RANCHO SANTA MARGARITA

2025 LOCAL HAZARD MITIGATION PLAN UPDATE

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SECTION 1.0: INTRODUCTION

Natural disasters can cause death and injuries, as well as significant damage to communities, businesses, public infrastructure, and the environment. Each year, natural disasters take the lives of hundreds of people and injure thousands more, and taxpayers pay billions of dollars annually to help recovery efforts. After disasters, repairs and reconstruction are often completed to simply restore the affected areas to their pre-disaster conditions. Such efforts expedite a return to normalcy; however, the replication of pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. As the cost of damage from natural disasters continues to increase, communities realize the importance of identifying effective ways to reduce vulnerability to disasters. While it is not possible to prevent disasters from happening, their effects can be reduced or eliminated through well-organized public education and awareness efforts, preparedness, and mitigation. For those hazards that cannot be fully mitigated, the community must be prepared to provide efficient and effective response and recovery.

It is impossible to predict exactly when and where disasters will occur or the extent to which they will impact a community. However, with careful planning and collaboration among public agencies, stakeholders, and citizens, it is possible to minimize losses that may occur from disasters. Proactive mitigation planning helps reduce the cost of disaster response and, by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruption. For hazards that can be mitigated, the City should be prepared to implement efficient and effective short- or long-term actions where needed.

The City of Rancho Santa Margarita developed this single-jurisdictional Local Hazard Mitigation Plan ("LHMP" or "plan") to reduce future loss of life and property resulting from disasters, and to provide increased resiliency, allowing the City to return to normal sooner, with fewer impacts to people, facilities, and infrastructure.

1.1 PLAN PURPOSE

The purpose of the LHMP is to provide the City with clear direction for hazard mitigation action planning. This LHMP 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.

This plan focuses on the mitigation component of the cycle shown in Figure 1.1, *Disaster Response Cycle*. Hazard mitigation plays an important role in reducing the impacts of disasters by identifying effective and feasible actions to reduce the risks posed by potential hazards. The City is updating this plan to be

Figure 1.1 Disaster Response Cycle

consistent with current standards and regulations, ensuring that the understanding of hazards facing its community reflects best available information and current conditions.

The LHMP does not supersede current City plans or strategies (such as the General Plan); rather it enhances the ability to identify, inform and mitigate hazard risks unique to the City. Information in this plan will be used to help guide and coordinate mitigation activities and serve as a tool for decision-makers to direct mitigation activities and resources.

1.2 PLAN AUTHORITY

1.2.1 FEDERAL

The federal Robert T. Stafford Disaster Relief and Emergency Act (the Stafford Act), as amended by the Disaster Mitigation Act of 2000 (DMA 2000) and supported by various pieces of regulation, directs hazard mitigation planning activities such as this plan. A City is not required to prepare a LHMP, but the Stafford Act requires State, local, and tribal governments that wish to be eligible for federal hazard mitigation grant funds to submit a hazard mitigation plan that outlines the processes for identifying the natural and man-made hazards, risks, and vulnerabilities of the jurisdiction (United States Code [USC] Title 42, Section 5156[a]). FEMA has promulgated Code of Federal Regulations (CFR) Title 44, Part 201 to carry out the hazard mitigation planning requirements in the Stafford Act. These regulations direct the planning process, plan content, and FEMA approval for hazard mitigation plans.

This LHMP complies with the Stafford Act and DMA 2000, along with the appropriate sections of Title 44 of the CFR, including Parts 201, 206, and 322.

1.2.2 STATE

California Government Code Section 8685.9 (Assembly Bill [AB] 2140) limits the State of California's share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts, unless the jurisdiction has adopted a valid hazard mitigation plan consistent with DMA 2000 and has incorporated by reference the hazard mitigation plan into the jurisdiction's General Plan, which can be accomplished as part of the resolution for adoption of the LHMP.

With an approved and incorporated plan, the State may cover more than 75 percent of the remaining disaster relief costs. All California counties and cities are required to prepare a General Plan, which must include a Safety Element that identifies hazard conditions and public safety issues. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its Safety Element, if the LHMP meets applicable State requirements. This allows communities to use the LHMP to satisfy State requirements for Safety Elements.

California Government Code Section 65302 (g)(4), (Senate Bill [SB] 379), requires that the General Plan Safety Element address the hazards created or exacerbated by climate change. The Safety Element must identify how climate change is expected to affect hazard conditions in the community and include measures to adapt and be more

resilient to these anticipated changes. Since a LHMP can be incorporated into the Safety Element, including these items in the LHMP can satisfy the State requirement. SB 379 states that climate change must be addressed in the Safety Element when the LHMP is updated after January 1, 2017 (for communities that already have an LHMP), or by January 1, 2022 (for communities without an LHMP). A LHMP and Safety Element address similar issues, but the Safety Element provides a higher-level framework and set of policies, while a LHMP focuses on more specific mitigation, often short-term, actions. LHMPs focus on hazard mitigation-related actions, while the Safety Element also includes policies for emergency response, recovery, and preparedness.

The Rancho Santa Margarita General Plan Safety Element was updated and adopted in February 2022. The LHMP is incorporated into the Safety Element by reference, as permitted by California Government Code Section 65302.6. The General Plan Safety Element specifically covers citywide safety and education; seismic and geologic hazards; flood hazards; wildland fire hazards; changing weather patterns; human activity hazards; and crime risk and prevention.

This LHMP is consistent with current standards and regulations, as outlined by the Governor's Office of Emergency Services (Cal OES) and FEMA. It uses the best available information, and its mitigation actions reflect best practices and community values. In order to receive AB 2140 compliance, the City intends to meet the requirements of current State and federal guidelines and make Rancho Santa Margarita eligible for all appropriate benefits under State and federal law and practices. Upon receiving FEMA's approvable pending adoption (APA) notification, the City will formally adopt the LHMP and will also adopt the approved LHMP into the Safety Element of the General Plan via resolution. The City's General Plan Safety Element currently references the LHMP and will be updated to document how the public can access the most current, approved LHMP in its entirety. Compliance with AB 2140 will be determined by Cal OES.

1.3 PLAN ADOPTION

The previous iteration of the LHMP was approved by Cal OES and FEMA in 2019, and this document serves as a comprehensive update in accordance with recent State and federal regulations. Following FEMA approval, the City Council of Rancho Santa Margarita formally adopts the 2025 LHMP as an update to the 2019 LHMP. A copy of the resolution will be provided in Appendix A.

1.4 PLAN ORGANIZATION

The LHMP is organized into the following sections to reflect the logical progression of activities undertaken to develop the plan and includes all relevant documentation required to meet the necessary criteria for FEMA approval. Each section is briefly described below:

Section 1.0: Introduction describes the background and purpose of the plan, as well as the authority established for its development.

Section 2.0: Planning Process describes the LHMP planning process, as well as the meetings and outreach activities undertaken to engage partner agencies, stakeholders, and the public.

Section 3.0: Community Profile provides the history, geography, and demographics, of Rancho Santa Margarita, including land use and development trends.

Section 4.0: Risk and Vulnerability Assessment identifies and profiles the natural and human-induced hazards affecting the City, including their history, risk of future occurrence, and any effects changing weather patterns have on their frequency and intensity, where applicable. The selection and confirmation of hazards are also discussed. This section also identifies the vulnerability and risk to the community, including vulnerable populations, and critical facilities associated with each hazard.

Section 5.0: Hazard Mitigation Strategy identifies the specific hazard mitigation actions to reduce potential risks to the City's critical facilities, residents, and business owners in order to improve resiliency, and assesses the City's capabilities to implement and achieve the mitigation actions.

Section 6.0: Plan Maintenance discusses implementation of the plan, including the process to monitor, evaluate, update, and maintain the LHMP, and identifies opportunities for continued public involvement.

Section 7.0: References identifies the various resources utilized throughout development of the LHMP.

1.5 MITIGATION GOALS

The following goals for reducing disaster risk have been identified for the Rancho Santa Margarita LHMP:

- To protect the general population from natural hazards/human-induced hazards and improve resiliency.
- To avoid damages to Rancho Santa Margarita's critical facilities, public infrastructure, and private property.
- To reduce the potential impact of natural disasters on the environment.
- To promote hazard mitigation measures as an integrated policy.
- To promote public awareness of the risks associated with hazards and continue coordination with the public and community partners to address hazard mitigation that reduces vulnerabilities.

1.6 CHANGES IN COMMUNITY PRIORITIES

The priorities of the City remain similar to those in the 2019 LHMP. The mitigation goals were reviewed by the Planning Team and determined to be relevant with minor revisions to communicate priorities relative to resiliency and the importance of partnerships to

address hazard mitigation that reduces vulnerabilities, consistent with the mitigation strategy.

The Community Profile was updated to reflect current demographic data and recent updates to the Rancho Santa Margarita General Plan. Development trends and future development remains similar to the 2019 LHMP, with the City being primarily developed and limited vacant land for future development. Future potential development has been revised to reflect the City's 2021-2029 Housing Element Update, which was required to include an inventory of land suitable and available for residential development to meet the City's regional housing need allocation (RHNA) of 680 units. As part of the identification of sites, environmental constraints, including natural hazards were considered. The sites are located within an area of the City considered to have reduced vulnerabilities specific to natural hazards.

The planning process for the update remained similar with the City leading the LHMP update and all partners that participated in the 2019 LHMP invited to participate in the LHMP update. The planning team was expanded to include invitations to additional community partners, including those involved with vulnerable populations.

A comprehensive approach to community outreach continued to be a primary focus of the Project Management Team. This was expanded to include additional focus groups and expanded outreach to vulnerable populations. Planning Team participants were vital in providing the opportunity for this additional and concentrated outreach.

Results of the community survey and outreach indicate the community continues to be concerned with the hazards addressed within the LHMP. With COVID-19, concern regarding disease outbreak was specifically identified. The 2019 LHMP identified Pest Management and Disease as a hazard. For the LHMP update, "Disease" was revised to "Disease Outbreak" to focus on outbreaks of infectious disease. The hazard profile was also updated to reflect this focus. The remaining hazards were updated to reflect changes since preparation of the 2019 LHMP.

The "Hazard Assessment" section was renamed "Risk and Vulnerability Assessment" to more accurately reflect the content of this LHMP section. The LHMP update includes an expanded vulnerability assessment to address vulnerable populations. Similarly, the mitigation strategy was updated to consider specific populations and areas of the City determined to experience higher vulnerability in the event of a hazard event. The mitigation actions were also revised to reflect mitigation actions that have been completed and identify priorities.

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SECTION 2.0: PLANNING PROCESS

This section describes each stage of the planning process used to develop the LHMP. The LHMP planning process provides a framework to document the plan's development and follows the Federal Emergency Management Agency (FEMA)-recommended steps. The LHMP follows a prescribed series of planning steps which includes organizing resources, assessing risk, developing the mitigation plan, drafting the plan, reviewing and revising the plan, and adopting and submitting the plan for approval. Each step is described in this section.

Hazard mitigation planning in the United States is guided by statutory regulations described in the Disaster Mitigation Act of 2000 (DMA 2000) and implemented through Title 44 Code of Federal Regulations (CFR) Parts 201 and 206. FEMA's hazard mitigation plan guidelines outline a four-step planning process for the development and approval of hazard mitigation plans. Table 2-1, *DMA 2000 CFR Crosswalk*, lists the specific CFR excerpts that contain the requirements for approval, and identifies the applicable section of this LHMP.

Table 2-1
DMA 2000 CFR Crosswalk

DMA 2000 (44 CFR 201.6)	2025 LHMP Section
(1) Organize Resources	Section 2
201.6(c)(1)	Organize to prepare the plan
201.6(b)(1)	Involve the public
201.6(b)(2) and (3)	Coordinate with other agencies
(2) Assess Risks	Section 4
201.6(c)(2)(i)	Assess the hazard
201.6(c)(2)(ii) and (iii)	Assess the problem
(3) Develop the Mitigation Plan	Section 5
201.6(c)(3)(i)	Set goals (Section 1)
201.6(c)(3)(ii)	Review possible activities (actions)
201.6(c)(3)(iii)	Draft an action plan
(4) Plan Maintenance	Section 6
201.6(c)(5)	Adopt the plan
201.6(c)(4)	Implement, evaluate, and revise

2.1 FORMING THE PLANNING TEAM

2.1.1 PROJECT MANAGEMENT TEAM

The City of Rancho Santa Margarita contracted with De Novo Planning Group to assist with the LHMP update. A core Project Management Team, consisting of City Staff and the Consultant Team, was assembled to organize, facilitate, and execute preparation of the LHMP. The Project Management Team was responsible for day-to-day coordination of the LHMP work program, including forming and assembling the Planning Team; scheduling Planning Team meetings; preparing, reviewing, and disseminating Planning Team meeting materials; coordinating, scheduling and participating in community engagement activities and meetings; and coordinating document review.

2.1.2 LHMP PLANNING TEAM

The Project Management Team re-engaged with the 2019 LHMP Planning Team to request their continued involvement with the plan update. To expand the Planning Team, additional stakeholders and community partners were also identified. Some participated as part of the Planning Team and others participated as part of specific focus group meetings and outreach (refer to Section 2.1.3, Public Outreach).

City Staff Planning Team members represented the following City Departments:

- City Administration
- Development Services
- Community Services
- Public Safety
- Public Works & Engineering

An invitation was sent via email to individuals advising them of the City's efforts to prepare an update to the 2019 LHMP and requesting their participation, including an invitation to participate in scheduled Planning Team meetings; a copy of the correspondence is included in Appendix B. An invitation was sent to the following agencies and organizations:

- Age Well Senior Services
- American Red Cross of Orange County
- Capistrano Unified School District
- City of Lake Forest
- City of Mission Viejo
- Family Assistance Ministries
- O'Neill Regional Park
- Orange County Emergency Management
- Orange County Fire Authority
- Orange County Health Care Agency
- Orange County Sheriff's Department
- Rancho Santa Margarita Landscape and Recreation Corporation (SAMLARC)
- RSM Cares
- Saddleback Valley Unified School District
- Santa Margarita Water District
- Southern California Edison
- Southern California Gas Company
- Trabuco Canyon Water District

The City received responses from some agencies and organizations expressing interest in participating directly on the Planning Team, and others indicating their inability to participate but willingness to provide information.

The LHMP Planning Team worked together to ensure the success of the planning process. The team's key responsibilities included:

- Participation in Planning Team meetings
- Collection of valuable local information and other requested data
- Providing agency-specific knowledge and input
- Assistance with the public engagement process
- Decision on plan process and content
- Asset and issue identification
- Review of existing and development of additional mitigation actions
- Review and comment on the draft LHMP

Table 2-2, *LHMP Planning Team*, identifies the Planning Team members that directly participated in the Planning Team meetings and their roles in the LHMP development process.

Table 2-2
LHMP Planning Team

Name	Title/Role	Organization	Planning Team Role
City Project Management Team			
Cheryl Kuta, AICP	Assistant City Manager/Director of Development Services/LHMP Management Team	City of Rancho Santa Margarita	LHMP Management and Planning Team – Oversight and input on development and organization of Planning Team and meetings, participation in Planning Team meetings, development of and participation in community outreach, hazard identification, asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Wendy Starks, AICP	Principal Planner/LHMP Project Manager and Primary Point of Contact	City of Rancho Santa Margarita	Project Manager – Organization of Planning Team and meetings, participation in Planning Team meetings, development of and participation in community outreach, hazard identification, asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan coordination and review. Served as primary point of contact for City and

Name	Title/Role	Organization	Planning Team Role
			Consultant Project Management Team, Planning Team, and Public.
Derek Bingham, AICP	Senior Planner/LHMP Management Team	City of Rancho Santa Margarita	LHMP Management and Planning Team – Input on development and organization of Planning Team and meetings, participation in Planning Team meetings, hazard identification, asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Planning Team			
Steve Aleshire	Supervising Park Ranger II	OC Parks/O'Neill Regional Park	Hazard identification, asset identification, risk assessment/vulnerability discussion, and plan review.
George Blair	General Manager	SAMLARC	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Ethan Brown	Senior Emergency Management Program Coordinator	Orange County's Sheriff's Department	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Robert Craven	Assistant Superintendent, Business Services	Saddleback Valley Unified School District	Hazard identification, asset identification, risk assessment/vulnerability discussion, and plan review.
Krystie Franco	Community Services Coordinator	City of Rancho Santa Margarita	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Michaela Kennedy	Police Chief	Orange County's Sheriff's Department	Hazard identification, asset identification, risk assessment/vulnerability discussion, and plan review.
Sherri Lex	President	RSM Cares	Community outreach coordination and assistance, hazard identification, asset identification, risk assessment/vulnerability discussion, and plan review.
Chris Lopez	Safety Officer	Santa Margarita Water District	Capabilities assessment review/input and plan review.
Laura Lopez	Assistant to the City Manager/Public Information Officer	City of Rancho Santa Margarita	Asset identification, risk assessment/vulnerability discussion, capabilities

Name	Title/Role	Organization	Planning Team Role
			assessment, mitigation actions and prioritization, and plan review.
Connor Musler	Assistant Planner	City of Lake Forest	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Tri Nguyen, PE	Principal Engineer	City of Rancho Santa Margarita	Hazard identification, asset identification, risk assessment/vulnerability discussion, and plan review.
Joe Parco, PE	Public Works Director	City of Rancho Santa Margarita	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Ryan Shah	Community Services Coordinator	City of Rancho Santa Margarita	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.
Jeremy Vallone	Fire Captain	Orange County Fire Authority	Asset identification, risk assessment/vulnerability discussion, capabilities assessment, mitigation actions and prioritization, and plan review.

The LHMP Planning Team held two in-person meetings, as summarized in Table 2-3, *Planning Team Meeting Summary*. Meeting materials, including PowerPoint presentations, sign-in sheets, agendas, notes, and other relevant handouts, are provided in Appendix B.

Table 2-3
Planning Team Meeting Summary

Date	Meeting	Discussion Items
April 24, 2024	Planning Committee Meeting #1	• Project Goals, Objectives, and Expectations • Mitigation Planning and the LHMP Update • Hazard Confirmation and Identification • Asset Identification/Community Lifelines • Issue Identification and Discussion • Outreach Discussion
May 22, 2024	Planning Committee Meeting #2	• Hazards and Hazard Mapping • Critical Facilities • Asset Identification/Community Lifelines • Vulnerable Populations • Partners, Facilities, and Support Services Identification • Capabilities Assessment • Outreach Discussion

As part of the Planning Team meetings, components of the plan and updates were reviewed and discussed. Clarifications and additional information were obtained from Planning Team participants. Separate from the Planning Team meetings, discussions occurred with individuals and organizations on the Planning Team, as well as outside of the Planning Team to obtain additional information to further inform the LHMP.

Upon preparation of the draft LHMP, each of the planning team participants were provided a link to access the plan and provide comments. Comments and additional information received on the draft LHMP were incorporated into the document.

2.1.3 PUBLIC OUTREACH

A public outreach and engagement strategy was developed to maximize public involvement in the LHMP planning process. Components of the public outreach program are described below; refer to Appendix B for outreach materials.

Webpage

A dedicated webpage was developed on the City's website for the LHMP. The webpage provided information on the LHMP and how the public can be involved in the planning process. Contact information for questions and comments, including a dedicated email was provided. A link to complete the community survey was posted. The website was updated throughout the planning process and provided notifications and access to LHMP materials. The draft LHMP was also made available for review. This provided the opportunity for anyone to access information regarding the LHMP update at their own convenience and throughout the entirety of the update process.

E-Newsletter Distribution

The May 2024 edition of the City of Rancho Santa Margarita e-newsletter notified recipients of the City's preparation of a LHMP and requested the community's involvement in its development by completing the community survey (described below).

A link to the survey was provided. The e-newsletter is distributed to approximately 6,353 recipients, and it is published on the City's website for the public to view.

Community Survey

A community survey was developed to obtain input from the public about various hazard mitigation topics. In addition to basic demographic information, the survey asked residents to identify specific safety concerns, including identifying what hazards they felt were most likely to impact their neighborhood or property. Residents were also asked what actions they had taken to be more resistant to hazards and factors that resulted in some members of the community being more vulnerable to a hazard event. Information gained from the survey was used by the Planning Team to review existing mitigation actions and identify potential mitigation actions that would reduce damage and disruption from disaster or emergency events and improve resiliency and recovery.

The survey was made available for completion on the LHMP webpage, and the survey link was distributed via email by the City and Planning Team members. Distribution by the Planning Team also included the Chamber of Commerce, Applied Medical, and the Rancho Santa Margarita Landscape and Recreation Corporation (SAMLARC)[1] employees, boards and/or members. The survey was also advertised in the June and July editions of SAMLARC's newsletter, which is sent to approximately 3,000 members. Flyers advertising the LHMP update and survey were also provided to Villa La Paz Apartment Homes, Overture Senior Apartment Homes, Fountain Glen Senior Apartments, and Park Terrace Independent and Assisted Living Community. A QR code to access the survey was also provided at all Community Events, described below, and advertised at City Hall.

The survey was conducted between April 19, 2024 and August 19, 2024. The survey received 58 responses. Of the responses received, 30 respondents provided contact information. Input received was generally consistent with feedback received during one-on-one conversations at the community events and during the focus groups. Respondents are most worried about wildfire, seismic hazards, and high winds/Santa Ana wind events. Concerns regarding ingress and egress in an emergency event relative to potential damage to bridges, limited access, and traffic congestion were identified. This is also consistent with the survey conducted for the 2019 LHMP. Respondents identified email, city/agency website, and city/agency newsletters as the communication preference to receive information about reducing vulnerabilities to homes and neighborhoods. A new survey question for the LHMP update indicates that survey respondents feel factors that make members of the community more vulnerable to a hazard event include age (children under the age of 18 or seniors over 65), disability status (e.g., mobility, sensory, or developmental), chronic illness, and lack of a vehicle or reliable transportation.

Input received from the survey validated the hazards identified in the 2019 LHMP, which have been retained in this LHMP update. Pandemic-related disease was identified as a hazard not listed, that is a threat to the City. This was also identified by the Planning Team and the Pest Management and Disease hazard profile from the 2019 LHMP was revised

[1] SAMLARC is the Master Homeowners Association for approximately 13,650 homes in Rancho Santa Margarita.

to Pest Management and Disease Outbreak; refer to Section 4.0, *Risk and Vulnerability Assessment*. The input was also considered when reviewing and developing mitigation actions specifically related to vulnerabilities, how the community can become better prepared, and the importance of preparedness, coordination, and response actions.

Focus Groups

Four focus group meetings were conducted to provide an opportunity for outreach to specific groups and organizations to ensure diversity in the public participation process, and to obtain input directly from and relative to populations deemed more vulnerable to natural hazards within the community. As part of the meetings, an overview of hazard mitigation and the LHMP update process was provided. The participants were asked to provide input on issues or concerns relative to the specific hazards and potential mitigation actions. Attendees engaged in an open discussion guided by questions specific to the group. The Project Management team met with the following groups and organizations:

Age Well Senior Services. Age Well Senior Services is a nonprofit organization providing critical services, resources, and programs to seniors living in South Orange County. Age Well provides lunch on weekdays at nine senior centers, including at the Bell Tower Regional Community Center in Rancho Santa Margarita. Members of the Project Management Team attended a regularly scheduled lunch program on June 20, 2024, with 19 participants in attendance. The conversation focused on concerns about evacuation, especially for older people who do not have cars or family who can assist and how emergency information is communicated and received. This also provided an opportunity to inform the attendees of the AlertOC system.

Applied Medical. Applied Medical is the largest employer in the City operating within multiple buildings in the Business Park. Members of the Project Management Team met with 14 key staff associated with their facilities, operations, and risk reduction on June 27, 2024. Earthquakes and fires were identified as the primary hazards of concern. Power is critical to their operations; the company has backup generators and solar power. They have assisted employees who had to evacuate due to a wildfire event. Applied Medical is implementing an emergency alert system to disseminate information by text, phone, and email to all employees in the event of an emergency. City staff provided information on AlertOC for Applied Medical to disseminate to all employees.

Community Partners. Individuals involved in organizations that work with and/or provide services to underserved and vulnerable populations were identified and invited to participate in a focus group. The focus group meeting was held on June 20, 2024, and nine people were in attendance. Some of the organizations represented include the Rotary, RSM Cares, and South County Outreach. The conversation identified the need to include disabled children and those with special needs when there is an emergency or hazard. Participants recommended contacting apartments in town to reach vulnerable populations. Pets should be considered and the logistical challenges in the event of an evacuation. Existing City events and annual Fire Safety events are considered great resources for education and information. It was noted that individuals and families need to commit to actions and take proactive measures before, during, and after an event.

In response to the feedback received from the community partners, and as previously described, the Planning Team delivered and posted flyers advertising information regarding the LHMP update and the availability of a community survey, including QR code and website information, to Villa La Paz Apartment Homes, Overture Senior Homes, Fountain Glen Senior Apartments, and Park Terrace Senior Homes. The Planning Team also coordinated with RSM Cares to attend the RSM Cares Food Pantry, described below.

RSM Cares Food Pantry. RSM Cares serves over 500 families at their pantry distribution site twice a month. On August 7, 2024, members of the Planning Team attended the RSM Cares Food Pantry during the food distribution event). Due to the time limitations for direct interaction, a brief focused survey was conducted in three languages asking food bank recipients what hazards concerned them the most and to identify their specific concerns if a hazard event were to occur. The survey received 84 responses. Input received was generally consistent with feedback received during one-on-one conversations at community events, the community survey, and other focus groups. Respondents are most worried about wildfire and seismic hazards. Additionally, respondents stated they are most worried about contacting and staying together with their families and having to leave their home in the event of a natural hazard. They are also concerned about damage to their home or personal property and the cost of repairs or replacement.

Similar to the community survey, discussions and input received from the focus groups further validated the hazards identified in the 2019 LHMP, which have been retained in this LHMP update. The input also helped identify and reconfirm what worries people the most when they consider the potential impacts of a hazard event. This information was considered when reviewing and developing mitigation actions specifically related to vulnerable populations.

Community Events

The Project Management Team set up a booth at community events to inform the public about the LHMP update process and encourage completion of the survey. In addition to encouraging participants to complete the survey, the LHMP Planning Team was able to engage directly with a variety of people who shared personal experience and concerns and provided input on potential actions relative to reducing vulnerabilities. A raffle was held to engage and encourage participation. The community events included Splash Pad reopening day on May 18, 2024; and the Rancho Santa Margarita Summer Concert Series on July 7, 2024 and July 14, 2024. Approximately 1,500 people were in attendance for the Splash Pad reopening, and 3,500 for each of the two Summer Concerts.

Public Review Draft LHMP

A public review draft LHMP was made available to the Planning Team and public for review and comment, for a 20-day period beginning October 1, 2024 and ending October 21, 2024. The draft LHMP was made available on the LHMP webpage and at the City's Development Services counter. The Planning Team assisted in advertising availability of the draft LHMP through their email distribution lists and social media. Information was provided on how to submit comments or ask questions regarding the draft LHMP. No comments were received on the draft LHMP.

Planning Commission and City Council Meetings

An overview of the draft LHMP update was provided to the Rancho Santa Margarita Planning Commission and City Council, as part of their regularly scheduled meetings on November 6, 2024 and November 13, 2024, respectively. The presentation provided an overview of the LHMP and the update process with opportunities for the Planning Commission, City Council, and the public to ask questions and give input on the draft plan prior to submittal to Cal OES and FEMA for review. No comments were received from the public. Input received from the Planning Commission and City Council were incorporated into the draft LHMP. These comments resulted in references to backup power programs, post-fire conditions, and red flag warnings within the mitigation actions, and a new mitigation action regarding business integration with OCSD's Real Time Operations Center (RTOC).

2.1.4 REVIEW AND INCORPORATE EXISTING INFORMATION

The LHMP Planning Team referenced a variety of plans, studies, data, and technical reports available from local, State, and federal sources to prepare the LHMP. Primary resources reviewed and incorporated as part of the LHMP planning process are listed in Table 2-4, *Primary Plan Resources*. A complete list of resources is included in Section 7.0, *References*.

Table 2-4
Primary Plan Resources

Plans, Studies, Reports and Other Technical Data/Information	Planning Process/Area of Document Inclusion
Agency for Toxic Substances and Disease Registry/Center for Disease Control's (CDC) Social Vulnerability Index (SVI)	Vulnerability Assessment
Burned Area Emergency Response Assessment Final Specialist Report – Geologic Hazards, Holy Fire, August 27, 2018.	Hazard Profiles; Vulnerability Assessment; Mitigation Strategy
CalFire	Hazard Profiles; Vulnerability Assessment; Mitigation Strategy
Cal-Adapt	Hazard Profiles; Vulnerability Assessment; Mitigation Strategy
California Department of Water Resources	Hazard Profiles; Vulnerability Assessment
California Geological Survey	Hazard Profiles; Vulnerability Assessment
California State Hazard Mitigation Plan	Hazard Profiles
City of Rancho Santa Margarita General Plan and EIR	Community Profile; Hazard Profiles; Mitigation Strategy
County of Orange and Orange County Fire Authority LHMP, December 2021	Hazard Profiles; Vulnerability Assessment
County of Orange and Orange County Operational Area: Joint Information System Annex, November 2018	Hazard Profiles
FEMA Local Mitigation Planning Handbook, May 2023	Multiple plan sections
FEMA Local Mitigation Planning Policy Guide, Effective April 19, 2023	Multiple plan sections
FEMA Community Lifelines Implementation Toolkit	Stakeholder identification and outreach
FEMA Guide to Expanding Mitigation	Stakeholder identification and outreach; Vulnerability Assessment; Mitigation Strategy
FEMA National Risk Index	Hazard Profiles; Vulnerability Assessment
FEMA Map Service Center	Hazard Profiles; Vulnerability Assessment
National Drought Mitigation Center	Hazard Profiles; Vulnerability Assessment
OC Health Care Agency	Hazard Profiles; Vulnerability Assessment
OC Parks Firewood Management Policy	Hazard Profiles; Vulnerability Assessment
OC Public Works	Hazard Profiles
Orange County Fire Authority 2020 Unit Strategic Fire Plan	Hazard Profiles
Orange County Regional Water and Wastewater MJHMP	Hazard Profiles; Vulnerability Assessment
South Orange County Integrated Regional Water Management Plan	Hazard Profiles
U.S. Census American Community Survey	Community Profile; Vulnerability Assessment
U.S. Drought Monitor	Hazard Profiles; Vulnerability Assessment

2.2 ASSESS RISKS

In accordance with FEMA requirements, the LHMP Planning Team identified and confirmed the natural hazards affecting Rancho Santa Margarita and assessed the community's associated vulnerability from those hazards. Results from this phase of the LHMP update planning process aided subsequent identification and confirmation of appropriate mitigation actions to reduce risk from these hazards; refer to Section 5.0, *Mitigation Strategy*.

2.2.1 IDENTIFY/PROFILE HAZARDS

Based on a review of past hazards identified in the 2019 LHMP, as well as a review of existing plans, reports, and other technical studies, data, and information, the LHMP Planning Team determined if currently profiled hazards continued to be valid and identified other hazards that could affect the City. Content for each hazard profile is provided in Section 4.0.

2.2.2 ASSESS VULNERABILITIES

Hazard profiling exposes the unique characteristics of individual hazards and begins the process of determining which areas within the City are vulnerable to specific hazard events. The vulnerability assessment included input from the LHMP Planning Team and a GIS overlaying method for hazard risk assessments. Using these methodologies, populations and critical facilities impacted by hazards were identified and potential loss estimates were determined, where available. The vulnerability assessment for each hazard is provided in Section 4.0.

2.3 DEVELOP MITIGATION PLAN

2.3.1 IDENTIFY GOALS

The City's previously adopted 2019 LHMP provided relevant information in preparation of this LHMP, including the identification of mitigation goals. The Planning Team reviewed the previously developed goals and upon discussion, determined the goals to still be relevant with a minor update to one of them, and the addition of one regarding promoting public awareness. The Mitigation Goals are presented in Section 1.0, *Introduction*.

2.3.2 DEVELOP CAPABILITIES ASSESSMENT

A capabilities assessment is a comprehensive review of all the various mitigation capabilities and tools currently available to the City to implement the mitigation actions prescribed in the LHMP. The LHMP Planning Team reviewed the planning and regulatory; administrative and technical; financial; and education and outreach capabilities identified in the 2019 LHMP and updated the capabilities as appropriate. The capabilities assessment is provided in Section 5.0.

2.3.3 IDENTIFY MITIGATON ACTIONS

Since adoption of the 2019 LHMP, members of the Planning Team have conducted an annual review of the LHMP. The review included identification and consideration of any changes relative to hazard risks, including documentation of any hazard events. The mitigation actions were also reviewed to document specific actions that have been completed; progress toward completion of ongoing mitigation actions; the relevancy of mitigation actions; and any recommended changes.

The results of the annual reviews have been incorporated and documented within this LHMP update as provided in Section 5.0. Additional revisions to the mitigation actions

reflect the updates that have occurred within this LHMP. The Planning Team utilized information obtained through the planning process, including the community outreach, and updated risk and vulnerability assessment to further inform the revised mitigation actions.

During this process, the capabilities assessment was also referenced to better understand if the capability already existed and needed to be expanded, or if the capability was not currently available. A detailed discussion of the identification of mitigation actions is provided in Section 5.0.

2.3.4 PLAN REVIEW AND REVISION

As previously noted, once the draft LHMP was completed, a public review period was provided from October 1, 2024 to October 21, 2024, to allow public review and comments. No comments were received on the draft LHMP.

2.3.5 PLAN ADOPTION AND SUBMITTAL

The LHMP was submitted to Cal OES and FEMA for review. After receiving "approvable pending adoption" notification from FEMA, the LHMP was presented to the Planning Commission on June 4, 2025. The Planning Commission adopted a resolution recommending that the City Council adopt the LHMP. The LHMP was adopted by the City Council on July 9, 2025. A copy of the resolution was provided to FEMA and FEMA approved the plan for five years with an effective date of July 16, 2025. A copy of the resolution and FEMA approval is provided in Appendix A.

2.3.6 PLAN MAINTENANCE

Plan maintenance procedures, found in Section 6.0, include the measures the City will take to ensure the LHMP's continuous long-term implementation. The procedures also include the way the LHMP will be regularly monitored, reported upon, evaluated, and updated to remain a current and meaningful planning document.

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SECTION 3.0: COMMUNITY PROFILE

3.1 PHYSICAL SETTING

The City of Rancho Santa Margarita is within eastern Orange County about 10 miles northeast of the Pacific Ocean, in the foothills of the Santa Ana Mountains; refer to Figure 3-1, *Regional Location*. The City's Planning Area consists of approximately 14,443 acres, of which 8,280 acres are located within the City's incorporated limits and 6,163 acres are located within the City's Sphere of Influence (SOI); refer to Figure 3-2, *City and Sphere of Influence*. The community is bisected by the Foothill Transportation Corridor State Route 241 (SR-241), which extends to the north connecting with North County cities such as Yorba Linda and Anaheim, and to the south terminating at Oso parkway. The cities of Mission Viejo and Lake Forest are located to the west, Cleveland National Forest is located to the east, and unincorporated Orange County is located to the north and south. Regional access to the City is provided via SR-241, SR-133, and Interstate 5.

3.2 HISTORY

The earliest historic accounts of the Rancho Santa Margarita come from the journals of Captain Gaspar de Portolá, Ensign Miguel Costanso, and Father Juan Crespi, who passed through the area on their expedition between San Diego and San Francisco Bay in 1769. With the construction of Mission San Juan Capistrano on November 1, 1776, a Spanish presence in the area was firmly established. Around 1810 an outpost of the Mission now known as the Trabuco Adobe was constructed on a high plateau in what is today O'Neill Park in Rancho Santa Margarita.

With Mexican independence in 1821, Mission lands formerly held by the Catholic Church were transferred to the Mexican government. The area was divided into three ranchos, Rancho Mission Viejo, Rancho Trabuco, and Rancho Santa Margarita. The Trabuco Adobe was occupied by a number of Basque sheep herders, before coming under the control of James L. Flood and Jerome O'Neill in 1882 following the American acquisition of California. O'Neill and Flood purchased all three ranchos the same year, with the massive estate operating as a ranch well into the 1920s. It was subdivided once again in 1940, with the heirs of the Flood estate claiming the southern portion, in today's San Diego County, and the O'Neill family retaining the northern portion, including the Rancho Santa Margarita. The Trabuco Adobe slowly decayed, with minor remnants still visible today.

A 278-acre portion of the land retained by the O'Neill family was donated to the County of Orange for public recreation in 1948, and an additional 120 acres of parkland was donated to the County in 1963. That same year, the O'Neill family also established the Mission Viejo Company and began plans for a master-planned community under the same name. However, it was not until the mid-1980s that ground was finally broken on the Urban Village that would become modern Rancho Santa Margarita. Envisioned as an Urban Village by master planner and urban designer Richard Reese, the community developed rapidly through the late 1980s and 1990s. The City of Rancho Santa Margarita eventually incorporated on January 1, 2000, after being joined with the neighboring communities of Robinson Ranch, Dove Canyon, Rancho Cielo, Trabuco Highlands, and Walden in 1999.

3.3 DEMOGRAPHICS

Basic demographic data for Rancho Santa Margarita (population, education, employment, and housing) obtained from the US Census 2018-2022 American Community Survey (ACS) is summarized below.[1]

3.3.1 POPULATION

Table 3-1, *Rancho Santa Margarita and Orange County Population and Housing Data (2022)*, provides an overview of the City's and County's demographics.

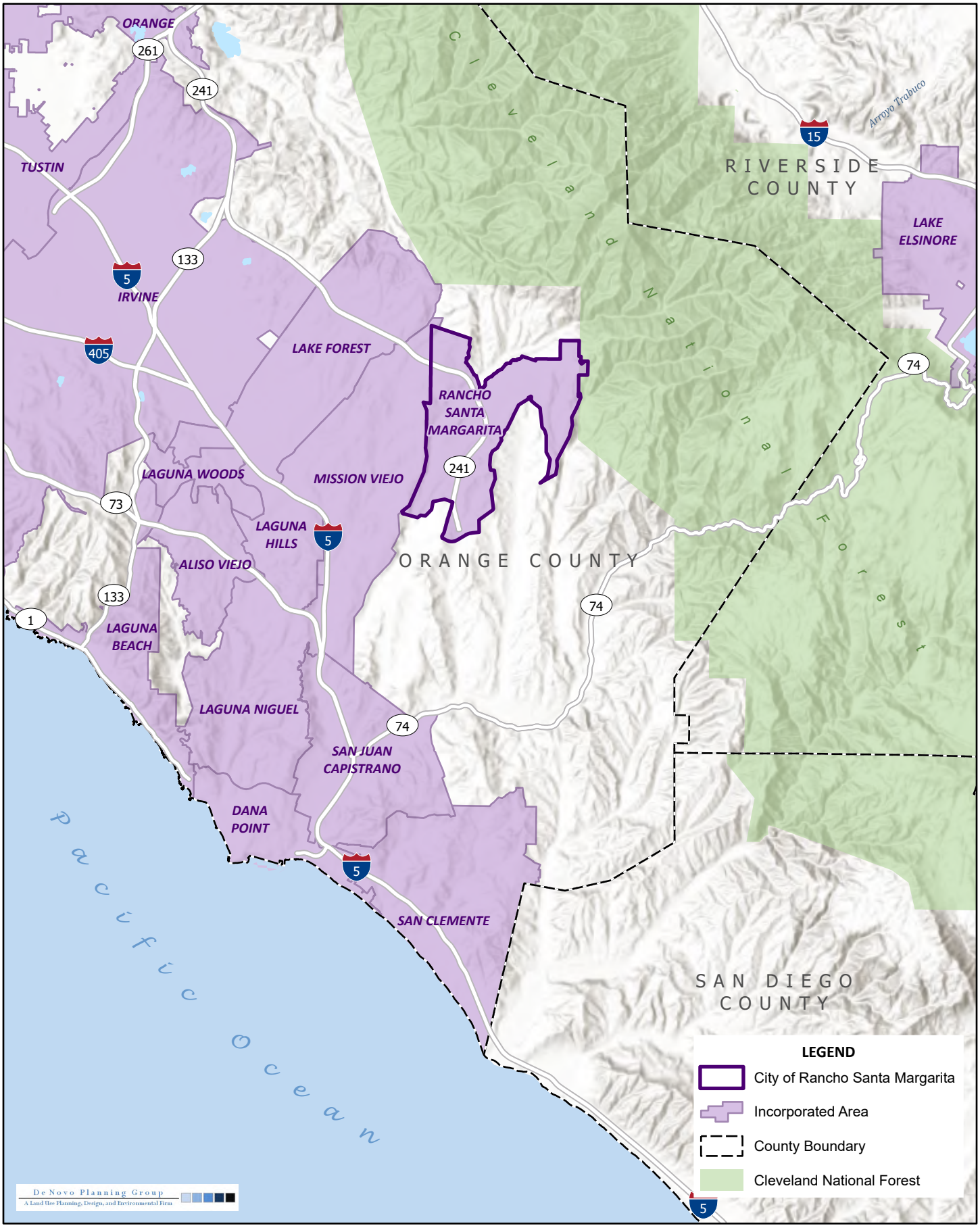
Table 3-1
Rancho Santa Margarita and Orange County Population and Housing Data (2022)

Category	Rancho Santa Margarita	Orange County
Total Population	47,702	3,175,227
Percent of Residents that are children (under 18 years)	22.9%	21.4%
Percent of Residents that are senior citizens (65 and over)	10.4%	15.4%
Median Age (years)	40.1	38.7
Median Household Income	$150,146	$109,361
Median House Value	$861,100	$862,900
Occupied Housing Units	16,798	1,066,286
Percent of Renter Occupied	27.1%	43.5%
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2018-2022.		

Rancho Santa Margarita's 2022 estimated population was 47,702 residents. When compared to Orange County, the City has a higher household income and home ownership rate, with a similar median house value. The City has a higher percentage of residents under 18 and a lower percentage of residents over 65 when compared to the County. The median age of City residents was 40.1, higher than the median age of Orange County residents at 38.7. Approximately 22.9 percent of the population was below the age of 18 and approximately 10.4 percent was above the age of 65.

A greater percentage of Rancho Santa Margarita residents identify as white when compared to Orange County; refer to Table 3-2, *Rancho Santa Margarita and Orange County Racial and Ethnic Composition*. Persons identifying as Asian account for 12.5 percent of the City's population, followed by those reporting two or more races (11.7 percent); "other race" (5.2 percent); Black or African American (1.7 percent); American Indian or Alaska Native (0.5 percent); and Native Hawaiian and Pacific Islander (0.1 percent). Hispanic or Latino persons of any race constitute 20.4 percent of the City's residents compared to 33.9 percent of County residents.

[1] The 2018-2022 American Community Survey (ACS) 5-year estimates is the most current 5-year data profile available. It represents 60 months of collected data and provides the most reliable and largest data set.



Sources: California State Geoportal. Map date: May 15, 2024.

CITY OF RANCHO SANTA MARGARITA

FIGURE 3-1.
REGIONAL LOCATION

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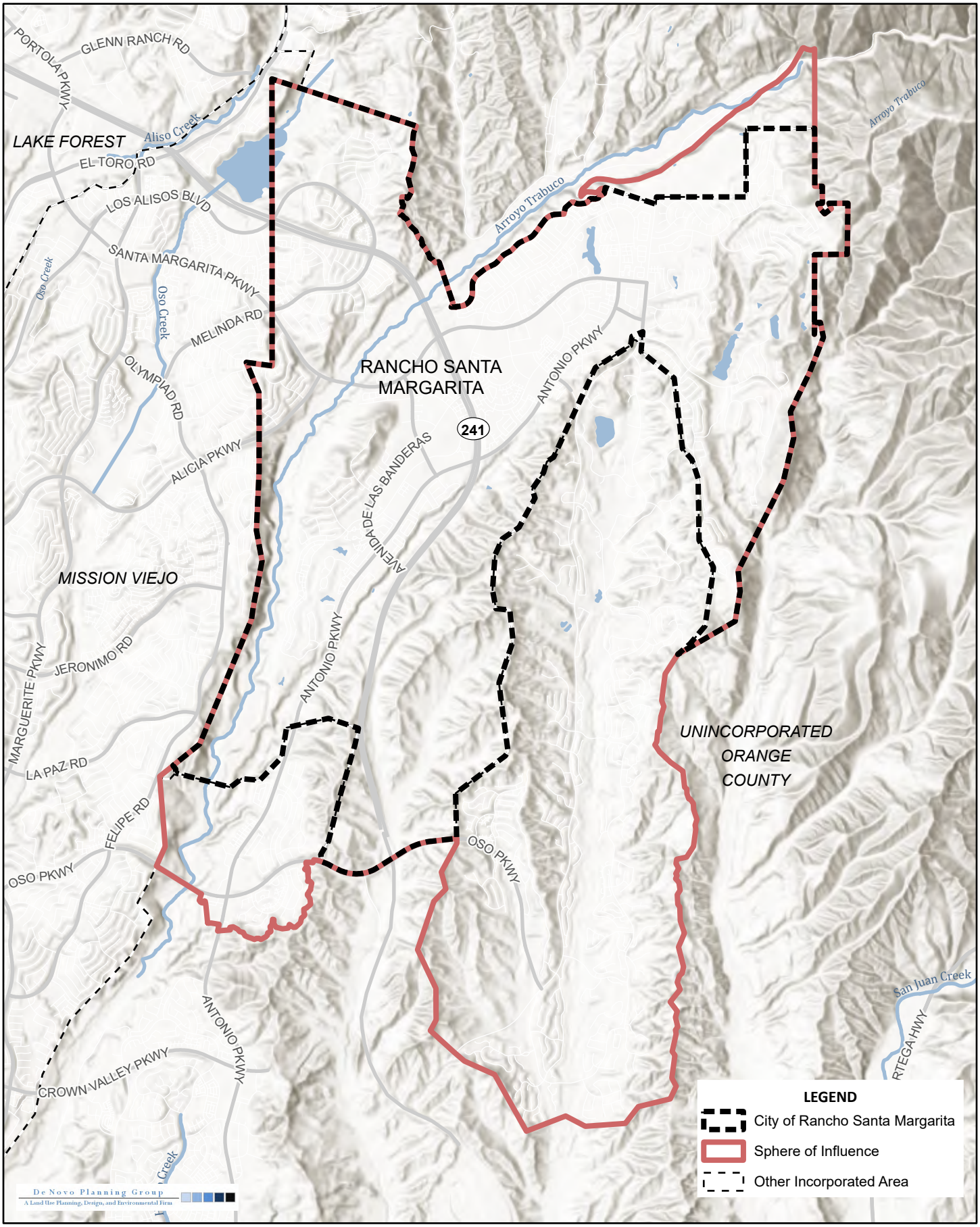

CITY OF RANCHO SANTA MARGARITA

FIGURE 3-2.
CITY AND SPHERE OF INFLUENCE

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO. Map date: May 14, 2024.

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Table 3-2
Rancho Santa Margarita and Orange County Racial and Ethnic Composition (2022)

Race or Ethnicity	Rancho Santa Margarita		Orange County	
	Population	Percentage of Population	Population	Percentage of Population
White	32,623	68.4%	1,594,137	50.2%
Black or African American	819	1.7%	53,753	1.7%
American Indian and Alaskan Native	217	0.5%	19,759	0.6%
Asian	5,947	12.5%	688,905	21.7%
Native Hawaiian and Other Pacific Islander	36	0.1%	9,847	0.3%
Other Race	2,471	5.2%	427,775	13.5%
Two or More Races	5,589	11.7%	381,051	12.0%
Hispanic or Latino (of any race)[1]	9,734	20.4%	1,077,367	33.9%
Total	**47,702**	**100%**	**3,175,227**	**100%**

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2018-2022.
Hispanic or Latino persons are not counted as a separate racial or ethnic category; persons who identify as Hispanic or Latino are also included in other racial or ethnic categories.
Totals may vary slightly due to rounding.

3.3.2 EDUCATIONAL ATTAINMENT

When compared to Orange County, Rancho Santa Margarita residents have a higher level of education attainment; refer to Table 3-3, *Rancho Santa Margarita and Orange County Educational Attainment*. Of the City's population that is 25 years or older, 16.4 percent attained a graduate or professional degree, 33.5 percent attained a bachelor's degree, and 8.2 percent attained an associate degree. Approximately 5.3 percent of adults in Rancho Santa Margarita have not completed high school compared to over 13 percent of adults in the County.

Table 3-3
Rancho Santa Margarita and Orange County Educational Attainment (2022)

Education Attainment (Age 25 and Over)	Rancho Santa Margarita		Orange County	
	Population	Percentage of Population	Population	Percentage of Population
Less than 9th Grade	924	2.8%	160,388	7.3%
9th to 12th Grade, no diploma	826	2.5%	129,070	5.9%
High School Graduate	4,561	13.8%	379,318	17.3%
Some College, No Degree	7,509	22.8%	421,273	19.2%
Associate degree	2,700	8.2%	167,810	7.6%
Bachelor's Degree	11,063	33.5%	591,937	26.9%
Graduate or Professional Degree	5,421	16.4%	347,881	15.8%
Total	**33,004**	**100%**	**2,197,677**	**100%**

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2018-2022.
Totals may vary slightly due to rounding.

3.3.3 EMPLOYMENT

Of the 38,176 residents over 16 years of age in the City, 28,377 were in the labor force. Out of the 28,366 people in the civilian labor force, 27,433 (71.9 percent) were employed and 933 (2.4 percent) were unemployed. The educational services and health care/social services sector employed the largest number of City residents (20.2 percent), followed by professional scientific, management, and administrative and waste management services (16.3 percent) and manufacturing (10.7 percent). The median household income in the City was $150,146. While approximately 18.1 percent of employees work from home, a majority of Rancho Santa Margarita residents commute outside of the City for work. The average commute travel time is 27 minutes.

3.3.4 HOUSING

As discussed in the City's 2021-2029 Housing Element, there are 17,346 housing units within the City. The most prevalent type of housing within Rancho Santa Margarita is single family detached units, consisting of approximately 53.9 percent of the housing stock. Most of the housing was built between 1980 and 2001. The California Department of Finance estimates an average household size of 2.69 persons per household.[2]

3.4 LAND USES AND EXISTING DEVELOPMENT

Development of the City is guided by its General Plan. The Rancho Santa Margarita General Plan assigns land use designations to all land located within its incorporated boundaries; refer to Figure 3-3, *General Plan Land Use Map*. Rancho Santa Margarita has been primarily developed as a series of Planned Communities prior to incorporation; refer

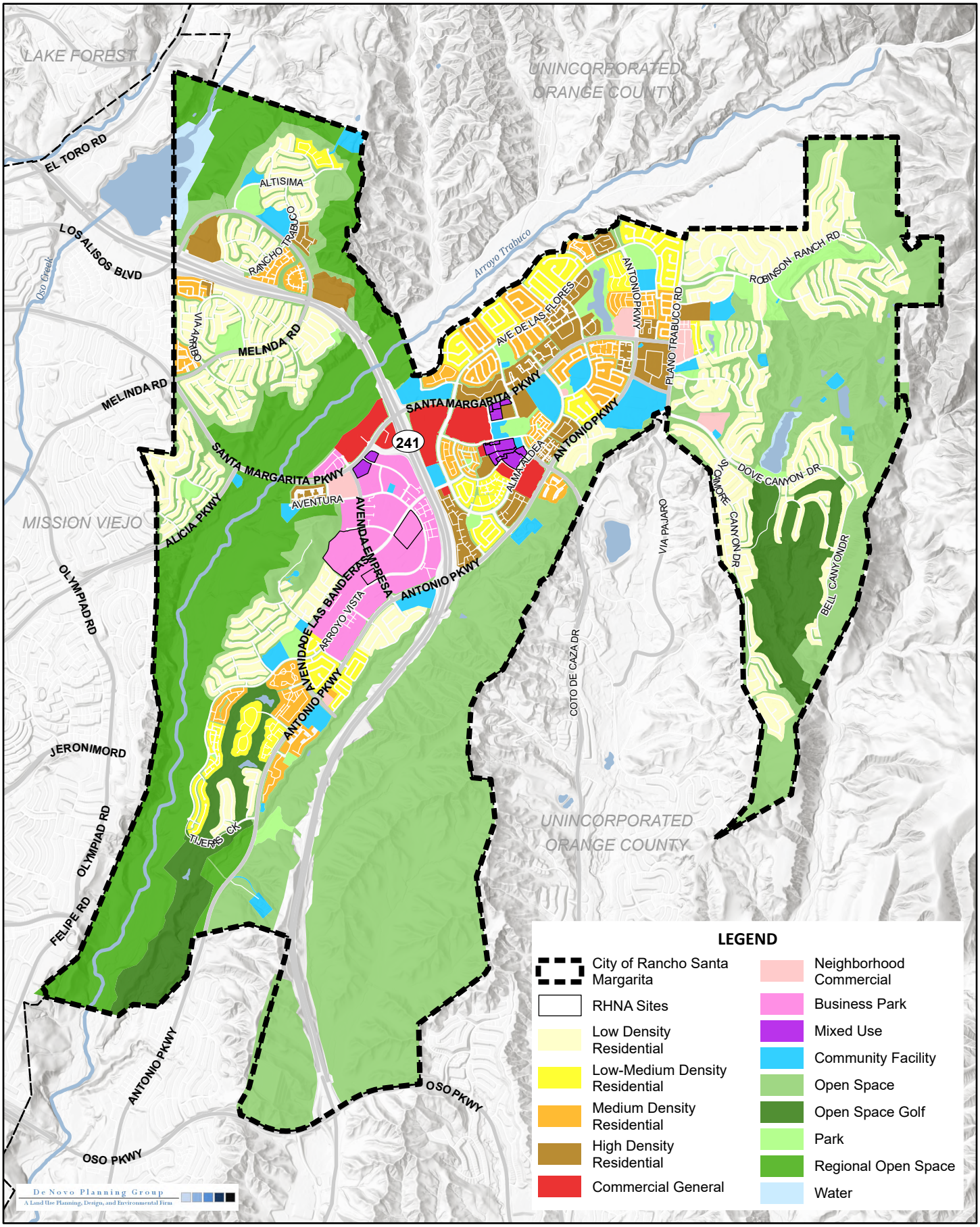
[2] California Department of Finance, *E-5 Population and Housing Estimates for Cities, County and the State, January 2021-2024, with 2020 Benchmark*, May 2024.

to Figure 3-4, *Planned Communities*. Table 3-4, *Land Use Designations*, identifies the current General Plan land use designations and descriptions of the typical uses allowed in each designation.

Table 3-4
Land Use Designations

Land Use	Maximum DUs/Net Acre or Maximum FAR/Net Acre	Summary Description of Land Use Designation
RESIDENTIAL LAND USE		
LDR – Low Density Residential	7.0 du/acre	Single-family detached units on moderate to large lots.
LMDR – Low-Medium Density Residential	11.0 du/acre	Small-lot single-family detached homes, as well as some single-family town homes and duplexes.
MDR – Medium Density Residential	18.0 du/acre	Detached single family homes on smaller lots, and attached, town homes, duplexes, multiple-family units such as apartments and condominiums.
HDR – High Density Residential	25.0 du/acre	Attached homes, apartments, condominiums, and senior housing.
COMMERCIAL AND BUSINESS LAND USES		
C – General Commercial	1.0:1 FAR	Retail stores, restaurants, lodging, personal services, business services, and financial services of a citywide or regional nature. Does not promote development of commercial strips.
NC – Neighborhood Commercial	0.6:1 FAR	Retail stores, service stations, restaurants, and services that serve the needs of surrounding neighborhoods.
BP – Business Park	1.0:1 FAR 35 du/acre	Service commercial, retail commercial, office, light industrial, open space, and community facilities (excluding public and private schools). Limited residential development may be permitted on properties designated with Workforce Housing Overlay zoning.
PUBLIC/QUASI-PUBLIC FACILITIES LAND USE		
CF – Community Facility	0.6:1 FAR	Fire stations, police stations, public and private schools, recreation centers, water tanks, utilities, or other community facilities.
OPEN SPACE LAND USES		
P – Parks	0.5:1 FAR	Publicly- or privately-owned and dedicated park lands.
OS – Open Space	N/A	Streams and washes, open space easements, and other private and public open spaces.
OSG – Open Space Golf	0.4:1 FAR	Maintenance and development of golf courses and other private recreational uses.
ROS – Regional Open Space	0.4:1 FAR	Sections of O'Neill Regional Park within the City. Active and passive recreational uses consistent with Orange County regulations.

Land Use	Maximum DUs/Net Acre or Maximum FAR/Net Acre	Summary Description of Land Use Designation
OTHER LAND USES		
FPC – Future Planned Community	To Be Determined	Denotes large areas of land within the Sphere of Influence for detailed planning and development for residential, commercial, community facility, recreation and open space uses.
MU – Mixed-Use	35.0 du/acre 1.0:1 FAR	Provides for combinations of uses typically found within the HDR and C designations. Mixed-use can take place in a single structure, on a single parcel, or on adjacent parcels.
City of Rancho Santa Margarita, *Rancho Santa Margarita General Plan*, adopted August 2024.		



Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO. Map date: April 1, 2024.

CITY OF RANCHO SANTA MARGARITA

FIGURE 3-3.
GENERAL PLAN LAND USE MAP

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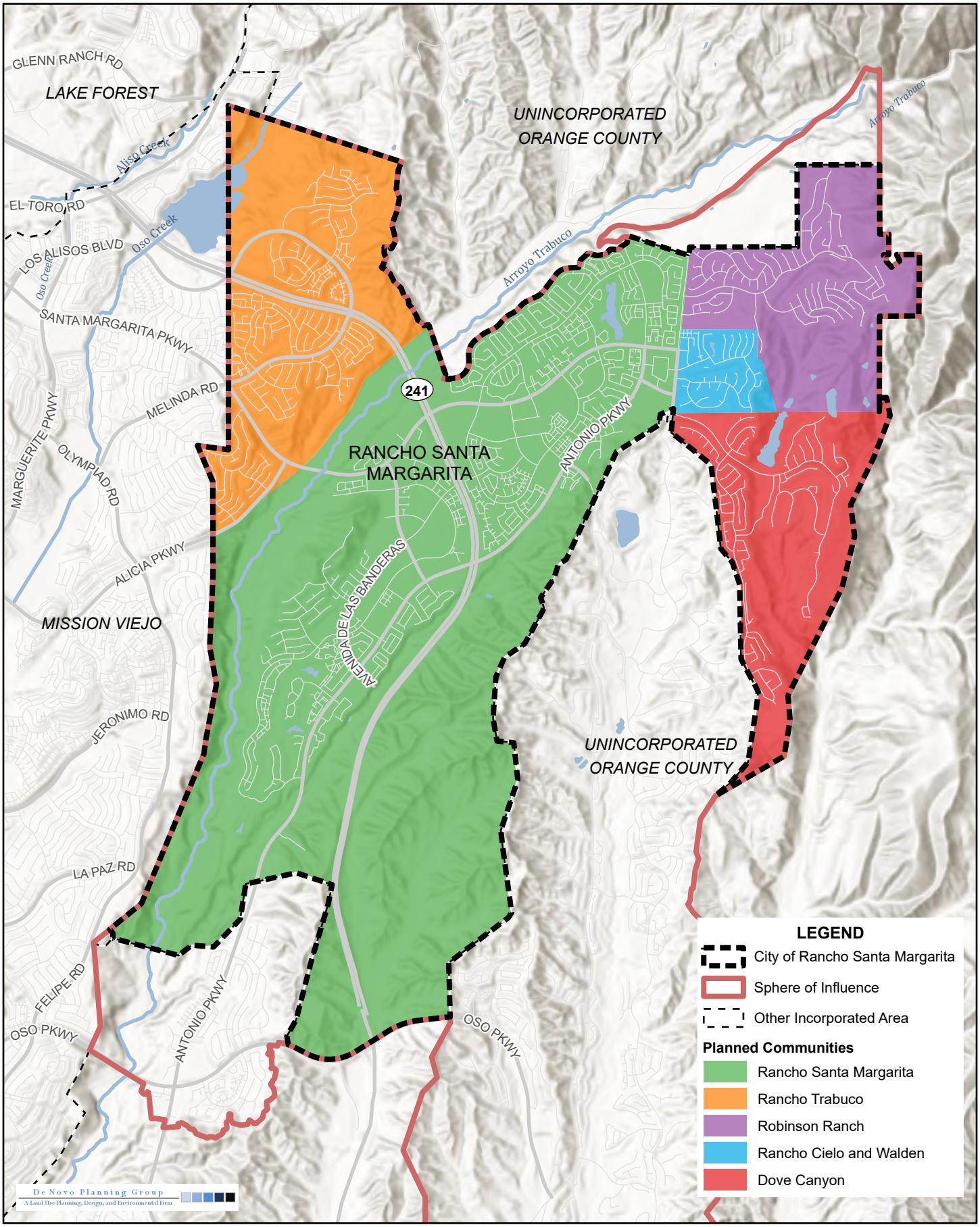

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO. Map date: May 14, 2024.

CITY OF RANCHO SANTA MARGARITA

FIGURE 3-4.
PLANNED COMMUNITIES

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Rancho Santa Margarita has been primarily developed as a series of Planned Communities prior to incorporation. The Planned Communities comprising the incorporated City include:

- Rancho Santa Margarita Planned Community
- Rancho Trabuco Planned Community
- Robinson Ranch Planned Community
- Dove Canyon Planned Community

The area located southwest of the Robinson Ranch Planned Community is referred to as the Rancho Cielo and Walden Communities. These areas were developed consistent with the Orange County development code.

While the Planned Communities once set forth the zoning and site development standards for specific areas within the City, they were replaced by the Rancho Santa Margarita Zoning Code (RSMZC) in 2007. The Planned Communities now serve as a guide for the character of development in specific geographic areas of the City. At this time, the Planned Communities have been built out, leaving little opportunity for significant new development.

Existing (on-the ground) development within the City limits are identified in Table 3-5, *Existing Land Use Summary*.

Table 3-5
Existing Land Use Summary

Land Use	Acres	Existing Dwelling Units	Existing Square Feet
Low Density Residential	895.5	6,033	--
Low-Medium Density Residential	228.2	2,259	--
Medium Density Residential	263.3	4,080	--
High Density Residential	251.4	5,396	--
General Commercial	108.6	--	728,048
Neighborhood Commercial	43.5	--	363,454
Business Park	265.5	--	3,384,024
Mixed Use	26.6	--	326,818
Community Facility	219.4	--	1,207,707
Parks	154	--	3,616
Open Space	3,162.6	--	10,000
Open Space Golf	457.1	--	67,026
Regional Open Space	1,164.3	--	--
Water	71.2	--	--
Right-of-Way (approximate)	1,061.3	--	--
Total	**8,372.5**	**17,768**	**6,090,193**

Source: City of Rancho Santa Margarita, *Rancho Santa Margarita General Plan*, adopted August 2024.
This data may vary from US Census ACS 5-year summary data due to the methodology and use of estimates.

As indicated in Table 3-5, there are 17,768 residential dwelling units and approximately 6.1 million square feet of commercial, business park, and community facilities uses within the City. Over 4,900 acres within the City are comprised of open space and park uses. Approximately 1,061 acres are right-of-way.

3.5 DEVELOPMENT TRENDS AND FUTURE DEVELOPMENT

The City Council adopted the 2020 Update to the Rancho Santa Margarita General Plan on March 11, 2020. The General Plan Update was a strategic update focused on five elements: Conservation/Open Space, Economic Development, Land Use, Noise, and Safety. The Circulation Element was last updated in 2014 and is currently in the process of being updated; the Safety and Housing Elements were updated in 2022; and the Land Use Element was updated in August 2024.

Most of Rancho Santa Margarita is developed, and limited vacant land is available for future new development. As a result, future growth in Rancho Santa Margarita will occur through reuse and revitalization of existing development. While the General Plan makes assumptions for growth based on a 20-year planning period, the LHMP is focused on a five-year horizon. Accordingly, some of the longer-term development trends associated with the General Plan may not occur within the period covered by this LHMP. In general, it is anticipated that new development will occur in a similar manner to historical development patterns in the City with only a limited number of parcels being developed at the maximum density or intensity. Although development is not currently proposed, there are future planned developments considered within the General Plan, described below.

Northeast Future Planned Community. The unincorporated area located north of Robinson Ranch is known as the Northeast Future Planned Community and designated Future Planned Community (FPC) on the Land Use Policy Map. This area consists of approximately 300 acres within the unincorporated jurisdiction of Orange County and is part of the Foothill- Trabuco Specific Plan adopted by the County in 1991. Future development of the Northeast Future Planned Community is expected to occur following annexation of the properties by the City and City approval of a Specific Plan ensuring that new development is compatible with the character of Rancho Santa Margarita. The City will work with the Local Agency Formation Commission (LAFCO) and owners of the area to prepare appropriate development plans and to annex this area into the City.

Chiquita Ridge. The City owns an approximately 92-acre property, known as Chiquita Ridge, along the east side of Antonio Parkway just south of Cañada Vista Park. Any future development of the property is subject to the terms of the Settlement Agreement which transferred the property to City ownership. According to the Settlement Agreement, 55 acres of the property may be developed, and 37 acres must be preserved for natural habitat. The property is currently designated as open space; therefore, future development would require the land use designation to be revised.

Mixed-Use. As properties transition and areas revitalize, there is the potential for new development to provide a mixture of residential and commercial uses within a single structure, on a single parcel, or on adjacent parcels. Through adoption of the Housing

Element in 2022, Mixed-Use sites within the Town Center and along Santa Margarita Parkway have been selected to meet the City's RHNA as shown on Figure 3-3.

In 2022, the City adopted the 2021-2029 Housing Element Update. The 2021-2029 Housing Element was required to include an inventory of land suitable and available for residential development to meet the City's regional housing need allocation (RHNA) of 680 units. However, the allocation is a planning target and the actual development of units is subject to market conditions and private development.

The City subsequently amended the General Plan Land Use Element, Zoning Code and Zoning Map, and adopted new objective development standards, in order to implement the Housing Element. The 2021-2029 Housing Element identifies candidate sites as viable for future residential and mixed-uses. These sites are located within the business park and commercial core areas of the City, generally centered around SR-241 and located between Santa Margarita Parkway and Antionio Parkway. As part of the identification of sites, environmental constraints, including natural hazards were considered. The sites are located within an area of the City considered to have reduced vulnerabilities specific to natural hazards.

Since adoption of the 2019 LHMP, the City has experienced limited development consisting of two accessory dwelling units (ADUs) at Via Serena and Via Belmonte and a few buildings in the Business Park added square footage based upon their business's needs. This new development has not resulted in a significant increase in vulnerability relative to a specific hazard. There is no known or anticipated development within the five-year planning period of the LHMP that would significantly increase the vulnerability for the hazards affecting Rancho Santa Margarita. New development and redevelopment occurring in the City provides for hazard vulnerability and risk reduction to the extent feasible. These reductions occur due to development under the most current building code requirements and regulations that proactively reduce vulnerabilities specific to the location and type of development.

Rancho Santa Margarita has experienced a reduction in population between 2017 (49,078 persons) and 2022 (47,702 persons).[3] There is no indication that the reduction in population has been concentrated to a particular area of the City. In general, many California cities have experienced reductions in population over the past several years associated with a variety of factors, including but not limited to, COVID-19 associated deaths, a falling birthrate, a drop in international migration, and Californians moving to other states.[4]

3.6 INFRASTRUCTURE SYSTEMS

Infrastructure systems within the City, such as roadways, water and wastewater facilities, electricity, and natural gas, provide vital community and individual functions. These facilities and distribution systems are primarily owned, operated, and maintained by

[3] US Census American Community Survey 5-Year Estimates 2013-2017 and U.S. Census Bureau, American Community Survey 5-Year Estimates 2018-2022.
[4] Public Policy Institute of California, *What's Behind California's Recent Population Decline – and Why It Matters*, https://www.ppic.org/publication/whats-behind-californias-recent-population-decline-and-why-it-matters/, October 2023, accessed September 8, 2024.

outside agencies, and not the City. The ability for infrastructure systems to remain operational during hazard events and emergencies will contribute to the City's ability to withstand or recover sooner from hazard events.

3.6.1 TRANSPORTATION

Regional access to the City is provided via the SR-241, State Route 133 (SR-133), and Interstate 5 (I-5). SR-241 passes through the central portion of the City in a north-south direction while SR-133 and I-5 travel in a north-south direction west of the City, connecting with neighboring south Orange County cities. There are three major arterial roadways providing primary ingress and egress in the City: Santa Margarita Parkway, Antonio Parkway, and Alicia Parkway. Access to the eastern portion of the City, requires roadways to span Trabuco Canyon. Inspection and maintenance of the City's transportation facilities are critical to ensuring their protection against disasters, such as earthquakes.

3.6.2 WATER AND WASTEWATER

Rancho Santa Margarita is served by two water providers: the Santa Margarita Water District (SMWD) and the Trabuco Canyon Water District (TCWD). TCWD serves the eastern part of Rancho Santa Margarita (Robinson Ranch, Trabuco Highlands, Dove Canyon, Rancho Cielo, and Walden Communities). The remaining portions of the incorporated City are served by SMWD.

SMWD's system consists of 1,385 miles of water (potable and recycled) and sewer lines, 34 potable water tank reservoirs, one emergency storage potable water reservoir, eight recycled water tank reservoirs, four open-air recycled water reservoirs, two sewage treatment plants, and 20 sewer lift stations.[5] TCWD's water system consists of 66 miles of pipelines, nine pump stations, and eight treated water storage reservoirs.[6] Major facilities include the Robinson Ranch Reclaimed Water Reservoir, Dove Lake, and the Trabuco Creek Wells Facility which includes Rose Canyon Well and Lang Well. TCWD's system is interconnected with SMWD and Irvine Ranch Water District (IRWD) to provide reliability. TCWD's wastewater system consists of 36 miles of sewers and interceptors, eight sewer lift stations, and nine miles of force mains.

The SMWD and the TCWD are members of the Municipal Water District of Orange County (MWDOC). The MWDOC is a member of the Metropolitan Water District of Southern California (MWD). Nearly all the MWDOC water supply is purchased from MWD, which imports the water from the Colorado River Aqueduct (a small portion comes from Northern California through the State Water Project).

Since a majority of the City's water supplies are transported from outside of the area, damage to water conveyance systems in and outside of the area could interfere with the ability to provide water to the City.

The SMWD and TCWD are also responsible for the collection of wastewater within the City. SMWD owns and operates the Oso Creek Wastewater Reclamation System and the Chiquita Water Reclamation Plant. Additionally, wastewater from SMWD is also treated

[5] Santa Margarita Water District, *2020 Urban Water Management Plan*, June 2021.
[6] Arcadis U.S., Inc., *Trabuco Canyon Water District 2020 Urban Water Management Plan*, June 2021.

at the 3A Water Reclamation Plant, J.B. Lathan, and Los Alisos Water Recycling Plant. TCWD collects wastewater and reclaims it at the Robinson Ranch Wastewater Treatment Plant and has the capacity to divert wastewater to SMWD Chiquita Water Reclamation Plant. Water reclaimed by both SMWD and TCWD is used for irrigation purposes only. Damage to wastewater conveyance infrastructure and treatment facilities could occur as a result of a hazard event. Depending upon the nature and extent of the damage, a leak in a sewer pipe could pose a risk to the community's health and the environment and damage to a treatment facility could reduce capacity at the facility.

SMWD and TCWD are participating agencies in the Orange County Regional Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The MJHMP is comprised of the primary plan and 19 jurisdiction-specific annexes. SMWD and TCWD have identified mitigation actions to reduce the risk of damage to water and wastewater facilities and improve overall resiliency of their infrastructure systems and operations.

3.6.3 ELECTRICITY

Southern California Edison provides electricity to Rancho Santa Margarita. Electricity is distributed from power plants through power lines and substations. One substation, the Santa Margarita Substation, is located within the City northwest of Santa Margarita Parkway and SR-241. Power lines within the City are primarily located underground, with the exception of aboveground utilities at the Santa Margarita Parkway bridge and two at Plano Trabuco. Damage to the substation or the larger distribution system outside of the City could result in power loss to the City. More localized power losses can also occur in the event underground transmission lines are damaged.

3.6.4 NATURAL GAS

Southern California Gas provides gas service to Rancho Santa Margarita. There are no major gas transmission lines traversing the City; however, there are major transmission lines located within other areas of Orange County. Damage to these facilities could interfere with natural gas service in the City. Similarly, more localized disruptions could occur in the event local transmission lines are damaged.

3.7 CRITICAL FACILITIES AND FACILITIES OF CONCERN

The LHMP Planning Team identified 79 critical facilities and facilities of concern for incorporation in the hazard vulnerability/risk analysis; refer to Table 3-6 and Figure 3-5, *Critical Facilities and Facilities of Concern*. Critical facilities and facilities of concern are owned, operated, and maintained by various agencies, not just the City. Critical facilities serve an important function in the operations of the municipal government and in serving the community. These facilities include City Hall, fire station, community center, major transportation systems, water and wastewater facilities, communication facilities, and utility facilities. Damage to these facilities caused by a hazard event has the potential to impair response and recovery and may lead to disruption of services. Facilities of concern are less vital to safety and well-being, but may assist in evacuations, serve as assembly points or temporary shelters, or provide a supportive role in preparing for and recovering from hazard events.

Where available, the LMHP Planning Team identified a facility's potential loss value, comprised of replacement and contents for each facility. If a facility is completely destroyed in a hazard event, the replacement and contents values indicate the cost to replace the entire facility and all of its contents. Typically, the cost to repair a damaged facility would be less than the replacement value. While the replacement and contents values are used throughout this plan to estimate potential losses, it is noted that the actual cost to recover from a hazard event will depend on the type and magnitude of the event.

Table 3-6
Rancho Santa Margarita Critical Facilities and Facilities of Concern

ID	Name	Facility Type	Critical Facility	Facility of Concern	Owner/Responsible Agency
1	RSM City Hall	Government	X		City of Rancho Santa Margarita
2	RSM Post Office			X	Federal Government
3	RSM Library			X	County of Orange
4	RSM Postal Annex			X	Federal Government
5	OCFA Station 45 Fire Station		X		Orange County Fire Authority
6	Cox Master Telecommunications Facility	Communications	X		
7	Pac Bell Central Switch			X	
8	Santa Margarita Substation	Electrical	X		Southern California Edison
9	Community Center	Community	X		City of Rancho Santa Margarita
10	RSM Beach Club and Lake			X	SAMLARC
11	Arroyo Vista K-8	Public School		X	Capistrano Unified School District/State
12	Tijeras Creek Elementary			X	
13	Cielo Vista Elementary			X	Saddleback Valley Unified School District/State
14	Melinda Heights Elementary			X	
15	Robinson Elementary			X	
16	Trabuco Mesa Elementary			X	
17	RSM Intermediate			X	
18	Mission Hills Christian School	Private School		X	
19	Rancho Viejo Montessori School			X	
20	Santa Margarita Catholic High School			X	
21	St. Junipero Serra Catholic School			X	
22	St. John's Episcopal School			X	

Table 3-6
Rancho Santa Margarita Critical Facilities and Facilities of Concern

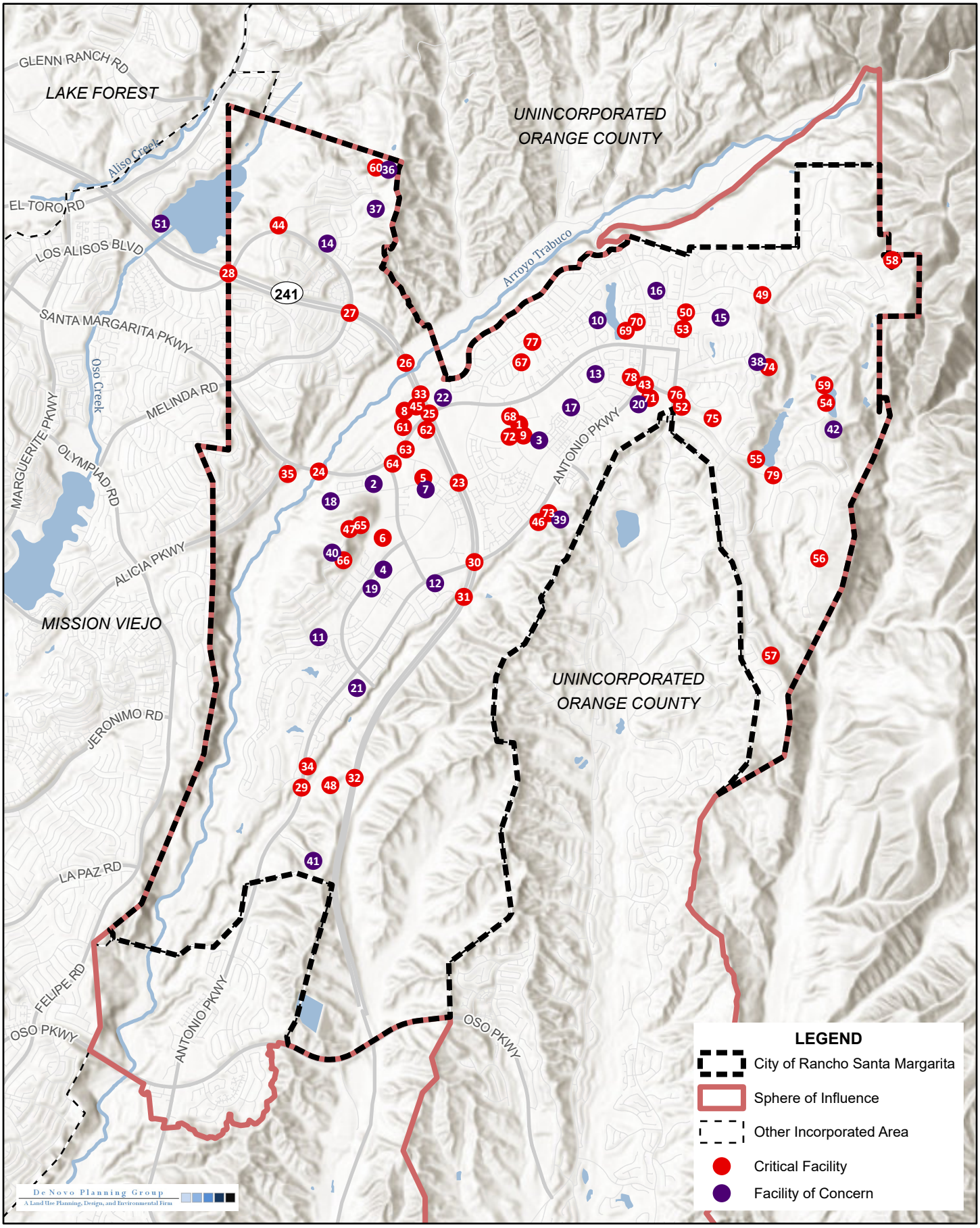
ID	Name	Facility Type	Critical Facility	Facility of Concern	Owner/Responsible Agency
23	Banderas Bridge	Transportation	X		Caltrans
24	Santa Margarita Bridge (#1)		X		City of Rancho Santa Margarita
25	Santa Margarita Bridge (#2)		X		Caltrans
26	241 Toll Road Bridge		X		
27	Melinda Road Bridge		X		
28	Los Alisos Bridge		X		
29	Antonio Parkway Bridge (#1)		X		
30	Antonio Parkway Bridge (#2)		X		
31	241 Toll Road/Tijeras Creek		X		
32	Cañada Chiquita Bridge		X		
33	Pedestrian Bridge		X		
34	Plano Lift Station	Sanitary Sewer	X		Santa Margarita Water District
35	Trabuco Lift Station & Pump Station		X		
36	Rancho Trabuco Reservoir	Reservoir		X	
37	Trabuco Ridge Reservoirs (two)			X	
38	Starr Reservoir			X	
39	Foothill Reservoir			X	
40	Island Pasture Reservoir			X	
41	Upper Chiquita Reservoir			X	
42	Dove Canyon Reservoir			X	Trabuco Canyon Water District

Table 3-6
Rancho Santa Margarita Critical Facilities and Facilities of Concern

ID	Name	Facility Type	Critical Facility	Facility of Concern	Owner/Responsible Agency
43	Mesa Pump Station	Water Facility	X		Santa Margarita Water District
44	Altisima Pump Station		X		
45	Island Pump Station		X		
46	Foothill Pump Station		X		
47	Island Pasture Pump Station		X		
48	Antonio Pump Station		X		
49	Robinson Ranch Pump Station		X		Trabuco Canyon Water District
50	Plano Trabuco Lift Station & Pump Station	Wastewater and Water Facility	X		
51	Upper Oso Reservoir (with Compressor Building)	Reservoir		X	Santa Margarita Water District
52	Via Allegre Lift Station	Wastewater Facility	X		Trabuco Canyon Water District
53	Heritage Lift Station		X		
54	Trabuco Dam	Dam	X		
55	Dove Dam		X		
56	Bell Canyon Lift Station	Wastewater Facility	X		
57	Barneburg Lift Station		X		
58	Trabuco Reservoirs (two)	Water Reservoir	X		
59	Robinson Ranch Wastewater Treatment Plant	Wastewater Facility	X		

Table 3-6
Rancho Santa Margarita Critical Facilities and Facilities of Concern

ID	Name	Facility Type	Critical Facility	Facility of Concern	Owner/Responsible Agency
60	Macro Wireless Facility	Communication	X		AT&T
61	Macro Wireless Facility		X		Verizon
62	Macro Wireless Facility		X		Sprint
63	Macro Wireless Facility		X		Metro PCS
64	Macro Wireless Facility		X		Sprint
65	Macro Wireless Facility		X		AT&T, Sprint, Verizon, T-Mobile
66	Macro Wireless Facility		X		Sprint
67	Small Cell		X		Verizon
68	Macro Wireless Facility		X		Verizon
69	Macro Wireless Facility		X		Verizon
70	Macro Wireless Facility		X		AT&T, T-Mobile
71	Macro Wireless Facility		X		Sprint
72	Macro Wireless Facility		X		AT&T
73	Macro Wireless Facility		X		Metro PCS, Sprint, AT&T
74	Macro Wireless Facility		X		Sprint, Verizon, AT&T
75	Macro Wireless Facility		X		AT&T
76	Small Cell		X		AT&T
77	Small Cell		X		AT&T
78	Small Cell		X		AT&T
79	Golf Club Lift Station	Wastewater Facility	X		Trabuco Canyon Water District



CITY OF RANCHO SANTA MARGARITA

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO. Map date: August 26, 2024.

FIGURE 3-5.
CRITICAL FACILITIES & FACILITIES OF CONCERN

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SECTION 4.0: RISK AND VULNERABILITY ASSESSMENT

4.1 HAZARD IDENTIFICATION

The first step in developing the risk assessment is identifying the hazards. Federal Emergency Management Agency (FEMA) guidance identifies several hazards that may affect communities. The list of hazards is comprehensive, but not meant to be exhaustive or limit a community from identifying other hazards within their plans. Additionally, a community may not be susceptible to all hazards identified for consideration. In reviewing the previously approved 2019 LHMP for the City, the Planning Team considered the County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan, the California State Hazard Mitigation Plan (SHMP), and the FEMA list of hazards as a reference point and discussed the potential for a specific hazard to affect the community. For the LHMP update, the discussion considered the hazards identified in the 2019 LHMP and previous occurrences within the City and surrounding area and the Planning Team's professional experience and knowledge, as well as review of General Plans and Hazard Mitigation Plans of cities within the surrounding area. Additionally, the 2019 LHMP required Annual Planning Team Review reports that were informative with this update as they assessed how well the 2019 LHMP responded to hazardous events and if new hazards should be included.

Table 4-1, *Rancho Santa Margarita Hazard Identification*, summarizes the Planning Team's discussion and determination of hazards for inclusion in the LHMP. In addition to discussing with the Planning Team, FEMA's National Risk Index was reviewed to confirm the City's risk exposure associated with each natural hazard.

For purposes of the hazard profiles, the Planning Team reconfirmed that some hazards could remain combined or included within a larger hazard category, or be renamed to reflect the specific hazard affecting Rancho Santa Margarita. Therefore, earthquakes, liquefaction, and landslide are all addressed under the heading of Seismic Hazards. Severe Weather includes heavy winds (Santa Ana winds), heavy rains (including El Nino years), and extreme heat. Human-induced hazards include arson, hazardous materials, terrorism, and unexploded ordnance.

Climate change is not a stand-alone hazard but has the potential to exacerbate other natural hazards in the City. As such, the Planning Team determined it would be best to discuss climate change considerations within each applicable hazard profile. Similarly, power outage (both planned and unplanned) could occur as a result of several hazards, resulting in secondary impacts within the community. Power outage is discussed in detail in the Severe Weather Profile and is also cross referenced in other relevant hazard profiles. The following hazards are discussed within the LHMP:

- Dam/Reservoir Failure
- Drought
- Flood
- Human-Induced Hazards
- Landslide/Mudflow
- Pest Management and Disease Outbreak
- Seismic Hazards
- Severe Weather
- Wildfire

Table 4-1
Rancho Santa Margarita Hazard Identification

Hazards	Identified in Previous (2019) LHMP	Include in LHMP Update?	Discussion of Hazard's Inclusion or Exclusion
Avalanche	No	No	Not applicable to Rancho Santa Margarita
Climate change	Yes	Yes	Climate change is not a stand-alone hazard, but it may change the characteristics of the hazards that affect the community, such as frequency and intensity. Therefore, climate change is discussed within each of the applicable hazard profiles.
Coastal Erosion	No	No	Not applicable due to the distance from the coast.
Coastal Storm	No	No	Not applicable due to the distance from the coast.
Dam/Reservoir Failure	Yes	Yes	Dams and reservoirs occur within and around the City and their potential failure could impact the City.
Pest Management and Disease Outbreak	Yes	Yes	O'Neill Regional Park, partially located within the City, has experienced some issues with infestation of trees due to the borer beetle. Other vector control concerns include mosquitos. Additionally, COVID-19 has heightened the awareness of the potential for infectious disease. Thus, the Planning Team determined the hazard was of enough significance to be included within the LHMP.
Drought	Yes	Yes	The City depends on groundwater and imported surface water, both of which are susceptible to drought.
Earthquake Fault Rupture	Yes	Yes	The City is located within a seismically active area and is subject to earthquakes. Hazards associated with earthquakes are addressed in Seismic Hazards
Expansive Soils	No	No	Expansive soils are not a significant concern within the City.
Extreme Heat	Yes	Yes	Although extreme heat conditions are relatively rare in Rancho Santa Margarita, due to the increase in frequency and the affect when combined with other hazards, such as drought and wildfires, the Planning Team determined the hazard should be included within the LHMP.
Flood	Yes	Yes	FEMA-identified floodplains associated with major creeks are located within the City. Some localized flooding has also occurred, typically related to heavy rain events.
Geological Hazards	No	No	Geologic hazards within the City are associated with seismic activity and therefore are addressed under Seismic Hazards.

Hazards	Identified in Previous (2019) LHMP	Include in LHMP Update?	Discussion of Hazard's Inclusion or Exclusion
Hailstorm	No	No	The City does not typically experience hailstorms.
Hazardous Materials	Yes	Yes	Hazardous materials are typically associated with the transport or use of hazardous materials and are included as part of Human-Induced Hazards.
Human-Caused Hazards	Yes	Yes	The Planning Team identified human-induced hazards specific to the City, which include arson, hazardous materials, terrorism and unexploded ordnance.
Hurricane	No	No	Hurricanes do not occur within the City.
Land Subsidence	No	No	Rancho Santa Margarita is not subject to land subsidence.
Landslide/Mudflow	Yes	Yes	Portions of the City have experienced landslides and mudflows.
Lightning	No	No	Significant lightning events do not typically occur within the City.
Liquefaction	Yes	Yes	There are areas within the City identified as having the potential for liquefaction. Liquefaction is addressed under Seismic Hazards.
Sea Level Rise	No	No	Not applicable due to the distance from the coast.
Seismic Hazards	Yes	Yes	The City is in an area susceptible to earthquake ground shaking and associated seismic hazards.
Severe Winter Storm	Yes	Yes	The climate within southern California does not result in ice storms, blizzards, or significant snowfall. Rancho Santa Margarita does experience heavy rain events. For purposes of the LHMP, heavy rain events are profiled under Severe Weather.
Tornado	No	No	Tornadoes do not typically occur within the City.
Tsunami	No	No	The City is not located within or in proximity to a tsunami inundation area.
Volcano	No	No	The City is not located in an active volcano area.
Wildfire	Yes	Yes	Large portions of the City and surrounding area are located in high fire hazard zones.
Wind	Yes	Yes	Regular wind does not occur within the City. The City experiences high wind events associated with Santa Ana wind conditions. Within the LHMP, these events are addressed under the hazard category Severe Weather.
Windstorm	Yes	Yes	Santa Ana winds events are common in Rancho Santa Margarita. For purposes of the LHMP, Santa Ana wind events are profiled under Severe Weather.

4.2 HAZARD PROFILES

This section contains profiles for the hazards identified as having the potential to occur in Rancho Santa Margarita. Each hazard includes a description of the hazard, location where the hazard may occur, severity of the hazard, history of the hazard, and the probability of the hazard's future occurrence.

Probability of future occurrences are based on historical frequencies, statistical probabilities, hazard probability maps, and other available information. Probabilities are defined as follows:

- Unlikely – There may or may not have been historic occurrences of the hazard in the community or region and data suggest that occurrences are unlikely. The chance of future occurrences is less than 1 percent each year.
- Occasional – There may or may not have been historic occurrences of the hazard in the community or region, but data suggest there is a possibility that the hazard will occur in the community. The chance of future occurrences is between 1 to 10 percent each year.
- Likely – There has been historic occurrences of the hazard in the community or region and data suggest it is likely that the hazard will continue to occur in the community. The chance of future occurrences is between 10 to 90 percent each year.
- Highly likely – There has been historic occurrences of the hazard in the community or region and data suggest it is highly likely to continue to occur in the community. The chance of future occurrences is 90 percent or above each year.

4.2.1 DAM/RESERVOIR FAILURE

DESCRIPTION

A dam is a barrier preventing the flow of water or loose solid materials (such as soil or snow) or a barrier built across a watercourse for impounding water. Dams are artificial barriers, which are 25 feet or more in height or have an impounding capacity of 50-acre feet or more. Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause a dam to fail. Dam failure causes downstream flooding that can affect life and property.

Reservoirs are defined as an artificial lake, pond, impoundment or tank, used to store water. Reservoirs can be created on the surface by constructing dams to store water. Additionally, tank reservoirs can be constructed to store water either above ground, on the surface, or below ground. Reservoir failure is the uncontrolled release of impounded water from a reservoir. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism activities can all cause a reservoir to fail. Seismic activity may also cause inundation by the action of a differential movement of a reservoir and the water within, causing shearing or buckling of the reservoir infrastructure.

Dam or reservoir failures are most likely to happen for the following reasons:[1]

- Overtopping, caused by water spilling over the top of a dam; usually a precursor of dam failure because of inadequate spillway design, debris blockage of spillways, or settlement of the dam crest.
- Foundation defects, including settlement and slope instability.
- Cracking caused by natural settling of a dam or seismic movements.
- Inadequate maintenance and upkeep.
- Piping, when seepage through a dam is not properly filtered, soil particles continue to progress and form sinkholes in the dam.

FEMA and the California Governor's Office of Emergency Services (Cal OES) require all dam owners to develop an Emergency Action Plan (EAP) for warning, evacuation, and post-flood actions. In the event of a major dam failure, mutual aid from all levels of government would be required for an extended period of time. Recovery efforts would include the removal of debris, clearing roadways, demolishing unsafe structures, assistance in reestablishing public services, and providing continued care for the affected population.

Dams are regulated by the Department of Water Resources, Division of Safety of Dams (DSOD). DSOD ensures dam safety by:[2]

- Reviewing and approving dam enlargements, repairs, alterations, and removals, and ensuring that the dam appurtenant structures are designed to meet minimum requirements.
- Performing independent analyses to understand dam and appurtenant structures performance, including structural, hydrologic, hydraulic, and geotechnical evaluations.
- Overseeing construction to ensure work is performed in accordance with approved plans and specifications.
- Inspecting each dam on an annual basis to ensure it is safe, performing as intended, and does not have development issues.
- Periodically reviewing the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California.

DSOD is responsible for assigning each jurisdictional dam a downstream hazard potential. The downstream hazard potential is based on potential downstream impacts to life and property should the dam fail when operating with a full reservoir. The downstream hazard

[1] Association of State Dam Safety Officials, *Dam Failure and Incidents*, https://damsafety.org/dam-failures, accessed June 3, 2024.
[2] California Department of Water Resources, *Division of Safety of Dams*, https://water.ca.gov/programs/all-programs/division-of-safety-of-dams, accessed June 4, 2024.

is not related to the condition of the dam or the likelihood of the dam to fail in either the short- or long-term. Dams in southern California usually do not operate at full capacity at all times of the year, and thus hazard risks and classifications are a worst-case scenario assessment. The DSOD definitions for downstream hazards are borrowed from the Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures. FEMA categorizes the downstream hazard potential into three categories – low, significant, and high – DSOD adds a fourth category of extremely high:[3]

- Low: No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.
- Significant: No probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
- High: Expected to cause loss of at least one human life.
- Extremely High: Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.

DSOD uses the U.S. Army Corps of Engineer's National Inventory of Dams condition assessment rating definition as a guideline in assigning condition assessments. A dam safety deficiency is defined as a load capacity limit or other issue that can result in a failure of the dam or appurtenant structure. It is a characteristic or condition that does not meet the applicable minimum regulatory criteria. Conditions assessment definitions are as follows:

Satisfactory — No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable State or federal regulatory criteria or tolerable risk guidelines.

Typical Circumstances:

- No existing deficiencies or potentially unsafe conditions are recognized, with the exception of minor operational and maintenance items that require attention.
- Safe performance is expected under all loading conditions including the design earthquake and design flood.
- Permanent risk reduction measures (reservoir restrictions, spillway modifications, operating procedures, etc.) have been implemented to eliminate identified deficiencies.

[3] California Department of Water Resources, Definitions for Downstream Hazard and Condition Assessment, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-Safety-of-Dams/Files/Publications/Division-of-Safety-of-Dams-Definitions-for-Downstream-Hazard-and-Condition-Assessment.pdf, September 2021, accessed June 4, 2024.

Fair

No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action. Note: Rare or extreme event is defined by the regulatory agency based on their minimum applicable State or federal criteria.

Other Circumstances:

- Lack of maintenance requires attention to prevent developing safety concerns.
- Maintenance conditions may exist that require remedial action greater than routine work and/or secondary studies or investigations.
- Interim or permanent risk reduction measures may be under consideration.

Poor

A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.

Other Circumstances:

- Dam has multiple deficiencies or a significant deficiency that requires remedial work.
- Lack of maintenance (erosion, sinkholes, settlement, cracking, unwanted vegetation, animal burrows, inoperable outlet gates) has affected the integrity or the operation of the dam under normal operational conditions and requires remedial action to resolve.
- Critical design information is needed to evaluate the potential performance of the dam. For example, a field observation or a review of the dam's performance history has identified a question that can only be answered by review of the design and construction history for the dam. Uncertainty arises when there is no design and/or construction documentation available for review and additional analysis is needed to better understand the risk associated with operation under normal operational conditions.
- Interim or permanent risk reduction measures may be under consideration.

Unsatisfactory	A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Typical Circumstances: • A critical component of the dam has deteriorated to unacceptable condition or failed. • A safety inspection indicates major structural distress (excessive uncontrolled seepage, cracks, slides, sinkholes, severe deterioration, etc.), advanced deterioration, or operational deficiencies which could lead to failure of the dam or its appurtenant structures under normal operating conditions. • Reservoir restrictions or other interim risk reduction measures are required. • A partial or complete reservoir drawdown may be mandated by the State or federal regulatory agency.
Not Rated	The dam has not been inspected, is not under State jurisdiction, or has been inspected but, for whatever reason, has not been rated.

LOCATION AND EXTENT

Critical dams and reservoirs located within Rancho Santa Margarita and/or with the potential to inundate parts of the City are identified in Table 4-2, *Dams and Reservoirs in Rancho Santa Margarita* and shown on Figure 4-1, *Dams and Reservoirs*. DSOD's downstream hazard potential and condition assessment for each dam and reservoir are also provided in Table 4-2. It should be noted that the Upper Oso Reservoir is partially located within the northwestern portion of the City; however, according to DSOD data, the Upper Oso Reservoir's inundation area does not extend into Rancho Santa Margarita. In addition, Portola is located outside of City limits, but within the City's sphere of influence (SOI).

Additionally, there are several water facilities and treatment plants located within the City as described in Table 4-3, *Water/Wastewater Facilities in Rancho Santa Margarita*. Localized flooding or inundation could result if structural damage occurred to these facilities.

Table 4-2
Dams and Reservoirs in Rancho Santa Margarita

Name	Owner[1]	Dam Purpose	Downstream Hazard Potential	Condition Assessment
Dove Canyon	Dove Canyon Master Association	Flood Risk Reduction, Irrigation, Recreation, Water Supply	High	Satisfactory
Portola[2]	SMWD	Water Supply, Irrigation	High	Satisfactory
Trabuco	TCWD	Water Supply, Other, Irrigation	High	Satisfactory
Upper Chiquita	SMWD	Water Supply	Extremely High	Satisfactory
Upper Oso[3]	SMWD	Water Supply, Other, Irrigation	Extremely High	Satisfactory

Note:
1. TCWD = Trabuco Canyon Water District and SMWD = Santa Margarita Water District.
2. Dam/reservoir is located outside of City limits, but within the City's sphere of influence (SOI).
3. Dam/reservoir inundation area does not extend into Rancho Santa Margarita.

Source: Department of Water Resources, Division of Safety of Dams, *Dams Within Jurisdiction of the State of California, Dams Listed Alphabetically by Dam Name*, September 2023; National Inventory of Dams, *Dams of the Nation*, https://nid.sec.usace.army.mil/#/, accessed September 21, 2024.

Table 4-3
Water/Wastewater Facilities in Rancho Santa Margarita

Name	Type	Jurisdiction[1]
Altisima Pump Station	Water Facility	SMWD
Antonio Pump Station	Water Facility	SMWD
Barneburg Lift Station	Water Facility	TCWD
Bell Canyon Lift Station	Water Facility	TCWD
Chiquita Ridge Wastewater Treatment Plant	Treatment Plant	SMWD
Foothill Pump Station	Water Facility	SMWD
Heritage Lift Station	Water Facility	TCWD
Mesa Pump Station	Water Facility	SMWD
Plano Lift Station	Sanitary Sewer	SMWD
Plano Trabuco Lift Station & Pump Station	Water Facility	TCWD
Robinson Ranch Pump Station	Water Facility	TCWD
Robinson Ranch Wastewater Treatment Plant	Treatment Plant	TCWD
Trabuco Creek Wells Facility	Water Facility	TCWD
Trabuco Lift Station & Pump Station	Sanitary Sewer	SMWD
Trabuco Pump Station	Water Facility	SMWD
Via Allegre Lift Station	Water Facility	TCWD

Note: 1. TCWD = Trabuco Canyon Water District and SMWD = Santa Margarita Water District

Source: City of Rancho Santa Margarita, Trabuco Canyon Water District, and Santa Margarita Water District.

The geographic extent from dam or reservoir failure is dependent on the type of infrastructure and amount of water stored at the time of the hazard incident. Development of maps that show inundation areas in the event of dam failure is the responsibility of the dam's owner. Inundation maps have been prepared as part of the EAP effort through DSOD and Cal OES. Small areas of the City are located within dam inundation areas; refer to Figure 4-1. Inundation areas primarily occur in the Robinson Ranch and Dove Canyon Planned Community areas within the eastern portion of the City, although the inundation area would be limited to the Dove Canyon Golf Club and

Dove Canyon open space area. Along the southern boundary, adjacent to SR-241 and Oso Parkway, small portions of the City are located within inundation areas associated with Upper Chiquita. While a portion of Upper Oso is located along the northwestern boundary of the City, the inundation area associated with this dam does not extend into Rancho Santa Margarita. Additionally, the inundation area associated with Portola occurs south of City limits but within the SOI. The inundation areas include major roadways such as SR-241 and residential uses.

West of Rancho Santa Margarita, Lake Mission Viejo is located adjacent to the City and could pose a concern in case of failure due to the proximity of the Lake to Alicia Parkway (a major ingress and egress to Rancho Santa Margarita). Smaller flood control improvements associated with Lake Mission Viejo such as canals, culverts, levees, and retention basins could suffer structural damage during an earthquake that could affect the City. According to the General Plan, 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.

PREVIOUS OCCURRENCES

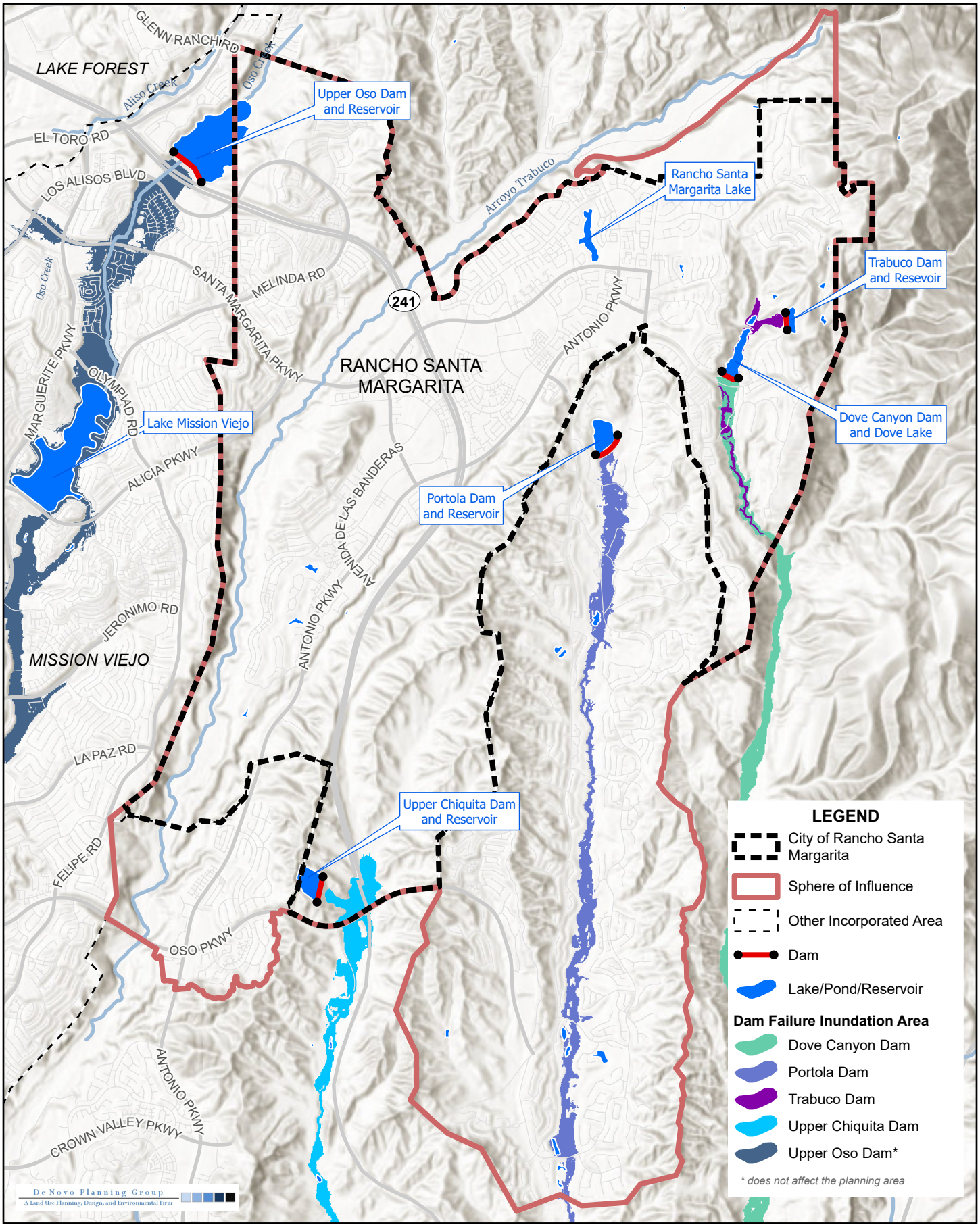
Rancho Santa Margarita (along with the rest of Orange County cities) has never experienced a major dam failure. The closest dam failures to the City occurred in the City of Los Angeles (St. Francis Dam Disaster of 1928 and Baldwin Hills Dam Disaster of 1963). The City of Westminster in north Orange County experienced a reservoir (tank) failure in 1998. No other incidents have occurred.[4]

PROBABILITY OF FUTURE OCCURRENCES

The primary hazards that could cause failure of the reservoirs and their associated dams are strong earthquake ground shaking, seiche, and liquefaction. All of the sites listed in Table 4-2 would be subject to seismic ground shaking, as is the entire southern California region, due to the presence of numerous major faults; refer to the Seismic Hazards Profile for more information. In addition, portions of Upper Oso are within a mapped liquefaction zone; and portions of Trabuco and Upper Chiquita are within a mapped landslide zone.

As there has only been one water storage structure failure in over one hundred years of Orange County history, the probability for future events is anticipated to remain low. However, dam/reservoir failure resulting in flooding within the community could occur due to severe seismic activity. Since the Baldwin Hills Dam failure in 1963, the State of California implemented stringent standards, regulations, and regular inspections. Additional regulations were put into place after the Oroville Dam crisis in 2017, triggering additional inundation mapping and emergency preparedness planning. Additionally, as shown in Table 4-2, all dams with the potential to inundate parts of Rancho Santa Margarita have received a condition assessment rating of "satisfactory" by the DSOD. Therefore, the probability of future occurrences of reservoir or dam failure is considered to be unlikely.

[4] Municipal Water District of Orange County, *Orange County Regional Water and Wastewater Hazard Mitigation Plan, Final*, August 2019.



CITY OF RANCHO SANTA MARGARITA

FIGURE 4-1.
DAMS AND RESERVOIRS

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; DWR. Map date: August 26, 2024.

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CLIMATE CHANGE

Dam/reservoir failure is not directly correlated to climate change within Rancho Santa Margarita. Dam and reservoir failure could be caused by seismic activity, which is also not caused by climate change. However, ground failure (due to oversaturated soils) compromising infrastructure integrity or heavy rains overtopping dams could occur. Repetitive severe storm events could increase "wear and tear" and require additional maintenance and infrastructure improvements to protect dam and reservoir integrity and function. Largely, dam and reservoir operations occur outside of weather patterns and are not impacted by them.

4.2.2 DROUGHT

DESCRIPTION

Drought in its simplest definition is an extremely dry climatic period where the available water falls below a statistical average for a region. Drought is also defined by factors other than rainfall, including vegetation conditions, agricultural productivity, soil moisture, water levels in reservoirs, and stream flow. Droughts or water shortages are a gradual phenomenon, occurring over multiyear periods and increasing with the length of dry conditions. When precipitation is less than normal for a period, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to water in wells increases. If dry weather persists and water supply problems develop, the dry period can become a drought. Drought cycles are common in southern California and are influenced by cyclical El Niño and La Niña events.

The term "drought" can have different meanings depending on how a water deficiency affects day to day activities. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:

- Agricultural – Agricultural drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.

- Hydrological – Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.

- Meteorological – Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.

- Socioeconomic – Drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply because of weather-related supply shortfall. It may also be called a water management drought.

Although climate is a primary contributor to hydrological drought, other factors such as changes in land use (i.e., deforestation), land degradation, and the construction of dams

all affect the hydrological characteristics of a region. Since regions are interconnected by natural systems, the impact of meteorological drought may extend well beyond the borders of the precipitation-deficient area. Changes in land use upstream may alter hydrologic characteristics such as infiltration and runoff rates, resulting in more variable stream flow and a higher incidence of hydrologic drought downstream. Land use change is one-way human actions alter the frequency of water shortage even when no change in precipitation has been observed.[5]

Droughts cause public health and safety impacts, as well as economic and environmental impacts. Public health and safety impacts are primarily associated with catastrophic wildfire risks and drinking water shortage risks for small water systems in rural areas and private residential wells. Examples of other impacts include costs to homeowners due to loss of residential landscaping, degradation of urban environments due to loss of landscaping, agricultural land fallowing and associated job loss, degradation of fishery habitat, and tree mortality with damage to forest ecosystems. Drought conditions can also result in damage to older infrastructure that is located within dry soils with potential to leak or break. Dead or dying vegetation poses a risk to falling and damaging structures and infrastructure systems.

In Orange County, drought conditions typically result in implementation of large-scale conservation efforts, reducing water supplies to customers and altering the pricing system by implementing higher rates for water usage that exceeds certain levels (i.e., wasteful). Higher rates that may be imposed during a drought could have disproportionate impacts on lower-income households. Reduction in groundwater supplies during drought conditions can also result in the need for water agencies that have high reliance on local groundwater supplies to purchase larger amounts of imported water. Drought conditions have also resulted in drier brush and an increase in the size and severity of wildfires; refer to the Wildfire Hazard Profile for further discussion.

LOCATION AND EXTENT

Droughts are generally widespread events that could easily affect the entire City of Rancho Santa Margarita, and the larger Orange County region. The geographic extent of drought conditions could extend to every resident and business owner receiving water from TCWD and SMWD, the water suppliers for the City. Both TCWD and SMWD rely on imported water from other regions (e.g., Colorado River and northern California) via aqueducts. As a result, droughts can be caused or made worse by conditions in the regions in which the water originates.

Drought severity depends on numerous factors, including duration, intensity, geographic extent, as well as regional water supply demands by humans and vegetation. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity. The magnitude of drought is usually measured in time and the severity of the hydrologic deficit.

[5] National Drought Mitigation Center, *Drought Basics*, https://drought.unl.edu/Education/DroughtBasics.aspx, accessed June 3, 2024.

The U.S. Drought Monitor is a map released weekly that indicates the portions of the United States that are experiencing drought and the severity of the drought based on five classifications: abnormally dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought: moderate (D1), severe (D2), extreme (D3), and exceptional (D4); refer to Table 4-4, *Drought Severity Classification*.

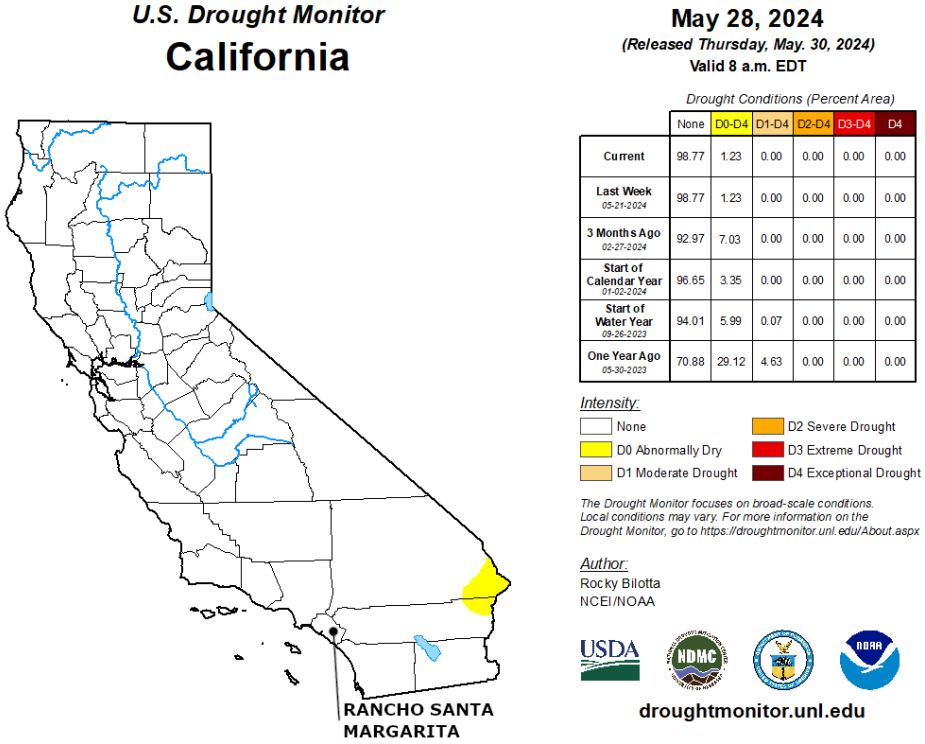
Table 4-4
Drought Severity Classification

Category	Description	Possible Impacts
D0	Abnormally Dry	Active fire season begins; dryland crop germination is stunted; soil is dry; snowpack is minimal.
D1	Moderate Drought	Dryland pasture growth is stunted; landscaping and gardens need irrigation earlier; wildlife patterns begin to change; stock ponds and creeks are lower than usual.
D2	Severe Drought	Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; river flows decrease; reservoir levels are low and banks are exposed.
D3	Extreme Drought	Fire season lasts year-round; water conservation rebate programs increase; water use restrictions are implemented.
D4	Exceptional Drought	Water shortages are widespread; surface water is depleted; poor air quality affects health; fields are left fallow.
Source: U.S. Drought Monitor, *Drought Classification,* https://www.droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx, accessed June 3, 2024; U.S. Drought Monitor, California, https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA, accessed June 3, 2024.		

The Drought Monitor is not a forecast but looks backward; providing a weekly assessment of drought conditions based on how much precipitation did or did not fall. Because drought is a slow-moving hazard, it may take more than one good rainfall to end a drought, especially if an area has been in drought for a long time.

Figure 4-2, *Drought Monitor Map*, depicts the drought monitor map, which identifies areas of drought and labels them by intensity as shown in Table 4-4. As of May 28, 2024, south Orange County is classified as "None" by the U.S. Drought Monitor.

Figure 4-2
Drought Monitor Map



Source: United States Drought Monitor, *California*, https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA, accessed June 3, 2024.

PREVIOUS OCCURRENCES

Although defining drought can be challenging across a large geography, California has experienced numerous severe droughts over the past century. FEMA declared one drought emergency for California in January 1977, and other drought emergency declarations have been declared by the State. According to the 2023 State Hazard Mitigation Plan, from 1950 to 2022, there were 11 drought State Emergency Proclamations in California.[6]

Table 4-5, *Historical Droughts*, shows the historical droughts that have occurred in California from 1827 through the present.

[6] California Governor's Office of Emergency Services, *2023 California State Hazard Mitigation Plan*, https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-California-SHMP_Volume-1_11.10.2023.pdf, published August 2023, accessed June 4, 2024.

Table 4-5
Historical Droughts

Date	Area Affected	Notes
1827–1916	Statewide	Multiyear: 1827–29, 1843–44, 1856–57, 1863–64 (particularly extreme), 1887–88, 1897–1900, 1912–13.
1917–21	Statewide except central Sierra Nevada and north coast	Simultaneous in affected areas, 1919–20. Most extreme in north.
1922–26	Statewide except central Sierra Nevada	Simultaneous in effect for entire State only during 1924, which was particularly severe.
1928–37	Statewide	Simultaneously in effect for entire State, 1929–34. Longest, most severe in State's history.
1943–51	Statewide	Simultaneously in effect for entire State, 1947–49. Most extreme in south.
1959–62	Statewide	Most extreme in Sierra Nevada and central coast.
1976–77	Statewide, except for southwestern deserts	Driest 2 years in State's history. Most severe in northern two-thirds of State.
1987–92	Statewide	Moderate, continuing through 1989. Most extreme in northern Sierra Nevada.
2000-2002	Statewide	Most severe in southern California.
2007-2009	Statewide	Twelfth driest 3-year period on record at the time. Most severe in western San Joaquin Valley.
2012–17	Statewide	Most severe California drought on record.
2021-23	Statewide	Drought emergency proclamation issued in April 2021 with additional orders May 2021, July 2021, and October 2021. Drought restrictions eased in March 2023.

Sources: Paulson, R. W., E. B. Chase, R. S. Roberts, and D. W. Moody, Compilers, National Water Summary 1988-89--Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper.
California Department of Water Resources, California's Most Significant Droughts: Comparing Historical and Recent Conditions, February 2015.
California Governor's Office of Emergency Services, *2023 California State Hazard Mitigation Plan*, August 2023.

The most severe drought on record began in 2012 and continued through 2017. On January 17, 2014, the governor of California declared a State drought emergency, and on April 1, 2014 the governor announced the first-ever mandatory 25 percent statewide water use reduction and a series of actions to help save water, increase enforcement to prevent wasteful water use, streamline the State's drought response, and invest in new technologies that would make California more drought resilient. At the time of the announcement, the volume of Sierra Nevada snowpack was approximately 14 percent of normal. Despite multiple storms in February 2014, drought conditions persisted. By the end of May 2014, all of California was in a condition of "extreme" or "exceptional" drought. At the same time, the volume of the Sierra Nevada snowpack had decreased to less than 10 percent of normal and water stored in Lake Oroville, the major reservoir for the State Water Project, was at 58 percent of normal.[7] On April 7, 2017, the governor issued an executive order ending the drought emergency in Southern California, including Orange County.

[7] California Department of Water Resources, *California's Most Significant Droughts: Comparing Historical and Recent Conditions*, February 2015.

On October 19, 2021, the governor of California declared a State drought emergency, which added the eight counties, including Los Angeles County (not included within an executive order in April, May, or July 2021) calling for a voluntary reduction of water use by 15 percent across California.[8] This declaration followed the second driest year on record and near record low storage in California's largest reservoirs. The proclamation required local water suppliers to implement water shortage contingency plans responsive to local conditions and prepare for the possibility of a third dry year. On March 28, 2022, the governor issued an executive order noting continued drought conditions and requiring urban water suppliers to activate, at a minimum, Level 2 of their customized Water Shortage Contingency Plans. These plans, required by State law, are developed by local water agencies to navigate drought and each plan is customized based on an agency's unique infrastructure and management. Triggering Level 2 of these plans involves implementing water conservation actions to prepare for a water shortage level of up to 20 percent. For example, in many communities, this would mean reducing the number of days that residents can water outdoors, among other measures. On March 24, 2023, the governor rolled back some drought emergency provisions that were no longer needed due to improving water conditions, while maintaining other measures that support regions and communities still facing water supply challenges, and that continue building up long-term water resilience.[9]

During drought conditions, the City partners with SMWD and TCWD to educate residents and business owners regarding State-mandated water conservation measures. SMWD has also adopted a Water Conservation and Water Supply Shortage Program.[10] The purpose of the program is to encourage reduced water consumption within SMWD through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within SMWD to avoid and minimize the effect and hardship of water shortage to the greatest extent possible. SMWD has established best management practices and water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, designed to achieve progressively greater levels of conservation based on the conditions of the declared water shortage or emergency.

TCWD's 2020 Water Shortage Contingency Plan (WSCP) is a detailed guide to prepare for and respond to water shortages.[11] The WSCP is used to prevent catastrophic service disruptions through proactive, rather than reactive, management. According to the WSCP, a water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as drought, climate change, and catastrophic events. The WSCP provides a structured guide for TCWD to deal with water shortages, incorporating prescriptive information and standardized action levels, along with implementation actions in the event of a catastrophic supply interruption. This way, if and when shortage conditions

8 California Governor's Office, *Proclamation of a State of Emergency*, October 2021.
9 Governor Gavin Newsom, *Governor Newsom Eases Drought Restrictions*, https://www.gov.ca.gov/2023/03/24/governor-newsom-eases-drought-restrictions/, accessed June 5, 2024.
10 Santa Margarita Water District, Ordinance No. 2021-05-05, Ordinance of the Board of Directors of the Santa Margarita Water District, Orange County, California, Adopting a Water Conservation and Water Supply Shortage Program, May 5, 2021.
11 Trabuco Canyon Water District, *Final 2020 Water Shortage Contingency Plan*, June 2021.

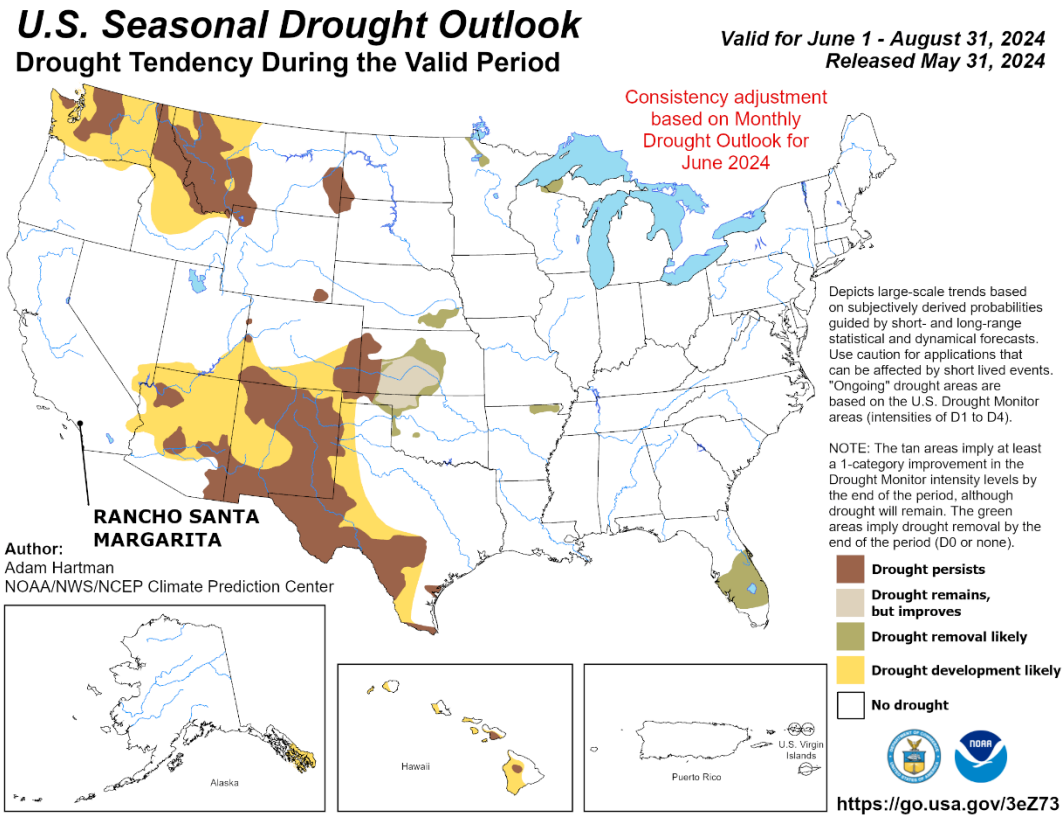
arise, TCWD's governing body, its staff, and the public can easily identify and efficiently implement pre-determined steps to manage a water shortage.

Chapter 9.05, Special Regulations, Section 9.05.120, Landscape Water Efficiency of the City's Municipal Code, identifies water use standards to promote conservation and efficient use of water relative to landscaping in the City. Overwatering is also a prohibited discharge in accordance with the City's Stormwater Program.

PROBABILITY OF FUTURE OCCURRENCES

Based on previous occurrences and trends in California, the likelihood that Rancho Santa Margarita will experience drought conditions in the future is considered high. The U.S. Seasonal Drought Outlook depicts large-scale trends based on U.S. Drought Monitor areas (intensities of D1 to D4), as shown in Figure 4-3, *U.S. Seasonal Drought Outlook*. The southern California region, including Rancho Santa Margarita, is currently not showing drought tendencies due to the heavy rain season in 2023-2024. While it is not a current concern based on available data, drought is considered to have a high probability for reoccurrence within the City. The probability of future occurrences is considered highly likely.

Figure 4-3
U.S. Seasonal Drought Outlook



Source: National Weather Service Climate Prediction Center, *U.S. Seasonal Drought Outlook*, https://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png, accessed June 4, 2024.

CLIMATE CHANGE

According to the 2023 State Hazard Mitigation Plan, there is a high probability of future drought events in the State, with at least one period of drought occurring somewhere in California every year. Climate scientists studying California find that drought conditions are likely to become more frequent and persistent over the twenty-first century due to climate change such as more frequent and extended periods of high temperature conditions. The *California Adaptation Planning Guide* states that the pressure climate change places on ground water reliance during times of drought is not sustainable. The *Fourth Climate Change Assessment* states that California has experienced a succession of dry spells, and with warmer conditions the impacts of these droughts have increased. Additionally, the experiences faced by water supply agencies during recent droughts (2012-2016 and 2020-2022) underscores the need to examine water storage, distribution, management, conservation, and use policies more closely. Decreasing snowmelt, reduced precipitation, and higher temperatures are all expected effects of climate change. When coupled with increasing demand for water in portions of California, these conditions may result in future challenges associated with drought conditions for Rancho Santa Margarita and other communities.

4.2.3 FLOOD

DESCRIPTION

Flooding occurs when a waterway, either a natural one or an artificial drainage channel, receives more water than it is capable of conveying, causing the water level in the waterway to rise. Depending on how long these conditions last and the amount of water the waterway receives in proportion to its capacity, the rising water level may eventually overtop the waterway's banks or any other boundaries to the drainage area, resulting in flooding in the surrounding area.

Floods often occur during heavy precipitation events, when the amount of rainwater exceeds the capacity of storm drains or flood control channels. Floods can also happen when infrastructure such as levees, dams, or culverts fail, when a section of drainage infrastructure fails, or due to blockage or debris, and water cannot be drained from an area fast enough. These failures can be linked to precipitation events (i.e., when water erodes away a levee, allowing water to escape and flood nearby areas), or can be a consequence of other emergency situations (i.e., a dam collapsing due to an earthquake).

FEMA defines flood or flooding as a general and temporary condition of partial or complete inundation of normally dry land areas from:

- The overflow of inland or tidal waters;
- The unusual and rapid accumulation or runoff of surface waters from any source; or,
- Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

Floods can be caused by a number of factors, including:

- Weather and climate patterns (e.g., El Niño, La Niña, Pineapple Express, Atmospheric River, etc.)
    - El Niño and La Niña are complex weather patterns resulting from variations in ocean temperatures in the equatorial Pacific. Warmer or colder than average ocean temperatures in one part of the world can influence weather around the globe. El Niño and La Niña episodes typically last nine to 12 months, but some prolonged events may last for years.[12]
    - Pineapple Express is a name given to an atmospheric river on the West Coast. It is a channel in the atmosphere that moves vast amounts of moisture and can result in massive showers.
- Hydrologic features such as reservoirs, ponds, lakes, rivers, etc. can have a large impact on the amount of flooding.

[12] National Ocean Service, *What are El Niño and La Niña?*, https://oceanservice.noaa.gov/facts/ninonina.html, accessed June 4, 2024.

- The absorption capacity of the ground depends on the composition of soil and bedrock of the area. Less absorbent soil conditions in addition to lack of proper storm infrastructure can result in flooding.

- Type and density of vegetation is related to absorption of moisture affecting the flow of water.

- Patterns of land use/urbanization relates to the pervious and impervious nature of the ground.

- Expected level, age, and condition of flood management infrastructure will impact flooding conditions.

- Large-scale wildfires dramatically alter the terrain and ground conditions. Vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, creating conditions ripe for flash flooding and mudflow. Flood risk remains significantly higher until vegetation is restored – up to five years after a wildfire.[13]

The force of a flood can be enough to carry away large objects and damage structures, causing considerable damage to buildings and infrastructure. In severe instances, floodwaters themselves can destroy structures or move them off their foundation. Floods can saturate and weaken soil, potentially making structures built on them more susceptible to damage or collapse. Flooding can affect water quality, as large volumes of water can transport contaminants into water bodies and overload storm and wastewater systems. Additionally, large increases in water volume can cause water body erosion and loss of aquatic habitat. It can also cause great economic loss to people and government due to the destruction of roads, bridges, farms, businesses, houses, and automobiles.

LOCATION AND EXTENT

Orange County's terrain makes it naturally susceptible to flooding. Many of the rivers, creeks, and streams flow through natural floodplains on their way to the ocean. The City is located within the San Juan Creek watershed and is responsible for storm drain systems within City boundaries. The Orange County Flood Control District (OCFCD) is the agency responsible for regional flood control. Trabuco Creek and Tijeras Canyon Creek drain the northern and western areas of the City, while Dove Canyon drains the southeastern portion.

Flood zones within Rancho Santa Margarita are determined by Flood Insurance Rate Maps (FIRMs), produced by FEMA in partnership with various communities. A FIRM is the official flood map that shows a community's flood hazard areas. These may include high-hazard (Special Flood Hazard Areas [SFHA]), moderate- to low-hazard areas, and undetermined areas. A SFHA map shows the 100-year floodplain, divided into zones A

[13] Federal Emergency Management Agency, *Flood Risks Increase After Fires*, https://www.fema.gov/sites/default/files/documents/fema_flood-after-fire_factsheet_nov20.pdf, accessed June 4, 2024.

and AE.[14] A FIRM also includes 500-year floodplains and higher, classified as moderate and minimal risk areas. A 100- and 500-year flood is an event that has a 1 in 100 (1 percent) and 1 in 500 (0.2 percent) chance, respectively, of occurring in any given year. This data is incorporated into FIRMs to support the National Flood Insurance Program (NFIP) and provide the basis for community floodplain management regulations and flood insurance requirements.

Figure 4-4, *Flood Hazard Zones*, shows the locations of flood zones in Rancho Santa Margarita, and Table 4-6 provides the details and acreage of these zones that occur within the City. Potential flooding could occur along the Arroyo Trabuco Creek (also known as Trabuco Creek) and Tijeras Canyon Creek areas.

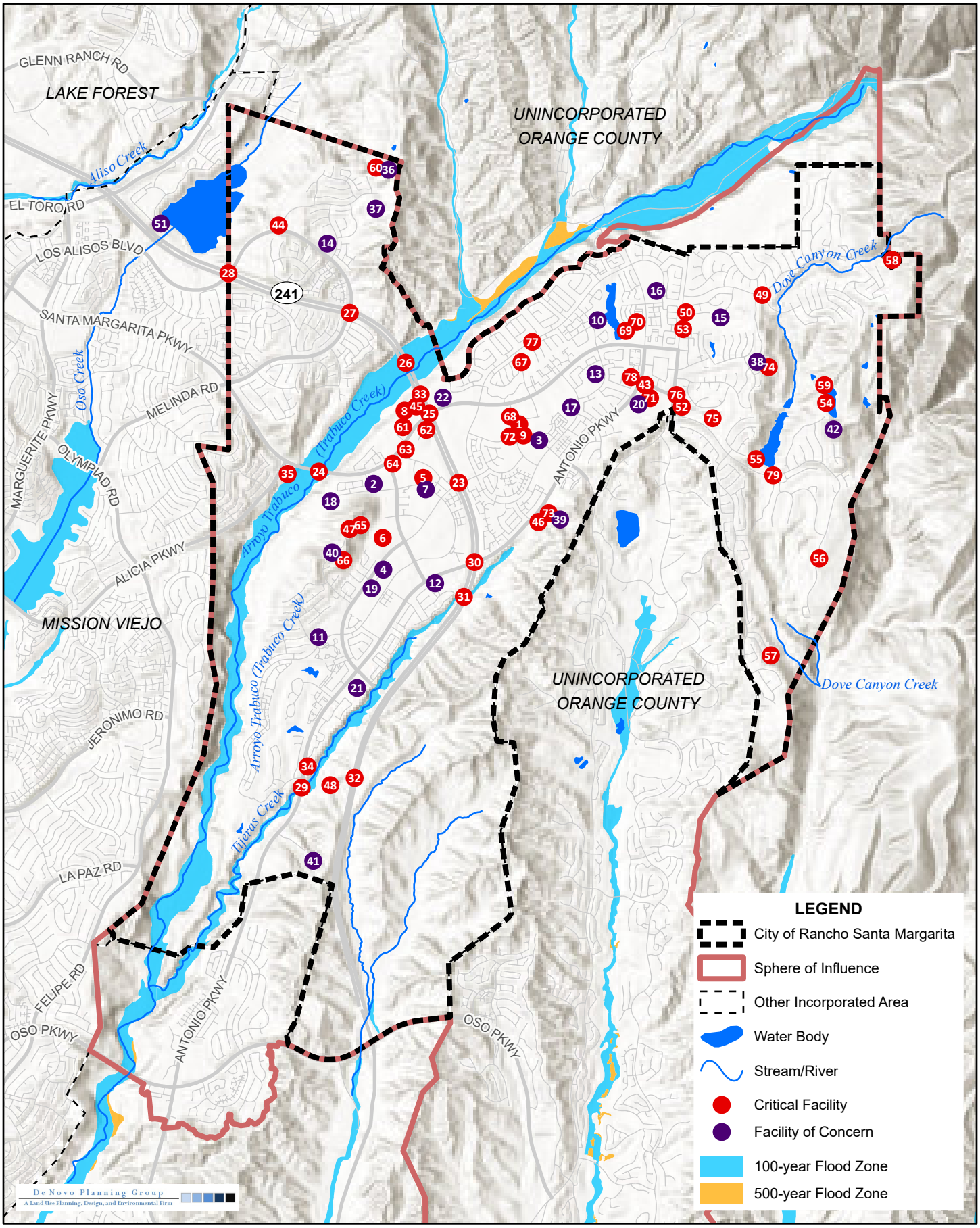
Table 4-6
Acreage by Flood Zones

Flood Zone	Risk	Area in City (acres)	Area in SOI (acres)	Total (acres)
100-Year	High	429.04	266.11	695.16
500-Year	Moderate to Minimal	0.55	12.89	13.44
Source: Federal Emergency Management Agency, August 26, 2024.				

Along Trabuco Creek, a dense growth of trees and brush are located in the main channel, which could result in higher flood levels. Floods that could 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 moves in, 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.

Localized flooding can occur outside of mapped flood hazard zones during heavy rain events associated with extensive runoff. Localized flooding typically occurs when significant amounts of rain fall over a short time period and/or, as a result of overloaded or blocked stormwater drainage systems that cause sheet flow into streets and low-lying areas. The City consistently maintains storm drain channels and proactively clears storm drains ahead of weather events. However, during heavy rain events there is the potential for fallen tree limbs or debris to interfere with the storm drain system, resulting in flooding of local streets.

[14] Federal Emergency Management Agency, *National Flood Insurance Program, Flood Insurance Manual*, April 2024, https://www.fema.gov/sites/default/files/documents/fema_nfip_flood-insurance-manual_042024.pdf, accessed June 10, 2024.



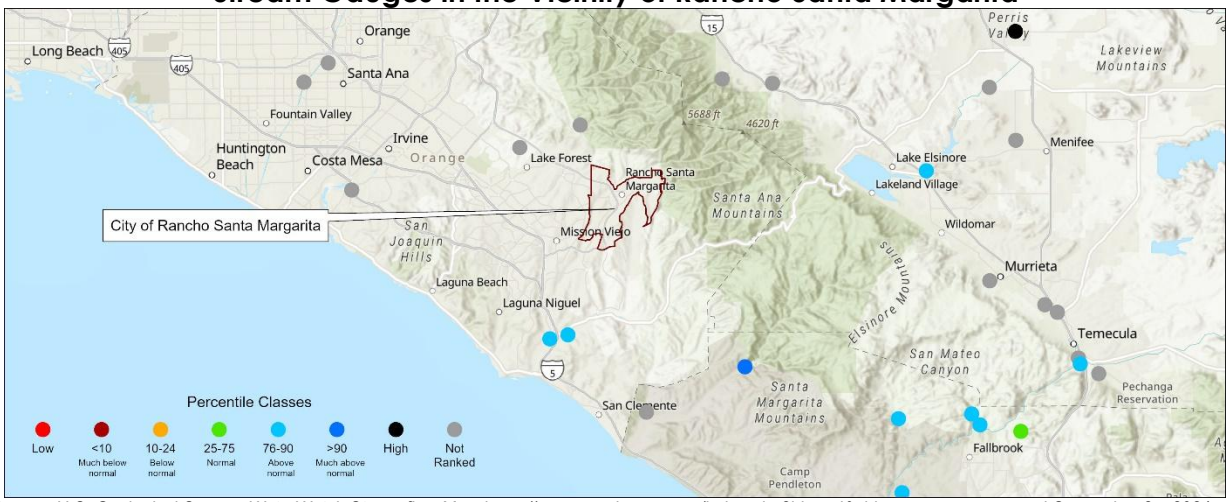
CITY OF RANCHO SANTA MARGARITA

FIGURE 4-4.
FLOOD HAZARD ZONES

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; FEMA. Map date: September 27, 2024.

The extent or magnitude of flooding is measured by percentage and annual chance floods. The flooding areas are classified as 1 in 100 (1 percent) or high risk, and 1 in 500 (0.2 percent) or moderate risk of flooding. Areas having a chance of less than 0.2 percent are classified as low risk areas. Floods are measured by stream gauges that are installed in bodies of water located near populated areas. They are installed and operated by the United States Geological Survey (USGS) and monitor water levels constantly. This data is then sent to the National Weather Service, and a warning is sent if there is potential for flooding. Many gauges are Automated Local Evaluation in Real-Time (ALERT) gauges, which are designed to send an automated warning when water levels reach predetermined levels or change rapidly. Figure 4-5, *Stream Gauges in the Vicinity of Rancho Santa Margarita,* shows the location of gauges.

Figure 4-5
Stream Gauges in the Vicinity of Rancho Santa Margarita



Source: U.S. Geological Survey, *WaterWatch Streamflow Map*, https://waterwatch.usgs.gov/index.php?id=real&sid=w__gmap, accessed September 27, 2024.

PREVIOUS OCCURRENCES

The National Weather Service report, *A History of Significant Weather Events in Southern California*, includes a chronological list of events organized by weather type. However, only a handful of these events have affected Rancho Santa Margarita. Additionally, NOAA's Storm Event Database summarizes flood events of regional significance affecting the City of Rancho Santa Margarita. These are documented below: [15, 16]

- In December 1997, an El Niño storm brought the heaviest rain to Orange County in 70 years; the neighboring city, Mission Viejo, totaled as much as 10 inches in heavy downpours. Widespread flooding and mudslides occurred throughout the County.

- In December 2010, a large storm brought heavy rain and periods of serious flooding throughout Orange County, prompting a Federal disaster declaration. Orange County officials estimated $36 million in total damages due to 10 inches or more of rain received.

- In February 2014, the only significant storm of the 2013 – 2014 rainy reason caused minor street flooding in neighboring city, Mission Viejo.

- In July - August 2015, moisture from Hurricane Dolores and Hurricane Linda resulted in uncharacteristic showers and thunderstorms with up to 4 inches of rain in southern California.

- In January 2017, a series of storms traversed the southern California region, producing flooding rains, extreme mountain snowfall, and strong winds. California Highway Patrol reported three vehicles submerged and stuck in water on Antonio Parkway in Las Flores.

- In December 2018, a moisture plume with a weak atmospheric river brought showers and thunderstorms to Orange and San Diego counties, with some areas receiving over 4 inches of rainfall over higher terrain. Mud and debris flows occurred at recent Holy burn scar areas, and there were many reports of flash flooding across the region.

- In April 2020, an atmospheric river brought widespread heavy rain to Orange and San Diego counties. Numerous flash floods and floods occurred in areas including Peralta Hills, Buena Park, Costa Mesa, and Seal Beach.

- In December 2021, an atmospheric river impacted southern California with heavy rain, high elevation snow, and windy conditions. Some areas reported over 5 inches of rainfall. This led to flooding, debris flows and closed roads.

[15] National Oceanic and Atmospheric Administration, National Weather Service, *A History of Significant Weather Events in Southern California*, https://www.weather.gov/media/sgx/documents/weatherhistory.pdf, accessed June 19, 2024.
[16] National Oceanic and Atmospheric Administration National Centers for Environmental Information, *Storm Events Database*, https://www. ncdc.noaa.gov/stormevents/, accessed June 19, 2024.

- In January 2023, a series of atmospheric rivers brought heavy rains to Orange, San Diego, Riverside, and San Bernardino Counties. Rain accumulation ranged from 1.25 to 2 inches in Orange County, resulting in widespread flooding reports and several swiftwater rescues.

- In August 2023, Tropical Storm Hilary made landfall in Baja California and moved through southern California. Torrential rainfall occurred, particularly within inland mountain and desert communities, resulting in flash flooding and debris flow.

While many flood events have occurred within southern Orange County, no major floods have historically caused major damage within the City of Rancho Santa Margarita; refer to the discussion of Landslides/Mudflows, below.

PROBABILITY OF FUTURE OCCURRENCES

Based on the frequency of severe weather events and the capacity of facilities, the probability of future occurrences of flooding is considered likely. As discussed, FEMA defines flood zones based on the probability of occurrence, expressed in a percentage of the chance of a flood of a specific extent occurring in any given year. For areas located within the 100-year flood zone, there is a 1 percent chance in a given year that this area will be inundated by flood waters. For moderate flood hazard areas located within the 500-year flood zone, this probability decreases to 0.2 percent. For minimal flood hazard areas, they are located outside of the 0.2 percent annual chance flood. Figure 4-4 denotes the 100- and 500-year flood zones within the City. Flooding incidents are most likely to occur within these delineated areas. Additional zones in the periphery of these flood areas may pose a flood risk, but since they are outside the designated 1-percent annual chance floodplain, they do not require additional flood insurance.

The Integrated Regional Water Management Plan for South Orange County (IRWM), which includes OCFCD and the City of Rancho Santa Margarita, integrates regional projects to improve water supply, protect water quality, enhance the environment, and provide flood risk management. The IRWM establishes a priority ranking to help further regional efforts to investigate the feasibility of, and identify funding for, these projects.

OCFCD's flood control facilities are designed to handle water flow from storm drains and other runoff and "channel" the water into the bay or ocean. The Operations & Maintenance Division conducts regular inspections and performs cleaning as needed. OCFCD encourages the public to notify them when a channel or ditch is blocked or filled with debris to help minimize the possibility of flooding. The OCFCD continues to upgrade the Regional Flood Control system to provide protection from the 100-year storm event. The highest priority improvement to the flood control system in South Orange County includes the improvement programs for the San Juan Creek and Trabuco Creek channels.

In addition to meeting the FEMA 100-year flood protection designation in South Orange County channels to reduce overall flood risk, the County has placed a top priority on predicting flood events and reacting in a timely manner to areas of flooding and severe soil erosion. The Automatic Local Evaluation on Real Time (ALERT) Flood Detection System consists of a network of over 100 rainfall and flood control and reservoir water level sensors strategically located throughout the County. The ALERT system transmits data via

radio transmission to the County's base station computer which allows for real time monitoring of storm conditions. The ALERT network is supported by satellite and radar storm tracking provided by the National Weather Service, the NOAA and a contract meteorologist.

CLIMATE CHANGE

Climate change has a direct effect on flooding. According to research conducted by UCLA, California will experience extremely wet and extremely dry seasons by the end of the century. It is predicted that "over the next 40 years, the State will be 300 to 400 percent more likely to have a prolonged storm sequence as severe as the one that caused the legendary California flood more than 150 years ago."[17] With population density and increased urbanization of Orange County, such a flood could be devastating. While the annual rainfall averages may remain constant, the wet season may be narrower, leading to large downpours in a short period of time that overwhelm infrastructure and lead to increased flooding.

4.2.4 HUMAN-INDUCED HAZARDS

The following human-induced hazards are analyzed below: arson, hazardous materials, terrorism, and unexploded ordnance.

DESCRIPTION

Arson

Common law arson is defined as the willful and malicious burning or charring of property. While most arson crimes involve damage to buildings, arson can also be committed by a person who sets fire to forest or wildlands. Property damage or destruction is not required, and the knowing burning of personal property is generally enough to constitute arson.[18]

Hazardous Materials

A hazardous material means a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released. The term "release" means spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency.[19] Hazardous materials can be in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials accidents can occur during production, storage, transportation, use, or disposal.[20]

[17] University of California Los Angeles Newsroom, *Study forecasts a severe climate future for California*, http://newsroom.ucla.edu/releases/california-extreme-climate-future-ucla-study, accessed June 20, 2024.
[18] Cornell Law School, *Legal Information Institute*, https://www.law.cornell.edu/wex/arson, accessed June 20, 2024.
[19] Health and Safety Code Division 20, Chapter 6.95 Hazardous Materials Release Response Plans and Inventory, Article 1.
[20] U.S. Department of Homeland Security, *Chemicals and Hazardous Materials Incidents*, https://www.ready.gov/hazmat, accessed June 20, 2024.

The impacts of hazardous material release vary, depending on the type and amount of material released. Hazardous materials exposure can include the following effects: skin/eye irritation; difficulty breathing; headaches; nausea; behavior abnormalities; cancer; genetic mutations; physiological malfunctions (i.e., reproductive impairment, kidney failure); physical deformations; or, birth defects.[21]

Terrorism/Mass Attack

Domestic terrorism is defined by the Federal Bureau of Investigation (FBI) as perpetuated by individuals and/or groups inspired by or associated with a primarily U.S. based movement that espouses extremist ideologies of a political, religious, social, racial, or environmental nature. International terrorism is perpetuated by individuals and/or groups inspired by or associated with designated foreign terrorist organizations or nations.[22] The U.S. Federal Code states that terrorism must appear to be intended to 1) intimidate or coerce a civilian population; 2) influence the policy of a government by intimidation or coercion; or, 3) affect the conduct of a government by mass destruction, assassination or kidnapping.[23]

In addition to use of weapons, terrorism can be carried out through other channels. Bioterrorism refers to biological agents (microbes or toxins) used as weapons to further personal or political agendas. Acts of bioterrorism range from a single exposure directed at an individual by another individual biological warfare resulting in mass casualties. A bioterrorist attack could be caused by virtually any pathogenic microorganism. High-priority agents include organisms that pose a risk to national security because they can be easily disseminated or transmitted from person to person; result in high mortality rates and have the potential for major public health impact; might cause public panic and social disruption; and require special action for public health preparedness.[24] Cyberterrorism refers to unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives.[25]

Other acts of violence that do not qualify as terrorism would be defined as mass attacks. Assailants use weapons to attack and intimidate crowds in public places, with the intention of harming multiple victims. Mass attacks could include the following:[26]

- Active shooter: Individuals using firearms to cause mass casualties;

[21] U.S. Environmental Protection Agency, *Health and Ecological Hazards Caused by Hazardous Substances*, https://www.epa.gov/emergency-response/health-and-ecological-hazards-caused-hazardous-substances, accessed June 20, 2024.
[22] Federal Bureau of Investigation, *Terrorism*, https://www.fbi.gov/investigate/terrorism, accessed June 20, 2024.
[23] U.S. Federal Code Title 18, Chapter 113B, Section 2331.
[24] Centers for Disease Control and Prevention, *Bioterrorism Agents/Diseases*, https://emergency.cdc.gov/agent/agentlist-category.asp#catdef, accessed June 20, 2024.
[25] Fairleigh Dickinson University, *Cybersecurity and Cyber Terrorism*, https://online.fdu.edu/program-resources/cybersecurity-and-cyber-terrorism/, accessed June 20, 2024.
[26] U.S. Department of Homeland Security, *Mass Attacks in Crowded & Public Spaces*, https://www.ready.gov/public-spaces, accessed June 20, 2024.

- Intentional Vehicular Assault (IVA): Individuals using a vehicle to cause mass casualties;
- Improvised Explosive Device (IED): Individuals using homemade bombs; and
- Other methods may include knives, fires, drones, or other weapons.

Unexploded Ordnance

Unexploded ordnance (UXO) are explosive weapons that did not explode when they were employed, and still pose a risk of detonation, sometimes many years after use. Approximately 1,800 acres of Rancho Santa Margarita were used between 1944 to 1956 for aircraft bombing practice and gunnery practice range called Trabuco Bombing Range, in connection with El Toro Marine Corps Air Station. Pilots dropped small practice bombs that included an explosive charge designed to create smoke upon impact. Additionally, practice rockets that did not contain an explosive charge were fired. While the ordnance used in the City were only practice devices, there is still the potential for small explosive charges that could burn or cause fatal injuries if picked up or disturbed.[27]

LOCATION AND EXTENT

Arson

Arson could occur anywhere throughout the City, including urbanized or open space areas. Depending on the type of arson, available fuel, and weather conditions, the fire could spread amongst different areas of the City and potentially extend beyond the City into neighboring areas.

Arson fires are not measured on a specific scale and are usually classified by size or impact. The size and severity of any fire depends on the availability of fuel, weather conditions, and topography. Arson committed within Moderate, High, and Very High Fire Hazard Severity Zones have the potential to spread more quickly and through a large portion of the City; refer also to the discussion of Wildfires (Section 4.2.9).

Hazardous Materials

Hazardous materials are generated, used, and stored by facilities throughout Rancho Santa Margarita and surrounding communities for a variety of purposes in service industries, small business, schools, and households. 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.

Most of the hazardous materials in Rancho Santa Margarita are associated with relatively low risk, small-scale operations, such as vehicle fueling and service stations, power generators, pools, and garment cleaners. Common hazardous materials include diesel fuel, chlorine, flammable waste, fuel waste, radiator coolant, ethylene glycol, pesticides, paint thinner, non-halogenated solvents, slop oil, toxics, and petroleum distillate solvents. The City does not contain the types of industrial uses that typically result in larger amounts

[27] City of Rancho Santa Margarita, *Potentially Explosive Ordnance in the City of Rancho Santa Margarita and O'Neill Regional Park*, July 23, 2015.

of hazardous materials, nor is heavy industry located in adjoining areas of other cities. 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 the former Trabuco Bombing Range (discussed below under Unexploded Ordnance) site.

According to the State Water Resources Control Board GeoTracker, leaking underground storage tanks were discovered at the 1) Shell Oil Gas Station (21712 Plano Trabuco); 2) Mobil Gas Station (31421 Santa Margarita Parkway), and; 3) OCFA Fire Station #45 (30131 Aventura).[28] Proper clean-up activities commenced, and all three incidents are listed as completed, case closed. Several other underground storage tanks (UST) are operated and maintained within the City boundaries, without incident. Additionally, a total of seven cleanup program sites have had unauthorized releases. Of these, five cleanup site programs are listed as completed, case closed; and two cleanup site programs are currently undergoing remediation (Joy Cleaners at 30092 Santa Margarita Parkway and Plaza Empresa - Rancho Cleaners at 29941 Aventura). The former Trabuco Bombing Range is also designated as a Military Cleanup Site (refer to unexploded ordnance sections for details regarding cleanup activities).

The Environmental Protection Agency (EPA) biennially collects information regarding the generation, management, and disposal of hazardous materials under the Resource Conservation and Recovery Act (RCRA). The Biennial Report Summary for 2021 indicated four hazardous waste generators in Rancho Santa Margarita: Applied Medical Resources (22872 Avenida Empresa); Control Components Inc. (22591 Avenida Empresa); CVS (22361 Antonio Parkway); and Target (30602 Santa Margarita Parkway).[29] Hazardous waste generated at these locations (including alkaline solutions, inorganic solid waste, organic solid waste, oil waste, pharmaceutical waste, heavy metals and others) are disposed pursuant to RCRA regulations.

Hazardous materials are also transported throughout California and Orange County, with the largest amount of transportation occurring along highways under the regulatory authority of the California Highway Patrol (CHP). Over 250 miles of interstate highway, including the third busiest highway transportation corridor in the country (Interstate 5), and 719 miles of other major transportation routes run through Orange County. CHP has designated these highways as hazardous materials transportation corridors. In addition to several major arterials, State Route 241 (SR 241) bisects the City. Rancho Santa Margarita is also located in proximity to Interstate 5 and State Route 73. There is some level of risk in the event of traffic collisions or other conditions that result in a release.

The extent of a hazardous materials release is dependent on several conditions, including the nature of the material, climate conditions, the amount of chemical released, and the regulatory environment. The extent of the release can also depend on intent (non-malicious or malicious). Malicious hazardous materials releases are included under the Terrorism Hazard Profile. Non-malicious releases would be accidental releases because of human error, technological failure, or natural hazards.

[28] California State Water Resources Control Board, *GeoTracker: Rancho Santa Margarita*, https://geotracker.waterboards.ca.gov/map/, accessed June 20, 2024.
[29] U.S. Environmental Protection Agency, *2021 Site Listing for California*, https://rcrapublic.epa.gov/rcrainfoweb/action/modules/br/search, accessed June 20, 2024.

The nature of the released material is usually the most important determinant of the extent or severity of a spill. Hazardous materials can be flammable, radioactive, infectious, corrosive, toxic/poisonous, or otherwise reactive. For example, a radioactive material spill would have much further-reaching extent when compared to a paint spill. Climate conditions also affect the severity of hazardous materials spills. For example, heavy rains or winds can spread hazardous materials over a larger geographical area and cause challenging cleanup conditions. Challenging cleanup conditions could allow for further contaminations due to the spill. Additionally, natural hazards such as wildfires or earthquakes could cause hazardous materials releases as a secondary effect with challenging cleanup conditions.

Terrorism/Mass Attack

Locations most vulnerable to terrorism or other violent mass attacks are places where people gather, places of political importance, infrastructure, and destinations. Examples include but are not limited to:

- Schools
- Hospitals
- City hall
- Community centers
- Libraries
- Transit operations and stops
- Shopping malls/large retail centers
- Freeways/Toll Roads and other transportation infrastructure
- Power plants and utility infrastructure
- Event/entertainment centers

Although more limited, as with any city, Rancho Santa Margarita has locations such as those identified above that could be vulnerable to terrorism or mass attacks.

An international evaluation scale called the Global Terrorism Index (GTI) measures national terrorism and considers four indicators weighted over 5 years to measure the severity of the attack:

- Total number of terrorist incidents in a given year
- Total number of fatalities caused by terrorists in a given year
- Total number of injuries caused by terrorists in a given year
- A measure of the total property damage from terrorist incidents in a given year

In the United States, the Department of Homeland Security (DHS) utilizes the National Terrorism Advisory System (NTAS) to effectively communicate information about terrorist threats by providing timely, detailed information to the American public. NTAS consists of two types of advisories: Bulletins and Alerts. Because DHS may issue NTAS Bulletins in circumstances not warranting a more specific warning, NTAS Bulletins provide the DHS with greater flexibility to provide timely information to stakeholders and members of the public. When there is specific, credible information about a terrorist threat against the United States, DHS will share an NTAS Alert with the American public when circumstances warrant doing so.

Unexploded Ordnance (UXO)

Of the original 1,800-acre Trabuco Bombing range, approximately 1,300 acres have already been developed as residential, city park/open space, and the Tijeras Creek Golf Club. The remaining 500 acres of undeveloped land is permanently set aside as open space and county parks, and is currently within O'Neill Regional Park, under the jurisdiction of the County of Orange Resources and Development Management Department. During residential and commercial development preparation, the soil was turned over and material two to three feet below the surface was passed through a screen. Additionally, the area was swept using a metal detector capable of detecting down two feet.[30] Removed UXO has historically been located within the boundaries of O'Neill Regional Park, particularly around the adobe hut near the San Francisco Solano marker.

The U.S. Army Corps of Engineers (Corps), published the Final Remedial Investigation Work Plan for the Former Trabuco Bombing Range, Rancho Santa Margarita, California, dated October 2006. The Remedial Investigation (RI) Work Plan addressed characterization of the former Trabuco Bombing Range to provide information necessary to estimate location, concentration, and nature of munitions and explosives of concern (MEC) present at the site. In addition, soil sampling activities were conducted to determine if munitions constituents (MC) were released when compared to Human Heath Preliminary Remediation Goals and project ambient conditions to confirm or deny a release of MC has occurred. MCs are defined as any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 United States Code 2710 (e)(4)). If an MC release is confirmed, future investigations would be conducted to assess possible impacts to human health, ecological receptors, and the environment associated with munitions constituents (MCs). It is possible unexploded ordnance could be located within parkland in the O'Neill Regional Park, where it is unknown whether the areas were cleared.

Unexploded ordnance is not measured on a specific scale and is usually classified by type or geographic distribution. Since the ordnances used in the area were practice devices and not live, detonation would likely be limited to the immediate area. However, the severity of the detonation could be significant depending upon its proximity to a person.

PREVIOUS OCCURRENCES

Arson

The cause of the Holy Fire that began on August 6, 2018 was thought to be arson; however, the suspect was acquitted of arson charges and investigators were ultimately unable to determine who started the fire.[31] The Holy Fire is the most significant fire event involving suspected arson that has affected the City in recent history. Previous

[30] City of Rancho Santa Margarita, *Potentially Explosive Ordnance in the City of Rancho Santa Margarita and O'Neill Regional Park*, July 23, 2015.
[31] Emery, S., *Man acquitted of igniting massive Holy fire in Orange and Riverside counties*, https://www.ocregister.com/2023/06/01/man-acquitted-of-igniting-massive-holy-fire/, published June 1, 2023, accessed June 20, 2024.

occurrences of arson involve fires of a much smaller nature. Impacts of the Holy Fire are discussed in the Wildfire Hazard Profile.

Hazardous Materials

The Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), and California law require responsible parties to report hazardous materials releases if certain criteria are met. Recent spills in the City are identified in Table 4-7, *Cal OES Historical HazMat Spill Notifications in Rancho Santa Margarita since 2010*.

Table 4-7
Cal OES Historical HazMat Spill Notifications in Rancho Santa Margarita since 2010

Spill Date	Agency	Site	Spill Substance Type	Amount
10/26/2017	Private Citizen	Los Pioneros	Hydraulic Fluid	20 ft x 30 ft
02/13/2017	Trabuco Canyon Water District	Dove Lake, Dove Canyon Drive	Sewage	2000 gal.
08/31/2016	OC Public Works	149 Mira Mesa	Petroleum	3-5 gal.
05/02/2014	Santa Margarita Water District	30442 Esperanza	Sewage	132 gal.
07/15/2013	Circle K	31527 Santa Margarita Pkwy	Petroleum	5 gal.
03/20/2013	Fedex Ground	16 Tanglewood Lane	Petroleum	.5 gal.
03/07/2013	Trabuco Canyon Water District	31772 Via Allegre	Sewage	600 gal.
10/03/2010	Veederoot	31521 Santa Margarita Pkwy	Petroleum	12 oz.
02/05/2010	Point Conception	23121 Arroyo Vista	Roofing Sealant	Unknown

Source: California Governor's Office of Emergency Services, *Spill Release Reporting*, http://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/spill-release-reporting, accessed June 21, 2024.

Terrorism/Mass Attack

Though there have been a variety of threats in Orange County, there is no substantial history of terrorism or mass attacks in Rancho Santa Margarita or the surrounding area.[32] The most recent terrorism incident in Orange County occurred in the City of Laguna Woods at the Geneva Presbyterian Church. In May 2022, a shooter opened fire at a Taiwanese church service, killing one parishioner and injuring five others. The FBI, the ATF, and the Orange County Sheriff's Department investigated the case and the suspect was charged with 98 counts of federal hate crimes and weapons and explosives offenses.[33] On August 23, 2023, a mass shooting occurred at Cook's Corner, a bar in Trabuco Cayon. The gunman killed three people and injured six others before being fatally shot by Orange County sheriff's deputies.[34]

[32] Crime Mapping, *City of Rancho Santa Margarita*, https://www.crimemapping.com/map/ca/RanchoSantaMargarita, accessed June 21, 2024.
[33] United Stated Department of Justice, *Nevada Man Charged with Federal Hate Crimes for Irvine Taiwanese Presbyterian Church Shooting*, https://www.justice.gov/opa/pr/nevada-man-charged-federal-hate-crimes-irvine-taiwanese-presbyterian-church-shooting, accessed June 21, 2024.
[34] Gonzalez, D., *Cook's Corner in Trabuco Canyon reopens following mass shooting that killed 3*, September 1, 2023, https://abc7.com/cooks-corner-trabuco-canyon-orange-county-mass-shooting/13725274/, accessed September 27, 2024.

Unexploded Ordnance (UXO)

Unexploded ordnances have previously been located within the vicinity of O'Neill Regional Park; however, the City is unaware of any confirmed injuries that have taken place due to unintentional detonation.

PROBABILITY OF FUTURE OCCURRENCES

Arson

Although arson is not a historically common activity within the City of Rancho Santa Margarita, it is difficult to assess the future probability of such an occurrence. Rancho Santa Margarita has a long history of being identified as a safe community with very low criminal activity. Thus, the probability of future occurrences is considered unlikely.

Hazardous Materials

Rancho Santa Margarita has experienced hazardous releases historically, and includes several facilities that manufacture, transport, or use hazardous materials. To effectively manage hazardous materials and waste, the City implements applicable policies and regulations from the County, State and federal government. The City implements applicable portions of the Orange County Hazardous Materials Area Plan and the Orange County Hazardous Waste Management Plan. Both the federal government and the State require all business 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 a private sector contract. Based on the data provided above, there is an occasional probability of hazardous materials releases occurring in the City.

Terrorism/Mass Attack

The probability of a terrorist attack in Rancho Santa Margarita is unlikely; however, terrorism incidents can occur without warning. Though use of weapons for terrorism may be rare, the prevalent use of computers and the internet for cyberterrorism and the relative ease of bioterrorism increase the likelihood of a terrorism incident.

Unexploded Ordnance (UXO)

Due to the City and O'Neill Regional Park being located adjacent to and in some areas overlapping portions of the former Trabuco Bombing Range and previous ordnance removal activities, the likelihood of an unexploded ordnance being within the area is high. However, the actual probability of an unexploded ordnance being detonated is

considered unlikely due to education and a public safety campaign notifying the public of what to do and what not to do in the event of discovery.

CLIMATE CHANGE

Arson

Arson is a human caused hazard and is not correlated with climate change. However, climate change may make arson fires more devastating by increasing temperatures and decreasing humidity during the fire season. Plant based fuel may increase, providing more material for arson fires to turn into wildfires.

Hazardous Materials

Hazardous materials releases are typically caused by accidental conditions, which are not correlated with climate change. However, hazardous materials releases can result from a natural hazard event such as a wildfire or severe weather event. Climate change may cause an increase in the number of these events in Rancho Santa Margarita. Hazardous materials releases during wildfire and severe weather events can spread contamination to large geographic areas and amplify long-term impacts to human and ecological health.

Terrorism

While there is not a direct connection between climate change and terrorism, climate change has the potential to exacerbate local conflicts. Climate change can increase the frequency and severity of natural hazard events. Significant and prolonged conditions such as drought can cause conflicts regarding natural resources and livelihood insecurity, as well as food insecurity or water scarcity. These conditions can contribute to an environment where affected groups or individuals may harbor grievances or resort to unlawful activities to generate income.[35]

Unexploded Ordnance (UXO)

Unexploded ordnance is related to historical conditions associated with the use of the devices for training, which are not correlated with climate change.

[35] Climate Diplomacy, *Insurgency, Terrorism and Organised Crime in Warming Climate*, https://www.climate-diplomacy.org/publications/insurgency-terrorism-and-organised-crime-warming-climate, accessed June 21, 2024.

4.2.5 LANDSLIDE/MUDFLOW

DESCRIPTION

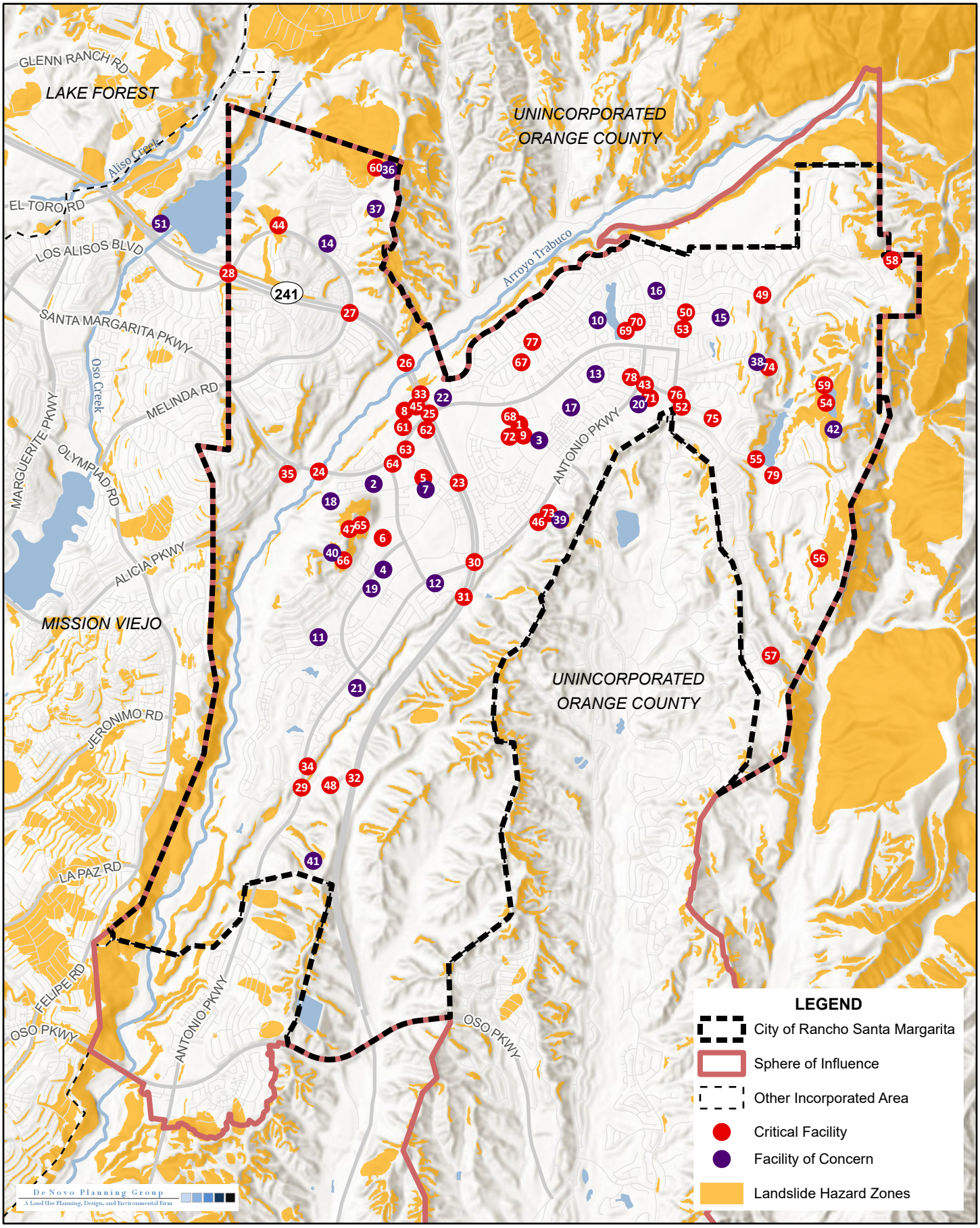
When a hillside or other slope becomes unstable, the soil and rocks that make up the slope slide toward the bottom. Landslides are often sudden, although some occur very slowly over a long period of time. Loose and fractured materials are more likely to slide than compact materials or solid rock, and steep slopes are at greater risk than gentle rises. Areas that have been recently burned by wildfires are more susceptible to sliding because the fire destroys the plant cover that helps stabilize slopes.

Landslides are usually induced by either earthquakes or moisture. The shaking of an earthquake can decrease slope stability, or in a more severe instance, can fracture the earth material enough that it slides. Moisture-induced landslides can occur when the ground soaks up enough water that it becomes loose and unstable. This is often the result of intense or long-lasting rainfall but can also result from a pipeline burst or overwatering landscapes. In some cases, hillside erosion from rainfall can cause instability and result in landslides. If the slide is wet enough to become mud, the event is known as a mudslide or a mudflow.

Regardless of the cause or specific form, a landslide can damage or destroy structures built on the sliding material or in its path. Underground infrastructure, such as pipelines or telecommunication lines, may be severed during a landslide. This could lead to infrastructure-induced flooding if water pipes are broken. In addition to property damage, landslides can crush or bury people, creating a risk of serious injury or death.

LOCATION AND EXTENT

Figure 4-6, *Landslide Hazard Zones*, identifies landslide hazard zones within the City and surrounding area based on terrain, geologic, geotechnical and seismological data. These areas are susceptible to earthquake-induced landslide hazards and do not depict areas that could be at risk for moisture-induced landslides.



CITY OF RANCHO SANTA MARGARITA

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; California Geological Survey Seismic Hazard Zonation Program. Map date: August 26, 2024.

FIGURE 4-6.
LANDSLIDE HAZARD ZONES

According to the County of Orange and Orange County Fire Authority Hazard Mitigation Plan, locations at risk from landslides or debris flows (mudflows) include areas with one or more of the following conditions:[36]

- On or close to steep hills
- Steep road-cuts or excavations
- Existing landslides or places of known historic landslides (such sites often have tilted powerlines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground)
- Steep areas where surface runoff is channeled, such as below culverts, V-shaped valley, canyon bottoms, and steep stream channels
- Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons
- Canyon areas below hillside mountains that have recently (within 1 to 6 years) been subjected to wildfire

Areas of steep slopes and the creeks that convey surface runoff from the community serve as locations at risk for landslides and mudflows within Rancho Santa Margarita. The City's location within and adjacent to high wildfire hazard areas also makes it more susceptible to experiencing landslides and mudflows associated with heavy rain events following a wildfire event.

Landslides and mudflows have different predictability and velocity levels depending upon the nature and location of the event. Slow landslides may damage structures and infrastructure and are difficult to stabilize due to their large size. However, slow landslides allow people to evacuate before there is the danger of loss of life. Landslides and mudflows with high velocity can destroy structures or other lifeline utilities and can cause significant loss of life or injury. The severity of a landslide is often measured by the amount of material that slides (e.g., in cubic feet).[37] Mudflows tend to be more fluid and because they flow down a stream or creek, they can extend beyond the community in which they originated. Mudflows can occur suddenly without time for adequate warning and reach

[36] County of Orange and Orange County Fire Authority, *Local Hazard Mitigation Plan*, December 2021.
[37] U.S. Geologic Survey, *The Landslide Handbook – A Guide to Understanding Landslides*, https://pubs.usgs.gov/circ/1325/pdf/Sections/Section1.pdf, accessed June 21, 2024.

100 miles per hour. Monitoring of weather conditions and understanding historic fire conditions within the area can help to identify conditions in which mudflows are likely.

PREVIOUS OCCURRENCES

No significant landslides have occurred within Rancho Santa Margarita in City history. There was one isolated slope failure incident in Bell Canyon (2010) which covered a street with five to six feet of mud. This event was caused by heavy rains and dead plant materials which blocked drainage facilities and was remediated. Mudflows have historically occurred within the Trabuco Canyon area during and after heavy storms. A recent example occurred in November 2018, when a late fall storm on the Holy Fire burn scar turned Trabuco Creek into a river of mud, ash, and debris.[38] Prior to heavy storms, the City of Rancho Santa Margarita works proactively to close areas with mudflow potential and clear drainage channels, focusing on target areas to reduce damage associated with mudflows. The City also provides signs that warn people that Trabuco Canyon and the Holy Jim Canyon area are closed.

PROBABILITY OF FUTURE OCCURRENCES

The probability of future occurrences of landslides and mudflows is considered likely within the City. Several steep slopes are noted as landslide hazard zones in Rancho Santa Margarita, where the probability of landslides is higher. Additionally, landslides can be caused by earthquake activity, which was determined to have a high probability of occurring in the City. Areas that have experienced fires and loss of vegetation could experience landslide or mudflow events associated with heavy rain conditions.

CLIMATE CHANGE

There is no known link between climate change and seismic activity, and therefore climate change is not expected to directly affect earthquake-induced landslides. In southern California, climate change is anticipated to decrease overall precipitation levels and cause more frequent drought conditions, but there is also a possibility of

[38] ABC7 Eyewitness News, *Trabuco Creek turns into raging river of mud amid rain storm,* https://abc7.com/weather/video-trabuco-creek-turns-into-raging-river-of-mud-amid-storm/4791668/, published November 29, 2018, accessed June 21, 2024.

increased frequency of intense storms. Drought conditions cause soil to dry out over time, reducing the ability for soils to absorb precipitation when storms occur. Decreased absorption can result in increased amounts of runoff with the potential for landslide and/or mudflow conditions. More significant or frequent storm events can also result in more precipitation to be absorbed by the soil of slopes in Rancho Santa Margarita and could destabilize hillsides and cause an increase in the frequency of landslide events or mudflows. Increased temperatures and dry conditions associated with climate change can also result in wildfires. When wildfires burn through an area, they often cause devegetation and destabilization of soil that can also result in landslides or mudflows during intense storm events.

4.2.6 PEST MANAGEMENT AND DISEASE OUTBREAK

DESCRIPTION

Pest Management

Pests can include disease, insects, or weeds that cause costly and irreparable harm to natural resources. Methods to manage these problems includes integrated pest management, that couples the use of pesticides and biological pest control and monitoring to reduce the overuse of pesticide applications.[39]

Pests of major concern in Orange County include the Invasive Shot Hole Borer (ISHB) and Gold Spotted Oak Borer (GSOB), two invasive beetle species that attack a variety of tree species including avocados, common landscape selections, and California native species.[40] The GSOB damages trees by boring tunnels or holes and feeding larvae which can lead to canopy dieback and tree death. The ISHB attacks trees by injecting a fungus into the tree which causes a disease called Fusarium dieback. This disease disrupts the tree's veins and can cause other problems. Local experts and authorities are working together to stop the spread of the beetle and minimize damages.

Disease Outbreak

A disease outbreak refers to a scenario when the amount of a disease in a community rises above the baseline level in a limited geographic area. An epidemic is a disease outbreak that occurs, often suddenly, within a specific geographical area. A pandemic, in contrast, occurs if the disease spreads to multiple areas or the entire globe. Disease outbreaks can occur as infectious diseases are transmitted from person to person by direct or indirect contact.

Diseases can also spread through vectors – defined as "any insect or other arthropod, rodent, or other animal of public health significance capable of harboring or transmitting the causative agents of human disease, or capable of causing human discomfort and

[39] U.S. Department of Agriculture – National Institute of Food and Agriculture, *Pest Management*, https://nifa.usda.gov/topic/pest-management, accessed June 21, 2024.
[40] Irvine Ranch Conservancy, *Invasive Insect Profile: Gold Spotted Oak Borer & Shot Hole Borer*, https://www.irconservancy.org/invasive-insect-profile-gold-spotted-oak-borer-shot-hole-borer/#:~:text=Tree%20Infestation%3A%20The%20GSOB%20and,the%20health%20of%20infested%20trees, accessed June 21, 2024.

injury."[41] According to the Orange County Mosquito and Vector Control District, specific vectors of concern in the County include rats, mosquitos, flies and Red Imported Fire Ants. Vector-borne diseases of concern include West Nile virus, flea-borne typhus, and spotted fever. Orange County Mosquito and Vector Control District routinely tests for the presence of Lyme disease in local tick populations and has not experienced any confirmed locally acquired human cases of Lyme. The mosquitoes responsible for transmitting Zika, yellow fever and dengue, have been detected in parts of Orange County.

LOCATION AND EXTENT

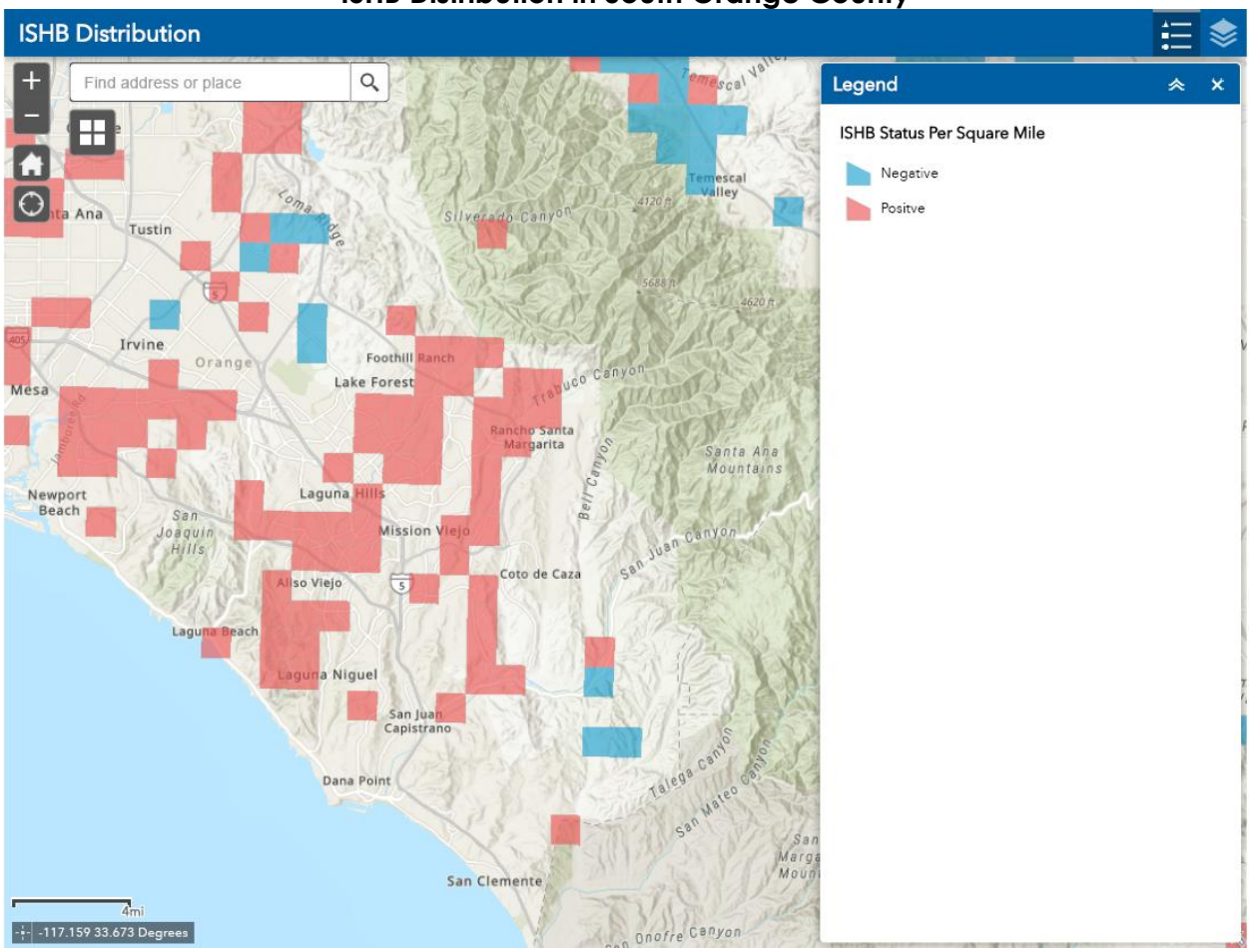
Pest Management

ISHB has been identified throughout Orange County, and infestations within Rancho Santa Margarita are concentrated within O'Neill Regional Park. There have been a few instances of ISHB infecting ornamental landscape outside of the regional park boundaries. Refer to Figure 4-7, *ISHB Distribution in South Orange County*, for mapped ISHB locations within the City and surrounding communities. Red indicates areas where trees tested positive for the pest; areas in blue tested negative.

GSOB is distributed throughout southern California, and infestations within Rancho Santa Margarita are concentrated within the Santa Ana Mountain regions, including O'Neill Regional Park. Refer to Figure 4-8, *GSOB Distribution in South Orange County*, for mapped GSOB locations within the City and surrounding communities.

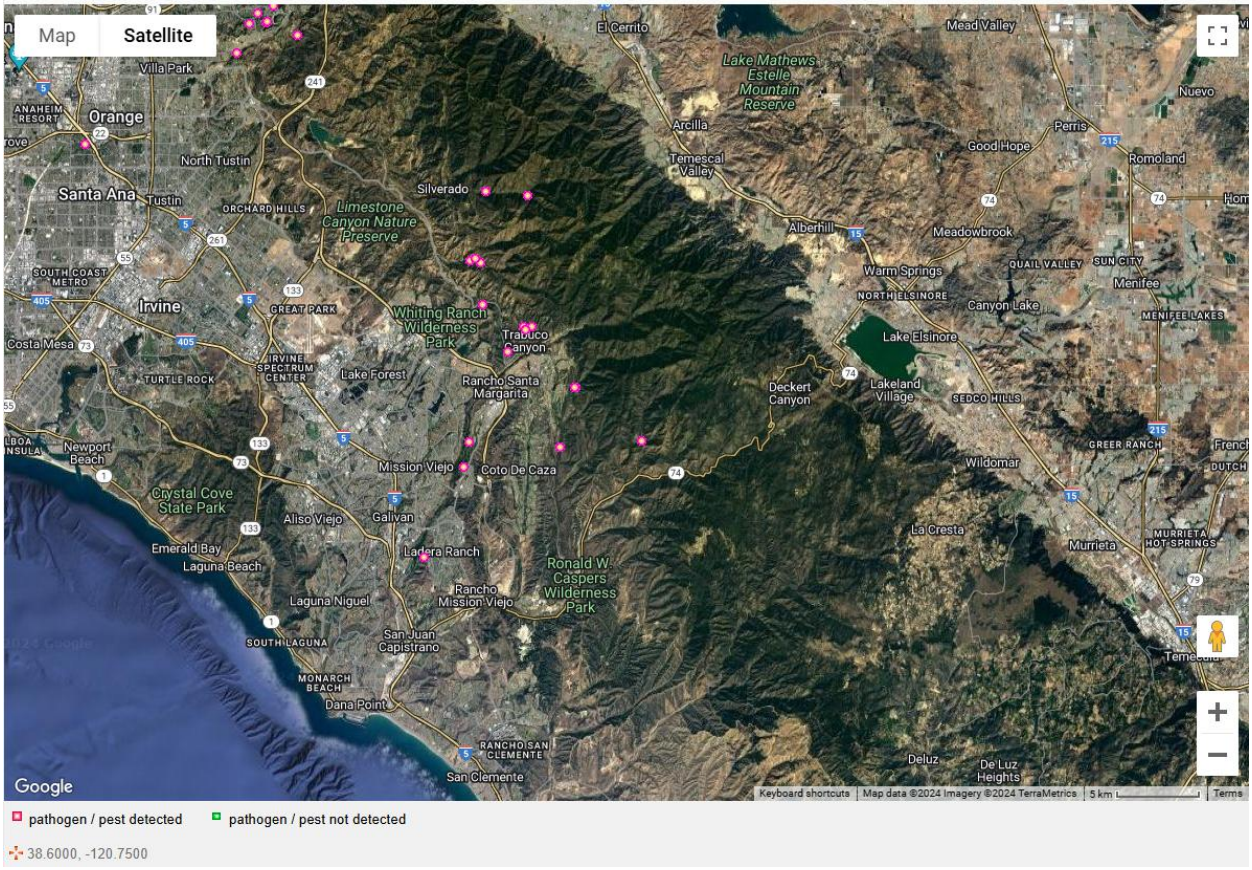
[41] Orange County Mosquito and Vector Control District, *What is a Vector?*, https://www.ocvector.org/what-is-a-vector, accessed August 5, 2024.

Figure 4-7
ISHB Distribution in South Orange County



Source: University of California Agriculture and Natural Resources, ISHB-FD Distribution in California, https://ucanr.edu/sites/pshb/pest-overview/ishb-fd-distribution-in-california/, accessed August 5, 2024.

Figure 4-8
GSOB Distribution in South Orange County



Source: Calflora, *Agrilus auroguttatus / Goldspotted Oak Borer / GSOB*, https://www.calflora.org/entry/pathogen.html?id=pth27, accessed August 5, 2024.

Disease Outbreak

A public health crisis involving infectious diseases can originate anywhere in the City or region and can spread through the population of Rancho Santa Margarita. A crisis can spread rapidly at places of congregation, such as schools, commercial centers, or places of worship.

State and local health departments monitor and report cases of certain diseases which are deemed to be of public interest by reason of their contagiousness, severity, or frequency. Data on these diseases are collected and tracked by the Centers for Disease Control and Prevention (CDC) in order to recognize disease outbreaks and track the spread of disease at the regional, State, and federal levels.

PREVIOUS OCCURRENCES

Pest Management

There is no precedent for the ISHB and GSOB infestation within the City. Borer beetles were identified in the City between 2016-2017, and within the southern California region around 2003. There are no known previous occurrences prior to this discovery, and there is no comparable pest in existence within Orange County.

Disease Outbreak

The most severe and recent disease outbreak was the global COVID-19 pandemic, which first emerged in China in 2019 and was characterized as a pandemic by the World Health Organization (WHO) in March 2020. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Anyone can get sick with COVID-19 and become seriously ill or die, but most people recover without treatment. People who have pre-existing health problems, such as people taking immunosuppressive medication, those with chronic heart, lung, liver or rheumatological problems, and those with HIV, diabetes, cancer, obesity or dementia, are at higher risk of COVID-19. Over 760 million cases and 6.9 million deaths have been recorded worldwide since December 2019.[42] Within Orange County, there have been 8,706 reported COVID-related deaths.[43]

Outside of the COVID-19 Pandemic, there is no history of major public health crises or major vector borne disease outbreaks impacting the City of Rancho Santa Margarita.

PROBABILITY OF FUTURE OCCURRENCES

Pest Management

ISHB and GSOB is likely to continue spreading within the City and southern California region, due to the existing distribution. Management techniques currently involve removal of infested material; there is no known way to eradicate either the beetle or the fungus once a tree is infected. The University of California is leading research efforts to better understand the beetle and identify eradication techniques. Until then, the probability of future occurrences within Rancho Santa Margarita is likely.

Disease Outbreak

As public health crises can result from local, regional, or global factors, the nature and geographic extent can be difficult to predict. The regulations related to reporting and monitoring of agents that can lead to public health crises are robust, and early identification of these agents reduces the risk of a crisis. Additionally, the Orange County Vector Control District regularly conducts field surveys to determine presence of vector-borne disease. Despite this, the probability of future occurrences impacting Rancho Santa Margarita is likely.

CLIMATE CHANGE

Pest Management

ISHB and GSOB is not connected to climate change. However, ISHB and GSOB are causing the death of native trees within the City of Rancho Santa Margarita which could cause an increase in fuel material for future wildfires associated with increased

[42] World Health Organization, *Coronavirus Disease (Covid-19)*, https://www.who.int/news-room/fact-sheets/detail/coronavirus-disease-(covid-19), accessed August 5, 2024
[43] Orange County Health Care Agency, Covid-19 Resources, https://www.ochealthinfo.com/services-programs/disease-prevention/diseases-conditions/covid-19-resources, accessed August 5, 2024.

temperatures and drier conditions. Additionally, the loss of native habitat can also exacerbate flooding or erosion issues within the City especially during heavy rain events.

Disease Outbreak

Climate change can have significant impacts on public health and has the potential to be a cause of a public health crisis. Warming trends could facilitate higher rates of climate-related illnesses and death. Food-borne, water-borne and vector-borne infections and diseases have the capacity to spread more quickly.

Climate change can also exacerbate droughts and biodiversity loss, resulting in food shortages and affecting public health. Environmental disasters related to climate change such as heavy rainfall and flooding can increase breeding opportunities for disease vectors such as mosquitos, as well as cause displacement, causing more interactions with wildlife and increasing the risk of spillover of pathogens.[44]

4.2.7 SEISMIC HAZARDS

DESCRIPTION

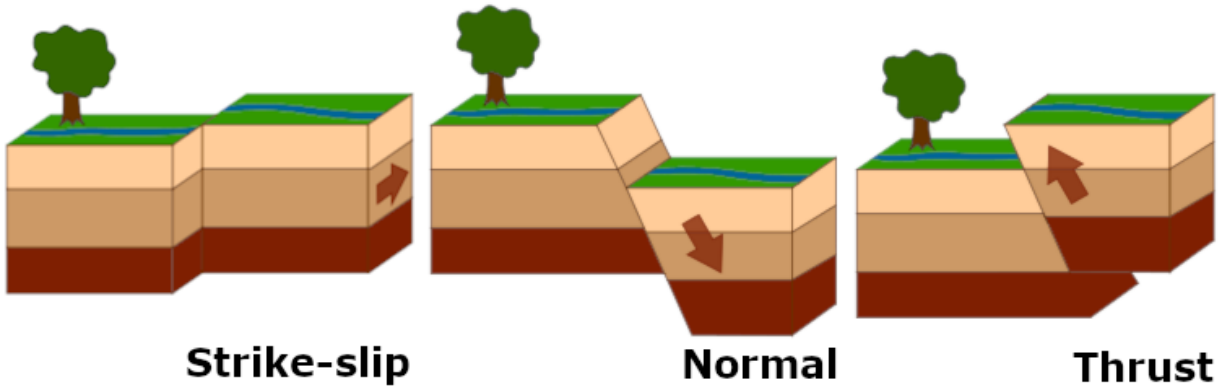
Earthquakes

The US Geological Survey (USGS) defines an earthquake as a sudden slip on a fault and the resulting ground shaking and radiated seismic energy caused by the slip (or any other sudden stress changes in the earth).[45] Faults are fractures along the earth's crust between two blocks of earth and can be defined as a strike slip, normal, or thrust faults, as depicted in Figure 4-9, *Types of Faults*, below.

Fault movement can occur rapidly, in the form of an earthquake, or may occur slowly, in the form of creep. During an earthquake, the rock on one side of a fault suddenly slips with respect to the other. Earthquakes occur without warning and result in effects such as ground motion, surface faulting, and ground failure (including liquefaction and landslides), described below.

[44] De Oliveira, T., Tegally, H., *Will climate change amplify epidemics and give rise to pandemics?*, https://www.science.org/doi/10.1126/science.adk4500, accessed August 21, 2024.
[45] U.S. Geologic Survey, *Earthquake Hazards Program*, https://www.usgs.gov/glossary/earthquake-hazards-program, accessed June 11, 2024.

Figure 4-9
Types of Faults



Source: U.S. Geological Survey, *Earthquake Hazard Program*, https://www.usgs.gov/programs/earthquake-hazards, accessed June 21, 2024.

Ground Motion

Ground motion is seismic shaking (vibration) of the ground during an earthquake.[46] When a fault ruptures, seismic waves radiate and cause the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can further amplify ground motion.

Seismic shaking can be strong enough to result in widespread devastation or virtually undetectable by the average person. The intensity of seismic shaking is a result of the release by the fault rupture (how much of the accumulated stress was released), the length of the rupture (the longer the slip along the fault line, the greater the shaking), and the depth at which the rupture occurs (ruptures that occur closer to the surface often cause stronger shaking). Usually, areas closest to the site of the rupture experience the greatest shaking, although differences in geology and soil can also have an impact.

Seismic shaking can damage or destroy buildings and structures and may cause partial or total collapse. Ground movement can damage or destroy infrastructure on or beneath the surface, such as roads, rail lines, and utility lines and pipes. This in turn, can cause hazardous materials releases, water main breaks, and other dangerous situations resulting from infrastructure failure. Falling debris and structures also create a risk of personal injury or death.

Surface Faulting

Surface faulting is the differential movement of two sides of a fracture, where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults, which occur based on the type of underlying fault.

Faults occur at the boundaries between large sections of the earth's surface, called tectonic plates. While most of California sits on the North American plate, coastal areas in southern California (including Rancho Santa Margarita) are on the Pacific plate. The

[46] U.S. Geological Survey, *What are the Effects of Earthquakes?*, https://www.usgs.gov/programs/earthquake-hazards/what-are-effects-earthquakes, accessed June 21, 2024.

San Andreas Fault is the main boundary between North American and Pacific plates, but other fault lines can be found up to 200 miles away. The presence of the San Andreas Fault and other faults is the reason for California's frequent seismic shaking and other tectonic activity.

Liquefaction

Liquefaction is a phenomenon that occurs when ground shaking causes saturated soils, primarily clay-free deposits such as sand or silt, to lose strength and act like a viscous fluid. Certain soils are more susceptible to liquefaction, particularly younger and looser sediment closer to the water table. According to FEMA, liquefaction causes three types of ground failure, as described below:[47]

- Lateral spreads involve the lateral movement of large blocks of soil as a result of liquefaction of an underlying layer. They generally develop on gentle slopes, most commonly between 0.3 and 3 degrees. Horizontal movements commonly are as much as 10 to 15 feet. However, where slopes are particularly favorable, and the duration of ground shaking is long, lateral movement may be as much as 100 to 150 feet. Lateral spread usually breaks up internally, forming numerous fissures and scarps.

- Flow failures consist of liquefied soil or blocks of intact material riding on a layer of liquefied soil and are the most catastrophic type of ground failure caused by liquefaction. They commonly move several feet and up to dozens of miles under certain conditions. Flow failures usually form in loose saturated sands or silts on slopes greater than three degrees.

- Loss of bearing strength occurs when the soil supporting buildings or other structures liquefies. When large deformations occur, structures settle and tip. The general subsurface geometry required for liquefaction-caused bearing failures is a layer of saturated, cohesionless soil that extends from near the ground surface to a depth equal to about the width of the building.

Landslides

Earthquakes can create stresses that contribute to landslides. Landslides can include a variety of ground movement, such as rock falls, slope failures, and debris flows. While earthquakes can cause landslides, other causes can include erosion, soil saturation, excess weight from accumulation of rain or snow, or man-made structures weakening slopes. Thus, landslides are profiled separately.

LOCATION AND EXTENT

The City is located within the southern California region, known to be seismically active. No active faults are known to pass through Rancho Santa Margarita. The closest active

[47] U.S. Geological Survey, *What are the Effects of Earthquakes?*, https://www.usgs.gov/programs/earthquake-hazards/what-are-effects-earthquakes, accessed June 11, 2024.

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), as discussed below.

Elsinore Fault Zone (Elsinore-Glen Ivy Fault). The Elsinore Fault follows a general line easterly of the Santa Ana Mountains into Mexico. The main trace of the Elsinore Fault zone is approximately 112 miles long. The last major earthquake on this fault occurred in 1910 (magnitude 6.0), and the interval between major ruptures is estimated to be about 250 years. The Southern California Earthquake Center (SCEC) reports probable earthquake magnitudes for the main trace of the Elsinore fault to be in the range of 6.5 to 7.5.

Chino Fault. The Chino Fault is a right reverse fault and is part of the Whittier-Elsinore Fault system which is located northeast of Chino Hills. The fault is approximately 17.4 miles long and extends from the Santa Ana Mountains northwest to the City of Pomona, where it joins the San Jose Fault. SCEC reports probable earthquake magnitudes for the Chino fault to be in the range of 6.0 to 7.0. The last earthquake reported was on July 29, 2008, with a magnitude of 5.4.

Newport-Inglewood Fault Zone. The Newport-Inglewood Fault extends from the Santa Monica Mountains southeastward through the western part of Orange County to the offshore area near Newport Beach and was the source of the destructive 1933 Long Beach earthquake (magnitude 6.4), which caused 120 deaths and considerable property damage. During the past 60 years, numerous aftershocks ranging from magnitude 3.0 to over 5.0 have been recorded. SCEC reports probable earthquake magnitudes for the Newport-Inglewood fault to be in the range of 6.0 to 7.4.

The two known local faults outside the City, the Aliso and Cristianitos, are thought to be inactive and are not zoned under the State's Alquist-Priolo Earthquake Fault Zone Act.

Liquefaction susceptibility is located along Trabuco Canyon and Tijeras Canyon Creek traversing through the City; refer to Figure 4-10, *Liquefaction Hazard Zones*. Additionally, most of the low-lying areas in Rancho Santa Margarita (primary located around surface waterways) have a high liquefaction potential because of shallow ground water, within 50 feet of the ground surface. Liquefaction zones identify areas where the potential for liquefaction is relatively high, and in the event of development, would require detailed site-specific geotechnical investigations.

Ground shaking would be particularly damaging to residential buildings constructed of wood or reinforced 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 too few shear walls.

Intensity and Magnitude

Earthquake ground shaking is generally expressed in terms of intensity and magnitude. Several scales may be used to measure the strength or intensity of an earthquake.[48]

[48] U.S. Geological Survey, *Earthquake Magnitude, Energy Release, and Shaking Intensity*, https://www.usgs.gov/programs/earthquake-hazards/earthquake-magnitude-energy-release-and-shakingintensity#:~:text=Moment%20Magnitude%20(MW)%20is,magnitude%20range%20where%20they%20overlap, accessed June 11, 2024.

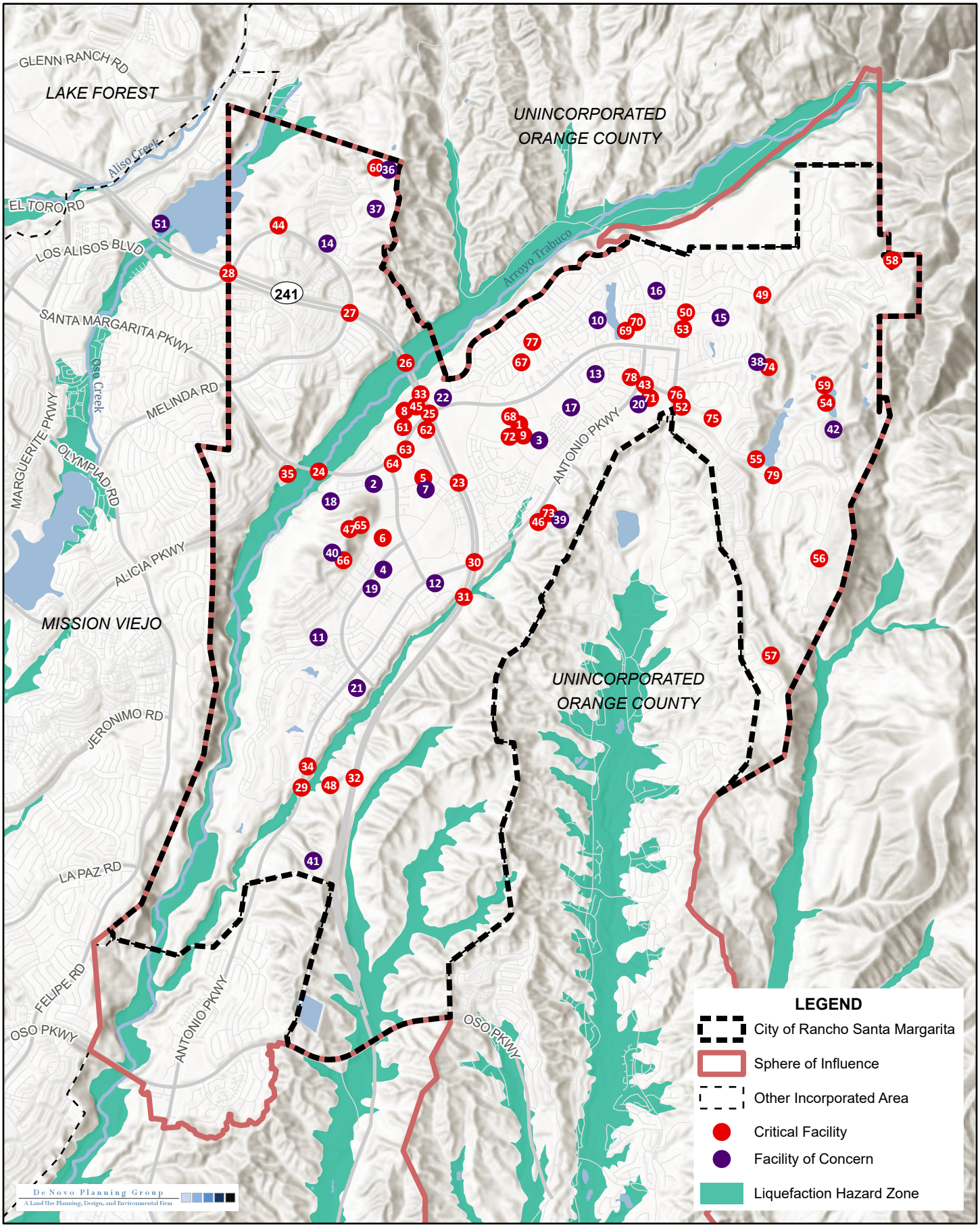
Magnitude scales, like the moment magnitude (Mw), measure the size of the earthquake at its source. An earthquake event has a single magnitude; however, the degree of ground shaking that the earthquake causes varies from place to place based on distance, type of surface material, and other factors. Figure 4-11, *Earthquake Shaking Potential*, shows the potential for the City to experience earthquake ground shaking. As shown, the entire City is identified as having lower-to-moderate ground shaking potential, with more populated flat areas generally having a higher ground shaking potential than the hillside areas.

In contrast to magnitude, other scales describe earthquake intensity, which can vary depending on distance from earthquake epicenter and local characteristics. The Modified Mercalli intensity scale expresses earthquake intensity experienced at a particular location on a scale of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects. The level of intensity assigned to a specific location is a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced. Table 4-8, *The Modified Mercalli Intensity Scale*, lists abbreviated descriptions of the Modified Mercalli intensity levels.

Table 4-8
The Modified Mercalli Intensity Scale

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only be few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specifically designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: U.S. Geologic Survey, *The Modified Mercalli Intensity Scale*, https://www.usgs.gov/natural-hazards/earthquake-hazards/science/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects, accessed June 11, 2024.



CITY OF RANCHO SANTA MARGARITA

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; California Geological Survey Seismic Hazard Zonation Program. Map date: August 26, 2024.

FIGURE 4-10.
LIQUEFACTION HAZARD ZONES

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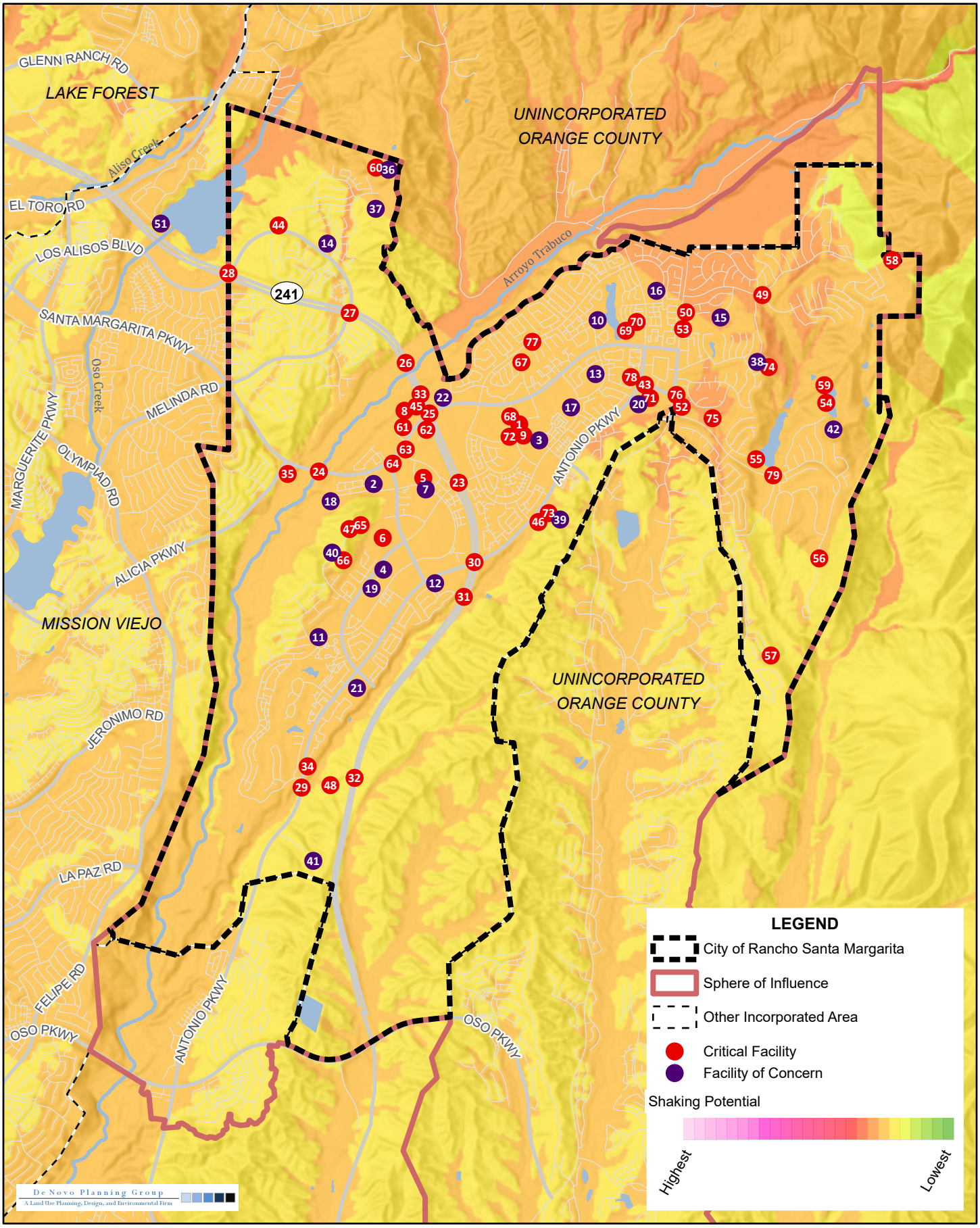

CITY OF RANCHO SANTA MARGARITA

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; California Geological Survey Map Sheet 48. Map date: August 26, 2024.

FIGURE 4-11.
EARTHQUAKE SHAKING POTENTIAL

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PREVIOUS OCCURRENCES

As discussed above, a variety of faults are located near the City of Rancho Santa Margarita. Table 4-9, *Major Earthquake Faults of Particular Concern*, identifies faults of concern and last major ruptures.

Table 4-9
Major Earthquake Faults of Particular Concern

Fault Name	Type of Faulting	Last Major Rupture	Slip Rate	Interval Between Major Ruptures	Probable Magnitudes
Elsinore	Right-lateral strike-slip	May 15, 1910 Magnitude 6.0 (no surface rupture)	Roughly 4.0 mm/year	Roughly 250 years	6.5–7.5
Newport-Inglewood	Right-lateral; local reverse slip	March 10, 1933 Magnitude 6.4 (no surface rupture)	0.6 mm/year	Unknown	6.0–7.4
San Andreas	Right lateral strike-slip	April 18, 1906 Magnitude 7.9	20 to 35 mm/year	Varies; between 20 and 300 years	6.8–8.0
San Jacinto	Right-lateral strike-slip; minor right-reverse	April 9, 1968 Magnitude 6.5	7 to 17 mm/year	Varies; between 100 and 300 years	6.5–7.5
San Joaquin Hills	Blind thrust	Unknown; potentially 1855	0.42 to 0.79 mm/year	Unknown	>7.0

Sources: Southern California Earthquake Center, *Significant Earthquakes and Faults,* http://scedc.caltech.edu/significant/fault-index.html, accessed July 12, 2024. Grant, Lisa B. et al, *Coastal Uplift of the San Joaquin Hills, Southern Los Angeles Basin, California, by a Large Earthquake since A.D. 1635,* Bulletin of the Seismological Society of America, Volume 92, No. 2, pp 590–599, March 2002.

Table 4-10, *Significant Historical Earthquakes in Southern California*, identifies major earthquakes that have occurred in southern California. Several of these earthquakes occurred prior to the City's incorporation in 2000; therefore, specific data regarding impacts to the City from these incidents is not available. However, the Northridge Earthquake and the Whittier Narrows Earthquake both resulted in major disaster declarations from the federal government, which included Orange County as a designated area.[49]

[49] Federal Emergency Management Agency, *Disasters and Other Declarations,* https://www.fema.gov/disaster/declarations, accessed July 12, 2024.

Table 4-10
Significant Historical Earthquakes in Southern California

Earthquake Name	Year	Estimated Magnitude
Wrightwood	1812	7.5
Los Angeles	1855	6.0
San Bernardino	1858	6.0
Elsinore	1910	6.0
San Jacinto	1918	6.8
North San Jacinto	1923	6.3
Long Beach	1933	6.4
San Fernando	1971	6.5
Whittier Narrows	1987	5.8
Newport Beach	1989	4.7
Northridge	1994	6.7
Chino Hills	2008	5.4
Ridgecrest	2019	7.1

Source: Southern California Earthquake Data Center, *Significant Earthquakes and Faults*, http://scedc.caltech.edu/significant/index.html, accessed June 12, 2024; California Department of Conservation, *California's Big Earthquakes*, https://www.conservation.ca.gov/cgs/earthquakes/significant, accessed June 12, 2024; U.S. Geological Survey, *Search Earthquake Catalog*, https://earthquake.usgs.gov/earthquakes/search/, accessed June 12, 2024.

The California Geological Survey does not identify any previous instances of liquefaction within the City limits or the larger Santiago Peak Quadrangle.[50]

Southern California experienced groundshaking during the most recent significant earthquake on July 4, 2019 with an epicenter in Ridgecrest, located approximately 130 miles north of the City in Kern County. The local magnitude of the earthquake was 6.4, and included a series of foreshocks and aftershocks. On July 6th, 2019, a magnitude 7.1 earthquake occurred in the same location. The cause of the earthquake was determined to be a shallow strike slip faulting in the crust of the North America Plate. Minor groundshaking was experienced in Rancho Santa Margarita, and no damage in the City was reported.[51]

PROBABILITY OF FUTURE OCCURRENCES

Rancho Santa Margarita is in a known seismically active area, and thus the probability for future seismic hazard occurrences is considered highly likely. Given the significant seismic shaking events in the region, it is certain that such events will continue. The southern California region has many fault lines (including major faults), and it is almost inevitable that a regional fault line will rupture in the foreseeable future and cause a major seismic shaking event. The USGS Uniform Earthquake Rupture Forecast Version 3 released in 2017 provides a perspective of the likelihood each California region will experience a magnitude 6.7 or larger earthquake in the next 30 years; refer to Table 4-

[50] California Department of Conservation, Division of Mines and Geology, *Seismic Hazard Zone Report for the Santiago Peak 7.5-Minute Quadrangle, Orange County, California,* published 2002.
[51] United States Geological Survey, *M 7.1 – 18km W of Searles Valley, CA*, https://earthquake.usgs.gov/earthquakes/eventpage/ci38457511/executive, accessed July 12, 2024.

11, *Los Angeles Region Earthquake Probabilities*, and Table 4-12, *Likelihood of One or More Earthquakes Occurring in the Next 30 Years in Orange County Region by Fault*.

Table 4-11
Los Angeles Region Earthquake Probabilities

Magnitude (greater than or equal to)	Average Repeat Time (years)	30-Year Likelihood of One or More Events
5.0	1.4	100%
6.0	10	96%
6.7	40	60%
7.0	61	46%
7.5	109	31%
8.0	532	7%

Notes:
1. M≥5 means magnitude greater than or equal to 5.0, and likewise for the other two magnitude thresholds.
2. The 30-year period measured by this report is 2014 to 2044.
3. A 30-year period is used as it is the typical duration of a homeowner mortgage.
4. Actual repeat times will exhibit a high degree of variability and will almost never exactly equal the average listed in the table above.

Source: U.S. Department of the Interior and U.S. Geological Survey, *UCERF3: A New Earthquake Forecast for California's Complex Fault System Fact Sheet 2015-3009*, March 2015.

Table 4-12
Likelihood of One or More Earthquakes Occurring in the Next 30 Years in Orange County Region by Fault

Magnitude	Elsinore Fault	Newport-Inglewood Fault	Southern San Andreas Fault	San Jacinto Fault	San Joaquin Hills Fault
M≥6.7	3.66%	0.70%	19.21%	5.41%	0.42%
M≥7.0	1.82%	0.63%	12.86%	5.39%	0.40%
M≥7.5	0.90%	0.20%	10.21%	5.28%	0.24%
M≥8.0	<0.01%	--	3.24%	2.75%	--

Notes:
1. M≥6.7 means magnitude greater than or equal to 6.7, and likewise for the other magnitude thresholds.
2. The 30-year period measured by this report is 2014 to 2044; a 30-year period is the typical duration of a homeowner mortgage.
3. Percentages for fault sections closest to Rancho Santa Margarita.

Source: U.S. Department of the Interior and US Geological Survey, *The Third California Earthquake Rupture Forecast (UCERF3)*, Google Earth file with fault probabilities, March 2015.

CLIMATE CHANGE

Earthquakes are caused by seismic activity, which is not correlated with climate change. However, climate change could bring more severe rain events increasing the amount of water saturation in loose soils. The increased saturation combined with an earthquake event could cause liquefaction or landslides to occur in the City.

4.2.8 SEVERE WEATHER

DESCRIPTION

Heavy Rains

During severe weather events such as strong storms, rain can fall at such a high rate that it cannot drain away fast enough. Heavy rain can cause flooding, leading to inundation and potential damage to buildings, roadways, and other critical infrastructure. Heavy rainfall conditions can also trigger landslides, mudflow, and slope instability due to the added weight of rain-saturated slopes and weakened slopes from the pressure the groundwater exerts on porous hillside materials. In California, heavy rainfall events are often short, intense bursts of rain, but in some cases, heavy rain can persist for multiple days.

Thunderstorms are rain storms with lightning that can also include strong winds and hail. According to the National Weather Service/National Oceanic and Atmospheric Administration (NWS/NOAA), a severe thunderstorm must have at least one of the following: 1) hail that is one inch in diameter or larger; or 2) winds of 58 miles per hour or greater.[52] About 10 percent of thunderstorms in Orange County are classified as severe. They usually occur when cool, moist air moves in to break a prolonged hot spell. The storms are usually short-lived and infrequent. Over the interior mountain areas, storms are more intense, and they may become unusually severe on occasion at intermediate and high elevations. Rancho Santa Margarita experiences heavy rain events that can result in localized flooding, mudflows, and fallen tree limbs or brush that block roadways and drainage systems.

Santa Ana Winds

Santa Ana winds are warm, dry winds that push dry air from the inland deserts of California and the Southwest over the mountains between coastal California and the deserts. They form when high pressure builds over the desert of the Great Basin region, causing winds to blow from the east toward the Pacific Ocean and lower air pressure offshore. As air moves west from the Great Basin toward California, where pressure is lower, it gains speed as it whips through mountain valleys and passes. The resulting airflow can reach speeds upwards of 30 mph, and gusts of more than twice this speed.[53] The phenomenon occurs during the fall and early winter. Santa Ana windstorms can last for several days at a time. These hot and very dry winds dry out vegetation, increasing the fuel available to feed fires. The gusts can also fan flames and spread wildfires.

Extreme Heat

Extreme heat conditions are defined as weather that is much hotter than average for a particular time and place, and sometimes more humid. The heat index is a measure of how hot it feels when relative humidity is factored into the actual temperature. High

[52] National Weather Service, *What Constitutes a Severe Thunderstorm*, https://www.weather.gov/bmx/outreach_svr, accessed July 12, 2024.
[53] California Governor's Office of Emergency Services, *2023 California State Hazard Mitigation Plan*, https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-California-SHMP_Volume-1_11.10.2023.pdf, published August 2023, accessed July 12, 2024.

humidity can cause the heat index to increase drastically and create dangerous health conditions.[54]

Typically, the National Weather Service (NWS) issues Excessive Heat Warning/Advisory when the heat index is predicted to be 105°F or greater for two or more consecutive days, although the temperature cut-off varies for different regions.[55] Cal-Adapt identifies an extreme heat day or warm night as a day in a year when the daily maximum/minimum temperature exceeds the 98th historical percentile of daily maximum/minimum temperatures based on the historical data from 1961-1990 between April and October. For the City of Rancho Santa Margarita, the 98th percentile would be 91.5°F. Additionally, Cal-Adapt defines a heat wave as periods of four consecutive extreme days or warm nights when the daily temperature is above the extreme heat threshold.[56]

Power Outage

Power outages are a major secondary effect of severe weather events in Rancho Santa Margarita. During severe weather incidents, such as high winds Southern California Edison (SCE) may implement an operational practice called Public Safety Power Shutoffs (PSPS), to preemptively shut off power in high-risk areas during potentially dangerous fire conditions. This program is designed to proactively prevent SCE facilities from starting a wildfire when winds and temperatures are high.

Strong Santa Ana winds, high temperatures, and low humidity are all severe weather conditions that could trigger a PSPS event. The frequency of PSPS events depends on weather and environmental factors, and SCE makes decisions based on internal thresholds, assessment of real-time information, and situational awareness data. SCE has met with the City of Rancho Santa Margarita and applicable community first responders to inform about PSPS protocol, including the location of circuits in the jurisdiction that may be shut off during a PSPS event.

When possible, SCE intends to notify customers prior to a PSPS event. When weather forecasts indicate extreme fire conditions, SCE begins predictive modeling to assess potential impact while monitoring weather watch alerts from the National Weather Service. Two days prior to extreme fire conditions forecasted, SCE would coordinate first with the local government, emergency management community, and first responders. A first notification would go out to customers 48 hours prior to the shut off, a second notification 24 hours prior, and a final notification with power shut off. It is noted that actual or sudden onset of extreme weather conditions could impact coordination and notification efforts.[57]

Outside of the PSPS events, there is the potential for power outages to occur within the City. SCE defines a major outage as a large unexpected outage caused by either

[54] Environmental Protection Agency and Center for Disease Control, *Climate Change and Extreme Heat: What You Can Do to Prepare*, https://www.epa.gov/sites/production/files/2016-10/documents/extreme-heat-guidebook.pdf, accessed July 12, 2024.
[55] National Weather Service, *Heat Watch vs. Warning*, https://www.weather.gov/safety/heat-ww, accessed July 12, 2024.
[56] Cal-Adapt, *Extreme Heat Days & Warm Nights*, https://cal-adapt.org/tools/extreme-heat/, accessed July 12, 2024.
[57] Southern California Edison, *Public Safety Power Shutoffs*, https://www.sce.com/safety/wildfire/psps, accessed July 12, 2024.

accidents or natural disasters. While uncommon, loss of electrical power is a potential secondary effect of severe weather events.

LOCATION AND EXTENT

A heavy rain, Santa Ana wind, or extreme heat event would occur throughout the entire City of Rancho Santa Margarita. While PSPS would only affect certain circuits within the City, a major power outage could affect the entirety of the City, including public infrastructure such as water/wastewater, transportation facilities, and emergency services. Although most of Rancho Santa Margarita powerlines are located underground, they are connected to regional lines which are located aboveground. Therefore, power outages or interruptions could occur from events not directly impacting the City.

Heavy Rains

One of the indicators for a heavy rain season is the Oceanic Niño Index (ONI), used to monitor the El Niño-Southern Oscillation (ENSO). To calculate the ONI, scientists from the National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center calculate the average sea surface temperature in the El Niño 3.4 region (area of the east-central equatorial Pacific Ocean) for each month, and then average it with values from the previous and following months. This running 3-month average is compared to a 30-year average. The observed difference from the average temperature in that region, whether warmer or cooler, is the ONI value for that 3-month "season". Based on the ONI, the El Niño (warm) and La Niña (cool) events in the tropical Pacific are categorized as weak, moderate, strong, or very strong.[58]

Rancho Santa Margarita experiences an average of 13.8 inches of rain per year, with February being the wettest month (average of 3.4 inches of rain) and June, July, and August being the dryest months (average of 0.1 inches of rain).[59] Typically, the City's drainage systems have been able to accommodate heavy rain events, as the City proactively inspects, cleans, and clears catch basins and flow lines to prevent flooding and other issues in anticipation of a storm. Trabuco Canyon and Holy Jim Canyon are often proactively closed in anticipation of a rain event.

Santa Ana Winds

Hurricane winds are measured using the Saffir-Simpson Hurricane Wind Scale. Although hurricane events are not typical within Rancho Santa Margarita, the scale can be used to measure strong winds that are not associated with a hurricane event. The scale uses measurements in pressure, wind speed, and damage potential to identify the types of damage associated with sustained wind events; refer to Table 4-13, *Saffir-Simpson Hurricane Wind Scale*.

[58] National Oceanic and Atmospheric Administration, *Climate Variability: Oceanic Niño Index*, https://www.climate.gov/news-features/understanding-climate/climate-variability-oceanic-ni%C3%B1o-index, accessed July 12, 2024.
[59] Best Places, *Rancho Santa Margarita, CA Climate*, https://www.bestplaces.net/climate/city/california/rancho_santa_margarita, accessed September 27, 2024.

Table 4-13
Saffir–Simpson Hurricane Wind Scale

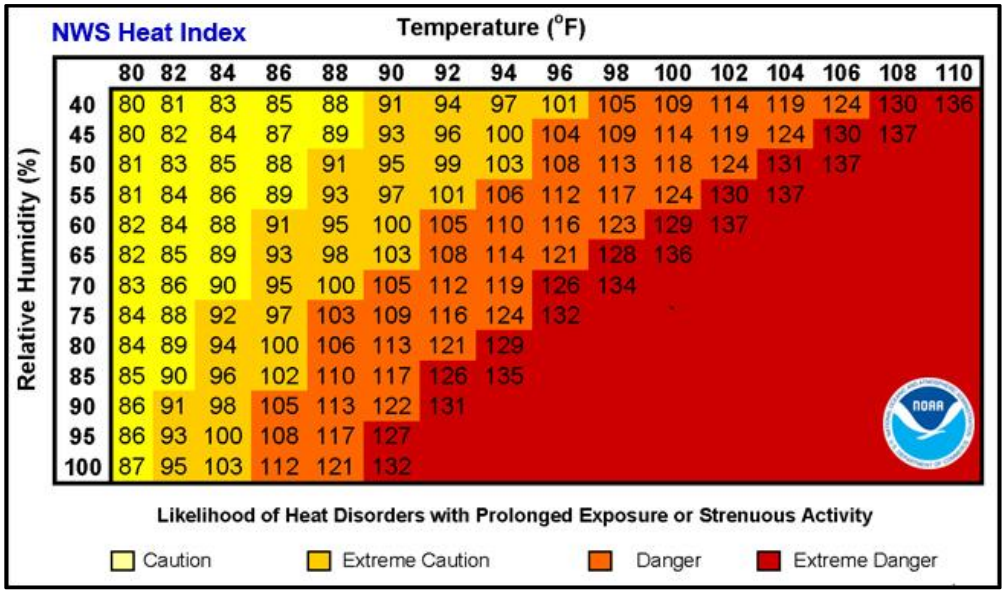
Category	Sustained Wind Speed	Description of Damages
1	74–95 mph	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap, and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96–110 mph	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3	111–129 mph	**Devastating damage:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	130–156 mph	**Catastrophic damage:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 mph or higher	**Catastrophic damage:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Hurricane Center, *Saffir-Simpson Hurricane Wind Scale*, https://www.nhc.noaa.gov/aboutsshws.php, accessed July 12, 2024.

Extreme Heat

The Heat Index, which measures the "apparent temperature" when considering both air temperature and humidity, is used by the NWS to identify extreme heat days. Extreme heat is particularly dangerous when occurring for a prolonged period (heat waves). Figure 4-12, *Heat Index*, shows the likelihood of heat disorder with prolonged exposure or strenuous activity associated with various temperatures and relative humidity. As described above, the NWS indicates alert procedures when the Heat Index is expected to exceed 105°–110°F (depending on local climate).

Figure 4-12
Heat Index



Source: National Weather Service, *NWS Heat Index*, https://www.weather.gov/images/safety/heatindexchart-650.jpg, accessed July 12, 2024.

Power Outage

SCE designates High Fire Risk Areas as areas with circuits within California Public Utilities Commission's (CPUC) Tier 2 (elevated risk) and Tier 3 (extreme risk) Fire Threat Areas. The CPUC Fire-Threat Map was developed with input from the U.S. Forest Service, California Department of Forestry and Fire Protection, and the State's investor-owned utilities, including SCE. SCE uses their own thresholds prior to initiating a PSPS event. When evaluating weather and environmental conditions, SCE considers a variety of factors which include but are not limited to:

- NWS Red Flag Warnings
- SCE meteorological assessments
- SCE Fire Potential Index
- SCE Fire Scientist assessments
- Real-time situational awareness information
- SCE Fire Management/Office of Emergency Management input
- Concerns from local or State fire authorities
- Mandatory or voluntary evacuation orders in place
- Expected impact of de-energizing circuits on essential services (including public safety agencies, water pumps, traffic controls, etc.)
- Other operational considerations to minimize wildfire ignitions

PREVIOUS OCCURRENCES

Heavy Rains

The rainy season in Rancho Santa Margarita traditionally occurs between November into early May, although severe rains have occurred during other times of the year. Refer to the Flood Hazard Profile for a summary of specific regional storms that caused heavy rains in the City. During the week of December 16 – 23, 2010, record and historic rain levels were

recorded in Orange County. During that week, Rancho Santa Margarita received over 19 inches of rain. As discussed above under the Landslide/Mudflow Profile, in December 2010 an isolated slope failure, caused in part by heavy rains, occurred in Bell Canyon. In late November and early December 2018, the City experienced heavy rainfall; while some standing water occurred on local roadways/bridges, no major damage resulted. Heavy rains in combination with the Holy Fire burn scar did result in mud, ash, and debris within Trabuco Creek, resulting in damage to Trabuco Canyon Road outside the City.

Between 2018 and 2024, the City experienced several rain events involving consecutive days of heavy rains. These events have resulted in the proactive closure of Trabuco Canyon due to mudflows and areas of localized flooding because of the intensity and prolonged nature of the rain events. On November 8, 2022, OCSD issued a mandatory evacuation order for residents of the Silverado Canyon, Williams Canyon, and Modjeska burn areas (located north of the City) due to a strong rain storm that brought flash flood warnings and wind advisories. Total reported rainfall over the course of this three-day storm was 4.37 inches in Coto de Caza which is adjacent to the City. In January 2023, several storm systems with heavy rain and wind occurred in southern California. The City experienced some downed trees. More recently, in March 2023, the State of California experienced severe winter storms resulting in the Governor of California proclaiming a state of emergency for several counties and the President issuing a Presidential Emergency Declaration for California that was amended March 16, 2023 to include Orange County. The Governor issued a state of emergency proclamation that included Orange County on August 18, 2023 due to Tropical Storm Hilary, as well as February 4, 2024 due to a powerful, slow moving, atmospheric river.

Santa Ana Winds

Santa Ana winds occur annually between September to May in the City of Rancho Santa Margarita and southern California region. These events have caused tree limbs to fall and debris to scatter, at times resulting in blocked roadways and storm drain systems. Significant Santa Ana wind events in Orange County's recent history include an event in October 2018, where wind gusts of up to 75 miles per hour caused trees to fall, claiming the life of a woman in Tustin.[60] In November 2021, Rancho Santa Margarita experienced strong winds. The City experienced some downed trees and minor damage. Within southern California, including Orange County, wind advisories have most recently occurred in December 2021, February 2022, April 2022, October 2022, January 2022, January 2023, and April 2023. Another high Santa Ana wind event occurred in March 2024, where wind gusts caused a tree to collapse onto an apartment complex in Lake Forest and a light post to fall onto a parked vehicle in Mission Viejo.[61] Most incidents of high wind in Rancho Santa Margarita are the result of either the Santa Ana winds or La Niña/El Niño wind conditions.

[60] Bloom, T., Yost, C., & Wolfe, C., *34-Year-Old Tustin Woman Dies After Tree Falls on Vehicle Amid Strong Winds*, https://ktla.com/news/local-news/woman-dies-after-tree-falls-on-vehicle-in-tustin-amid-strong-winds/, accessed July 12, 2024.
[61] Lee, H. & Bahnsen, A., *Toppled tree displaces a dozen residents at Lake Forest apartment complex as Santa Ana gusts hit*, https://www.ocregister.com/2024/03/14/toppled-tree-displaces-lake-forest-residents-as-santa-ana-gusts-hit-orange-county/, accessed July 12, 2024.

Extreme Heat

Rancho Santa Margarita experiences an average of four extreme heat days per year, although some years over the past decades have seen as few as one or as many as 12 extreme heat days.[62] Since 2010, the Bell Canyon monitoring station (located approximately 3.5 miles southeast of Rancho Santa Margarita) has experienced an extreme heat event (91.5°F or higher) every year.[63] During this period, the maximum temperature during extreme heat events reached an average of 97.6°F. Table 4-14, *Orange County Extreme Heat Events*, summarizes recent notable extreme heat events identified by the NWS in and around the forecast area. Some events from Los Angeles and surrounding areas are included. Events were included based on frequency, severity, and impact.

Power Outage

Rancho Santa Margarita has never experienced a City-wide power outage due to severe weather within the community. However, a PSPS warning was issued by SCE from December 7 to December 8, 2020 for the Dove Canyon and Trabuco Canyon areas due to high winds and wildfire conditions.[64] A planned power outage also occurred on August 26, 2020. Advance notice was provided to SCE customers advising that power could be off for the whole period; turned off more than once; may not begin exactly at the announced plan outage started time; and conditions may require the planned outage to be postponed. SCE provided a courtesy notice to the City which was posted on the City website "Newsflash" section.[65] In November 2021, Rancho Santa Margarita experienced strong winds resulting in isolated areas of the City losing power for two days. In March 2022, strong winds and a fast-moving wildfire in the Cleveland National Forest resulted in SCE declaring areas of the City were under consideration for PSPS.

[62] Cal-Adapt, *Extreme Heat Days and Warm Nights*, http://cal-adapt.org/tools/extreme-heat/, accessed July 12, 2024.
[63] National Oceanic and Atmospheric Administration, *Climate Data Online Search: Santa Fe Dam California*, CA US, https://www.ncei.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USR0000CSFD/detail, accessed June 18, 2024.
[64] Ludwig, A., Power Outages Possible In Rancho Santa Margarita, Dove Canyon, https://patch.com/california/ranchosantamargarita/power-outages-possible-rancho-santa-margarita-dove-canyon, accessed July 12, 2024.
[65] City of Rancho Santa Margarita, *Planned Power Outage - Wednesday, August 26th (overnight)*, https://www.cityofrsm.org/CivicAlerts.aspx?AID=537&ARC=957, accessed July 12, 2024.

Table 4-14
Orange County Extreme Heat Events

Dates	Description
June 28–June 30, 2013	A heat wave on the order of a 20-year event enveloped the west and southern California. Death Valley reached the highest June temperature ever recorded in the United States: 129°F on June 30. Other desert cities like Palm Springs, Thermal, and Borrego Springs tied or set new June records and came within 1 degree of the all-time highest temperature on record on June 29.
April 30–May 1, 2014	On April 30, temperatures soared past 90°F along the coast, breaking many daily high temperature records. Winds kept the minimum temperature in Anaheim at 77°F. On May 1, temperatures at all lower-elevation stations were in the 90s, with Chula Vista topping the list at 100°F.
May 13–May 15, 2014	Strong high pressure and a strong late-season Santa Ana wind event combined to bring record high temperatures exceeding 100°F to most of the lower elevations on these days. Many all-time high temperature records for the month of May were broken. The hottest day was May 15 when it was 106°F in Yorba Linda and the San Diego Wild Animal Park.
March 13–March 16, 2015	Strong high pressure and Santa Ana conditions boosted temperatures into the 90s across the coast and valleys each day, with cooling only into the 60s at night. Numerous daily high maximum and daily high minimum records were set. The warmest day, on March 13, was 96°F in Santa Ana. Highest minimum temperatures were 68°F in Santa Ana and San Diego on March 15.
September 1-September 3, 2017	A strong high-pressure system stalled over the western US and allowed temperatures to rise into the triple digits. This heatwave was documented as the greatest statewide heat wave ever recorded in California (at the time). Readings soared above 110°F across the Central Valley, while in southern California, days of triple-digit heat fueled the largest wildfire on record in the City of Los Angeles (La Tuna Fire).
July 1 – July 6, 2018	A strong high-pressure system obliterated heat wave records across southern California, as part of the larger North American Heat Wave. Santa Ana recorded 114°F on July 6; Riverside tied a record at 118°F and UCLA recorded an all-time hottest record at 111°F. The Chino automated weather station recorded 120°F – the highest temperature ever recorded by any automated weather station in the valleys or coastal areas around Orange, Riverside, San Bernardino and San Diego counties. Additionally, several hottest all-time overnight low temperatures were recorded in Burbank (82°F) and Los Angeles (79°F).
September 6, 2020	A historic heat wave swept through Southern California during the Labor Day weekend. Woodland Hills set a record temperature of 121 degrees on Sunday afternoon, the highest official temperature ever recorded in Los Angeles County according to the National Weather Service.
February 9 – February 13, 2022	A heat advisory was issued for Los Angeles and Orange counties and the Inland Empire due to unseasonably hot weather, with temperatures up to 20 degrees above normal. It was the first heat advisory issued by the National Weather Service in Los Angeles during the month of February since 2006.
June 2022	A heat advisory was issued for several parts of southern California due to triple-digit temperatures.
September 1 –September 9, 2022	From September 1st through September 9th, 2022, temperature records for September were shattered across the western portion of the United States. The National Weather Service issued an excessive heat warning in Orange County during this period.
August 2023	Following a series of heat waves in July, an excessive heat warning was issued in Orange County in late August 2023.
July 2024	Inland Los Angeles and Orange Counties under excessive heat warning beginning July 3, with temperatures in some areas reaching 105°F.
September 4 – September 9, 2024	Southern California, including Orange County, experienced high temperatures with several days of excessive heat warnings beginning September 4, 2024. Temperatures were predicted to reach 105°F in Orange County inland areas.

Source: National Weather Service, *A History of Significant Weather Events in Southern California*, updated May 2017; Climate Signals beta, Southern California Heat Wave July 2018 and September 2017; NASA Earth Observatory, California Heatwave Fits a Trend, https://earthobservatory.nasa.gov/images/147256/california-heatwave-fits-a-trend; KTLA, *Heat wave: SoCal to see unseasonably hot temperatures up to 20 degrees above normal*, February 9, 2022; OCDE Newsroom, *Update: Excessive heat warning extended for Southern California*, https://newsroom.ocde.us/excessive-heat-warning-issued-for-southern-california-2/, accessed July 12, 2024; CalOES News, *Extreme Heat Returns to Southern California This Week*, https://news.caloes.ca.gov/extreme-heat-returns-to-southern-california-this-week/, accessed July 12, 2024; LAist, *Your SoCal weather report for Wednesday, July 3: Heat wave in full swing into next week,* July 3, 2024. Orange County Register, *Brace yourself for more 100-degree days and red-flag warnings, Southern California*, September 6, 2024.

PROBABILITY OF FUTURE OCCURRENCES

Heavy Rains

El Niño and La Niña are opposite phases of a natural climate pattern across the tropical Pacific Ocean that swings back and forth every 3 – 7 years, on average, in what is called the ENSO. The ENSO pattern in the tropical Pacific can be in one of three states: El Niño, Neutral, or La Niña. El Niño (the warm phase) and La Niña (the cool phase) lead to significant differences from the average ocean temperatures, winds, surface pressure, and rainfall across parts of the tropical Pacific. Neutral indicates that conditions are near their long-term average.

According to the NWS, ENSO conditions have returned to neutral after experiencing El Niño conditions from winter to spring 2023-24; however, La Niña conditions are projected to develop during July to September (65% chance) and persist into the Northern Hemisphere during winter 2024-25 (85% chance). Typically, El Niño is associated with warm, wet winters in southern California, while La Niña is associated with cooler and drier conditions. As such, the southern California area could experience a rapid swing from heavy precipitation to dryness. However, due to the cyclical nature of these climate patterns, and based on previous occurrences and weather trends in southern California, it is highly likely that heavy rains will continue to occur in the City.

Santa Ana Winds

High winds, or Santa Ana wind events for purposes of this LHMP, have historically occurred annually within southern California and Rancho Santa Margarita. According to the NWS, these winds are most common during the cooler months of the year, occurring from September to May. Due to the topography of the area, weather patterns, and annual occurrence, it is highly likely that high winds related to Santa Ana wind events will continue to occur in the City annually.

Extreme Heat

Extreme heat events have historically occurred within California and southern California. Table 4-14 demonstrates 13 significant extreme heat events in Orange County from 2013-2024. According to the National Weather Service, California has been experiencing more frequent and severe heat waves. Cal-Adapt Extreme Heat Days & Warm Nights tool indicates that for most areas around the State, the climate models project a significant rise in the number of days exceeding what is now considered extremely hot for the given area. For Rancho Santa Margarita, baseline data (1961-1990) shows four extreme heat days per year, which is shown to increase to 10 days per year (2035-2064). Thus, based on the historical occurrence of four extreme heat days per year and projected increase in future occurrences of 10 days per year, the probability that extreme heat events will continue to occur in the City is highly likely.

Power Outage

Power outage and/or PSPS events are typically associated with heavy rains, Santa Ana winds, and extreme heat. These associated events are highly likely to continue to occur in the City. Thus, based on previous occurrences and the probability of future heavy rains,

Santa Ana winds, and extreme heat, power outage is highly likely to continue to occur in the City.

CLIMATE CHANGE

Climate change has direct effects on heavy rain events. According to research conducted by UCLA, California will experience extremely wet and extremely dry seasons by the end of the century. Climate scientists predict that "over the next 40 years, the State will be 300 to 400 percent more likely to have a prolonged storm sequence as severe as the one that caused the legendary California flood more than 150 years ago." With the population density and urbanization of Orange County, such a flood could be devastating for the City of Rancho Santa Margarita.

According to the California Adaptation Planning Guide, local heat waves are likely to occur much more frequently. Climate models project a significant rise in the number of days exceeding what is now considered extremely hot for Rancho Santa Margarita. The number of heat waves is very likely to increase because of climate change, reflecting the global trend.

SCE reports that increased power outages are directly related to climate change, and states on their website that PSPS will become "the new normal during high fire/wind events." PSPS will become increasingly required to mitigate fire risk as increased severity and duration of extreme weather events occur.

Additionally, climate change may result in storm events, Santa Ana winds and heat waves occurring outside of traditional seasons of the year. This could increase secondary effects, such as flooding, erosion, or wildfire events.

4.2.9 WILDFIRE

DESCRIPTION

A wildfire is defined as an unplanned and unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fire where the object is to extinguish the fire. Wildfire is a natural part of the southern California ecosystem, helping to clear brush and debris, and is a necessary part of the various species' life cycles. Wildfires can be sparked by lightning, accidents, or arson.

At the same time, human activity has changed the buffer zone between urbanized and undeveloped areas, known as the wildland-urban interface, where naturally fire-prone landscapes abut developed neighborhoods. The natural setting of a wildland-urban interface can make these areas highly desirable places to live, and many of these areas in California are now developed. This development has brought more people into wildfire-prone areas. The availability of fuel and increasing encroachment into the wildland-urban interface have made wildfires a common and dangerous hazard in California. 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.

LOCATION AND EXTENT

CAL FIRE prepares wildfire hazard severity maps including mapping areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. 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. While FHSZ do not predict when or where a wildfire will occur, they do identify areas where wildfire hazards could be more severe and therefore are of greater concern. Zones are designated on varying degrees from moderate, high, and very high. A large portion of land within the City is open space and includes rugged topography with highly flammable native vegetation, making wildland fires a significant risk to the community and within the City's sphere of influence (SOI). Very High Fire Hazard Severity Zones (VHFHSZs) are located in the west, south, and east areas of the City; refer to Figure 4-13, *Fire Hazard Severity Zones*. Additionally, these Fire Hazard Severity Zones are not limited to the City of Rancho Santa Margarita. Land designed within the VHFSZ is also located within the City of Mission Viejo and City of Lake Forest, immediately west of Rancho Santa Margarita. The Cleveland National Forest is located to the northeast of the City and is also designated a VHFSZ within the State Responsibility Area.

Fire protection challenges within Rancho Santa Margarita occur where development is located within and directly adjacent to wildland urban interface areas. As the number of structural features increase, so does the risk of incidence of fire. Wildfires are not measured on a specific scale and are usually classified by size or impact. The size and severity of any fire depends on the availability of fuel, weather conditions, and topography, although wildfires in the wildland urban interface do not need to be identified as large to be damaging. Due to the location of development within and adjacent to Moderate, High, and Very High Fire Hazard Severity Zones, there is the

potential for a wildfire to spread quickly and through a large portion of the City, depending on the conditions and nature of the fire.

PREVIOUS OCCURRENCES

Fire season in southern California traditionally has occurred between May and September. However, it should be noted that Orange County has experienced some of its most devastating fires during the fall (outside of the traditional fire season), including the Laguna Fire and Freeway Complex Fire described below.

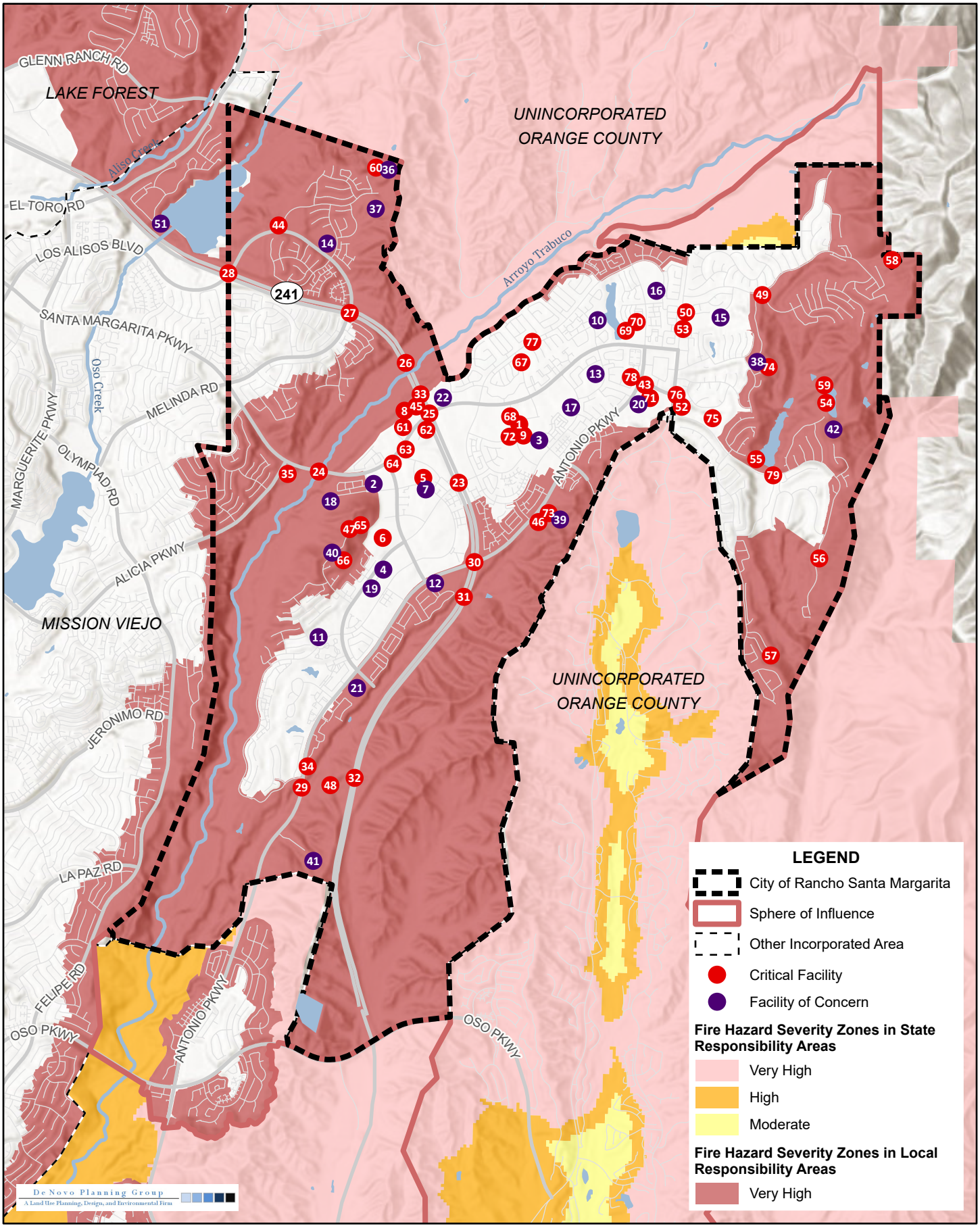
Table 4-15, *Recent Fires in Orange County*, summarizes wildfire activity in Orange County dating back to 1996. These fires have resulted in varying impacts with the amount of acreage ranging from three acres to over 30,000 acres. These fires have occurred both within and outside of what has been referred to as the traditional wildfire season.

In comparison to Table 4-15, Table 4-16, *Major Wildfires in Orange County History*, identifies the most significant historical fires in Orange County dating back to 1948 in terms of the amount of acreage claimed. As seen in Tables 4-15 and 4-16, the most recent fires originating near Rancho Santa Margarita include the Airport Fire, which claimed over 23,500 acres of land in 2024; the Holy Fire, which claimed over 23,000 acres of land in 2018; the Silverado Fire, which claimed over 12,000 acres of land in 2020; and the Jim Fire, which claimed over 500 acres of land in 2022.

Table 4-15
Recent Fires in Orange County

Location	Name	Begin Date	Acres Claimed
Lemon Heights	N/A	10/21/1996	Unknown
El Toro MCAS	N/A	10/13/1997	6,000
Santiago Canyon	N/A	8/31/1998	9,000
Fountain Valley	N/A	12/9/1998	Unknown
Mission Viejo	N/A	12/27/1999	38
San Clemente	N/A	8/22/2000	Unknown
San Clemente	N/A	9/11/2000	500
Laguna Beach	N/A	8/7/2001	Unknown
El Toro MCAS	N/A	9/9/2001	30
Trabuco	N/A	1/23/2002	Unknown
Anaheim	N/A	2/9/2002	2,400
Yorba Linda	N/A	4/21/2002	Unknown
Mission Viejo	N/A	5/13/2002	1,100
Los Alamitos	N/A	5/14/2002	Unknown
Mission Viejo	N/A	5/14/2002	Unknown
Costa Mesa	N/A	7/16/2002	30
Garden Grove	N/A	7/29/2002	Unknown
Yorba Linda	N/A	11/20/2002	477
Mission Viejo	N/A	11/26/2002	3
Santa Ana Mountains	Sierra Fire	2/6/2006	10,854
Santa Ana Mountains	Windy Ridge Fire	3/11/2007	2,036
Santa Ana Mountains	Santiago Fire	10/21/2007	28,400
Santa Ana Canyon	Freeway Complex Fire	11/15/2008	30,305
Santa Ana Mountains	Long Canyon	9/23/2010	40
Santa Ana Mountains	Falls Fire	8/5/2013	1,416
Santa Ana Mountains	Silverado Fire	9/12/2014	1,600
Santa Ana Mountains	Canyon Fire	9/25/2017	2,662
Anaheim Hills	Canyon 2 Fire	10/9/2017	9,000
Aliso Viejo Canyon Park	N/A	6/2/2018	200
Trabuco Canyon	Holy Fire	8/6/2018	23,136
Santa Ana Mountains	Silverado Fire	10/26/2020	12,466
Yorba Linda	Blue Ridge	10/26/2020	13,964
Santa Ana Mountains	Bond Fire	12/2/2020	6,680
Laguna Beach	Emerald Fire	2/10/2022	154
Trabuco Canyon	Jim Fire	3/2/2022	553
Laguna Niguel	Coastal Fire	5/11/2022	200
Trabuco Canyon	Airport Fire	9/9/2024	23,526

Sources: NOAA National Centers for Environmental Information, *Storm Events Database*, https://www.ncdc.noaa.gov/stormevents/, accessed May 23, 2024; California Department of Forestry and Fire Protection, *Incidents*, https://www.fire.ca.gov/Incidents, accessed October 22, 2024.



CITY OF RANCHO SANTA MARGARITA

FIGURE 4-13.

FIRE HAZARD SEVERITY ZONES

Sources: City of Rancho Santa Margarita; Orange County GIS; USGS; LAFCO; Fire Hazard Severity Zones in State Responsibility Areas, 4/1/2024; Fire Hazard Severity Zones in Local Responsibility Areas - Recommended 2007-2011. Map date: August 26, 2024.

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Table 4-16
Major Wildfires in Orange County History[1]

Fire Name	Year	Acres Claimed
Green River	1948	53,079
Steward	1958	69,444
Unknown	1958	11,774
Paseo Grande	1967	51,075
Indian	1980	28,938
Owl	1980	18,332
Carbon Canyon	1980	14,613
Gypsum	1982	19,986
Assist 108	1989	13,478
Laguna	1993	14,337
Ortega	1993	21,010
Sierra	2006	10,515
Santiago	2007	28,517
Freeway Complex	2008	30,305
Holy Fire	2018	23,136
Silverado Fire	2020	12,466
Blue Ridge	2020	13,964
Airport Fire	2024	23,526

Notes:
1. For purposes of this LHMP, major fires in Orange County are defined as burning more than 10,000 acres in total.

Source: County of Orange and Orange County Fire Authority, *Local Hazard Mitigation Plan*, December 2021; California Department of Forestry and Fire Protection, *Incidents*, https://www.fire.ca.gov/Incidents, accessed October 22, 2024.

Some of the most significant fires in Orange County and within the Rancho Santa Margarita area are described below.

Airport Fire

The Airport Fire originated along the 32200 block of Trabuco Creek Road near a field for remote-controlled airplanes in Trabuco Canyon. The fire started on September 9, 2024 during a period of extremely high temperatures in southern California, and spread upslope aligned with terrain and wind, toward the 2018 Holy Fire burn scar and into the County of Riverside. The communities of Robinson Ranch and Trabuco Highlands, and the Trabuco Highland Apartment Complex received orders to evacuate with many other neighborhoods having voluntary evacuation warnings in place. Several roads in the area were also closed. The fire did not ultimately reach Rancho Santa Margarita, as winds moved the fire through the Cleveland National Forest to Riverside County and away from the City.

On September 9, 2024, the City activated its Emergency Operations Center (EOC), which remained active for four days. During the initial days of the fire, a long-term care and reception shelter was established at the Bell Tower Regional Community Center and a large animal shelter was established at 88 Fair Drive in Costa Mesa. Mission Viejo Animal Services moved to the Bell Tower Regional Community Center to assist sheltering pets and help evacuated residents reunite with their pets. According to the OCFA Deputy Chief, the cause of the fire has been classified as unintentional, sparked by heavy equipment used to replace barriers on Trabuco Creek Road to restrict access into the

vegetation. Over 23,500 acres were burned within both Orange and Riverside counties. Initial damage assessments indicate there were 34 structures damaged, 160 structures destroyed, and 22 injuries, all of which occurred outside of Rancho Santa Margarita.

Silverado Fire

The Silverado Fire originated in the Santa Ana Mountains, northeast of Irvine near Santiago Canyon Road and Silverado Canyon Road, in October 2020 and burned over 12,000 acres in Irvine, Lake Forest and Silverado, including portions of Whiting Ranch Wilderness Park and Limestone Canyon Nature Preserve in the Irvine Ranch Open Space. The fire started on October 26, 2020 and, fueled by Santa Ana winds, spread south and southeast towards the Foothill Ranch neighborhood in Lake Forest. Over 75,000 people in Irvine and Lake Forest were under evacuation orders. Confirmed damages included 11 structures that were damaged and five structures that were destroyed. Two firefighters sustained critical injuries. Orange County firefighters were also battling the Blue Ridge Fire which started to the north on the same day near Yorba Linda. While the cause of the fire remains under investigation, SCE officials indicated in a letter to the California Public Utilities Commission that "lashing wire" used in one of SCE's telecommunication lines may have caused the fire.[66]

Blue Ridge Fire

The Blue Ridge Fire originated in the Chino Hills area, north of State Route (SR) 91, at the edge of Riverside, San Bernardino, and Orange counties. The fire started on October 26, 2020 and burned over 14,000 acres. Santa Ana winds caused the fire to spread north into Chino Hills State Park and west into Yorba Linda. The fire was active for 12 days and resulted in confirmed damages including 12 structures that were damaged and one structure that was destroyed. Over 8,500 homes were evacuated in Chino Hills, Yorba Linda, and Brea.

Holy Fire

The Holy Fire originated in Trabuco Canyon/Holy Jim community in August 2018 and burned over 23,000 acres. The Holy Fire began on August 6, 2018, about 0.25-miles east-northeast from the confluence of Trabuco Canyon and Holy Jim Canyon and spread quickly to the rest of Trabuco Canyon and Riverside County toward Lake Elsinore, and north into Cold Water Canyon and Santiago Peak. Warm weather, low humidity, and Santa Ana winds contributed to the spread of the Holy Fire. Additionally, because the State was battling several fires in northern California, it took time for outside firefighting personnel to report in Orange County. The temperatures and low humidity, combined with the often steep and difficult terrain of the Santa Ana Mountains, created additional challenges in fighting the fire. Approximately 7,400 homes and 21,000 people were evacuated in these communities. Governor Jerry Brown declared a state of emergency for Orange and Riverside Counties.

[66] NBC News, *Cause of Southern California fire that forced thousands to evacuate may be 'lashing wire'*, https://www.nbcnews.com/news/us-news/cause-southern-california-fire-forced-thousand-evacuate-may-be-lashing-n1244973, accessed May 23, 2024.

The cause of the Holy Fire was thought to be arson, but investigators were ultimately unable to determine who started the fire.[67] Five firefighters sustained injuries battling the fire, and at least 12 structures were destroyed. The fire did not ultimately reach Rancho Santa Margarita, as winds moved the fire through the Cleveland National Forest to Riverside County and away from Rancho Santa Margarita. Nevertheless, the City's air quality was degraded for several days, and flames and smoke from the Holy Fire were highly visible.[68]

Ultimately, out of the total of 22,877 acres, 3,290 acres were high soil burn severity (14 percent), 16,258 acres were moderate soil burn severity (71 percent), 1,780 acres were low burn severity (8 percent), and 1,549 acres were very low burn severity or unburned (7 percent). The fire removed vegetation that helps keep slopes intact, changed the structure and erosion potential of the soil, and altered the stability of the landscape. The Holy Fire assessment concluded that slope instability within the burn area is associated with channels containing significant amounts of sediment or fire debris. Ground surveys and observations have determined that most drainages in the Holy Fire burn area are loaded with unsorted, unconsolidated materials, which is discussed further in the Landslide/Mudflow Hazard Profile.[69]

Freeway Complex Fire

On November 15, 2008 a vegetation fire began at westbound State Route (SR) 91 and Green River Road. Erratic Santa Ana winds and low humidity caused the fire to spread in several directions, including north into Chino Hills State Park, south across SR 91 toward Anaheim, west into Yorba Linda, and northwest into the Carbon Canyon/Diamond Bar area. A secondary fire began at the Olinda Alpha Landfill, eventually merging with the Freeway Fire to become known as the Freeway Complex Fire.

The Freeway Complex Fire was contained in four days on November 2008, after burning over 30,000 acres and damaging/destroying over 381 homes, commercial structures, and other buildings. Numerous vehicles, municipal parks, and sensitive ecological areas were also damaged or destroyed. The cause of the fire is believed to be a faulty catalytic converter. At that time, the Freeway Complex Fire was the fourth largest fire in Orange County History.[70]

Laguna Fire

On October 27, 1993, a brush fire began near Laguna Canyon Road about one mile north of El Toro Road. Santa Ana winds pushed the fire in several directions including north into Crystal Cove State Park and south into Laguna Beach. By the time the fire was contained, 366 homes were destroyed, over 500 were damaged, and 17,000 acres were

[67] Emery, S., *Man acquitted of igniting massive Holy fire in Orange and Riverside counties*, https://www.ocregister.com/2023/06/01/man-acquitted-of-igniting-massive-holy-fire/, published June 1, 2023, accessed June 20, 2024.
[68] CBS Local Los Angeles, *Crews Make Progress Against Arson-Sparked Holy Fire,* https://losangeles.cbslocal.com/2018/08/11/crews-make-progress-against-arson-sparked-holy-fire/, accessed January 29, 2019.
[69] Schwartz and Stempniewicz, *Burned Area Emergency Response Assessment FINAL Specialist Report – Geologic Hazards for the Holy Fire, Cleveland National Forest*, published August 27, 2018.
[70] Orange County Fire Authority, *After Action Report Freeway Complex Fire*, November 15, 2008.

burned. While the Laguna Fire was not the largest fire to occur in Orange County, it is the deadliest fire in County history. Investigators determined that the fire was likely the result of arson but were ultimately unable to determine who started the fire.[71]

The Laguna Fire occurred several years prior to the incorporation of the City of Rancho Santa Margarita and the formation of the Orange County Fire Authority. The fire did not encroach into Rancho Santa Margarita; however, the fire was visible and smoke inundation was heavy.

Historical Wildfires Near Rancho Santa Margarita

Prior to the City of Rancho Santa Margarita's incorporation in 2000, several historical wildfires occurred within the vicinity; refer to Table 4-17, *Historical Wildfires in the Vicinity of Rancho Santa Margarita (1914–1980)*. While these fires occurred prior to urbanization of the community, it is important to document historical wildfire patterns within the area.

Table 4-17
Historical Wildfires in the Vicinity of Rancho Santa Margarita (1914–1980)

Fire Name	Alarm Date	Acres	Cause	Location/Vicinity
Unknown	1919	2,224.92	Unknown	Northeast of Rancho Santa Margarita
Unnamed	1925	8,649.89	Unknown	East of Rancho Santa Margarita (Riverside County)
Unnamed	1926	9,934.25	Unknown	North of Rancho Santa Margarita
Green River	11/09/1948	53,078.93	Unknown	North of Rancho Santa Margarita
Toro	07/23/1950	729.37	Unknown	Southeast of Rancho Santa Margarita
Jameson	08/30/1954	7,880.90	Unknown	East of Rancho Santa Margarita (Riverside County)
Cornwell	09/11/1956	3,172.69	Unknown	East of Rancho Santa Margarita (Riverside County)
Steward	12/14/1958	69,444.69	Equipment Failure	East of Rancho Santa Margarita
Indian	07/24/1966	1,404.84	Unknown	Northeast of Rancho Santa Margarita (Riverside County)
Nelson	05/15/1970	3,585.96	Unknown	Within and West of Rancho Santa Margarita
Source: OCFA Wildland GIS Application, *Historical Fires 1914–1980*, accessed March 20, 2019.				

[71] Laguna Beach County Water District, *1993 Fire Storm*, https://www.lbcwd.org/about-us/district-history/1993-fire-storm#ad-image-0, accessed June 3, 2024.

PROBABILITY OF FUTURE OCCURRENCES

Wildfires have a high probability of occurring due to the developed nature and geographic extent of the VHFHSZ within the City. Rancho Santa Margarita is continually exposed to Santa Ana winds during the fall season; however, these winds can occur at other times of the year as well. Additionally, as with the recent Holy Fire, Silverado Fire, Blue Ridge Fire, and Airport Fire, it is highly probable that fires of regional significance will occur in South Orange County, Riverside County, and San Bernardino County, that could impact the City of Rancho Santa Margarita. The wildland-urban interface is likely to experience wildfires in future years.

Further, Rancho Santa Margarita is located adjacent to other urbanized areas, and fires in neighboring jurisdictions could extend into the City. The recent fires in Orange County demonstrate the ability for a wildfire to begin in one place and spread to other cities or cross county lines. As such, the probability of future occurrences of wildfire is considered highly likely.

CLIMATE CHANGE

Several of the largest California wildfires have occurred in the past decade, including the August Complex Fire, Dixie Fire, and Mendocino Complex Fire. During 2018, the Camp Fire became the deadliest wildfire in California history, killing 85 civilians and burning over 153,000 acres in Butte County.[72] Southern California experienced several severe fires in recent history, including the Airport Fire, Line Fire, Bridge Fire, Woolsey Fire, and the Holy Fire.

Climate change is expected to cause an increase in temperatures, as well as more frequent and intense drought conditions. As mentioned previously, the severity of a wildfire is dependent on the amount of oxygen, heat, wind, relative humidity, and fuel. Excessive heat and low humidity during the summer and fall months are likely to occur. It is possible that higher temperatures could cause local native chaparral and scrub ecosystems to change to grasslands. This would increase dry plant matter, which could cause wildfires to move more quickly or spread into developed areas of Rancho Santa Margarita.

It is well documented that regional wildfires will likely become an increased threat, which could have secondary consequences for the City. Specifically, parts of Riverside and San Bernardino County could see wildfire risk increase between 50 and 100 percent. Wildfires release smoke, ash, and other particulate matter that substantially degrade air quality. Thus, fires located in different parts of Orange, Riverside, or San Bernardino counties can negatively impact air quality in the City.

[72] CalFire, *Camp Fire,* https://www.fire.ca.gov/incidents/2018/11/8/camp-fire/, accessed June 3, 2024.

4.3 VULNERABILITY/RISK ASSESSMENT

Vulnerability refers to a description of which assets, including structures, systems, populations, and other assets as defined by the community, within locations identified to be hazard-prone, are at risk from the effects of the identified hazards. A vulnerability analysis predicts the extent of damage on the built environment that may result from a hazard event of a given intensity in a specific area.

4.3.1 HISTORY OF DISASTERS AND OTHER DECLARATIONS

Federally declared disasters affecting Orange County from 2014 to 2024 are listed below in Table 4-18, *Orange County FEMA Disaster Declarations (2014-2024)*. As shown, the greatest threats to the County and City include fire, severe weather, flooding, and seismic and geologic hazards such as landslide and mudslide.

Table 4-18
Orange County FEMA Disaster Declarations (2014-2024)

Disaster Number	Description	Declaration Date/ Incident Period	Assistance Provided
DR-4305	Flood (California Severe Winter Storms, Flooding, and Mudslides)	03-16-2017/ (01-18-2017 to 01-23-2017)	Public Assistance, Risk Mitigation Assistance
FM-5213	Fire (California Canyon Fire)	09-26-2017/ (09-25-2017 to 10-02-2017)	Public Assistance
FM-5223	Fire (California Canyon 2 Fire)	10-09-2017/ (10-09-2017 to 10-20-2017)	Public Assistance
DR-4344	Fire (California Wildfire)	10-10-2017/ (10-08-2017 to 10-31-2017)	Individual Assistance, Public Assistance, Hazard Mitigation Assistance
EM-3428	Biological (California COVID-19)	03-13-2020/ (01-20-2020 to 05-11-2023)	Public Assistance
DR-4482	Biological (California COVID-19 Pandemic)	03-22-2020/ (01-20-2020 to 05-11-2023)	Individual Assistance, Public Assistance, Hazard Mitigation Assistance
FM-5381	Fire (California Blue Ridge Fire)	10-26-2020/ (10-26-2020)	Public Assistance
FM-5380	Fire (California Silverado Fire)	(10-26-2020)	Public Assistance, Hazard Mitigation Assistance
FM-5383	Fire (California Bond Fire)	12-03-2020/ (12-03-2020)	Public Assistance
FM-5439	Fire (California Coastal Fire)	05-12-2022/ (05-11-2022 to 05-16-2022)	Public Assistance
EM-3591	Flood (California Severe Winter Storms, Flooding, and Mudslides)	01-09-2023/ (01-08-2023 to 01-31-2023)	N/A
EM-3592	Flood (California Severe Winter Storms, Flooding, Landslides, and Mudslides)	03-10-2023/ (03-9-2023 to 7-10-2023)	N/A

Source: Federal Emergency Management Agency, *Disasters and Other Declarations*, https://www.fema.gov/disaster/declarations, accessed September 20, 2024.

State-proclaimed disasters affecting Orange County from 2014 to 2024 are listed in Table 4-19, *California State Disaster Declarations for Orange County (2014-2024)*. State-proclaimed disasters affecting the County and City include severe weather and wildfire.

Table 4-19
California State Disaster Declarations for Orange County (2014-2024)

Disaster Code	Description	Date of Disaster
77	January Winter Storms	January 2017
89	Cherokee, LaPorte, Sulphur, Potter, Cascade, Lobo & Canyon Fires	October 2017
106	Holy Fire	August 2018
109	Atmospheric River Storm System	January and February 2019
127	December Winter Storms	December 2021
140	Severe Winter Storms	December 2022 & January 2023
141	Severe Winter Storms	February 2023 & March 2023
142	Tropical Storm Hilary	August 2023
146	Severe Winter Storms	February 2024
153	Airport Fire	September 2024

Source: California State Franchise Tax Board, *List of California Disasters*, https://www.ftb.ca.gov/file/business/deductions/disaster-codes.html, accessed September 20, 2024.

4.3.2 METHODOLOGY

For each of the hazards profiled in the previous section, a vulnerability/risk assessment is provided. The vulnerability/risk assessment gives equal weight to all hazards, regardless of the hazards' probability. It should be noted that the actual losses will depend on the type, location, magnitude, and extent of the hazard event.

The vulnerability/risk examines three aspects of each hazard: the physical threat to critical facilities, facilities of concern, and residential and non-residential structures; the social threat to vulnerable populations, including residents and visitors to the City; and the threat to any other assets that may be affected.

This section relies primarily on the following data sources:

- U.S. Census [2017-2021 American Community Survey (ACS) 5-year estimates]
- Center for Disease Control and Prevention (CDC)/ Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI)
- California Environmental Protection Agency (CalEPA) SB 535 Disadvantaged Communities
- FEMA's National Risk Index

Census data and associated analysis/mapping conducted as part of the City's Housing Element Update were reviewed and compared to the hazards and associated mapping provided within this LHMP to provide an understanding of socially vulnerable populations that may potentially reside within an area of the City subject to hazards. This information was supplemented by the CDC/ATSDR SVI, which uses U.S. census data to determine the social vulnerability of each census tract and ranks each tract on 16 variables, in order to

identify communities that may need support before, during, or after disasters. These variables are grouped into four themes that cover major areas of social vulnerability: socioeconomic status (e.g., income below 150% of poverty level, unemployed, no health insurance), household characteristics (e.g., 65 years or older, aged 17 years or younger, single parent households, English language proficiency), racial and ethnic minority status, and housing type and transportation (e.g., multi-unit structures, mobile homes, crowding, no vehicle).

FEMA's National Risk Index was reviewed in regards to the risks associated with the natural hazards with the potential to affect the City and County. FEMA's National Risk Index leverages available data for natural hazard and community risk factors to develop a baseline risk measurement at the county and census tract level. Risk refers to the potential for negative impacts as a result of a natural hazard. FEMA's National Risk Index does not include human-induced hazards. For example, a flood resulting from changes in river flows is a natural hazard, whereas flooding due to a dam failure is considered a manmade hazard, and therefore excluded from the National Risk Index.

In determining risk, FEMA's National Risk Index considers three components: a natural hazards component (expected annual loss), a consequence enhancing component (social vulnerability), and a consequence reduction component (community resilience). Expected Annual Loss represents the average economic loss in dollars resulting from natural hazards each year. It is calculated for each hazard type and quantifies loss for relevant consequence types: buildings, people, and agriculture. Social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. Community resilience is the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

4.3.3 CRITICAL FACILITIES AND FACILITIES OF CONCERN

The LHMP Planning Team identified critical facilities and facilities of concern for incorporation in the hazard vulnerability/risk analysis; refer to Table 3-6 and Figure 3.5 in Section 3.0, *Community Profile*. Critical facilities and facilities of concern are owned, operated, and maintained by various agencies, not just the City. Critical facilities serve an important function in the operations of the municipal government and in serving the community. These facilities include government buildings, community buildings, fire stations, hospitals, public schools, water and wastewater infrastructure, and transportation infrastructure. Damage to these facilities caused by a hazard event has the potential to impair response and recovery and may lead to disruption of services. Facilities of concern are less vital to safety and well-being, but may assist in evacuations, serve as assembly points or temporary shelters, or provide a supportive role in preparing for and recovering from hazard events.

Where available, the LHMP Planning Team identified a facility's potential loss value, comprising replacement and contents for each facility. The data was provided by the City's property insurance schedule and therefore, information for facilities not owned by the City are not shown (e.g. water/wastewater infrastructure, private buildings). In some instances, replacement cost information was not made available. If a facility is completely destroyed in a hazard event, the replacement and contents values indicate

the cost to replace the entire facility and all of its contents. Typically, the cost to repair a damaged facility would be less than the replacement value. While the replacement and contents values are used throughout this plan to estimate potential losses, it is noted that the actual cost to recover from a hazard event will depend on the type and magnitude of the event.

The critical facilities and facilities of concern were mapped in GIS and overlaid with mapped hazard areas (those hazards that have a specific geographic area) to determine which assets are located in each hazard area. In addition to critical facilities, the number of residents and residential and non-residential structures within each of the mapped hazard areas was calculated. Hazard area and critical facility overlays were conducted for dam inundation, liquefaction, landslide (specific to seismic conditions), flood, and wildfires.

Due to the nature of the hazards and availability of information, hazard overlays were not prepared for drought, human-induced hazards, landslide/mudflow, pest management and disease outbreak, and severe weather. These hazards are not geographically defined and have the potential to affect the entire community. There are no defined hazard areas for moisture-induced landslides and mudflows, although as discussed in the hazard profile, they have historically occurred along hillside areas and within the Trabuco Creek area, respectively. For purposes of this LHMP, it is assumed that drought, human-induced hazards, landslide/mudflow, pest management and disease outbreak, and severe weather could potentially impact the entire community, including the critical facilities.

Replacement and contents values for the facilities in each hazard area are provided to estimate the potential losses based on the method described above. However, the likelihood that all facilities are completely damaged at the same time or that the entirety of a structure and its contents are damaged is extremely unlikely. Most impacts are anticipated to be isolated to certain locations based on the hazard.

In addition to critical facilities and facilities of concern, other assets could be affected by hazards, including services or local economic activities. The vulnerability/risk assessment describes the potential harm to these other assets based on available information.

4.3.4 VULNERABLE POPULATIONS

Factors such as age, socioeconomic status, access to key services, physical and/or mental conditions, and other factors affect the ability of people to prepare, respond, cope, or recover from a hazard event. Even though some hazard events may impact all parts of Rancho Santa Margarita with equal severity, different people may experience the impacts to a greater or lesser extent. For example, lower-income households are less likely to have the financial resources to implement mitigation actions in their homes, and less likely to have the financial means to recover as a result of a hazard event. As a result, certain groups are considered to be more vulnerable to specific hazards than other groups.

This assessment includes a social threat analysis that examines how hazard events are likely to impact different populations within Rancho Santa Margarita and where these

populations live in the City. This includes assessing whether the people in an area of an elevated hazard risk are more likely than the average person to be considered a vulnerable population. The following criteria are used to assess the threat to vulnerable populations:

- Disability status: Persons with disabilities often have reduced mobility and may experience difficulties living independently. As a result, they may rely on the assistance of others to prepare for and mitigate hazard conditions.

- Income levels: Lower-income households are less likely to have the financial resources to implement mitigation activities on their residences. They may also struggle with having the necessary time to find and access educational resources discussing hazard mitigation strategies. Furthermore, lower-income households are less likely to be able to move to safer areas that are less at risk of being impacted by a hazard.

- Age: Seniors (individuals 65 years of age or older) are more likely to have reduced mobility, physical and/or mental disabilities, and lower-income levels, all of which may decrease their ability to prepare for and mitigate a hazard event. Similarly, individuals under 18 years of age may rely on the assistance of their parent or guardian to prepare for and mitigate hazard conditions.

- Other variables: Other demographic and socioeconomic factors may adversely affect communities that encounter hazards. For instance, persons without access to a vehicle or non-English speakers may have greater difficulty during an evacuation event; and persons without health insurance may have difficulties recovering from injuries sustained during a hazard event.

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health, including natural or human-caused hazards. Reducing social vulnerability can decrease both human suffering and economic loss. As described above in Section 4.3.2, *Methodology*, the CDC SVI uses Census data to determine the social vulnerability of every census tract. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. Maps of the four themes are shown in the figures below; refer to Figure 4-14, *Overall SVI*; Figure 4-15, *Socioeconomic SVI*; Figure 4-16, Household Characteristics SVI; Figure 4-17, *Racial and Ethnic Minority Status SVI*; and Figure 4-18, *Housing Type and Transportation SVI*.

Table 4-20, *Social Vulnerability Index*, shows the CDC's SVI percentile ranking for each census tract in the City (Statewide comparison). The percentile ranking represents the proportion of tracts that are equal to or lower than a tract of interest in terms of social vulnerability. For example, a CDC SVI ranking of 0.85 signifies that 85% of tracts in the State are less vulnerable than the tract of interest and that 15% of tracts in the State are more vulnerable. Tracts with higher SVI ranking are more likely to contain vulnerable populations.

Table 4-20
Social Vulnerability Index

Census Tract	Overall SVI	Socioeconomic Status	Household Characteristics	Racial/Ethnic Status	Housing Type & Transportation
320.34	0.02	0.10	0.17	0.20	0.01
320.41	0.21	0.45	0.05	0.06	0.33
320.42	0.00	0.02	0.02	0.11	0.07
320.43	0.01	0.11	0.09	0.07	0.02
320.44	0.01	0.02	0.09	0.09	0.03
320.45*	0.00	0.07	0.02	0.16	0.01
320.46*	0.00	0.02	0.08	0.10	0.01
320.48	0.01	0.09	0.11	0.17	0.01
320.49	0.17	0.19	0.35	0.22	0.20
320.50	0.05	0.17	0.07	0.23	0.09
320.51	0.14	0.15	0.32	0.30	0.14
320.53	0.10	0.19	0.12	0.25	0.13
320.54	0.54	0.45	0.71	0.33	0.60
320.55	0.29	0.31	0.46	0.26	0.25
320.65	0.00	0.05	0.07	0.16	0.01

Source: Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry, *CDC/ATSDR Social Vulnerability Index 2022 database California*, accessed August 22, 2024.
Notes: * located entirely in Sphere of Influence

As shown, there is one census tract (tract 320.54) in the City with an overall SVI that falls within the third quartile (0.5001 to 0.7500), which the CDC categorizes as having "Medium-High" level of vulnerability; and one census tract (tract 320.55) in the City with an overall SVI that falls within the second quartile (0.2501 to 0.5000), which the CDC categorizes as having "Low-Medium" level of vulnerability. These tracts are both located in the central area of the City, which is characterized by relatively high density/intensity development when compared to the rest of the City. The census tracts with the highest overall SVI (that are thus more likely to contain vulnerable populations) include:

Census tract 320.54. This census tract is located in the central portion of the City, generally bounded by SR-241 on the west, Santa Margarita Parkway on the north, Alma Aldea and Via Honesto on the east, and Antonio Parkway on the south. This tract is predominantly composed of commercial uses, moderate- to higher-density residential uses, and civic uses. This tract includes City Hall, the Rancho Santa Margarita library, and Rancho Santa Margarita Intermediate School. The tract also contains Park Terrace, an assisted living residential care facility for seniors; and two 55+ senior apartment homes (Overture Rancho Santa Margarita and Fountain Glen). The City of Rancho Santa Margarita 2021-2029 Housing Element identifies this tract as containing high levels of overcrowding (i.e., more than one person per room) and is one of the two census tracts in the City considered "Sensitive Communities" for displacement, meaning residents may be vulnerable to displacement in the event of shifts in housing costs.

Census tract 320.55. This census tract is located in the central portion of the City, generally bounded by Alma Aldea, Via Honesto, and Bienvenidos on the west, Antonio Parkway

and Santa Margarita Parkway on the north, Plano Trabuco Road on the east, and the City limits on the south. This tract is predominantly composed of lower- to higher-density residential uses, open space, and civic uses. This tract includes Santa Margarita Catholic High School. The City of Rancho Santa Margarita 2021-2029 Housing Element identifies this tract as containing the census tract block group with the lowest median household income in the City, corresponding to the Villa La Paz Apartment Homes. It is also one of the two census tracts in the City considered "Sensitive Communities" for displacement.

While other census tracts within the City had lower overall SVI scores than the two tracts identified above, vulnerable populations may still occur. For instance, persons over the age of 65 and persons with disabilities are located throughout the City.

Another indicator of vulnerable populations is the California Environmental Protection Agency (CalEPA) SB 535 Disadvantaged Communities map, which shows geographic areas containing designated disadvantaged communities for the purpose of SB 535. The designation is based in part on census tracts receiving the highest 25 percent of scores according to the Office of Environmental Health Hazard Assessment's CalEnviroScreen tool, which identifies communities experiencing disproportionate amounts of pollution, environmental degradation, and socioeconomic and public health conditions. There are no disadvantaged communities in Rancho Santa Margarita according to CalEPA's SB 535 Disadvantaged Communities map.[73]

Overall, the data suggest that central Rancho Santa Margarita contains higher concentrations of vulnerable populations, likely due to the relatively higher incidence of multi-family housing and age-restricted and assisted living housing developments. Areas that are less likely to have significant vulnerable populations are largely concentrated in the western and eastern portion of the City, which is predominantly comprised of single-family residential uses and expansive green spaces. It is important to note, however, that the absence of data showing concentrations of vulnerable groups within these areas does not mean that vulnerable populations do not exist. Based on discussions with local service providers, persons with social vulnerabilities are likely to exist throughout the City, although they may not be at concentrated levels. Local service providers have seen a significant increase in the number of people in need since the COVID-19 Pandemic, including a wide range of individuals that do not fall into demographic and socioeconomic groups typically associated with social vulnerability. This suggests that while it is important to identify socially vulnerable groups and develop targeted assistance programs, it is equally important to support broad-based strategies that address the community as a whole.

[73] California Environmental Protection Agency, *SB 535 Disadvantaged Communities (2022 Update)*, https://oehha.ca.gov/calenviroscreen/sb535, accessed August 22, 2024.

Figure 4-14
Overall SVI

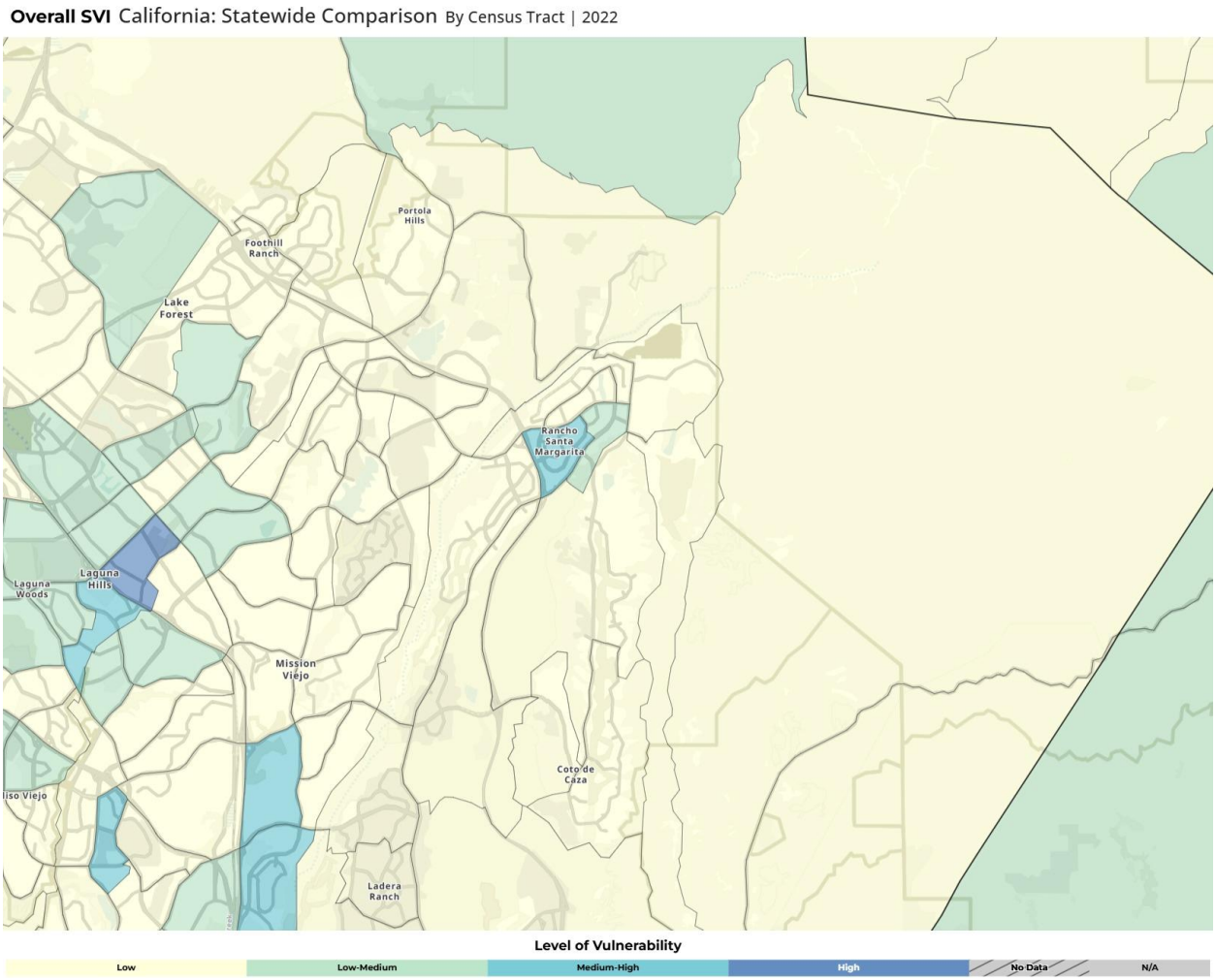


Figure 4-15
Socioeconomic SVI

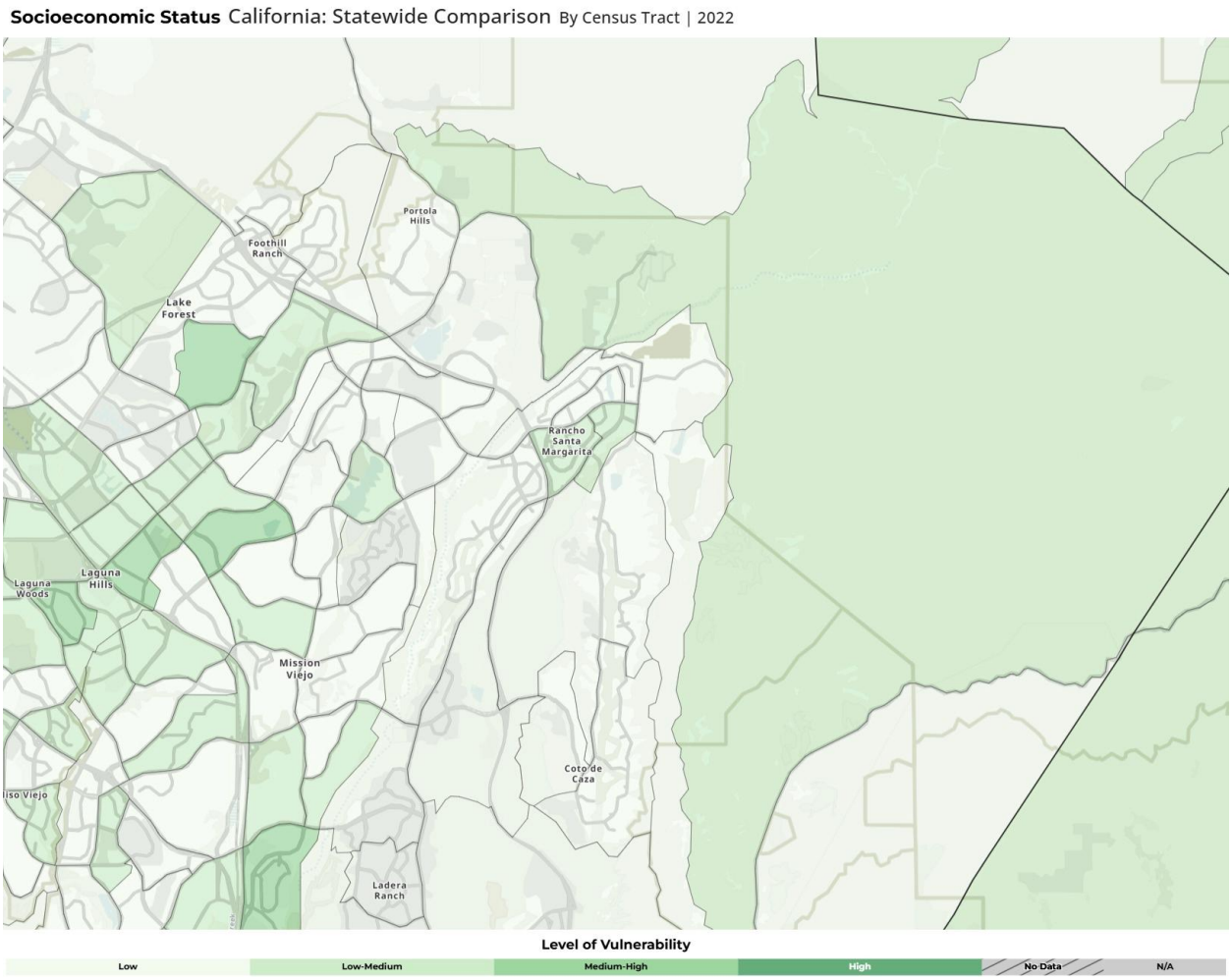


Figure 4-16
Household Characteristics SVI

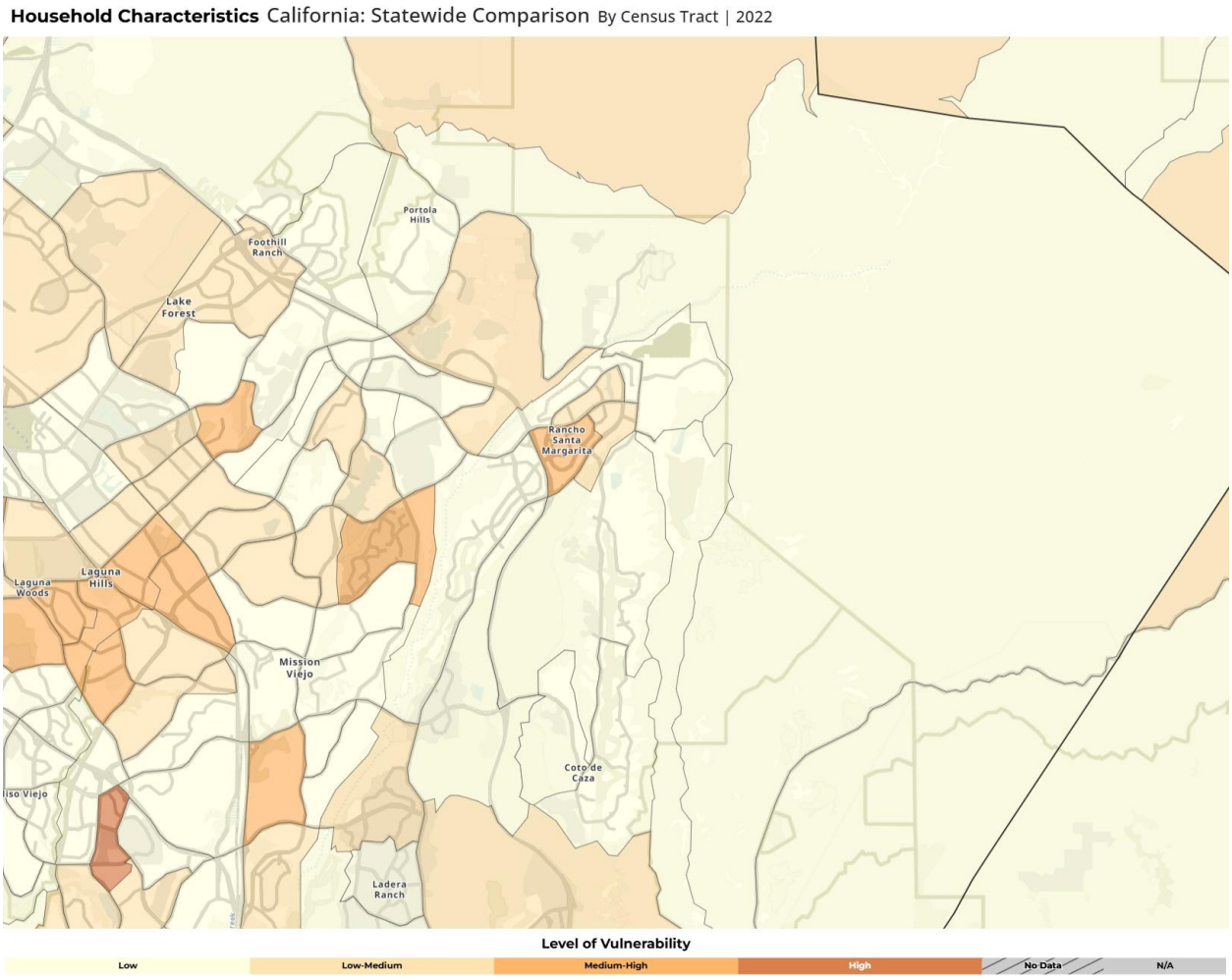


Figure 4-17
Racial and Ethnic Minority Status SVI

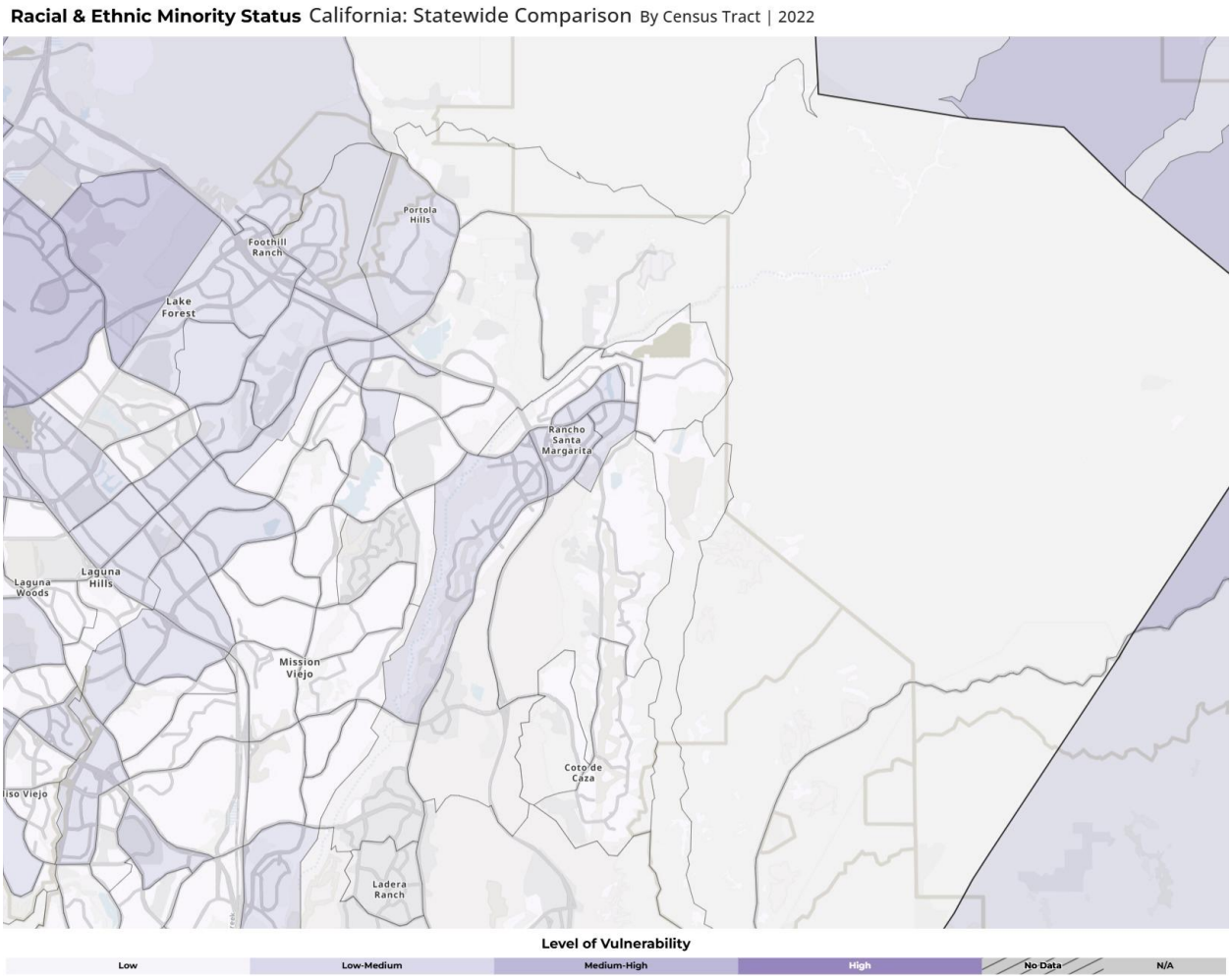
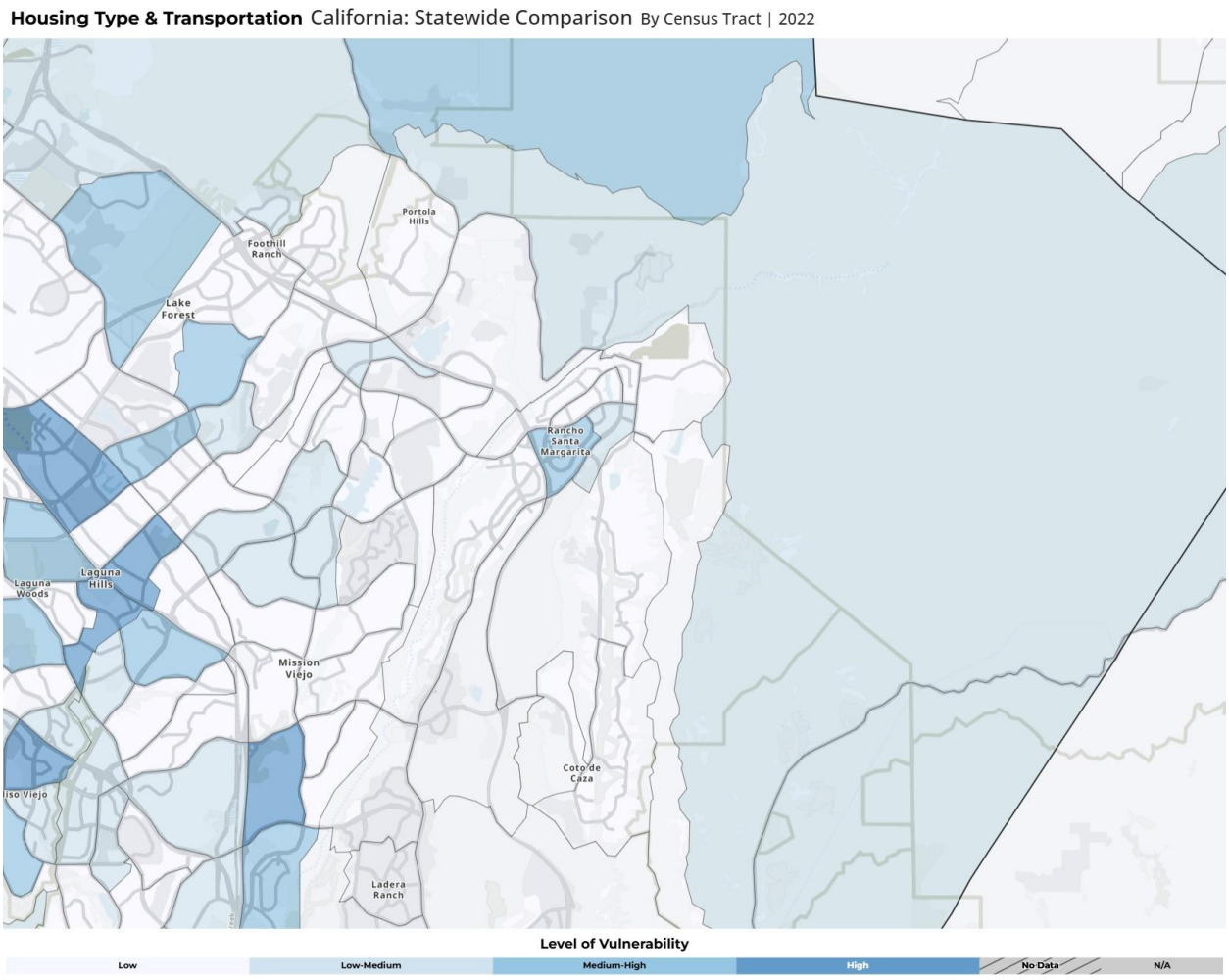


Figure 4-18
Housing Type and Transportation SVI



4.3.5 VULNERABILITY/RISK ASSESSMENT

Dam/Reservoir Failure

Dam and reservoir failures have the capacity to cause environmental damage, damage property, threaten human life, and displace persons residing in the inundation path. The portions of the City located within a dam inundation area are generally limited to a portion of the Robinson Ranch and Dove Canyon Planned Communities within the eastern area of the City and along the southern boundary, adjacent to SR-241 and Oso Parkway. There is also an inundation area that occurs south of City limits but within the City's SOI, within the Coto de Caza community.

Table 4-21, *Facilities in a Dam Inundation Zone*, identifies one critical facility in Rancho Santa Margarita within dam inundation zones; there are no facilities of concern located within dam inundation zones.

Table 4-21
Facilities in a Dam Inundation Zone

Map ID	Name	Type	Owner/Responsible Agency
79	Golf Club Lift Station	Wastewater Facility	Trabuco Canyon Water District

The areas of the City identified as having the potential for inundation associated with a dam/reservoir failure primarily consist of non-residential areas (primarily open space and recreation areas, roadways, parking, and rights-of-way), with the exception of a small number of residential uses in the SOI, south of City limits in Coto de Caza. Major roadways within inundation areas include a portion of SR-241 and Oso Parkway within the southern portion of the City. Dove Canyon Drive, a major roadway in the eastern portion of the City, is downstream of the Dove Canyon and Trabucco reservoirs, but is not located within the inundation area and is unlikely to be affected by reservoir failure due to the Dove Canyon spillway, which would divert water underneath the roadway. A failure could damage critical facilities and infrastructure (e.g., roads, water, wastewater, electricity, natural gas), resulting in short-term interruption or extended loss of services, loss of business income, and displacement of individuals and businesses. A catastrophic dam failure, depending on the size of the dam and the population downstream, could exceed the response capability of public safety personnel and resources, or significantly impair their ability to respond.

According to U.S. Census ACS estimates (2017-2021), the census tracts containing inundation areas (Robinson Ranch, Dove Canyon, and Coto de Caza areas) have median incomes of over $175,000, well above the City median income of $150,146 and County median income of $106,209. These areas also have a low (less than 10 percent) percentage of population with a disability; a low (less than five percent) percentage of population living alone; a low (less than 20 percent) percentage of renter-occupied housing units; and a low (less than five percent) percentage of housing units experiencing overcrowding.

Since the inundation areas and associated depths of inundation are primarily limited to open space areas and access would continue to be provided within the area, residents

residing within the vicinity of dam inundation areas (including portions of the Robinson Ranch and Dove Canyon Planned Communities, and Coto de Caza) would likely not be significantly vulnerable. There is the potential that lower-income households and households experiencing housing costs as a greater percentage of their income directly within the area of roadway inundation could be susceptible to cost burden with limited income and resources and may experience greater difficulties in the event they need to leave the area for an extended period of time. A dam or reservoir failure could also impact more vulnerable populations, such as senior citizens and persons with disabilities, as they may not have access to transportation to evacuate the area. Even if the City of Rancho Santa Margarita is not within an inundation path, there is the potential for the community to be impacted as damage to utility transmission lines and infrastructure could also impact communities outside of the immediate hazard area.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to dam and reservoir failure are similar. As discussed in Section 3.5, *Development Trends and Future Development*, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City, generally centered around SR-241 and located between Santa Margarita Parkway and Antionio Parkway. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur within these areas. These areas are not located within dam inundation areas and future development would not increase vulnerabilities. Minimal residential growth is also anticipated throughout the City in the form of new accessory dwelling unit (ADUs). Future development projects would be subject to applicable federal, State, and local laws and regulations, including the latest iteration of the Building Code and City's floodplain management regulations, that would decrease vulnerability associated with dam/reservoir failure.

Drought

Drought conditions would affect all of Rancho Santa Margarita; therefore, all critical facilities, infrastructure systems, structures, and residents within the City are considered vulnerable to drought hazards. Droughts do not typically result in physical damage to buildings and infrastructure; thus, critical facilities and facilities of concern are not at risk of destruction or structural failure.

Prolonged drought conditions often result in stricter conservation measures, potentially impacting residents and business owners. Stricter conservation measures usually involve higher water rates or penalties for use above a specific threshold. These higher rates or penalties could disproportionately impact lower-income households and those residents on a fixed income. Households that earn 30 percent or less than the County's median income (up to $47,350 for a family of four in 2024, based on HCD Income Limits) are considered "extremely low-income." Extremely low-income (ELI) households typically consist of minimum-wage workers, seniors on fixed incomes, persons with disabilities, and farmworkers. Approximately 9.6 percent of households in Rancho Santa Margarita are ELI

households.[74] ELI households represent a smaller percentage of households in Rancho Santa Margarita when compared to the County as a whole. Based on 2016-2020 Comprehensive Housing Affordability Strategy (CHAS) data, ELI households comprise 5.2 percent of owner-occupied households compared to 21.4 percent of renter-occupied households. ELI households are particularly susceptible to cost burden, or paying at least 30 percent of gross monthly income toward housing-related costs, reducing the ability for households to have money available for other necessities and emergency expenditures. According to U.S. Census ACS estimates (2017-2021), areas of Rancho Santa Margarita with lower median incomes are concentrated in the center of the City (generally bounded by Avenida de las Flores and Santa Margarita Parkway on the north, SR-241 on the west, Plano Trabuco Road and Antonio Parkway on the east, and the City limits on the south), including Tract 320.51 (median household income of $86,014), Tract 320.54 (median household income of $90,917), and Tract 320.55 (median household income of $98,081). This area includes the City's concentration of multi-family residential units, an assisted living residential care facility for seniors, and two 55+ senior apartment homes.

Some businesses, such as restaurants, can also be vulnerable to these conservation measures. The City does not have any industries typically known to utilize large amounts of water, such as farming and manufacturing.

Urban water suppliers, including TCWD and SMWD, are required to prepare and adopt Water Shortage Contingency Plans (WSCP) to prepare for and respond to water shortages. The WSCP serves as an operating manual to prevent catastrophic service disruptions through proactive, rather than reactive, management.

Prolonged drought conditions can also cause impacts to the environment, resulting in dead or dried vegetation, drier soils, damage to wildlife habitat, and degradation of landscape quality. These conditions can increase the vulnerability of other hazards within the community, such as wildfires, insect infestations, and wind erosion.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to drought are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur. However, future growth within the City is not expected to substantially increase vulnerabilities associated with drought. New development would be required to install water efficient fixtures and landscaping pursuant to requirements of the City's Municipal Code. Additionally, water suppliers take growth projections into account when planning for future water supply and have accounted for population growth in the City. UWMPs are required to be updated every five years to ensure that adequate water supplies are available to meet existing and future water needs. As part of the UWMPs, a drought risk assessment evaluates the reliability of water supplies by

[74] U.S. Department of Housing and Urban Development, Consolidated Planning/CHAS Data 2016-2020, https://www.huduser.gov/portal/datasets/cp.html, accessed August 23, 2024.

comparing projected future water demands with expected available water supplies under normal year, single dry year, and multiple dry year conditions. Because of the history of droughts within California, UWMPs are required to address reliability and provide for contingency plans in the event of drought or other water interruptions.

Flood

Flood-prone areas within Rancho Santa Margarita, as identified by FEMA, are primarily located within and adjacent to creeks traversing the City. There are no buildings located within the 100-year floodplain. Four critical facilities are identified within the flood hazard area; these facilities consist of portions of roadways that bridge (span) the creeks and provide access in and out of the City. Table 4-22, *Facilities in a Flood Hazard Zone*, identifies the critical facilities within the flood hazard zone; there are no facilities of concern located within the flood hazard zone.

Table 4-22
Facilities in a Flood Hazard Zone

Map ID	Name	Type	Owner/Responsible Agency
24	Santa Margarita Bridge (#1)	Transportation	City
26	241 Toll Road Bridge	Transportation	Caltrans
29	Antonio Parkway Bridge (#1)	Transportation	Caltrans
31	241 Toll Road/Tijeras Creek Bridge	Transportation	Caltrans

A significant flood resulting in damage to any of these critical facilities could impact the entire community, as these structures provide the primary access into and out of the community. Damage to the roadways could hinder emergency response service and evacuations. Because the flood zones occur within and around the creeks, a flood could also result in debris flow downstream. Localized flooding could damage homes and businesses resulting in reduced economic activity and loss of use until repair work can be completed.

Residents with mobility challenges and those without access to reliable transportation may have difficulty evacuating during a flood event. Vulnerable populations with regards to flooding include seniors, persons with disabilities, and lower-income households, as these populations may experience greater mobility challenges or access limitations to personal transportation. According to U.S. Census ACS estimates (2017-2021), approximately 10 percent of the City's population is 65 years of age or older. While the City's median household income of $150,146 is relatively high compared to the County's median household income of $109,361, approximately 9.6 percent of the total number of households in Rancho Santa Margarita are ELI households, meaning they earn 30 percent or less than the County's median income. Areas of Rancho Santa Margarita with lower median incomes are concentrated in the center of the City, which correlates with a concentration of the City's multi-family residential units and senior housing.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and

populations related to flood hazards are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City, generally centered around SR-241 and located between Santa Margarita Parkway and Antionio Parkway. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur within these areas. These areas are not located within flood hazard zones and future growth would not increase vulnerabilities to flooding. Minimal residential growth is also anticipated throughout the City in the form of new ADUs. Future development projects would be subject to applicable federal, State, and local laws and regulations, including the latest iteration of the Building Code and City's floodplain management regulations, that would decrease vulnerability associated with flood hazards.

Repetitive Loss and Severe Repetitive Loss

Addressing risk to repetitive loss and severe repetitive loss structures is an important step in reducing the financial impact of flooding, as repetitive losses require extensive disaster management resources and high NFIP claims.

FEMA defines a repetitive loss as any NFIP-insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978. FEMA defines a severe repetitive loss as any NFIP-insured structure that has met one of the following paid flood loss criteria since 1978:

- four or more separate claim payments of more than $5,000 each (Including building and contents payments); or
- two or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property.

The City of Rancho Santa Margarita does not have any repetitive loss or severe repetitive loss properties.

Human-Induced Hazards

Human-induced hazards have the potential to affect all of Rancho Santa Margarita; therefore, all critical facilities, infrastructure systems, structures, and residents within the City are within the human-induced hazards area. Arson and terrorism are more likely to cause damage to structures and infrastructure systems than hazardous materials or unexploded ordnance. Although hazardous materials could result in damage to structures, it is more likely that a hazardous material spill would result in potential health hazards or closure of roadways or areas within the community surrounding the spill. Unexploded ordnances could cause damage to physical structures if they are moved from the O'Neill Regional Park area and are detonated. However, it is more likely that detonation would occur in the area of O'Neill Regional Park where it is discovered, and away from the built environment. Generally, sites that are closer to the origin for the release of the hazardous materials are more at threat than those that are further away.

Anyone in the community is susceptible to harm associated with a human-induced hazard. The extent of harm or injury is highly dependent upon the nature of the hazard. Arson, terrorism, or hazardous materials could also damage the environment, impair air quality, and interfere with water quality. Damage to infrastructure systems, including water supplies and water/wastewater conveyance, power transmission, and natural gas systems could interrupt service or cause long-term outages. Damage to transportation systems could limit the ability for emergency services and other service providers to reach areas of the community. Residents living next to major transportation infrastructure, such as highways, rail lines, or major arterial streets, have a greater threat of being affected by a hazardous materials release since trucks, vehicles, or trains carrying quantities of hazardous materials may release their contents into the environment if the truck, vehicle, or train is involved in a collision or derailment.

Residential development is distributed throughout the City and occurs near major transportation corridors. Similarly, areas of the City having more socially vulnerable populations are distributed throughout the City with most occurring within the center of the City where the majority of the City's multi-family residential units and senior/assisted living housing are concentrated. The City does not contain significant land uses that use or generate hazardous materials. Therefore, residents are not regularly exposed to environmental risks associated with non-residential development operations. As stated, it is more likely an event due to accidental release of hazardous materials would occur along a transportation corridor. Populations more susceptible to a hazardous materials spill typically include the elderly, children, and those with pre-existing health conditions.

Threats of terrorism or cyberterrorism could impact service and operations of businesses and services within the City. The impact on socially vulnerable populations would be highly dependent upon what types of service and operations are impacted. There is the potential that if some services, such as medical, public transit, and social services are impacted to the extent that they could not operate, that the elderly, disabled, and lower-income households reliant on these services would experience significant challenges.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to human-induced hazards are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur. However, future growth within the City is not expected to substantially increase vulnerabilities associated with human-induced hazards. Police and emergency response capabilities would be expanded to maintain service standards, as needed. Further, future development projects would be subject to applicable federal, State, and local laws and regulations, which would reduce vulnerabilities associated with human-induced hazards.

Landslide/Mudflow

Within Rancho Santa Margarita, areas of steep slopes are at risk for landslides. Table 4-23, *Facilities in a Landslide Hazard Zone*, identifies the critical facilities and facilities of concern located within areas having the potential for earthquake-induced landslides.

Table 4-23
Facilities in a Landslide Hazard Zone

Map ID	Name	Type	Owner/ Responsible Agency	Total Loss Potential
Critical Facilities				
44	Altisima Pump Station	Water Facility	SMWD	$1,908,092
48	Antonio Pump Station	Water Facility	SMWD	$2,091,587
54	Trabuco Dam	Dam	TCWD	$20,000,000
55	Dove Dam	Dam	TCWD	$20,000,000
60	Macro Wireless Facility	Communications	AT&T	Not Available
65	Macro Wireless Facility	Communications	Sprint, T-Mobile, Verizon, AT&T	Not Available
66	Macro Wireless Facility	Communications	Sprint	Not Available
Facilities of Concern				
40	Island Pasture Reservoir	Reservoir	SMWD	$20,000,000

SMWD = Santa Margarita Water District; TCWD = Trabuco Canyon Water District.
Total Loss Potential includes estimated replacement and content values, if applicable. If not provided, values are not currently available.

There are approximately 4,180 dwelling units with a population of approximately 12,280 people residing within earthquake-induced landslide hazard areas. There are also approximately 890,000 square feet of non-residential development located within these hazard areas. Other areas within the community may be susceptible to moisture-induced landslide conditions that are not reflected in the numbers above. Further, areas susceptible to mudflow conditions are not specifically defined, but have historically occurred in the creeks that convey surface runoff from the community.

Landslide and mudflows could result in damage to structures. Roadways could also be damaged, impeding access and hindering emergency response. Underground utilities may be damaged during a landslide or mudflow event, causing service interruptions or complete outages. Landslide or mudflows may require evacuation of people from the area. Lower income households, those with mobility challenges, and those without access to reliable transportation may have difficulty evacuating the area in the event of a landslide or mudflow. Lower income households or those on fixed incomes may have more difficulty in the event of displacement or recovering from a landslide or mudflow event. As previously stated, lower-income households and seniors are concentrated within the center of the City. These are also the most vulnerable census tracts in the City according to CDC/ATSDR SVI data in terms of overall SVI, socioeconomic SVI, household characteristics SVI, and housing type and transportation SVI. As shown in Figure 4-6, the center of the City is not susceptible to earthquake-induced landslide hazards. These areas are generally developed with urban uses and do not contain areas of steep slopes that are at risk for landslides or mudflow. Areas that contain steep slopes and other geologic features susceptible to landslides and mudflow generally occur within the

periphery of the City, including but not limited to portions of the Robinson Ranch and Dove Canyon Planned Communities, in the O'Neill Regional Park, and SOI (Coto de Caza). As such, it is more likely that areas in the periphery of the City, while not identified as containing significant concentrations of lower income and senior households, would contain socially vulnerable populations susceptible to landslide and mudflow hazards.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to landslide/mudflow are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City, generally centered around SR-241 and located between Santa Margarita Parkway and Antionio Parkway. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur within these areas. These areas are urbanized and not located within earthquake-induced landslide zones; as such, future growth is not anticipated to increase vulnerabilities to landslides/mudflow. Minimal residential growth is also anticipated throughout the City in the form of new ADUs. Future development projects would be subject to applicable federal, State, and local laws and regulations, including the latest iteration of the Building Code, that would decrease vulnerability associated with these hazards.

Pest Management and Disease Outbreak

Structures and infrastructure are not typically vulnerable to pests and disease likely to impact Rancho Santa Margarita. ISHB and GSOB attack native and landscape trees, which could indirectly damage a structure or infrastructure if the tree fell due to decline or death. Similarly, a person could be injured as a result of a tree or limb falling. Although ISHB and GSOB has been concentrated within O'Neill Regional Park, there have been instances of infestation of ornamental landscaping outside of the regional park boundary. Therefore, pest management could affect all of Rancho Santa Margarita. Extensive loss of trees and landscaping could also impact the aesthetic character of the area and result in significant removal and replacement costs. Although this would not directly impact critical facilities, if not removed, it could result in a greater risk associated with wildfires.

Infectious disease could affect specific populations or be transmitted throughout a community. All of Rancho Santa Margarita is vulnerable to disease. A disease outbreak, such as experienced with COVID-19, could disproportionally affect the elderly and persons with preexisting health conditions. In the event of a major outbreak, local and regional health care facilities and services could be impacted. There is a concentration of elderly persons living within the center of the City, due to the presence of an assisted living residential care facility for seniors and two 55+ senior apartment homes. However, populations that are most vulnerable to disease outbreak, including the elderly and persons with preexisting health conditions, live throughout the City.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and

populations related to pest management and disease outbreak are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur. However, future growth within the City is not expected to substantially increase vulnerabilities associated with pest management and disease outbreak. Emergency response capabilities would be expanded to maintain service standards. Further, future development projects would be subject to applicable federal, State, and local laws and regulations, which would reduce vulnerabilities associated with these hazards.

Seismic Hazards

The entire community is at risk to seismic ground shaking. Critical facilities, residential and non-residential buildings and infrastructure could be damaged in the event of an earthquake. The extent of damage would depend upon the location and magnitude of the earthquake. Depending upon the damage, emergency services, communication systems, and utility services may all be hindered. Senior citizens and those will disabilities that have limited mobility may be harmed if they are unable to react quickly and seek out areas of safety from falling debris. Further, extended interruptions in services, including power outages, would disproportionately affect people with medical conditions requiring power for medical equipment. As previously stated, approximately 10 percent of the total population of Rancho Santa Margarita is aged 65 or older. Approximately eight percent of Rancho Santa Margarita residents reported having one or more disabilities.

In addition to mobility limitations and the potential to be harmed during an earthquake, some populations may experience significant challenges in the event their homes are damaged and require repairs or displacement due to the extent of damages. According to the City's 2021-2029 Housing Element, approximately 86.2 percent of the City's housing stock was constructed between 1980 to 1999, while only 5.6 percent of the housing stock was constructed prior to 1980. Although a majority of the City's housing stock is not considered substandard or in need of rehabilitation or replacement, there is the potential for large portions of the housing stock to be susceptible to damage associated with a more significant earthquake.

Approximately 9.6 percent of households in Rancho Santa Margarita are ELI households. ELI households are particularly susceptible to cost burden, or paying at least 30 percent of gross monthly income toward housing-related costs, reducing the ability for households to have money available for other necessities and emergency expenditures, including structural repairs or relocation funding in the event their home becomes unlivable.

The City is also susceptible to seismic-induced liquefaction and landslides (landslides are discussed above). Table 4-24, *Facilities in a Liquefaction Hazard Zone*, identifies the critical facilities located within a liquefaction hazard area; there are no facilities of concern located within the hazard area.

Table 4-24
Facilities in a Liquefaction Hazard Zone

Map ID	Name	Type	Owner/ Responsible Agency	Total Loss Potential
Critical Facilities				
24	Santa Margarita Bridge (#1)	Transportation	City	Not Available
26	241 Toll Road Bridge	Transportation	Caltrans	Not Available
29	Antonio Parkway Bridge (#1)	Transportation	Caltrans	Not Available
31	241 Toll Road/Tijeras Creek	Transportation	Caltrans	Not Available

Caltrans = California Department of Transportation
Total Loss Potential includes estimated replacement and content values, if applicable. If not provided, values are not currently available.

There are approximately 545 dwelling units with a population of approximately 1,600 people residing within liquefaction hazard areas. There are also approximately 77,400 square feet of non-residential development located within this hazard area.

Liquefaction can damage buildings and infrastructure, including pipelines within soils subject to liquefaction. Damage to transportation infrastructure can impede access and hinder emergency response and evacuation. Damaged utilities can result in service interruptions or complete outages. Lower income households, those on fixed incomes, and those with mobility challenges or no access to transportation may have challenges evacuating and may have more difficulty in the event of displacement.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to seismic hazards are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City. These areas are not located on active faults or within liquefaction hazard zones. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur. However, future growth within the City is not expected to substantially increase vulnerabilities associated with seismic hazards. Future development projects would be subject to applicable federal, State, and local laws and regulations, including the latest iteration of the Building Code, that would decrease vulnerability associated with seismic hazards.

Severe Weather

Severe weather includes strong winds (Santa Ana winds), heavy rain events, and extreme heat. Any of these events could impact the entire community; therefore, all critical facilities, infrastructure systems, structures, and residents within the City are within the severe weather hazard area. Heavy rain can damage structures if the roof is compromised or drainage systems overflow and cause flooding. Landslides, slope instability, and mudflows can also occur along slopes and along creeks and channels. Flooding of roadways can also occur, stranding vehicles and limiting emergency access and response. Santa Ana wind events can damage structures, particularly from falling trees or branches or potential debris that is carried by the wind. Extreme heat events do

not typically result in damage to structures. However, these events can place greater demand on the power system and result in power outages that can impact residents and businesses. Young children, the elderly, or people suffering from serious medical conditions are physiologically more vulnerable to heatstroke. People requiring the use of medical equipment with a power source could be impacted. Additionally, people experiencing homelessness are also at higher risk of health complications during an extreme heat event. Lower-income households or those with limited mobility may be unable to acquire or seek out cooling devices without significant advance preparations. This can be further compounded by the threat of Public Safety Power Shutoff events. During these events, extreme heat impacts may affect larger portions of the City and populations that would not be viewed as vulnerable under normal circumstances.

The impact on socially vulnerable populations would be dependent upon the event and what types of facilities, services, and operations are impacted. While unlikely, there is the potential that if some services, such as medical, public transit, and social services are impacted to the extent that they could not operate for a period of time, that the elderly, disabled, and lower-income households reliant on these services would experience significant challenges. These populations would also be more vulnerable to extreme heat events, as they may not have access to air conditioning or the financial means to provide air conditioning for extended periods of time. Heavy winds can cause damage to power lines and result in power outages that could have health impacts on populations requiring electricity-dependent medical equipment. Some people may be required to work outside or travel via walking or public transit which could increase their exposure to the elements. For instance, people caught outside without shelter during a heavy rain event could be swept away by flash flood; heavy winds could cause injuries or death due to flying debris or falling tree branches; and extended exposure to extreme heat could result in severe medical conditions.

As described above, 10 percent of the total population of Rancho Santa Margarita is aged 65 or older. Approximately eight percent of residents reported having one or more disabilities. Households that earn 30 percent or less than the County's median income (up to $47,350 for a family of four in 2024) are considered ELI households ELI households typically consist of minimum-wage workers, seniors on fixed incomes, persons with disabilities, and farmworkers. Approximately 9.6 percent of households in Rancho Santa Margarita are ELI households. ELI households are particularly susceptible to cost burden and therefore may not have the financial means or the existing resources to alleviate extreme heat conditions, or address damage that could occur from significant rain and Santa Ana wind events.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to severe weather are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur. However, future growth within the City is not expected to substantially increase vulnerabilities associated with severe weather.

Wildfire

A large portion of the City is located within a fire hazard zone. Table 4-25, *Facilities in a Fire Hazard Zone*, identifies the critical facilities and facilities of concern located within fire hazard zones. These include water and wastewater facilities, dams, communication facilities, schools, transportation facilities, and reservoirs. Any of these facilities could be damaged or destroyed in the event of a wildfire.

Table 4-25
Facilities in a Fire Hazard Zone

Map ID	Name	Type	Owner/ Responsible Agency	Total
Critical Facilities				
8	Santa Margarita Substation	Electrical	Southern California Edison	Not Available
24	Santa Margarita Bridge (1)	Transportation	City	Not Available
26	241 Toll Road Bridge	Transportation	Caltrans	Not Available
27	Melinda Road Bridge	Transportation	Caltrans	Not Available
28	Los Alisos Bridge	Transportation	Caltrans	Not Available
29	Antonio Parkway Bridge (1)	Transportation	Caltrans	Not Available
30	Antonio Parkway Bridge (2)	Transportation	Caltrans	Not Available
31	241 Toll Road/Tijeras Creek	Transportation	Caltrans	Not Available
32	Cañada Chiquita Bridge	Transportation	Caltrans	Not Available
33	Pedestrian Bridge	Transportation	Caltrans	Not Available
34	Plano Lift Station	Sanitary Sewer	SMWD	Not Available
35	Trabuco Lift Station & Pump Station	Sanitary Sewer	SMWD	Not Available
44	Altisima Pump Station	Water Facility	SMWD	$1,908,092
46	Foothill Pump Station	Water Facility	SMWD	$1,172,519
47	Island Pump Station	Water Facility	SMWD	$2,000,000
48	Antonio Pump Station	Water Facility	SMWD	$2,091,587
49	Robinson Ranch Pump Station	Water Facility	TCWD	$2,000,000
54	Trabuco Dam	Dam	TCWD	$20,000,000
55	Dove Dam	Dam	TCWD	$20,000,000
56	Bell Canyon Lift Station	Wastewater Facility	TCWD	$2,000,000
57	Barneburg Lift Station	Wastewater Facility	TCWD	$2,000,000
59	Robinson Ranch Wastewater Treatment Plant	Wastewater Facility	TCWD	$20,000,000
60	Macro Wireless Facility	Communications	AT&T	Not Available
65	Macro Wireless Facility	Communications	Sprint, T-Mobile, Verizon, AT&T	Not Available
66	Macro Wireless Facility	Communications	Sprint	Not Available
73	Macro Wireless Facility	Communications	Metro PCS, Sprint, AT&T	Not Available
74	Macro Wireless Facility	Communications	Sprint, Verizon	Not Available
Facilities of Concern				
12	Tijeras Creek Elementary	Public School	CUSD/State	Not Available
14	Melinda Heights Elementary	Public School	SVUSD/State	$37,300,000
18	Mission Hills Christian School	Private School	Not Available	Not Available

Map ID	Name	Type	Owner/ Responsible Agency	Total
21	St. Junipero Serra Catholic School	Private School	Not Available	Not Available
36	Rancho Trabuco Reservoir	Reservoir	SMWD	Not Available
37	Trabuco Ridge Reservoirs (2)	Reservoir	SMWD	Not Available
38	Starr Reservoir	Reservoir	SMWD	Not Available
39	Foothill Reservoir	Reservoir	SMWD	$20,000,000
40	Island Pasture Reservoir	Reservoir	SMWD	$20,000,000
41	South County Regulating Reservoir	Reservoir	SMWD	$20,000,000
42	Dove Canyon Reservoir	Reservoir	TCWD	Not Available
51	Upper Oso Reservoir (with Compressor Building)	Reservoir	SMWD	$20,420,338

CUSD = Capistrano Unified School District; SVUSD = Saddleback Valley Unified School District; SMWD = Santa Margarita Water District; TCWD = Trabuco Canyon Water District; Caltrans = California Department of Transportation
Total Loss Potential includes estimated replacement and content values, if applicable. If not provided, values are not currently available.

There are approximately 6,375 dwelling units with a population of approximately 20,200 people residing within a fire hazard zone. There are also approximately 1,306,550 square feet of non-residential development located within this hazard area. A wildfire within the City could damage buildings and infrastructure, impacting residents as well as business owners and their employees. Impacts to businesses could affect the local economy.

Depending upon the location and extent of the fire, transportation routes could be impaired or inaccessible, which could impede evacuation and hinder emergency response. Evacuation and shelter areas may be more difficult for some evacuees to access depending upon the location of the wildfire. People with limited mobility or lack of access to transportation could be at a higher risk due to their inability to evacuate quickly. Wildfires within the area, even if not within the City can also impact people's health due to poor air quality. Senior citizens, youth, and people with preexisting medical conditions are most at risk. Utility systems could be damaged or interrupted. Controlled and proactive power outages are highly likely during a wildfire event to reduce the risk for additional fires to be initiated. These power outages can extend beyond the area of the fire.

Similar to severe weather conditions, the impact on socially vulnerable populations within Rancho Santa Margarita would be dependent upon the event, location, and severity. A wildfire could directly damage residences, businesses, service providers, transportation and utility infrastructure, or cause services to be impacted. Direct impacts to these facilities would greatly impact those that may not have the financial means to address the damage, cannot relocate to other areas, do not have alternative transportation options, or have medical conditions that limit their mobility and could result in greater health-related impacts. As previously described, this would include the elderly, persons with disabilities, and lower income households, which are concentrated within the center of the City but are also present throughout the City.

Land use and population patterns have not substantially changed within the City's Planning Area since preparation of the 2019 LHMP. New development in Rancho Santa Margarita over the last five years has been minimal; thus, vulnerabilities to land uses and populations related to wildfire are similar. As discussed in Section 3.5, future residential and mixed-use development is anticipated to occur primarily within the business park and commercial core areas of the City, generally centered around SR-241 and located between Santa Margarita Parkway and Antionio Parkway. While it is unlikely that all anticipated growth would occur within the five-year period of this LHMP, the City anticipates some level of population growth to occur within these areas. These areas are not located within VHFHSZs and future development would not increase vulnerabilities to wildfire. Minimal residential growth is also anticipated throughout the City in the form of new ADUs. Future development projects would be subject to applicable federal, State, and local laws and regulations, including the latest iteration of the Fire Code, that would decrease vulnerability associated with wildfire.

SUMMARY OF VULNERABILITY

Table 4-26, *Risk Assessment Summary*, shows a summary of critical facilities that intersect with hazard areas in the City. Those critical facilities that intersect with a hazard area are indicated with a "Y" and a red-shaded cell. Critical facilities that do not fall within the hazard area are designated with an "N" and a green-shaded cell. The risks of groundshaking, severe weather, drought, pest management/disease, and human-induced hazards are equal throughout the community.

Table 4-26
Risk Assessment Summary

Map ID	Facility	Ground shaking	Liquefaction	Wildfires	Flood	Landslide/ Mudflow	Severe Weather	Drought	Pest Management/ Disease Outbreak	Dam/Reservoir Failure	Human- Induced Hazards
8	Santa Margarita Substation	Y	N	Y	N	N	Y	Y	Y	N	Y
12	Tijeras Creek Elementary	Y	N	Y	N	N	Y	Y	Y	N	Y
14	Melinda Heights Elementary	Y	N	Y	N	N	Y	Y	Y	N	Y
18	Mission Hills Christian School	Y	N	Y	N	N	Y	Y	Y	N	Y
21	St. Junipero Serra Catholic School	Y	N	Y	N	N	Y	Y	Y	N	Y
24	Santa Margarita Bridge (1)	Y	Y	Y	Y	N	Y	Y	Y	N	Y
26	241 Toll Road Bridge	Y	Y	Y	Y	N	Y	Y	Y	N	Y
27	Melinda Road Bridge	Y	N	Y	N	N	Y	Y	Y	N	Y
28	Los Alisos Bridge	Y	N	Y	N	N	Y	Y	Y	N	Y
29	Antonio Parkway Bridge (1)	Y	Y	Y	Y	N	Y	Y	Y	N	Y
30	Antonio Parkway Bridge (2)	Y	N	Y	N	N	Y	Y	Y	N	Y
31	241 Toll Road/Tijeras Creek	Y	Y	Y	Y	N	Y	Y	Y	N	Y
32	Cañada Chiquita Bridge	Y	N	Y	N	N	Y	Y	Y	N	Y
33	Pedestrian Bridge	Y	N	Y	N	N	Y	Y	Y	N	Y
34	Plano Lift Station	Y	N	Y	N	N	Y	Y	Y	N	Y
35	Trabuco Lift Station & Pump Station	Y	N	Y	N	N	Y	Y	Y	N	Y
36	Rancho Trabuco Reservoir	Y	N	Y	N	N	Y	Y	Y	N	Y
37	Trabuco Ridge Reservoirs (two)	Y	N	Y	N	N	Y	Y	Y	N	Y
38	Starr Reservoir	Y	N	Y	N	N	Y	Y	Y	N	Y
39	Foothill Reservoir	Y	N	Y	N	N	Y	Y	Y	N	Y
40	Island Pasture Reservoir	Y	N	Y	N	Y	Y	Y	Y	N	Y
41	Upper Chiquita Reservoir	Y	N	Y	N	N	Y	Y	Y	N	Y
42	Dove Canyon Reservoir	Y	N	Y	N	N	Y	Y	Y	N	Y
44	Altisima Pump Station	Y	N	Y	N	Y	Y	Y	Y	N	Y
46	Foothill Pump Station	Y	N	Y	N	N	Y	Y	Y	N	Y
47	Island Pasture Pump Station	Y	N	Y	N	Y	Y	Y	Y	N	Y
48	Antonio Pump Station	Y	N	Y	N	N	Y	Y	Y	N	Y
49	Robinson Ranch Pump Station	Y	N	Y	N	N	Y	Y	Y	N	Y
51	Upper Oso Reservoir (with Compressor Building)	Y	N	Y	N	N	Y	Y	Y	N	Y
54	Trabuco Dam	Y	N	Y	N	Y	Y	Y	Y	N	Y
55	Dove Dam	Y	N	Y	N	Y	Y	Y	Y	N	Y
56	Bell Canyon Lift Station	Y	N	Y	N	N	Y	Y	Y	N	Y
57	Barneburg Lift Station	Y	N	Y	N	N	Y	Y	Y	N	Y
59	Robinson Ranch Wastewater Treatment Plant	Y	N	Y	N	N	Y	Y	Y	N	Y
60	Macro Wireless Facility	Y	N	Y	N	Y	Y	Y	Y	N	Y
65	Macro Wireless Facility	Y	N	Y	N	Y	Y	Y	Y	N	Y
66	Macro Wireless Facility	Y	N	Y	N	Y	Y	Y	Y	N	Y
73	Macro Wireless Facility	Y	N	Y	N	N	Y	Y	Y	N	Y
74	Macro Wireless Facility	Y	N	Y	N	N	Y	Y	Y	N	Y
79	Golf Club Lift Station	Y	N	N	N	N	Y	Y	Y	Y	Y

SECTION 5.0: HAZARD MITIGATION STRATEGY

Hazard mitigation strategies are used to reduce hazard impacts on residents, public infrastructure, and critical facilities. The hazard mitigation actions will help to protect the safety and well-being of residents and visitors, critical facilities, facilities of concern, other buildings and structures, key services, the local economy, and other important community assets. Some actions will also help with emergency preparedness, allowing for a more effective community response to hazard events. Preparedness actions are not a required component of an LHMP, but they support and complement mitigation activities, and the Planning Team chose to include them as part of the overall hazard mitigation strategy.

This section of the LHMP is derived from an in-depth review of the vulnerabilities and capabilities described in this plan. Overall, the actions represent the City's risk-based approach for reducing and/or eliminating the potential losses as identified in the Vulnerability/Risk Assessment section.

5.1 CAPABILITIES ASSESSMENT

This capabilities assessment has been designed to identify existing local agencies, personnel, planning tools, public policy and programs, technology, and funds that have the capability to support hazard mitigation activities and strategies outlined in this plan. As part of the 2019 LHMP, the Planning Team collaborated to identify capabilities and mechanisms available to the City and partner agencies for reducing damage from future hazard events. After initial identification, the capabilities were reviewed again and updated in the context of developing the mitigation actions. This LHMP update builds from the capability assessment created by the Planning Team. The capabilities were reviewed and revised, as appropriate.

The capabilities assessment considered the following types of resources:

- Planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and State statutes, and plans and programs that relate to guiding and managing growth and development.

- Administrative and technical capabilities refer to the community's staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It also refers to the ability to access and coordinate these resources effectively.

- Financial capabilities are the resources that a jurisdiction has access to or is eligible to use to fund mitigation actions.

- Education and outreach capabilities are programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

Table 5-1, Capabilities Assessment, summarizes the capabilities assessment for Rancho Santa Margarita.

Table 5-1
Capabilities Assessment

Resource	Description and Ability to Support Mitigation
Planning and Regulatory	
General Plan Responsible Department: City of Rancho Santa Margarita Development Services Department	The Rancho Santa Margarita General Plan establishes the overall vision for future growth and development. As a blueprint for the future, the plan contains policies and programs designed to provide a solid basis for decisions related to land use and development. The General Plan provides the framework for the implementation of the LHMP mitigation actions. The Safety Element identifies hazards that could impact the community and establishes policy for the preparation and update of the LHMP. The City will formally adopt the approved City of Rancho Santa Margarita Local Hazard Mitigation Plan into its General Plan Safety Element to ensure compliance with AB 2140, making the City eligible for additional funding under the California Disaster Assistance Act (CDAA).
Zoning Ordinance Responsible Department: City of Rancho Santa Margarita Development Services Department	The Rancho Santa Margarita Zoning Code implements the General Plan by establishing regulations for land use control within the City, including where and how development occurs. Zoning is used to protect the public health, safety and welfare of a community. The City can use the Zoning Code to implement mitigation actions to reduce risks associated with future development.
Subdivision Ordinance Responsible Department: City of Rancho Santa Margarita Development Services Department	The City's subdivision ordinance regulates development of housing, commercial, industrial or other uses, including associated public infrastructure, as land is subdivided into buildable lots. The subdivision ordinance can ensure future subdivisions account for the risk of hazards on future development.
Building Code Responsible Department: City of Rancho Santa Margarita Development Services Department	The Rancho Santa Margarita Building Code regulates how buildings are constructed. The City adopts the State Building Code with amendments, as applicable, and continues to work with OCFA to adopt recommended amendments that contribute to disaster resistance.
Emergency Operations Plan Responsible Department: City of Rancho Santa Margarita City Administration Department and Public Safety Providers	The Emergency Operations Plan (EOP) addresses the City of Rancho Santa Margarita's planned response to extraordinary situations associated with natural disasters and/or technological incidents including both peacetime and national security operations. Although its primary focus is the provision of coordinated mutual aid within the City of Rancho Santa Margarita and fulfilling reporting requirements to the Orange County Operational Area, the EOP also provides an overview of the operational concepts relating to various emergency situations. The EOP identifies components of the City of Rancho Santa Margarita's emergency response organization and describes the overall responsibilities of the City in protecting life and property and assuring the overall well-being of the population. Together, the EOP and LHMP provide a mitigation and response strategy to hazard events.

Resource	Description and Ability to Support Mitigation
Capital Improvement Plan Responsible Department: City of Rancho Santa Margarita Public Works Department	The Capital Improvement Program (CIP) is established to provide for the planning, funding, design, construction, maintenance and repair of City facilities and infrastructure. The CIP is a "roadmap" that provides direction and guidance to the City to carefully plan and manage its capital and infrastructure assets. Typical improvement and maintenance projects in the CIP include Street Improvement/Maintenance Projects; Traffic Improvement Projects; Special Projects; Landscaping/Renovation Projects; City Hall and Bell Tower Regional Community Center Building Projects; and Bridge Projects. The CIP identifies and funds mitigation actions related to City facilities and infrastructure.
Stormwater Management Plan Responsible Department: City of Rancho Santa Margarita Public Works Department	The City's Stormwater Management Plan is designed to avoid flooding associated with stormwater runoff. It focuses on design and construction measures that are intended to reduce the impact of frequent urban nuisance flooding. The plan is part of the City's overall strategy to reduce flooding impacts.
Storm Drain Master Plan Responsible Department: City of Rancho Santa Margarita Public Works Department	The City developed a Storm Drain Master Plan for the City's Storm Drain System. This Plan identifies deficiencies with the system and prioritizes the mitigation actions. A long term Maintenance Plan will also be created to update the current schedule of maintenance efforts.
Urban Water Management Plan Responsible Agencies: Santa Margarita Water District (SMWD) and Trabuco Canyon Water District (TCWD)	SMWD and TCWD prepare Urban Water Management Plans (UWMP) every five years, with the most recent plans (2020 UWMP) adopted in June 2021. An UWMP provides long-term resource planning to ensure that adequate water supplies are available to meet existing and future water needs. UWMP addresses drought conditions and the ability to provide water to customers. The UWMP can be used to coordinate and implement mitigation actions associated with drought and water supply reliability.
Mutual Aid Agreements Responsible Agencies: City of Rancho Santa Margarita, Orange County Fire Authority (OCFA), Orange County Sheriff's Department (OCSD)	The City and its public safety providers maintain agreements with emergency responders to lend assistance across jurisdictional boundaries when an emergency response exceeds local resources. These agreements also provide access to additional technical expertise. Access to these resources provides opportunities to implement mitigation actions to reduce damage and risk of injury during an event. It also provides for collaboration and sharing of information specific to hazards.

Resource	Description and Ability to Support Mitigation
Orange County Emergency Operations Center Responsible Agency: County of Orange	The Orange County Emergency Operations Center (OC EOC) functions as the communication and coordination center for the County Operational Area emergency response organization and disaster preparedness, providing a central point for coordinating operational, administrative, and support needs of the County and Operational Area Members. It also assists in coordination and communication between Mutual Aid Coordinators and the State Office of Emergency Services during emergency response and recovery operations. The OC EOC can be used to gather and process information to and from the County, cities, school and special districts, business and industry, volunteer organizations, individuals, and State and federal government agencies. It has the ability to function as a virtual EOC so that Operational Area Members may communicate between EOCs without co-location. WebEOC is a crisis information management system and provides secure real-time information sharing. Accurate and timely communication is critical during a hazard event and can reduce more significant damage and injury. Mitigation actions specific to communications and information and resource sharing are implemented through the communication systems and response efforts to reduce risk of injury and damage.
Administrative and Technical	
City Administration	The City Administration Department includes City Attorney's Office, City Clerk's Office, City Manager's Office, Human Resources, Risk Management, and Emergency Management. Staff within these departments will be involved in mitigation actions by providing support for their establishment and implementation.
Development Services Department	The Development Services Department includes (in part) Building & Safety; Code Enforcement; Economic Development, GIS; and Planning. Together, staff in these divisions are responsible for regulating the construction, alteration, use and occupancy of buildings; maintaining and improving the health and safety, general welfare of the City; implementing the goals and policies of the General Plan and enforcing the Zoning Code; and maintaining data and preparing maps regarding various conditions within the City, including hazard areas. Mitigation actions related to ensuring development requirements along with plans and programs are updated to reflect most current hazard information, including GIS mapping, education programs and activities, enforcement of fire-related requirements, implementation of water conservation measures, and others that may be implemented by or in coordination with Development Services staff.
Public Safety Providers	Public Safety includes (in part) Fire Services provided by OCFA, and Police Services provided by OCSD. The OCSD provides police protection services and OCFA provides fire protection services to the City. Both OCSD and OCFA also provide community programs and education campaigns. The OC Health Care Agency provides guidance during pandemic-related emergencies on how to limit the spread of communicable diseases. Public Safety Providers are a key component of implementing mitigation actions, including but not limited to, coordinating and communicating with the public and other agencies, ensuring safe and efficient evacuations, if necessary, providing or participating in public education and preparedness activities that support mitigation of risks, reducing wildfire risks and enforcing fire-related requirements.

Resource	Description and Ability to Support Mitigation
Emergency Management	Emergency Management supports citizens, first responders, and City staff in building and sustaining the City's ability to mitigate, prepare, protect, respond, and recover from the effects of natural and human-caused disasters. The Emergency Management division works closely with the OCSD, OCFA, OC Health Care Agency, American Red Cross, OCSD Emergency Management Division, surrounding cities and other county departments and agencies to provide preparedness and coordination during a disaster. Similar to public safety providers, emergency management implement mitigation actions, including but not limited to, coordinating and communicating with the public and other agencies and providing or participating in public education and preparedness activities that support mitigation of risks.
Public Works & Engineering Department	The Public Works Department is responsible for engineering design and construction of capital improvement projects, maintaining municipal facilities, reviewing development applications, and issuing various permits. The Public Works & Engineering Department assist in identifying and implementing mitigation actions pertaining to capital improvements, maintenance of transportation systems, maintenance of storm drain systems, maintenance and removal of tree limbs or debris in the public right-of-way.
Finance Department	The Finance Department is responsible for all aspects of the City's accounting process, including preparation of the City Budget. Although the Finance Department does not directly implement mitigation actions, it plays an important role to facilitate implementation by working with the various departments to ensure mitigation actions are incorporated into the City budget, to administer grant support, and to document costs for eligible reimbursement following hazard events.
Community Services Department	The Community Services Department provides residents with recreation classes, special events, senior services, and facility rentals. In conjunction with other departments, Community Services may implement mitigation actions specific to community outreach and education activities and partner with neighboring cities, public and private schools, HOAs and other organizations to provide evacuation and reunification locations and shelters. The Community Services Department staff will establish safe "cooling" and "heating" areas for residents during extreme weather events and other emergencies.
Community Emergency Response Team	The City of Rancho Santa Margarita provides Community Emergency Response Team (CERT) training to community volunteers. The CERT program educates volunteers about disaster preparedness for the hazards that may impact their area. It trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. The program falls under the Federal Emergency Management Agency's jurisdiction and is standardized nationwide. CERT training consists of seven mandatory three-hour classroom sessions and one four-hour Saturday Final Exercise.
Emergency Response Team	Rancho Santa Margarita staff are on-call as part of their employment agreement and are trained through FEMA, along with OCFA and OCSD. They are trained to staff the EOC. Any mitigation pertaining to training, education, and communication will likely involve staff.

Resource	Description and Ability to Support Mitigation
Santa Margarita Water District and Trabuco Canyon Water District	Santa Margarita Water District (SMWD) and Trabuco Canyon Water District (TCWD) provide water and wastewater service to the City. SMWD and TCWD are part of the Orange County Regional Water and Wastewater Multi-jurisdictional Hazard Mitigation Plan (MJHMP) which identifies district-specific mitigation actions pertaining to hardening and protecting water and wastewater infrastructure and service reliability and resiliency. Mitigation actions related to water conservation and hardening of critical facilities specific to water and wastewater will be implemented in coordination with SMWD and TCWD.
California Department of Transportation	The California Department of Transportation (Caltrans) has jurisdiction, owns, operates, and maintains several of the roadways/bridges within Rancho Santa Margarita. Mitigation actions related to ensuring emergency transportation routes are maintained, repaired, and strengthened will require coordination and implementation by Caltrans.
Southern California Gas Company	Southern California Gas Company (Gas Company) provides natural gas service to Rancho Santa Margarita. The Gas Company owns and maintains natural gas conveyance infrastructure. Mitigation actions specific to the provision of these services will be implemented in coordination with the Gas Company.
Wireless Facilities	A variety of service providers provide communication services within Rancho Santa Margarita. Mitigation actions specific to the provision of these services will be implemented in coordination with these service providers.
American Red Cross	The City of Rancho Santa Margarita has relationship with the local Red Cross office in Santa Ana. The Red Cross provides both technical and education/outreach support in the implementation of mitigation actions.
Financial	
Federal Emergency Management Agency	The Federal Emergency Management Agency (FEMA) is the federal agency responsible for hazard mitigation, emergency preparedness, and emergency response and recovery activities. It provides guidance to State and local governments on hazard mitigation activities, including best practices and how to comply with federal requirements. FEMA also provides funding for hazard mitigation actions through grant programs.
California Governor's Office of Emergency Services	The California Governor's Office of Emergency Services (Cal OES) is responsible for overseeing and coordinating emergency preparedness, response, recovery and homeland security activities within California. Cal OES regularly dispatches team members to join first responders, emergency leaders and those affected by disasters that threaten public safety, to provide information essential to the public. Cal OES can assist in obtaining funding for mitigation actions identified in the plan and providing guidance on future plan updates.
Emergency Reserve Fund	The City maintains an emergency reserve fund for emergency needs.

Resource	Description and Ability to Support Mitigation
Education and Outreach	
AlertOC	AlertOC is a mass notification system designed to keep Orange County residents and businesses informed of emergencies and certain community events. By registering with AlertOC, time-sensitive voice messages and text messages from the County or City in which someone lives or works may be sent to their home, cell, or business phone. This system can be used to implement mitigation actions pertaining to public outreach and dissemination of accurate and timely information during a hazard event.
Orange County Crime Stoppers	This service allows citizens to anonymously report potential criminal activity and/or supply information regarding suspects of crimes. It allows people to report non-emergency information either by phone call, web or text. This program can be critical to mitigate a potential terrorist event.
Sherriff Explorer Program	The Explorer Program provides young adults (age 14-21) with the opportunity to assist the OCSD in Rancho Santa Margarita. Through weekly meetings, Explorers can broaden their knowledge and learn firsthand about the challenges and rewards of a career in law enforcement. Explorers receive training in a variety of topics including leadership, patrol procedures, first-aid, and laws of arrest.
Emergency Preparedness Outreach	Disasters cannot be prevented; however, the community can reduce the effects of disasters before they occur, prepare for what could happen, and improve response and recovery. Several mitigation actions pertain to outreach and information to the community and can be implemented through a variety of programs and events in coordination with the City and other partner agencies and stakeholders.
Neighborhood Watch	This crime prevention program enlists the active participation of citizens in cooperation with law enforcement to reduce crime in their neighborhood. This program involves neighbors getting to know each other and working together in a program of mutual assistance. Residents are trained to recognize and report suspicious activities in their neighborhoods and learn numerous crime prevention techniques and security measures. This can also be helpful in the event of a disaster or emergency for neighbors to help each other.
Great Shakeout Participation	The City annually hosts a Great Shakeout event. This event can be used to implement mitigation actions to inform and educate the public regarding hazards that affect the community and ways to reduce impacts from the hazards.
Police/Fire Community Awareness Events	Educational events provide an opportunity to implement mitigation actions specific to educating and informing the community regarding hazards and ways to reduce impacts from the hazards and what to do during an emergency.
Homeowner Association's Outreach	The City of Rancho Santa Margarita is comprised of several Homeowner's Associations. The associations can help to implement mitigation actions through the distribution of information to their residents and other proactive measures.
City Website, E-Newsletter, Social Media, Brochures and Pamphlets	These various forms of communication provide an opportunity to convey information and implement mitigation actions specific to educating and informing the community regarding all hazards and ways to reduce impacts from the hazards.

Resource	Description and Ability to Support Mitigation
How can these capabilities be expanded upon and improved to reduce risk?	
Several mitigation actions provide opportunities to expand upon the City's capabilities to reduce risk. Examples of these opportunities include: Planning/Regulatory: Adopt the LHP Update into the General Plan Safety Element (Mitigation Action #9). Monitor and update building codes and seismic regulations (Mitigation Action 11). Prepare a pandemic preparedness and response plan (Mitigation Action #26). Incorporate information from Dam Inundation and Emergency Action Plans into the LHMP update and General Plan Safety Element (Mitigation Action #52). Administrative/Technical: Work with partners and vulnerable populations to identify opportunities to mitigate impacts (Mitigation Actions #5 and #6). Identify organizations to assist property owners and renters with simple earthquake mitigation activities and small project-based structural improvements (Mitigation Action #15 and #16). Educate employees on best practices and measures to be implemented during a pandemic (Mitigation Action #28). Share water provider information for water conservation and strategies to reduce water usage and opportunities for cost savings (Mitigation Actions #32 and #33). Partner with agencies with expertise to identify potential locations for landslides and/or mudflow events associated with heavy rainfall after wildfire events (Mitigation Action #47). Financial: Funding resources for housing/shelter (Mitigation Action #4) and to mitigate impacts to vulnerable populations (Mitigation Action #6). HOAs to pursue funding for defensible space and fuel modification (Mitigation Action #20). Funding for a generator (Mitigation Action #41). Education/Outreach: Education and dissemination of information with partner agencies and at City-sponsored events (Mitigation Actions #1, #2, and #3). Outreach programs with OCFA relative to fires, potential vulnerabilities, and mitigation techniques (Mitigation Action #17). Provide up to date information on the City's website in the event of a pandemic (Mitigation Action #29). Proper handling and storage of hazardous materials (Mitigation Action #49). Notification of property owners within dam inundation areas (Mitigation Action #53).	

5.2 HAZARD MITIGATION OVERVIEW

FEMA'S NATIONAL FLOOD INSURANCE PROGRAM

The National Flood Insurance Program (NFIP) provides affordable insurance to property owners, renters and businesses by encouraging communities to adopt and enforce floodplain management regulations. Participation in the NFIP is optional; however, property owners who live in a non-participating community with flood-prone areas are not able to buy flood insurance through the program. Communities with mapped floodplains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood damaged buildings in mapped floodplains if they are not participants of the NFIP.

The City of Rancho Santa Margarita is a participant in the NFIP and implements the requirements of the NFIP through the Rancho Santa Margarita Municipal Code Chapter 9.12, *Floodplain Management Regulations*. Section 9.12.050, *Basis for establishing the areas of special flood hazard*, adopts by reference the "areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in the 'Flood Insurance Study (FIS) for Orange County, California and Incorporated Areas' dated December 3, 2009, with accompanying Flood Insurance Rate Maps (FIRMS) and Flood Boundary and Floodway Maps (FBFMs), dated December 3, 2009, and all subsequent amendments and/or revisions."

The Rancho Santa Margarita Municipal Code Section 9.12.110 states the City Council shall designate the Floodplain Administrator by resolution and Section 9.12.120 establishes the duties and responsibilities of the Floodplain Administrator. The Public Works Director is the City's Floodplain Administrator. The Floodplain Administrator is responsible for administering and implementing the provisions of the NFIP, including administering, implementing, and enforcing Municipal Code Chapter 9.12. No structure or land is allowed to be constructed, located, extended, converted, or altered without full compliance with Chapter 9.12 and other applicable regulations. In the event of any substantial damage occurring within the City's floodplain, Municipal Code Section 9.12.120 and all FEMA NFIP regulations, guidelines, and publications, including FEMA 213, would be followed with respect to substantially improved/substantially damaged buildings. These procedures would be coordinated with other departments/divisions and implemented by staff.

To date, the City does not have any repetitive loss properties or severe repetitive loss properties within the jurisdiction. The City plans to continue its participation in the NFIP and comply with the requirements. The City completed Mitigation Action 7 in the 2019 LHMP, which involved updates to the City's General Plan Safety Element to ensure that current floodplain information is incorporated, and that goals and policies adequately respond to floodplain conditions within the City to reduce vulnerability to flood hazards. Implementation of LHMP update Mitigation Actions 9 and 46 would continue to assist with compliance. Mitigation Action 9 addresses adoption of the LHMP into the City's General Plan Safety Element, including any future updates. Mitigation Action 46 requires continued evaluation of flood hazards for any development proposed within a flood hazard zone; consistent with the City's floodplain ordinance.

Additionally, it should be noted that the City's General Plan Land Use map identifies where specific land uses are allowed within the City. The City's Open Space designation is applied to streams and washes, open space easements, and other private and public open spaces. The Regional Open Space designation is applied to the portions of O'Neill Regional Park within the City. The City's floodplains are generally limited to land designated Open Space and Regional Open Space and does not allow for habitable development. The City will continue to use its General Plan land use designations to control development within these areas.

HAZARD MITIGATION GOALS

The mitigation goals, presented in Section 1.0, serve as the basis for direction to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from hazards. The plan's goals guide the direction of future activities aimed at reducing risk and preventing loss from hazards. The goals also serve as checkpoints as agencies and organizations begin implementing mitigation action items.

HAZARD MITIGATION PRIORITIZATION

The Planning Team discussed each mitigation action to identify the priority, using the following as guidance:

- High Priority: Top organizational priority and is generally a well-detailed project idea. Protects population, resource or property at high risk. Uses feasible methods, techniques or technology.

- Medium Priority: A good idea that needs more information or is an action that addresses a moderate hazard.

- Low Priority: An idea that needs a lot more information or will take a lot of preliminary action to build support.

Some actions, although possibly in need of more information, were identified as a high priority due to current conditions, the risk of the hazard, and the probability of its occurrence. The Planning Team considered the frequency and severity of the hazard; the vulnerability of the community; the impacts the mitigation action would avoid or reduce; the benefits of the action on the community; the critical facilities that would benefit; the environmental benefits of the action; and the capability of the City and its partner agencies to implement the action.

The Planning Team reviewed the STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria, as described in Table 5-2, *STAPLE/E Review and Selection Criteria*, when considering and prioritizing the mitigation actions. This methodology, as endorsed by FEMA, requires that social, technical, administrative, political, legal, economic, and environmental factors are considered when reviewing potential actions.

Table 5-2
STAPLE/E Review and Selection Criteria

STAPLE/E REVIEW	SELECTION CRITERIA
Social	• Is the proposed action socially acceptable to the jurisdiction and surrounding community? • Are there equity issues involved that would mean that one segment of the jurisdiction and/or community is treated unfairly? • Will the action cause social disruption?
Technical	• Will the proposed action work? • Will it create more problems than it solves? • Does it solve a problem or only a symptom? • Is it the most useful action in light of other jurisdiction goals?
Administrative	• Can the jurisdiction implement the action? • Is there someone to coordinate and lead the effort? • Is there sufficient funding, staff, and technical support available? • Are there ongoing administrative requirements that need to be met?
Political	• Is the action politically acceptable? • Is there public support both to implement and to maintain the project?
Legal	• Is the jurisdiction authorized to implement the proposed action? • Are there legal side effects? Could the activity be construed as a taking? • Will the jurisdiction be liable for action or lack of action? • Will the activity be challenged?
Economic	• What are the costs and benefits of this action? • Do the benefits exceed the costs? • Are initial, maintenance, and administrative costs considered? • Has funding been secured for the proposed action? If not, what are the potential funding sources (public, nonprofit, and private)? • How will this action affect the fiscal capability of the jurisdiction? • What burden will this action place on the tax base or local economy? • What are the budget and revenue effects of this activity? • Does the action contribute to other jurisdiction goals? • What benefits will the action provide?
Environmental	• How will the action affect the environment? • Will the action need environmental regulatory approvals? • Will it meet local and State regulatory requirements? • Are endangered or threatened species likely to be affected?

HAZARD MITIGATION BENEFIT – COST REVIEW

FEMA requires local governments to analyze the benefits and costs of a range of mitigation actions that can reduce the effects of each hazard within their communities. Benefit-cost analysis is used in hazard mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity.

Conducting benefit-cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now in order to avoid disaster-related damages later. The analysis is based on calculating the frequency and severity of a hazard, avoiding future damages, and risk.

A hazard mitigation plan must demonstrate that a process was employed which emphasized a review of benefits and costs when prioritizing the mitigation actions. The benefit-cost review must be comprehensive to the extent that it can evaluate the monetary as well as the nonmonetary benefits and costs associated with each action. The benefit-cost review should at least consider the following questions:

- How many people will benefit from the action?
- How large an area is impacted?
- How critical are the facilities that benefit from the action (e.g., which is more beneficial to protect, the fire station or the administrative building)?
- Environmentally, does it make sense to do this project for the overall community?

These questions were considered to help determine the appropriateness of mitigation actions. Those actions that did not have adequate benefits were excluded from the list of mitigation actions.

5.3 HAZARD MITIGATION ACTIONS

5.3.1 PREVIOUS HAZARD MITIGATION ACTIONS

The 2019 LHMP identified 49 mitigation actions. On an annual basis, the Planning Team has reviewed the mitigation actions and documented their status.

The Planning Team considered the following in their review:

- Is the mitigation action still relevant?
- What steps/actions are you aware of that have been taken to address the specific mitigation action?

In 2024, the Planning Team was specifically asked to consider potential mitigation actions relating to the City's pandemic response in light of COVID-19. Recommended mitigation actions were documented and have been refined and incorporated as part of the plan update. During the COVID-19 pandemic, some of the on-going mitigation actions that involved community-wide events or outreach were limited or modified due to restrictions associated with gatherings and social distancing. However, once restrictions were lifted, on-going progress of these mitigation actions was continued.

Table 5-3, *Status of Previous Plan Mitigation Actions*, provides a consolidated summary of the status of each action.

Table 5-3
Status of Previous Plan Hazard Mitigation Actions

Mitigation Reference Number	2019 Mitigation Action	Completed	Removed; No Longer Necessary or Feasible	Carried Into Plan Update	Status
1	Capitalize on City-sponsored events, such as Rancho Fest, Summer Concert Series, and the Great Shakeout to inform and educate the public regarding hazards with the potential to affect the community and ways they can protect themselves and reduce impacts from the hazards.			X	In 2022 and 2023 staff hosted booths at the City's Summer Concert Series and Rancho Fest. A main focal point at the City booth was information encouraging residents to enroll in AlertOC. A display with a QR code to sign up for AlertOC was prominently displayed. The Great CA Shakeout occurred on Thursday, October 21, 2022 and October 19, 2023 with information provided beforehand on all of the City's social media.
2	Coordinate with partner agencies, such as Orange County Sheriff's Department (OCSD), Orange County Fire Authority (OCFA), American Red Cross, Trabuco Canyon Water District, Santa Margarita Water District, RSM Chamber of Commerce, AgeWell, HOAs, and public and private schools to create and disseminate educational materials for residents/business owners to identify their risk to multi-hazards; identify mitigation actions they can implement; provide additional sources and resources for information; and provide classes/seminars, etc.			X	A new annual public education event was launched in 2022. The Fire Safety & Preparedness meeting held in June 2022 and 2023 and August 2024 featured presentations from the Mayor and the City's public safety partners including OCFA, OCSD, and Mission Viejo Animal Services. Presentations on the OCFA "Ready, Set, Go" and Home Hardening programs and evacuation information from the Chief of RSM Police Services from OCSD were provided. In 2022, the program also featured a presentation from the California Insurance Commission. The City provided all presentations on the City's YouTube channel with a link on the City's website for each event. On August 20, 2024 the City held a Fire Safety and Preparedness Community Meeting and topics were: Wildfire Home Resilience, Evacuation Preparedness, Hands-On Fire Extinguisher Operation, Smoke Detector Giveaways, and Animal Preparedness. Partners included the OCFA, OCSD, Southern California Edison, and Mission Viejo Animal Services.
3	In coordination with OCSD's current program, develop and implement a public outreach campaign to inform the public on warning expectations, including emergency sheltering and evacuation procedures, including pre-planned maps for distribution to employers and residents, and what alert systems and information sources are available to reduce conveyance of misinformation.			X	In 2021 OCSD implemented the OCSD/City Evacuation Zone Project. City staff worked with the OCSD and OCFA to prepare evacuation maps that include a QR code that allows field personnel to easily access this important information. The maps are used by field personnel when conducting evacuations. The maps have been loaded into AlertOC and on public-facing websites. These maps allow for streamlined notifications and display of areas that are under Evacuation Order, Evacuation Warning, and those that have been cleared for re-population. The maps were used extensively during the Airport Fire by EOC and field personnel and for communication with the public regarding evacuation orders.
4	Continue to partner with the American Red Cross, the County, neighboring cities, public and private schools, and HOAs to provide evacuation and reunification locations and shelters in an emergency.			X	The City continues to do this.
5	Work with Caltrans and neighboring jurisdictions to ensure emergency transportation routes are maintained, repaired, and strengthened, as necessary.			X	The City continues to do this. The seven-year CIP includes several multi-jurisdictional projects that will improve regional traffic flow. These include signal upgrade projects that allow for real-time control of traffic signals that can be used to facilitate traffic flow during evacuations.
6	Seek funding to hire an additional staff person and establish a Community Emergency Response (CERT) Team program.	X			In 2023, the City's in-house Emergency Manager initiated the City's Community Emergency Response Team (CERT) training program. The City's first CERT class completed training in fall 2023 and the second CERT class is scheduled to be complete in fall 2024.
7	When updating the City's General Plan, review natural hazards information and mapping (e.g., liquefaction, landslide, floodplains, fire hazard zones) to ensure the most current information is reflected and updated as necessary. Incorporate new and/or revised goals and policies specific to reducing vulnerability to natural hazards. The City will formally adopt the approved City of Rancho Santa Margarita Local Hazard Mitigation Plan into its General Plan Safety Element to ensure compliance with AB 2140, making the City eligible for additional funding under the California Disaster Assistance Act (CDAA).	X			The 2020 General Plan Update implemented this mitigation action. Additionally, in 2022, in conjunction with the 6th Cycle Housing Element Update (2021-2029), the General Plan Safety Element was updated to include evacuation information as required by State law. With the requirement to update the LHMP every 5 years, which includes demonstration of compliance with AB 2140, this mitigation action will be revised and a portion carried into the plan update.

Mitigation Reference Number	2019 Mitigation Action	Completed	Removed; No Longer Necessary or Feasible	Carried Into Plan Update	Status
8	Support utility providers' efforts to harden and strengthen critical lifeline systems to reduce vulnerability, maintain service, and improve recovery times in the event of a hazard event. Examples – utility pole reinforcements, backup generators, modeling scenarios to analyze resilience of distribution network.			X	This mitigation action is on-going.
9	Monitor changes/updates to building codes and seismic regulations to determine if City-owned critical facilities may need seismic retrofits as they age and building codes are updated.			X	The City adopts the triennial updates to the California Building Code. State law permits the City to adopt local amendments to the Building and Fire Codes to address specific climatic, geological, or topographical conditions. City Council adopted the 2022 Codes on November 9, 2022; this adoption included Local amendments to the Fire Code at the recommendation of OCFA.
10	If any City-owned critical facility is determined to be seismically vulnerable, identify a plan to conduct structural retrofitting, including funding sources.			X	No City-owned critical facility has been identified by be seismically vulnerable.
11	Inform owners of all critical facilities of changes/updates to building codes and seismic regulations and encourage them to evaluate the need for structural retrofits.			X	Not applicable at this time.
12	If any critical facilities are determined to be seismically vulnerable, work with the owner to identify potential funding sources to implement seismic retrofits.			X	Not applicable at this time.
13	Educate and encourage property owners to secure furnishings, storage cabinets, and utilities to prevent injuries from damage. Examples include anchoring bookcases, dressers, and file cabinets, installing latches on drawers and cabinet doors, securing desktop computers and appliances, using flexible connections on gas water lines, and securely mounting framed pictures and mirrors.			X	Action modified in the LHMP update.
14	Partner with the OCFA to perform outreach programs to increase awareness about fires, identify potential vulnerabilities, and implement fire mitigation techniques.			X	Refer to Mitigation Reference No. 2. The City publicizes OCFA programs, including "Ready, Set, Go" and Home Hardening, on social media and the webpage in coordination with OCFA. Additionally, the City Council issues a Fire Prevention Week proclamation annually.
15	Reduce wildfire risks by enforcing fire-related requirements pertaining to evacuation routes, minimum road widths, clearances around structures, and peak load water supply for fire response.			X	There are no proposed development projects that would trigger this mitigation action.
16	Coordinate with the HOAs and property owners to ensure the creation of defensible spaces and fuel modification around homes and neighborhoods to reduce vulnerability and increase the success potential of fire fighters in the case of a wildfire emergency. Partner with the OCFA to ensure enforcement.			X	The City meets with Community Associations of Rancho (CAR) regularly and this topic often arises with most up-to-date information communicated to all in attendance. OCFA coordinates with HOAs to maintain fuel modification areas.
17	Partner with HOAs to pursue grant funding for defensible space and fuel modification and to disseminate information to homeowners.			X	Refer to Mitigation Reference No. 2. The annual Fire Safety and Preparedness meeting is widely publicized to all HOAs.
18	Coordinate with Cal Fire, OCFA, and OCSD during wildfire events to ensure areas of evacuation are clearly articulated to the community using local naming conventions and understanding.			X	There were no local wildfire events in 2022 or 2023. September 2024, the Airport Fire required mandatory evacuations and evacuation warnings which were clearly communicated using the maps referenced in Mitigation Reference 3.
19	Encourage HOAs and property owners to install fire-resistant vegetation.			X	OCFA performs annual inspections in the WUI and coordinates with the HOAs to maintain fuel modification areas. Action combined with #16 in the LHMP update.

Mitigation Reference Number	2019 Mitigation Action	Completed	Removed; No Longer Necessary or Feasible	Carried Into Plan Update	Status
20	Partner with Orange County Mosquito and Vector Control District to implement education programs regarding vector issues and coordinate with HOAs to distribute information and educate property owners.			X	Public information campaigns from those agencies are shared on the City website and social media. Each year the City invites a representative from Orange County Mosquito and Vector Control to provide a presentation during a regularly scheduled City Council meeting to educate the public about ongoing concerns and their efforts to address them.
21	Monitor and remove or treat any standing water susceptible to mosquitos within City-owned facilities.			X	The City is proactive in this regard and actively monitors standing water on City property.
22	Coordinate with Orange County Health, local hospitals, clinics, medical groups, employers and HOAs to distribute information about the effects and transmission of diseases.			X	Throughout the Pandemic, the City posted updated information and education about COVID-19 on the City's webpage and social media. Additionally, City staff volunteered at vaccination Points of Dispensing (PODs) and with the business mask distribution program during 2020. Expand or add a measure(s) specifically relating to pandemic: a. Coordinate with County Health and CDPH to disseminate information relating to Public Health Orders, pandemic, or general public health measures. b. Utilize the City's EOC and Emergency Declarations to ensure continued city services in the event of a pandemic or other widespread threat to public health. c. Prepare a pandemic preparedness and response plan. d. Seek funding and other resources to secure personal protective equipment and supplies. e. Communicate with and educate employees on best practices and measures to be implemented during a pandemic f. Identify an appropriate amount of PPE (masks and gloves) to stockpile for RSM residents in the event of a future pandemic and have a plan for dissemination. g. Cooperate and coordinate with health care agencies about education/dissemination of vaccines. h. Provide up-to-date information on the City's website as is being done for the COVID pandemic.
23	Partner with OC Parks and Department of Fish and Wildlife and HOA's to educate the community on the bore beetle, including what it is, how to identify it, and proper removal and disposal of infested trees.			X	Public information campaigns from those agencies are shared on the City website and social media.
24	Proactively monitor drought conditions or water conservation warnings issued by State agencies or the water districts.			X	The City monitors information provided by the State. Primary responsibility for water conservation measures is under the purview of SMWD and TCWD, who provide information to their respective customers. The agencies also provide regular updates to the City Council at its regularly scheduled meetings. California was declared "drought free" in October 2023.
25	Work with the water districts to develop a drought communication plan and early warning system to facilitate timely communication of relevant information to the public concerning water conservation needs and to educate citizens regarding water conservation and encourage implementation of water-saving measures.			X	Information is provided to SMWD and TCWD customers by their respective water agencies. Both water districts are proactive about communicating this information to their customers. Public information campaigns from those agencies are shared on the City website and social media.
26	Require State-mandated water conservation measures during drought emergencies.			X	This is done by the water districts as directed by the State. As of November 2022, no new conservation measures have been mandated by the State. California was declared "drought free" in October 2023.

Mitigation Reference Number	2019 Mitigation Action	Completed	Removed; No Longer Necessary or Feasible	Carried Into Plan Update	Status
27	Prior to and during heavy rain events, close/limit access to Trabuco Canyon Road and other roadways determined vulnerable to the potential for flooding and mudflow.			X	The City coordinates with the County of Orange and OCSD when a rain event occurs that would trigger flooding on Trabuco Canyon Road (outside the City) and/or roads within the City. Significant rain events in 2022 and 2023 required coordination with OCSD to ensure Trabuco Canyon was navigated safely.
28	Seek funding to purchase mobile digital traffic signs and proactively use the signs to warn drivers of road closures and areas that are closed or should be avoided along the creeks and channels.	X			The City received American Rescue Plan funding and purchased two digital signs in 2022. This measure will be modified in the plan update to reflect the purchase of the mobile digital traffic signs has been completed.
29	Coordinate with the OCSD and OCFA to proactively notify people to leave areas along creeks and channels prior to heavy rain events and to continue to monitor areas during events.			X	Public information campaigns from OCSD, OCFA, and the OC EOC are shared on the City website and social media.
30	Continue to work with HOAs to ensure removal of fallen limbs prior to and during a high wind event.			X	This occurs via coordination with SAMLARC during and following high wind events and the City responds quickly to fallen tree limbs.
31	Monitor conditions during a high wind event to ensure fallen tree limbs or debris do not block roadways or the storm drain system.			X	The City monitors weather conditions and Public Works removes downed limbs and provides additional street sweeping to clean up debris to prevent blocked storm drains.
32	Educate citizens, especially vulnerable populations, regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme heat events occur, including the location of cooling centers in the community.			X	The school districts send advisories to their school communities as does So Cal Edison. The City's Belltower Regional Community Center served as a cooling center the weekend of September 3-5, 2022 during an extreme heat event, and was open from 11:00 a.m. to 5:00 p.m.
33	Seek funding to purchase a generator for the Bell Tower Regional Community Center.			X	In 2020 and 2023, the City submitted grant applications to fund the purchase of a generator but was unsuccessful.
34	Work with age-restricted and assisted living facilities to obtain grant funding for backup generators in the event of a power outage. Ensure backup generators have enough fuel to last at least four days to ensure continuous coverage in case of a sustained power outage.			X	As the City was unsuccessful with the 2020 and 2023 grant application, no efforts were made to assist others to secure similar funding.
35	Coordinate with Southern California Edison during any planned or unplanned power outage to ensure citizens are informed and regularly updated, especially at-risk populations that may be exceptionally vulnerable in the event of a long-term power outage.			X	SCE has a robust notification system that provides advance notice to the City when a PSPS is under consideration. Since the inception of the SCE PSPS program, the City has been notified of potential PSPS events during every summer and fall (see discussion of power outage and PSPS notifications in Section 4.2.8.). When notification to customers is provided by SCE, the City shares the information on its website and social media accounts. To date, only one brief PSPS event has been implemented.
36	Continue to proactively monitor and perform regular drainage system maintenance including removal of debris prior to storm events and similarly encourage HOAs and other property owners to proactively remove debris from their drainage systems			X	This is an ongoing effort and Code Enforcement coordinates with HOAs to enforce and monitor drain system maintenance. The City will respond quickly to these types of complaints.
37	Educate citizens about safety during flood conditions, including the dangers of driving on flooded roads.			X	The City is proactive in this regard during flood conditions, especially on Trabuco Canyon Road.
38	Require evaluation of flood hazards associated with development in flood hazard zones.			X	No development applications were submitted for projects in flood hazard zones.
39	Following wildfire events, continue to partner with Cal Fire, Orange County Office of Emergency Preparedness, OCFA, and OCSD, to identify the potential and location for landslide and/or mudflow events associated with heavy rainfall.			X	This is an on-going partnership.
40	Actively communicate with OCFA and support the Fire Watch Program, which provides consistent monitoring of canyons and high fire hazard areas to prevent fires from being ignited and spreading.			X	This is an on-going partnership.
41	Provide information to the community regarding the proper handling, storage and disposal of hazardous materials.			X	The City posts information on its website and the City has regular e-waste and document shredding events. The City receives calls about how best to dispose of hazardous materials and provides callers with the relevant information for the specific material they wish to dispose of. Additionally, the City has a popular battery disposal receptacle in City Hall.

Mitigation Reference Number	2019 Mitigation Action	Completed	Removed; No Longer Necessary or Feasible	Carried Into Plan Update	Status
42	Support and publicize County locations and events for disposal of household hazardous waste items.			X	This is done via the City's website and social media accounts (see the response for 41 above).
43	Continue to provide education materials to the community regarding the potential for unexploded ordnances and what to do in the event of discovery.			X	This information is on the website and in the General Plan EIR. The City makes information available on its website about the unexploded ordnance as it relates to the former Trabuco Bombing Range.
44	Incorporate updated hazard information from the Dam Inundation and Emergency Action Plans being prepared for dams/reservoirs identified as critical facilities into the next update to this LHMP and the City's General Plan Safety Element.			X	The City reviewed the Trabuco Canyon Water District with the Trabuco Dam Emergency Action Plan (EAP). The EAP defines the responsibilities and procedures to identify and effectively address unusual and unlikely conditions that may endanger the Trabuco Dam and nearby areas in time to take mitigating actions and notify appropriate emergency management officials.
45	Coordinate with dam owners to notify property owners if located within an inundation area, as determined by the Dam Inundation and Emergency Actions Plans and provide education information and resources in the event of an emergency.			X	The County of Orange and Orange County Fire Authority 2021 LHMP identifies the Dove Canyon Dam, the Portola Dam (in Coto De Caza), and Trabuco as "high" risk, and Upper Chiquita as "extremely high" risk.
46	Partner with the HOAs to seek funding for the installation of permanent bollards or barricades around areas vulnerable to vehicles where large community events occur.			X	This is an ongoing effort with the RSM Lake identified as the primary area of concern. Temporary bollards and barriers are installed during events at the Lake.
47	Partner with the HOAs to seek funding to prepare a Community Wildfire Protection Plan (CWPP).	X			SAMLARC, the largest HOA in the community, has a Perimeter Defensible Space Master Plan in place. Community Associations of Rancho (CAR) has formed a Fire Safe Council and received grant funding in 2024.
48	Fund equipment for motorcycle officers that have completed certified critical incident response training.	X			This is an ongoing effort in partnership with OCSD.
49	The City should implement an Energy Action Plan (EAP). The EAP should: • Evaluate the City's current green building requirements every three years, consistent with Building Code updates, to consider additional requirements for new residential and nonresidential development to ensure that new development meets or exceeds adopted green building measures in the State. • Establish a program to encourage and incentivize existing development to install solar panels. • Encourage the use of electric equipment for City construction contracts. • When feasible, the City should offer incentives for use of energy reduction measures such as expedited permit processing and reduced fees. • Coordinate periodic community outreach to leverage community involvement, interest and perspectives in implementing energy reduction measures. • Review and evaluate the availability of renewable energy sources for consumers within Rancho Santa Margarita. • Encourage the business community to reduce energy consumption through innovative technologies such as the use of cogeneration facilities. • Work with large employers and retail shopping centers to ensure access to EV charging stations. In addition, to implement the EAP, the City should appoint an Implementation Coordinator to oversee the successful implantation of all selected EAP strategies. The primary functions of the Implementation Coordinator should be to create a streamlined approach to manage implementation of the EAP.	X			The City's 2020 General Plan includes a mitigation measure that requires the City adopt an Energy Action Plan within two years (by March 2022). Principal Planner Wendy Starks has been named the Implementation Coordinator and an Energy Action Plan Inventory was completed in March 2022 as required by the EIR mitigation measure.

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5.3.2 HAZARD MITIGATION ACTIONS

The hazard mitigation actions identified below list those activities that the City will use to reduce their risk of potential hazards. These mitigation actions were reviewed and updated in the context of the updated hazards and vulnerability assessment, community outreach, discussions and collaboration with the LHMP Planning Team, and annual reviews and status of the previous plan's mitigation actions. All the mitigation actions that were discussed have been included within the plan. Some of these actions may be eligible for funding through federal and State grant programs and other funding sources as made available to the City. The mitigation actions are intended to address the comprehensive range of identified hazards and associated risks and vulnerabilities. Some actions may address risk reduction from multiple hazards.

The process used to update the hazard mitigation actions for this plan included the following:

- Review of the vulnerability and risk assessment presented in Section 4.0;
- Review of the capabilities assessment presented in Subsection 5.3;
- Review of the City's previously approved hazard mitigation plan mitigation actions;
- Review of the results of the community survey, and feedback received as part of the focus outreach meetings; and
- The Planning Team's discussion of concerns/issues that need to be addressed to reduce hazards to critical facilities and the community.

Table 5-4, *Hazard Mitigation Actions*, identifies the mitigation action, hazard(s) it addresses, City Department and/or partner agency/stakeholder responsible for implementation, priority, and the timeline for implementation. The timeline for implementation is defined as follows:

- Ongoing: 1-2 years and ongoing thereafter
- Short-Term: 1 to 2 years
- Medium-Term: 3 years
- Long-Term: 4 to 5 years

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Table 5-4
Hazard Mitigation Actions

Mitigation Reference Number	Mitigation Action	Hazard(s) Addressed	Responsible Department(s)	Potential Funding Sources*	Priority	Timeline
1	Capitalize on City-sponsored events, such as Rancho Fest, Summer Concert Series, and the Great Shakeout to inform and educate the public regarding hazards with the potential to affect the community and ways they can protect themselves and reduce impacts from the hazards. Advertise and inform residents/business owners of AlertOC and assist people in registering for notifications.	Multiple Hazards	Development Services and Emergency Management	Staff Time/General Fund	High	Ongoing
2	Coordinate with partner agencies, such as Orange County Sheriff's Department (OCSD), Orange County Fire Authority (OCFA), American Red Cross, Trabuco Canyon Water District, Santa Margarita Water District, RSM Chamber of Commerce, AgeWell, HOAs, and public and private schools to create and disseminate educational materials for residents/business owners to identify their risk to multi-hazards; identify mitigation actions they can implement; provide additional sources and resources for information; and provide classes/seminars, etc.	Multiple Hazards	Development Services and Emergency Management	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	High	Ongoing
3	In coordination with OCSD's current program, develop and implement a public outreach campaign to inform the public on warning expectations, including emergency sheltering and evacuation procedures, including assisting participants in identifying their mapped evacuation area, and what alert systems and information sources are available to reduce conveyance of misinformation.	Multiple Hazards	Emergency Management, Public Information Officer, in coordination with OCSD	Staff Time/General Fund	High	Ongoing
4	Partner with the County, neighboring cities, and local nonprofits to identify potential housing/shelter opportunities, including funding resources, for vulnerable populations in the event of a hazard resulting in displacement.	Multiple Hazards	Community Services and Development Services	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	Medium to High	Medium- to Long-Term
5	Partner with local nonprofits to identify and implement targeted mitigation actions to support vulnerable or underserved populations, including identifying specific medical (e.g., care and equipment) and transportation needs during a hazard event.	Multiple Hazards	Community Services and Development Services	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	High	Ongoing
6	Partner with the local community and other organizations, such as the American Red Cross, religious organizations, non-profits, and partner agencies (So Cal Gas, SCE, SMWD, TCWD) to work directly with vulnerable populations (elderly, homeless, low income, special needs, etc.) to identify opportunities to mitigate impacts in the event of a natural disaster, including the identification of available resources and eligibility programs (such as SCE's self-generation and backup power programs) and how to access and implement those resources and programs.	Multiple Hazards	Community Services and Development Services	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	High	Ongoing
7	Continue to partner with the American Red Cross, the County, neighboring cities, public and private schools, and HOAs to provide evacuation and reunification locations and shelters in an emergency.	Multiple Hazards	Community Services	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	High	Ongoing
8	Work with Caltrans and neighboring jurisdictions to ensure emergency transportation routes are maintained, repaired, and strengthened, as necessary.	Multiple Hazards	Public Works	Staff Time/General Fund; USDOT Rebuilding American Infrastructure with Sustainability and Equity (RAISE); Caltrans Highway Bridge Program (HBP); OC Go Funding	High	Ongoing
9	The City will adopt the approved City of Rancho Santa Margarita Local Hazard Mitigation Plan into its General Plan Safety Element, including any future updates, to ensure compliance with AB 2140, making the City eligible for additional funding under the California Disaster Assistance Act (CDAA).	Multiple Hazards	Development Services	General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	Low	Long-Term

Mitigation Reference Number	Mitigation Action	Hazard(s) Addressed	Responsible Department(s)	Potential Funding Sources*	Priority	Timeline
10	Support utility providers' efforts to harden and strengthen critical lifeline systems to reduce vulnerability, maintain service, and improve recovery times in the event of a hazard event. *Examples – utility pole reinforcements, backup generators, modeling scenarios to analyze resilience of distribution network.*	Multiple Hazards	Public Works, Development Services, in coordination with applicable utility providers	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); Cal Fire Wildfire Prevention Grants	High	Ongoing
11	Monitor changes/updates to building codes and seismic regulations to determine if City-owned critical facilities may need seismic retrofits as they age and building codes are updated.	Seismic Hazards	Development Services	Staff Time/General Fund	Medium	Long-term
12	If any City-owned critical facility is determined to be seismically vulnerable, identify a plan to conduct structural retrofitting, including funding sources and schedule.	Seismic Hazards	Development Services	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	Medium	Long-term
13	Inform owners of all critical facilities of changes/updates to building codes and seismic regulations and encourage them to evaluate the need for structural retrofits.	Seismic Hazards	Development Services and Public Works	Staff Time/General Fund	Medium	Long-term
14	If any critical facilities are determined to be seismically vulnerable, work with the owner to identify a plan and schedule for implementation of seismic retrofit, and to assist in identifying potential funding sources to implement seismic retrofits.	Seismic hazards (earthquakes and liquefaction)	Development Services and Public Works	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP)	Medium	Long-term
15	Identify organizations that can educate property owners and renters with simple earthquake mitigation activities to reduce the potential for injury and damage, and the strain on City resources during an event. Examples include anchoring bookcases, dressers, and file cabinets, installing latches on drawers and cabinet doors, securing desktop computers and appliances, using flexible connections on gas water lines, and securely mounting framed pictures and mirrors.	Seismic hazards (earthquakes)	Development Services, Public Works, and Emergency Management	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	High	Short-Term
16	Identify organizations that can educate property owners and renters to implement small project-based structural improvements to mitigate potential damage associated with heavy rains or Santa Ana wind events. Examples include roof repair/replacement, rain gutter repair/cleanout, tree trimming/ removal, downspouts, rain barrels, or other drainage improvements.	Severe Weather (heavy rains, Santa Ana winds)	Development Services, Public Works, and Emergency Management	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); LUCI Adaptation Planning Grant Program	High	Short-Term
17	Partner with the OCFA to perform outreach programs to increase awareness about fires, including potential post-fire conditions, such as smoke damage, soot, and ash, identify potential vulnerabilities, and implement fire mitigation techniques.	Wildfire; Human-induced hazards (arson)	Development Services and Emergency Management, in coordination with OCFA	Staff Time/General Fund	High	Ongoing
18	Reduce wildfire risks by enforcing fire-related requirements pertaining to evacuation routes, minimum road widths, clearances around structures, and peak load water supply for fire response.	Wildfire; Human-induced hazards (arson)	Development Services, Public Works, in coordination with OCFA	Staff Time/General Fund	High	Ongoing
19	Coordinate with the HOAs and property owners to ensure the creation of defensible spaces and fuel modification around homes and neighborhoods to reduce vulnerability and increase the success potential of fire fighters in the case of a wildfire emergency. Encourage HOAs and property owners to install fire-resistant vegetation. Partner with the OCFA to ensure enforcement.	Wildfire; Human-induced hazards (arson)	Development Services, Public Works, in coordination with OCFA	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); Cal Fire Wildfire Prevention Grants	High	Ongoing
20	Partner with HOAs to pursue grant funding for defensible space and fuel modification and to disseminate information to homeowners.	Wildfire; Human-induced hazards (arson)	Development Services, Public Works, in coordination with OCFA	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); Cal Fire Wildfire Prevention Grants	High	Ongoing
21	Coordinate with County of Orange Emergency Operations Center, Cal Fire, OCFA, and OCSD during wildfire events to ensure areas of evacuation are clearly articulated to the community using the evacuation maps developed in coordination with OCSD, OCFA, and the City.	Multiple Hazard	Development Services, Public Information Officer, Public Works, in coordination with OCFA	Staff Time/General Fund	High	Ongoing
22	Partner with Orange County Mosquito and Vector Control District to implement education programs regarding vector issues and coordinate with HOAs to distribute information and educate property owners.	Pest Management/Disease Outbreak	Public Information Officer	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	High	Ongoing

Mitigation Reference Number	Mitigation Action	Hazard(s) Addressed	Responsible Department(s)	Potential Funding Sources*	Priority	Timeline
23	Monitor and remove or treat any standing water susceptible to mosquitos within City-owned facilities.	Pest Management/Disease Outbreak	Public Works	Public Works Staff Time/General Fund	High	Ongoing
24	Coordinate with Orange County Health Care Agency, California Department of Public Health, local hospitals, clinics, medical groups, employers and HOAs to disseminate information relating to Public Heath Orders, pandemic, or general public health measures, and treatment options. Identify opportunities to reach, inform, and connect those most vulnerable with health care providers.	Pest Management/Disease Outbreak	City Administration, Public Information Officer	Staff Time/General Fund	High	Ongoing
25	Utilize the City's EOC and Emergency Declarations to ensure continued City services in the event of a pandemic or other widespread threat to public health.	Pest Management/Disease Outbreak	City Administration, Emergency Manager	Staff Time/General Fund	High	Ongoing
26	Prepare a pandemic preparedness and response plan.	Pest Management/Disease Outbreak	City Administration, Emergency Manager	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Emergency Management Performance Grant (EMPG)	Medium	Ongoing
27	Identify an appropriate amount of personal protective equipment (PPE) (such as masks and gloves) to stockpile for residents in the event of a future pandemic and have a plan for dissemination. Seek funding and other resources to secure PPE and supplies.	Pest Management/Disease Outbreak	City Administration, Emergency Manager	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Emergency Management Performance Grant (EMPG)	Medium/High	Ongoing
28	Communicate with and educate employees on best practices and measures to be implemented during a pandemic.	Pest Management/Disease Outbreak	City Administration, Emergency Manager	Staff Time/General Fund	Medium/High	Ongoing
29	Provide up-to-date information on the City's website in the event of a pandemic.	Pest Management/Disease Outbreak	Public Information Officer	Staff Time/General Fund	High	Ongoing
30	Partner with OC Parks and Department of Fish and Wildlife and HOAs to educate the community on the bore beetle, including what it is, how to identify it, and proper removal and disposal of infested trees.	Pest Management/Disease Outbreak	Public Information Officer	Staff Time/General Fund	Medium	Medium-Term
31	Proactively monitor drought conditions or water conservation warnings issued by State agencies or the water districts.	Drought	Development Services and Public Works	Staff Time/General Fund	Medium/High	Ongoing
32	Partner with the City's water providers to share their information relative to drought conditions to facilitate communication of relevant information to the public concerning water conservation needs and to educate citizens regarding water conservation, the availability of financial incentives and programs to conserve water and encourage implementation of water-saving measures.	Drought	Public Information Officer, in coordination with water districts	Staff Time/General Fund	Medium/High	Ongoing
33	Partner with the City's water providers to share their information relative to strategies that reduce water usage, are cost-effective, and provide cost savings for both the property owner and tenants.	Drought	Development Services and Public Works	Staff Time/General Fund; California DWR Watershed Resilience Program	Medium/High	Medium-Term
34	Communicate State-mandated water conservation measures during drought emergencies.	Drought	Public Information Officer	Staff Time/General Fund	Medium	Ongoing
35	Prior to and during heavy rain events, work with Orange County Public Works and OCSD to close/limit access to Trabuco Canyon Road and other roadways determined vulnerable to the potential for flooding and mudflow.	Severe Weather (heavy rains); Flood; Landslide; Mudflow	Public Works in coordination with OCSD and OC Public Works	Public Works Staff Time/General Fund	High	Ongoing
36	Proactively use the mobile digital traffic signs to warn drivers of road closures and areas that are closed or should be avoided along the creeks and channels.	Severe Weather (heavy rains); Flood; Landslide; Mudflow	Public Works in coordination with OCSD	General Fund; FEMA Flood Mitigation Assistance (FMA)	Medium	Ongoing
37	Coordinate with the OCSD and OCFA to proactively notify people to leave areas along creeks and channels prior to heavy rain events and to continue to monitor areas during events.	Severe Weather (heavy rains); Flood; Landslide; Mudflow	Public Information Officer and Emergency Manager, in coordination with OCSD and OCFA	Staff Time/General Fund	High	Ongoing
38	Continue to work with HOAs to ensure removal of fallen limbs prior to and during a high wind event.	Severe Weather (Santa Ana winds)	Public Works	Staff Time/General Fund	Medium	Ongoing

Mitigation Reference Number	Mitigation Action	Hazard(s) Addressed	Responsible Department(s)	Potential Funding Sources*	Priority	Timeline
39	Monitor conditions during a high wind event to ensure fallen tree limbs or debris do not block roadways or the storm drain system.	Severe Weather (Santa Ana winds)	Public Works	Staff Time/General Fund	High	Ongoing
40	Educate citizens, especially vulnerable populations, regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme heat events occur, including the location of cooling centers in the community.	Severe Weather (extreme heat)	Public Information Officer and Community Services; FEMA Grant Funding	Staff Time/General Fund	High	Ongoing
41	Identify and pursue funding to purchase a generator for the Bell Tower Regional Community Center.	Seismic (earthquake); Wildfire; Severe Weather (heavy rains, Santa Ana winds, extreme heat)	Public Works, Community Services and Emergency Management	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	High	Short-Term
42	Work with age-restricted and assisted living facilities to identify and obtain grant funding for backup generators in the event of a power outage. Ensure backup generators have enough fuel to last at least four days to ensure continuous coverage in case of a sustained power outage.	Seismic (earthquake); Wildfire; Severe Weather (heavy rains, Santa Ana winds, extreme heat)	Public Works, Community Services and Emergency Management	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC)	High	Short-Term
43	Coordinate with Southern California Edison during any planned or unplanned power outage to ensure citizens are informed and regularly updated, especially at-risk populations that may be exceptionally vulnerable in the event of a long-term power outage.	Seismic (earthquake); Wildfire; Severe Weather (heavy rains, Santa Ana winds, extreme heat); Human-induced hazards (arson; terrorism)	Public Works and Public Information Officer	Staff Time/General Fund	High	Ongoing
44	Continue to proactively monitor and perform regular drainage system maintenance including removal of debris prior to storm events and similarly encourage HOAs and other property owners to proactively remove debris from their drainage systems.	Severe Weather (heavy rains, Santa Ana winds); Flood; Landslide; Mudflow	Public Works	Staff Time/General Fund	Medium/High	Ongoing
45	Educate citizens about safety during flood conditions, including the dangers of driving on flooded roads.	Severe Weather (heavy rains); Flood; Landslide; Mudflow	Public Information Officer in coordination with OCSD	Staff Time/General Fund	High	Ongoing
46	Require evaluation of flood hazards associated with development in flood hazard zones.	Flood	Development Services	Staff Time/General Fund	Low	Ongoing
47	Following wildfire events, continue to partner with Cal Fire, OC EOC, OCFA, and OCSD, to identify the potential locations for landslide and/or mudflow events associated with heavy rainfall.	Severe Weather (heavy rains); Landslide; Mudflow	Public Works and Public Information Officer, in coordination with OCSD	Staff Time/General Fund	High	Ongoing
48	Actively communicate with OCFA and support the Fire Watch Program, which provides consistent monitoring of canyons and high fire hazard areas to prevent fires from being ignited and spreading. Provide notification of red flag warnings through the City's notification systems.	Wildfire; Human-induced hazards (arson)	Emergency Management and Public Information Officer	Staff Time/General Fund	Medium/High	Ongoing
49	Provide information to the community regarding the proper handling, storage and disposal of hazardous materials.	Human-induced hazards (hazardous materials)	Public Works and Public Information Officer	Staff Time/General Fund	Low/Medium	Ongoing
50	Support and publicize County locations and events for disposal of household hazardous waste items.	Human-induced hazards (hazardous materials)	Public Works and Public Information Officer	Staff Time/General Fund	Low/Medium	Ongoing
51	Continue to provide education materials to the community regarding the potential for unexploded ordnances and what to do in the event of discovery.	Human-induced hazards (hazardous materials)	Public Information Officer	Staff Time/General Fund	Low/Medium	Ongoing
52	Incorporate updated hazard information from the Dam Inundation and Emergency Action Plans being prepared for dams/reservoirs identified as critical facilities into the next update to this LHMP and the City's General Plan Safety Element.	Dam/reservoir failure	Development Services and Emergency Management	Staff Time/General Fund	Medium	Medium- to Long-Term
53	Coordinate with dam owners to notify property owners if located within an inundation area, as determined by the Dam Inundation and Emergency Actions Plans and provide education information and resources in the event of an emergency.	Dam/reservoir failure	Development Services and Emergency Management	Staff Time/General Fund	Medium	Medium- to Long-Term

Mitigation Reference Number	Mitigation Action	Hazard(s) Addressed	Responsible Department(s)	Potential Funding Sources*	Priority	Timeline
54	Partner with the HOAs to seek funding for the installation of permanent bollards or barricades around areas vulnerable to vehicles where large community events occur.	Human-induced hazards (terrorism)	Development Services, Public Works, in coordination with HOAs	Staff Time/General Fund; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Homeland Security Grant Program (HSGP)	Medium	Long-term
55	Inform and encourage integration of businesses with OCSD's Real Time Operations Center (RTOC).	Human-induced hazards (arson, hazardous materials, terrorism)	OCSD and Development Services	Staff Time/General Fund	Low/Medium	Ongoing

Ongoing: 1-2 years and ongoing thereafter
Short-Term: 1 to 2 years
Medium-Term: 3 years
Long-Term: 4 to 5 years
Note: *The Potential Funding Sources column identifies potential grant programs for the City to pursue. No award has been made at this time, and other grant programs may apply.

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SECTION 6.0: PLAN MAINTENANCE

This section identifies the formal process that will ensure that the LHMP remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the plan annually and producing an update every five years, so the City can maintain eligibility for federal and State hazard mitigation funding.

This section describes how the City will integrate public participation throughout the plan maintenance and implementation process. It also describes how the City intends to incorporate the mitigation actions outlined in this plan into existing planning mechanisms and programs. The plan's format allows the City to readily update sections when new data becomes available, ensuring the plan remains current and relevant.

6.1 METHOD AND SCHEDULE FOR MAINTAINING AND UPDATING THE PLAN

6.1.1 PURPOSE AND AUTHORITY

Section 201.6.(d)(3) of Title 44 of the Code of Federal Regulations requires that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval to remain eligible for benefits awarded under the Disaster Mitigation Act (DMA). As described below, monitoring the progress of the mitigation actions will be on-going throughout the five-year period between the adoption of the LHMP and the next update effort. The LHMP Planning Team will continue to meet or coordinate on an annual basis to monitor the status of the implementation of mitigation actions and develop updates as necessary.

The City intends to update the plan on a five-year cycle from the date of plan adoption. It is anticipated that this update process will be initiated at least 18 months prior to the expiration of the existing plan. The cycle may be accelerated to less than five years based on the following triggers:

- A presidential disaster declaration that impacts the City.
- A hazard event that causes loss of life.

Under the direction of the City's Project Management Team, which is comprised of the City of Rancho Santa Margarita Director of Development Services/Assistant City Manager and Principal Planner, the LHMP Planning Team (identified in Section 2.0, *Planning Process*) will be responsible for the on-going maintenance of this LHMP. The Project Management Team will take the primary lead in the LHMP maintenance by coordinating maintenance of this plan with the Planning Team, including undertaking the formal review process and updating the plan. Key City departments who should maintain an active role in the maintenance and future updates are identified below.

- City Administration
- Community Services
- Development Services
- Public Safety Providers (OCSD and OCFA)

- Public Works & Engineering

In addition to City staff, the following partner agencies, organizations, and stakeholders who were invited to and/or participated on the Planning Team during preparation of the plan should be included in the maintenance and future update activities:

- Age Well Senior Services
- American Red Cross of Orange County
- Capistrano Unified School District
- City of Lake Forest
- City of Mission Viejo
- Family Assistance Ministries
- Orange County Emergency Management
- Orange County Fire Authority
- Orange County Health Care Agency
- Orange County Parks
- Orange County Sheriff's Department
- Rancho Santa Margarita Landscape and Recreation Corporation (SAMLARC)
- RSM Cares
- Saddleback Valley Unified School District
- Santa Margarita Water District
- Southern California Edison
- Southern California Gas Company
- Trabuco Canyon Water District

Although specific Planning Team members may change, the City staff positions and departments and other partner agencies and organizations should continue to be included in the plan implementation and maintenance process.

Opportunities to expand the Planning Team or include the involvement of stakeholders separate from the Planning Team should be considered. This would likely include the community partners, service agencies, and organizations that work directly with the community, including with specific focus on underserved and vulnerable populations.

The Project Management Team, under the direction of the Director of Development Services/Assistant City Manager and Principal Planner will facilitate the Planning Team meetings and will assign tasks such as updating and presenting the plan to other departments, stakeholder groups, and/or elected officials. The Planning Team will be responsible for maintaining and updating the plan and will coordinate implementation of the plan through their respective positions and agencies. Plan implementation and evaluation will be a shared responsibility among all Planning Team Members.

6.1.2 ANNUAL PLAN MONITORING AND MAINTENANCE

It will be important to monitor the progress of the mitigation actions throughout the five-year period between adoption and the next required update. At a minimum, the Director of Development Services/Assistant City Manager, Principal Planner, representatives from each City Department, and Planning Team members should meet annually to monitor implementation of the LHMP. However, in the event a significant disaster occurs within

Rancho Santa Margarita, the Director of Development Services/Assistant City Manager, Principal Planner and City Department representatives will convene within 30 days of the disaster to review and update the LHMP as needed. In addition to City staff, partner agencies, organizations, and stakeholders, may be identified for participation, as appropriate.

The Principal Planner will coordinate with responsible City departments and agencies/organizations identified for each mitigation action. These responsible departments and agencies/organizations will monitor and evaluate the progress made on the implementation of mitigation actions and report to the LHMP Planning Team on an annual basis. Working with the LHMP Planning Team, these responsible departments and agencies/organizations will be asked to assess the effectiveness of the mitigation actions and modify the mitigation actions as appropriate. A LHMP Mitigation Action Progress Report worksheet or tracking mechanism will assist departments and agencies/organization responsible for implementing mitigation actions in reporting on the status and assessing the effectiveness of the mitigation actions. Information from the departments and agencies/organizations will be used to monitor mitigation actions and inform the annual evaluation of the LHMP. The following questions will be considered as criteria for evaluating the plan's effectiveness:

- Has the nature or magnitude of hazards affecting the City changed?
- Are there new hazards that have the potential to impact the City?
- Do the identified goals and actions address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the LHMP?
- Can additional local resources be committed to address identified hazards?

As part of the annual meeting, the progress of implementing the mitigation actions will be documented and opportunities to incorporate the actions into other planning documents will be identified. This review will include the following:

- Summary of any hazard events that occurred during the prior year and their impacts on the community.
- Review of successful mitigation initiatives identified in the plan.
- Brief discussion about why targeted mitigation actions were not completed.
- Reevaluation of the mitigation actions to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term project due to funding availability).

- Recommendations for new mitigation actions.
- Changes in, or potential for, new funding options/grant opportunities.
- Integration of new data and maps that can be used to inform the plan.
- Evaluation of any other planning programs or initiatives within the City that involve hazard mitigation.

The purpose of the annual evaluation will be to ensure consideration and implementation of the LHMP and document progress to inform future LHMP updates. Future updates to the LHMP will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available. Issues that arise during the annual LHMP evaluation that require changes to the vulnerability/risk assessment, mitigation strategy, and other components of the plan, will be incorporated into the next update of the LHMP in 2029. The questions identified above would remain valid during the preparation of the 2029 plan update.

6.1.3 FIVE-YEAR UPDATE

The intent of the five-year update process will be to add new planning process methods, community profile data, hazard data and events, vulnerability analyses, mitigation actions, and goals to the adopted plan so that the LHMP will always be current and up to date. Based on the needs identified by the Planning Team, the update will, at a minimum, include the elements below:

1. The update process will be convened at least 18 months prior to expiration of the existing plan through a Planning Team identified by the City Project Management Team.
2. The hazard risk assessment will be reviewed and updated using best available information and technologies.
3. Based on new/updated information provided by facility owners and available funding, the evaluation of critical facilities and mapping will be updated and improved.
4. The mitigation actions will be reviewed and revised to account for any actions completed, deferred, or changed to account for changes in the risk assessment or new City policies identified under other planning mechanisms, as appropriate (such as the City's General Plan).
5. The draft update will be sent to appropriate agencies for comment.
6. The public will be given an opportunity to comment prior to adoption.
7. The City Council will adopt the updated LHMP.

6.2 ADOPTION

The LHMP update will be presented to both the Rancho Santa Margarita Planning Commission and the City Council prior to transmittal to Cal OES and FEMA for review. The Rancho Santa Margarita City Council is responsible for adopting the LHMP. This formal adoption should take place every five years. Once the plan has received FEMA Approval Pending Adoption, the City Council will be requested to adopt the plan. Upon adoption, the City's Development Services Department will transmit the adopted plan and resolution to Cal OES.

6.3 INCORPORATION INTO EXISTING PROGRAMS AND PLANNING MECHANISMS

The effectiveness of the nonregulatory LHMP depends on the implementation of the plan and incorporation of the outlined mitigation action items into City plans, policies, and programs. The City's General Plan is an integral part of this plan. The City, through the recent update and adoption of its General Plan Safety Element, has planned for the impact of hazards. The LHMP process has allowed the City to review the goals and policies contained in the General Plan Safety Element and identified mitigation actions that will further implement these policies. The City views the General Plan and the LHMP as complementary planning documents that work together to achieve the goal of risk and vulnerability reduction to Rancho Stanta Margarita citizens and property. Many of the ongoing recommendations identified in the mitigation strategy further the goals and policies of the General Plan and other adopted plans. Further, as part of the Safety Element, the City has acknowledged the LHMP and will continue to incorporate it by reference.

The plan includes a range of action items that, if implemented, would reduce loss from hazard events in the City. Together, the mitigation action items in the LHMP provide the framework for activities that the City may choose to implement over the next five years. The City has prioritized the plan's goals and identified actions that will be implemented (resources permitting) through existing plans, policies, and programs. In addition to the General Plan, the City will coordinate the recommendations of the LHMP with other existing plans and programs, which include, but are not limited to:

- Rancho Santa Margarita General Plan Updates
- Orange County and Orange County Fire Authority Local Hazard Mitigation Plan
- Rancho Santa Margarita Capital Improvement Program
- Rancho Santa Margarita Building Codes
- California Environmental Quality Act Review

As a guidance document, implementation of the mitigation actions can be accomplished most effectively by integrating the LHMP into ongoing programs, policies, and practices. Opportunities to integrate the mitigation actions include the following:

- Integration of mitigation actions in emergency response and post-disaster recovery planning.

- Ongoing education and outreach programs to increase staff, residents, business owners, employees, and overall community awareness of the risks and opportunities to implement mitigation actions associated with natural hazards.

- Continued coordination with the City and other partner agencies and organizations on emergency operations and training opportunities.

- Continued consideration of hazard implications and opportunities to implement hazard mitigation as City plans, policies, procedures, and practices are prepared and updated.

The LHMP Project Manager (Principal Planner) is responsible for overseeing the plan's implementation and maintenance through the City's existing programs. The Principal Planner, or designated appointee, will assume lead responsibility for facilitating LHMP implementation and maintenance meetings. Although the Development Services Department will have primary responsibility for review, coordination, and promotion, plan implementation and evaluation will be a shared responsibility among all departments identified as lead departments in the mitigation action plan. The City will reference and incorporate this LHMP into all relevant planning documents, programs, decisions, processes, and regulations. The LHMP will be reviewed and considered by internal City departments as applicable plans or programs are created or updated in the future. Opportunities to integrate the mitigation action plan into other planning mechanisms and documents will be identified as part of the annual plan monitoring and maintenance described in Section 6.1.2.

6.3.1 2019 LHMP PAST INCORPORATION EFFORTS

The hazard mitigation actions identified in the City's previously adopted 2019 LHMP were incorporated into existing programs and other planning mechanisms when appropriate. Several successful integrations of the 2019 LHMP are outlined in Table 5-3, as previous mitigation actions marked "completed." For example, the 2020 General Plan Update implemented Mitigation Action 7 by incorporating new and/or revised goals and policies specific to reducing vulnerability to natural hazards and adopting the 2019 LHMP into the General Plan Safety Element. In 2022, in conjunction with the 6th Cycle Housing Element Update (2021-2029), the General Plan Safety Element was updated to include evacuation information as required by State law.

In addition to the incorporation of hazard mitigation actions, information from the 2019 LHMP was used to inform planning processes in the City. This information was used in various planning documents, project review, and other decision-making processes to minimize the risk of hazards. For example, information from the 2019 LHMP was used in the 6th Cycle Housing Element Update (2021-2029) to identify environmental constraints such as areas at risk of wildfire, flooding, and geologic and seismic conditions to determine how these may impact the development of residential units in Rancho Santa Margarita.

6.4 CONTINUED PUBLIC INVOLVEMENT

The City recognizes the need for continued public involvement throughout the five-year planning period to keep community members and partner agencies updated on the LHMP, including socially vulnerable populations. The public will continue to be informed on LHMP actions through regular updates to the City websites and through annual progress reports. The adopted LHMP will remain permanently available for review on the City's website, with contact information for interested parties to direct comments and concerns. Additionally, the City will ensure continued public involvement through the promotion of hazard and emergency preparedness education, interagency coordinated outreach efforts, public disaster fairs, drills and other hazard awareness campaigns as included in applicable Mitigation Actions in Section 5.0*, Hazard Mitigation Strategy*. These mitigation actions include outreach and communication methods designed to appeal to the entire community, including targeted outreach to socially vulnerable populations. All public feedback will be reviewed and considered for incorporation (if deemed appropriate) into the next LHMP update. Additionally, coordination and implementation of individual mitigation actions will involve direct coordination and interaction with the public, such as those involving targeted support to vulnerable or underserved populations, programs to assist property owners and renters to implement risk reduction improvements, and working with HOAs and property owners. Implementation of these mitigation actions will provide additional opportunities for continued public involvement and assist in determining how best to implement mitigation actions, assess the effectiveness of the mitigation actions, and identify additional opportunities for mitigation actions to be considered in the next update. Upon initiation of the LHMP update, the Planning Team will review feedback and outreach efforts, which will be analyzed and incorporated into a new public involvement strategy based on the needs and capabilities of the City at the time of the update. At a minimum, this strategy will include the use of the City website, email distribution lists, and social media, as well as coordination with partner agencies and organizations, and will include specific outreach to vulnerable populations.

6.5 POINT OF CONTACT

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