



CITY OF NORCO
2050 GENERAL PLAN

SAFETY ANALYSIS

NOVEMBER 13, 2023



NORCO GENERAL PLAN SAFETY ELEMENT

Introduction

The City of Norco is in the western portion of Riverside County, approximately 45 miles east of Los Angeles, and about 12 miles from Ontario Airport. Norco shares boundaries with the cities of Corona, Riverside, Eastvale, and Jurupa Valley, and unincorporated Riverside County. Located adjacent to the Santa Ana River, the City is prone to the effects of natural hazards related to earthquakes, wildfire, and flooding. As an inland community, the City can also be affected by severe weather events such as windstorms, extreme heat, and drought. These hazards have impacted Norco in the past and will continue to impact it in the future, potentially changing because of climate change.

Regulatory Framework

California Government Code (GC) § 65302 (g) identifies the statutory requirements that govern the preparation of a General Plan Safety Element. This section of the GC has been modified several times to respond to the changing issues and priorities of the State since its original adoption. For additional detail regarding the statutory requirements governing General Plan Safety Elements, please refer to Appendix A of this report.

Basic Element Requirements

GC § 65302 (g) 1 requires the Safety Element to address the protection of the community from any unreasonable risks associated with the effects of the following hazards:



All these required applicable hazards to the City are addressed in the Safety Element Requirement Matrix below and will then be incorporated into the updated Norco Safety Element.

In addition, Safety Elements are required to address these non-hazard specific issues, as they apply to the City:



Recent Bill Changes

In addition to the requirements in GC § 65302 (g) 1, other changes adopted by the California Legislature have affected what is required to be addressed in the Safety Element:

Wildfire Hazards (SB 1241)

SB 1241—G C § 65302 (g) 3— requires cities and counties to address fire risk in state responsibility areas (SRA) and very high fire hazard severity zones in the safety element of their general plans upon the next revision of the housing element. This bill also requires cities and counties to make certain findings regarding available fire protection and suppression services before approving a tentative map or parcel map.

Evacuation Concerns (AB 747 and SB 99)

SB 99—G C § 65302 (g) 5—requires the identification of developments in any hazard area that do not have two evacuation routes. Also, AB 747 — G C §65302.15— further requires that Safety Elements shall be reviewed and updated as necessary to identify the capacity, safety, and viability of evacuation routes under a range of emergency scenarios within the jurisdiction. While this requirement identifies the Safety Element, there is the potential this analysis may overlap with the Circulation Element and will require coordination to reduce any potential conflicts.

Climate Change Concerns (SB 379)

SB 379 — G C §65302 (g) 4— requires that the Safety Element be reviewed and updated, as necessary, to address climate adaptation and resiliency. This review occurs in conjunction with the preparation of a vulnerability assessment or with reliance on a Local Hazard Mitigation Plan (LHMP), which addresses climate adaptation risks and vulnerabilities. Reliance on this document ensures compliance and leveraging of this plan, effectively allowing for comprehensive implementation of future projects and programs that support addressing the effects of climate change.

Plan Integration (AB 2140)

AB 2140 — G C §65302.6— recommends the integration of the LHMP into the General Plan Safety Element. Upon completion of this voluntary requirement, the City would be eligible for potential cost savings during future disaster/emergency events where the California Disaster

Assistance Act requirements are activated. Preparation of the LHMP and General Plan Safety Element anticipates compliance with this requirement.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The intention of the Alquist-Priolo Earthquake Fault Zoning Act (1972)—California Public Resources Code (PRC), Chapter 7.5, Section 2621-2699.6—is to reduce the risks associated with surface faults. It requires the designated State Geologist to identify and map “Earthquake Fault Zones” around known active faults. Per PRC Section 2623, before the approval of a project, cities and counties shall require a geologic report defining and delineating any hazard of surface fault rupture. If a city or county finds that no undue hazard of that kind exists, the State Geologist may waive the report.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act —California PRC, Chapter 7.8, Section 2690-2699.6— created a statewide seismic hazard mapping and technical advisory program in 1990 to help cities and counties address the effects of geologic and seismic hazards caused by earthquakes. Per PRC 2697, cities and counties shall require, before the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard. If a city or county finds that no undue risk of this kind exists, based on information resulting from studies conducted on sites near the project and of similar soil composition to the project site, the geotechnical report may be waived. After report approval or a waiver granted, subsequent geotechnical reports shall not be required, provided that new geologic datum, or data, warranting further investigation is not recorded. Each city and county shall submit one copy of each approved geotechnical report, including the mitigation measures, if any, and are delivered to the State Geologist within 30 days of report approval.

Existing Conditions Summary

Seismic Hazards (Seismic Shaking, Liquefaction, Landslide)

Norco is in a seismically active region of southern California. Surrounded by active earthquake faults of varying size and significance, the City is prone to seismic hazards (earthquakes). Typically, seismic shaking and fault rupture are deemed the primary hazards as they occur because of an earthquake, as there are no active fault zones within the City, fault rupture is not a concern. Liquefaction and earthquake-induced landslides are considered secondary hazards since an earthquake event often triggers them. Often, earthquakes can trigger other effects such as building damage/collapse, infrastructure failure, pipeline breakage, and damage to transportation and communication facilities. The size of the earthquake and distance from the epicenter typically determine the severity of these events.

Primary Seismic Hazard (Seismic Shaking)

Seismic shaking (ground shaking) is the term that refers to the movement of the earth’s surface resulting from an earthquake. This shaking is typically the primary cause of damage in earthquakes, which correlates to the magnitude of the earthquake and proximity to the event’s epicenter. Typically, the Modified Mercalli Intensity (MMI) scale measures the intensity

of seismic shaking, based on the amount of observed damage. Since the degree of shaking, and consequently damage, decreases as the seismic energy travels further away from the fault rupture's point of origin, different parts of a city or region can report different shaking intensities. The MMI uses a 12-point scale to measure shaking intensity. There are no active or potentially active faults in the Norco area. However, moderately strong shaking can still be expected in the City as a result from faults to the west (Chino/Elsinore fault zones).

Secondary Seismic Hazards

Secondary Seismic Hazards include those that involve the interaction/reaction of earth materials to a seismic event. The following are secondary seismic hazards of concern for the City:

Liquefaction

Liquefaction is a ground failure phenomenon that occurs because of a seismic event. Ground failure typically occurs when the following conditions exist:

- Loose unconsolidated granular soils
- Shallow groundwater conditions
- Strong seismic shaking

When all three conditions are met, and liquefaction occurs, soils experience a total or substantial loss of shear strength and behave like a liquid. Thin alluvium that amplifies earthquake shaking also contributes to a moderately high liquefaction potential and can occur in Norco where the bedrock is shallow and impedes the downward flow of groundwater. The only area where this is an issue is along the Santa Ana River channel.

Earthquake Induced Landslide

Ground failure resulting from an earthquake can also occur in the form of a landslide. These failures typically happen in areas with steep slopes or unstable soil conditions. Usually, post-wildfire conditions and intense precipitation can further exacerbate these unstable hillside conditions, contributing to greater landslide vulnerability. Landslides can impact structures, sever utility lines, block roadways, and impact people and properties if they are located within the path of the ground failure.

The potential for earthquake induced landslides is minor in Norco because of the hard bedrock that underlies most of the City and the absence of geologic formations that is typical in most California landslides. Most of the City is in an area of either low or very low potential for slope stability caused by ground shaking. The only area of moderate potential is on vacant land immediately adjacent to the river in the northeast corner of the City.

Wildfire/Urban Fire

Portions of Norco are under threat of potential wildland fires, especially, developments located in or adjacent to the City's hillsides. The State Fire Hazard Severity Zone Maps developed by Cal Fire identify locations where fire threat is elevated based on fuels, terrain, weather, and other relevant factors. The presence of these fire hazard severity zones triggers the requirement for a jurisdiction to address wildfire hazards and develop policies and actions

that support mitigation and risk reduction. **Figure 1** depicts the locations within the City located within the very high fire hazard severity zone, portions of the City located within the Cal Fire recognized Wildland Urban Interface (WUI) and the California Public Utility Commission (CPUC) identified fire hazard threat zones. The CPUC created a single statewide fire-threat map to select areas with a higher risk for destructive power line fires and where stricter fire-safety regulations should apply. **Figure 2** depicts the historic wildfire perimeters that have occurred in or near the City.

Wildfire or the potential of, can be directly related to the City's land use and development patterns. While much of the community is considered low density (due to the equestrian nature of the community), this rural setting still poses a fire threat due to the presence of out buildings, barns, feed storage, wood shingled roofs, and deep setbacks on properties (larger, deeper properties have the potential to create more code compliance issues). The City also has large open areas containing dry vegetation, hillsides and slopes which can hinder firefighting capability. To compound things there are also portions of the community designated as conservation areas which are designed to maintain wildlife habitat, which includes provisions restricting the removal of vegetation despite its proximity to nearby development. Approximately 20% of the City is located within either open space, conservation, or limited development areas.

Fires within or adjacent to the commercial and industrial areas of the City could have a larger economic and financial impact within the community. The size of fires associated with industrial and commercial properties is also a concern, as the resources to combat these fires can be massive and put a strain on local fire jurisdictions. These areas also present an increased potential of fire hazards due to the presence of hazardous materials, chemical storage and use, heavy duty equipment/machinery, even the byproduct and waste because of inventory production/fabrication.

Flood

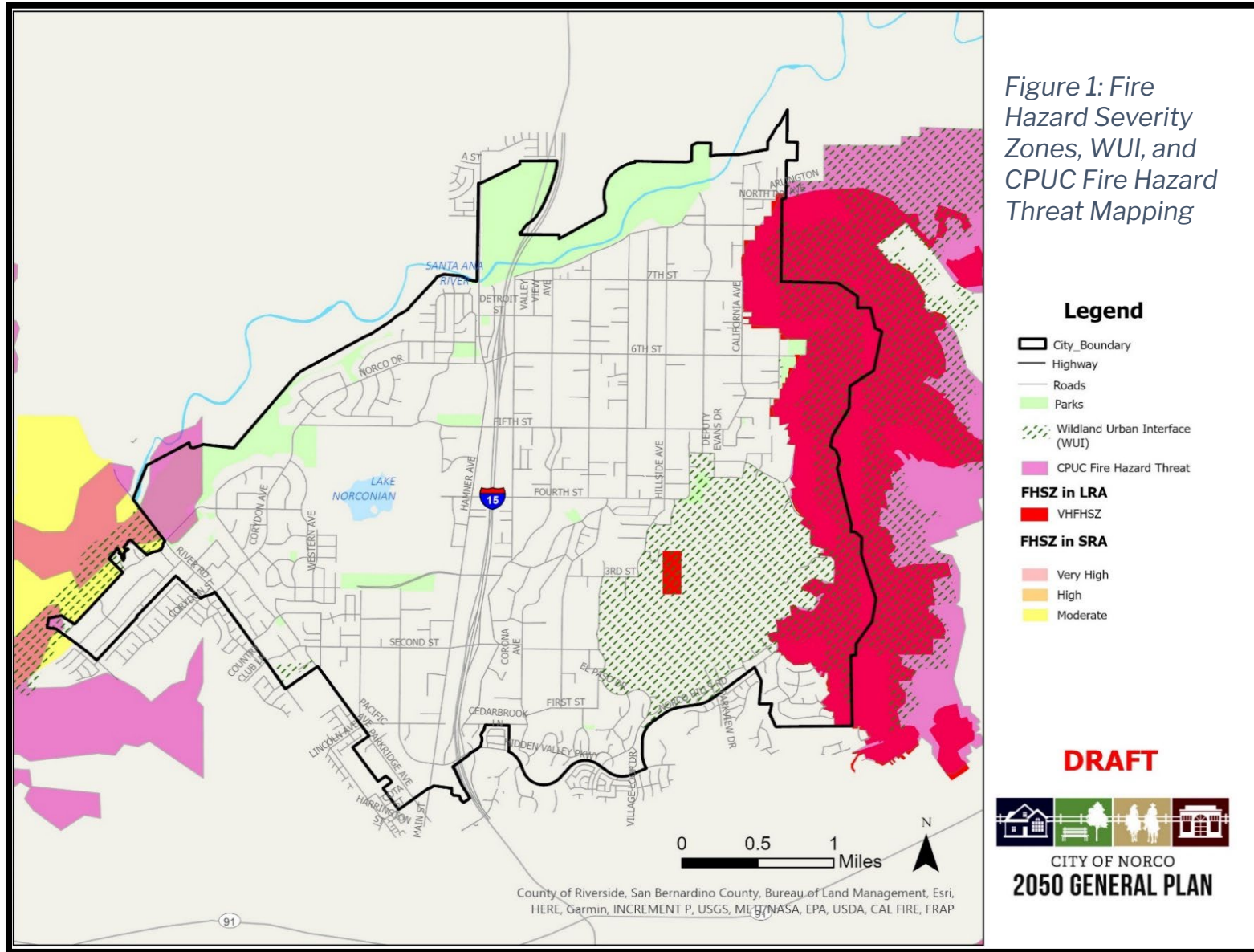
Flooding in Norco is addressed by participation with and under the jurisdiction of the Riverside County Regional Flood Control and Water Conservation District. The District builds and maintains facilities throughout the region which are used for flood control. The City also relies on its own Drainage Master Plan which identifies flood control infrastructure and drainage within the City.

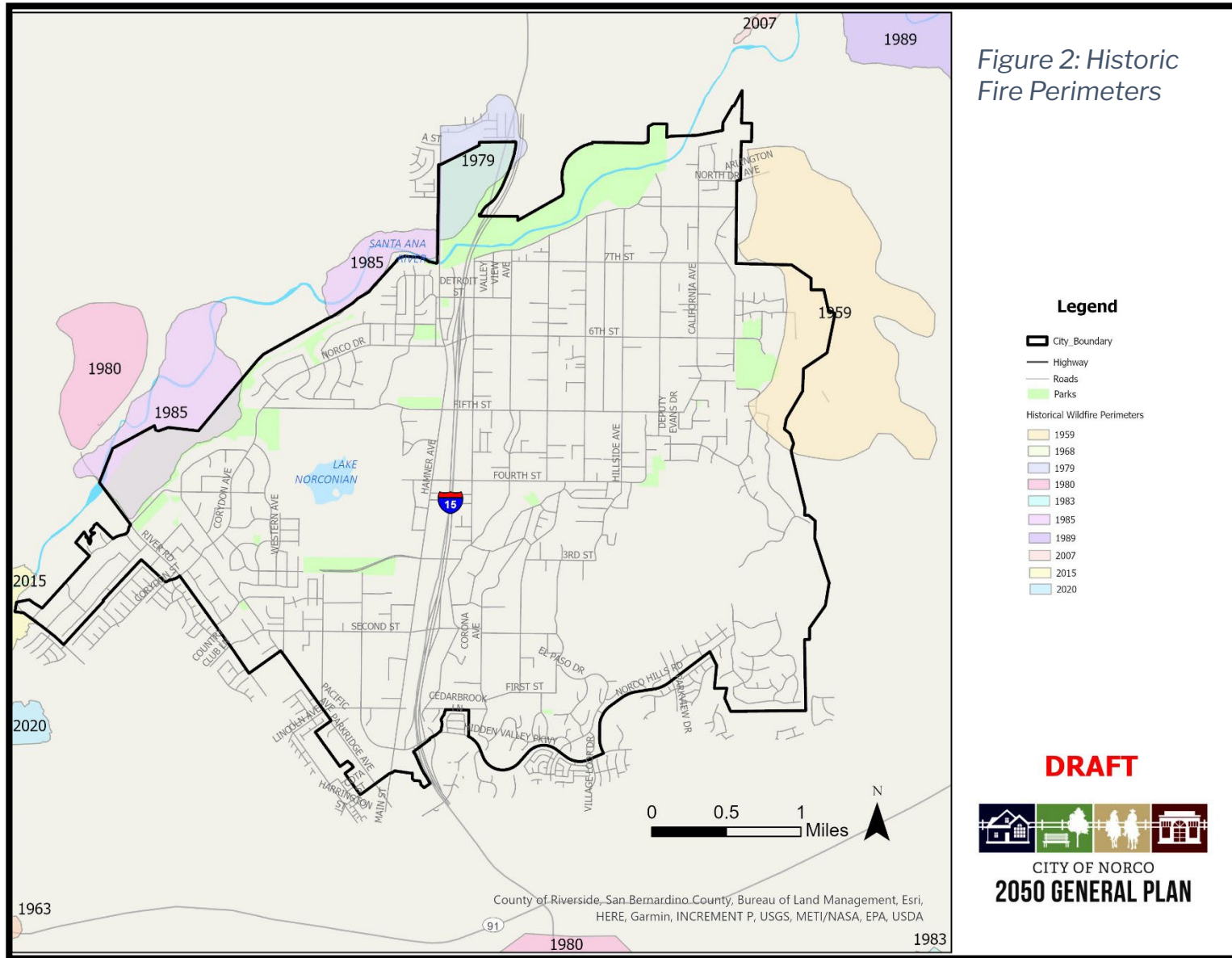
A major contributor to local flooding in the region is the Santa Ana River channel which forms the northern border for a large portion of the City. Fortunately, the south bank of the river forms steep bluffs that create a natural barrier between the river and much of the community. The Silverlakes Equestrian Center is in the northernmost section of the City, along the north banks of the Santa Ana River. Areas closest to the riverbed and in the vicinity of city flood control facilities are at greatest risk for flooding. While a majority of the City is relatively flat, several drainage facilities were constructed to convey stormflows from the elevated areas in the eastern part of the City to the west, eventually draining into the Santa Ana River. The North Norco Channel built to aid in drainage was excavated to increase capacity and has aided in the mitigation of flood waters.



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However, it is anticipated that the capacity would be insufficient during a 100-year storm, and the area around Sierra Ave and properties along 6th Street could flood. The same can be anticipated with flood waters during a 100-year storm in relation to the limited capacity of the South Norco Channel. While portions of the community are located within the 100- and 500-year flood zones, improvements to storm drains, roadways, and properties may reduce the overall flooding occurring within the City. Isolated flooding will remain a regular occurrence in the City, as developments have interrupted historic drainage patterns and created issues within neighborhoods. **Figure 3** depicts areas of the City that may be prone to flooding from 100- and 500-year floods.

Dam Inundation also has the potential to impact the City. Dam inundation mapping made available by the California Department of Water Resources indicates that portions of Norco could be inundated if either the Seven Oaks Dam or Lake Matthews reservoir were to breach releasing water held by these facilities. **Figure 3** also includes the dam inundation zones mapped within the City and neighboring areas.

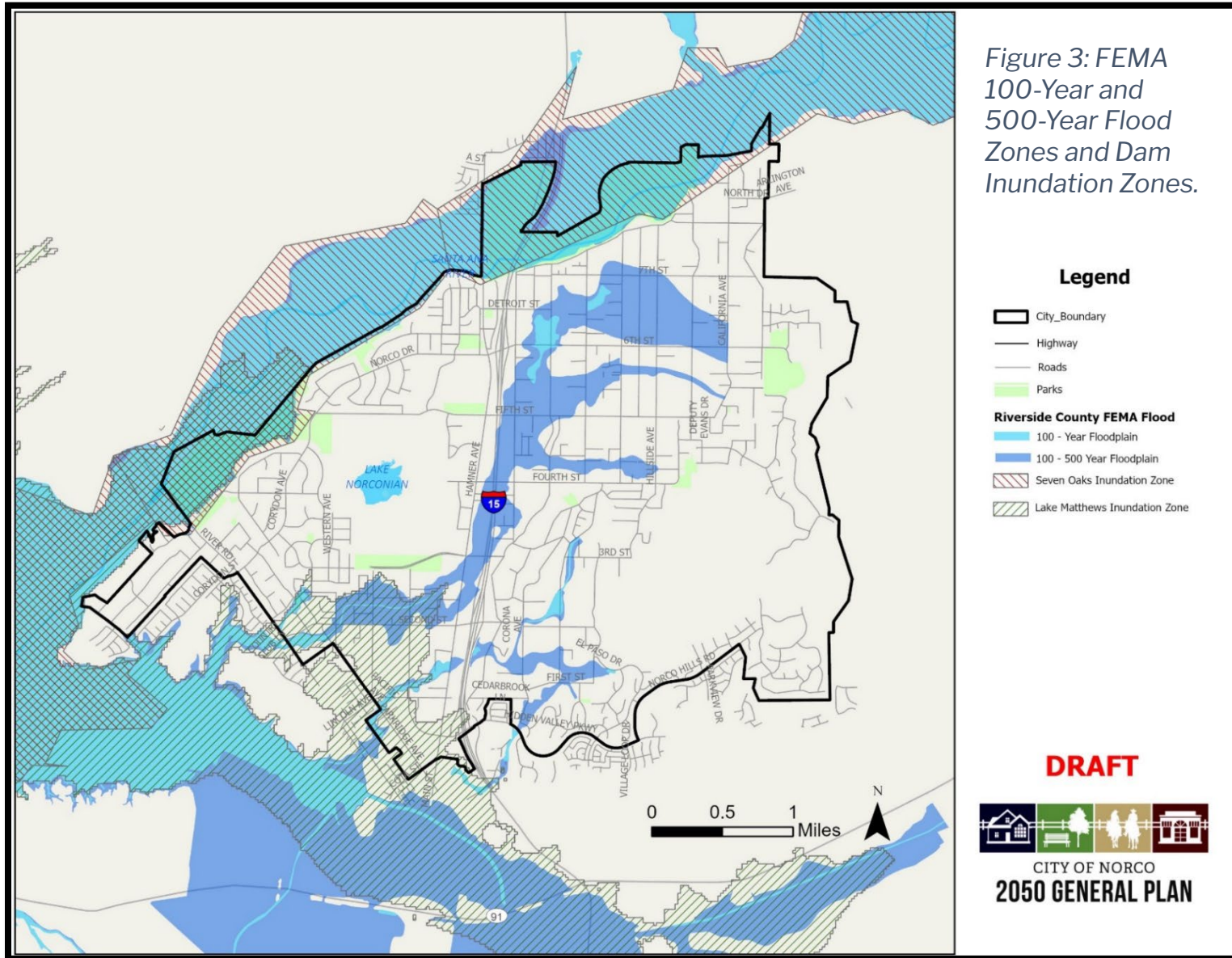
Severe Weather (Extreme Heat, Windstorms, Drought)

Severe weather is a potential concern for the City. The types of weather events of greatest concern for the City include extreme heat, windstorms, and drought. While these types of events can occur frequently and at certain times of the year, the City can expect the following impacts associated with these hazards:

Extreme Heat

According to the Resilient IE Project (a collaborative project between Western Riverside County of Government (WRCOG) and the San Bernardino County Transportation Commission (SBCTA) with funding from Caltrans to mitigate risks associated with climate adaptation on the region's transportation infrastructure), extreme heat incidents can strain the city's power delivery networks, and can increase rates of heat-related illnesses, particularly in at-risk populations. To address community needs, the City has developed criteria for opening cooling centers during extreme heat events, which includes the following:

- The forecast anticipates temperatures of 97+ degrees.
- The Riverside University Health System-Public Health, after contact with the National Weather Service, issues a "Heat Warning" for affected areas.
- Heat Warning announcements posted on media outlets, television, radio, local newspaper and posting on the Summer Crisis Hotline.
- Norco is in a wind prone area and is susceptible to "Santa Ana" winds due to the proximity to the Cajon Pass. Wind speeds greater than 70 mph are possible which increases the potential for a devastating wind driven wildland fire.



Windstorm

According to the Resilient IE Project, strong winds are expected to become more intense around the city of Norco because of changing climatic conditions. Strong “Santa Ana Wind” conditions typically occur when warm high-pressure zones form in the inland desert portions of California and Nevada and push hot dry air towards the coastal areas of southern California. These conditions typically occur in the fall and are usually dry high speed wind conditions that can exacerbate fire weather conditions and help wildfire grow significantly in size.

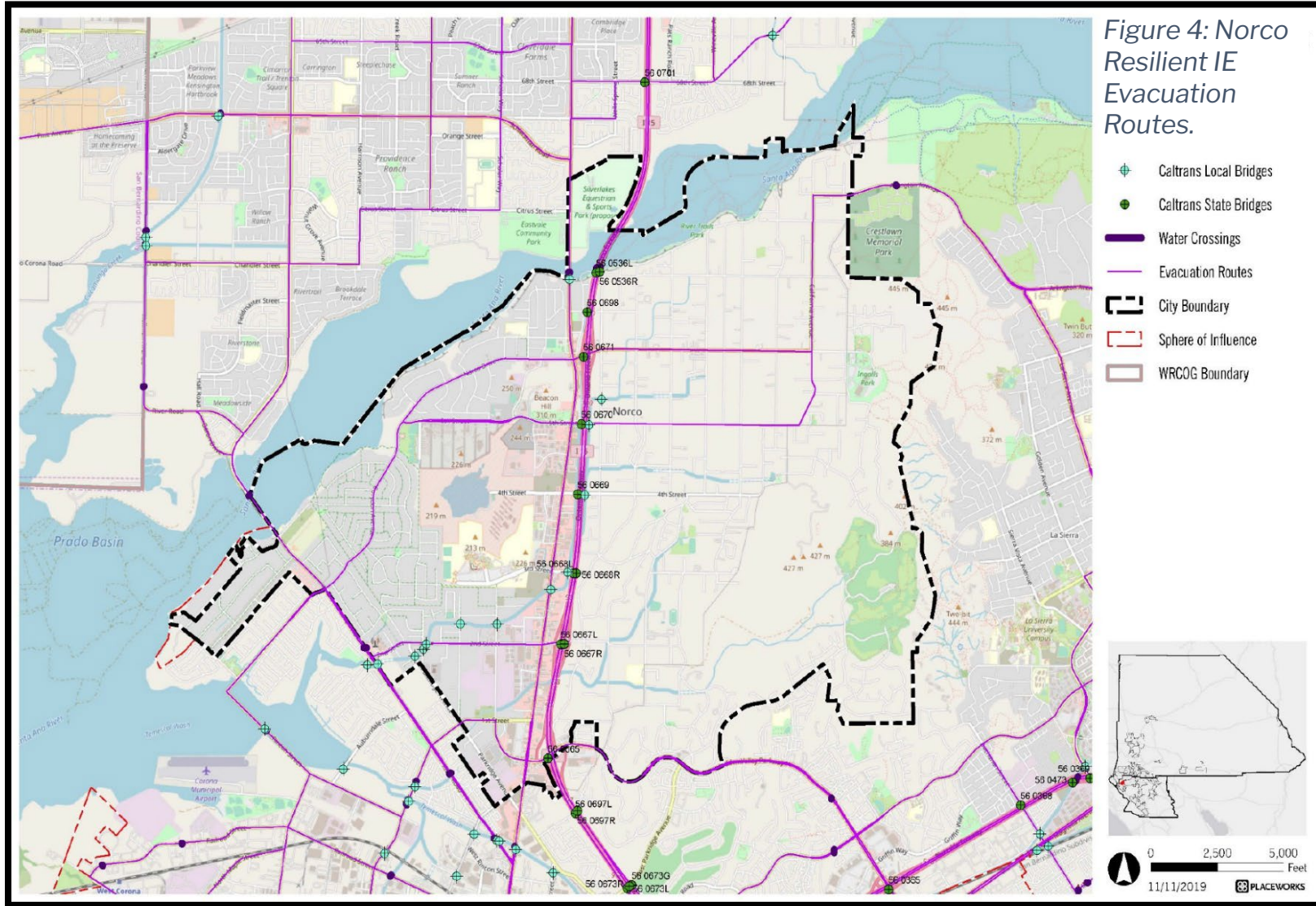
Drought

According to the Resilient IE Project, water sources will likely experience more frequent and intense droughts, which can cause water shortages. On October 19, 2021, the Governor of the State of California proclaimed a condition of statewide drought and strongly encouraged local agencies to take aggressive, immediate action to reduce water consumption and prepare for potentially worsening conditions. Since that time Norco has adopted, implemented, and is currently enforcing a water conservation program to reduce the quantity of water used, to ensure sufficient water is available for human consumption, sanitation, and fire protection. The City is authorized to declare a water shortage emergency when it determines the City cannot meet the ordinary demands and requirements without depleting City water supplies to a level that would affect human consumption, sanitation, and fire protection. The City gets its water supply from local groundwater wells, purchased recycled water, and imported water. According to the 2020 Urban Water Management Plan, the City’s water supply is projected to meet full-service demands through 2045 during normal years, single dry year, and five consecutively dry years.

Evacuation

In addition to aiding the various jurisdictions with mitigating risks associated with climate adaptation, the Resilient IE project also identified evacuation routes as part of the State’s SB 99 analysis requirements for Safety Elements. **Figure 4** depicts the routes identified by the Resilient IE project, which are listed in **Table 1**.

Table 1: Evacuation in Norco as Identified by the Resilient IE Project	
North/South	East/West
Interstate 15 (I-15)	Norco Drive
Hamner Ave	Sixth Stret
Corydon Ave	Fifth Street
River Rd	Second St
California Ave	First St
	Mountain Ave
	Hidden Valley Pkwy
	Arlington Ave



Safety Element Requirements Matrix

The following matrix was prepared to help City staff understand how the existing safety element meets current requirements as codified in GC § 65302 (g) (requirements after the adoption of new state requirements like SB 1241, SB 99, AB 747, SB 379, and AB 2140). To facilitate the review, this matrix relies on the latest version of the General Plan Safety Element Assessment from the Board of Forestry and Fire Protection (highlighted in blue). This Cal Fire assessment includes requirements pertaining to wildfire and emergency evacuation, within jurisdictions containing Very High Fire Hazard Severity Zones (VHFHSZs) and/or a State Responsibility Area (SRA). Due to the presence of VHFHSZs, these requirements will apply to Norco.

The Safety Element Requirement Matrix identifies the following:

- Identifies if the requirement is currently included in the Existing Element.
- Provides a brief explanation for inclusion/omission in the updated element.
- Identifies opportunities for expansion and recommendations for compliance with new requirements.

The table is intended as a quick reference regarding how the updated safety element will be prepared and the new topics/issues that will be addressed.

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
Seismically Induced Surface Rupture		X	No Alquist Priolo Special Study Zones (active faults) are located within the City.	N/A
Ground Shaking	X		Nearby fault systems like the Chino, Elsinore, San Jacinto, and San Andreas have the potential to cause strong seismic events.	Expand on current policies, including language that considers the most up to date CA Building Codes. Create policies that can assist property owners with retrofits and mitigation projects.
Ground Failure		X	This hazard does not appear to be an issue within the City.	N/A
Slope Instability: Landslides, Mudslides	X		Portions of the community are located within steep hillside areas, where slope instability could be a concern.	Review and expand policies regarding slope instability and improved mapping to highlight areas of concern.
Tsunami		X	Due to the City's location inland from the coastline, Tsunami is not a hazard of concern	N/A
Seiche		X	Only large body of water in Lake Norconia. It is adjacent to a residential neighborhood.	A policy should be developed to address the potential impacts to surrounding areas if water release occurs.
Dam Failure	X		It is included in the Safety Element, though it is stated that it is not a major concern to the city. Seven Oaks Dam would not affect the City, Prado	Update inundation mapping to include Lake Mathews, the reservoirs inundation zone includes portions of the City, and

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
			would have to fill beyond capacity and back up to the City.	could potentially impact residents and buildings.
Flooding	X		All FEMA zones are identified, and adequate background information is included.	Update the current mapping to be more legible and easier to identify the specific zones. Update to include the latest National Flood Hazard Layer (NFHL) map amendments. Update with current flood infrastructure projects.
Subsidence		X	Not a concern in the City.	N/A
Liquefaction	X		Areas are identified in the current plan.	Create a stand-alone map identifying these zones in the City, to better identify areas of caution.
Wildland and Urban Fires	X		Some policies are in place	Significant policy updates, creation of new policies, to meet compliance standards with CAL Fire standards.
Wildfire Goal		X	New Information Needed	Develop an overall goal for fire safety in the SE.
Wildfire: Historical Fire Data		X	New Information Needed	Include a history with local wildfires in the city and local region.

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
Wildfire: Land Uses in VHFHSZ		X	New Information Needed	Include a brief description of development trends in the city in particular areas that meet this requirement. Create a policy that addresses this as part of the update. Incorporate by reference any policies within the LHMP, CWPP, Land Use Element etc.
Wildfire: Fire Protection Responsibilities		X	New Information Needed	Outline responsibilities of fire protection in the jurisdiction.
Wildfire: References to CWPP, LHMP, etc.		X	New Information Needed	Include a reference to these various plans, linking them with other SE requirements such as Land Use.
Wildfire: Residential Evacuation without two points of ingress/egress identified.		X	New Information Needed	Create a section in the SE addressing emergency evacuation. SB99 Analysis: Create a map identifying these residential areas and the parcels within that meet the Cal FIRE requisite (30+ parcels) w/o 2 pts of ingress/egress. Perform an analysis as part of the SE update

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
				and add this information to the Evacuation portion of the SE. Policy creation that avoids this issue in the future when new developments or redevelopments is considered.
Wildfire: Evacuation Routes Identified	X Partially		2.1.8 Evacuation and Shelter - The City's main evacuation routes are the 1-15 Freeway and Hamner Avenue. Secondary routes include Second Street and River Rd./Archibald Ave., California Ave./North Dr., and Mountain Ave. and Hidden Valley Pkwy. /McKinley Ave. 2.3.1n	Create a map depicting the potential evacuation routes as identified. Have there been any studies conducted about route capacity and viability under various scenarios? Create a policy that would ensure that these routes are analyzed before any new development or major redevelopment occurs.
Wildfire: Development standards to meet or exceed CA CCR: Title 14	X Partially		Policy 2.3.1h Policy 2.3.1i Policy 2.3.1j	Update the language of these policies to be all inclusive. Create a separate new policy stating that all building standards must meet or exceed current CA Title 14, CCR.

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Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
Wildfire: Minimize new development in VHFHSZs		X	New Information Needed	Create a policy stating this as a requirement for new development and redevelopment
Wildfire: Firesafe design for future development		X	New Information Needed	Create policy requiring that firesafe design be mandatory for future development.
Wildfire: New essential facilities located outside of fire risk areas		X	New Information Needed	Create a policy making this a requirement when feasible.
Wildfire: Mitigating existing non-conforming development to current fire standards.	X Partially		Policy 2.3.1m	Update the language or Create a policy and subsequent actions if needed that will address this and outline a strategy.
Wildfire: Evaluate Redevelopment after large fires		X	New Information Needed	Create a policy to address this and meet the requirement.
Wildfire: Fuel modification for new developments in VHFHSZs.	X Partially		Policy 2.3.1i	Modify current policy to read new dev in VHFHSZ or create new policy to address the requirement.
Wildfire: Fire protection plans for new development in VHFHSZ		X	New Information Needed	Create a policy to address this requirement, reference the CWPP
Wildfire: Long term maintenance of the fire reduction projects.		X	New Information Needed	Create policy addressing this requirement.
Wildfire: Adequate Ingress Egress to new development		X	New Information Needed	Create a policy to address this requirement

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
Wildfire: Minimum evacuation of residential areas in a VHFHSZs	X Partially		Policy 2.1.8 Policy 2.3.1n	Modify language to address this or create a new policy to address this requirement.
Wildfire: Areas with inadequate access routes		X	New Information Needed	Create a policy to address this requirement
Wildfire: Public outreach regarding defensible space, specific plans to at risk population.	X Partially		Policy 2.3.1p	Modify language of policy or create new policy to address this requirement.
Wildfire: Future water supply identified		X	New Information Needed	Create a policy that addresses this concern. Incorporate by reference the Norco Urban Water Management Plan
Wildfire: New development requires adequate fire protection	X Partially		Policy 2.3.1i	Modify the language to address new development specifically. Create a new policy addressing this requirement.
Wildfire: Infrastructure for new development including: water supply and location, long term integrity of water supply, evacuation and emergency access, fuel modification and defensible space, vegetation clearance on roads, and visible home and street signage.	X Partially		Policy 2.3.1j Policy 2.3.1o	Modify the language to address infrastructure requirements. Create new policies to address the requirements

Safety Element Requirement Matrix (As of September 2023)				
Safety Element Requirement	Included	Not Included	Reason for Inclusion or Exclusion	Opportunities for Expansion (Where Applicable)
Wildfire: Map of existing emergency service facilities		X	New Information Needed	Map the emergency critical facilities and ensure adequate fire coverage
Wildfire: Assessment and projection of future emergency needs	X Partially		Policy 2.3.1b	Modify the language, or create new policies to address the requirement
Wildfire: Emergency Services training		X	New Information Needed	Develop policy to address the requirement. Add section in fire protection
Wildfire: Mutual aid agreements	X Partially		Policy 2.3.1a	Add section describing the mutual aid agreements

Conclusions

The following areas should be focused on for the update to the Norco Safety Element

1. Updated mapping should be incorporated that includes new information pertaining to FEMA flood hazard zones, liquefaction and landslide hazards, wildfire hazards, and dam inundation .
2. Incorporate a climate change discussion and the potential effects on the hazards of concern within the City. These hazards would include wildfire, severe weather events (heat, drought, wind), precipitation, seismic events, and flooding.
3. Update and map evacuation constraints within the City to identify key locations where evacuation challenges may occur due to single ingress/egress conditions.
4. Expand wildfire hazards discussion and goals and policies to address the following key areas.
 - a. Location of the Very High Fire Hazard Severity Zone (VHFHSZ).
 - b. Development requirements within the VHFHSZ.
 - c. Historical fires that have impacted the region and City.
 - d. Fire capabilities and responsibilities of the City and other participating agencies.
 - e. Address home hardening, vegetation management, and defensible space for private and public properties.
 - f. Assess fire response capabilities and infrastructure.
 - g. Address planning and preparation activities associated with mutual aid and recovery.
 - h. Identify training processes and protocols in place to address emergency needs.