriff's Department, medical professionals, community-based agencies, and service providers to provide social and mental health care support that reduces recidivism and prevents criminal behaviors.

Policy 6.6: Work with the Orange County Sheriff's Department and the local schools to educate parents and students regarding bullying and internet safety.

Policy 6.7: Encourage the development and operation of community and recreational facilities as a pre-emptive strategy to reduce youth related crime.

Policy 6.8: Promote public awareness of both the responsiveness of local law enforcement and ways to reduce criminal activity.

Policy 6.9: Apply Crime Prevention Through Environmental Design (CPTED) principles aimed at reducing criminal activity to new development and redevelopment.

Policy 6.10: Ensure that adequate street and property lighting is provided and maintained in order to protect public health and safety.

Related Goals and Policies

The goals and policies described in the Safety Element are related to and support subjects included within other General Plan elements; refer to Table SAF-1.

Table SAF-1
Safety Related Goals and Policies by Element

General Plan Element	Safety Element Issue Areas					
	Citywide Safety and Education	Seismic and Geologic Hazards	Flood Hazards	Wildland Fire Hazards	Human Activity Hazards	Crime Risk and Prevention
Land Use		2.2, 2.3, 2.4	3.2, 3.3, 3.4	4.1, 4.3, 4.4, 4.6		7.7, 7.9
Circulation						
Housing				4.6	5.3	
Conservation/Open Space						
Safety		2.3	3.1, 3.2, 3.3		5.1, 5.3	7.7
Noise						

SAFETY PLAN

As in all communities, human activities and natural conditions occur in Rancho Santa Margarita that influence the quality of life of its residents. Providing an environment where businesses and residents can operate and feel safe, as well as being prepared for emergency situations, is essential. The Safety Plan reflects the community's goal to provide a safe environment that educates and prepares its residents and reduces potential impacts associated with natural and human-induced hazards.

Citywide Safety and Education

The City will minimize hazards and protect public safety through prevention and emergency preparedness planning and education. The City maintains an Emergency Operations Plan (EOP) to address the planned response to emergency situations, such as natural disasters, national security emergencies, and technological incidents. The EOP's primary focus is coordinated mutual aid within the City and fulfilling reporting requirements to the Orange County Operational Area. The EOP establishes policies and procedures for emergency response, identifies authorities, and assigns responsibilities for response activities. Local emergency preparedness plans serve as extensions of the California Emergency Plan and the Emergency Resource Management Plan.

To support the EOP, the City will institute multi-jurisdictional cooperation and communication for emergency planning and response management. Private individuals and organizations will be solicited to enhance local communication and response with cellular phones, ham radios, AM/FM radio, and cable television. Effective emergency response also requires vital facilities such as hospitals, fire stations, communication centers and schools to be functional and operational after a disaster. In addition, the City will work cooperatively with law enforcement in the event of an emergency requiring evacuation. Major arterials serve as the primary routes for evacuation; however, evacuation routes will depend upon the emergency event and area affected. Law enforcement will identify the appropriate routes and assist residents leaving the City in the event an evacuation of all or part of the City is required.

The City prepared an analysis consistent with Senate Bill 99 to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. The analysis identified three residential areas with limited emergency access points. The City will continue to coordinate with OCFA and OCSD to ensure adequate exit strategies are available for these areas. A White Paper describing the methodology used to map the evacuation routes is included as an Appendix to the Safety Element.

Educating residents and businesses about potential disasters and the EOP can increase the effectiveness of response efforts. An educated public will know how to prevent injury and property damage during and after emergency episodes. The City will work to educate residents and businesses about appropriate actions to safeguard life and property during and after emergencies. Education about emergency preparedness can occur through distribution of information on the City's website and on social media platforms, presentations to civic groups and homeowner's associations, and instruction in local schools.

Seismic and Geologic Hazards

Fault Rupture and Ground Shaking

Earthquake severity is normally classified according to magnitude (a measure of the amount of energy released when a fault ruptures), and seismic intensity (a

qualitative estimate of the damage caused by an earthquake at a given location). No active faults are known to pass through Rancho Santa Margarita. The closest active faults are the Elsinore-Glen Ivy fault (10.1 miles away), the Chino fault (11.1 miles away), and the Newport Inglewood fault (14.4 miles away). The occurrence of surface rupture on these segments would not be expected to produce fault surface rupture within the City.

The two known local faults, Aliso and the Cristianitos, are thought to be inactive and are not zoned under the State's Alquist-Priolo Earthquake Fault Zone Act. An earthquake on either of these two faults would be particularly damaging to residential buildings, particularly those of wood or unreinforced masonry construction, and to mobile homes. Other buildings that do not typically perform well in earthquakes are soft-story buildings. These types of buildings have a story (typically the first floor) that lacks adequate strength or toughness due to fewer shear walls. Two types of soft-story buildings are common: 1) buildings with large window openings used for display purposes on the first floor, and 2) buildings housing the garage on the first floor.

Geologic Hazards

Rancho Santa Margarita lies primarily on a long narrow older river terrace called the Plano Trabuco. The land rises and steepens eastward while, across Trabuco Creek to the north and Tijeras Creek to the south, the land becomes more rolling and underlain by less stable geologic materials. Elevations range from about 350 feet above mean sea level in the valleys to about 2,400 feet at the highest ridgeline north of the City. Most of the City sits on competent alluvial materials that are less prone to natural hazards than the perimeter portions of the City. Potential geologic hazards in the planning area include liquefaction, landslides, subsidence, expansive soils, and collapsible soils.

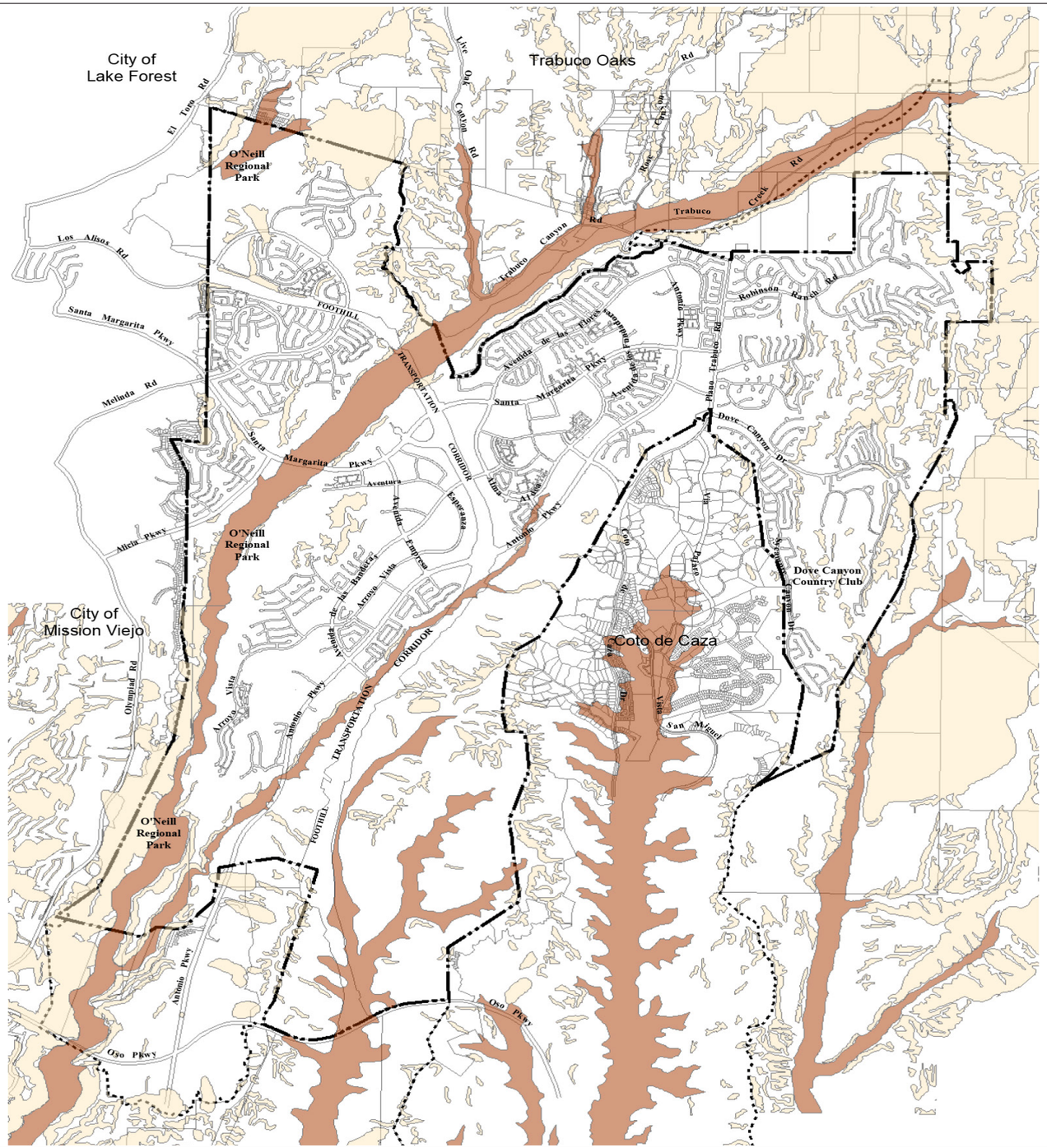
Liquefaction

Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. Liquefaction is caused by a sudden temporary increase in pore water pressure due to seismic densification or other displacement of submerged granular soils. Liquefaction more often occurs in earthquake-prone areas underlain by young (i.e., Holocene age) alluvium where the groundwater table is higher than 50 feet below ground surface.

The California Geological Survey maintains Seismic Hazards Zone Maps (the City is located within the Santiago Peak and Canada Gobernadora Quadrangles) that depict seismic hazards such as liquefaction and landslides. According to the California Geologic Survey Quadrangles, liquefaction susceptibility is located along Trabuco Canyon and Tijeras Canyon Creek traversing through the City; refer to Figure SAF-1. Most of the lowlands in the Rancho Santa Margarita area have a high liquefaction potential because shallow ground water, within 50 feet of the ground surface, has been historically reported.

Seismic-Induced Landslides

Strong ground motions can worsen existing unstable slope conditions, particularly if coupled with saturated ground conditions. Seismically-induced landslides can overrun structures, people, or property, sever utility lines, and block roads. Thereby, hindering rescue operations after an earthquake. Areas underlain by shale and siltstone are more prone to landslides when compared to other bedrock geology, and the Capistrano, Monterey and Topanga Formations, prevalent throughout hillside areas in the City, are most prone to slow-developing, slump-type failure. The area east of Rancho Santa Margarita and some steep slopes within the City would be most vulnerable to seismically-induced slope failure, due to the steep terrain and the presence of weak sedimentary rock units. Areas on the gentler slopes may also be susceptible where slopes have been undercut by streams or roadcuts. Figure SAF-1 shows areas mapped by the State as having a potential for seismically-induced landsliding.



LEGEND

- Landslide
- Liquefaction
- City Boundary
- Sphere of Influence

0 2,400 4,800 Feet

Source: Orange County Local Agency Formation Commission, 2013 and California Geological Survey, 2002.

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Liquefaction / Landslide Potential

Figure SAF-1

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A combination of geologic conditions leads to landslide vulnerability. The hilly and mountainous areas within the planning area are underlain by soft sedimentary bedrock. The sedimentary bedrock units that underlie the hillside areas appear to be grossly stable in their natural conditions, as few landslides have been mapped in the planning area. However, an earthquake on a nearby seismic source could trigger landslides.

Numerous landslides have been mapped in the eastern half of the Rancho Santa Margarita area, as sediments in the area have the potential to fail (by landsliding) during an earthquake. Sections of Trabuco Canyon Road or Live Oak Canyon Road could be blocked by fallen rock debris immediately following an earthquake, or worse, could be destroyed by landsliding. This would hinder rescue and evacuation operations. Earthquake-induced landslides could also impact developments adjacent to the mountain front. In addition to geologic processes, climatic conditions, man-induced topographical alterations and earthquakes also trigger failure to unstable slopes. Slope stability hazards in the City relate to the undeveloped hillside areas, as grading activities and soil remediation techniques are used to mitigate these hazards prior to development.

Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. Most ground subsidence is man-induced and is usually associated with the extraction of oil, gas or ground water from below the ground surface in valleys filled with recent alluvium. No regional subsidence as a result of either groundwater pumping or oil extraction has been reported for the Rancho Santa Margarita area. However, thick alluvial deposits may be susceptible to subsidence should rapid groundwater withdrawal occur beneath these areas in response to population increase. These areas are primarily located in designated open spaces in the City, but development in the northeastern portion of the City and adjacent to Antonio Parkway may be susceptible.

Expansive Soils

Expansive soils create a shrink-swell hazard. Structural damage may result over a long period of time, usually from inadequate soils and foundation engineering or the placement of structures directly on expansive soils. Most of Rancho Santa Margarita is underlain by sedimentary units (both bedrock and alluvium) that are composed primarily of granular soils (silty sand, sand, and gravel). Such units are typically in the low to moderately-low range for expansion potential. However, every sedimentary unit in the area contains layers of fine-grained soils that are typically in the moderate to highly expansive range. The areas that are most susceptible to expansive soils are located along the western boundary of the City.

Collapsible Soils

Collapse occurs when saturated, collapsible soils lose cementation, resulting in substantial and rapid settlement under relatively low loads. The alluvial deposits in the valley and canyon floors are susceptible to collapse.

Tsunamis and Seiches

Seiching involves an enclosed body of water oscillating due to ground shaking, usually following an earthquake. Lakes and reservoirs are typical bodies of water affected by seiching. Rancho Santa Margarita Lake is located north of Santa Margarita Parkway and west of Antonio Parkway. Lake Mission Viejo is located approximately one mile southwest from the City. The City also has three reservoirs (Upper Oso Reservoir, Upper Chiquita Reservoir, and Trabuco Water Treatment Plant). The Upper Oso reservoir is located near the Foothill Transportation Corridor State Route 241 (SR-241) in the northwestern portion of the City and extends into Mission Viejo. The Upper Chiquita Reservoir was built in 2011 on the western slope of Chiquita Canyon. The Trabuco Water Treatment Plan is located on the eastern portion of the City and provides water at peak demand periods to augment water supply. These areas of the City may be vulnerable to seiching.

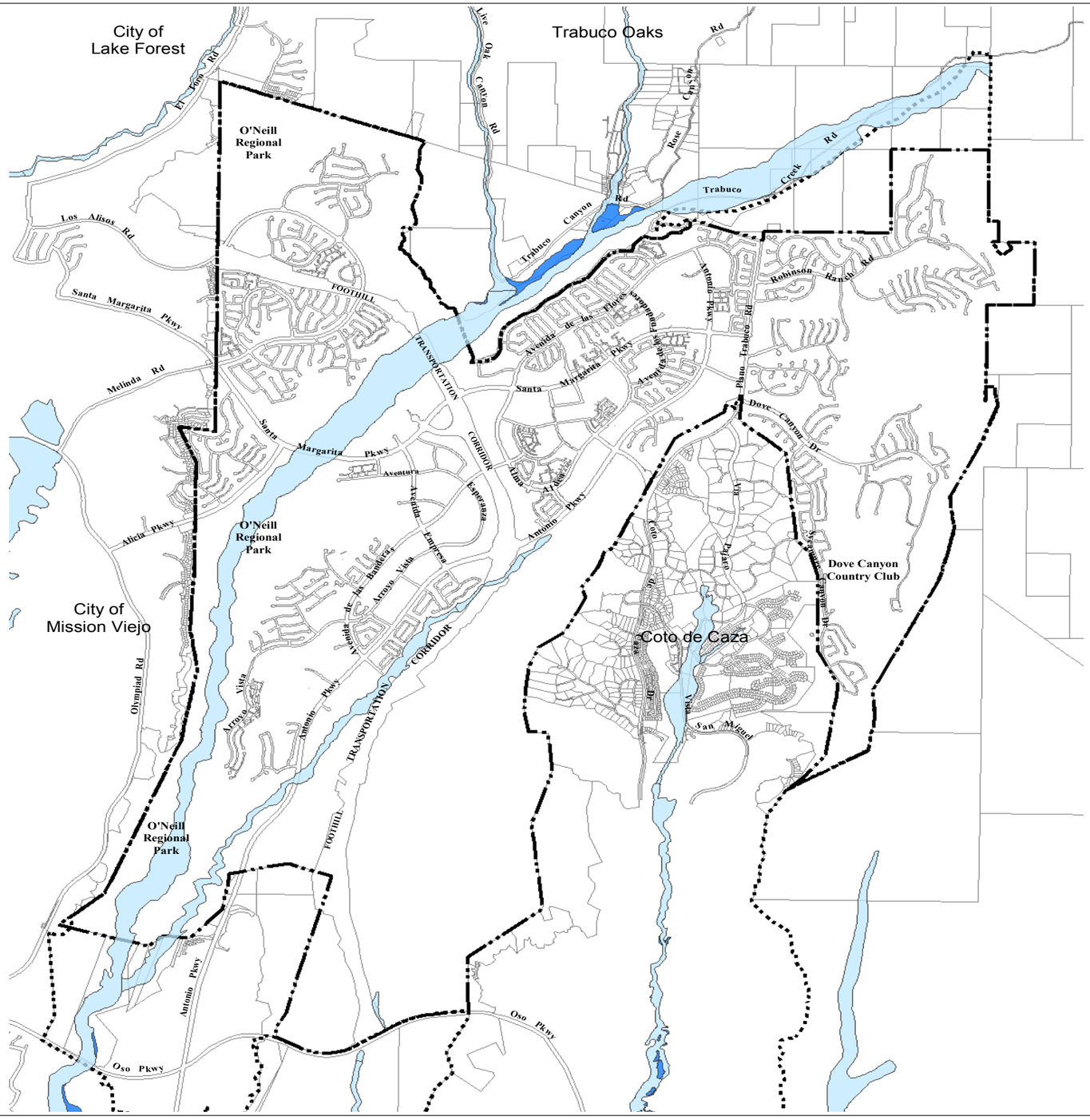
The City will enact programs to reduce geologic hazards to protect public safety. To minimize hazards from earthquakes and other geologic hazards, the most recent State seismic guidelines and guidelines for other geologic hazards will be implemented for structural design. During the review of development proposals involving slopes, grading, unstable soils and other hazardous conditions, surveys of soil and geologic conditions by a State-licensed engineering geologist will be required. Based on the results of the survey, design measures will be incorporated into projects to minimize geologic hazards.

Flood Hazards

FEMA Flood Zones

The unpredictable seasonal range in rainfall that is typical of coastal southern California, coupled with geographic and geologic conditions, makes Rancho Santa Margarita and all of Orange County vulnerable to flooding during the winter storm season.

The City of Rancho Santa Margarita is subject to atmospheric events and severe weather conditions that could threaten public safety, including weather patterns leading to flooding and other storm damage. Flooding is a natural attribute of any stream and is influenced by the intensity and distribution of rainfall. According to the latest FEMA Flood Insurance Rate Maps (FIRMs), there are areas identified within the City that are subject to a 100-year flood and a 500-year flood (refer to Figure SAF-2).



RANCHO SANTA MARGARITA
January 1, 2000

LEGEND

- 100-Year Flood
- 500-Year Flood
- City Boundary
- Sphere of Influence

0 2,400 4,800 Feet

Source: Orange County Local Agency Formation Commission, 2013 and Federal Emergency Management Agency, Flood Insurance Rate Maps, December 2009.

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Flood Hazard Map

Figure SAF-2

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As can be seen from Figure SAF-2, potential flooding could occur along the Arroyo Trabuco Creek (also known as Trabuco Creek) and Tijeras Canyon Creek areas. Along Trabuco Creek, a dense growth of trees and brush are located in the main channel, which may raise flood levels considerably. If flooding were to occur, it would be difficult to predict and plan for since rainfall in the area is extremely variable. Floods that would impact the City would typically be of short duration, with high peak volumes and high velocity. This is due to the arid to semi-arid nature of the area. When a major storm occurs, water collects rapidly and runs off quickly due to the rapid descent of the mountains into Trabuco Creek, Tijeras Canyon Creek, and Dove Canyon. Consequently, resultant flows are of the flash-flood type, generally having sharp peaks and short durations. Although some severe floods have impacted the area in the past, flooding damage in this area has generally been lower than in other areas of Orange County because of its relatively undeveloped state in the upper watershed areas. No homes or structures are located within the 100-year or 500-year flood zones within the City.

Dam Failure Induced Flooding

No major dam is located upstream from the planning area. However, Rancho Santa Margarita has three reservoirs (Upper Oso Reservoir, Upper Chiquita Reservoir, and Trabuco Water Treatment Plant) located within the City. The Upper Oso reservoir is located in the northwestern portion of the City and extends into Mission Viejo. The reservoir has been in use since 1979 and holds 1.3 billion gallons of water. The Upper Chiquita Reservoir was built in 2011 on the western slope of Chiquita Canyon and holds 244 million gallons of water. The Trabuco Water Treatment Plant is located on the eastern portion of the City and provides water at peak demand periods to augment water supply. Seismically-induced inundation can also occur if strong ground shaking causes structural damage to above-ground water tanks. Several other reservoir sites are within the planning area. Most of these are owned and operated by either the Trabuco Canyon or Santa Margarita Water Districts.

Additionally, Lake Mission Viejo is located near the City to the southwest. Other, smaller flood control improvements, such as canals, culverts, levees, and retention basins may crack and suffer some structural damage during an earthquake, especially in areas prone to ground failure. These facilities could pose an inundation hazard if they contain water at the time of the seismic event, or if they are not repaired soon after an earthquake and prior to the next winter storm season.

Drainage Facilities

The Orange County Flood Control District (OCFCD) is the agency responsible for the regional flood control, while the City is responsible for storm drain systems within the City boundaries. The local storm drain facilities were developed in coordination with the planned communities. The City's Drainage Master Plan addresses the storm drain system. This system is fully developed and no future expansions are planned.

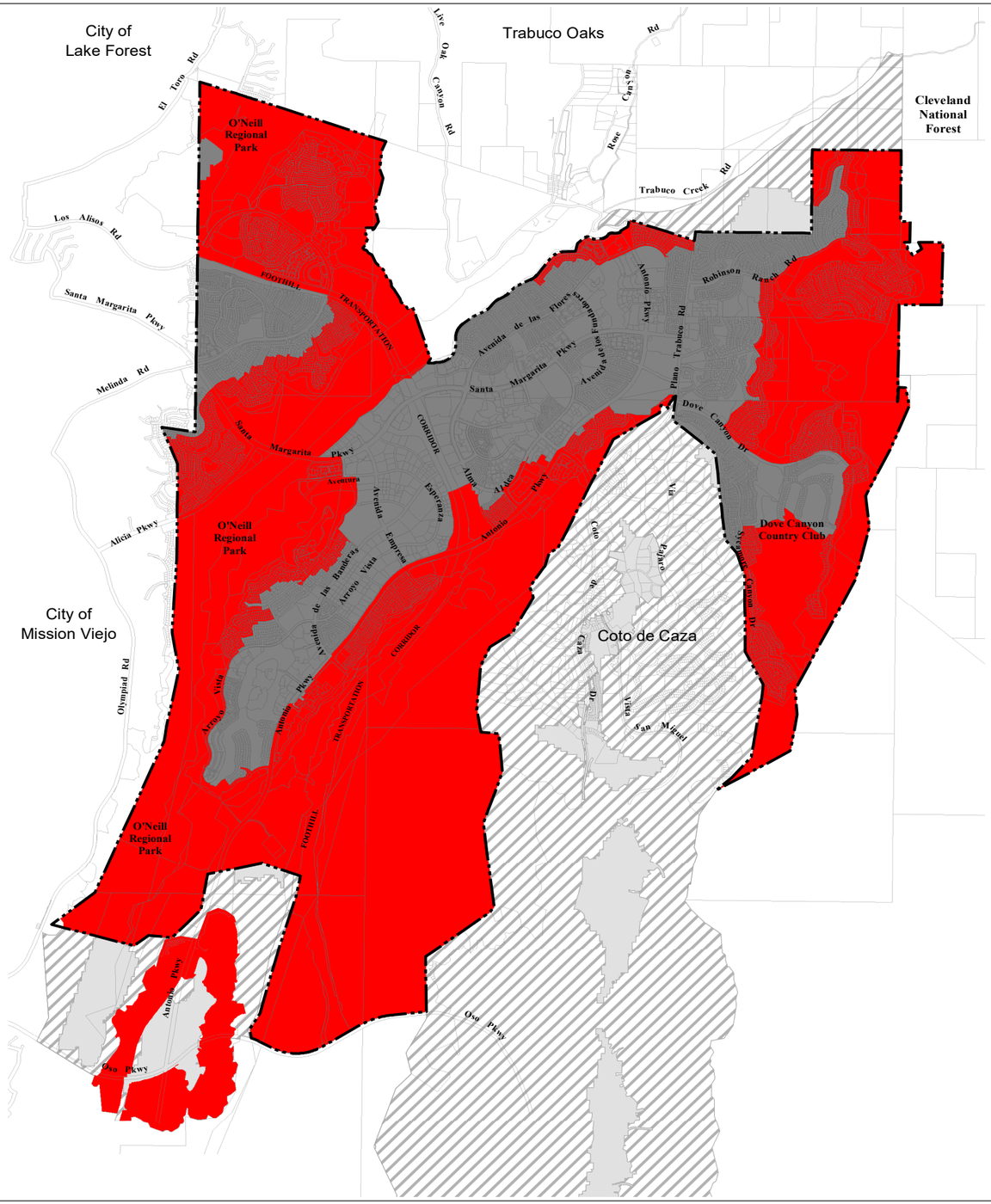
The flood hazard areas in Rancho Santa Margarita are within open space lands in the City. These areas remain open space, as outlined in the Land Use Element. The City will monitor the local drainage system and will work with the OCFCD to identify needed improvements for new development projects.

Wildland Fire Hazards

Given the large portion of land that remains as open space within the planning area, including rugged topography with highly flammable native vegetation, wildland fires are a significant risk. The California Government Code requires safety elements of a general plan to identify land designated as a State Responsibility Area for fire services and land designated within a ~~very~~ Very ~~high~~ High F~~f~~ire H~~h~~azard S~~s~~everity Z~~z~~one. CAL FIRE prepares wildfire hazard severity maps including mapping areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (refer to Figure SAF-3). These zones, referred to as Fire Hazard Severity Zones (FHSZ), define the application of various mitigation strategies and influence how people construct buildings and protect property to reduce risk associated with wildland fires. -The Planning Area includes both Local Responsibility Areas and State Responsibility Areas (within the Sphere of Influence), with portions of both Local and State Responsibility Areas being designated as Very High Fire Hazard Severity Zones. Very H~~h~~igh F~~f~~ire Hazard S~~s~~everity Z~~z~~ones are located in the west, south, and east areas of the City.

Wildland fires have occurred in Orange County, particularly in the fall, ranging from small localized fires to disastrous fires covering thousands of acres. The most severe fires have typically occurred during Santa Ana wind conditions. According to OCFA, since 1993 there have been 37 fires in the areas surrounding Rancho Santa Margarita, most of them in adjacent areas. The most recent fire in Orange County, The Holy Jim Fire, originated in Trabuco Canyon in August 2018. Wildland fires are difficult to control due to adverse weather conditions, such as excessive wind and heat; large quantities of combustible fuel; inaccessible terrain; nonexistent or very limited water supply; and large fire frontage requiring disbursement of fire forces.

Fire protection challenges exist within Rancho Santa Margarita including higher density residential areas and urbanized areas located within and directly adjacent to high hazard wildland areas. As the number of structural features increase, so does the incidence of fire. Certain development patterns pose more difficult fire problems. These include multi-story, wood frame, high-density apartment developments, multi-story research developments, large continuous developed areas with combustible roofing materials, and facilities that use and/or store hazardous materials. Features of structural conditions that affect fire control include the type and use of structure, area of building, number of stories, roof covering, and exposures to the building.



LEGEND

Local Responsibility Area

- VHFHSZ
- Non-VHFHSZ

State and Federal Responsibility Area

- VHFHSZ
- Non-VHFHSZ
- City Boundary
- Sphere of Influence

VHFHSZ - Very High Fire Hazard Severity Zone

0 2,400 4,800 Feet

Sources: CALFire Fire Resource and Assessment Program (FRAP), October 2011 and Orange County Local Agency Formation Commission, 2013.

Michael Baker INTERNATIONAL

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Wildfire Hazard Areas

Figure SAF-3

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Areas posing a significant risk to the City are subject to the Public Resources Code, Sections 4291-4299, which require property owners to conduct maintenance to reduce the fire danger. The Orange County Fire Authority (OCFA) has responsibility for wildfire suppression on all private land in Rancho Santa Margarita. Any proposed development plans are reviewed by the OCFA to determine if fuel modification plans or other preventative measures are required. The fire flow rates from the Uniform Fire Code are also implemented by the OCFA and reviewed for any new development.

The City will continue to reduce the potential for dangerous fires by coordinating with the OCFA to implement fire hazard education, fire protection, and fuel modification programs. In particular, OCFA has a Ready, Set, Go Defensible Space initiative with guidelines for property owners to use to protect their homes and other property. OCFA provides education via the Homeowner Associations and the City about hardening of homes in FHSZ's. The current California Fire Code will be used to reduce structural fire hazards. The California Fire Code is incorporated into City Code (Municipal Code Chapter 10.6). In addition, the City will work closely with the local water districts and OCFA to ensure that water pressure is adequate for firefighting purposes.

Defensible Space: Defensible space refers to a separation zone between wildlands and structures where fuel, including natural and ornamental vegetation, man-made combustible materials, and ancillary structures, is managed or modified to minimize the spread of fire to the structure and allow space for defending structures from burning vegetation. The separation is important to improving the survivability of structures in a wildland fire event and is most readily maintained when planned for as part of project design.

The City's Local Hazard Mitigation Plan addresses threats from Wildfire Hazards in more detail.

The City's Emergency Operations Plan (2016) characterizes potential hazards within the community, including urban and wildland fires, and outlines the effective mobilization of both public and private resources in the event of an emergency. As an operations plan, the EOP is designed to provide the framework for Rancho Santa Margarita Emergency Operations Center (EOC) operations during incidents regarding the activation and use of the EOC.

The County of Orange Community Wildfire Protection Plan (2017) covers all OCFA service areas and portions of 17 cities that either threaten or are threatened by State Responsibility Areas (SRA). Rancho Santa Margarita is served by OCFA and is located within the Community Wildfire Protection Plan (CWPP) area. The CWPP provides an overview of wildland fire risks, hazards, and values within the planning area; recommends possible actions to reduce impacts of wildfire in the planned area; and provides an action plan.

Drought

A drought is a period of drier than normal conditions that can result in decreases in water supplies. In California, drought is commonly associated with below normal precipitation. Drought hazards increase with the length of the drought, as water supplies in reservoirs are depleted and groundwater levels decline due to increased pumping. The extent of drought impacts is dependent on many factors including climate, water use patterns, available water supplies and geography. Drought hazards can vary as well, and can include lack of adequate drinking water, loss of vegetation or increased fire risks. Floods and drought cycles occur regularly in southern California, and are influenced by cyclical El Niño and La Niña events.

The most severe drought in the City began in 2012 and continued into 2017. The City formed partnerships with Santa Margarita Water District (SMWD) and Trabuco Canyon Water District (TCWD) to assist in their efforts to ensure future supply and reliability. Additionally, the City offers educational resources and events highlighting water awareness.

Human Activity Hazards

Hazardous Materials

Hazardous materials are used in Rancho Santa Margarita for a variety of purposes, including in service industries, small businesses, schools, and households. Many chemicals used in household cleaning, construction, dry cleaning, landscaping, and automotive maintenance and repair are considered hazardous. Accidents can occur in the production, use, transport, and disposal of hazardous waste.

Uses known to handle, store, and/or maintain hazardous materials within the City involve fixed facilities comprised of gas stations, pump stations, commercial and retail businesses, and municipal uses. The majority of properties within the City containing hazardous materials are located along Santa Margarita Parkway, Antonio Parkway, Aventura, and Arroyo Vista. These facilities include gasoline service stations, utility facilities, dry cleaner facilities, and a former military site.

Over 250 miles of interstate highway, including the third busiest highway transportation corridor in the country (Highway 5), and 719 miles of other major transportation routes run through Orange County. The CHP has designated these highways as hazardous materials transportation corridors. Hazardous substance incidents could occur within the planning area due to the transportation systems (major arterials and SR-241) that traverse the area.

To effectively manage hazardous materials and waste, the City implements applicable portions of both the Orange County Hazardous Materials Area Plan and the Orange County Hazardous Waste Management Plan. Both the Federal government and the State require all businesses that handle more than a specified amount of hazardous materials or extremely hazardous materials, termed a reporting quantity, to submit a business plan to the local Certified Unified

Program Agency (CUPA). The CUPA with responsibility for the City is the Orange County Environmental Health Department. These business plans are submitted to the CUPA annually.

The City participates in a Household Hazardous Waste (HHW) collection program set up by the County of Orange in accordance with the California Integrated Solid Waste Management Act of 1989. HHW drop-off facilities are located throughout the county. The City also participates in a recycling program operated under private sector contract.

The City will work to minimize accident and health risk from hazardous materials with the following approaches:

- Cooperate with Federal, State, and county agencies to effectively regulate the management of hazardous materials and hazardous waste;
- Cooperate with the County of Orange to implement the applicable portions of the County Hazardous Waste Management Plan and the Hazardous Materials Area Plan;
- Identify roadway transportation routes for conveyance of hazardous materials;
- Implement the emergency response plan for accidents involving hazardous materials; and
- Cooperate with the Certified Unified Program Agency (CUPA) for Rancho Santa Margarita (the Orange County Environmental Health Department) and the Orange County Fire Authority to administer risk management plans for businesses within the City.

Ground Transportation

Rancho Santa Margarita is traversed by a variety of transportation systems including SR-241, Antonio Parkway, Oso Parkway, and Santa Margarita Parkway. The Orange County Transportation Authority (OCTA) transit system provides bus service. The City's ground transportation system is an asset to local economic development, but poses several potential hazards including automobile accidents and pedestrian and bicycling accidents. The risk of accidents can be reduced by properly maintaining the transportation infrastructure and correcting deficiencies. The City will work with the Orange County Sheriff's Department and the California Highway Patrol to monitor the ground transportation system for hazardous conditions. When safety problems are identified, the City will request the appropriate agency (i.e., Caltrans, OCTA or the City's Public Works Department) to take corrective measures.

Crime Risk and Prevention

Rancho Santa Margarita has one of the lowest crime rates of any city in Orange County, and is typically one of the top safest cities in the nation when compared to other cities with a population over 25,000. Protecting citizens and businesses from criminal activity is a priority in Rancho Santa Margarita. Police protection is provided by the Orange County Sheriff's Department. A Police Services Department (OCSD sub-station) is located at City Hall and provides a variety of community policing programs, including Community Oriented Policing and youth programs. The City will ensure that contracted staffing levels correspond to the City population and needs, and will monitor mutual aid agreements between the Orange County Sheriff's Department and the police departments of surrounding jurisdictions. Crime prevention programs will continue to be implemented through Police Services for both residential and business communities. Through the development review process, the City will encourage the incorporation of Crime Prevention through Environmental Design (CPTED) techniques into site planning and architectural design of new development and redevelopment/revitalization projects to deter on-site crime.

CITY OF RANCHO SANTA MARGARITA SB 99 ANALYSIS WHITE PAPER

Emergency Evacuation Route Analysis

Prepared by De Novo Planning Group
August 2021

SB 99 Analysis White Paper

The City prepared an analysis consistent with Senate Bill 99 to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. The analysis found that Robinson Ranch Road, Dove Canyon Drive, and Sycamore Canyon Drive appear to be the most vulnerable to slow exits due to the high number of residential parcels, single exit points, and long canyon roads. Additionally, Melinda Road, near the Highway 241 crossings may be impacted in an emergency situation. Although all the residential parcels in this area have multiple exit points, they all access Melinda Road. The following is an explanation of the methodology used to map the evacuation routes.

Definitions & Data Sources

Residential Developments

Parcel data obtained from the SCAG GIS Open Data Portal were used to determine the location of residential developments. This parcel set includes the general plan land use designations within the City of Rancho Santa Margarita. Parcels with general plan land uses of Low Density Residential, Medium Density Residential, Medium High Density Residential, and High Density Residential were considered Residential Developments for the purposes of this study.

Hazard Areas

High Hazard Zones were defined as areas that are in one or more of the following pre-defined hazard zones:

1. FEMA's 100-year flood zone
2. California OES dam inundation area (none within the city)
3. California Geological Survey's Map Sheet 58 Landslide Susceptibility classes 8, 9, or 10
4. California Geological Survey's Potential Liquefaction and Potential Landslide areas, mapped as part of the California Seismic Hazard Zonation Program
5. CalFire's High and Very High Fire Threat zones
6. CalFire's Very High Fire Hazard Severity Zones in Local Responsibility Areas

These hazard zones were combined into one single "Combined Hazard Area" using ArcGIS merge and dissolve geoprocessing tools.

Evacuation Routes

Road data obtained from the Orange County GIS Open Data Portal were utilized to identify points of exit from clusters (neighborhoods) of residential parcels. Road centerlines were divided into three main classes:

1. *State Highway* – Highway 241
2. *Arterials* – as defined by Orange County GIS data "Arterials"
3. *Minor/Residential Roads* – All other roads not considered "Arterial" by the Orange County GIS roads dataset. These roads are generally the first roads a resident will encounter when departing their residence.

Assumptions & Methodology

Identification of Residential Developments in Hazard Areas

Using ArcGIS, Residential Developments in Hazard Areas were identified by a running a location query to find the parcels with residential general plan designations that intersect the single Combined Hazard Area. All residential parcels were mapped; those parcels within the Combined Hazard Area are identified by a thicker, bolder outline.

Identification of Residential Subdivision Exit Points

The goal of this analysis was to find at least two separate points of exit from residential neighborhoods by following a rudimentary roadway network in which vehicles move from Minor/Residential Roads to Arterial, and eventually to a State Route. The following assumptions apply:

1. Residential Developments have immediate access to Minor/Residential Roads but are distant from the SR 241
2. Arterials connect Minor/Residential Roads to the SR 241
3. Residential Exit Points are the points where Minor/Residential Roads intersect Arterials, thereby providing eventual access to the SR 241

Using ArcGIS, a point file representing the intersections of Minor/Residential and Arterials roads was created.

Analysis

Upon visual analysis, residential parcels within the Combined Hazard Area were assigned to one of four categories:

1. One Exit Point with distance to a Single Arterial
2. One Exit Point directly onto a Single Arterial
3. Multiple Exit Points with access to a single Arterial (Loop Road)
4. Multiple Exit Points with access to multiple Arterials

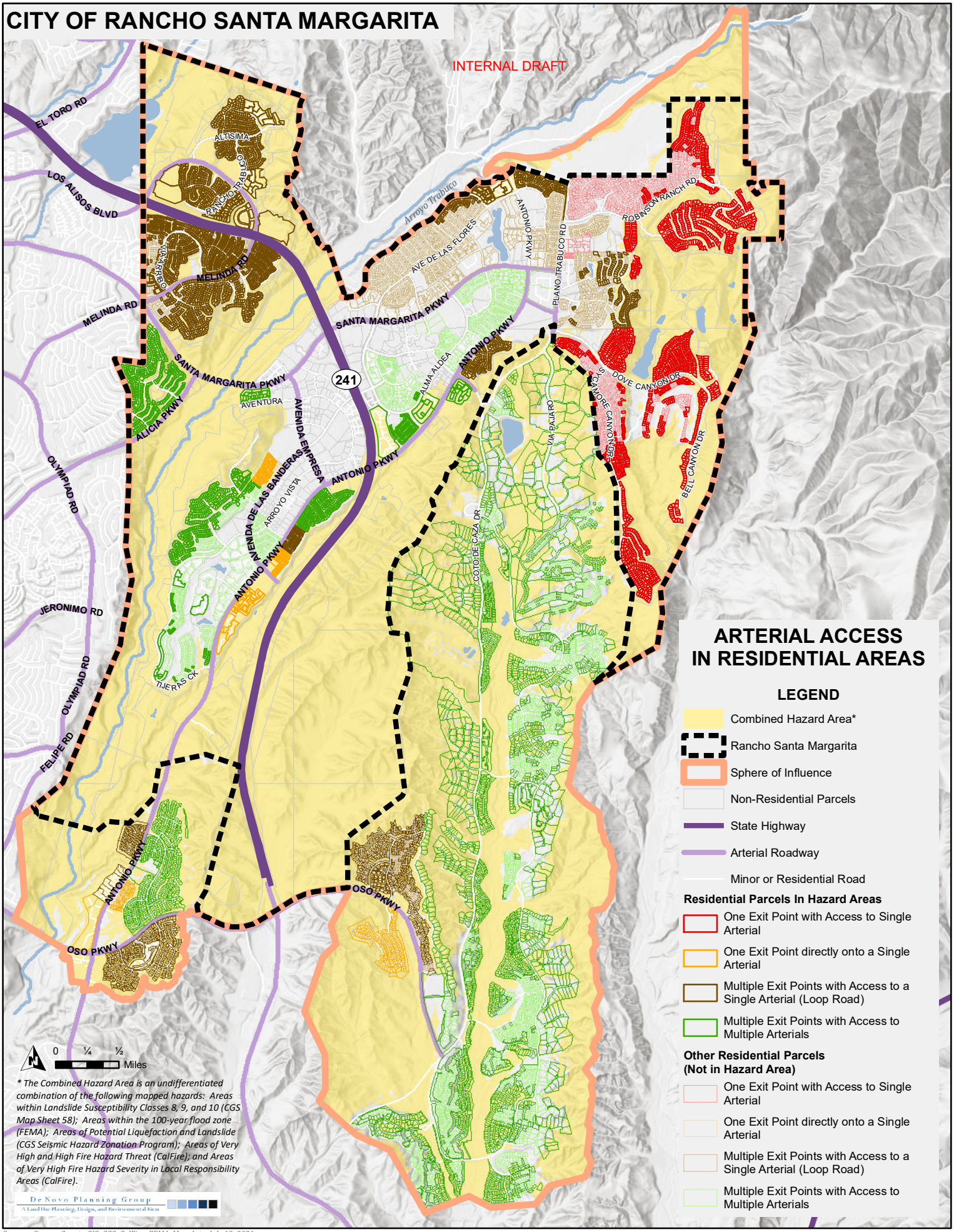
Results

The City will continue to coordinate with OCFA and OCSD to ensure viable exit strategies are available for the following areas of the City:

1. Robinson Ranch Road, Dove Canyon Drive, and Sycamore Canyon Drive appear to be the most vulnerable to slow exits due to the high number of residential parcels, single exit points, and long canyon roads.
2. Melinda Road, near the Highway 241 crossings may be impacted in an emergency situation. Although all the residential parcels in this area have multiple exit points, they all access Melinda Road.

CITY OF RANCHO SANTA MARGARITA

INTERNAL DRAFT



ARTERIAL ACCESS IN RESIDENTIAL AREAS

LEGEND

- Combined Hazard Area*
- Rancho Santa Margarita
- Sphere of Influence
- Non-Residential Parcels
- State Highway
- Arterial Roadway
- Minor or Residential Road

Residential Parcels In Hazard Areas

- One Exit Point with Access to Single Arterial
- One Exit Point directly onto a Single Arterial
- Multiple Exit Points with Access to a Single Arterial (Loop Road)
- Multiple Exit Points with Access to Multiple Arterials

Other Residential Parcels (Not in Hazard Area)

- One Exit Point with Access to Single Arterial
- One Exit Point directly onto a Single Arterial
- Multiple Exit Points with Access to a Single Arterial (Loop Road)
- Multiple Exit Points with Access to Multiple Arterials

0 ¼ ½ Miles

** The Combined Hazard Area is an undifferentiated combination of the following mapped hazards: Areas within Landslide Susceptibility Classes 8, 9, and 10 (CGS Map Sheet 58); Areas within the 100-year flood zone (FEMA); Areas of Potential Liquefaction and Landslide (CGS Seismic Hazard Zonation Program); Areas of Very High and High Fire Hazard Threat (CalFire); and Areas of Very High Fire Hazard Severity in Local Responsibility Areas (CalFire).*

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Sources: Orange County GIS; CGS; CalFire; FEMA. Map date: July 12, 2021.