

City of Riverside

DRAFT PUBLIC SAFETY ELEMENT

TECHNICAL BACKGROUND REPORT

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SECTION 1: COMMUNITY PROFILE

Like most Southern California cities, Riverside faces a diverse array of potential natural hazards. With the Santa Ana River nearby and numerous arroyos traversing the City, flood risk is a real concern. The City's undeveloped hillsides are visually appealing but can provide fuel for a wildfire or mudslides in heavy rains. Like all California cities, Riverside is also susceptible to earthquakes. Although no known faults traverse the City or its Sphere of Influence, regional faults have the potential to threaten health and safety.

Many hazards created by the activities of businesses, and other urban activities, present potential public safety hazards, as well. The City's transportation network of roads, freeways, rail lines, and airports provides crucial mobility to Riverside residents, but each transportation mode comes with associated risk. Furthermore, Riverside residents experience personal and property crimes.

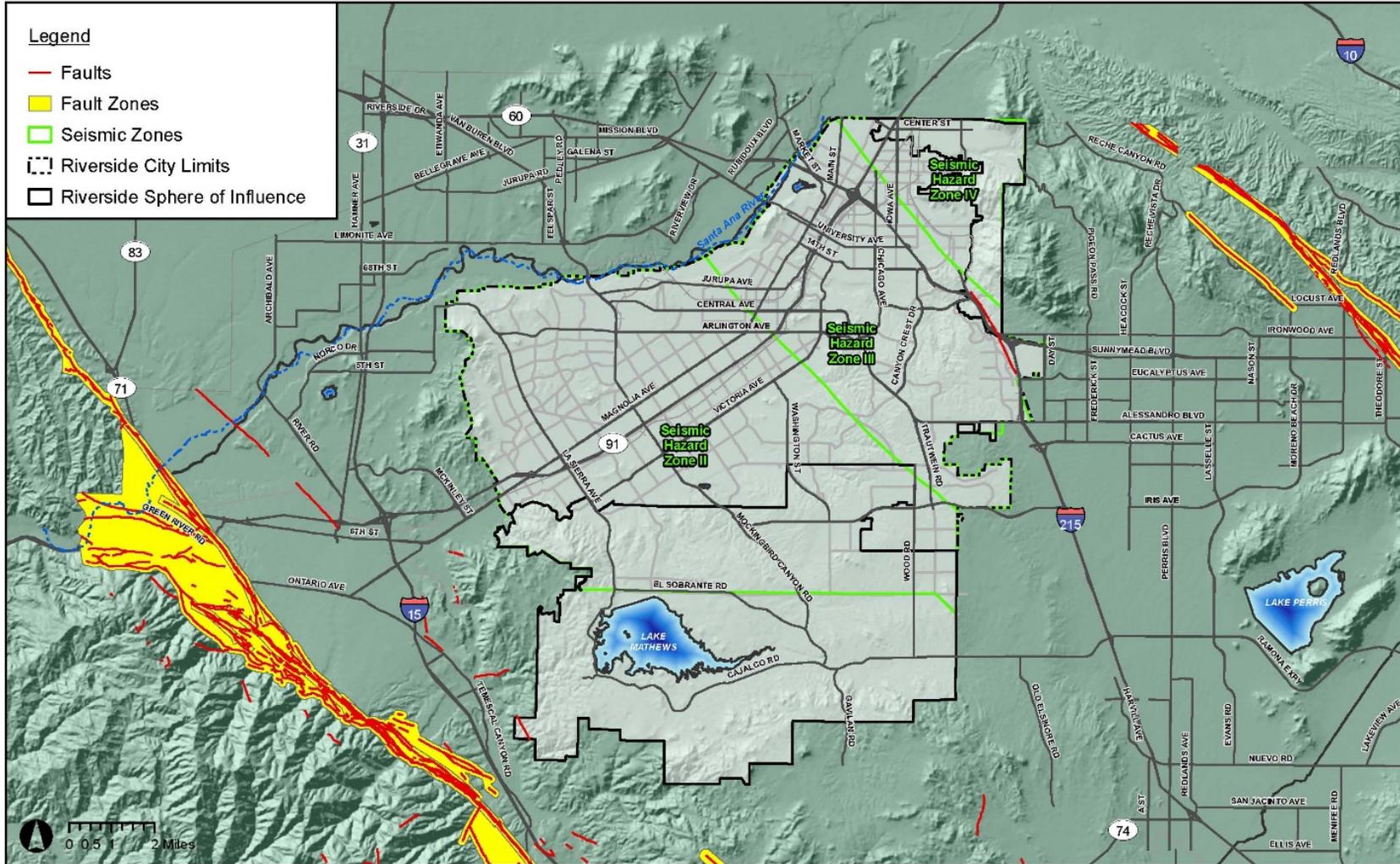
Riverside residents' sense of security directly affects how the quality of life is perceived. How individual cities respond to particular hazards shapes a city's image in the minds of its residents and visitors. For Riverside to continue its image as a desirable place to live and to offer an attractive location for new business growth, the City must continue to comprehensively address the public safety needs and concerns of its residents, businesses, institutions, and visitors.

GEOLOGIC & SEISMIC HAZARDS

The State has two pieces of legislation that require cities to act to protect residents from geologic and seismic hazards, including:

- Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist to identify earthquake fault zones along traces of both recently and potentially active major faults. Cities and counties that contain such zones must inform the public regarding their location, which are usually 0.25 miles or less in width. Proposed development plans within these earthquake fault zones must be accompanied by a geotechnical report prepared by a qualified geologist, describing the likelihood of surface rupture. As a matter of information, there are no such zones within the City or its Sphere of Influence.
- Seismic Hazards Mapping Act requires the State Geologist to prepare maps identifying seismic hazard zones. Development in seismic hazard areas is subject to policies and criteria established by the State Mining and Geology Board. In addition, approval of development on a site within a seismic hazard area requires the preparation of a geotechnical report and local agency consideration of the policies and criteria set forth by the State Mining and Geology Board (Public Resources Code Section 2690 et seq.).

Figure CP-1: Regional Fault Zones



SEISMICITY & FAULTING

While no known faults traverse the City, several faults in the region have the potential to produce seismic impacts within the City and its Sphere of Influence. Three significant faults, shown on **Figure CP-1: Regional Fault Zones**, pass within 20 miles of Riverside.

- The San Andreas fault is at its closest point 11 miles from Downtown Riverside, abutting the San Bernardino Mountains. The San Andreas fault extends 600 miles from Eureka in Northern California's Humboldt County south to the Mexican border. The San Andreas fault is estimated to have the capability of producing up to an 8.3-magnitude (M) earthquake. One of the more direct impacts that an earthquake of this magnitude could have on the City of Riverside is the disruption of potable water supplies to the City. The City's primary water supplies come from a series of wells north of the City, with the water lines from these sources running directly across segments of the San Andreas fault.
- The San Jacinto fault runs as close as 7 miles from Downtown. This fault extends more than 125 miles, from northwest of El Centro in Imperial County to northwest of San Bernardino, passing through the intersection of Interstates 10 and 215, the City of Loma Linda, and the Box Springs Mountains. This fault has the capability of producing up to a 7.0M earthquake.
- The Elsinore fault passes within 13 miles of Downtown, extending approximately 4 miles west of Lake Mathews and Corona and south into the City of Lake Elsinore. This northwest-/southwest-trending fault has the capability of producing up to a 6.0M earthquake. Northwest of Corona, the Elsinore fault splits into two segments and forms the two upper strands of the Elsinore fault. The southwestern strand becomes the 25-mile-long Whittier fault, with the capacity of producing up to a 7.2M earthquake, and the northeastern strand becomes the 13-mile-long Chino fault, with the capacity of producing up to a 7.0M earthquake.

Table CP-1: Magnitude and Intensity Scales of Earthquakes

Magnitude	Descriptor	Intensity	Description
1.0–3.0	Very Minor	I	I. Not felt except by a very few under especially favorable conditions.
3.0–3.9	Minor	II–III	II. Felt only by a few persons at rest, especially on upper floors of buildings. III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0–4.9	Light	IV–V	IV. 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. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0–5.9	Moderate	VI–VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. 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.
6.0–6.9	Strong	VIII–IX	VIII. 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. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0–7.9 8.0 and higher	Major Great	X–XII	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Although no Alquist-Priolo fault zone or active or potentially active fault has been mapped at the surface within Riverside, one northwest-/southeast-trending unnamed fault (identified as *County Fault* on **Figure**

CP-1: Regional Fault Zones) is projected toward the southwest corner of the Sphere of Influence boundary south of Lake Mathews (Wilson Geosciences, Inc. 2004).

MAGNITUDE AND INTENSITY

Magnitude and intensity measure different characteristics of earthquakes. Magnitude measures the energy released at the source or epicenter of the earthquake with the use of a seismograph. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment.

Table CP-1, Magnitude and Intensity Scale of Earthquakes, correlates magnitude (Magnitude Scale) ranges to the intensities (Mercalli Scale) typically observed at locations near the epicenter of earthquakes. The estimated maximum earthquake event would generate site intensities in the range of VI to IX in Riverside.

SEISMIC RELATED HAZARDS

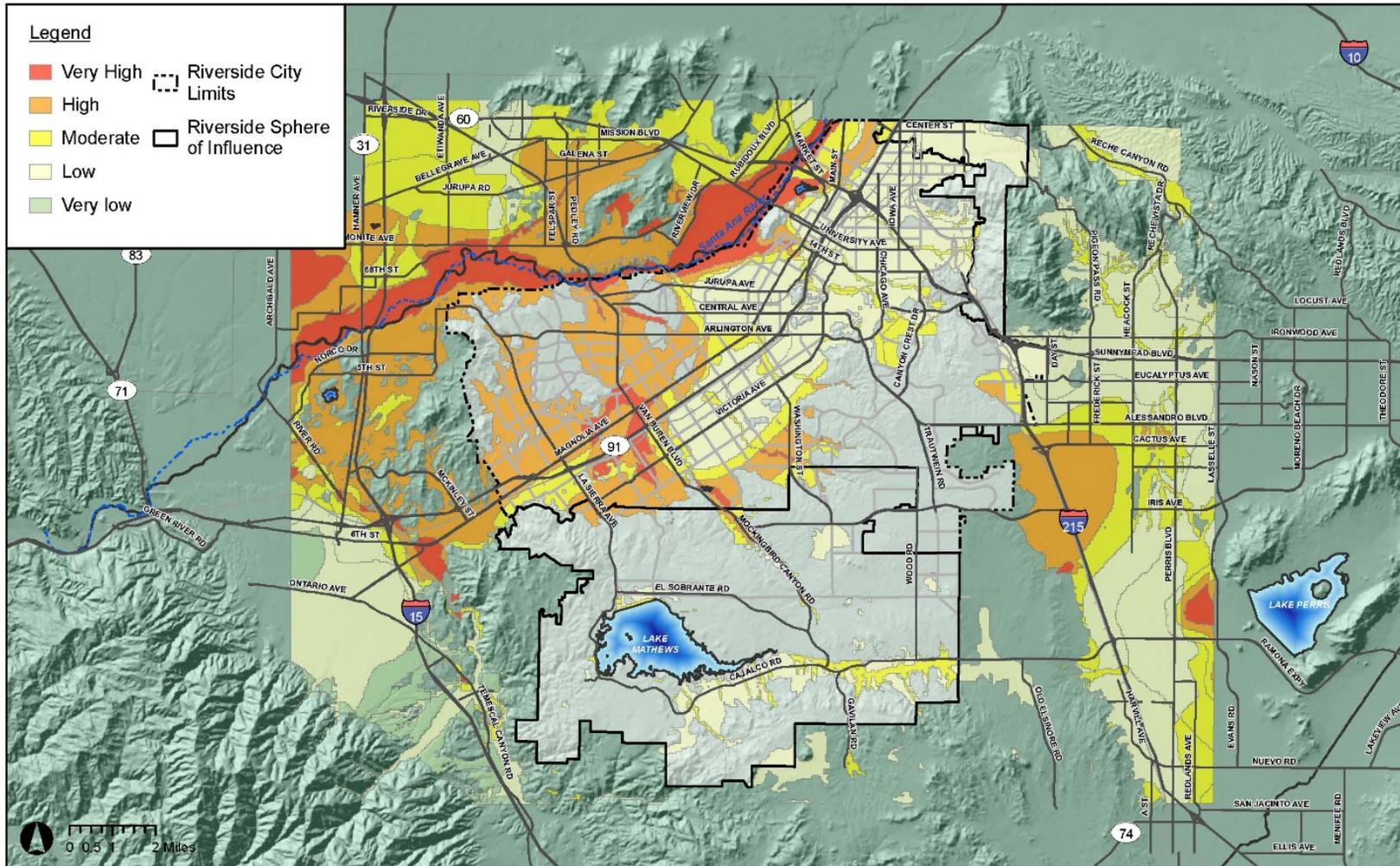
Due to the topography and the nature of the geologic formations present in Riverside, other seismic-related geologic hazards are less severe than would be expected in cities with extensive, steep hillside terrain. Ground shaking, which can seriously affect the integrity of structures, is an important consideration in the City because of the proximity of major faults and the preponderance of loose alluvial soils.

Other geologic hazards associated with ground shaking include liquefaction and ground failure. Liquefaction occurs when ground shaking causes water-saturated soils to become fluid and lose strength. Liquefaction historically has been responsible for significant damage, creating problems with bridges, buildings, buried pipes, and underground storage tanks. Liquefaction hazards are particularly prevalent along watercourses, a significant concern in the City given its proximity to the Santa Ana River and its numerous arroyos. **Figure CP-2, Liquefaction Zones**, illustrates the areas within the City with a high potential for liquefaction.

Within Riverside, the four primary liquefaction areas include the area along the Santa Ana River, a broad area south and west of the Riverside Municipal Airport, a portion in western Riverside spanning La Sierra Avenue, and a smaller area along the City's southern boundary. Most of the Sphere of Influence area is not susceptible to liquefaction, except for alluvial drainages leading into Lake Mathews.

Liquefaction historically has been responsible for significant damage, creating problems with bridges, buildings, buried pipes, and underground

Figure CP-2: Liquefaction Zones



Another soil condition influencing development practices is called shrink-swell potential. This term refers to the change in soil volume that results from a change in moisture content. Soils with this potential occur primarily west of the Riverside Municipal Airport and within the Lake Mathews drainage area of the Sphere of Influence but can be found throughout the City and Sphere (**Figure CP-3, Soils with High Shrink-Swell Potential**).

STEEP SLOPES

Steep slopes also affect how and where development can occur. The San Jacinto, San Bernardino, and San Gabriel Mountains provide a frame for the Inland Empire region, and a series of hills and smaller mountains surround Riverside itself including the La Loma Hills, Jurupa Mountains, Pedley Hills, and La Sierra/Norco Hills. Within the City, surface elevations range from ~700 feet above mean sea level near the Santa Ana River to over 1,400 feet west of La Sierra Avenue. The highest point in the Sphere of Influence is Arlington Mountain, standing 1,853 feet tall.

Within Riverside, most natural slopes are relatively flat, generally less than 15 percent, with some slopes ranging from 15 to in excess of 30 percent. Steep topography fractured and unconsolidated bedrock conditions, and expansive soils make many hillside areas highly unstable. Principal areas of steep slopes include the Box Springs Mountains, Alessandro Heights, Hawarden Hills, and the east-facing slopes of the Norco Hills. Many slopes in the Sphere of Influence are steeper than those within the City.

The portions of the City susceptible to landslides and rockfalls include high slope areas in the west and northeast. Landslides may result from heavy rain, erosion, removal of vegetation, seismic activity, or combinations of these and other factors.

Required roads around structures subject to geo-logic hazards are required to meet the minimum roadway widths of Title 18, Subdivision, of the Riverside Municipal Code of Ordinances (RMC), and clearance around any structures is reviewed on a case-by-case basis as part of the review of development projects.

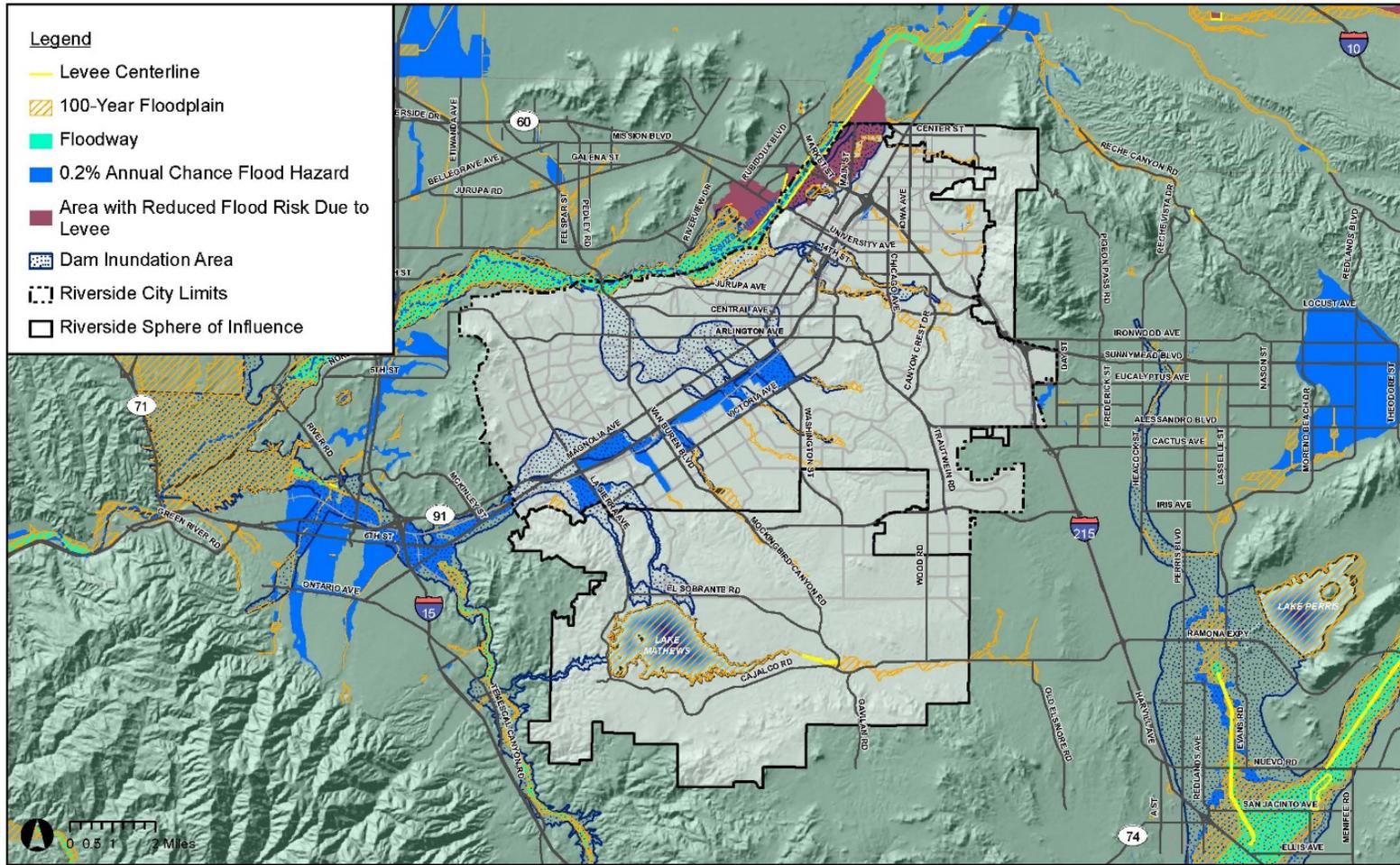
FLOODING & DAM INUNDATION

Riverside is more susceptible to flood damage than to any other disaster. Southern California's unpredictable seasonal ranges of rainfall, coupled with geographic and geologic conditions, make Riverside particularly vulnerable to flooding, especially during winter months. Increasing conversion of natural areas to pavement and less-pervious ground covers makes the effects of storms more intense and potentially damaging.

Flash floods, mudslides, and creek flooding have all occurred in the City, claiming lives and damaging property. The impacts of flooding can also damage the drinking water supply, create power outages, and damage homes and property. The City of Riverside has been included as part of four Presidential Disaster Declarations for heavy rains and flooding in 2003, 2005, 2010, and 2011. These events caused damage to City infrastructure as well as homes and businesses.

The City's flood risk areas include the area adjacent to the Santa Ana River; lands alongside arroyos, washes, and drainage channels; and lands in the vicinity of several dams, including the Harrison Dam, Woodcrest Dam, Mary Street Dam, Prenda Dam, Box Springs Dam, Mockingbird Canyon Dam, Alessandro Dam, Cajalco Dam, Fairmount Dam, and Lake Evans Dam (see **Figure CP-4, Flood Hazard Areas**). Although dams can provide valuable flood control and water storage functions, areas near dams are considered to be at risk in the event of dam failure. The safety of all dams is the responsibility of the U.S. Army Corps of Engineers, which conducts inspections on a regular basis.

Figure CP-4: Flood Hazard Areas





Past dam failures in California (in Baldwin Hills in 1963 and in St. Francis in 1928) and near-failures (in Van Norman in 1971 and in Oroville in 2017) point out the importance of ensuring dam safety. Dams may fail for seismic or geologic reasons. Riverside lies downstream from several dams and debris basins whose drainages ultimately flow into the Santa Ana River or its tributaries. Inundation hazards range from high to low with distance away from Lake Mathews and other reservoirs, such as Harrison and Mockingbird Reservoirs. Figure PS-4 illustrates potential dam inundation zones throughout the City

The Cobey-Alquist Floodplain Management Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management to protect people and property from flooding hazards. The act also identifies requirements that jurisdictions must meet to receive state financial assistance for flood control.

Riverside participates in the National Flood Insurance Program. Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA) show potential flood areas with a 1 percent or greater chance of occurring annually, known as the "base flood" or 100-year flood zones, in addition to areas outside of the base flood zone that may be less susceptible to inundation but are still considered to be part of the floodplain.

Figure CP-4, Flood Hazard Areas identifies designated floodways, flood hazard zones, and levee protection zones in accordance with California Government Code Section 65302(g).

Flooding, depending on its severity, can cause disruption of commerce and governmental services, extraordinary public expenditures for flood relief, and impairment of the tax base. Flood risks are best

avoided through proactive and preventative measures. Through the identification of potential flood hazard areas, the City can reduce the impact. Preventing the siting of certain types of facilities, specifically emergency or other critical facilities, in areas subject to inundation from dam failure or in designated floodplains can also mitigate flood hazards and guard against disruption of City services and loss of life and property during flood events.

Although protection from flooding is critical to the City, flood protection measures need not pose or create negative environmental impacts. Flood-control measures and techniques should emphasize solutions that utilize or incorporate natural features and processes over concrete-only channels and detention basins.

FIRE PREVENTION & RESPONSE

No part of Riverside is immune from fire danger. Structural and automobile fires represent the most common types of fire in urbanized areas and can be caused by a variety of human, mechanical, and natural factors. Urban fires have the potential to spread to other structures or areas, particularly if not extinguished promptly. Proactive efforts, such as fire sprinkler systems, fire alarms, fire-resistant roofing, and construction methods, can collectively lessen the likelihood and reduce the severity of urban fires.

Areas of dense, dry vegetation, particularly in canyon areas and on hillsides, pose the greatest potential for wildfire risks. Urban/wildland interface fires occur when a fire burning in wildland vegetation gets close enough to threaten urban structures.

The major urban/rural interface areas of high fire risk within the City and the Sphere of Influence include Mount Rubidoux, the Santa Ana River Basin, Lake Hills, Mockingbird Canyon/Monroe Hills, Sycamore Canyon, Box Springs Mountain, and La Sierra/Norco Hills. **Figure CP-5a, Very High Fire Hazard Areas**, identifies areas of urban/rural very-high fire-hazard areas. **Figure CP-5b, Historic Fires within Very-High Hazard Severity Zones**, overlays those very high fire hazard severity areas with the City's record of historic fires within those areas. Introduction of residential development into this natural landscape will increase the potential risk of fire damage to people and personal property.

Approaches to wildfires have changed dramatically with greater understanding of the role of fire in natural processes. For many years, total fire suppression of brush and vegetation was the guiding principle of most areas of the western United States. Contemporary approaches recognize brush and other vegetation as potential fire "fuel" that must be managed in a holistic and ecologically sensitive way to reduce fire threats.

Figure CP-5: Very-High Fire Hazard Severity Zone Areas

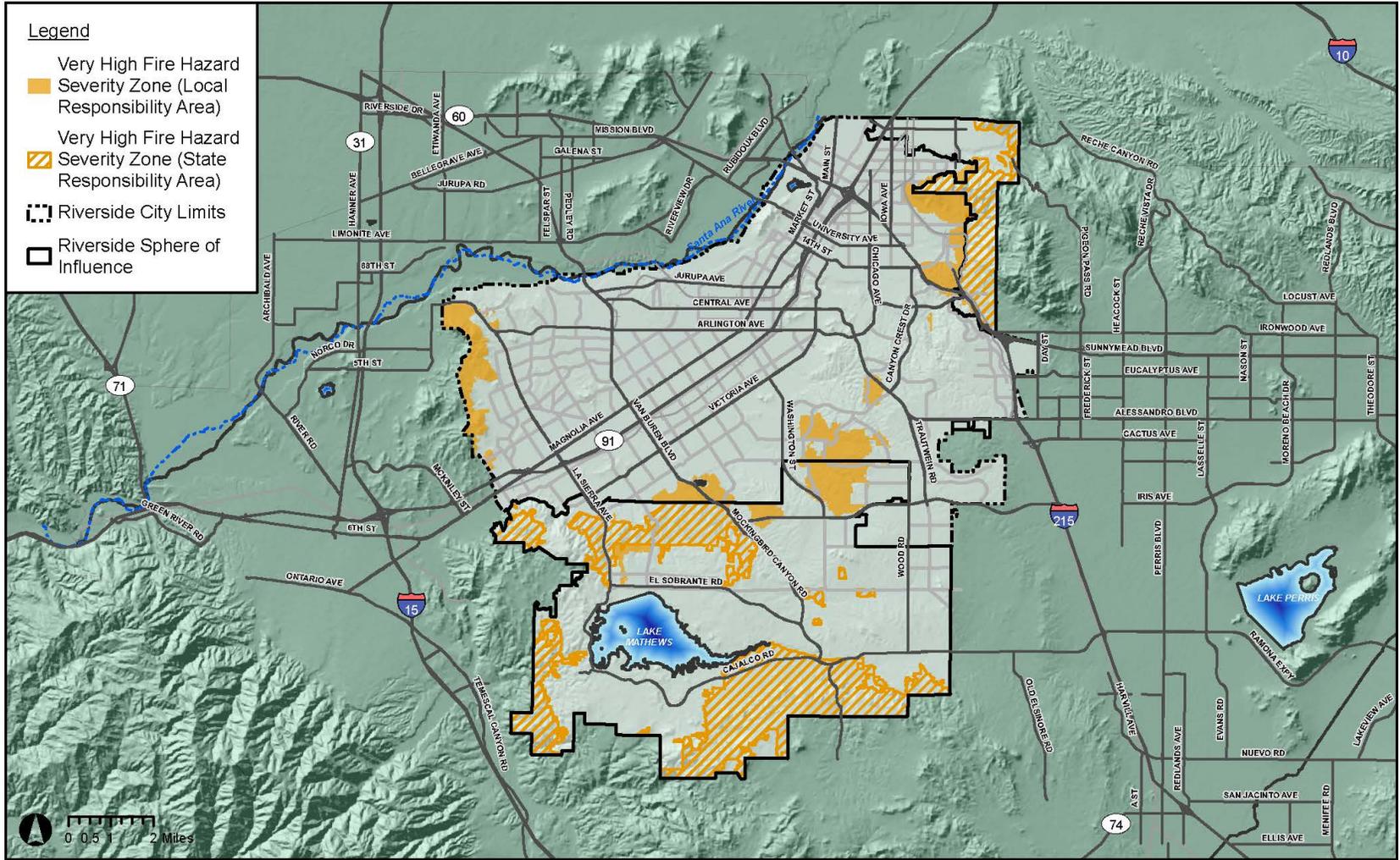
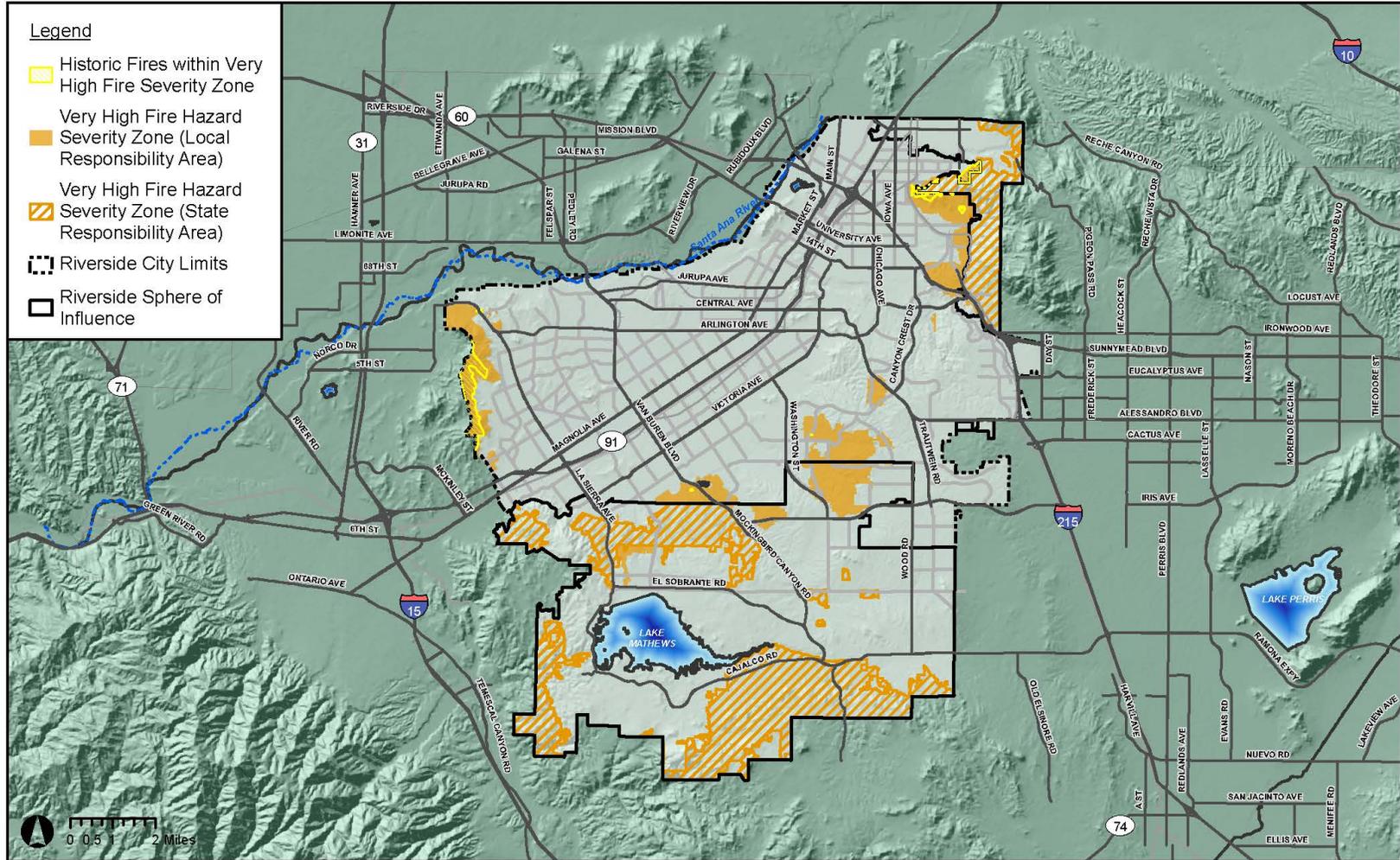


Figure CP-5b: Historic Fires within Very-High Fire Hazard Severity Zone Areas





RIVERSIDE FIRE DEPARTMENT

The Riverside Fire Department (RFD) takes proactive and preventative measures to reduce fire risks and is a first responder to fire emergencies. The six divisions of RFD consist of Administration, Fire Prevention, Operations, Special Services, Urban Search and Rescue and Training. RFD utilizes a highly trained work force, progressive technology, and responsible fiscal management to provide its diverse services to the community. RFD's major facilities include 14 fire stations throughout the City, Administration/Fire Prevention offices, and a Fire Training Center used for the advanced training of personnel. The 14 fire stations house 212 sworn firefighter personnel and 72 emergency services personnel including Basic Life Support and Advanced Life Support personnel. RFD staff includes 23 civilian personnel including administrative, inspector, engineering, and support staff (RFD 2017, 2021a, 2021).

RFD implemented service improvements through application of Riverside Measure Z funding and achieved an Insurance Services Office (ISO) rating of ISO Class 1 - the highest awarded level - in December 2019 (RFD 2019). The City of Riverside's Measure Z also continues to provide funding for RFD staff positions and training and vehicle replacement and maintenance (City of Riverside 2020).

RFD includes four truck companies, each staffed with four RFD staff, and each RFD fire apparatus is staffed with a paramedic. Fire apparatuses are also equipped with global positioning system-based Automatic Vehicle Location technology to improve dispatch and reduce response time.

In addition, the Riverside County Fire Department and the California Department of Forestry and Fire Protection (CAL FIRE) provide mutual aid to the City and fire protection to unincorporated areas within the

City's Sphere of Influence.

The RFD Operations Division responds to more than 25,000 calls for service annually. Average time for service calls is 8 minutes. RFD has established a performance goal for emergency response to arrive within 8 minutes of dispatch over 90 percent of the time, remarkable for a city of great geographic size but slower than the 5-minute response time that is generally preferred by fire officials. Ensuring that such a high level of service can be provided over the long term is a community goal (City of Riverside 2021a).

For purposes of underwriting fire insurance, communities are classified with respect to their fire defenses and physical characteristics. These classifications are referred to as ISO ratings and range on a scale of 1 to 10. ISO Class 1 represents the highest level of fire protection and ISO Class 10 represents the lowest level of protection. A community's ISO rating takes into account water supply, fire department capabilities, communities, regulations, hazards, and climate. The availability of an adequate water supply and delivery system is a major consideration. As of 2019, RFD had the highest available ISO rating of Class 1 (RFD 2019). For more information on the City's peak load water supply requirements, see the Public Facilities and Infrastructure Element, Table PF-1: RPU Projected Domestic Water Supply.

Roads around structures subject to fire hazards are required to meet the minimum roadway widths of Title 18, Subdivision, of the Riverside Municipal Code. Clearance around any structures is reviewed on a case-by-case basis as part of the review of proposed development projects.

The level of hazard to life and property is affected not only by a fire in itself but also by road access for evacuation, the number of available firefighters, vegetation clearance around properties, availability of water and water pressure, and the effectiveness of building/fire codes and inspection of developments in areas of higher fire hazard. Riverside will reduce the destructive potential of fire by providing funding for RFD so that it continues to provide adequate levels of fire protection and fire-hazard education. The current California Fire Code will also be used to reduce structural fire hazards. These proactive measures lay out a blueprint to reduce the risks from all types of fires.

LOCAL PLANS

CITY OF RIVERSIDE FIRE DEPARTMENT STRATEGIC PLAN

The RFD Strategic Plan for Fiscal Years 2017–2022 identifies RFD’s key goals and objectives and articulates the agency’s core responsibilities, mission, and guiding principles (RFD 2017). The 2017–2022 Strategic Plan includes Emergency Planning goals and objectives for RFD’s Emergency Services Division.

CITY OF RIVERSIDE LOCAL HAZARD MITIGATION PLAN

The City of Riverside’s LHMP dated January 1, 2018, was reviewed by the California Office of Emergency Services, and approved by FEMA on July 30, 2018 (City of Riverside 2018). The LHMP evaluated and assessed the risks that identified hazards pose to the City, reviewed and assessed past disaster occurrences, and, through the engagement of the community, set goals to mitigate potential risks to reduce or eliminate long-term risk to people, property, and the environment from natural, man-made, and technological hazards.

COUNTY OF RIVERSIDE OPERATIONAL AREA—MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

The County of Riverside Operational Area-Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) dated July 30, 2018, is the County of Riverside’s commitment to reduce risks from natural and other hazards (County of Riverside 2018a). The LHMP serves as a guide for decision makers as they commit resources to reducing the effects of natural and other hazards. It also serves as a basis for the state Office of Emergency Services to provide technical assistance and to prioritize project funding.

The LHMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involve planning, policy changes, programs, projects, and other activities. The LHMP may be accessed at:

<https://riversideca.gov/fire/sites/riversideca.gov.fire/files/fire/pdf/Riverside%202018%20LHMP%20County%20Revised%20APA.pdf>

EMERGENCY OPERATIONS PLAN

The Emergency Operations Plan (EOP), initially approved in May 2002 and updated in 2017, addresses the

City's planned response to emergencies associated with natural disasters and technological incidents, including both peacetime and wartime nuclear defense operations. The EOP is maintained by the Emergency Manager and is periodically updated.

CITY OF RIVERSIDE HAZARDOUS MATERIALS RESPONSE PLAN

RFD has two levels of a Hazardous Materials Response Plan. The first level is for all responders and the second is specifically for the City's Hazardous Materials Response Team (RFD 2021c).

COUNTY OF RIVERSIDE HAZMAT OPERATIONS GROUP

The County of Riverside has a plan for multi-agency hazardous materials (hazmat) response. The County of Riverside Hazmat Operations Group consists of hazmat teams from municipal and county agencies with responsibilities involving hazmat incidents, including the County of River-side Emergency Management Department, CAL FIRE/Riverside County Fire Department, River-side County Sheriff's Hazardous Device Team, County of Riverside Department of Environmental Health, Riverside University Health System - Public Health, and the Cities of Corona, Hemet, and Riverside (County of Riverside Emergency Management Department 2021). The goals of the County of Riverside Hazmat Operations Group include:

- Standardize equipment.
- Develop joint response procedures.
- Enhance training opportunities.
- Share resources.
- Test joint response capabilities.

The County of Riverside Hazmat Operations Group provides enhanced multi-agency capability to respond to chemical, biological, radiological, nuclear, and/or explosive device threats through agency coordination, training, and response exercises.

**The County of Riverside
Hazmat Operations
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PUBLIC UTILITY PLANS

RIVERSIDE PUBLIC UTILITIES WILDFIRE MITIGATION PLAN

The Wildfire Mitigation Plan (WMP) for Riverside Public Utilities (RPU), a consumer-owned electric utility, was approved by the City of Riverside on December 17, 2019 (RPU 2019a, 2019b). The RPU WMP (RPU 2019b) is designed to meet the standards set forth by SB 901, which was signed into law in September 2018. SB 901 tasked all private and publicly owned utilities and corporations to construct, maintain, and operate their electrical system in a manner that will minimize the risk of wildfire. SB 901 requires utilities to submit and update a WMP annually and to hire a qualified independent evaluator to review and assess the comprehensiveness of its WMP. In accordance with AB 1054, RPU submits an updated WMP to the Wildfire Safety Advisory Board annually by July 1 of each year.

DROUGHT

Drought conditions recur in California and recurrence of drought conditions is expected to continue. California has experienced many periods of drought and weather extremes, which are occurring more frequently because of climate change. From 2012–2016, much or all of California was under severe drought conditions, with greatly diminished precipitation, snowpack, and streamflow and higher temperatures. Water shortages to forests, aquatic ecosystems, hydroelectric power plants, rural drinking water supplies, agriculture, and cities caused billions of dollars in economic losses, killed millions of forest trees, brought several fish species closer to extinction, and caused inconvenience and some expense to millions of households and businesses (Lund et al. 2018).

California most recently experienced a 5-year drought event in 2012–2016, and other notable historical droughts included 2007–2009, 1987–1992, 1976–1977, and off-and-on dry conditions spanning more than a decade in the 1920s and 1930s (California Department of Water Resources 2021; Lund et al. 2018). Provisions of California’s Emergency Services Act have been used to declare a statewide drought emergency for only two California drought events, the 2012–2016 event and its immediate predecessor in 2007–2009. Drought conditions are a gradual phenomenon, accumulating over a period of time. Water storage, whether in surface water reservoirs or groundwater basins, buffers drought condition impacts and influences the timing of when and where drought impacts occur. A single dry water year is not a drought condition for most areas of California because California’s extensive system of water infrastructure and groundwater resources buffers impacts.

DROUGHT CONDITIONS

Drought conditions are defined based on impacts on water users. Drought conditions may occur throughout California and impacts vary with location. Therefore, drought conditions affecting other regions of California may or may not affect water users in the City of Riverside and surrounding jurisdictions. City of Riverside residents and businesses receive water from RPU. The City's Sphere of Influence extends to the south of the City boundary and includes areas where retail water service is provided by the Western Municipal Water District. The City of Riverside receives its water supply from local groundwater basins, the Bunker Hill Basin in San Bernardino, the Rialto Colton Basin in Colton, and the Riverside Basin. These basins are replenished by rain and snowmelt. The City of Riverside's water rights are based on natural groundwater recharge over a 40-year hydrologic (precipitation) cycle. Riverside also has the right to import water from other jurisdictions and has infrastructure in place to do so but has not relied on imported water since 2008. The City has many years' worth of water in reserve, and while there is no near-term risk to Riverside's water supplies, there may be a long-term risk from drought conditions. The City has and will continue to promote water-conservation programs in accordance with City ordinances and policies, which will allow the City to grow and prosper while minimizing the cost to find and develop new water supplies (RPU n.d.1, 2016).

DROUGHT PREPAREDNESS & RESPONSE

State, local, and regional water management plans and state regulations and local ordinances affect how the City manages water supply and infrastructure and prepares and manages for drought conditions. Public water utilities are required to prepare, implement, and periodically update Urban Water Management Plans (UWMPs) and comply with state laws and regulations applicable to water management. California SB 606 (2018) establishes standards and guidelines for efficient water use, including indoor and outdoor water use standards and guidelines for residential and commercial water customers (RPU n.d.2). The City has established a Water Conservation Ordinance (Chapter 14.22) and Water Efficient Landscaping and Irrigation Ordinance (Chapter 19.570) that establish the City's water-conservation program, standards for efficient use of water, and applicability of specific water-conservation provisions that may be implemented by the City during drought conditions.

STATE PLANS

CALIFORNIA WATER PLAN UPDATE 2018

The California Water Plan is the state's strategic plan for sustainably managing and developing water

resources for current and future generations. The California Water Plan is required by California Water Code Section 10005(a), and the California Department of Water Resources is responsible for updating the California Water Plan every 5 years. The California Water Plan presents the status and trends of the state's water-dependent natural resources; water uses and supplies; and future agricultural, urban, and environmental water demands and supplies for a range of climatic and socioeconomic scenarios. The California Water Plan is intended to guide state investments in innovation and infrastructure and advance integrated watershed management with sustainable outcomes (California Department of Water Resources 2019).

CALIFORNIA DROUGHT CONTINGENCY PLAN

The California Drought Contingency Plan represents the first state drought plan and was developed following the Governor's executive orders and drought proclamations in 2008 and 2009. It is a planning and implementation document that may be used to assist agencies in preparing for, responding to, and recovering from drought. The goals of the California Drought Contingency Plan are to minimize drought impacts through improved agency coordination, enhanced procedures for monitoring drought conditions and early warning capability, improved assessment of drought impacts, and more effective response to drought emergencies.



LOCAL & REGIONAL PLANS

2020 Urban Water Management Plan RPU prepared its 2020 UWMP in accordance with the Urban Water Management Planning Act, Sections 10610 through 10656 of the California Water Code to document its current and future water demands and planned supplies. The planning period for the 2020 UWMP is from 2020 through 2045. For the 2020 cycle, there are new requirements for UWMPs that have been implemented through legislation passed since the previous UWMP update in 2015. The UWMP

summarizes RPU's existing and planned sources of water supplies, and includes RPU's water demand forecasting, plans for conservation and efficient use of water, assessment and reliability of water supplies, drought risk assessment (DRA) and water shortage contingency plan (WSCP), and reporting on climate change impacts and energy intensity. The 2020 UWMP also addresses seismic risk and mitigation; RPU continues to include seismic risk assessment in its planning process for system improvements.

The UWMP outlines demand management measures that RPU would implement a broad range of conservation programs for water conservation and efficient water use. The water shortage contingency plan included in the UWMP outlines specific shortage response actions that would be taken at each shortage level, e.g., actions that would be taken during a catastrophic water shortage (Stage 5) resulting in a greater than 50 percent reduction (RPU 2021). The 2020 UWMP presents a comparison of expected supplies and demands during future conditions. RPU is committed to efficient water use, and if needed RPU can implement its WSCP to reduce demands. However, RPU anticipates being able to meet all demands through 2045, even during a five-year dry period

RPU published its 2020 UWMP in 2021 after City Council adoption. The 2020 UWMP was reviewed by the California Department of Water Resources (DWR), then voted on and adopted June 22, 2021 by the City Council to become part of the Riverside Municipal Code and part of City operations. RPU is required to prepare an UWMP and submit it to DWR every five years. DWR prepares guidance materials for water suppliers to help them prepare UWMPs that meet requirements of the California Water Code. RPU has used these guidance materials to prepare its 2020 UWMP. Regional plans are revised periodically as the state passes new regulations for shortage planning. Policies are then updated to conform to the new planning requirements, e.g., the City is updating the water reliability assessment for drought lasting five consecutive water years and other drought planning measures.

HAZARDOUS MATERIALS

A hazardous material is any material that because of its quality, concentration, or physical or chemical characteristics poses a significant potential hazard to human health or safety or to the environment. Hazardous materials are used in Riverside for a variety of purposes. The most common large users include manufacturers, medical clinics, agriculture, dry cleaners, pest controllers, and automotive-related business. As of 2021, over 430 commercial businesses in the City were classified as small-quantity generators that produce hazardous waste and have business emergency plans for the chemicals they use (EPA 2021a).

Individual households utilize smaller amounts of hazardous materials, including batteries, household cleaners, and paint. However, when the total number of households is considered, the aggregate amount of hazardous material can be staggering. When used and disposed of properly, many materials can provide needed or desired ends, but improper use as well as accidents can lead to health and safety risks. Such materials may be released through any spilling, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

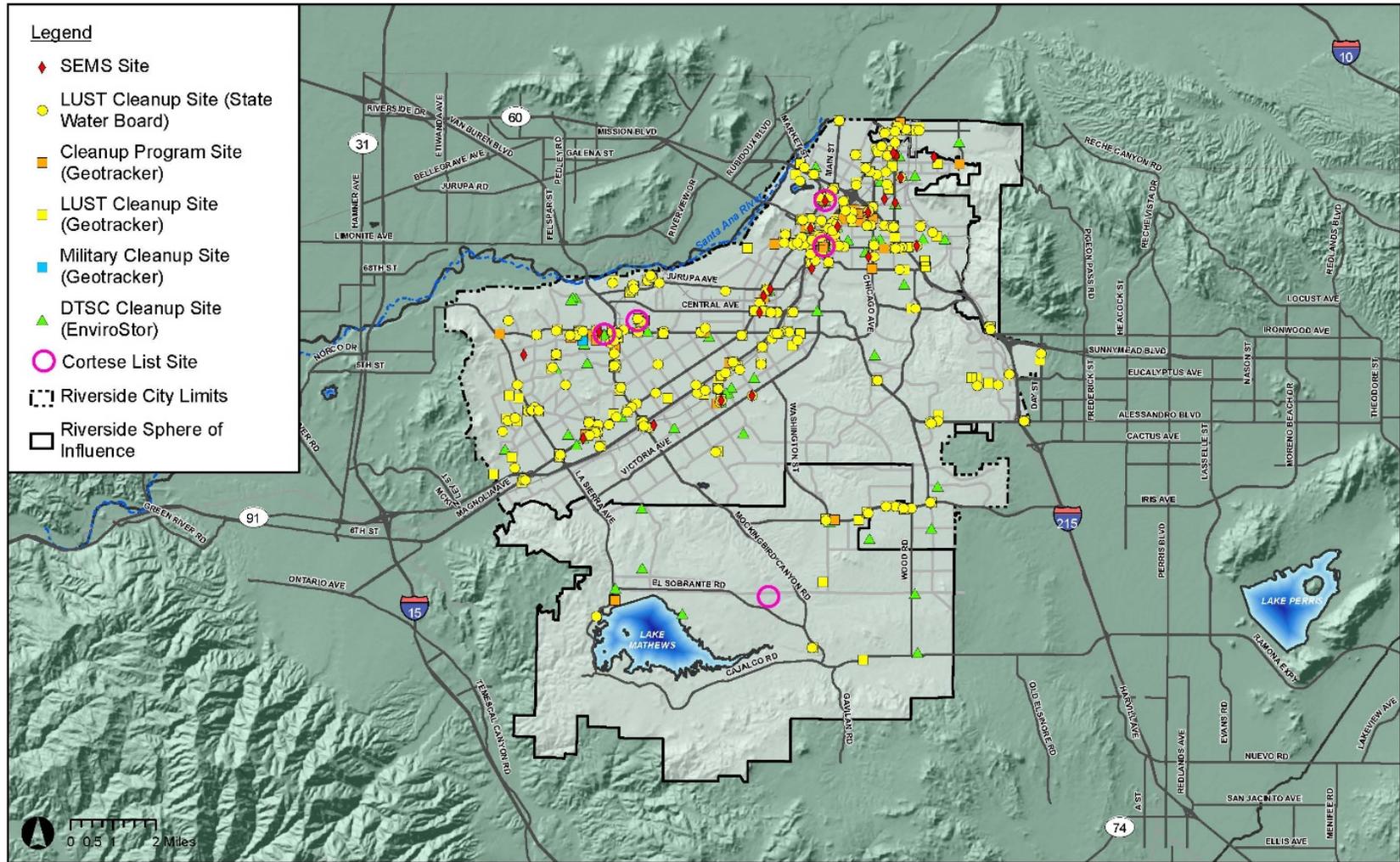
Large users and transporters of hazardous materials are monitored and regulated by EPA and other federal, state, and county regulatory agencies, such as the State Department of Toxic Substances Control and RFD.

EPA has identified a total of 14 sites in Riverside and within its Sphere of Influence on its 2020 Toxics Release Inventory database (EPA 2020). These are sites that are known to release toxic chemicals into the air. EPA's Toxics Release Inventory reporting program closely monitors the emissions from these facilities to ensure that their annual limits allowed under federal regulations are not exceeded and that public health and safety are protected.

TRANSPORTATION CONCERNS

Hazardous materials pass through Riverside on local freeways, rail lines, and surface streets. Notably, the City has no direct authority to regulate the transport of hazardous materials on federal and state highways or rail lines, which are governed by regulations of the U.S. Department of Transportation and the California Highway Patrol. When transporting explosives, inhalation hazards or other potentially dangerous materials, and highway route-controlled quantities of radioactive materials, safe routing and safe stopping-places are required, and drivers are required to display warning placards or markings while hauling hazardous materials.

Figure CP-6: Hazardous Waste Sites



CONTAMINATED SITES

Although the use of hazardous materials is carefully regulated today, past activities have led to the contamination of several sites in the City. Contamination has resulted from leaking underground storage tanks, disposal of hazardous materials, and various industrial practices. With the City's proximity to the Santa Ana River and given that the local groundwater basin supplies drinking water, improper use and disposal of hazardous materials pose real threats to the City's well-being.

The contamination plumes in wells in the Bunker Hill Basin contain trichloroethylene (TCE), dibromo chloropropane (DBCE), and perchlorate plumes. Prior DBCE contamination is primarily related to herbicide use in orange groves. Perchlorate and TCE contamination are primarily related to historical industrial operations. As stated in the Public Facilities and Infrastructure Element, these contaminants are being mitigated through water treatment and other methods

The Superfund Act is a federal law designed to protect the environment from risks created from previous disposal practices. Adopted by Congress in 1980, the law, also known as the Comprehensive Environmental Response, Compensation, and Liability Act, was created as a long-term trust to provide funding to remediate and prevent damage from improper hazardous materials disposal. One site within the City has been identified as a Superfund site: Alark Hard Chrome at 2777 Main Street, Riverside, 92501 (EPA 2021b). This site is illustrated on **Figure CP-6, Hazardous Waste Sites**. Over time, additional sites in the City may qualify for Superfund assistance.

To effectively manage hazardous materials and wastes by large users, the City has implemented applicable portions of the Riverside County Hazardous Waste Management Plan. The City's Household Hazardous Waste Collection program targets the appropriate disposal of household solvents, batteries, and chemicals that require special disposal practices to prevent environmental damage. In addition to these programs, RFD's Hazardous Materials Response Unit responds to incidents involving hazardous materials. RFD's Certified Unified Program Agency also regulates hazardous materials in the City. The Riverside Public Works Department monitors hazardous wastes entering the City's sewers.

The current regulatory environment provides a high level of protection from the hazardous materials manufactured within, transported to, and stored in Riverside's industrial, commercial, and educational facilities. By recognizing these hazards and ensuring that an educated public can work with City officials to minimize risks associated with hazardous materials in the urban environment, Riverside can maintain safe conditions citywide.

GROUND & AIR TRANSPORTATION

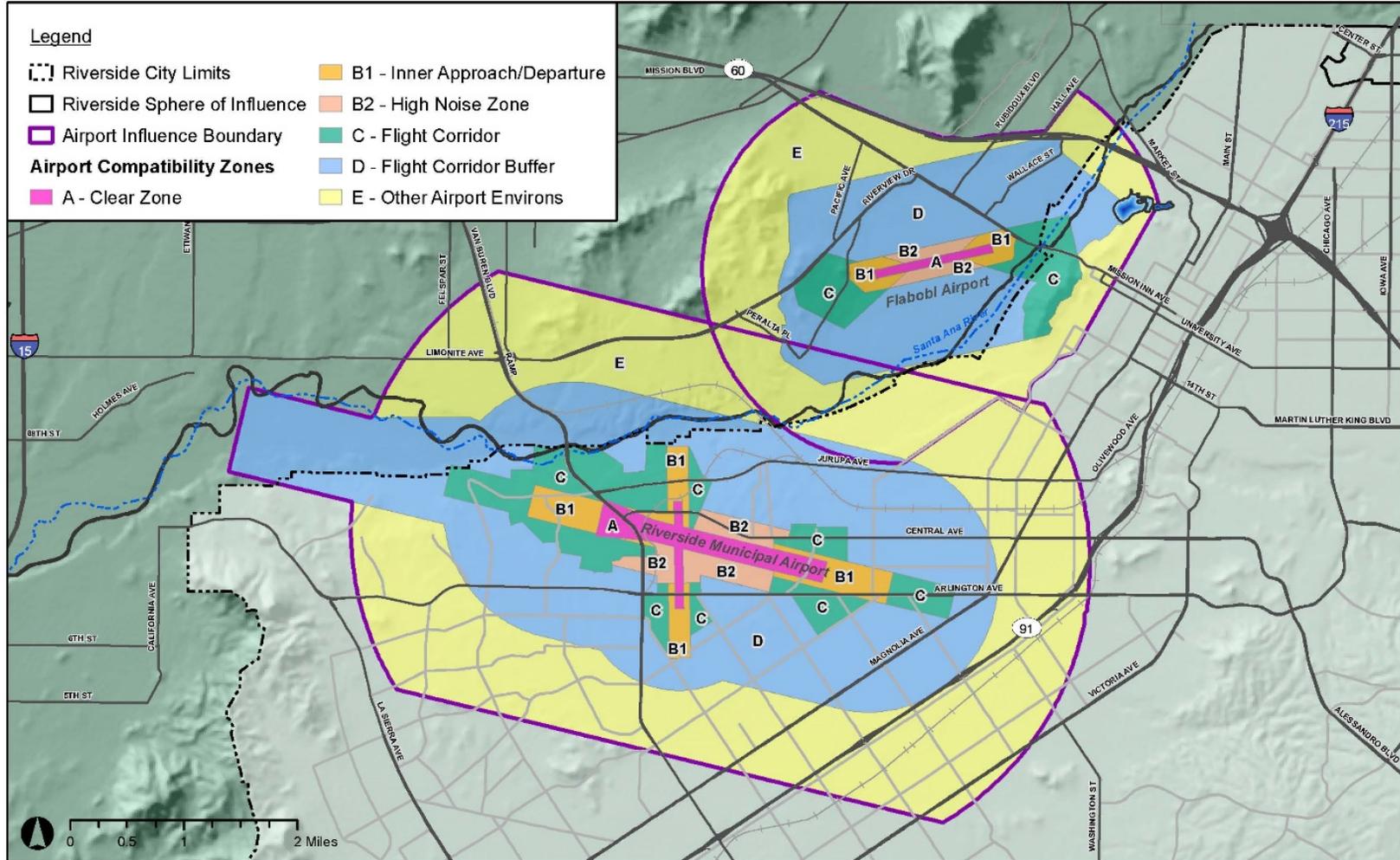
Riverside's multi-faceted transportation network - including its streets, freeways, rail lines, airport, and other routes - provides much-needed mobility to citizens, visitors, businesses, and the movement of goods. At the same time, all of these systems pose potential safety risks to users and those in the vicinity. This section details the potential risks of the various components of the Riverside travel network and identifies proactive and concrete measures the City will pursue to reduce and remove such risks.

AIRPORT OPERATIONS

Riverside Municipal Airport is an integral part of the local and regional air transportation system, providing private aviation services to Riverside and the surrounding area. The airport is situated on 451 acres in the northwestern portion of Riverside, bordered by Arlington Avenue to the south, Central Avenue to the north, Hillside Avenue to the east, and Van Buren Boulevard to the west. The airport is owned and operated by the City, with its operations overseen by the City of Riverside Airport Commission.

The other significant air facility that affects the City and its Sphere of Influence is the approximately 2,400-acre March Air Reserve Base (MARB). Located southeast of the City, between Riverside and the City of Moreno Valley, the MARB had earlier served as a U.S. Air Force base, where activities began in 1918. The Department of Defense redesignated the base as an air reserve base in 1996. A Joint Powers Authority, of which Riverside is a part, administers operations on the base. In addition to the air reserve activities, the March Joint Powers Authority's long-range plan calls for the base to serve as an inland port, accommodating cargo in transfers between ground and air shipping (Riverside County Airport Land Use Commission 2014).

Figure CP-7a: Riverside Municipal and Flabob Airport Land Use Compatibility Zones and Influence Areas



Flabob Airport, in the City of Jurupa Valley just west of the Santa Ana River, is approximately 1.5 miles northwest of the City's Downtown. Its influence in the City of Riverside, along with that of the Riverside Municipal Airport, is shown on **Figure CP-7a: Riverside Municipal and Flabob Airport Land Use Compatibility Zones and Influence Areas** (Riverside County Airport Land Use Commission 2004, 2005a).

The risk of aircraft crashes is an important consideration in planning around airports. In tandem with any aviation operation, "crash" zones for airports are a major safety issue. These zones establish areas where the risk of a crash is determined in relation to takeoff and landing patterns. Even though the MARB is not within Riverside, flight patterns related to the MARB affect the neighborhoods of Orangecrest, Mission Grove, and Sycamore Canyon/Canyon Springs (Riverside County Airport Land Use Commission 2014).

The Riverside County Airport Land Use Compatibility Plan (ALUCP) adopted by the Riverside County Airport Land Use Commission in October 2004 (Riverside County Airport Land Use Commission 2004, 2005b), designates zones of airport-influenced areas in Riverside County and establishes a series of policy and compatibility criteria that ensures both aviation activities and surrounding uses are compatible.

As shown on **Figure CP-7a, Riverside Municipal and Flabob Airport Land Use Compatibility Zones and Influence Areas**, Riverside Municipal and Flabob Airports involve six zones of airport influence areas and land use compatibilities, as identified in the Riverside County ALUCP.



As shown on **Figure CP-7b: MARB/IPA Airport Land Use Compatibility Zones and Influence Areas**, there are eight zones of airport influence and land use compatibilities, as identified in the MARB/Inland Port Airport (IPA) ALUCP, which was adopted by the Riverside County Airport Land Use Commission on November 13, 2014. Upon adoption, the MARB/IPA ALUCP became a part of the October 2004 countywide ALUCP.

The ALUCP for MARB/IPA is primarily based on the U.S. Air Force's 2005 Air Installation Compatible Use Zone Study for the MARB. The compatibility zones and associated criteria set forth in the MARB/IPA ALUCP provide noise and safety compatibility protection equivalent to, or greater than, the Air Force-recommended criteria presented in the Air Installation Compatible Use Zone.

The Land Use Policy Map (**Figure LU-10**) in the Land Use and Urban Design Element has been developed to avoid allowing intensive new uses within the airport-influenced areas. Development controls include limiting development within areas subject to high noise levels and limiting the intensity and height of development within aircraft hazard zones.

75 percent of the freight handled by the Ports of Long Beach and Los Angeles is carried through the City of Riverside

RAILROAD OPERATIONS

Commuter rail and freight transit by rail create safety concerns at roadway-rail grade crossings and along rail rights-of-way. The numerous at-grade railroad crossings in Riverside pose concerns related to safety in addition to localized traffic congestion. In the United States as a whole, statistics show that a train accident involving death, personal injury, or property damage occurs approximately every 2 hours. With its extensive network of freight trains and the growing popularity of commuter rail operations, Southern California as a region incurs train-related incidents at a disproportionately high rate.

Riverside is trisected by two transcontinental rail lines: the BNSF Railway and the Union Pacific Railroad. These two rail lines carry over 75 percent of the freight handled by the Ports of Long Beach and Los Angeles through Riverside. There are 26 mainline crossings where the railroads intersect with City streets, and approximately 128 trains pass through the City daily (Riverside Public Works Department 2021).

Train traffic through the City is expected to increase in the future. Train traffic has been increasing through additional freight airport cargo in the Inland Empire, specifically from the establishment of the IPA, as well as the completion of the Alameda Corridor East project (March Inland Port Authority 2021; San Gabriel Council of Governments 2021). The Alameda Corridor East project, which is upgrading and improving the link between the Inland Empire region and the Ports of Los Angeles and Long Beach, will facilitate freight railway services, improve safety, and reduce travel time for personal movement.

Any attempt to reduce risks associated with trains must address several different groups of people: train operators, drivers, and pedestrians. The City's first priority is to create grade-separated rail crossings. Of the 70 railroad crossings in the City, 15 are existing grade separations and 20 are primary crossings on a grade separation priority list (City of Riverside Public Works Department 2021). Six railroad grade-separation projects were completed from 2005 through 2021: Jurupa Avenue, Columbia Avenue, Magnolia Avenue, Iowa Avenue, Streeter Avenue, and Riverside Avenue; and two railroad crossings have been closed permanently: Mountain View Avenue and Jane Street. Construction of roadway/rail grade-separation projects are planned on Harrison Street, Gibson Street, Jefferson Street, Palm Avenue, Washington Street, Brockton Avenue, Panorama Road, Cridge Street, Palmyrita Avenue, Center Street, Main Street, and 7th Street. One at-grade crossing, 3rd Street, is currently under design and construction is anticipated to commence in 2023. The Riverside County Transportation Commission is the lead agency for implementing these projects (Riverside Public Works Department 2021).

Given the expense and time required to achieve grade separations, other measures will also need to be pursued, including integrating roadway-rail traffic control systems and roadway traffic management systems, providing better information warning of trains to motorists and pedestrians, improving passive

and active warning signs and signals for light rail and commuter rail transit, developing cost-effective off-track train presence detection systems (such as automated horn systems), and assessing safety data to determine target areas for technology. These new technologies will be demonstrated, evaluated, and integrated for rail-transit system safety applicability on the City's roadways.

TRAFFIC HAZARDS

Vehicle travel, whether in a car, bus, truck, or motorcycle, is the most common form of transportation within the City. Riverside has more than 750 miles of surface streets and 30 miles of freeway lanes. Typical traffic patterns consist of early morning commuters from both Riverside and points east traveling westbound toward Los Angeles and Orange Counties. Early and mid-morning traffic backs up both directions going through the Downtown area and traveling westbound through the western portion of the City as the local work force begins to arrive. This pattern is reversed on typical weekday afternoons.

While sitting in traffic is an annoyance to most people, vehicle travel also poses safety risks from potential accidents, driver impairment or behavior, dangerous road conditions, or combinations of these factors. To reduce the risk of ground transportation hazards, the City has a multi-faceted response approach to preventing incidents from occurring and responding promptly when incidents do occur.

The Traffic Bureau of the Riverside Police Department (RPD) both enforces traffic laws and responds to traffic incidents. Proactive citation enforcement by the Traffic Bureau has proven to be an effective deterrent in reducing the number of collisions attributed to aggressive driving habits.

In the 3 years from 2017 through 2019, there were 2,770 vehicle collisions in the City, excluding collisions on Interstate 215, State Route 91, and State Route 60, 103 of which involved fatal and severe injuries. Most collisions related to vehicles, bicycles, and pedestrians have occurred within environmental justice communities in the City. Several roadways and intersections have a higher incidence of vehicle collisions, including Magnolia Avenue, Van Buren Boulevard, La Sierra Avenue, and University Avenue in the Downtown area. The principal factors in vehicle collisions were unsafe speed (28 percent), vehicle right-of-way violation (21 percent), improper turning (18 percent), and traffic signals and signs (16 percent). Impaired driving was a cause in 8 percent of collisions, and other factors a cause in 9 percent of collisions (University of California, Berkeley 2021).

Proactive citation enforcement such as educational and interactive methods of reducing aggressive driving is essential to the community's success in traffic enforcement. The Traffic Bureau also manages the Crossing Guard, Safe Streets, and Traffic Education programs. These duties and programs are aimed at controlling and responding to traffic situations and preventing traffic incidents before they occur.

PEDESTRIAN AND BICYCLIST SAFETY

As the City looks to encourage increased pedestrian and bicycling activity to achieve its community mobility goals, pedestrian and bicyclist safety will require more focused attention. While vehicle transportation needs tend to get the most attention—or at least the greatest amount of pavement—walking and bicycling represent important travel modes that are more environmentally benign and offer opportunities for physical exercise. An environment safe for walking and bicycling is considered to be a key element of a successful Downtown, residential neighborhoods that link to commercial areas, and a safe route to school program, optimizing the goals set forth by the Healthy Cities Task Force created by Mayor Loveridge in 1998. The City holds the title of a “California Healthy City,” as a city with a prospect health element and Healthy Eating and Active Lifestyle (H.E.A.L.) City resolution (City of Riverside 2010).

In much of Southern California, walking has been the forgotten mode of mobility, yet walking is a critical component of our urban transportation system and a practical transportation choice with numerous health and environmental benefits for both individuals and their communities. Although Riverside as a whole has a wide dispersal of residential, employment, and commercial centers, there are many opportunity areas within the City to foster improved pedestrian facilities. Above all, people need to feel safe in their neighborhoods if they are to use trails, paths, sidewalks, and crosswalks. Better signage, targeted crossing guards, more police patrols, and programs such as the Traffic Calming and Safe Routes to Schools Programs are just some of the resources the City has and will continue to use to increase pedestrian and bicycle safety. The benefits for increased walking are enormous.

Vehicle accidents involving pedestrians and bicyclists have been concentrated to a small number of roads in the City. From 2017 through 2019, there were 49 total vehicle collisions in the City that involved a pedestrian fatality (17) or severe injury (32). Pedestrian collisions occurred predominantly on or near University Avenue and Iowa Avenue. Reported causes of pedestrian-vehicle accidents were approximately 40 percent pedestrian violations, 36 percent pedestrian right-of-way violations (pedestrian had right-of-way), and 24 percent other causes.

From 2017 through 2019, there were 133 bicyclist injury collisions in the City (no fatalities). Most of the collisions that involved a bicyclist were concentrated on a small portion of the City’s streets, with 53 percent occurring on just 8 percent of the roadway network. Approximately 40 percent of bicyclist-vehicle accidents involved either the motorist or the bicyclist on the wrong side of the roadway; other causes included vehicle right-of-way violations (approximately 20 percent; motorist had right-of-way), improper turning by either the bicyclist or motorist, signal violations by either the bicyclist or motorist, and other causes (each approximately 14 percent of total). University Avenue and Magnolia Avenue experienced the

highest and second-highest number of vehicle-bicyclist collisions.

POLICE SERVICES

The mission of Riverside Police Department (RPD) is to provide a strong partnership between law enforcement and the community, focused on public safety that provides quality, responsive, and effective services through valued employees. RPD plays an important role in protecting residents and businesses from criminal activity and helping to educate the public about ways to reduce criminal activity.

Historically, RPD facilities have been centralized, with each of the station locations providing services to the entire City. The Orange Station headquarters building at 4102 Orange Street in Downtown Riverside serves as RPD's administrative center and houses the office of the Chief of Police, the Support Services Division (including the Personnel Bureau and training and administrative functions), the Records Bureau, the Communications Bureau, and the Community Services Bureau.

Lincoln Station, at 8181 Lincoln Avenue, houses patrol and traffic functions and the RPD Technical Services Unit including the Bomb Squad. Magnolia Station, at 10540 Magnolia Avenue, is the base of operations for Central and West Neighborhood Policing Centers, Forensics, Investigations and Special Operations Division, Community Policing, Communications (dispatch), Training Bureau, and Property Room.

The North and East Neighborhood Policing Centers Field Operations are based at the Fairmount Station at 3775 Fairmount Boulevard. RPD currently employs 560 personnel including sworn officers and civilian personnel.

Additional police facilities are located throughout the City. The aviation building is adjacent to Riverside Municipal Airport at 7020 Central Avenue and houses the Air Support Unit and SWAT Team. RPD's Internal Affairs office is at 10540 Magnolia Avenue, and the Domestic Violence investigation team office is at the Family Justice Center at 3900 Orange Street (County of Riverside 2018b). The Parole and Corrections Team maintains offices at the Fairmount Station and Community Policing officers provide limited services from an office at the Galleria at Tyler.

The Field Operations Division, the largest division of RPD, provides first response to all emergencies, performs preliminary investigations, and provides basic patrol services.

RPD has established the Community Services Bureau to serve as a resource for residents by providing educational information regarding criminal awareness and crime prevention. The Community Services Bureau implements RPD's youth and community-based programs and serves to strengthen the relationship of RPD with the community. RPD also implemented a community policing initiative in 2021 that will be incorporated into the revised RPD Strategic Plan.



The City of Riverside's Measure Z continues to provide funding for sworn officer and non-sworn public safety positions, dispatcher positions, and vehicle maintenance positions, including hiring incentives and recruitment costs (City of Riverside 2020).

RPD sets two essential criteria for patrol response. The first criterion supports police officers' efforts to respond to the most urgent calls from citizens, known as Priority One calls, within 7 minutes of the time calls for service are received. Priority One calls are typically of a life-threatening nature, such as a robbery in progress or an accident involving bodily injury. Officers attempt to respond to Priority Two calls, which are less urgent, within 12 minutes. These types of calls are not life-threatening and include incidences such as past burglary, petty theft, and shoplifting.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

While many people think that crime prevention is strictly a job for police, community involvement can also play a role. Furthermore, the design of a development can have a major impact on the future potential for crime to occur in the vicinity. Developments that promote natural surveillance reduce hiding places and otherwise promote defensible space can minimize criminal activity.

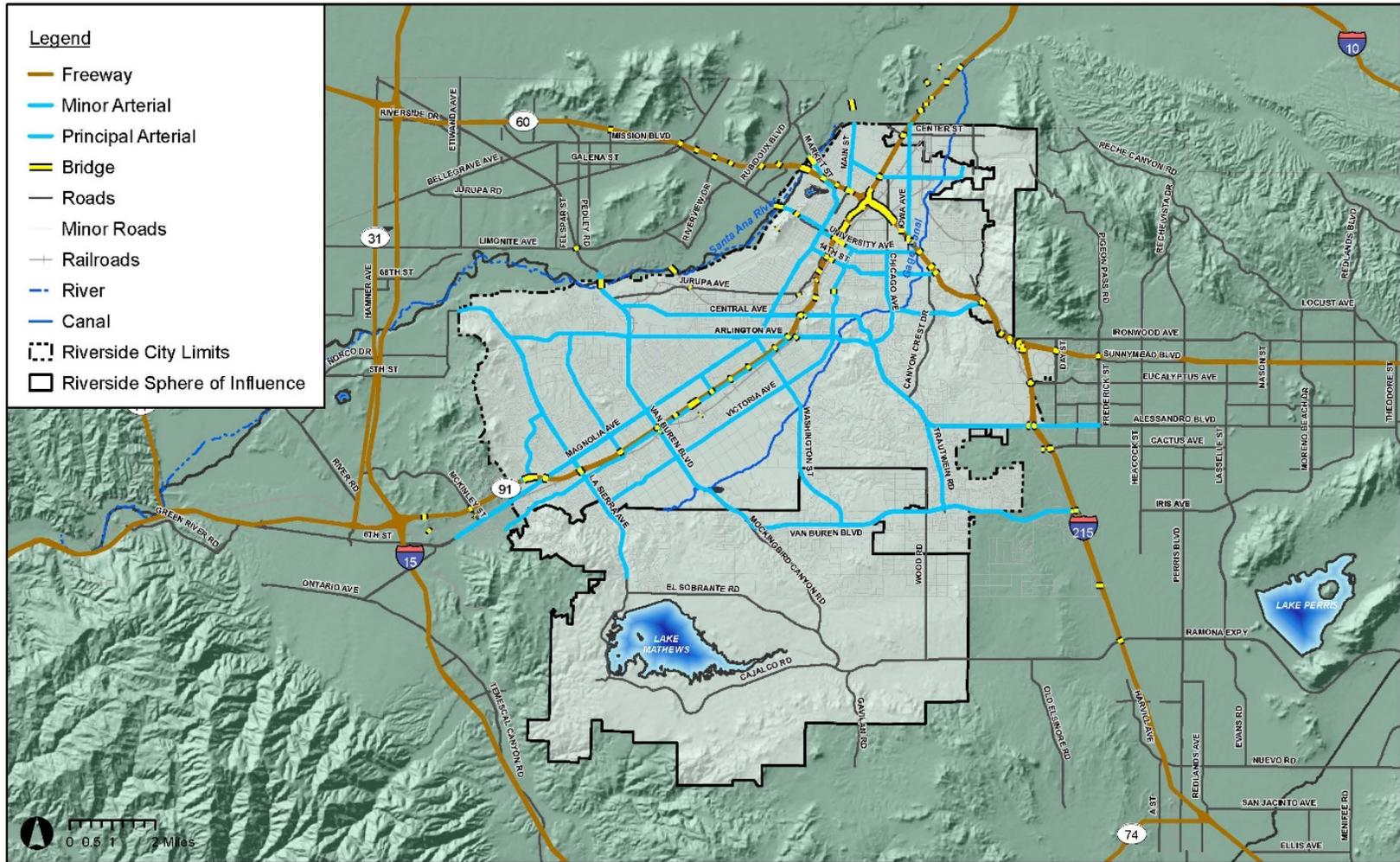
Recognizing the crime-reducing impact of project design, cities across the nation seek to prevent crime by implementing CPTED strategies. CPTED strategies focus on project design that reduces the potential for criminal behavior, in large part by encouraging people to keep an eye out for each other. CPTED approaches the problem of creating a defensible environment by addressing both the physical and psychological aspects of design. Security concerns are addressed during the design stage of a project rather than added after initial development. These concerns are normally addressed by the Planning Division, which seeks input from RPD on a case-by-case basis. CPTED incorporates several strategies to create a defensible space, such as:

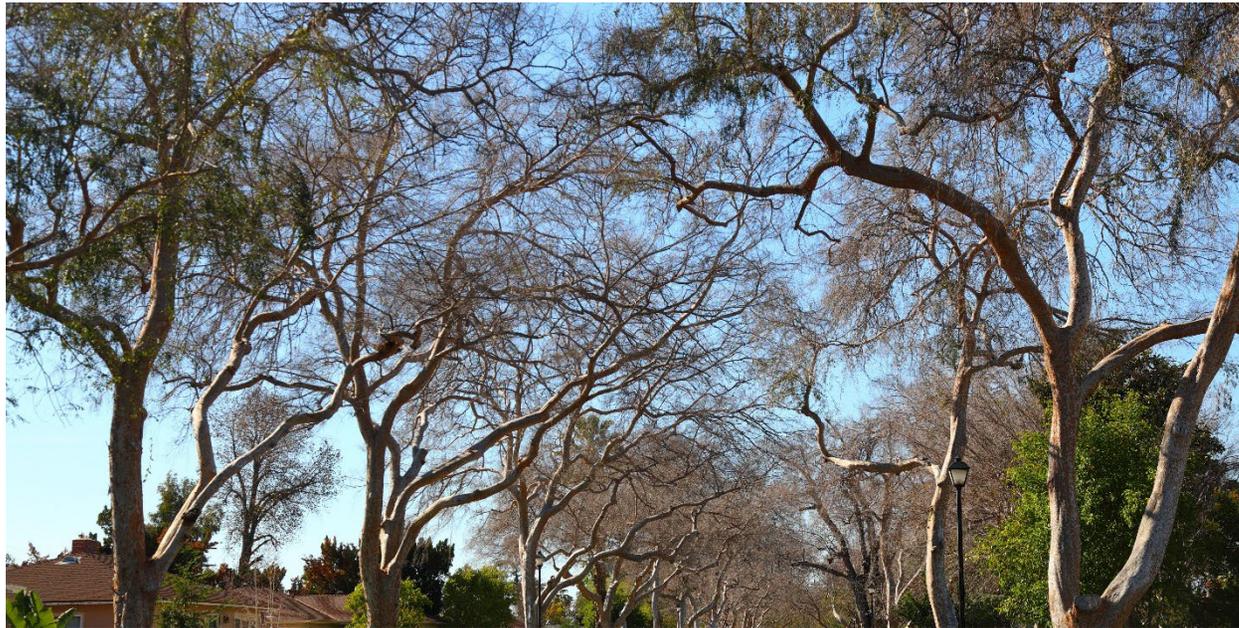
- **Surveillance:** Surveillance is the principal weapon in the protection of defensible space by keeping intruders easily observable (the concept of keeping the eyes on the street). The ease of surveillance is promoted by features that maximize visibility of people, parking areas, and building entrances. These features may include doors and windows that look out on to streets and parking areas, pedestrian-friendly sidewalks and streets, front porches, and adequate nighttime lighting. Many of these features have the added potential to enrich and expand social networks within the community that help bring about a greater sense of community cohesion.
- **Territoriality:** Fostering a sense of territoriality is important to support defensible space because it encourages individuals to take control of their environment and defend it against attack. Potential offenders recognize this sense of territory and are duly discouraged from engaging in criminal

activities there. Territoriality is promoted by incorporation of design features that define property lines and distinguish private spaces from public spaces using landscape plantings, pavement designs, gateway treatments, and fences.

- Natural Access Control: By clearly distinguishing public areas and private areas, access to potential targets is reduced and the perception of risk to potential offenders is increased as a deterrent. Natural access control can be achieved by designing streets, sidewalks, building entrances, and neighborhood gateways to clearly indicate public routes, as well as discouraging access to private areas using structural or design elements.
- Physical Security: The CPTED goal of increasing physical security of areas is not to create an impenetrable fortress, but rather to make it more difficult and time consuming to enter a location. Some simple features that can be used include window locks, dead bolts for doors, and interior door hinges. Features that can be used outside of the home include having an orderly environment where entryways are exposed and well designed. The incorporation of landscaping features is another way to deter intruders and increase security around the home.

Figure CP-8: Evacuation Routes





MULTI-HAZARD FUNCTIONAL PLANNING & INTERAGENCY RESPONSE

Many emergency situations require the coordinated response of multiple local and regional agencies. For example, fires can be the result of a crime and also result in injury or death. Because so many incidents blur the lines between the City's different first responder agencies, coordination of efforts among these agencies is critical. RFD maintains mutual aid agreements with San Bernardino County, the City of Corona, and the MARB, and maintains an automatic aid agreement with the CAL FIRE Joint Powers Authority. RPU maintains mutual aid agreements with water service providers and electric utility infrastructure operators in adjacent jurisdictions.

The Emergency Management Office within RFD coordinates emergency response, disaster preparedness, and disaster recovery by activating the California Standardized Emergency Management System and the National Incident Management System. The Emergency Management Office prepares an EOP, essential to the coordination of efforts in response to a major disaster, whatever its origin. Critical components of the plan include the establishment of multiple evacuation routes and the ability to provide emergency

services in the swiftest manner possible. **Figure CP-8: Evacuation Routes**, identifies the City's major evacuation routes and existing infrastructure that can influence response times during a major disaster.

The EOP is maintained by the Emergency Manager and is periodically updated. A major update of the plan is accomplished every 5 years. The EOP was updated in 2017, and the City is preparing a full update of the EOP, scheduled to be completed in 2021, to include public health and pandemic elements.

The Emergency Operations Center is a secure facility where designated City personnel congregate to work in response to a disaster. The Emergency Operations Center, serving as the center of the City emergency operations, is within the City's Corporation Yard at 3085 Saint Lawrence Street (RFD 2021d).

The Riverside Emergency Management Office co-ordinates state-level terrorism preparedness, response, and recovery, along with all other designated emergencies that may affect the City. The California Standardized Emergency Management System and the National Incident Management System create a system where City, county, and state emergency services work in concert to respond to any disaster in a coordinated fashion.

Educating residents and businesses about potential disasters and the EOP can increase the effectiveness of response efforts. An educated public will know how to prevent injury and property damage during and after emergency events and also know how to find and offer help to their neighbors. The City will work to educate residents and businesses about appropriate actions to safe-guard life and property during and after emergencies. Education about emergency preparedness can occur through the distribution of brochures, presentations to residents, instruction in local schools, and information on the City's website.

PANDEMIC PREPAREDNESS, RESPONSE, & OUTREACH

The City's and County of Riverside's LHMP previously included pandemic flu as a safety concern, which was fully realized as a public health crisis beginning in 2020 as the COVID-19 outbreak affected the City, California, and the rest of the world. The City of Riverside has prepared and is implementing Riverside's Road to Recovery (City of Riverside 2021b) to guide the City and its constituents through response to changing conditions and eventual recovery. Riverside's Road to Recovery includes three phases-I, Response Phase; II, Recovery Phase; and III, Thrive Phase-corresponding to Stages I through IV of the State Pandemic Recovery Plan. During the Response Phase, the City has sought to maintain essential functions considering economic and social constraints brought about by COVID-19.

The February 2020 fires demonstrate the nexus of homelessness with natural hazards and emergency services and illustrate that addressing this nexus will require the coordinated efforts of City departments and City-specific solutions.

During the Recovery Phase, the City will continue to stimulate business and community recovery while being protective of the public and workforce.

As part of the Thrive Phase, the City will continue to facilitate public and workforce health and safety, modernize City operations by streamlining processes and maximizing use of technology, and identify sustainable and resilient strategies to prepare for future pandemic waves and other public health crises, including developing and implementing pandemic preparedness, response, and outreach programs. The City has established two major action items to support public health in pandemic emergencies, which are shown in the action plan.

HOMELESSNESS

Aspects of homelessness intersect with aspects of public safety, and for this reason the City has incorporated policies and action items related to homelessness into the Public Safety Element, including Policy PS-6, Homelessness; Policy PS-1, Natural Hazards; and Policy PS-4, Emergency Services.

In February 2020, the City and adjacent area surrounding the Santa Ana River were affected by fire three times in a 6-day period. These fires occurred outside of fire season during the winter, highlighting the constant need for the City to be prepared for natural hazard incidents. The February 2020 fires and other incidents including flooding have required the evacuation of homeless individuals living in the Santa Ana Riverbed. These incidents demonstrate the nexus of homelessness with natural hazards and emergency services and illustrate that addressing this nexus will require the coordinated efforts of City departments and City-specific solutions.

The City has established programs targeted at addressing homelessness in a coordinated manner. The City of Riverside Office of Homeless Solutions develops public and private partnerships and coordinates direct outreach services aimed at reducing and preventing homelessness by providing a wide range of services and resources for homeless persons and increasing permanent supportive housing opportunities for very-low-income and long-term homeless persons to end their homelessness in the City of Riverside (City of Riverside Office of Homeless Solutions 2021a). Office of Homeless Solution programs include Outreach and Engagement, Shelters, Transitional Housing, Wrap Around Services (Life Skills, Job Training, Financing, Medical and Mental Health Services), and cooperative programs with Riverside Workforce Development Programs.

The City of Riverside Public Safety and Engagement Team, established in 2019, is designed to maintain order in public places while providing homeless individuals with a pathway out of homelessness. Team members provide resources and assistance to homeless individuals while also addressing issues of

unlawful panhandling, camping, abandoned personal belongings, and vagrancy. Office of Homeless Solutions staff and staff from RPD, the Community & Economic Development Department, and the Parks, Recreation and Community Services Department received training on engaging with homeless individuals and on mental health and public health (City of Riverside Office of Homeless Solutions 2021b).

CLIMATE ADAPTATION & RESILIENCY

The City of Riverside published an Economic Prosperity Action Plan and Climate Action Plan in January 2016 (City of Riverside 2016). The Climate Action Plan identified the City's greenhouse gas (GHG) emissions, GHG Emissions Reduction Targets for 2020 and 2035, and GHG emission-reduction strategies for the energy, transportation and land use, water, and solid waste management sectors. The 2016 Economic Prosperity Action Plan and Climate Action Plan identified incorporation of a resilience and adaptation focus into City planning and adoption of climate adaptation and mitigation programs as opportunity areas. The City is planning to prepare a new Climate Action and Adaptation Plan and vulnerability assessment incorporating best practices and will continue to implement GHG emissions-reduction strategies and adaptation and mitigation programs (refer to Appendix A).



SECTION 2: PUBLIC SAFETY CONSTRAINTS

The City has identified Opportunity Sites for new housing and mixed use development in all seven City Wards. The identified Opportunity Sites, with Zoning Code and specific plan amendments, could accommodate up to 31,564 housing units. The total number of housing units that could result from implementation of the Zoning Code and specific plan amendments includes the 18,458 housing units that would be required to meet the RHNA and an additional approximately 5,500 housing units to account for less than 100 percent of planned development occurring in at least some of the identified Opportunity Sites.

The process for identifying opportunity areas considered potential constraints to development, including consideration of the boundaries of natural hazard zones and human-caused hazard zones identified from various data sources. The identified opportunity areas have been mapped with respect to natural and human-caused hazard zones, including seismic hazard zones, flood hazard zones, fire hazard zones, hazard sites, and airport land use zones. The overlay of the identified Opportunity Site locations and hazard zones is shown on **Figure PSC-1: Opportunity Site Hazard Zones**.

Considering the boundaries of the various natural hazard zones and human-cause hazard zones, the identified opportunity areas, as shown on **Figure PSC-1: Opportunity Site Hazard Zones**, do not completely avoid identified hazard zones. For example, opportunity areas in the Northside area of the City (Main Street, Market Street) and central areas of the City (Magnolia Avenue, Arlington Avenue) are in the vicinity of moderate, high, or very high soil liquefaction zones. Opportunity areas in the Arlington Station area (Arlington Avenue, Van Buren Boulevard, Riverside Freeway, and Magnolia Avenue) are within 0.2 percent flood zones and dam inundation areas. Opportunity areas in the Woodcrest area (Van Buren Boulevard, intersection of Wood Road) are within moderate to high fire-hazard zone areas and flight buffer zones, and opportunity areas in the Magnolia Center area (Central Avenue) are also in flight buffer zones. However, as shown on **Figure PSC-2, Opportunity Site Very-High Fire Hazard Area**, opportunity sites are largely outside of areas designed in a very high fire hazard severity zone.

HAZARD MITIGATION

Developments may or may not be proposed for specific opportunity areas based on market conditions and other factors and identifying an area as an opportunity area does not mean that the area would be further developed. Developments proposed in Opportunity Site areas within or adjacent to identified hazard zones would be subject to City of Riverside processes and procedures for project-specific development review. Specific elements of the City's processes and procedures for development review and assessment and mitigation of hazards are identified in the Public Safety Implementation Actions in the action plan. The City's development review process would further identify and characterize site-

specific hazards, and mitigation measures would be applied to reduce the potential impacts of identified hazards in accordance with applicable standards. These include requirements for proposed developments to conform to design and construction standards for proposed projects in seismic hazard, flood hazard, and fire zone areas; conform with land uses identified in airport land use plans; and conform with other applicable design and construction requirements.

Figure PSC-1: Opportunity Site Hazard Zones

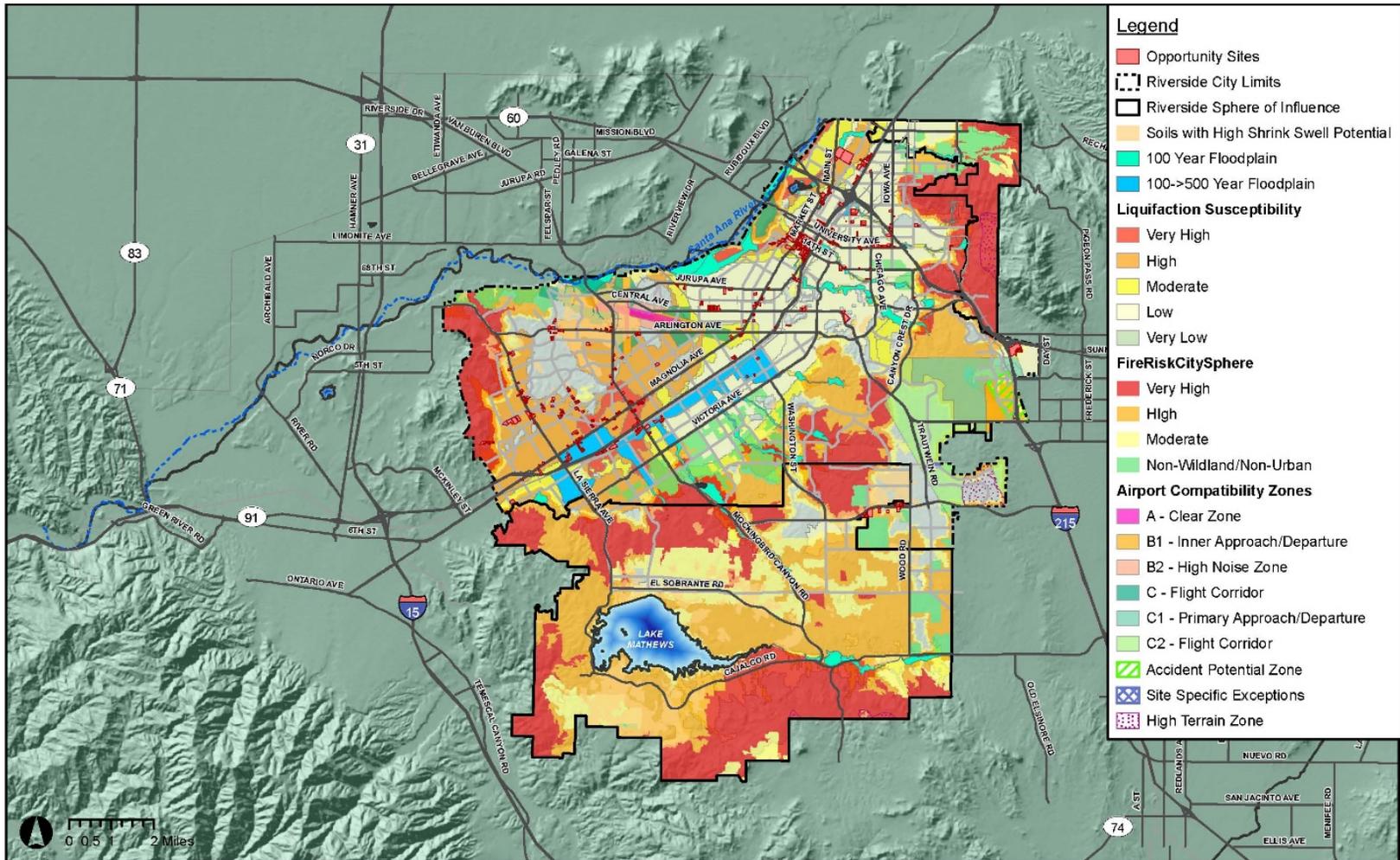


Figure PSC-2, Opportunity Site Very-High Fire Hazard Severity Zone Areas

