



# 7

## Healthy Community

Foster a healthy community in a safe environment that promotes active lifestyles, wellness, and access to recreation and locally sourced foods.

Redlands community members support a wide variety of healthy community initiatives, including farmers' markets and access to fresh and local vegetables and fruits, increased access to parks and open spaces, and improved pedestrian facilities.

The community will support healthy living by celebrating its agricultural heritage through educational programs and seasonal festivals that bring income to area farmers while connecting local grocers and restaurants with growers to increase availability of local produce around town.

The city's network of parks and recreation facilities should meet the community's active lifestyle needs by promoting access and connectivity to trails, as well as the strategic addition of more parks and active

play areas. New and enhanced walking and biking paths, designed in collaboration with the community, will provide convenient connections to destinations. The Emerald Necklace will include trails to meet the needs of joggers, cyclists, and equestrian riders as well as users of all ages and abilities seeking to enjoy the city's open spaces. Access, park service levels, and facilities meeting the needs of the community's diverse population will be considered in long-range planning, especially in areas targeted for infill and new development.

The City will proactively plan for its response to natural and man-made disasters, enlisting volunteers to work with emergency management professionals to make the community more resilient.



Photo Credit: Ashlyn Walker



Photo Credit: Randi Taube

# 7.1 ACTIVE LIFESTYLE

The term “active lifestyle” refers to the incorporation of activities such as walking, biking, and play into one’s daily routine. Redlands’ development pattern—a grid of streets and small blocks, with many residential areas surrounding Downtown—and the flat topography in much of the city makes it a community conducive to active lifestyles. The General Plan seeks to foster walkability and active lifestyles in the Transit Villages, which are expected to be the principal areas of new growth in the community, and improve active transportation throughout the city. Residents respond positively to improving opportunities for activity, including creating new recreational activities, providing trail linkages, and creating parks and plazas. Education, events, and programs that capitalize on the city’s walkable urban assets will further support active lifestyles.

## POLICIES

### Principles

- 7-P.1** Promote active lifestyles and community health by furthering access to trails, parks, public open space, and other recreational opportunities.
- 7-P.2** Promote programs and community events to support active living.
- 7-P.3** Encourage businesses to support employee wellness programs that facilitate healthy living.



Photo Credit: Marcelo Villacres

## 7.2 PARKS AND RECREATIONAL OPEN SPACE

This section contains policies for parks, golf courses, recreation facilities, and areas of outstanding scenic and cultural value, that correspond to the “open space for outdoor recreation” category in State planning law. These includes trails and other linkages between major recreation and open space preservation areas.

The parks, trails, and open space system has long been a prominent focus of Redlands’ planning efforts. While the park system is wide-reaching and generally well-distributed throughout the city, this system must be continually maintained and expanded to respond to population growth and adapt to the needs of an increasingly diverse and aging population. Existing parks encompass about 424 acres in the city, summarized in Table 7-1. Figure 7-1 shows existing and planned parks and recreational facilities, with proposed parks indicated with a symbol showing their generalized locations. At some locations, more than one site in the vicinity of the symbol may be appropriate and could be approved without amending the General Plan.

### Parkland Classification

There are several different kinds of parks in Redlands, including community parks, neighborhood parks, and pocket parks. The types of parks are as follows:

- **Community parks.** These parks are generally large in size—typically at least 15 acres—and include a variety of activities for a variety of ages. The six developed community parks range in size from 18 to 36 acres. Three additional proposed community parks would range from 20 to 27 acres.
- **Neighborhood parks.** Neighborhood parks are designed primarily to meet the needs of elementary school-aged children living within one mile. They typically contain picnic and play areas. The eight existing parks range from three to 18 acres. Several new neighborhood parks are designated throughout the Planning Area.
- **Pocket parks.** These are small parks nestled in the midst of densely developed areas.
- **Other parks.** Terrace Park is a linear park featuring a tree-lined walkway. The San Timoteo Nature Sanctuary is a Redlands Conservancy-run reserve for natural species in the San Timoteo Canyon. Sunset Hills Park is intended for passive recreation, trails, and equestrian uses.

TABLE 7-1: EXISTING PARKS (2016, CITY OF REDLANDS)

Park	Acreage	Park	Acreage
<b>Pocket Parks</b>		<b>Community Parks</b>	
Ed Hales Park	0.2	Community Park	18.2
Franklin Park	0.7	Ford Park	20.4
Orange Street Alley	0.1	Heritage Park	18.4
Simonds Parkway	0.8	Prospect Park	31.6
<b>Neighborhood Parks</b>		Redlands Sports Park	36.2
Brookside Park	9.5	Sylvan Park	18.4
Caroline Park	18.2	<b>Other Parks</b>	
Crafton Park	6.8	Sunset Hills Park	40.0
Israel Beal Park	8.1	Terrace Park	2.4
Jennie Davis Park	2.8	San Timoteo Nature Sanctuary	160.0
Oakmont Park	14.6	<b>TOTAL PARKLAND</b>	
Smiley Park	8.3	<b>424.2</b>	
Texonia Park	8.5	<i>Sources: City of Redlands, 2014; City of Redlands, 2015; Dyett &amp; Bhatia, 2015.</i>	



**TABLE 7-2: PARKLAND PROVISION STANDARD (2015)**

	Acres
Parkland <sup>1</sup>	253.5
School Recreational Area <sup>2</sup>	71.5
San Timoteo Nature Sanctuary <sup>3</sup>	80.0
Total Applicable to Park Standard	405
Population (2015) <sup>4</sup>	68,049
Park acres/1,000 residents	6.0

**Notes:**

1. Does not include San Timoteo Nature Sanctuary, undeveloped parks, school grounds, citrus groves (including 10.7 acres of groves at Prospect Park), or spaces that were part of other facilities (such as the Community Center and the Texas Armory).
2. Equals 50 percent of 2015 calculation of total school recreational area.
3. Equals 50 percent of land in the sanctuary; the entire sanctuary land is owned by the City.
4. Population estimate from the California Department of Finance, January 2015.

Sources: City of Redlands, 2016; Dyett & Bhatia, 2016.

**TABLE 7-3: PROJECTED PARK NEEDS FOR THE PLANNING AREA (2035)**

<b>Redlands</b>	
2035 Population	79,013
2015 Population	68,049
New Residents in 2035	10,964
New Resident Parkland Needs (acres)	55
<b>Planning Area</b>	
2035 Population	93,624
2015 Population <sup>1</sup>	77,269
New Residents in 2035	16,355
New Resident Parkland Needs (acres)	82

Sources: City of Redlands, 2016; Dyett & Bhatia, 2016.

**Parkland Standard and Proposed Parks**

**Parkland Standard**

The General Plan establishes a parkland/recreational space standard of 5 acres per 1,000 residents, consistent with State law (Quimby Act). The current (as of 2016) parkland exceeds this standard (Table 7-2).

In 2035, the City of Redlands is estimated to have approximately 10,964 new residents for a total projected population of 79,013. Based on the parkland standard of 5 acres per 1,000 residents, 55 acres of new parkland would be required to meet the needs of new residents (Table 7-3). For the Planning Area including the Sphere of Influence, an estimated 82 acres would be required to meet the needs of new residents.

**Proposed Parks**

Proposed parks are intended to meet the needs of new and existing residents in areas where additional development is anticipated, as well as in areas that are currently underserved by recreational facilities. New parkland will be necessary to serve residents and employees of newly created neighborhoods and employment centers throughout the Planning Area, including those in the proposed Transit Village Areas. Parkland proposed for the Planning Area totals approximately 315 acres, including 118 acres of undeveloped parkland. Proposed parks are shown in their approximate locations in Figure 7-1, and descriptions are provided in Table 7-4.



Texonia Park features a playground for neighborhood children.

**TABLE 7-4: UNDEVELOPED AND PROPOSED PARKS**

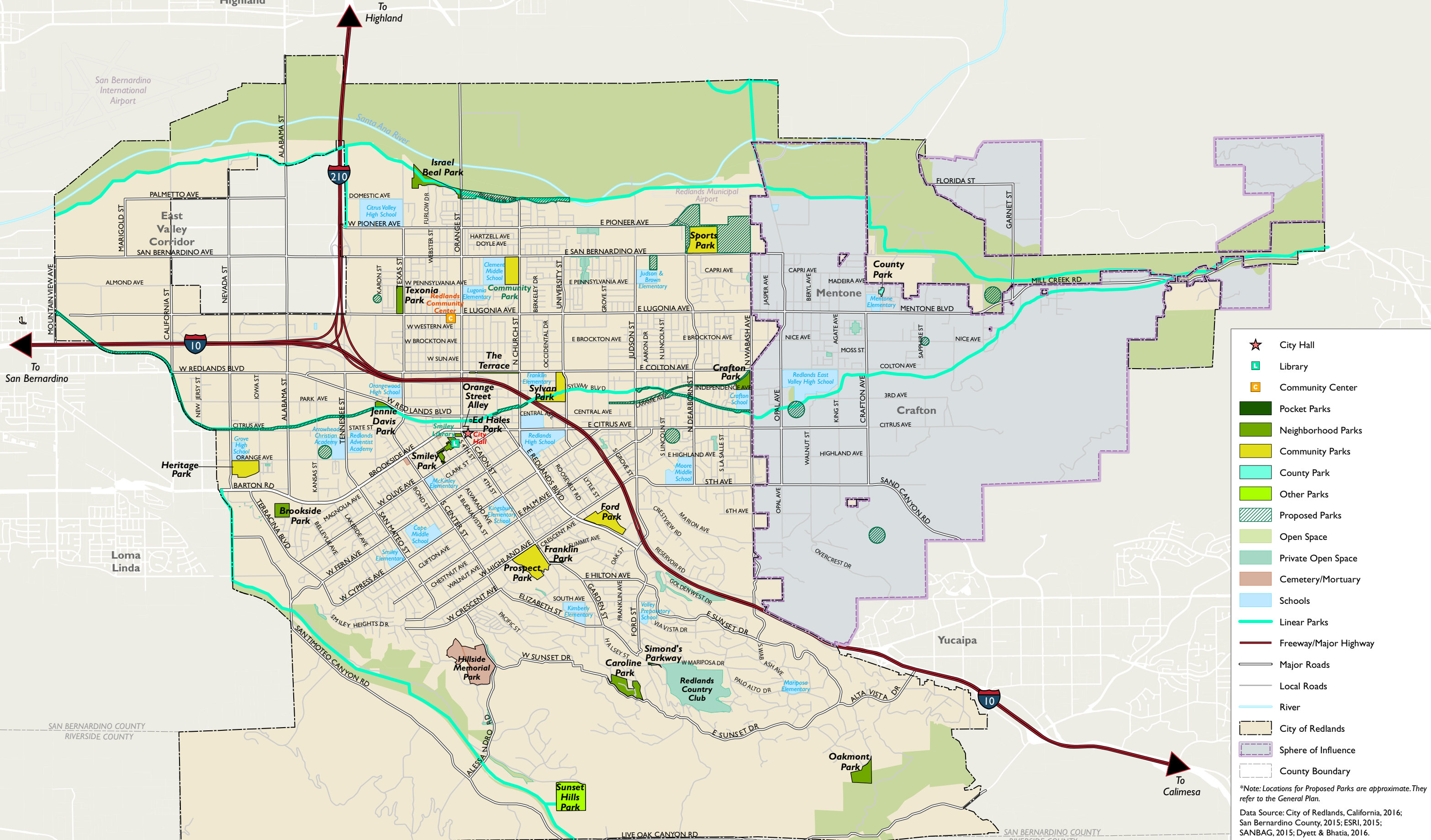
Park Name	Acres	Notes
<b>Undeveloped</b>		
Centennial	30.0	Located along the bluffs adjacent to Riverview Drive, this land was acquired for recreational uses including trails and parkland as well as for flood control. The Santa Ana River Trail is planned to go through this park.
Lincoln/Laramie	0.8	Pocket park located near the intersection of Lincoln Street and Laramie Avenue. Adjacent to the Orange Blossom Trail and the planned Mission/Zanja Trail.
Amethyst/Hwy 38 (Scout House)	27.1	Acquired for use as a community park serving the Mentone Area. This park lies adjacent to the future extension of San Bernardino Avenue.
Redlands Sports Park Completion	60.0	A community park on the corner of Dearborn Street and San Bernardino Avenue. A portion of the park (36.2 acres) has been developed for active recreation, with 60 acres as yet unbuilt. Future improvements will include additional athletic fields.
<b>TOTAL UNDEVELOPED PARKLAND</b>	<b>117.9</b>	
<b>Proposed (Redlands)</b>		
West Redlands	5.0	Proposed neighborhood park near the intersection of Kansas Street and Orange Avenue
New York Street	0.5	Proposed pocket park near the intersection of New York Street and Lugonia Avenue. Potentially developed as a linear park with a Class I bicycle and multi-purpose trail along New York Street.
Israel Beal Park Expansion	20.0	Continued expansion of Israel Beal Park along the bluffs as land is developed on its western border. Additional acreage will include active and passive recreation area as well as trails including the future location of the Santa Ana River Trail.
Lincoln Street	5.0	Proposed neighborhood park at the intersection of Citrus Avenue and Lincoln Street. This park could incorporate elements of the historic citrus grove.
Mission/Zanja Park	10.4	Proposed as a linear park that would follow the Mission Zanja. To be developed as a natural trail with neighborhood and pocket parks along its length.
San Timoteo Landfill	75.0	Proposed as a regional park on the County landfill site
Transit Villages <sup>1</sup>	20.0	Proposed as approximately 20 acres of community and neighborhood parks to serve residents and employees in the Transit Village Overlay Zone
<b>TOTAL PROPOSED PARKLAND (REDLANDS)</b>	<b>140.9</b>	
<b>Proposed (Sphere of Influence)</b>		
Opal Detention Basin	20.0	Proposed as a community park adjacent to the future Opal Detention Basin (part of proposed storm water management improvements). Adjacent to East Valley High School and the extension of Mission/Zanja Park into the Sphere of Influence.
Garnet Street	20.0	Proposed as a community park serving the Mentone Planning Area
Nice Avenue	1.0	Proposed as a neighborhood park near the intersection of Nice Avenue and Sapphire Avenue
Sand Canyon	15.0	Proposed as a 15-acre park to serve new residential development near Sand Canyon. Should this development not occur, the park would no longer be necessary.
<b>TOTAL PROPOSED PARKLAND (SPHERE OF INFLUENCE)</b>	<b>56.0</b>	
<b>TOTAL PROPOSED PARKLAND</b>	<b>196.9</b>	
<b>TOTAL UNDEVELOPED AND PROPOSED PARKLAND</b>	<b>314.8</b>	

*Note:*

*1. Specific locations for these parks have not yet been proposed. See section 4.4 for conceptual illustrations of potential parkland in the Transit Village areas.*

*Source: City of Redlands, 2016.*

Figure 7-1: Existing and Planned Parks



Note: Parks and Open Space in Resource Preservation area are part of the "Resource Preservation" designation.

\*Note: Locations for Proposed Parks are approximate. They refer to the General Plan.  
 Data Source: City of Redlands, California, 2016; San Bernardino County, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.

## Recreation Facilities

Recreational facilities in Redlands include the Redlands Community Center, the Community Senior Center, the Joslyn Senior Center, neighborhood community gardens, and the Carriage House. Large open spaces, including the San Timoteo Canyon, Live Oak Canyon, and the Crafton Hills also provide recreational space. The City of Redlands currently has joint use agreements with the Redlands Unified School District and the Grove School allowing public access to school recreational facilities. The agreement with the school district allows the City and the District to use facilities, parks, sports fields and classrooms as needed for community activities, such as the community gardens, adult and youth sports, and after school programs.

## Trails

### Redlands Trails

The City of Redlands provides public trails for walking, jogging, bicycling, and equestrian use. Some trails are located within City parks and open space, while others act as linkages between the parks or to other regional trails. Several of the City’s trails have been named “Heritage Trails” by the Redlands Conservancy, and are maintained by the Redlands Conservancy through a memorandum of understanding. Redlands’ public trails are summarized in Table 7-5. The Planning Area’s existing and proposed recreational trail network is shown in Figure 7-2.

The General Plan provides for a system of trails serving recreational and emergency access needs to accommodate walking, hiking, jogging, equestrian, and bicycle use. A number of these are shown as planned in the 2015 City of Redlands Bicycle Master Plan, including many regional connections.

### Trails Under Implementation

- **Orange Blossom Trail.** The Orange Blossom Trail Master Plan was completed in 2008 and the trail is currently (2016) under construction, with sections completed between Bryn Mawr Avenue and Texas Street and between Grove Street and Wabash Avenue. When complete, it will be a 7.5-mile trail that runs east to west across the city, passing through Downtown.
- **Mill Creek Zanja Trail.** The Zanja Trail and Greenway Park Project is currently in the conceptual stage. The general alignment of the trail follows the historic Mill Creek Zanja as it runs east to west across the city. The proposed 2.2-mile alignment runs from Wabash Avenue along Sylvan Boulevard, and ends at Redlands Boulevard and 9th Street. The Mill Creek Zanja Trail will intersect the Orange Blossom Trail and join it for some stretches, and will connect the University of Redlands with Downtown, parks, schools, and other destinations. The trail project also includes park improvements, pocket park development, interpretive signage, and flood control facilities. Ultimately, the trail is planned to connect to the trail system in Crafton Hills.



The Mill Creek Zanja Trail, shown in a conceptual rendering, is poised to become a vibrant public thoroughfare.

- **Mountain View Avenue Trail.** This multi-use trail will run along Mountain View Avenue from the Orange Blossom Trail to the Santa Ana River Trail. The Mountain View Avenue Trail has been built from San Bernardino Avenue to the Orange Blossom Trail, but is not yet complete through the Edison property.

### Proposed Trails

Proposed trails include the Sand Canyon Trail along Sand Canyon Road; a series of trails that would connect the Deer Trail to the parks and trail systems surrounding Sunset Drive in the canyon lands as well as Redlands Boulevard; the East Valley Corridor Bikeway along California Street; and trails that connect Redlands to Highland across the Santa Ana River wash at Alabama Street, Orange Street, and Florida Street.

Proposed trail alignments would also connect or extend segments of the East Valley Corridor Multi-Purpose Trail, the San Timoteo Creek Flood Control Trail, and the Gold Hill/Panorama Point Trail. The Garden/Panorama Point Trail, a segment that would connect the Garden/Mariposa Trail to Panorama Point, has also been proposed.

TABLE 7-5: REDLANDS TRAILS

Trail Name	Length (mi)
Bluffs Trail (H) <sup>1</sup>	0.89
Caroline Park Trails (H)	1.41
Church Street to Panorama Point	2.90
Cordillera Roadside Trail	1.74
Creekside Trail (H)	0.71
Deer Trail	0.14
East Valley Corridor Multi-Purpose Trail (H)	2.02
Garden/Mariposa Trail (H)	1.61
Gold Hill/Panorama Point Trail (H)	2.51
Oakmont Trail (H)	1.81
Oakridge Trail (H)	1.42
Old Carriage Road (H)	2.83
Orange Blossom Trail <sup>2</sup> (H)	2.83
Prospect Park Trail (H)	1.29
San Timoteo Creek Flood Control Trail	2.52
Sylvan Park Trail (H)	0.20
Teddy’s Trail (H)	0.38
The Terrace (linear park)	0.37
<b>TOTAL</b>	<b>27.58</b>

#### Notes:

1. (H) identifies Heritage Trails that are maintained by the Redlands Conservancy.
2. The Orange Blossom Trail is proposed to be a 7.5-mile bike and pedestrian trail; currently 2.83 miles are constructed.

Source: City of Redlands, 2016.

## Regional Trails

- **Crafton Trails.** A recreational trail system exists in the Crafton Hills, on land held by the Crafton Hills Open Space Conservancy. These include the College Trail, which leads from the Crafton Hills College campus, and trails connecting the Yucaipa Regional Park to Zanja Peak.
- **Yucaipa Trails.** The City of Yucaipa's trail system includes walking trails and bike lanes along Sand Canyon and Oak Glen roads. The proposed Sand Canyon Trail and Live Oak Canyon Trail in Redlands would link to these trails. Additionally, the proposed Yucaipa Boulevard Trail would link the Redlands Gold Hill/Panorama Point Trail to sidewalks and bike lanes along Yucaipa Boulevard. There are also the Yucaipa City hiking trails at the foot of the Crafton Hills.
- **Loma Linda Trails.** The Barton, Beaumont, and Mountain View trails in Loma Linda connect to the Redlands bicycle network. The San Timoteo Creek Trail in Loma Linda would connect to the proposed San Timoteo Creek Trail in Redlands.
- **Highland Trails.** Trails along 5th Street and Greenspot Road traverse the City of Highland and follow along the northern banks of the Santa Ana River Wash. Proposed trails in Redlands would cross the wash and connect to these trails at Alabama Street, Orange Street, and Florida Street.

## Proposed Trails

### Connecting Trails

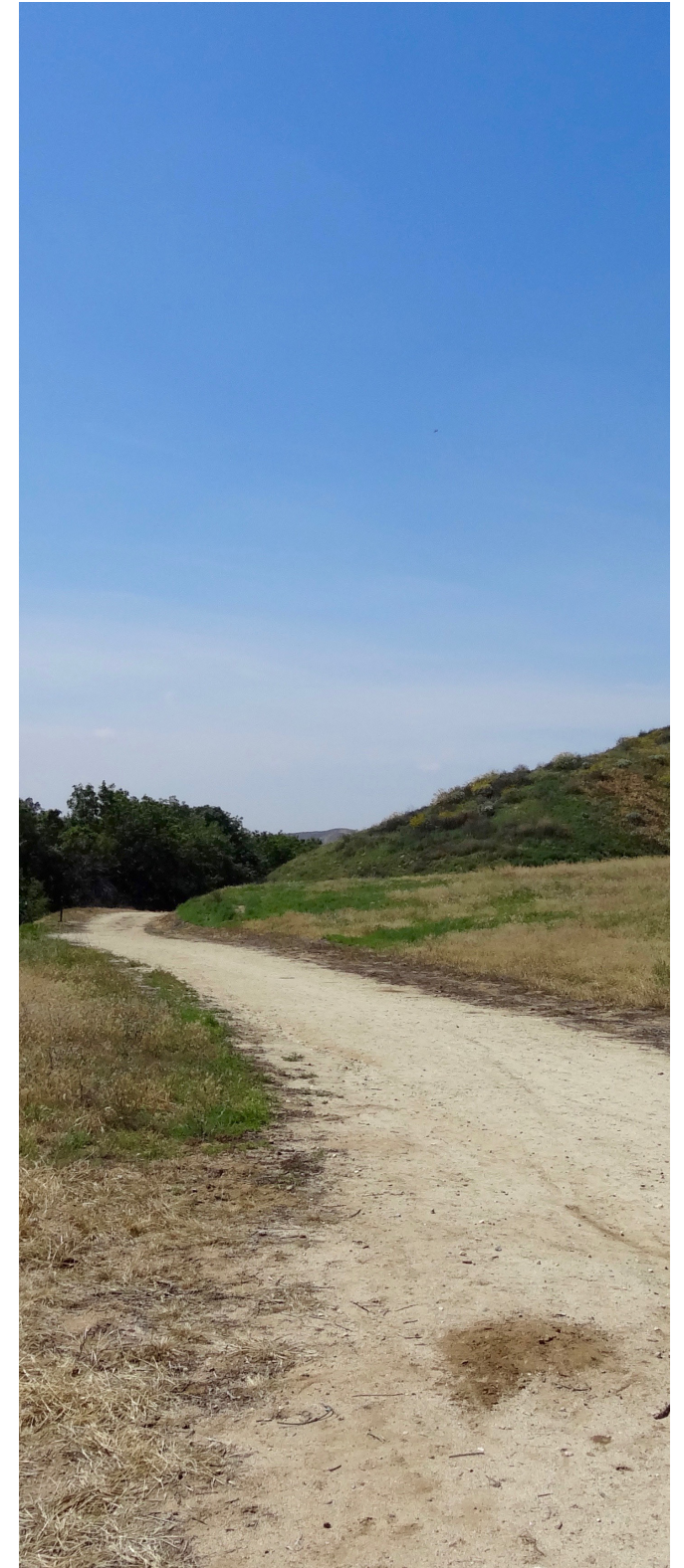
- **Lugonia Trail.** This trail will provide a north-south connection between the Santa Ana River Trail at the bluffs overlooking the wash and the Orange Blossom Trail at Redlands Boulevard. It will also provide connections to the New York Street Transit Village, Citrus Valley High School, and the commercial areas in the Lugonia Planning Subarea. It will run along the east side of New York

Street as it extends northward to Pioneer Avenue. This trail is planned to be a multi-use trail for pedestrians and bicyclists.

- **Heritage Trail.** This trail will provide a north-south connection between the Orange Blossom Trail and the Planned San Timoteo Trail. It will run along San Timoteo Road and Nevada Street, providing a link to Heritage Park. This trail is planned for pedestrians and bicyclists north of Barton Road, and for pedestrians, bicyclists, and equestrians south of Barton Road.

### Regional Trails

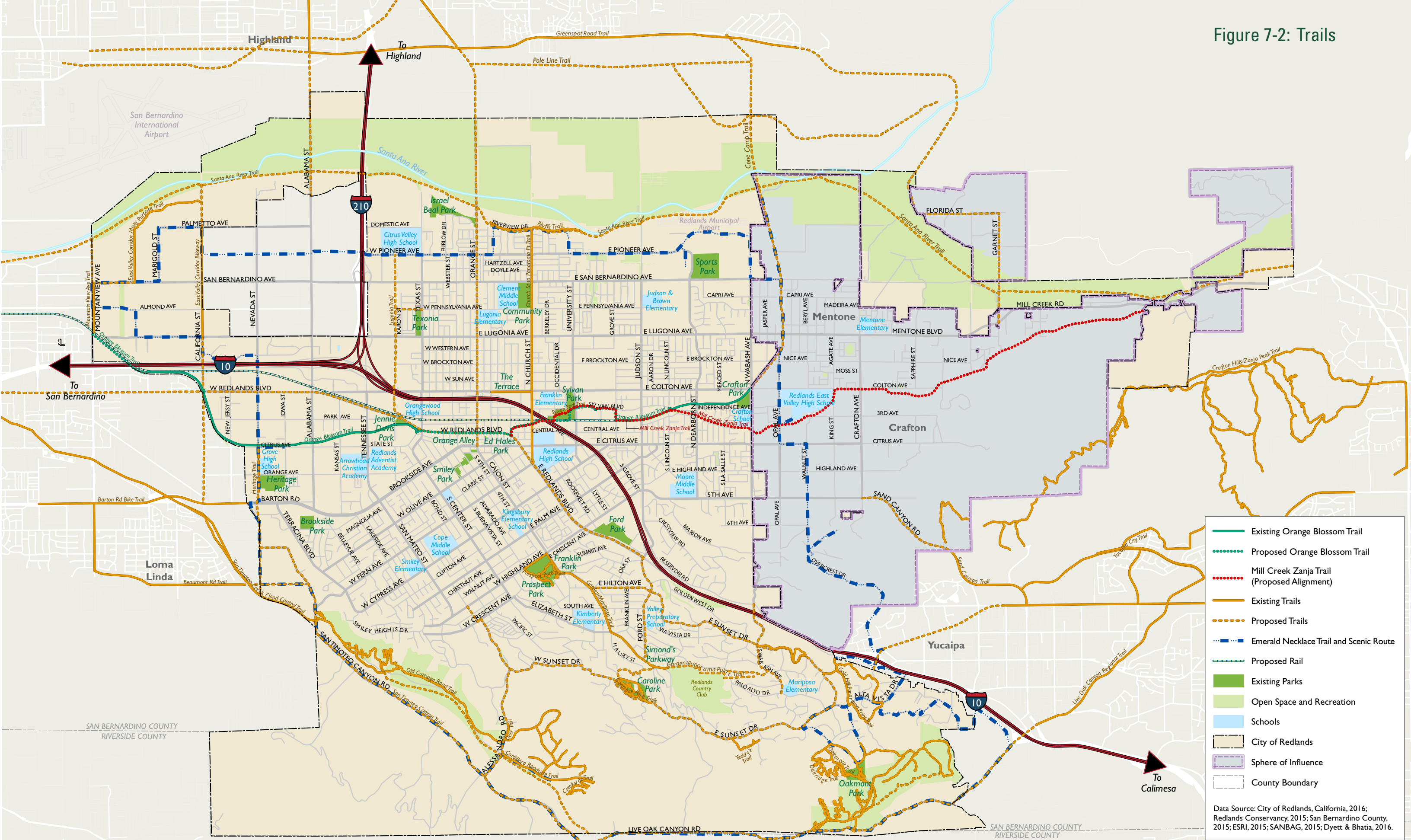
- **Santa Ana River Trail.** The Santa Ana River Trail is a regional trail complex that covers 110 miles from the San Bernardino County National Forest to the Pacific Ocean at Huntington Beach. Large portions of the trail have been completed in Orange and Riverside counties. In San Bernardino County, the trail has been developed, operated, and maintained primarily by the San Bernardino County Regional Parks Department. A non-paved segment of the trail extends from the Greenspot area into the San Bernardino National Forest where it connects with the Pacific Crest Trail. Within San Bernardino County, the Santa Ana River Trails extends to Waterman Avenue in San Bernardino. Plans are currently (2016) underway to construct the next segment from Waterman to California Street, then eventually through Redlands and Mentone to the San Bernardino National Forest.
- **San Timoteo Creek Trail.** This proposed trail generally follows the route of San Timoteo Creek, linking Live Oak Canyon with the Santa Ana River via a route which travels through a largely undeveloped area south of Redlands and Loma Linda. This trail is proposed to support multiple uses, including hiking, horseback riding, and bicycling. It has also been proposed in the San Bernardino County General Plan.
- **Live Oak Canyon Trail.** This proposed trail follows the route of Wilson Creek from Yucaipa Regional Park to the San Timoteo Creek Trail, passing through undeveloped/rural areas. It has also been proposed in the San Bernardino County General Plan.
- **City Creek Trail.** This trail follows City Creek from its terminus at the Santa Ana River northward into the national forest. Hiking, horseback riding and bicycling along this trail are enhanced by its proximity to the national forest and its trails. This conceptual trail was proposed in the San Bernardino County General Plan.
- **Crafton Hills Trail.** This trail circles the proposed Crafton Hills open space area, providing connections to the Live Oak Canyon Trail and the Mill Creek Trail. The trail would accommodate multiple uses, including hiking, horseback riding, and mountain bicycling. This conceptual trail was proposed in the San Bernardino County General Plan.
- **Mill Creek Trail.** This trail follows the route of Mill Creek, linking the Santa Ana River Trail near Angelus Oaks with the Santa Ana River Trail near Mentone and Highland. Multiple uses include hiking, horseback riding, and mountain biking. This trail passes through undeveloped/rural areas, and may require installation of comfort stations, rest/water stops, and similar amenities. This conceptual trail was proposed in the San Bernardino County General Plan.
- **San Timoteo Canyon and Live Oak Canyon Road Trails.** Class I natural trails are planned for San Timoteo and Live Oak Canyon roads once they are built out to their full rural road sections.



*The San Timoteo Canyon is a scenic destination for local hikers.*



Figure 7-2: Trails

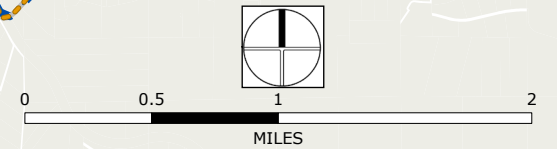


**Legend**

- Existing Orange Blossom Trail
- - - Proposed Orange Blossom Trail
- - - Mill Creek Zanja Trail (Proposed Alignment)
- Existing Trails
- - - Proposed Trails
- - - Emerald Necklace Trail and Scenic Route
- - - Proposed Rail
- Existing Parks
- Open Space and Recreation
- Schools
- City of Redlands
- Sphere of Influence
- County Boundary

Data Source: City of Redlands, California, 2016; Redlands Conservancy, 2015; San Bernardino County, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.

RIVERSIDE COUNTY



# POLICIES

## Principles

- 7-P.4** Create and maintain a high-quality, diversified park system that enhances Redlands’ unique attributes.
- 7-P.5** Provide parkland for a comprehensive range of active recreational needs, including sports fields and facilities, playgrounds, and open spaces for passive recreation per a Parks and Recreation Master Plan.
- 7-P.6** Enhance the presence of recreational opportunities in the city and increase park use by selecting new, highly accessible locations for parks.
- 7-P.7** Continue cooperative efforts with the Redlands Unified School District through joint use agreements for park and recreational facilities. Locate new neighborhood parks in conjunction with elementary or middle schools wherever feasible.
- 7-P.8** Minimize substitution of private recreation facilities for developer fee payment or park dedication to ensure that a public park system will be permanently available to the entire community.
- 7-P.9** Review park standards periodically to determine whether needs are being satisfied and how long-term costs will be met.
- 7-P.10** Equitably share the cost of parkland creation and maintenance between existing and new residents, businesses, and property owners.

- 7-P.11** Maximize the availability of recreational facilities and activities throughout the city.
- 7-P.12** Create and maintain a system of trails serving both recreational and emergency access needs.
- 7-P.13** Complete the Emerald Necklace system of scenic routes and trails, including the Orange Blossom Trail, Zanja Trail, Santa Ana River Trail, San Timoteo Trail, and other trails linking parks, regional trails, and open space areas.
- 7-P.14** Ensure that the trails in the Emerald Necklace meet the needs of joggers, cyclists, and equestrian riders, as well as users of all ages and abilities seeking to enjoy the city’s open spaces.
- 7-P.15** Work with landowners to develop, acquire, and maintain the trail system.

## Actions

### Parks

- 7-A.1** Develop and maintain a Parks and Recreation Master Plan.
- 7-A.2** Conduct an assessment of park and recreational assets, identify community needs and preferences (for both active and passive recreation), identify underserved locations, monitor park usage, and develop a plan for new park locations, programs, and funding.

- 7-A.3** Provide 5 acres of park area for each 1,000 Planning Area residents, and additional parkland for specialized, and low-use park acreage.
- 7-A.4** Provide all residential areas with a neighborhood/community park (of 8 or more acres where available) where suitable land is available at acceptable cost.
- 7-A.5** Provide parkland in areas where population increase is expected (such as Transit Villages), partner with the school district to improve access to recreational facilities for nearby residents in parkland-deficient neighborhoods, and eventually site parkland within convenient distance of youth in the schools.
- 7-A.6** Utilize under-used sites in commercial/ industrial areas, such as SCE right-of-way, easements, and orange groves, to provide recreational areas for employees working in those areas.
- 7-A.7** Consider access, park service levels, and facilities meeting the needs of the community’s diverse population in long-range park planning, especially in areas targeted for infill and new development.
- 7-A.8** Calculate park fees to enable purchase of acreage and provision of off-site improvements for 5 acres of parkland per 1,000 residents added.
- 7-A.9** Periodically review the parkland dedication formula to stay current with demographic information and market values.
- 7-A.10** Routinely review the adequacy of available funds for park improvements, including impact fees.

- 7-A.11** Continue annual review of five-year plan recommendations by the Parks and Recreation Commission for needs and available funding mechanisms.
- 7-A.12** Use available techniques, such as working with non-profit land trusts, to minimize acquisition costs.
- 7-A.13** Identify the needs of special user groups, such as the disabled and elderly, low-income individuals, and underserved and at-risk youth, and address these in park and recreation facility development.
- 7-A.14** Seek any available State and federal grant assistance in implementing the parks and open space proposals of the General Plan.
- 7-A.15** Investigate methods for improving access to private parks.
- 7-A.16** Continue the dedication of land along the Santa Ana bluff for a continuous linear park to be used as picnic and scenic area, and trail.
- 7-A.17** Encourage the development through acquisition and/or dedication of a linear park along the Zanja and the railroad right-of-way.

### Recreation

- 7-A.18** Strive to ensure that all areas of the community have an equal distribution of recreational facilities to maximize access and activities.
- 7-A.19** Seek partnerships with schools and private entities to provide more recreational opportunities for citizens.

- 7-A.20** Evaluate and consider expanding after-school recreation programs.
- 7-A.21** Require that the recreational needs of children and adults, including seniors and dependent adults, be addressed in development plans.
- 7-A.22** Consider retrofitting older parks with opportunities for additional parking and access.

**Trails**

- 7-A.23** Use the Multi-Use Trails Map (Figure 7-2) for designation and general location of local and regional trails within the Planning Area.
- 7-A.24** Coordinate trail planning with bike route planning in preparation for updates to the Redlands Bicycle Master Plan.
- 7-A.25** Establish agreement with public agencies and private entities for development and maintenance of trails in rights-of-way and utility corridors.
- 7-A.26** Partner with non-profit organizations such as the Redlands Conservancy and Crafton Hills Conservancy to assist in developing and managing the trails system and providing community outreach and education.
- 7-A.27** Seek grants and alternative funding mechanisms for trail development and maintenance.
- 7-A.28** Refer park projects to the Parks and Recreation Commission for review and recommendations of trails.
- 7-A.29** Review new development proposals for compliance with the Trails Plan and provide for right-of-way dedication and improvement/development of trails.

- 7-A.30** Install recreational amenities such as rest areas, benches, water facilities, and hitching posts to be incorporated into trails.
- 7-A.31** Locate trail rights-of-way with concern for safety, privacy, convenience, preservation of natural vegetation and topography, and impact on neighboring properties, and work with landowners on development proposals to incorporate and provide for a continuous multi-use trail system.
- 7-A.32** Expand street landscape standards to include trail landscape standards.
- 7-A.33** Design and install wayfinding signs for trails and scenic routes.
- 7-A.34** Coordinate trail planning with other regional plans to ensure connectivity and access to the regional trail system.



*Prospect Park features walking paths, orange groves, and views of Kimberly Crest.*

## 7.3 PUBLIC HEALTH

At first glance, it may be difficult to intuit commonalities between the fields of city planning and public health. Public health practitioners, for instance, predominantly focus on disease treatment, education, and individual behavior as determinants of health outcomes. City planners, on the other hand, draft policies impacting housing, transportation, public spaces, and the built environment. These two fields, however, do have a significant commonality; they share an emphasis on improving the well-being of individuals by creating conditions in which people can live their best, healthiest lives.

Research has, in fact, linked the design of cities and environmental characteristics with physical activity levels, diet, crime, and other components of health. The topic of public health is more salient today than ever. Nationwide, the number of patients suffering from heart disease, diabetes, and asthma is rising. Childhood obesity rates are higher than ever before. There is an urgent need for long-range planning to prioritize public health, and the Redlands General Plan seeks to address some of these issues.

The policies of the Redlands General Plan concerning education, transportation, access to services, nutrition, and the physical environment can have an enormous impact on an individual's health decisions. For instance, planning for a safe, connected system of bicycle thoroughfares can increase the likelihood of a Redlander utilizing her bicycle as a means of transportation, thus improving her cardiovascular health. Planning additional park space near public schools can bolster a child's physical activity and may instill in him the importance of lifelong exercise. Planning neighborhood health centers can improve the likelihood of a person acquiring the care she

requires. In addressing public health issues, the General Plan is an example of how Redlands puts its residents, and their health, first.

### Healthy Transportation and Physical Activity

Small changes to policy can go a long way towards improving public health. Providing residents with more options to walk or bike, for instance, can change daily transportation habits. In the 2011 Community Sustainability Plan, the City introduced efforts to minimize vehicle usage, including improving public transportation service, promoting ridesharing programs, and installing bike racks and bike lanes. The City of Redlands prioritizes active transportation modes not only to lessen pollution outputs, but to also encourage Redlanders to incorporate physical exercise into their daily routines.

The General Plan outlines policies to create walkable “complete neighborhoods” with an array of amenities to serve everyday needs; a more complete system of pedestrian and bicycle paths, and street redesign to foster personal mobility and physical activity, which may improve health outcomes for many. The General Plan also sets forth a series of conditions to encourage use of this infrastructure, including the incorporation of safety elements such as signage and lighting, health education, and exercise classes and programming.



Photo Credit: Beaver Medical Group

*Improving access to health centers and programs promoting healthy activity can improve the health of Redlanders of all ages.*

# POLICIES

## Principles

- 7-P.16** Ensure that all Redlands residents have access to a variety of transportation and physical activity options that enhance health and that work for diverse lifestyles, incomes, and abilities.
- 7-P.17** Achieve more walkable, livable neighborhoods by expanding the multi-modal transportation system and creating a safe, pedestrian-oriented environment.

## Actions

- 7-A.35** Implement street design features that facilitate walking and biking in both new and established areas. Require a minimum standard of these features for all new developments.
- 7-A.36** Discourage street closures; encourage creating new connections.
- 7-A.37** Prioritize completing incomplete sidewalks within a half-mile radius of existing commercial development.
- 7-A.38** Revise development standards to require pedestrian connections into and inside commercial projects.
- 7-A.39** Install appropriate facilities along streets and at roadway intersections to improve and insure pedestrian safety.
- 7-A.40** Improve signs directing residents and visitors to public parks and recreational facilities from all parts of the community. Integrate parks signage with bikeway and pedestrian-oriented signage systems throughout Redlands.

- 7-A.41** Improve the conditions for youth walking and bicycling in the areas surrounding schools by working with the school district on the Safe Routes to School program. Assess and prioritize identified Safe Routes to School infrastructure improvements in annual transportation improvements budgets.
- 7-A.42** Work with interested community members and organizations to plan and develop a course of exercise circuits that take advantage of existing parks, trails, and other pedestrian infrastructure. The course should be clearly marked, and contain simple stations and diagrams for self-guided training.
- 7-A.43** Encourage businesses or non-profit organizations to offer indoor recreational facilities and programs compatible with existing commercial, office, and industrial structures and zones, such as batting cages, rock climbing walls, basketball/indoor soccer facilities, and studios offering martial arts, aerobics, and yoga classes.
- 7-A.44** Support the use of clean fuel and “climate friendly” vehicles in order to reduce energy use, energy costs, and greenhouse gas emissions by residents, businesses, and City government activities.
- 7-A.45** Promote educational programs aimed at reducing obesity rates of residents.
- 7-A.46** Encourage the provision of bike lockers, bike-sharing, and other methods of supporting active transportation that can contribute to healthy lifestyles.





*Farmers markets provide mutual benefit to local farmers and residents alike. Each farmers market transaction supports the local sustainable food economy and healthy food consumption.*

## Sustainable Food Systems

The concept of a sustainable food system crosses over many issues. For example, in the U.S., obesity and diet-related chronic disease rates are escalating, and according to a 2014 study conducted by the California Department of Public Health, about 33.2 percent of adults in San Bernardino County in 2011-2012 were overweight. Public health is threatened by rising antibiotic resistance; chemicals and pathogens contaminate food, air, soil, and water; and the depletion of natural resources such as fresh water and prime farmland. These threats have human, social, and economic costs that are growing, cumulative, and unequally distributed, and many of these relate to the food system – what we eat and how it is produced and distributed.

Increasing access to healthy, locally grown food will educate residents about healthy food production, improve nutritional decision-making, and provide a local market for local produce that creates synergies and promotes sustainable food systems. Nine hundred acres in Redlands are actively utilized for agricultural purposes and many of the crops produced are sold locally. Redlands currently operates three community gardens, including the Smiley Garden, the Clement Garden, and the Lugonia Garden. These gardens represent just a small step towards integrating sustainable food systems into the lifestyles of Redlanders. The General Plan seeks to guide efforts related to the means in which sustainable food is produced (from small home gardens to large farms), sold (grocery stores and farmer markets), and integrated in City programs (schools, zoning, and others). The community's agricultural heritage will be celebrated through educational programs and seasonal festivals that bring income to area farmers and the 200+ small farms in the city. The community will organize and initiate farmers' markets in major accessible locations, and local leaders will help to partner grocers and restaurants with growers to increase availability of local produce around town.

# POLICIES

## Principles

- 7-P.18** Promote locally grown foods.
- 7-P.19** Support the creation of community gardens throughout the community.
- 7-P.20** Create a healthy, balanced, functional, and equitable food system by:
  - Reducing barriers and increasing access to locally-grown fruits and vegetables; and
  - Increasing community-wide knowledge of healthy local food choices.

## Actions

- 7-A.47** Promote locally-grown foods through the following initiatives:
  - Establish organic and local farming economic development zones in San Timoteo Canyon, Crafton, and other suitable locations;
  - Investigate State and local financing programs to assist with expanding the local farming programs;
  - Expand the community garden program subject to funding and land availability; and
  - Eliminate barriers to and establish incentives for increased local food production.
- 7-A.48** Support farmers’ markets throughout the city.
- 7-A.49** Use zoning to establish incentives for locating grocery stores with healthy food in neighborhood centers and to increase community-wide access to healthy food.

**7-A.50** Seek ways to partner with Redlands-based community supported agriculture (CSA) programs as an alternative source of fresh and healthy fruits and vegetables for Redlands’ residents— particularly those with limited mobility or limited income and those farthest from existing grocery stores.

**7-A.51** Support home gardening and small-scale urban farming efforts by considering the adoption of a home gardening and urban agriculture ordinance or by otherwise ensuring that zoning allows for home gardens and small-scale urban farming.

**7-A.52** Provide residents with opportunities to learn gardening basics and how to cook easy, healthy meals with fresh produce (e.g., online and library resources and workshops).

**7-A.53** Work with residents and other community organizations to plan and implement a Redlands Community Gardens program that would provide a source of fresh produce and offer learning opportunities for young and old alike. The intent is that access is free, and where there are costs, there would also be relief for low-income residents to the extent feasible. More specifically, the City will:

- Identify sites and support a Community Gardens program by securing insurance and providing water;
- Identify other suitable locations for future gardens (e.g., on school sites, on vacant lots or portions of other City-owned property);
- Include Redlands residents in the design and operation of the gardens;

- Enable gardeners to sell their produce through a local farmers’ market;
- Work with food banks and local organizations such as Helping Hands Pantry, to manage the donation of surplus produce to families in need; and
- Periodically evaluate the program and make adjustments as appropriate.

**7-A.54** Help schools make the healthy food connection by working cooperatively with the school district to:

- Establish high nutrition standards for school breakfast and lunch menus;
- Work to incorporate culturally-sensitive options (vegetarian, kosher, halal) into available meal plans;
- Remove unhealthy food and drinks from vending machines on school property;
- Establish appropriate sites and programs for school gardens to be used in curricula, after-school activities, and as a source of fresh produce for school meal plans; and
- Coordinate a “Farm to School” program that connects local farms to Redlands schools and supplies the balance of fresh produce beyond what is available from the school gardens and the school district’s lunch program.

**7-A.55** Develop and implement a healthy food purchasing and vending policy for City facilities and operations that commits to selecting healthy, well-balanced meals and snacks for City-sponsored activities, meetings, and facilities.

**7-A.56** Adopt zoning controls to limit the number of fast food outlets and drive-through restaurants near schools, the University of Redlands, and in Transit Villages.

**7-A.57** Support the raising of domestic farm animals, poultry, and bee-keeping in appropriate areas of the city.

**7-A.58** Develop incentives for new farmer training. Explore land leasing programs for new farmers.

**7-A.59** Support agri-tourism within Redlands by eliminating barriers for farms to provide events such as weddings, cooking classes, “dinner on the farm,” and other events.



## Equity and Access to a Broad Range of Services

An equitable distribution of health-oriented community facilities and services, including recreation centers, medical facilities, and youth centers will help to ensure the well-being of Redlanders. Though Redlands is home to numerous care facilities, including Redlands Community Hospital, Beaver Medical Group, and Loma Linda University Behavior Medical Center, health care facilities are not easily accessible to all members of the community. In particular, the northern end of Redlands and the eastern portion of the city near Mentone lack neighborhood healthcare and outpatient facilities. Improving access to healthcare via the construction of new facilities and improvements in transportation to existing facilities may encourage healthy lifestyles and recreational activity throughout the community.



Neighborhood health centers make quality healthcare more accessible to residents.

## POLICIES

### Principles

- 7-P.21** Promote health equity, including equal access to health facilities, clinics, goods, services, and economic and educational opportunities, helping to ensure well-being for residents of all ages, abilities, and incomes.
- 7-P.22** Create complete neighborhoods with access to a range of day-to-day goods and services within walking distance of residences, including medical facilities, community services, youth programs, and employment opportunities, to increase the sense of social cohesion among residents.

### Actions

- 7-A.60** Collaborate with San Bernardino County Public Health Department and other agencies to monitor health data related to Redlands outcomes, risk factors, and at-risk and vulnerable populations and individuals, and use these data to inform residents of new County and City programs serving the Redlands community.
- 7-A.61** Work with Redlands Community Hospital and other healthcare providers to locate new urgent care centers and outpatient facilities in underserved neighborhoods, where appropriate.
- 7-A.62** Use economic development efforts to recruit medical services to Redlands, including dentists, pediatricians, family physicians, and clinics that provide drug and alcohol treatment and counseling.

- 7-A.63** Assist with conversion of liquor stores to other retail that better meets community needs. Give priority to the conversion of those within a quarter-mile of schools and parks. Forms of support could include:

- Facilitating physical improvements (e.g., new freezers or coolers for perishables; new signs to change store names from "Liquor" to "Market");
- Assisting with business plan development to help owners find the right product fit for the community; and
- Hosting a semi-annual "check-in" open house for storeowners to trouble-shoot challenges associated with building maintenance, new products, and interactions with community members.

- 7-A.64** Work with interested organizations and residents to create a youth job development partnership, connecting local businesses with teens for after-school and summer work, volunteer positions, and other skills development opportunities.

- 7-A.65** Evaluate and make changes to the project review and permitting process to encourage and facilitate incorporation of universal life cycle design principles (design that promotes the ability to remain in one's house as one ages) in new residential development, allowing community members to stay in their homes and neighborhoods longer, thereby increasing community cohesion.

- 7-A.66** Expand access to health facilities through public transportation.

- 7-A.67** Consider zoning classifications changes to encourage more medical/professional service uses along Colton Avenue and Orange Street and other older commercial corridors.



## Crime Prevention and Safety Perception

Promoting community and pedestrian-oriented design and community partnerships to foster a populace invested in the community may deter crime and instill a sense of safety and pride in Redlands. The Redlands Police Department responds swiftly to crime incidents, but they alone cannot prevent crime from occurring. A limited number of residents participate in neighborhood watch programs, but improving the sense of ownership in one's neighborhood across Redlands will increase the number of "eyes on the street," and prevent crime before it happens. Similarly, incorporating crime-preventative measures into building, landscape, and public facility design can make great strides in improving the feeling of safety and community cohesion.



## POLICIES

### Principles

**7-P.23** Use planning and environmental design tools to deter crime, increase respect for neighbors and property, and improve the public perception of safety throughout the community.

**7-P.24** Encourage a sense of ownership, community pride and civic respect as a means of improving the safety and image of the city.

### Actions

**7-A.68** Incorporate Crime Prevention through Environmental Design principles and best practices into the Zoning Ordinance and project review procedures for new development and major renovations. Guidelines and checklists should include concepts such as:

- Natural Surveillance, e.g. orient buildings and windows to provide maximum surveillance of exterior areas, and locate entryways such that they are visible to adjacent neighbors or passersby;
- Natural Access Control, e.g. use landscaping such as low hedges and flowerbeds to identify points of entry and movement on property, and use signage and symbolic barriers to direct vehicular and pedestrian traffic;
- Natural Territorial Reinforcement, e.g. use thorny or thick plant materials in perimeter landscape areas to discourage cutting through parking areas and rear yards,

trampling vegetation, approaching ground floor windows, or climbing fences and walls;

- Maintenance, e.g. make it easier to maintain property by recommending graffiti-resistant surface materials, vandal-proof lighting, and landscaping selected for durability and easy maintenance; and
- Shared Facilities, e.g. promote activity in public areas throughout the day by coordinating shared uses of facilities (parking lots, parks, sports fields). Enforce property maintenance and environmental design regulations for businesses, especially "corner stores," including regulations for alcohol and tobacco advertisements. Assist storeowners in identifying low-cost solutions to maintenance issues and provide financial assistance to qualifying businesses. Continue to enforce provisions in the Municipal Code to manage alcoholic beverage sales locations and hold storeowners accountable for litter, graffiti, assault, prostitution, or other public nuisance connected to their stores.

**7-A.69** Ensure that Redlands has minimum illumination standards for streetlights and, if necessary, update the standards to reflect best practices for safety lighting.

**7-A.70** Continue community policing and relationship-building programs, including educational and mentoring initiatives with schools and the community center.

**7-A.71** Continue to involve residents in neighborhood improvement efforts, including those concerning safety, neighborhood character, planning, and revitalization.

**7-A.72** Enhance the aesthetics and quality of the housing stock and remove blight by implementing policies and programs identified in the Housing Element.

**7-A.73** Improve the sense of safety within Downtown, including the Redlands Mall area.



The Mill Creek Zanja flows west from Sylvan Park.

## 7.4 SAFETY

Environmental, seismic, and topographic conditions, and the patterns of urban development in Redlands can potentially pose risks to human health and property. This section identifies natural and manmade hazards that exist within Redlands, and seeks to mitigate their potential impacts through preventative and response measures.

### Hydrological Hazards

#### Drainage

The city generally drains from east to west to one of the two main existing major flood control facilities: The Santa Ana River and the San Timoteo Channel. The 2014 City of Redlands Drainage Master Plan divides the Planning Area into five watersheds or drainage areas, described below:

- **Zanja Watershed.** The Zanja is the largest watershed tributary to the Downtown area, consisting of 6,000 acres. This watershed includes the Crafton Hills area, which is composed mainly of flat agricultural lands lying mostly outside of city limits. Plans for flood control projects in this watershed include construction of the Opal Basin, and a storm drain that would intercept flows and allow them to bypass the Downtown area. The Drainage Master Plan also recommends increasing the drainage capacity of Redlands Boulevard.
- **Reservoir Canyon Watershed.** The second largest watershed area tributary to Downtown Redlands, this area includes the Oriental Storm Drain tributary. The area is hilly, with relatively steep slopes, with very little open space for potential detention/retention alternatives. Studies have been completed for this area to identify potential flood control mitigation efforts, but solutions are costly.

This area is one of the main contributors to the historical flooding of the Downtown area. Even with plans to construct Opal Basin and a diversion storm drain along the Zanja, flows from this area would still be expected to cause extensive flooding Downtown.

- **Downtown Watershed.** The Downtown watershed consists of the local drainage systems in the Downtown area, tributary to the Mission Creek channel at Alabama Street. Bounded by the I-10 freeway to the north and Zanja and Reservoir Canyon to the east, and approximately Orange/Pine Avenue to the south, this area primarily consists of dense residential and commercial development.
- **North City Watershed.** The North City Watershed lies north of the I-10 Freeway, and south of the Santa Ana River. The watershed is not a tributary to the Downtown area. This watershed is relatively flat, and is composed of residential, agricultural, and industrial land uses. The construction of Seven Oaks Dam has mitigated the flooding potential for the northern portion of this area, adjacent to the Santa Ana River.
- **South City Watershed.** The South City Watershed consists of the drainage area south of downtown, tributary to Mission Creek. This area consists of hillside, residential, and open space. Existing storm drains and drainage courses in this area do not necessarily follow the alignments of the existing roads, but rather meander through the open space as “open channels.”

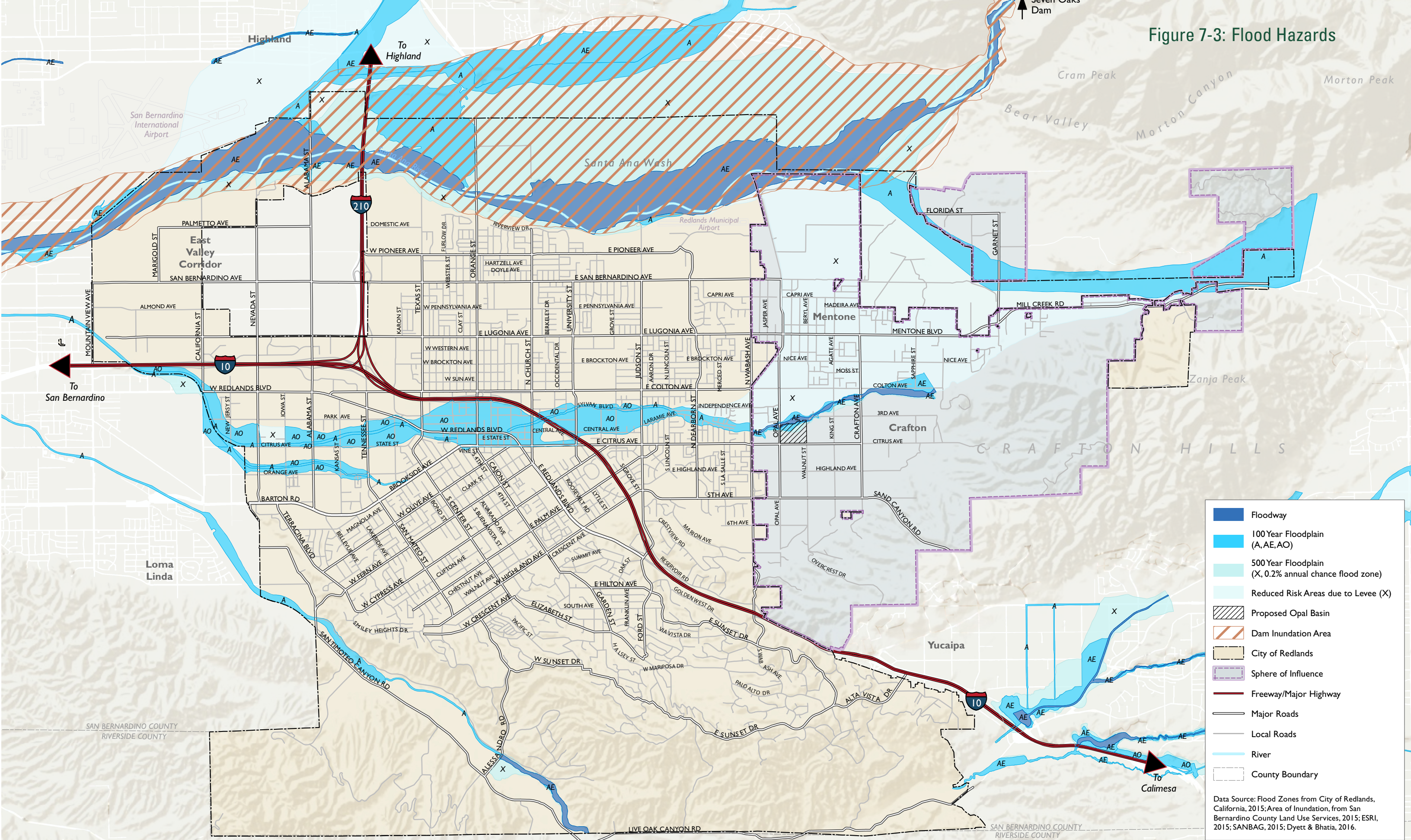
#### Flooding

Flooding has historically been a concern in the Planning Area, where moderate to heavy storms can overwhelm the area’s drainages and intermittent waterways. The city’s flood control system consists of ultimate and interim channels, storm drains, levees, basins, and dams managed by the San Bernardino County Flood Control District.

The Federal Emergency Management Agency (FEMA) issues Flood Insurance Rate Maps (FIRM) describing flood hazard zones for the Planning Area. As shown in Figure 7-3, areas prone to flooding can be found in the north, south, and central portions of the Planning Area. Areas with a 1-percent annual chance of flooding are generally mapped along the Santa Ana River wash, along San Timoteo Canyon, and along the Zanja watercourse from Loma Linda through Downtown and Crafton. Areas with shallow flooding (AO zones) are mapped along the Zanja and pass through Downtown.

New development in flood prone-areas should follow appropriate design standards with the understanding that a flood event is likely to occur. Development throughout the watershed may also be encouraged to help reduce the flooding impact of a storm event by enhancing the city’s green infrastructure system to complement its grey infrastructure. Land use actions to minimize flooding include preserving open space; protecting natural floodplain functions; regulating development in the floodplain as well as the watershed as a whole; addressing flood-prone properties through acquisition, relocation, or protection; and improving maintenance of the drainage system.

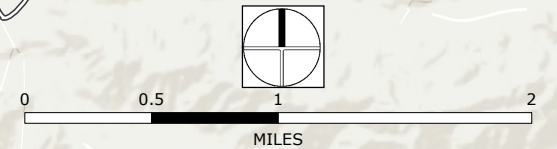
Figure 7-3: Flood Hazards



**Legend**

- Floodway
- 100 Year Floodplain (A, AE, AO)
- 500 Year Floodplain (X, 0.2% annual chance flood zone)
- Reduced Risk Areas due to Levee (X)
- Proposed Opal Basin
- Dam Inundation Area
- City of Redlands
- Sphere of Influence
- Freeway/Major Highway
- Major Roads
- Local Roads
- River
- County Boundary

Data Source: Flood Zones from City of Redlands, California, 2015; Area of Inundation, from San Bernardino County Land Use Services, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.



## Dam Inundation

Dam failure can result from causes such as earthquakes, erosion, improper siting, rapidly rising floodwaters, or structural/design flaws, and can result in severe flooding in downstream areas. Dams upstream from the Planning Area include the Seven Oaks Dam and the Bear Valley Dam. The Seven Oaks Dam, a flood control project that is part of the Santa Ana River Mainstem Project, is the closest dam upstream of the Planning Area. The Bear Valley Dam is located five miles north of the Planning Area. The flood inundation hazard area defined in the San Bernardino Land Use Plan Hazard Overlays covers areas downstream of the Bear Valley Dam and the Seven Oaks Dam. In the case of dam failure, flood waters are projected to flow as far as the bluffs south of the Santa Ana River Wash (Figure 7-3).

## POLICIES

### Principles

- 7-P.25** Protect lives and property and ensure that structures proposed for sites located on flood plains subject to the 100-year flood are provided adequate protection from floods.
- 7-P.26** Preserve as open space those areas that cannot be mitigated for flood hazard.
- 7-P.27** Support a multi-use concept of flood plains, flood-related facilities, and waterways, including, where appropriate, the following uses:
- Flood control;
  - Groundwater recharge;
  - Mineral extraction;
  - Open space;
  - Nature study;
  - Habitat preservation;
  - Pedestrian, equestrian, and bicycle circulation; and
  - Outdoor sports and recreation.

### Actions

- 7-A.74** Continue participation in the National Flood Insurance Program (NFIP) and the Community Rating System to ensure that the City is incentivized to reduce the risk of damage from flooding and improve flood preparedness.
- 7-A.75** Consider the impacts to health and safety from potential flooding on future development in flood-prone areas, including Downtown Redlands. Ensure that new development follows appropriate design standards.
- 7-A.76** Reduce the flooding impact of a storm event by enhancing the city's green infrastructure system to complement its grey infrastructure throughout the watershed.
- 7-A.77** Seek funding to implement the improvements detailed in the Drainage Master Plan.
- 7-A.78** Use the Drainage Master Plan to implement improvements to the drainage system in order to address flooding impacts. Where feasible, use "green initiatives" identified in the Master Plan to install site infiltration basins and bio-retention facilities in places where they may be most effective.
- 7-A.79** In the event of failure of the Seven Oaks or Bear Valley dams, implement emergency measures consistent with the City's Local Hazard Mitigation Plan and Emergency Operations Plan.
- 7-A.80** Coordinate with the U.S. Army Corps of Engineers and San Bernardino County throughout the construction, mitigation, and operation of the various compo-

nents/projects that make up the "Santa Ana River Mainstem Project" that will directly affect the Planning Area. These projects include the following: The Seven Oaks Dam, the improvement to the Mill Creek levees (completed), and the planned improvements along the three reaches of the San Timoteo Creek Project.

- 7-A.81** Work with FEMA to ensure that the City's flood plain information is up-to-date with the latest available hydrologic and hydraulic engineering data.
- 7-A.82** Investigate and plan for increased flooding hazards due to climate change. Develop strategies to adapt to changing flood hazard conditions, including those related to monitoring, emergency preparedness, vegetation management, and development policies, and ensure that the City's hazard information is up to date regarding climate trends.

## Fire Hazards

### Fire Hazard Setting

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped fire threat potential throughout California. CAL FIRE ranks fire threat according to the availability of fuel and the likelihood of an area burning (based on topography, fire history, and climate). The rankings include little or no fire threat, moderate, high, very high, and extreme fire threat. Redlands has a range of fire hazards from little to no threat to extreme threat.

In the Planning Area, the highest fire risk areas are in San Timoteo and Live Oak Canyons where the threat from wildfire is the highest. Crafton Hills is another higher risk area, situated in the northeast area of the city and in the Redlands Sphere of Influence. Prolonged droughts coupled with high winds and dry vegetation during the summer time creates the highest fire risk in these areas. Left uncontrolled, these fires have the potential to damage or destroy structures, roadways, and utility systems, and disrupt the economy.

### Urban Fire

On the south side of the city, the urban forest has a high fire severity threat for vegetation fires. This area consists mostly of single-family homes that have been forced to reduce watering days on their property due to drought. The dry nature of the vegetation adds to the fire danger during the dry summer months. The Downtown area consists of mostly traditional store-front structures that are served by public water and ample hydrants; however, as new development continues to occur, water resources may become taxed during droughts. The West End contains many newer warehouse, logistics, and distribution centers as well as apartment complexes where the risk is lower.

Urban fire risk in Redlands is greatest in older structures and in neighborhoods built before modern building codes for fire safety and building systems

were in place. Other factors affecting urban fire risk and relative likelihood of loss of life or property include building age, height and use, storage of flammable material, building construction materials, availability of sprinkler systems, and proximity to a fire station and hydrants. Each year, Redlands averages 264 fires, including 64 vegetation fires, 53 structure fires, 47 vehicle fires, and 100 miscellaneous fires. Most urban fires can be extinguished within a few hours.

Redlands' fire service responsibilities extend beyond fire suppression to include a range of paramedic, technical rescue, hazardous materials, and lifeline services. Approximately 75 percent of Redlands Fire Department calls (more than 8,000 calls annually) are for medical services. The Redlands Fire Department also responds to about 650 traffic collisions each year. While the plurality of emergencies are medical emergency related, staff hours spent on non-medical emergency responses make up the majority of hours spent on all emergencies.

The Redlands Fire Department has automatic mutual aid agreements with all surrounding fire agencies. The City's agreements with Loma Linda Stations 251 and 252 (to the west) and San Bernardino County Fire (Mentone Station 9 to the east, City of San Bernardino Station 228 and 231 to the north west) are facilitated by a consolidated dispatch center operated by CONFIRE. CONFIRE is a multi-agency organization that functions as the result of a 25-year Joint Powers Agreement for the collective provision of fire, rescue, and emergency medical dispatch services.

The Redlands Fire Department also has a mutual aid agreement with Riverside County to the south, the City of Highland to the north, and the City of Yucaipa to the east. Response times are typically longer as these agencies are dispatched by different centers, and a delay of 2 to 5 minutes can be expected on incidents in which they are not independently made aware of

the emergency. This delay is caused when the initial dispatching agency has to manually telephone the other agencies and ask for the necessary units.

### Wildland Fire

Wildland fire is a much larger concern in Redlands. This is particularly true in San Timoteo Canyon and Live Oak Canyon. Vegetation in these areas includes annual grasses and a variety of brush with low fuel moisture that are highly susceptible to and capable of carrying fire. Accompanied by drought conditions, extreme topography, and high winds, these fires can be devastating. Most of the city's large wildfires have occurred in these areas. In the last 20 years, there were

30 fire perimeters captured. These fires damaged 14 structures, 75 properties (parcels), and a total of 452 acres.



*The dry conditions and topography of the canyon areas pose a significant risk for wildfire hazards.*

Redlands has Local Responsibility Areas (LRAs) consisting mostly of the developed areas in the south part of the city, which encompass roughly 35 percent of the Redlands Fire Department’s coverage area. Portions of the Planning Area are also designated as State Responsibility Areas (SRAs), areas where the State of California is financially responsible for the prevention and suppression of wildfires. As shown in Figure 7-4, these areas are limited to the Crafton Hills outside of Redlands city limits. Some small areas of the Santa Ana River Wash are designated as Federal Responsibility Areas (FRAs).

The canyon area is designated as Resource Preservation in the land use map, which permits only very low residential densities of a maximum of one dwelling unit per acre, graduating to one dwelling unit per 10 acres depending on slope and other site conditions. In addition, the City has continually purchased land within the canyons and kept it in preserve as open space. These include areas north of Live Oak and San Timoteo Canyon Roads that are designated as high, very high, and extreme fire level threat. As open space, the area cannot be used for residential development; however, there are pocket developments that are exacerbating the wildland-urban interface (WUI) fire problem. There are no critical public facilities such as police, fire, or school facilities in the canyons; however, there is a railway that serves as one of the primary transportation arteries between Los Angeles and the rest of the country. A portion of Redlands Community Hospital lies adjacent to a high fire threat area.

Per the California Building Code, all new structures are required to install sprinklers and retain ample on-site storage of water to serve the system. The City also requires adequately sized on-site reservoirs to provide fire flow requirements.

The Crafton Hills area, which is within the Sphere of Influence, but not Redlands city limits, is another high fire threat area. While land use authority resides with the County of San Bernardino, the Redlands designated land uses are very low density designations. These include Rural Living, which carries a minimum five-acre lot size for slopes of 0 to 15 percent; and Hillside Conservation, which carries a maximum of one dwelling unit per 40 acres for slopes greater than 40 percent. A small portion of Crafton Hills that falls within the city limits was re-designated as Open Space and cannot be used for any type of residential, commercial, or industrial development.

### Insurance

The Insurance Service Office (ISO) is a leading source of information about property casualty insurance risk for local government. ISO helps establish fire insurance premiums for residential and commercial properties based in part on a city’s fire protection rating. ISO rankings are based on four criteria: a community’s emergency communications, fire department equipment and operations, and water supply. The ISO rates each community’s fire suppression system on a 10-point scale, with one (1) being the highest ranking that can be achieved. Redlands had maintained a Class 2/9 ISO rating from 2005 to 2013. The most recent evaluation dropped to a Class 3/9 ISO rating.

### Fire Stations

Redlands has four fire stations that provide service to the city. The equipment and staffing is listed in Table 7-6 below. The locations of the stations are depicted in Figure 7-4.

In addition, Table 7-7 lists neighboring stations that are located nearby and are able to provide fire service per mutual aid agreements.

**TABLE 7-6: FIRE SERVICES**

Station and Location	Equipment	Daily Staffing
Fire Station 261 525 E. Citrus Ave.	(1) Medic Engine Type 1, (1) Medic Truck, (1)Utility Vehicle, (1) Reserve Truck, (1) Type 3 (OES), (1)Res Engine Type 1, (1) BC (per day), (1) Res BC	7 personnel
Fire Station 262 1690 Garden Street	(1) Medic Engine Type 1 (1) Brush Engine Type 3	3 personnel
Fire Station 263 10 W. Pennsylvania Ave.	(1)Medic Engine Type 1, (1) Water Tender and (1) Incident Support Vehicle, (1)Res Type 1	3 personnel
Fire Station 264 1270 W. Park Ave.	(1)Medic Engine Type 1 (1) Medic Squad, (1)Brush Engine Type 3 and (1) Reserve Medic Squad	5 personnel

Source: Redlands Fire Department, 2016.

**TABLE 7-7: NEIGHBORING FIRE SERVICES**

Station and Location	Equipment	Daily Staffing
Crafton Fire Station No. 2 32664 Yucaipa Blvd.	1 Front Line Type I Fire Engine 1 Reserve Type I Fire Engine 1 Type II Fire Engine	3 personnel
Mentone Medic Engine 9 1300 Crafton Avenue Mentone, CA 92359	Type I and III, Utility Vehicle	3 personnel
Loma Linda 251 11325 Loma Linda Drive Loma Linda, CA 92354	Medic Truck Brush Engine Incident Support Vehicle ARV – off road vehicle	3 personnel
Loma Linda 252 10520 Ohio Street Loma Linda, CA 92354	Medic Engine Water Tender	3 personnel
San Bernardino Fire Station 233 – SBIA Norton Training 165 S. Leland Norton Way, Bldg. 680 San Bernardino, CA 92408	-0-	Not staffed, as needed basis only
San Bernardino Fire Station 228 3398 E. Highland Avenue San Bernardino, CA 92346	Type I and III Medic Engine - ALS	3 personnel
San Bernardino Fire Station 231 450 E. Vanderbilt Drive San Bernardino, CA 923408	Medic Engine - ALS	3 personnel

Source: Redlands Fire Department, 2016.

The Redlands Fire Department recognizes two response time standards:

- NFPA 1710, which calls for the first arriving unit to arrive within 4 minutes 90 percent of the time; and
- A more lenient standard recommended by the Citygate Associates High-Level Fire Department Review of 2008, which calls for the first unit arriving within seven minutes 90 percent of the time.

The Redlands Fire Department 90 percent Fractal is 9 minutes, which is over twice the NFPA and 2 minutes beyond the Citygate guidelines. In order to meet minimum response times, more fire stations and staff will be required.

### Water Supply

The Redlands Fire Department requires a minimum flow of water for fire protection in accordance with the adopted amended California Fire Code and the ISO standards. Redlands adheres to fire infrastructure and flow requirements in accordance with the California Fire Code (2013), National Fire Protection Association standards, and local standards. Redlands

Fire Development Guidelines show the City’s fire flow standards for new development projects, as described in Table 7-8.

Redlands’ water system (water lines, tanks, pump stations, etc.) is sized to handle the needs of the city. For more than 90 years, the City of Redlands has been in charge of providing high-quality drinking water to the Redlands and Mentone areas. For more information on the water system, see Chapter 4.

Water supplies can be interrupted or curtailed due to drought, fire, earthquake, or power failure. In case of emergency, MUED maintains backup generators for critical infrastructure to avoid supply interruptions. MUED can maintain or supplement water supplies through interties with adjacent water companies or standby production wells. Critical facilities are compliant with State seismic safety standards.

### Fire Access Standards

Clear emergency vehicle access to buildings is important. Such access is regulated by the adopted and amended California Fire Code and Redlands land development engineering standards. Under the current Fire Code, all portions of a building shall

be within 150 feet of a serviceable fire access road. Redlands has adopted the California Fire Code (CFC) with amendments to address local fire hazard concerns. Specific requirements for fire access include:

- **Roadway Design.** Access roads and public and private streets shall not exceed a 12 percent grade, shall be capable of supporting 75,000 pounds, and shall be built with all-weather driving capabilities.
- **Subdivision Access.** Subdivisions must have two points of vehicular ingress and egress from streets, one of which may be used for emergency purposes only.
- **Road Widths.** Roads shall be at least 24 feet wide citywide and allow for two-way traffic; emergency vehicle access only is required to have a 20-foot minimum width.
- **Bridge Design.** Per the California Fire Code, access bridges meet nationally recognized design standards, including a capability of supporting 75,000 pounds.
- **Project Perimeter.** Projects must provide adequate vehicular access for firefighting vehicles to the perimeter of a project that is adjacent to a fuel modified area or fire hazard area.

Some areas of the community have obstacles for fire suppression in regards to access. Measure U, passed by Redlands residents in 1997, established principles of managed development, which have resulted in some streets being recirculated, thus increasing the response time for suppression. Alternative measures to maneuver within the community, such as traffic signal preemption through Opticom, would greatly benefit the ability of the Fire Department to arrive on scene in a safe and more timely manner.

### Vegetation Management

A fire protection plan (FPP), approved by the fire code official, is required for all new development within the WUI area. FPPs are required to include mitigation measures consistent with the unique problems resulting from the location, topography, geology, flammable vegetation, and climate of the proposed site. FPPs must address water supply, access, building ignition and fire resistance, fire protection systems and equipment, defensible space, and vegetation management, and must be consistent with the requirements of California Building Code Chapter 7A, the International Wildland-Urban Interface Code, and the Redlands Municipal Code.

### Building and Signage Standards and Regulations

Redlands has adopted the latest edition of the California Fire Code, with all appendices, and amended it to address local concerns. The Fire Marshal reviews plans for structures and buildings citywide, including fire-prone areas. Checklists are used to address fire code requirements, including but not limited to: street and building signage, water supply, water infrastructure, sprinkler requirements, building requirements (sprinklers, smoke detectors, roofing, etc.), access roads, and vegetation management, among others.

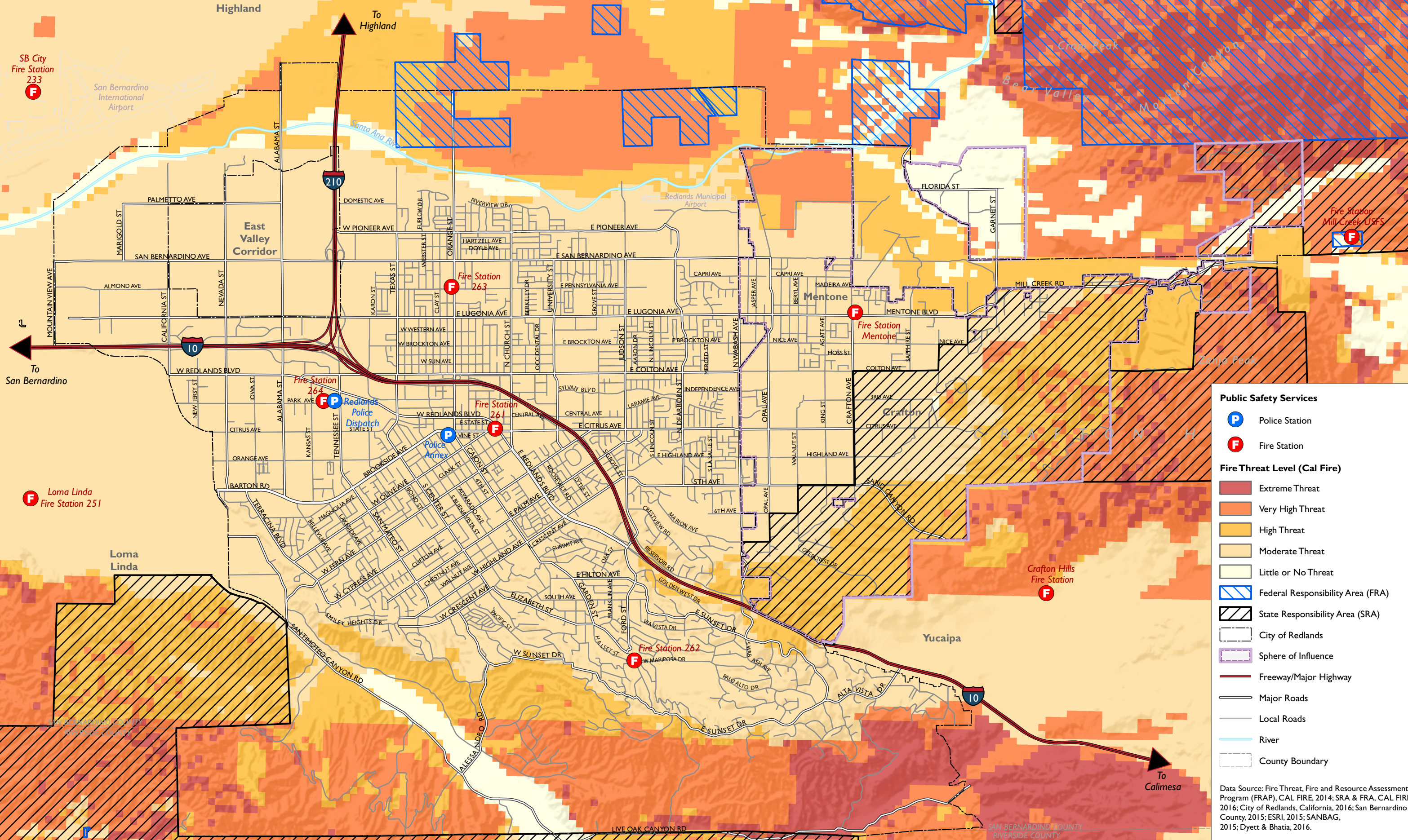
The City enforces uniform building address and street sign letters as found in section 505.1 of the California Fire Code, which establishes requirements for the design and display of approved address numbers, building numbers, or approved building identification on new and existing buildings to ensure legibility and visibility from the street or road fronting the property.

**TABLE 7-8: FIRE FLOW STANDARDS FOR NEW DEVELOPMENT**

Type of Development	Flow (gpm)	Duration (hours)	Fire Hydrants
Detached Single Family Residential	1,500	2	2
Attached Multifamily Residential	3,000	2	3
Light Commercial/Industrial (incl. schools)	3,000	3	3
Heavy Commercial/Industrial	5,000	4	4

Source: CFC 2013 - Appendix B (table B105.1).

Figure 7-4: Fire Hazards



**Public Safety Services**

- P** Police Station
- F** Fire Station

**Fire Threat Level (Cal Fire)**

- Extreme Threat
- Very High Threat
- High Threat
- Moderate Threat
- Little or No Threat

**Responsibility Areas**

- FRA:** Federal Responsibility Area
- SRA:** State Responsibility Area

**City of Redlands**

- City of Redlands
- Sphere of Influence

**Roads**

- Freeway/Major Highway
- Major Roads
- Local Roads

**Other Features**

- River
- County Boundary

**Data Source:** Fire Threat, Fire and Resource Assessment Program (FRAP), CAL FIRE, 2014; SRA & FRA, CAL FIRE, 2016; City of Redlands, California, 2016; San Bernardino County, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.





# POLICIES

## Principles

**7-P.28** Work to prevent wildland and urban fire, and protect lives, property, and watersheds from fire dangers.

## Actions

**7-A.83** Adhere to the requirements for high fire hazard areas designated by the Redlands Fire Department on the official Roof Classification Zone Map, and as specified in the document on file at the Redlands Fire Department describing High Fire Hazard Area Fire Safety Modification Zones.

**7-A.84** Maintain and update the high fire hazard areas map consistent with changes in designation by CAL FIRE.

**7-A.85** Update as needed the City’s High Fire Severity Areas to ensure that the Fire Department is protecting the community from wildland-urban fires as future development takes place.

**7-A.86** Continue to provide weed abatement services in High Fire Severity Areas in order to curb potential fire hazards.

**7-A.87** Provide appropriate staffing, equipment, and facilities to maintain an Insurance Service Office (ISO) Rating of 3 or better.

**7-A.88** Monitor fire-flow capability throughout the Planning Area, and improve water availability and redundancy if any locations have flows considered inadequate for fire protection. Continue to work with various water purveyors to maintain adequate water supply and require on-site water storage for areas where municipal water service is not available.

**7-A.89** Require adherence to applicable buildings codes and standards in accordance with Fire Hazard Overlay Districts, California Fire Code, and the California Building Code.

**7-A.90** Ensure that all new development located in a Very High Fire Hazard Severity Zone or a State Responsibility Area (SRA) is served by adequate infrastructure, including safe access for emergency response vehicles, visible street signs, and water supplies for fire suppression.

**7-A.91** Ensure, where feasible, that essential public facilities are located outside of high fire risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities. If locating such facilities outside of high fire risk areas is not feasible, identify construction methods and other mitigation measures to minimize risks.

**7-A.92** Continue to inspect and enforce areas within High Fire Severity Areas for fuel modification and fire safe landscaping. Work with property owners to maintain defensible space and provide public awareness of wildland-urban interface hazards.

*The Fire Department can provide examples of appropriate vegetation management through activities such as updating and maintaining the City’s fire safe landscape garden.*

**7-A.93** Require that new development minimizes risks to life and property from fire hazard through:

- Assessing site-specific characteristics such as topography, slope, vegetation type, wind patterns etc.;
- Siting and designing development to avoid hazardous locations;
- Incorporating fuel modification and brush clearance techniques in accordance with applicable fire safety requirements and carried out in a manner which reduces impacts to environmentally sensitive habitat to the maximum feasible extent;
- Using appropriate building materials and design features to ensure the minimum amount of required fuel modification; and
- Using fire-retardant, native plant species in landscaping.

**7-A.94** Avoid, where feasible, approving new development in areas subject to high wildfire risk. If avoidance is not feasible, condition such new development on implementation of measures to reduce risks associated with that development.

**7-A.95** Coordinate with the Redlands Fire Department and other fire prevention agencies to review all applications for new development. The Fire Department’s review should ensure compliance with fire safety regulations and assess potential impacts to existing fire protection services and the need for additional and expanded services.

**7-A.96** Ensure that all-weather access is provided for all new development, with adequate clearance for emergency vehicles, designed in accordance with

the California Fire Code, and ensure that all roads, streets, and major public buildings are identified in a manner that is clearly visible to fire protection and other emergency vehicles.

**7-A.97** Monitor methane gas production at active and inactive landfills and take preventive action if gas production creates a significant fire hazard.

**7-A.98** Devise alternative fire protection standards suitable for Rural Living areas not exposed to high wildland fire hazards.

**7-A.99** Consult the San Bernardino County Fire Safety Overlay Ordinance for possible appropriate implementation measures for development in the foothills area.

**7-A.100** Require that all projects proposed in areas that are at risk from wildfire adhere to requirements under Redlands Fire Department Prevention Standard “Fire Safety Modification Zones 1 and 2.”

**7-A.101** Work cooperatively with the San Bernardino County Fire Department, CAL FIRE, and fire protection agencies of neighboring jurisdictions to ensure that all portions of the Planning Area are served and accessible within an effective response time and to address regional wildfire threats.

**7-A.102** Educate the public about fire prevention. Work with State and other agencies to educate property owners on fire risks and measures to reduce those risks.

**7-A.103** Work with State, County and local agencies as well as nongovernmental organizations to plan for post-fire recovery in a manner that reduces further losses or damages from future fires.



- 7-A.104** Monitor the status of critical infrastructure after major fire incidents to minimize further damage to the land, community, and residents.
- 7-A.105** Continue to encourage inter-departmental cooperation within the City to identify critical facilities and structures that may be at risk of fire and to develop strategies to eliminate or minimize fire hazards.
- 7-A.106** Expand on the Department's Community Risk Reduction measures by re-evaluating the risk analysis for the City.

## Seismic and Geologic Hazards

### Seismicity

The Planning Area is bound to the northeast by the San Andreas fault zone and to the southwest by the San Jacinto fault zone. It is traversed by the Crafton Hills fault zone through southern Redlands, Crafton, and Mentone. Portions of these fault zones are designated Alquist-Priolo fault zones, as shown in Figure 7-5. Though the majority of the Alquist-Priolo designated zones are outside of the Planning area, some of these faults extend into the southwest and northeast portions of the Planning Area. In addition, the Reservoir Canyon fault of the Crafton Hills fault zone, which crosses the unincorporated portion of the Planning Area and part of southeast Redlands, is within a San Bernardino County-designated fault zone.

Given the Planning Area's location in a seismically active region, potential for seismic hazard is high. These hazards may be addressed through adherence with existing building codes and state and local regulations, though exposure to seismic risks cannot be completely eliminated.

### Groundshaking and Surface Rupture

Groundshaking during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Likewise, the composition of underlying soils can intensify groundshaking. Groundshaking is more pronounced in areas of unconsolidated alluvium, which tend to transfer relatively greater intensities of motion to the surface during a seismic event. As much of the Planning Area is situated on alluvial deposits, there is potential for severe groundshaking impacts.

Surface rupture results from the displacement of the ground surface along a fault or a portion of a fault. Areas at risk from surface rupture are those overlying

active faults. Structures built above an active fault are at risk of being torn apart or losing integrity in case of a surface rupture. Faults are shown in Figure 7-5.

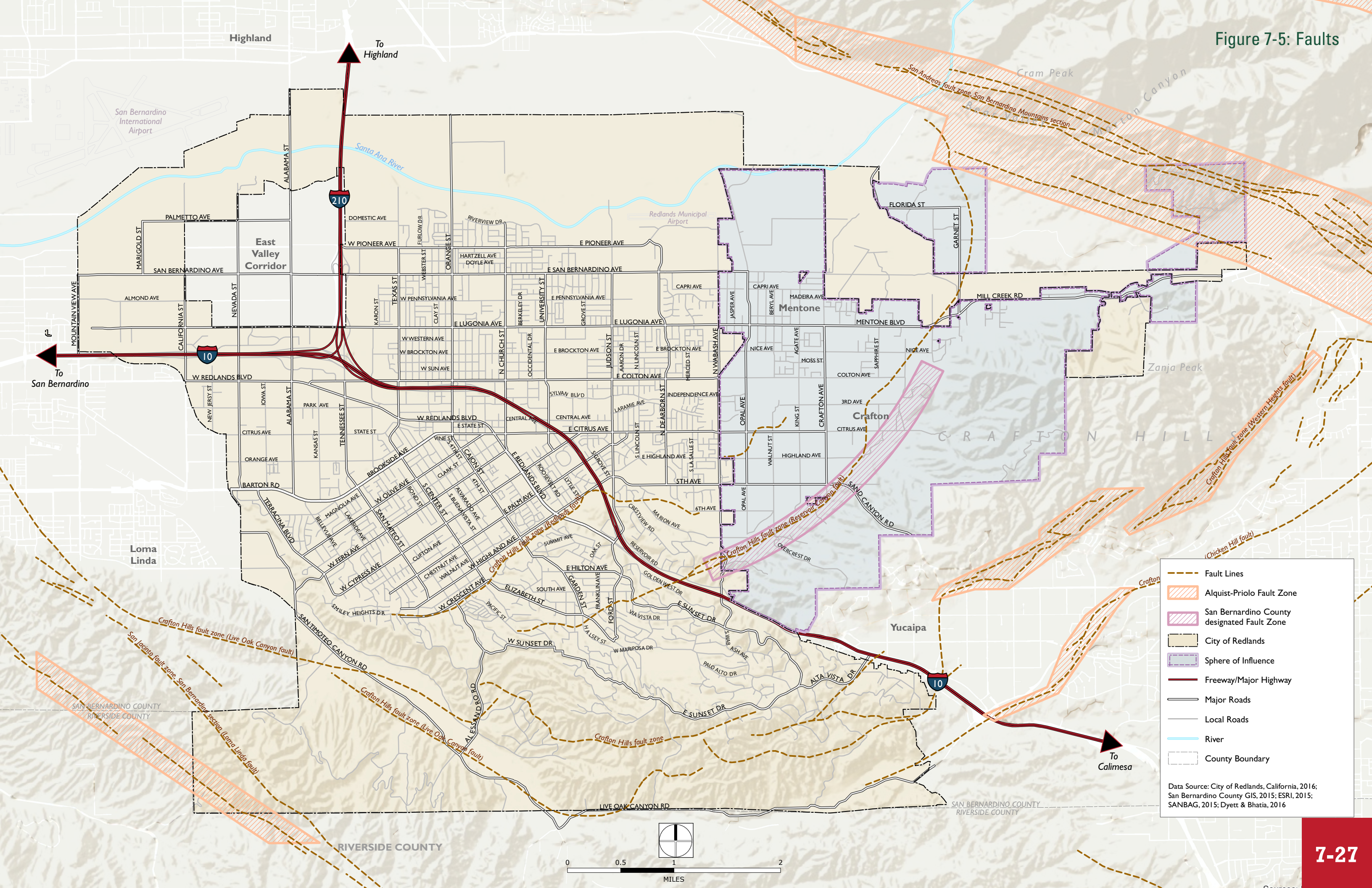
### Liquefaction

Liquefaction occurs when vibrations or water pressure within the soil causes the particles to lose contact with one another and behave like a liquid. Younger soils or recent deposits, such as alluvium, are more prone to being unconsolidated than older materials; thus, they are more prone to liquefaction, as are wet soils. Areas located along waterways tend to have the highest susceptibility to liquefaction as a result of their recent alluvial deposits and high groundwater levels. Liquefaction hazards are shown in Figure 7-6. As shown, the only portions of the Planning Area mapped with liquefaction susceptibility are along the Santa Ana River wash and in Mentone. However, because a majority of the Planning Area, including downtown sections, is situated upon alluvial fan deposits, there may be potential for impacts related to liquefaction as the result of severe seismic shaking.

### Landslides and Erosion

The majority of soils located in the Planning Area are well-drained, and surface erosion and slides are not common conditions. However, segments of San Timoteo Canyon, Live Oak Canyon, and the southwestern edge of the Crafton Hills are exceptions, as they contain weakly consolidated Saugus soils. On slopes greater than 30 percent, these soils are subject to rapid runoff and present moderate to high erosion hazards. Slope collapse or landslides resulting directly from earthquakes can occur in areas of moderate or even low susceptibility in a strong earthquake. Slides are more likely to occur during the wet season and in areas of high groundwater and saturated soils. Data from USGS indicates some land having medium to high susceptibility for landslides in the Planning Area, as shown in Figure 7-6.

Figure 7-5: Faults



	Fault Lines
	Alquist-Priolo Fault Zone
	San Bernardino County designated Fault Zone
	City of Redlands
	Sphere of Influence
	Freeway/Major Highway
	Major Roads
	Local Roads
	River
	County Boundary

Data Source: City of Redlands, California, 2016; San Bernardino County GIS, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016

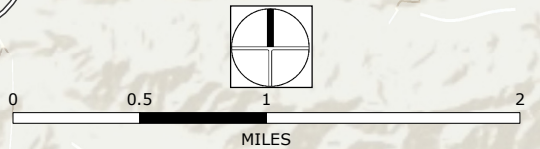
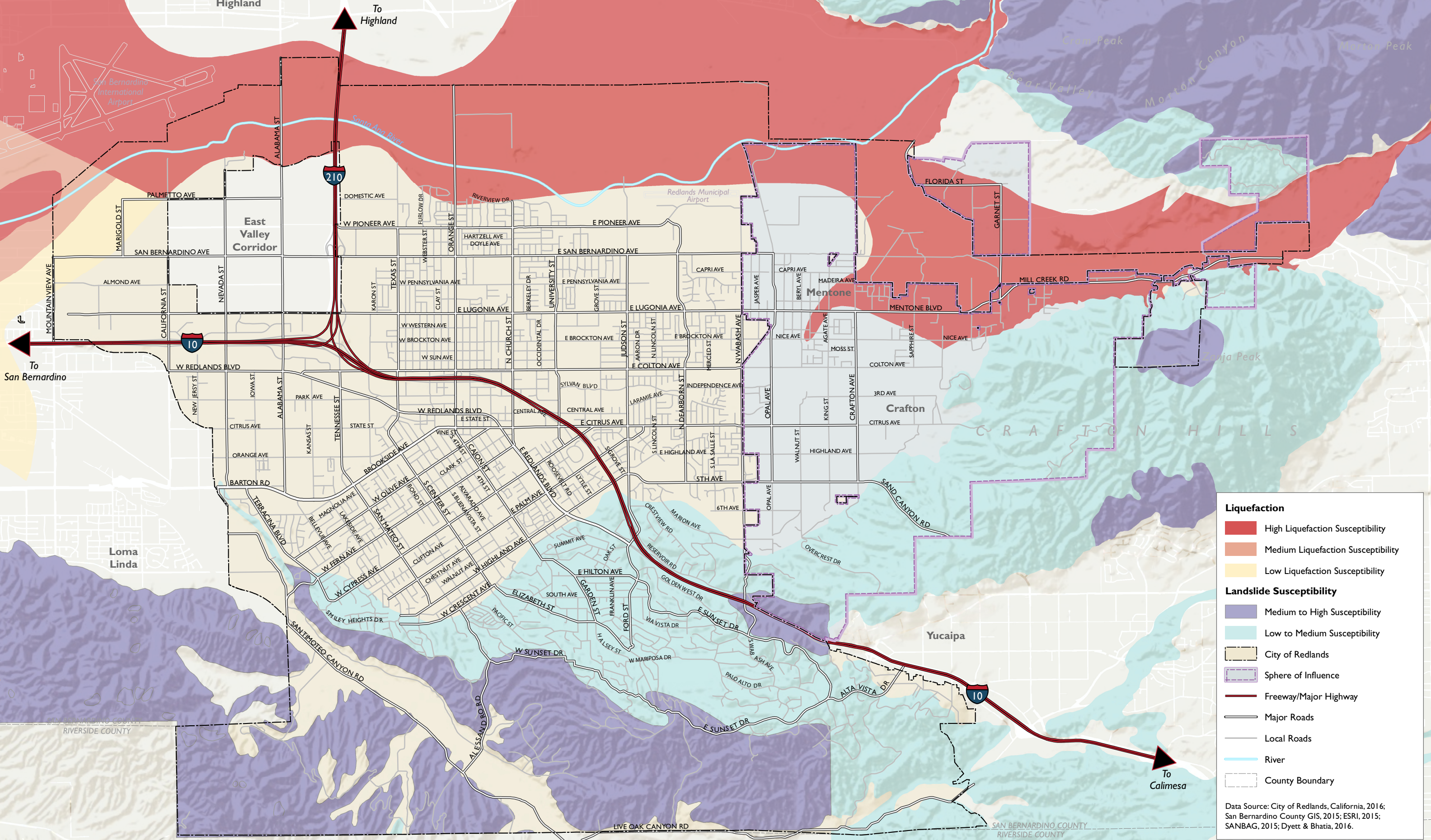


Figure 7-6: Liquefaction



**Liquefaction**

- High Liquefaction Susceptibility
- Medium Liquefaction Susceptibility
- Low Liquefaction Susceptibility

**Landslide Susceptibility**

- Medium to High Susceptibility
- Low to Medium Susceptibility

**Other Symbols:**

- City of Redlands
- Sphere of Influence
- Freeway/Major Highway
- Major Roads
- Local Roads
- River
- County Boundary

Data Source: City of Redlands, California, 2016; San Bernardino County GIS, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.

# POLICIES

## Principles

- 7-P.29** Investigate and mitigate geologic and seismic hazards or locate development away from such hazards, in order to preserve life and protect property.
- 7-P.30** Support implementation of San Bernardino County General Plan policies relating to geologic and seismic hazards in unincorporated areas and consult with the San Bernardino County Geologist where conflicting information exists or where no published information is available.

## Actions

- 7-A.107** Continue to restrict development within Alquist-Priolo Earthquake Fault Zones and along other active and potentially active faults that have not yet received Alquist-Priolo classification.
- 7-A.108** Refer to the latest fault maps. Consult with the Division of Mines and Geology if there are issues or questions concerning fault alignment. Evaluate and, if necessary, perform site-specific investigation for development proposed on or near Alquist-Priolo Earthquake Fault Zones as well as within 500 feet of other active/potentially active faults.
- 7-A.109** Require areas identified as having significant liquefaction potential (including secondary seismic hazards such as differential compaction, lateral spreading, settlement, rock fall, and landslide) to undergo geotechnical study prior to development and to mitigate the potential hazard to a level of insignificance or,

if mitigation is not possible, to preserve these areas as open space or agriculture.

- 7-A.110** Use the building inspection program to inventory and evaluate earthquake hazards in existing buildings, especially buildings with unreinforced masonry (URM), using the most current seismic design standards and hazard reduction measures, and continue the program for the systematic upgrading of seismically unsafe buildings. Continue to explore measures to induce building owners to upgrade and retrofit structures to render them seismically safe.
- 7-A.111** Undertake review of critical facilities that may be vulnerable to major earthquakes, and develop programs to upgrade them.
- 7-A.112** Develop a City-based public awareness/earthquake preparedness program to educate the public about seismic hazards and what to do in the event of an earthquake.
- 7-A.113** Continue to regulate development on slopes greater than 15 percent (15-foot rise in 100 feet run) to minimize soil erosion, landslides, water runoff, flood hazards, loss of habitat, and wildfire hazards. For land exceeding 30 percent slope, limit density to one housing unit per 10 acres or more, or one housing unit per parcel existing on the date of adoption of the General Plan if under 10 acres. Transferring densities from steeper areas to flatter portions of the site is desirable and preferred.

- 7-A.114** For new construction and exterior building expansions including multi-story additions or lateral expansions as deemed appropriate by the City Building Department, require the preparation of a geotechnical/soils/geologic report by a registered civil geotechnical/soils engineer and a certified engineering geologist. This report shall address erodible or expansive and collapsible soils, existing or potential landslides, areas with unsuitable percolation characteristics, large-scale subsidence, non-rippable bedrock areas, ground motion parameters, active/potentially active faulting, liquefaction, and any other geotechnical concepts as appropriate, and make recommendations for mitigating any potential adverse impacts.

- 7-A.115** Require soil erosion mitigation during construction.

- 7-A.116** Adopt revisions of the California Building Code that incorporate the most current seismic design standards and hazard reduction measures recommended by the Applied Technology Council (ATC), the Structural Engineers Association of California (SEAOC), the Earthquake Engineering Research Institute (EERI), the Seismic Safety Commission, and the Southern California Earthquake Center.

- 7-A.117** Use the Local Hazard Mitigation Plan and Emergency Operations Plan to address issues related to seismic hazards, including hazardous materials incidents, hazardous buildings, critical facilities (i.e., schools, hospitals), emergency response preparedness and recovery with consideration to evacu-

ation routes, peak load water supply requirements, and minimum road-width/clearance around structures.

- 7-A.118** Require geotechnical studies for development in areas where sewers are not available to ensure that the surrounding soil can support alternative wastewater disposal systems.

## Other Hazards

### Hazardous Materials

San Bernardino County Fire serves as the Certified Unified Public Agency (CUPA) for the Redlands Fire Department, and is responsible for inspecting facilities that handle hazardous materials, generate or treat hazardous waste, and/or operate an underground storage tank. The Redlands Fire Department responds to situations where local traffic accidents lead to a spillage of hazardous materials. Additional governmental agencies help protect Redlands from hazardous waste and materials. The County CUPA program covers seven areas:

- Aboveground Petroleum Storage Act (APSA) Program
- Area Plans for Hazardous Materials Emergencies
- California Accidental Release Prevention (CalARP) Program
- Hazardous Materials Release Response Plans and Inventories
- Hazardous Material Management Plan (HMMP)
- Hazardous Waste Generator Program
- Onsite Waste Treatment Program
- Underground Storage Tank Program

While Redlands does not have large hazardous waste generators or facilities typical for cities, other facilities present key fire hazards. Southern California Gas Company operates a natural gas fired electric generation plant on Mountain View Avenue and a high pressure gas transmission and distribution pipeline that extends along I-10.

High pressure gas lines run along Mountain View Avenue on the western edge of the Planning Area and turn southeast at Mission Road. At California Street the lines veer north, continuing east and south along Orange Avenue to Tennessee Street, State Street,

Eureka Street, Redlands Boulevard, Reservoir Road, Wabash Avenue, Panorama Drive, and entering Yucaipa along Hampton Road and Dunlap Boulevard. Another high pressure gas line stretches along Sand Canyon Road and Crafton Avenue. Smaller gas lines are distributed throughout most of the Planning Area. A high pressure petroleum line extends through Redlands in San Timoteo Canyon within the Santa Fe Pacific Railroad right-of-way. It carries multiple types of petroleum products, including oil, gasoline, and jet fuels.

### Wind Hazards

Redlands is subject to the Santa Ana winds, which can reach up to 100 miles per hour. These winds, which typically occur several times per year between September and December, have been known to topple power lines, trees, and street lights. These winds can also spread uncontrolled wildfire and hinder firefighters from reaching fires. Given the potentiality of wind hazard, residents should heed caution during major wind storms. Additionally, the City should circumvent hazard by educating the public about wind hazard preparedness and by thoroughly undertaking precautionary measures to minimize harmful impacts.

### Electromagnetic Fields

The dangers of electromagnetic fields are not well known or understood. Some researchers claim to have found a link between cancer and the electromagnetic fields, but there is no conclusive evidence supporting this claim. As a precautionary measure, the General Plan recommends protecting Redlands citizens from electromagnetic fields.

## POLICIES

### Principles

- 7-P.31** Protect residents from the potential dangers of broken or damaged fuel lines.
- 7-P.32** Protect residents from the potential dangers of hazardous cargos.
- 7-P.33** Protect people and property from the adverse impacts of high winds.
- 7-P.34** Use education and practical ways of reducing exposure to electromagnetic fields (EMFs) near transmission lines and other sources.

### Actions

- 7-A.119** Develop an emergency response plan that adequately addresses the impacts of a broken natural gas or petroleum line in the city, as well as the transportation of hazardous cargo. Coordination is needed between the Police and Fire Departments, Southern California Gas Company and Santa Fe Pacific Pipelines, and the City's emergency response team.
- 7-A.120** Provide sufficient information to schools, housing, and care facilities for fuel lines that exist or that are to be constructed in the Planning Area.
- 7-A.121** Monitor issues related to damage from windstorms and undertake precautionary measures as needed, such as tree trimming.
- 7-A.122** Setback new schools, housing, and care facilities a minimum of 100 feet from high voltage power lines or substations.

- 7-A.123** Regulate development on sites with known contamination of soil and groundwater to ensure that construction workers, future occupants, the public, and the environment are adequately protected from hazards associated with contamination. Work with State and local agencies to encourage cleanup of such sites.
- 7-A.124** Prohibit the development of projects that would reasonably be anticipated to emit hazardous air emissions or handle extremely hazardous substances within a quarter mile of a school.



## Airport/Aviation Safety

Risks associated with airport operations include those to people and property located in the vicinity of the airport and those to the safety of persons aboard an aircraft. Safety impacts are mitigated through land use policies that specify the types of land uses near the airport, thus limiting the number of people exposed to the risk of an accident and protecting airspace from land uses that can create hazards to flight.

The City has adopted an Airport Land Use Compatibility Plan (ALUCP), which contains policies that address land use safety with respect both to people and property on the ground and to occupants of aircraft, protection of airspace, and general concerns related to aircraft overflights, as well as to airport-related noise. Policies generally apply to the Airport Influence Area, which encompasses all lands on which the uses could be negatively affected by present or future aircraft uses at the airport and lands on which the uses could negatively affect the airport. Compatibility concerns also extend to other lands on which certain land use characteristics could adversely affect the safety of flight. The City's preparation and adoption of this document was in response to State legislation that permitted the County of San Bernardino and its incorporated cities to dissolve the County Airport Land Use Commission and delegate to each airport owner within the County the responsibility for preparing an airport land use compatibility plan.

Any uses designated within Airport Compatibility Zones should not violate the ALUCP's restrictions on density and structure height, and should allow for required amounts of open space. Coordination with the ALUCP will help to reduce the exposure of people and property to hazards from any flight accidents, as well as reduce the risk of an accident for aircraft in flight over the city. Figure 7-7 maps airport hazard areas in Redlands.

## POLICIES

### Principles

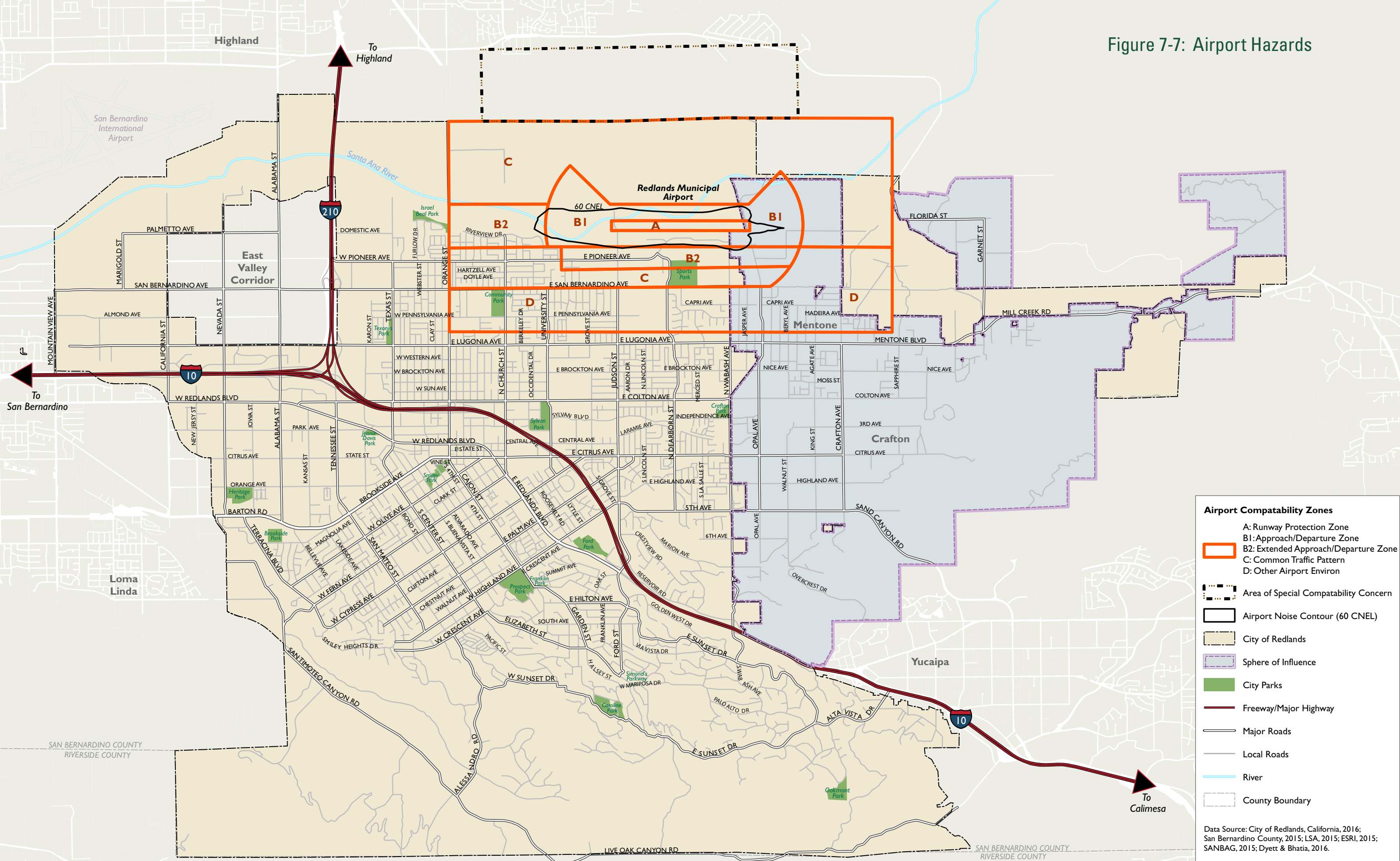
- 7-P.35** Implement the policies and standards of the Redlands Municipal Airport Land Use Compatibility Plan (ALUCP).
- 7-P.36** Limit hazards to and from flight operations due to land uses within the San Bernardino International Airport influence area.

### Actions

- 7-A.125** Review all projects within the Compatibility Zone Boundaries established by the ALUCP for conformity to the criteria set forth in the Primary Compatibility Criteria Matrix of the ALUCP.
- 7-A.126** Review all projects within the Compatibility Zones established by the San Bernardino International airport for conformity to the criteria set forth in the California Airport Land Use Planning Handbook. Coordinate with the airport on any future revisions to its compatibility standards.



Figure 7-7: Airport Hazards



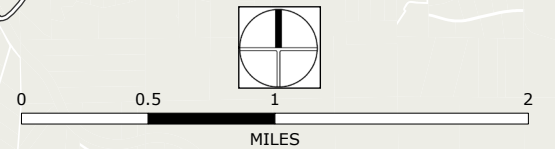
**Airport Compatibility Zones**

- A: Runway Protection Zone
- B1: Approach/Departure Zone
- B2: Extended Approach/Departure Zone
- C: Common Traffic Pattern
- D: Other Airport Environ

**Other Symbols:**

- Area of Special Compatibility Concern
- Airport Noise Contour (60 CNEL)
- City of Redlands
- Sphere of Influence
- City Parks
- Freeway/Major Highway
- Major Roads
- Local Roads
- River
- County Boundary

**Data Source:** City of Redlands, California, 2016; San Bernardino County, 2015; LSA, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.





## Emergency Management

Due to the prevalence of unpredictable and unavoidable hazards in and near the Planning Area, the City must plan to address the safety of residents in times of disaster. This may involve ensuring that all parts of the city are accessible for both evacuation and emergency access, including areas of new development. This may particularly affect any new development in sloped areas and the canyons, where access points may be sparse.

The purpose of emergency preparedness is to protect the health, safety and welfare of the general public during and after natural, man-made (technological), or attack-related emergencies. To handle such events effectively requires the coordination of a number of public and private agencies as well as the public safety agencies such as the Police, Fire, Quality of Life, Emergency Management, and Municipal Utilities & Engineering departments. The City of Redlands recognizes the importance of emergency preparedness through the design and implementation of the Redlands Emergency Operations, Continuity of Operations, and Hazard Mitigation plans. These plans are based on the functions and principles of the Standard Emergency Management System (SEMS), which follows the FIRESCOPE Incident Command System (ICS) identifying how the City fits into the overall SEMS structure.

The California Emergency Services Act requires the City to manage and coordinate the overall emergency and recovery activities within its jurisdictional boundaries. Under SEMS, the City is responsible at two levels, the field response and local government levels. At the field response level, the City and all other agencies use ICS to aid in a standardized emergency response. At the local government level, a designated Emergency Operations Center (EOC) is used as the central location for gathering and disseminating information and coordinating all jurisdictional emergency operations within the area. During disasters, the City of Redlands is required

to coordinate emergency operations with the San Bernardino County Operational Area and, in some instances, other local governments. Local agencies are a part of a broader Emergency Management Systems, overseen by the State of California's Southern Region Emergency Operations Center.

The State of California Multi-Hazard Mitigation Plan, also known as the State Hazard Mitigation Plan (SHMP), was approved by FEMA in 2013. The SHMP outlines present and planned activities to address natural hazards. The adoption of the SHMP qualifies the State of California for federal funds in the event of a disaster. Locally, the City of Redlands adopted a Hazard Mitigation Plan (HMP) in 2015. The purpose of the HMP is to demonstrate the plan for reducing and/or eliminating risk in the city. The HMP assesses risks associated with flooding, earthquake, wildfire, hazardous material, and drought hazards, and identifies mitigation goals, objectives, and projects to reduce the risk.

## Evacuation Routes

The 2007 San Bernardino County General Plan designates potential evacuation routes in the event of wildland fires and other natural disasters, and to ensure adequate access of emergency vehicles to all communities. Within the San Bernardino Valley, designated evacuation routes include Interstates 10, 15, 210, and 215; State Highways 30, 60, 66, 71, and 83; and numerous major and secondary highways. This list is not intended to be comprehensive, and specific evacuation routes would be designated during a specific emergency, since earthquakes, floods, fires, or other disasters may make certain routes impassable. Caltrans has also identified a number of "Potential Evacuation Routes" in the San Bernardino Valley. These roads have the least number of bridges, and may be among the safest roads to travel in the event of a major earthquake. In the East Valley, those roads which connect with the Planning Area include:

- Hospitality Lane from Tippecanoe Avenue to Waterman Avenue
- Coulston Street from Mountain View Avenue to Tippecanoe Avenue
- Lugonia Avenue from Orange Street to Mountain View Avenue
- Redlands Boulevard from Orange Street to Waterman Avenue

Routes leading away from the Planning Area and crossing through the City of San Bernardino rely on parts of Barton Road, Waterman Avenue, Mill Street, E Street, Kendall Drive, La Cadena Drive, Mt. Vernon Avenue, Highland Avenue, and Cajon Boulevard. Additionally, throughout the Planning Area, a system of recreational use trails may be used for emergency evacuation routes.

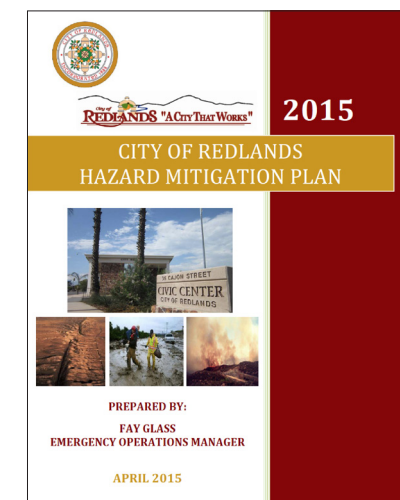
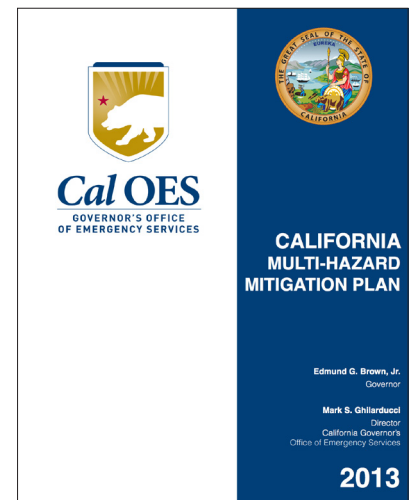
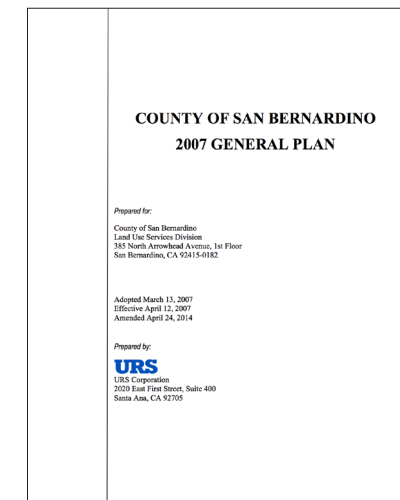
## Disaster Response Volunteers

The City of Redlands also relies on local disaster volunteer programs, including the following:

- **Community Emergency Response Team (CERT).** The City provides emergency preparedness information and disaster training for use by individuals in their own neighborhoods in times of an emergency, as well as continuing training for Affiliated CERT volunteers to assist the City before, during, and after a disaster or emergency.
- **Redlands Emergency Communications Groups (ACS).** These groups are responsible for redundant emergency communications and provides supplemental communication assistance to City agencies in the event of a disaster, emergency, or other designated event.
- **Disaster Council.** The City of Redlands Disaster Council is empowered to develop and recommend emergency and mutual aid plans and agreements for adoption by the City Council. The council consists of existing groups from various sectors of the community, including elected officials,

emergency management, first responders, volunteer services, major industry, commercial, healthcare, and education.

- **Voluntary Organizations Active in Disaster (VOAD).** The City has a strong relationship with San Bernardino County VOAD and the local San Bernardino County East End Community Organizations Active in Disaster (COAD), enabling members of the organizations to share information and coordinate the deployment of resources to improve outcomes for people affected before, during, and after a disaster.



The City of Redlands derives emergency management procedures from previous plans, including the County of San Bernardino General Plan (2007), the California Multi-Hazard Mitigation Plan (2013), and the City of Redlands Hazard Mitigation Plan (2015).

## POLICIES

### Principles

- 7-P.37** Use the City of Redlands Local Hazard Mitigation Plan and Emergency Operations Plan as the guides for disaster planning in the Redlands Planning Area.
- 7-P.38** Aim for City-level self-sufficiency in emergency response.

### Actions

- 7-A.127** Use the City of Redlands Local Hazard Mitigation Plan as the guide for identifying hazard risks and vulnerabilities, identifying and prioritizing mitigation actions, encouraging the development of local mitigation, and providing technical support for these efforts.
- 7-A.128** Continue to update and revise the Local Hazard Mitigation Plan and Emergency Operations Plan as needed to reflect changes in the Planning Area and in emergency management techniques, including specific local hazards that may not be included in the plan.
- 7-A.129** Maintain and update the City's Emergency Plan, as required by State law.
- 7-A.130** Maintain ongoing emergency response coordination with surrounding jurisdictions.
- 7-A.131** Require all City staff to be adequately trained to respond to emergency situations and conduct regular emergency preparedness drills with local organizations including the City's Fire, Police, Quality of Life, Emergency Management, and Municipal & Utilities Engineering departments.

- 7-A.132** Establish community programs to train volunteers to assist police, fire, and civil defense personnel during and after a major earthquake, fire, flood, or other major disaster.
- 7-A.133** Develop a public awareness program on the nature and extent of natural hazards in the Planning Area, and ways of minimizing disasters.
- 7-A.134** Investigate and plan for changes in hazard conditions due to climate change. Develop strategies to address changing risks to life and property from flood, drought, fire and other potential hazards, including those related to monitoring, emergency preparedness, development policies, conservation, and community resilience, and ensure that the City's hazard information is up to date regarding climate trends.

## 7.5 NOISE

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. Future residential development and recreational land uses will need to meet the City's land use compatibility matrix and noise standards. Of particular attention to the City are noise levels near loud transportation corridors, including roadways, the airport, railways.

### Noise Measurement

- **Level.** The decibel (dB) system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 A-weighted decibels (dBA) (very quiet) to 100 dBA (very loud).
- **Frequency.** Frequency is the composition or spectrum of the sound. Frequency is a measure of the pressure fluctuations per second.
- **Variation.** Variation is the sound level over time. Predominant rating scales for human communities in the State of California (State) are the Leq and the Community Noise Equivalent Level (CNEL) or the day-night average level (Ldn) based on A-weighted decibels. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly Leq for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). Ldn is similar to the CNEL scale but without the adjustment for events occurring during the

evening hours. CNEL and Ldn are within 1 dBA of each other and are normally interchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

### Noise Impacts

Noise impacts can be described in three categories. The first includes audible impacts, which refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater, since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise level of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

### Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions and thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160 to 165 dBA will potentially result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and

generally more concentrated in urban areas than in outlying, less-developed areas. Table 7-9 shows common sound levels and their noise sources.

## Noise Sources

### Traffic Noise

Automobiles, buses, and trucks produce transportation noise in Redlands. Major transportation noise sources in Redlands include traffic on Interstate 10 (I-10), Interstate 210 (I-210), California Street, Alabama Street, Tennessee Street, Center Street, Cajon Street, 6th Street, Orange Street, Church Street, Ford Street, Lugonia Avenue, Colton Avenue, Citrus Avenue, Highland Avenue, 5th Avenue, San Bernardino Avenue, Judson Avenue, Wabash Avenue, and Redlands Boulevard. Figure 7-8 shows noise level existing contours along roadways and along I-10. Figure 7-9 shows future noise contours projected for 2035.

### Rail Noise

The noise impacts associated with rail activities depend on a number of factors, including the type of train, the length of train, the use of a horn, the physical track conditions, the geometry and intervening structures between the rail line and its receptor, the number of trains operating, and the speed of the train.

Currently, two rail lines pass through portions of the city. The first is located along the Redlands Boulevard corridor and runs in an east-west direction generally following I-10, and runs through Downtown Redlands. This rail line is currently inactive, but the Redlands Passenger Rail Corridor project is now cleared for final design and construction along the right-of-way. The second rail line, which is currently active, is operated by Union Pacific. This rail line passes through the southwest and southern portion of the city, generally running parallel to San Timoteo Canyon Road. Based on the crossing inventory

completed on January 1, 2011, at the Alessandro Road intersection, typical operations included approximately 17 daytime trains and 20 nighttime trains ranging in speed from 45 to 65 mph.

### Aircraft Noise

The Redlands Municipal Airport is a source of noise, primarily from takeoffs and landings. There are on average 120 inbound and outbound flights from this airport. Aircraft includes single and multi-engine airplanes, jet airplanes, helicopters, gliders, and ultralight aircrafts. Noise from the aircraft generates a relatively minor contribution to the overall noise environment. Existing aircraft noise contours are illustrated in Figure 7-8.

### Stationary Noise Sources

Commercial-industrial and light-industrial land uses in the city have the potential to generate high noise levels and impact surrounding land uses with their equipment operation. Noise sources from these land uses include: air conditioning or refrigeration units, power tools, lawn equipment, generators, and other powered mechanical equipment.

**TABLE 7-9: COMMON SOUND LEVELS AND THEIR NOISE SOURCES**

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations <sup>1</sup>
Near jet engine	140	Deafening	128 times as loud
Civil defense siren	130	Threshold of pain	64 times as loud
Hard rock band	120	Threshold of feeling	32 times as loud
Accelerating motorcycle a few feet away	110	Very Loud	16 times as loud
Pile driver; noisy urban street/heavy city traffic	100	Very Loud	8 times as loud
Ambulance siren; food blender	95	Very Loud	—
Garbage disposal	90	Very Loud	4 times as loud
Freight cars; living room music	85	Loud	—
Pneumatic drill; vacuum cleaner	80	Loud	2 times as loud
Busy restaurant	75	Moderately loud	—
Near freeway auto traffic	70	Moderately loud	Reference level
Average office	60	Quiet	½ as loud
Suburban street	55	Quiet	—
Light traffic; soft radio music in apartment	50	Quiet	¼ as loud
Large transformer	45	Quiet	—
Average residence without stereo playing	40	Faint	⅙ as loud
Soft whisper	30	Faint	—
Rustling leaves	20	Very faint	—
Human breathing	10	Very faint	Threshold of hearing
—	0	Very faint	—

Notes:  
1. Subjective evaluations based on reference level of near freeway auto traffic.

Source: LSA Associates, 2015.

## POLICIES

### Principles

- 7-P.39** Support measures to reduce noise emissions by motor vehicles, aircraft, and trains.
- 7-P.40** Protect public health and welfare by eliminating existing noise problems where feasible and by preventing significant degradation of the future acoustic environment.
- 7-P.41** Ensure that new development is compatible with the noise environment by continuing to use potential noise exposure as a criterion in land use planning.
- 7-P.42** Guide the location and design of transportation facilities, industrial uses, and other potential noise generators to minimize the effects of noise on adjacent land uses.
- 7-P.43** Ensure long-term compatibility between the Redlands Municipal Airport and surrounding land uses.

### Actions

#### Land Use and Noise Compatibility

- 7-A.135** Use the noise and land use compatibility matrix (Table 7-10) and Future Noise Contours map (Figure 7-9) as criteria to determine the acceptability of a given land use, including the improvement/construction of streets, railroads, freeways, and highways. Do not permit new noise-sensitive uses—including schools, hospitals, places of worship, and homes—where noise levels are “normally unacceptable” or higher, if alternative locations are available for the uses in the city.
- 7-A.136** Require a noise analysis be conducted for all development proposals located where projected noise exposure would be other than “clearly” or “normally compatible” as specified in Table 7-10.
- 7-A.137** For all projects that have noise exposure levels that exceed the standards in Table 7-10, require site planning and architecture to incorporate noise-attenuating features. With mitigation, development should meet the allowable outdoor and indoor noise exposure standards in Table 7-11. When a building’s openings to the exterior are required to be closed to meet the interior noise standard, mechanical ventilation shall be provided.
- 7-A.138** Continue to maintain performance standards in the Municipal code to ensure that noise generated by proposed projects is compatible with surrounding land uses.

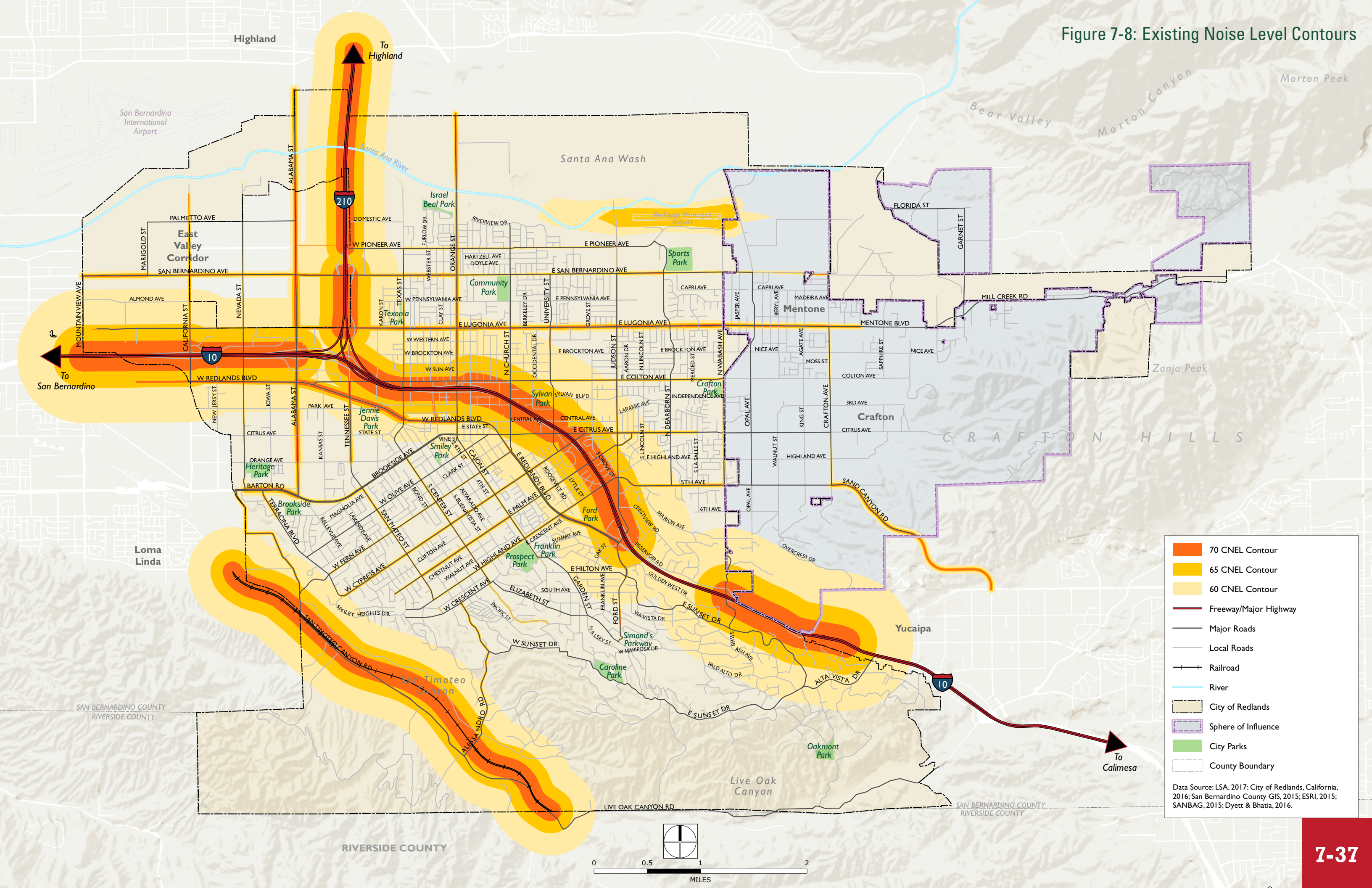
#### Railroad Noise

- 7-A.139** Work with SANBAG and other agencies to ensure that the Redlands Rail project incorporates mitigation to minimize potential impacts to the surrounding noise-sensitive uses once the final design is complete.
- 7-A.140** Coordinate with other agencies and private entities to implement a railroad quiet zone and other methods of reducing railroad noise impacts on surrounding uses along the Redlands Rail project and Southern Pacific Railroad.
- 7-A.141** Require all future developments within the city that fall within the required noise screening distances, as specified in the Federal Transit Authority (FTA) Noise and Vibration Manual, of the Union Pacific railroad in San Timoteo Canyon to conduct a detailed noise analysis.

#### Airport Noise

- 7-A.142** For projects within the Redlands Municipal Airport Influence Area, utilize the noise standards contained in the Redlands Municipal Airport ALUCP, as well as the noise standards contained in this element.
- 7-A.143** Periodically update the noise contours at the Redlands Municipal Airport or upon a major change in airport flight patterns.

Figure 7-8: Existing Noise Level Contours



	70 CNEL Contour
	65 CNEL Contour
	60 CNEL Contour
	Freeway/Major Highway
	Major Roads
	Local Roads
	Railroad
	River
	City of Redlands
	Sphere of Influence
	City Parks
	County Boundary

Data Source: LSA, 2017; City of Redlands, California, 2016; San Bernardino County GIS, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.

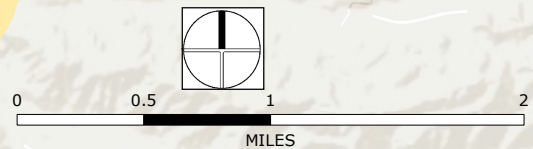
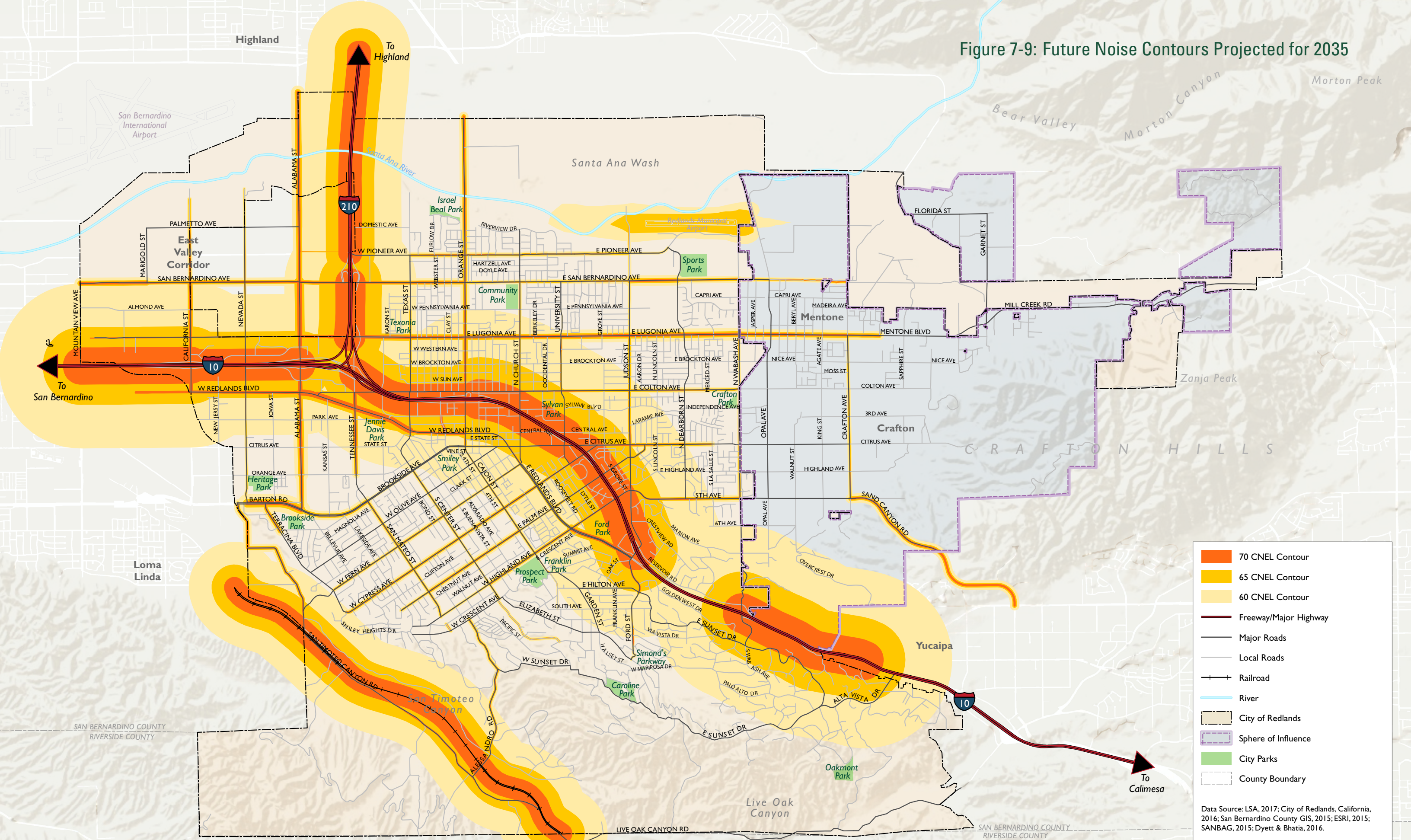


Figure 7-9: Future Noise Contours Projected for 2035



- 70 CNEL Contour
- 65 CNEL Contour
- 60 CNEL Contour
- Freeway/Major Highway
- Major Roads
- Local Roads
- Railroad
- River
- City of Redlands
- Sphere of Influence
- City Parks
- County Boundary

Data Source: LSA, 2017; City of Redlands, California, 2016; San Bernardino County GIS, 2015; ESRI, 2015; SANBAG, 2015; Dyett & Bhatia, 2016.

# MEASURE U POLICIES

## IMPLEMENTING POLICIES: Noise

**Introduction:** In addition to the provisions of the following sections 9.0e through 9.0z, it is the policy of the City of Redlands that no land use adjacent to existing residential land shall generate noise in excess of the residential CNEL levels specified in Table 9.1 [Table 7-10] and Table 9.2 [Table 7-11] of this Noise Element unless appropriate mitigation measures are imposed to reduce the noise level on adjacent residential property to the standards set forth in Tables 9.1 [Table 7-10] and 9.2 [Table 7-11].

**9.0e** Use the criteria specified in GP Table 9.1 [Table 7-10] to assess the compatibility of proposed land uses with the projected noise environment, and apply the noise standards in GP Table 9.2 [Table 7-11], which prescribe interior and exterior noise standards in relation to specific land uses. Do not approve projects that would not comply with the standards in GP Table 9.2 [Table 7-1].

*These tables are the primary tools which allow the City to ensure noise-integrated planning for compatibility between land uses and outdoor noise.*

**9.0f** Require a noise impact evaluation based on noise measurements at the site for all projects in Noise Referral Zones (B, C, or D) as shown on GP Table 9.1 [Table 7-10] and on GP Figure 9.1 [Figure 7-9] or as determined from tables in the Appendix, as part of the project review process. Should measurements indicate that unacceptable noise levels will be created or experienced, require mitigation measures based on a detailed technical study prepared by a qualified acoustical engineer (i.e., a Registered Professional Engineer in the State of California with a minimum of three years experience in acoustics).

**9.0g** Consider establishing a periodic noise monitoring program to identify progress in achieving noise abatement objectives and to perform necessary updating of the Noise Element and community noise standards.

*The California Department of Health Services recommended that noise elements be updated every five years.*

**9.0h** Minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.

**9.0i** Require construction of barriers to mitigate sound emissions where necessary or where feasible, and encourage use of walls and berms to protect residential or other noise sensitive land uses that are adjacent to major roads, commercial, or industrial areas.

**9.0j** Require the inclusion of noise mitigation measures in the design of new roadway projects.

**9.0k** Ensure the effective enforcement of City, State and federal noise levels by all appropriate City departments.

**9.0l** Adopt and enforce a new Community Noise Ordinance to mitigate noise conflicts between adjacent land uses, to ensure that City residents are not exposed to excessive noise levels from existing and new stationary noise sources, and to educate the public regarding noise issues.

*A Community Noise Ordinance establishes noise limits, typical of a quiet residential area, that can not be exceeded at the property line of the noise-creating use. The types of noise to be controlled include sources such as amplified sound, street sales, animals, construction and demolition, vibration, powered model vehicles, emergency signaling devices, power tools, air conditioning, and vehicles on private property.*

**9.0m** Designate one agency or department in the City to act as the noise control coordinator, to ensure the continued operation of the City's noise enforcement efforts, and to establish and maintain coordination among the City agencies involved in noise abatement.

**9.0n** Ensure the effective enforcement of City, State, and federal noise levels by all appropriate City departments, and provide quick response to complaints and rapid abatement of noise nuisances within the scope of the City's police power.

**9.0o** Establish noise guidelines for City purchasing policy to take advantage of federal regulations and labeling requirements.

**9.0p** Coordinate with the California Occupational Safety and Health Administration (Cal OSHA) to provide information on and enforcement of occupational noise requirements within the City.

**9.0q** Provide for continued evaluation of truck movements in the City to provide effective separation from residential or other noise sensitive land uses.

**9.0r** Encourage the enforcement of State Motor Vehicle noise standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and Redlands Police Department.

**9.0s** Require mitigation to ensure that indoor noise levels for residential living spaces not exceed 45 dB LDN/ CNEL due to the combined effect of all exterior noise sources.

*The Uniform Building Code (specifically, the California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Sections T25 28) requires that "Interior community noise levels (CNEL/ LDN) with windows closed, attributable to exterior sources shall not exceed an annual CNEL or LDN of 45 dB in any habitable room." The code requires that this standard be applied to all new hotels, motels, apartment houses and dwellings other than detached single family dwellings.*

*Policy 9-s sets the maximum acceptable interior noise level at 45 CNEL. The Noise Referral Zones (65 CNEL) delineate areas within which tests to ensure compliance are to be required for new structures.*

**9.0t** Require proposed commercial projects near existing residential land use to demonstrate compliance with the Community Noise Ordinance prior to approval of the project.

**9.0u** Require all new residential projects or replacement dwellings to be constructed near existing sources of non transportation noise (including but not limited to commercial facilities or public parks with sports activities) to demonstrate via an acoustical study conducted by a Registered Engineer that the indoor noise levels will be consistent with the limits contained in the Community Noise Ordinance.

**9.0v** Consider the following impacts as possibly "significant":

- An increase in exposure of four or more dB if the resulting noise level would exceed that described as clearly compatible for the affected land use, as established in GP Table 9.1 [Table 7-10] and GP Table 9.2 [Table 7-11];
- Any increase of six dB or more, due to the potential for adverse community response.

**9.0w** Limit hours for all construction or demolition work where site-related noise is audible beyond the site boundary.

**9.0x** Work with Caltrans to establish sound walls along freeways where appropriate.

**9.0y** Minimize impacts of loud trucks by requiring that maximum noise levels due to single events be controlled to 50 dB in bedrooms and 55 dB in other habitable spaces.

**9.0z** Coordinate with the San Bernardino International Airport Authority to minimize potential noise impacts to the City of Redlands which may result from overflights as specific airport operations and flight patterns are established.



I-10 and I-210 move through Redlands and are significant sources of noise.

**TABLE 7-10: NOISE/LAND USE COMPATIBILITY MATRIX AND INTERPRETATION (MEASURE U TABLE 9.1)**

Land Use Categories		Community Noise Equivalent Level (CNEL)							
Categories	Uses	<	60	65	70	75	80	85	>
RESIDENTIAL	Single Family, Duplex Multiple Family	A	C	C	C	D	D	D	
RESIDENTIAL	Mobile Homes	A	C	C	C	D	D	D	
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D	
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater, Mixed Uses with residential units	A	A	A	A	B	B	C	
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research & Dev., Professional Offices, City Office Building	A	A	A	B	B	C	D	
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheater, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D	
COMMERCIAL Recreation	Childrens Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	A	B	B	B	
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B	
INSTITUTIONAL General	Hospital, Church, Library, Schools Classroom	A	A	B	C	C	D	D	
OPEN SPACE	Parks	A	A	A	B	C	D	D	
OPEN SPACE	Golf Course, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C	
AGRICULTURE	Agriculture	A	A	A	A	A	A	A	
Zone A CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.								
ZONE B NORMALLY COMPATIBLE	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.								
ZONE C NORMALLY INCOMPATIBLE	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.								
ZONE D CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.								

Source: Mestre Greve Associates; Guidelines for the Preparation and Content of the Noise Element of the General Plan, prepared by the California Department of Health Services in coordination with The Governor's Office of Planning and Research. Adapted to the City of Redlands' standards.



**TABLE 7-11: INTERIOR AND EXTERIOR NOISE STANDARDS  
(MEASURE U TABLE 9.2)**

Land Use Categories  Uses	Community Noise Equivalent Level (CNEL) Energy Average CNEL	
	Interior <sup>1</sup>	Exterior <sup>2</sup>
<b>RESIDENTIAL</b>		
Single Family, Duplex, Multiple Family	45 <sup>3</sup>	60
Mobile Home	---	60 <sup>4</sup>
<b>COMMERCIAL, INDUSTRIAL, INSTITUTIONAL</b>		
Hotel, Motel, Transient Lodging	45	65 <sup>5</sup>
Commercial Retail, Bank Restaurant	55	---
Office Building, Research & Development, Professional Offices, City Office Building	50	---
Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	---
Gymnasium (Multipurpose)	50	---
Sports Club	55	---
Manufacturing, Warehousing, Wholesale, Utilities	60	---
Movie Theaters	45	---
<b>INSTITUTIONAL</b>		
Hospital, Schools classrooms	45	60
<b>OPEN SPACE</b>		
Parks	---	60

Notes:

\* CNEL (Community Noise Equivalent Level) - The average equivalent A-weighted sound level during a 24 hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 pm to 10 pm and ten decibels to sound levels at night after 10 pm and before 7 am.

1. Indoor environment excluding bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to private yard of single family as measured at the property line; multifamily private patio or balcony which is served by a means of exit from inside; mobile home park; hospital patio; park picnic area; school playground; hotel and recreational area.
3. Noise level requirement with open windows, if they are used to meet natural ventilation requirement.
4. Exterior noise level should be such that interior level will not exceed 45 CNEL.
5. Except those areas affected by aircraft noise.

See also Policy 9.0s

Source: Mestre Greve Associates.



*Smiley Park is a quiet, peaceful place for residents and University students to take a break.*

## 7.6 AIR QUALITY

While air quality is largely a regional issue, the land use, circulation, and growth decisions made by local communities, such as Redlands, affect regional air quality. Redlands' air quality is overseen by the South Coast Air Quality Management District. This district includes Orange County, most of Los Angeles County, and the western portions of San Bernardino and Riverside counties. The South Coast Air Quality Management District has the unfortunate distinction of being one of only two areas in the country with extreme nonattainment levels for the federal ozone standard. As of 2012, mobile sources, including cars, trucks, boats, and planes contributed to 80 percent of emissions in the district. Additionally, the South Coast also experiences high levels of fine particulate matter.

No recent studies of air quality specific to Redlands have been conducted. A study of this nature would be useful to understand the exact source of emissions and where efforts should be directed to minimize harmful effects to air quality. Based on the overall air quality trends of the South Coast area, one may predict that the largest source of emissions impacting air quality in Redlands come from mobile sources. The major presence of industrial activity likely also adversely impacts air quality.

## POLICIES

### Principles

- 7-P.44** Protect air quality within the city and support efforts for enhanced regional air quality.
- 7-P.45** Aim for a diverse and efficiently-operated ground transportation system that generates the minimum amount of pollutants feasible.
- 7-P.46** Increase average vehicle ridership during peak commute hours as a way of reducing vehicle miles traveled and peak period auto travel.
- 7-P.47** Cooperate in efforts to expand bus, rail, and other forms of mass transit in the portion of the South Coast Air Basin within San Bernardino County.
- 7-P.48** Involve environmental groups, the business community, and the general public in the formulation and implementation of programs that enhance air quality in the city and the region.
- 7-P.49** Protect sensitive receptors from exposure to hazardous concentrations of air pollutants.

### Actions

- 7-A.144** To the extent practicable and feasible, maintain a system of air quality alerts (such as through the City website, internet, e-mail to City employees, and other tools) based on South Coast Air Quality Management District forecasts. Consider providing incentives to City employees to use alternative transportation modes during alert days.

- 7-A.145** Provide, whenever possible, incentives for carpooling, flex time, shortened work weeks, telecommuting, and other means of reducing vehicular miles traveled.
  - b. Require grading projects to undertake measures to minimize mono-nitrogen oxides (NOx) emissions from vehicle and equipment operations; and
  - c. Monitor all construction to ensure that proper steps are implemented.
- 7-A.146** Promote expansion of all forms of mass transit to the urbanized portions of San Bernardino, Orange, Los Angeles, and Riverside counties. Support public transit providers in efforts to increase funding for transit improvements to supplement other means of travel.
- 7-A.147** Cooperate with the ongoing efforts of the U.S. Environmental Protection Agency, the South Coast Air Quality Management District, and the State of California Air Resources Board in improving air quality in the regional air basin.
- 7-A.148** Develop requirements for retrofitting existing residential buildings within the 500-foot AQMD buffer along the freeway to abate air pollution, and limitations on new residential developments within the buffer.
- 7-A.149** Ensure that construction and grading projects minimize short-term impacts to air quality.
  - a. Require grading projects to provide a stormwater pollution prevention plan (SWPPP) in compliance with City requirements, which include standards for best management practices (BMPs) that control pollutants from dust generated by construction activities and those related to vehicle and equipment cleaning, fueling, and maintenance;
  - b. Require grading projects to undertake measures to minimize mono-nitrogen oxides (NOx) emissions from vehicle and equipment operations; and
  - c. Monitor all construction to ensure that proper steps are implemented.
- 7-A.150** Establish and implement a Transportation Demand Management (TDM) Program.
- 7-A.151** Convert the City fleet to zero emissions vehicles where financially feasible and provide associated infrastructure for such vehicles.
- 7-A.152** Enforce regulations to prevent trucks from excessive idling in residential areas.
- 7-A.153** Require applicants for sensitive land uses (e.g. residences, schools, daycare centers, playgrounds, and medical facilities) to site development and/or incorporate design features (e.g. pollution prevention, pollution reduction, barriers, landscaping, ventilation systems, or other measures) to minimize the potential impacts of air pollution on sensitive receptors.
- 7-A.154** Require applicants for sensitive land uses within a Proposition 65 warning contour to conduct a health risk assessment and mitigate any health impacts to a less than significant level.