

5

Safety, Climate Resilience, Noise, and Public Services and Facilities



5. Safety, Climate Resilience, Noise, and Public Services and Facilities

The beautiful environment that attracts people to Santa Rosa also creates potential risks from hazards such as fires, floods, droughts, earthquakes, and slope instability that can harm people and property and cause economic and social dislocation.

The climate crisis has severely impacted Santa Rosa. In recent years, the city has experienced deadly and damaging wildfires, which have destroyed parts of the built and natural environment and have caused extremely poor air quality. In addition, recent local and regional droughts have been among the most intense ever recorded. Temperatures are increasing, extreme heat events are expected to get worse, and precipitation patterns are changing, increasing the risk of both floods and drought. Wildfires across the region, state, and nation are becoming more frequent, severe, damaging, and deadly.

The City's General Plan must include a safety element that identifies and mitigates potential short- and long-term risks and hazards that affect the community. It also must include a climate change vulnerability assessment, measures to address identified vulnerabilities, and a comprehensive hazard mitigation and emergency response strategy.

This chapter focuses on ensuring that Santa Rosa is resilient to hazards and equipped to recover from future events through goals, policies, and actions for climate resilience, safety, public services and facilities, and noise.

To support equitable outcomes, some policies and actions in this chapter, as in others, prioritize the needs of Equity Priority Areas and Equity Priority Populations.

The Vision for Santa Rosa is the foundation for the goals in this chapter. The following components of the Vision are especially pertinent to these goals and their policies and actions:

- **Safe:** Streets are safe; public safety services are provided by caring and thoughtful community members who are representative of and familiar with the neighborhoods, groups, and individuals they serve; and everyone, including immigrants and people of color, can safely access these services.
- **Prepared:** The health and safety of everyone is supported by neighborhood, City, and county-wide efforts to prepare for natural and human-caused hazards, and roadways are optimized to support efficient evacuations.

- **Resilient:** All facets of the community, including housing, infrastructure, and social services are sustainable and resilient to hazards and economic changes.

Figure 5-1 illustrates some of the key concepts that this chapter addresses.

Chapter Contents

→ Safety:

- Geology and Seismicity
- Flooding and Dam Failure
- Wildland and Urban Fire
- Hazardous Materials
- Emergency Preparedness and Evacuation

→ Climate Resilience:

- Agricultural and Ecosystem Pests and Diseases
- Drought
- Extreme Heat and Warm Nights
- Other Climate-Sensitive Health Risks
- Severe Winds and Storms
- Wildfire

→ Noise

- Projected Noise Sources
- Noise Standards

→ Public Services and Facilities:

- Water, Wastewater, Recycled Water, Stormwater, and Solid Waste
- Education and Learning
- Police and Fire

Equity Priority Areas or EPAs are areas in Santa Rosa where residents suffer most from economic, health, and environmental burdens. The City has also identified 10 **Equity Priority Populations**, groups with characteristics understood to contribute to vulnerability and/or the likelihood of being underserved.

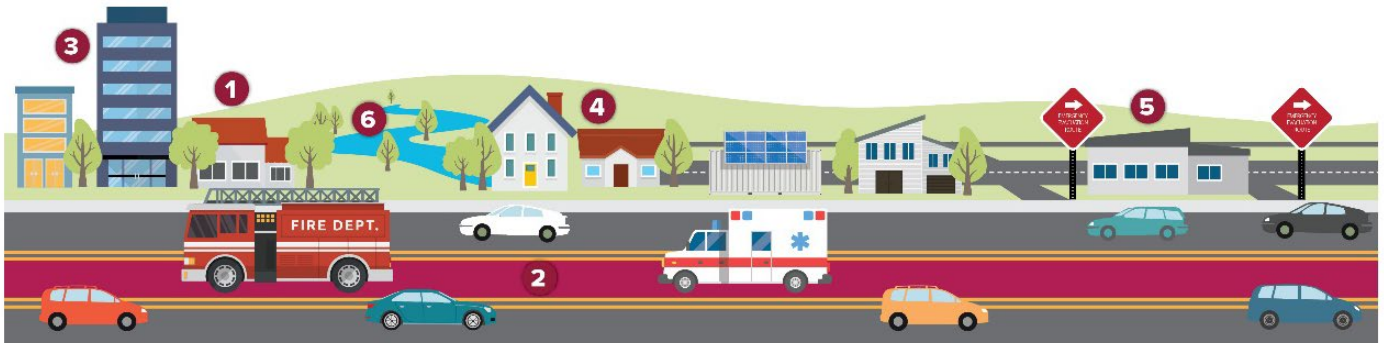
1. Low-income individuals and families
2. Racial or ethnic groups experiencing disparate health outcomes
3. Seniors, children, youth, and young adults
4. Individuals with disabilities
5. Immigrants and refugees
6. Outdoor workers and farmworkers
7. Individuals who have limited English proficiency
8. Unhoused people
9. Lesbian, gay, bisexual, transgender, queer, intersexual, asexual, and other LGBTQIA+ communities
10. Individuals who are incarcerated or who have been incarcerated

Environmental justice needs and health and equity considerations of EPAs and Equity Priority Populations have priority in some of the goals, policies, and actions in this and other chapters of the General Plan.

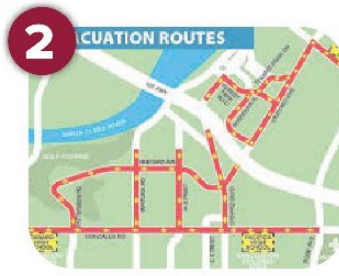
Figure 2-4 shows the locations of EPAs, chapters 2, Land Use and Economic Development, and 6, Health, Equity, and Environmental Justice, discuss EPAs in detail.

Figure 5-1: Visualizing the Concepts

SAFETY, CLIMATE RESILIENCE, NOISE, AND PUBLIC SERVICES AND FACILITIES



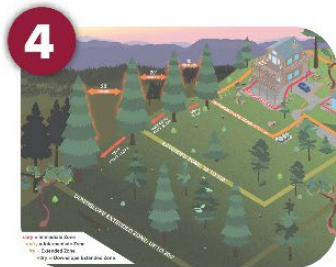
Cooling Centers



Optimized Evacuation Routes



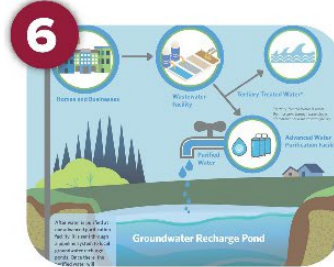
Earthquake Safe Buildings



Firesafe Home/Property



Resilience Centers



Sustainable Water Supply

Safety

Geology and Seismicity

The relatively flat valley floor adjacent to highland areas in and around Santa Rosa signifies the presence of active earthquake faults, as depicted on **Figure 5-2**, Regional Fault Lines. The primary seismic hazard to existing and new development is shaking and fault rupture from the Rodgers Creek-Healdsburg fault zone that transects the city. Other notable faults that could produce strong seismic shaking in Santa Rosa include the San Andreas, Hayward, Calaveras, Mayacamas, San Gregorio, Concord, Green Valley, and Greenville faults. These active faults are close enough that the city has a high probability of experiencing a magnitude 6.7 or greater earthquake by 2043, most likely along the San Andreas and Rodgers Creek-Hayward Fault systems. Secondary earthquake hazards of concern are landslides and liquefaction—when loosely packed, water-logged sediments at or near the ground surface lose their strength in response to strong ground shaking—as seen on **Figures 5-3**, Landslide Susceptibility Areas, and **5-4**, Liquefaction Zones.

Goals, Policies, and Actions

Goal 5-1: Minimize community exposure to seismic and geologic hazards.

Policy 5-1.1: **Ensure that new development, redevelopment, and major remodels avoid or adequately mitigate seismic and geologic hazards as part of the City's project review process.**

Action 5-1.1: *Prior to development approval, ensure geologic studies and analyses are deemed acceptable by a California Certified Engineering Geologist and/or*

Geotechnical Engineer for applicable hazard conditions.

Policy 5-1.2: **Restrict development in areas where adverse impacts associated with known natural or human-caused geologic hazards cannot be effectively mitigated, as determined by a California Certified Engineering Geologist and/or Geotechnical Engineer.**

Policy 5-1.3: **Do not allow development of critical facilities—hospitals, fire stations, emergency management headquarters, broadcast services, sewage treatment plants, and places of large congregations—in high-risk geologic hazard zones (e.g., Rodgers Creek Fault zone, liquefiable soils, areas of slope instability).**

Policy 5-1.4: **Better understand and ultimately mitigate seismically vulnerable structures in the city.**

Action 5-1.2: *Develop and periodically update an inventory of seismically vulnerable structures that includes unreinforced masonry construction, soft-story construction, and nonductile concrete construction.*

Action 5-1.3: *Require retrofitting and abatement of structural hazards to levels of risk acceptable to the Building Official.*

Action 5-1.4: *Prioritize retrofitting and abatement of City-owned buildings in areas determined to experience strong ground shaking during an earthquake.*

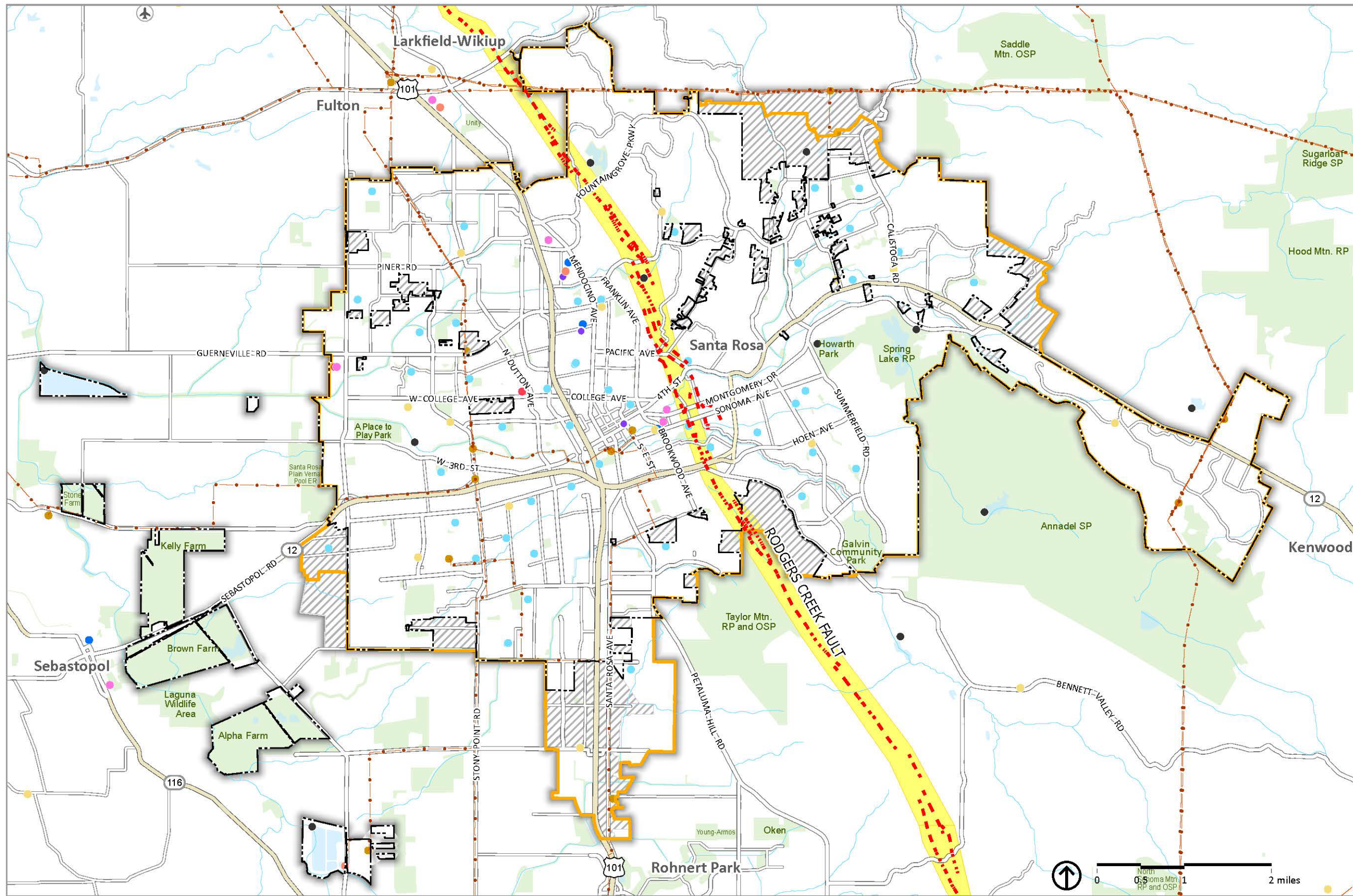


Figure 5-2
Regional
Fault Lines

- City Limits
- Urban Growth Boundary
- City Sphere of Influence
- Planning Area
- Creeks and Waterways
- Parks and Open Space
- Critical Facilities**
- Transmission Lines
- Electric Power Plants
- Electric Sub Stations
- Fire Stations
- Hospitals
- Urgent Care Facility
- Libraries
- Schools
- Local Law Enforcement Office
- Dam Location
- Airports
- Alquist Priolo Fault Trace
- Alquist-Priolo Fault Zone



Source: USGS, 2020; CGS, 2018; CalOES, 2021.

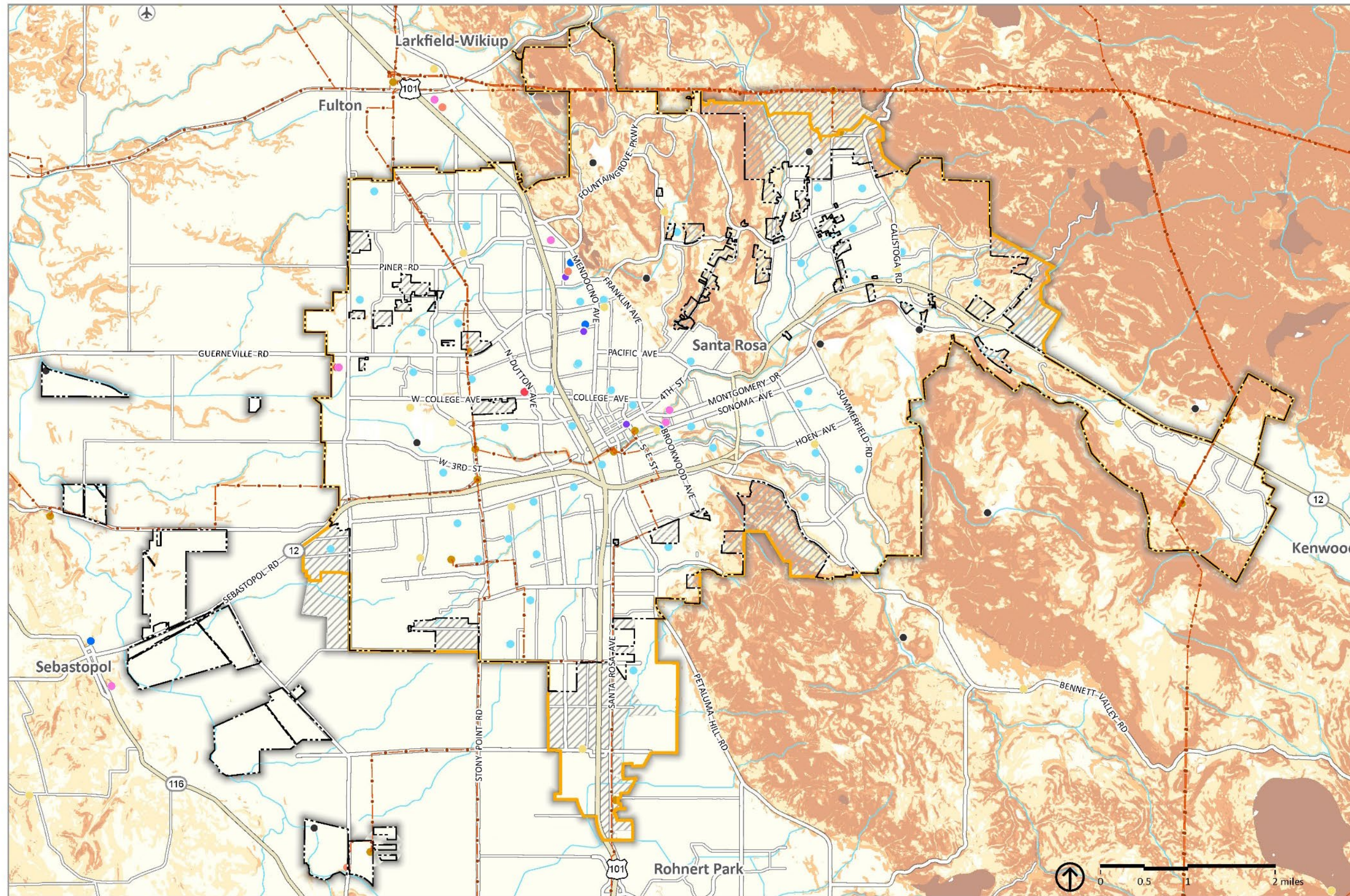


Figure 5-3
Landslide
Susceptibility
Areas

- City Limits
- Urban Growth Boundary
- City Sphere of Influence
- Planning Area
- Critical Facilities**
- Transmission Lines
- Electric Power Plants
- Electric Sub Stations
- Fire Stations
- Hospitals
- Urgent Care Facility
- Libraries
- Schools
- Local Law Enforcement Office
- Dam Location
- Airports
- Landslide Susceptibility Classes**
- 0 (Less Susceptible)
- 3
- 5
- 6
- 7
- 8
- 9
- 10 (More Susceptible)



Source: CGS, 2018; CalOES, 2021.



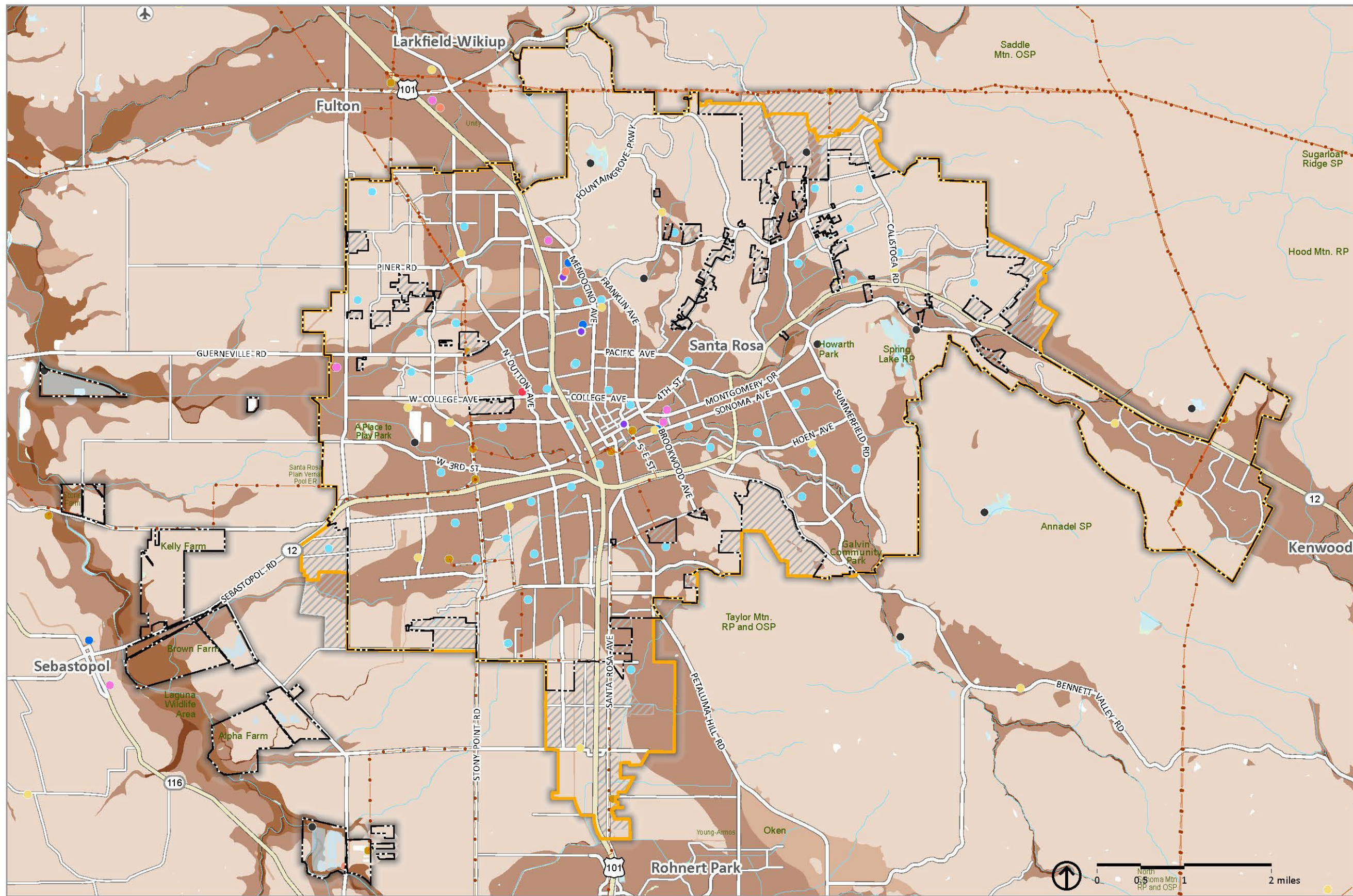


Figure 5-4
Liquefaction
Zones

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
- USGS Liquefaction Susceptibility**
- Very high
 - High
 - Moderate
 - Low
 - Very low



Source: CGS, 2018; CalOES, 2021.

- Action 5-1.5:** *Require owners of potentially vulnerable structures to report on the progress of seismic retrofitting.*
- Action 5-1.6:** *Ensure that seismic retrofitting of commercial, industrial, and public buildings meets the latest State requirements and industry best practices.*
- Action 5-1.7:** *Retrofit and harden water storage facilities, wastewater conveyance and treatment facilities, electricity transmission lines, roadways, water detention facilities, levees, and other utilities near the Rodgers Creek Fault.*
- Policy 5-1.5: Promote erosion-control strategies that reduce hazards to structures, properties, and drainages.**
- Action 5-1.8:** *Identify enhanced erosion-control measures for properties that exhibit high erosion potential, are in areas of steep slopes, or have experienced past erosion problems.*
- Action 5-1.9:** *Ensure the Community Wildfire Protection Plan is periodically updated to identify slope stability and wildfire hazard areas and mitigation strategies to reduce post-wildfire erosion.*

of the drainages in the city (Spring Creek, Matanzas Creek, Colgan Creek, Naval Creek, Roseland Creek, and Kawana Springs Creek) within 100-year and 500-year flood hazard zones. Santa Rosa Creek and key tributaries also can flood even though they are not currently delineated on FEMA maps.

Proximity to these creeks and drainages increases the risks of flooding. Many of these drainages are also susceptible to inundation from dam failure. The Department of Safety and Dams regulates 10 dams in or near the city that could inundate portions of Santa Rosa if they fail.

Figure 5-6 depicts these dam inundation areas. The dams that pose the greatest risk to the city are Fountain Grove, Lake Ralphine, Matanzas Creek, Salinger, and Warm Springs

Flooding and Dam Failure

Santa Rosa is in the Russian River watershed and has experienced flooding in the past. Rain events can overwhelm local drainages, especially the low-lying areas in the southwest part of the city, where critical sewer treatment facilities are located. When flooding occurs, creeks in the watershed can erode, which can lead to mudslides and landslides. As shown **on Figure 5-5**, Flood Hazard Zones, the Federal Emergency Management Agency (FEMA) has mapped many

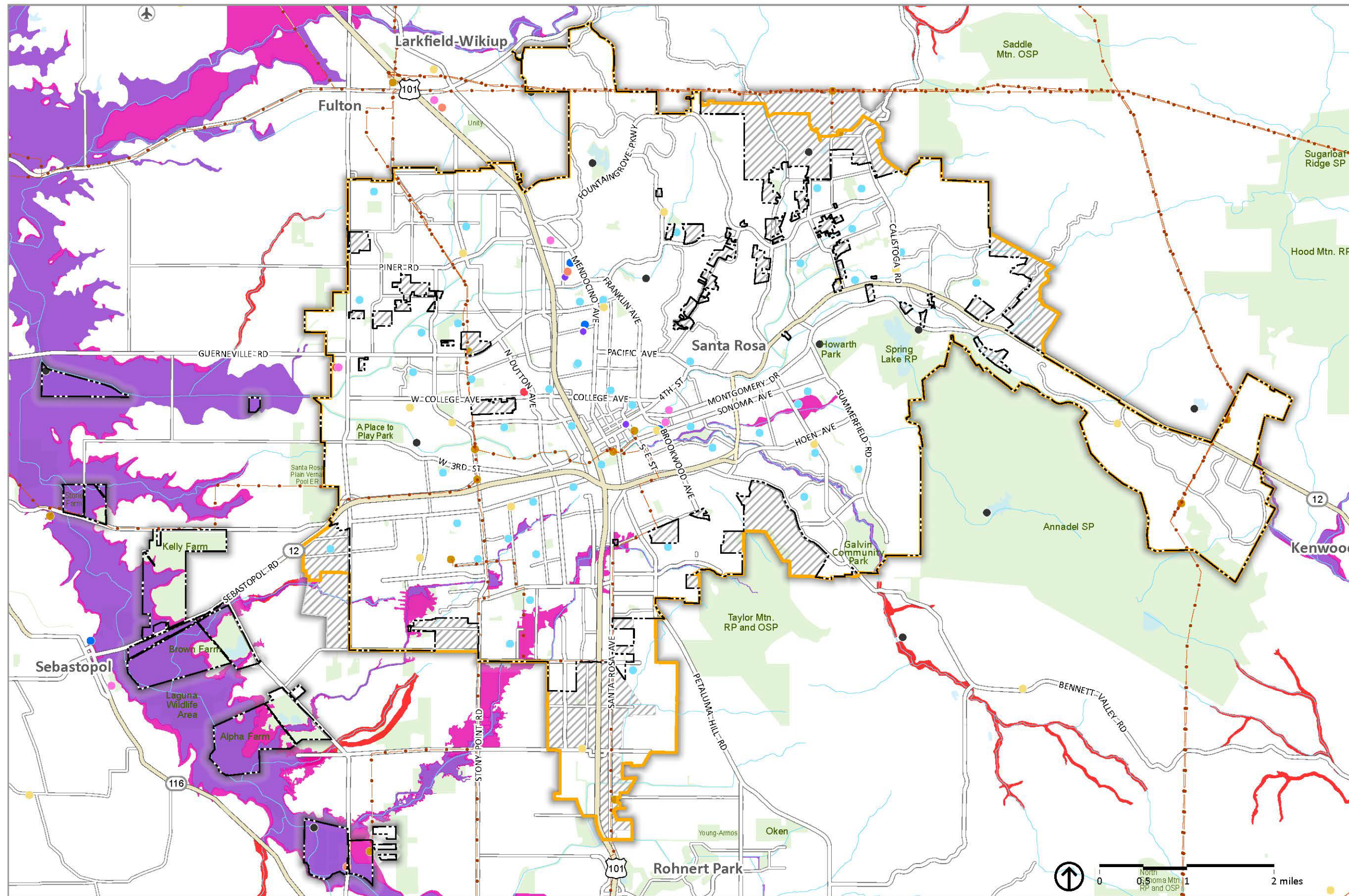


Figure 5-5
Flood Hazard Zones

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
- FEMA 100 Year Flood Zone
 - FEMA 500 Year Flood Zone
 - DWR Awareness 100 Year Flood Zone

Source: FEMA, 2021; CalOES, 2021.

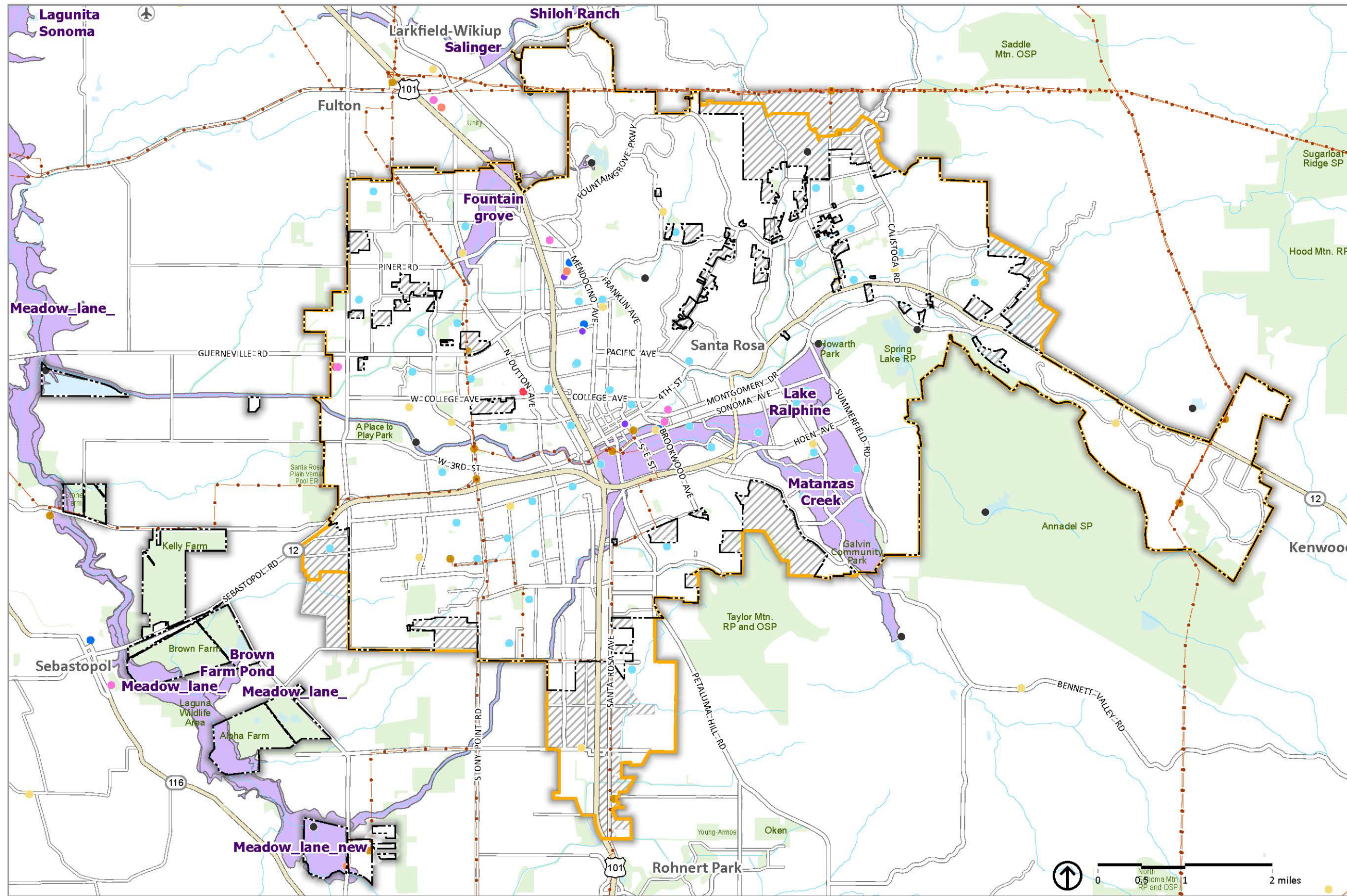


Figure 5-6
Dam Inundation
Areas

- City Limits
- Urban Growth Boundary
- City Sphere of Influence
- Planning Area
- Creeks and Waterways
- Parks and Open Space
- Transmission Lines
- Electric Power Plants
- Transmission Lines
- Fire Stations
- Hospitals
- Urgent Care Facility
- Libraries
- Schools
- Local Law Enforcement Office
- Dam Location
- Airports
- Dam Inundation Areas**
- Dam Inundation Areas

Source: DSOD, 2021; CalOES, 2021.



Goals, Policies, and Actions

Goal 5-2: Effectively manage the potential effects of flooding and dam failure.

Policy 5-2.1: **Ensure land use strategies consider flood impacts and stormwater management tactics to reduce the effects of future inundation.**

Action 5-2.1: *Incorporate flood management strategies into land use analysis and development review.*

Action 5-2.2: *Complete and implement the Storm Drain Master Plan; prioritize discussions with Sonoma Water Flood Protection Zone Advisory Committee regarding flood zones and land use designations.*

Action 5-2.3: *Require flood mitigation strategies in all planning activities along creeks and waterways.*

Policy 5-2.2: **Promote the enhancement and expansion of areas of open space and, where appropriate and safe, recreation, to use for flood management.**

Action 5-2.4: *Protect floodplains by retaining and expanding, as feasible, open space areas that can retain stormwater, recharge groundwater/aquifer, and prevent/reduce flooding.*

Action 5-2.5: *Limit the use of areas designated for flood control to passive recreation activities (e.g., hiking, fishing, bike riding), consistent with requirements to maintain the integrity of these areas to protect public safety.*

Low-impact development refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater to protect water quality and associated aquatic habitat.

Source: U.S. Environmental Protection Agency, 2023.

Policy 5-2.3: **Comply with all applicable FEMA flood-management regulations and requirements.**

Action 5-2.6: *Continue to maintain and periodically update flood hazard data, and coordinate with federal, state, and local agencies responsible for flood hazard analysis and management activities.*

Action 5-2.7: *Continue to incorporate features and appropriate standards into public works projects that reduce flooding hazards, including daylighting culverts in urban areas such as downtown.*

Policy 5-2.4: **Ensure that the design of new development in a flood zone provides adequate flood protection without negatively impacting adjacent or downstream properties.**

Action 5-2.8: *Require an evaluation of flood hazards and appropriate on-site mitigation options by a qualified professional for any project within a FEMA- and Department of Water Resources (DWR)-designated flood zone during the development review process.*

Policy 5-2.5: **Protect public and private properties from dam inundation.**

Action 5-2.9: *Coordinate with dam owners/operators to ensure that dam safety inspections are conducted annually, as required by the California Division of Safety of Dams (DSOD).*

Action 5-2.10: *Prioritize investment in flood-control mitigation that also reduces impacts associated with dam failure.*

Policy 5-2.6: Manage, maintain, and improve stormwater drainage and capacity.

Action 5-2.11: *Require dedication, improvement, and ongoing maintenance of stormwater management and retention areas as a condition of development approval.*

Action 5-2.12: *Identify the necessary development impact fees to pay for mitigation of stormwater management impacts for new development.*

Action 5-2.13: *Require stormwater management improvements that maintain and improve the storm drainage system citywide and prioritize areas needing significant investment, consistent with the Santa Rosa Citywide Creek Master Plan goals of preserving natural conditions of waterways and minimizing channelization of creeks.*

Action 5-2.14: *Ensure creek-side pathways, consistent with the Citywide Creek Master Plan and Bicycle and Pedestrian Master Plan, are incorporated as part of stormwater improvement projects along creek corridors.*

Policy 5-2.7: Provide storm drainage facilities that accommodate increased

development and enhanced water quality.

Action 5-2.15: *Cooperate with Sonoma Water and the Northern California Regional Water Quality Control Board on assessments of stormwater drainage facilities, to ensure adequate capacity to accommodate increases in residential and commercial development.*

Action 5-2.16: *Require implementation of best management practices for all new development to reduce discharges of nonpoint-source pollutants to the storm drain system.*

Wildland and Urban Fire

Santa Rosa and Sonoma County are prone to wildfire. Wildfires in the region can be intense and uncontrollable—many large-scale fires have started in other locations and ended up in Santa Rosa. **Figure 5-7** identifies historic wildfire perimeters.

The California Department of Forestry and Fire Protection (CAL FIRE) has identified the areas of greatest risk in the city and surrounding county, shown on **Figure 5-8**, and the areas of wildland-urban interface, on **Figure 5-9**. The City has taken steps to regulate fire-prone areas, including properties in the very high fire hazard severity zone as well as the wildland-urban interface. These areas are considered the Wildland-Urban Interface Fire Area, defined in the municipal code as a geographical area that the City identifies as a “Fire Hazard Severity Zone.” These areas have a significant risk of wildfire and therefore must conform to higher standards for protection under the California Fire Safe Regulations.

Figure 5-10 shows General Plan Land Uses in the Wildland-Urban Interface Fire Area. A key risk management strategy is to regulate the location

and intensity of uses in high-risk areas and ensure that new developments address wildfire risks during planning and development review. Ensuring access and evacuation potential for existing development in these areas is also essential to emergency response and can help reduce the need for recovery activities.

- Determine potential impacts of climate change on the local fire environment and how they could change wildfire hazard and risk in the mid-21st century.
- Establish a plan to track and monitor implementation of action items.

The **wildland-urban interface** is the zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. In the different zones, the **intermix zone** is land with at least one housing unit per 40 acres and 50 percent or more vegetation cover and the **interface zone** is land with at least one housing unit per 40 acres and less than 50 percent vegetation cover.

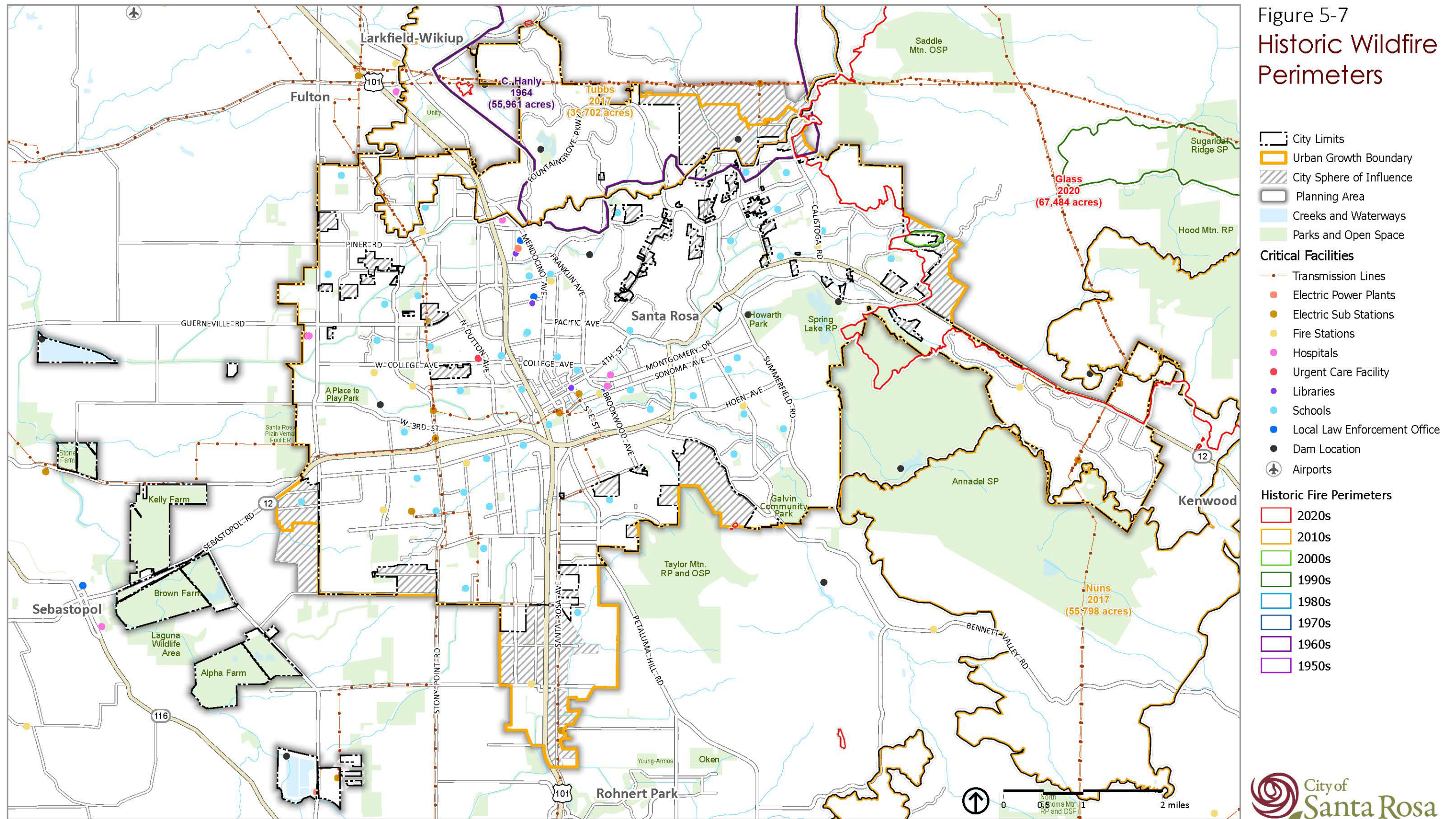
In Santa Rosa, the **wildland-urban interface fire area** is a geographical area identified by the City as a “Fire Hazard Severity Zone” in accordance with the Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

Source: U.S. Fire Administration, 2023

The Santa Rosa Community Wildfire Protection Plan (CWPP) was approved on September 18, 2020. The purpose of the plan is to enhance protection of human life and reduce the wildfire threat to community assets in the city. Key goals in this plan are:

- Minimize the wildfire threat to safety.
- Reduce the wildfire threat to at-risk assets.
- Develop priorities to mitigate risks and hazards.

Figure 5-7
Historic Wildfire
Perimeters



Source: Cal Fire, 2021; CalOES, 2021.

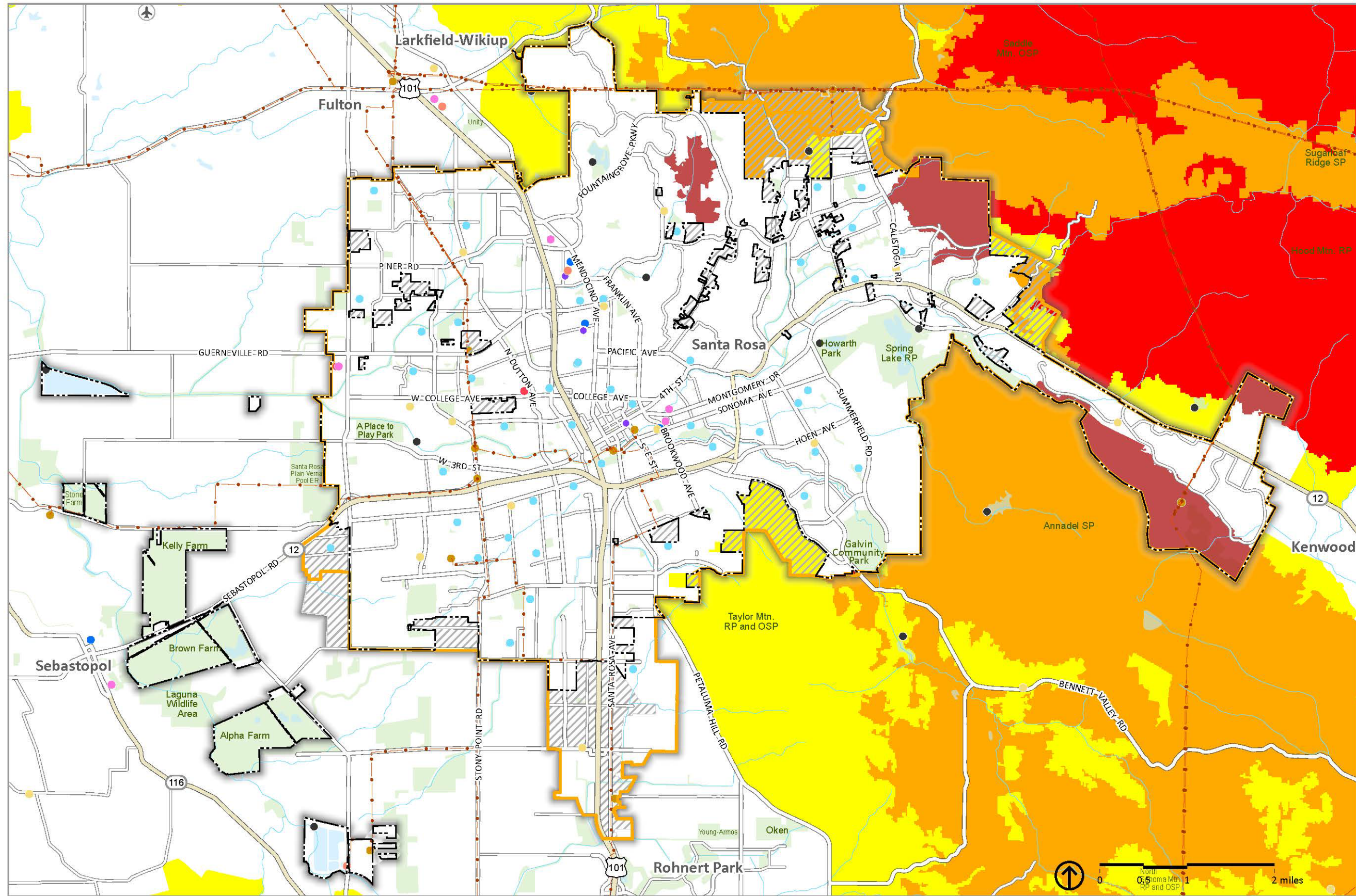
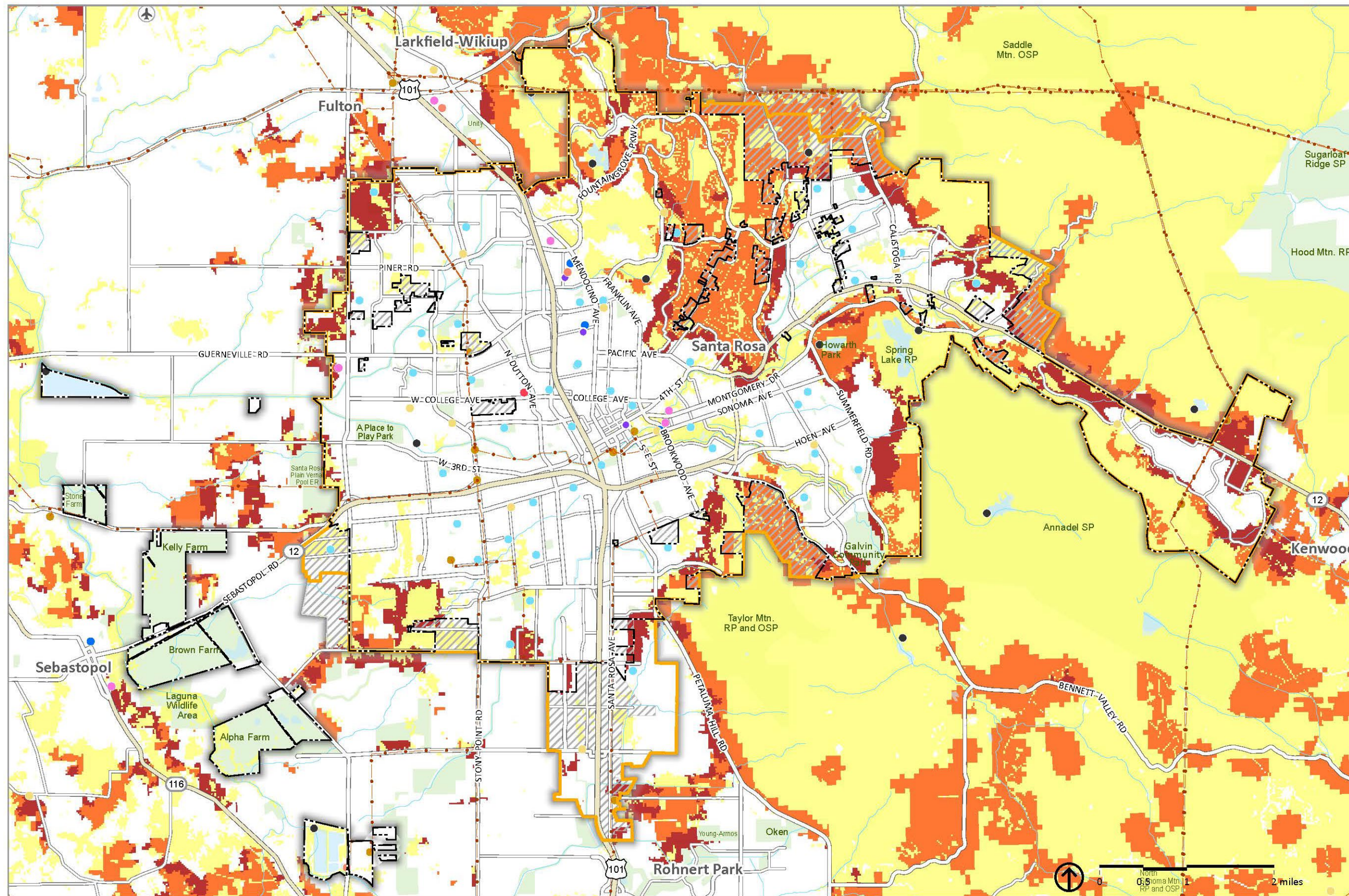


Figure 5-8
Fire Hazard
Severity Zones

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
- LRA Fire Hazard Severity**
- Very High Fire Hazard
- SRA Fire Hazard Severity**
- Very High
 - High
 - Moderate

Source: CalFire, 2020; CalOES, 2021.

Figure 5-9
Wildland-Urban
Interface Areas



- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
- Interface Zones**
- Not a WUI
 - Influence Zone
 - Intermix Zone
 - WUI Zone

Source: FRAP, 2015; CalOES, 2021.

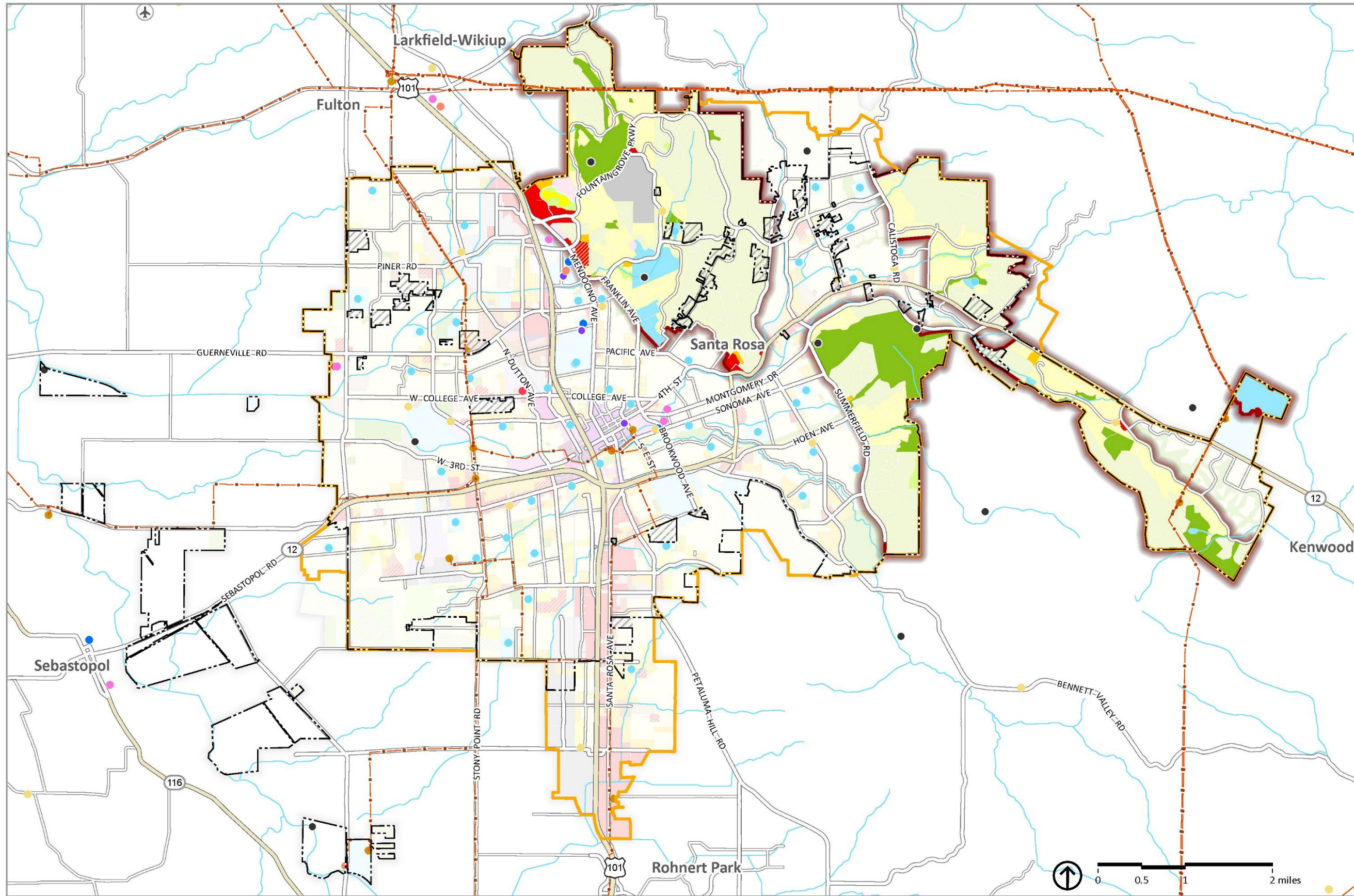


Figure 5-10
General Plan
Land Uses in
Wildland Urban
Interface Fire
Areas

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Wildland Urban Interface Fire Areas (WUIFAs)
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
- General Plan Land Uses in the WUIFA**
- Country Residential
 - Light Industry
 - Low Density Residential
 - Medium Density Residential
 - Medium Low Density Res
 - Office
 - Open Space
 - Parks and Recreation
 - Public/Institutional
 - Retail and Business Services
 - Retail/Medium Res Mixed Use
 - Very Low Density Residential



Source: CalFire, 2023; CalOES, 2021, City of Santa Rosa, 2023.

Goals, Policies, and Actions

Goal 5-3: Increase community resilience to future wildfire threats.

Policy 5-3.1: Adhere to State and local regulations and requirements of the Community Wildfire Preparedness Plan that address wildfire risk and vulnerabilities.

Action 5-3.1: Continue to require new developments and major remodels in the Wildland Urban Interface Fire Area to comply with Table 15, Mitigation Actions and City Codes, from the 2020 Santa Rosa CWPP as the equivalent of a Fire Protection Plan.

Action 5-3.2: Continue to require new development and redevelopment to incorporate fire-safe design and comply with the CWPP, local ordinances, and state requirements for fire hazard reduction around buildings and structures.

Action 5-3.3: Continue to require conformance with the California Fire Safe Regulations for existing nonconforming properties in the Wildland Urban Interface Fire Area (includes the very high fire hazard severity zone).

Action 5-3.4: Continue improving the City's previously developed post-wildfire recovery framework to assist with future post-wildfire redevelopment activities.

Action 5-3.5: Implement the fire mitigation projects in the CWPP.

Action 5-3.6: Establish a monitoring program to track the effectiveness of CWPP fuel-treatment activities.

Policy 5-3.2: Promote new development in areas of the community that have lower risk of wildfire hazards.

Action 5-3.7: Locate new essential public facilities outside of identified hazard areas (wildfire hazard zones, flood zones, fault rupture zones) whenever possible. Facilities that remain in hazard areas should be designed, located, and constructed to withstand the identified hazard(s).

Action 5-3.8: Develop siting criteria for essential public facilities, including potential mitigation strategies if the only feasible location is in a recognized hazard area.

Action 5-3.9: Consider updating the Zoning Code to prohibit land uses in the wildland-urban interface that serve mobility-limited persons, such as assisted care facilities.

Action 5-3.10: Explore the development of a managed retreat pilot program for areas in the wildland-urban interface fire area.

Managed retreat is the process of proactively moving people, structures, and infrastructure out of harm's way before disasters or other threats to avoid damage, maximize benefits, and minimize costs for communities and ecosystems.

Source: U.S. Climate Resilience Toolkit and the Georgetown Climate Center

Action 5-3.11: Create a transfer of development rights or managed retreat program in fire-prone areas (very high fire hazard severity zone and wildland-urban interface) to proactively relocate existing

development out of high-risk areas.

Action 5-3.12: *Explore the ability to prohibit increased densities or intensities of uses in fire-prone areas (very high fire hazard severity zone and wildland-urban interface fire area).*

Policy 5-3.3: Implement the vegetation management strategies and enhanced roadway standards of the CWPP throughout fire-prone areas.

Action 5-3.13: *Develop mitigation standards and thresholds for vegetation management and roadway standards to bring existing nonconforming developments into compliance with California Fire Safe Regulations (Title 14 of the California Code of Regulations) in the very high fire hazard severity zone and wildland-urban interface fire area.*

Policy 5-3.4: Ensure all community members and businesses are informed and empowered to address hazard vulnerabilities, considering the specific needs of Equity Priority Populations.

Action 5-3.14: *Continue to conduct multilingual and culturally appropriate education and outreach campaigns that assist property owners with defensible space, fire-safe landscaping, home hardening, and wildfire preparedness, as identified in the CWPP.*

Action 5-3.15: *Prioritize wildfire mitigation education and outreach efforts to vulnerable populations who may not receive typical outreach*

materials/information; provide culturally appropriate education content and materials in multiple languages and formats appropriate for people with access and functional needs as outlined in the CWPP.

Action 5-3.16: *Identify at-risk populations/developments in wildfire-prone areas and ensure emergency management planning and training include efforts to increase resilience in these areas.*

Action 5-3.17: *Develop a program that leverages California's Property Assessed Clean Energy financing through the Sonoma County Energy Independence Program to assist low-income households with maintaining defensible space around their homes and properties.*

Action 5-3.18: *Update the CWPP every five years to reflect the needs of the community and the changing risks in the wildland-urban interface fire area.*

Hazardous Materials

The California Health and Safety Code defines a hazardous material as one that poses a significant present or potential hazard to human health and safety or the environment if released into the workplace or environment due to quantity, concentration, and/or physical or chemical characteristics. Substances that are flammable, corrosive, reactive, oxidizing, radioactive, combustible, or toxic are considered hazardous. Hazardous materials can be found throughout the community, and though their presence may not be a significant hazard, their release in an uncontrolled manner or in a certain location could harm plants, animals, and people. Uncontrolled releases can go unnoticed or cause

impacts that are not known or understood until years later.

The Santa Rosa Fire Department has regulatory oversight of hazardous materials in the city. It is the Certified Unified Program Agency (CUPA), which manages and monitors the use, transport, and disposal of these materials. If a release happens, the Department sends its Hazardous Materials Response Unit to ensure the safety of community members and businesses. Human error is the most common cause of hazardous materials releases, but events like earthquakes and floods can also cause a release. In addition, accidental releases on major transportation routes through the city can pose a risk to the community.

As a CUPA, the Fire Department must produce an Area Plan that local government agencies use to respond to and minimize impacts from a release or threatened release of a hazardous material. The CUPA establishes an Area Plan in coordination with local emergency response agencies to:

- Identify hazardous materials that pose a threat to the community.
- Develop procedures for emergency response.
- Provide for notification and coordination of emergency response personnel.
- Provide for public safety, including notification and evacuation.
- Establish training for emergency response personnel.
- Identify emergency response supplies and equipment.
- Provide for feedback and follow-up after a major incident.

Goals, Policies, and Actions

Goal 5-4: Protect all community members and businesses from hazardous materials exposures and releases.

Policy 5-4.1: Reduce the potential for hazardous materials exposure to community members, visitors, and employees.

Action 5-4.1: Continue to require remediation, cleanup, and risk evaluation prior to changes in site use in areas where hazardous materials and petroleum products have impacted soil or groundwater.

Action 5-4.2: Continue to require that hazardous materials used in business and industry be transported, handled, and stored in accordance with federal, State, and local regulations.

Action 5-4.3: Continue to restrict future siting of businesses—including hazardous waste repositories, incinerators, or other hazardous waste disposal facilities—that use, store, process, or dispose large quantities of hazardous materials or wastes in areas subject to seismic fault rupture or significant ground shaking.

Policy 5-4.2: Ensure adequate capacity and safeguards on routes used to transport hazardous materials to prevent or minimize impacts from accidental release.

Action 5-4.4: Where applicable, ensure regional and local routes for transportation of hazardous materials and waste are adequately marked and unsafe

conditions are adequately addressed, where feasible.

Action 5-4.5: *Require that fire and emergency personnel can easily access routes needed for response to spill incidents.*

Policy 5-4.3: Facilitate commercial and industrial compliance with the Sonoma County Hazardous Materials and Waste Management Plan.

Action 5-4.6: *Support public awareness and participation in household waste management, control, and recycling through County programs, including the Sonoma County Household Hazardous Waste Management Plan.*

Policy 5-4.4: Minimize risks to human health from hazardous materials.

Action 5-4.7: *Inventory brownfield sites and identify necessary measures to remediate hazards.*

Action 5-4.8: *Work with landowners and support funding identification and cleanup of identified brownfield sites, particularly in EPAs.*

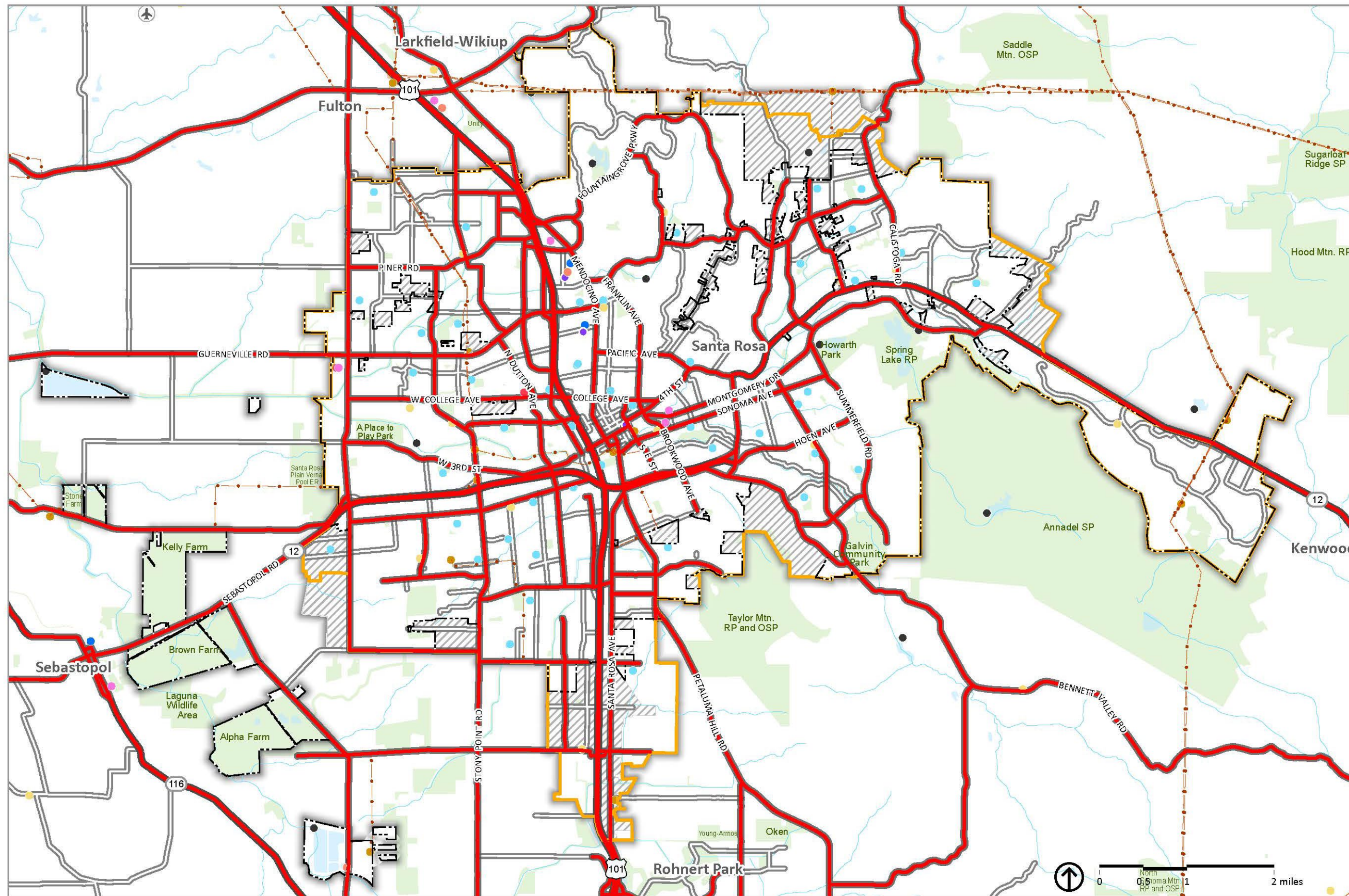
Action 5-4.9: *Seek funding and technical assistance to facilitate brownfield redevelopment, including federal Tax Incentives for brownfields sites, DTSC Revolving Loan Fund Program, Cleanup Loans and Environmental Assistance to Neighborhoods Loan Program, Brownfields Tax Incentives, and the U.S. Environmental Protection Agency brownfields grant and loan programs.*

Emergency Preparedness and Evacuation

A key City function is preparing for and responding to emergency events, and a central concern is being able to use identified routes during an evacuation, shown in **Figure 5-11**, including for locations with constrained access, shown in **Figure 5-12**. Since Santa Rosa is vulnerable to a variety of hazards (earthquakes, storms, floods, and wildfires), the City has developed a “Know Your Ways Out” online portal to make sure that City staff and community members know where these routes are and can prepare for future evacuation.

The Sonoma County Multi-jurisdictional Hazard Mitigation Plan (MJHMP) identifies hazard conditions, analyzes risk to people and facilities, and provides mitigation actions to reduce or eliminate hazard risks in the county. The MJHMP’s “City of Santa Rosa Annex” describes hazards, capabilities, and mitigation actions specific to Santa Rosa, in accordance with the federal Disaster Mitigation Act of 2000 and FEMA Local Hazard Mitigation Plan guidance. The mitigation actions in the MJHMP address similar issues as covered in the General Plan, but the Safety Element framework of goals, policies, and actions has broad application across the whole city over the next 20 years, while the MJHMP focuses on more-specific and short-term actions. The current MJHMP, adopted by FEMA, is incorporated into this chapter by reference according to California Government Code Section 65302.6; the MJHMP is on the City’s website at: <https://www.srcity.org/540/Local-Hazard-Mitigation-Plan>.

Figure 5-11
Evacuation Routes



- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
 - Evacuation Routes



Source: City of Santa Rosa, 2018; CalOES, 2021.

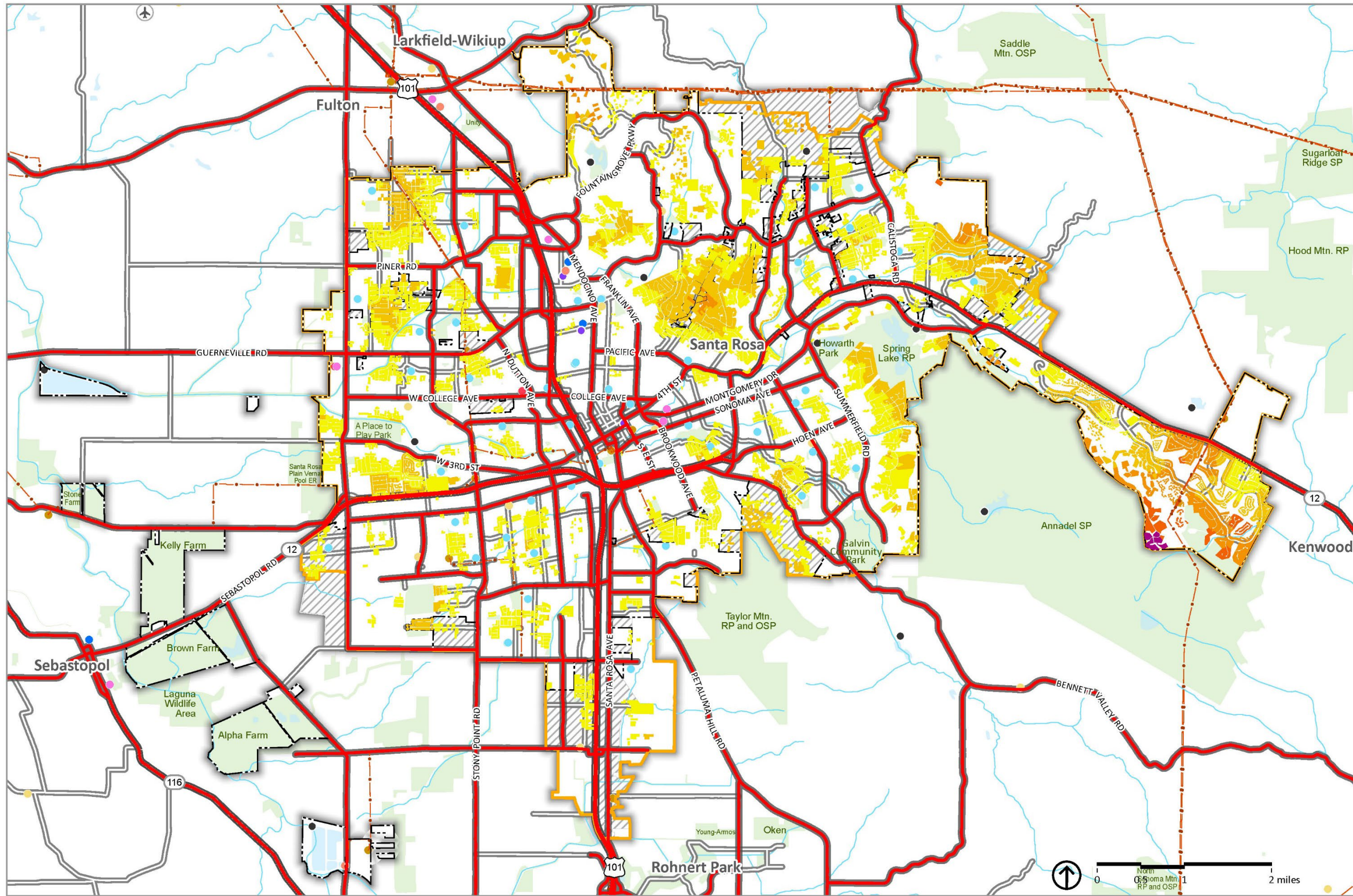


Figure 5-12
Evacuation
Constrained
Residential
Parcels

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Creeks and Waterways
 - Parks and Open Space
- Critical Facilities**
- Transmission Lines
 - Electric Power Plants
 - Electric Sub Stations
 - Fire Stations
 - Hospitals
 - Urgent Care Facility
 - Libraries
 - Schools
 - Local Law Enforcement Office
 - Dam Location
 - Airports
 - Evacuation Routes
- Distance from nearest Major Primary Intersection**
- [<= 0.25mi not shown]
 - 0.25 to 0.5mi
 - 0.5 to 1mi
 - 1 to 1.5mi
 - 1.5 to 2mi
 - 2+mi



Source: City of Santa Rosa, 2023; CalOES, 2021, PlaceWorks, 2023.

Goals, Policies, and Actions

Goal 5-5: Santa Rosa is prepared for future emergencies.

Policy 5-5.1: Encourage City staff and community members to be prepared for and capable of responding to emergency events.

Action 5-5.1: Maintain and periodically update the City's Emergency Operations Plan.

Action 5-5.2: Coordinate with staff of the Sonoma County Operational Area (which consists of the cities, special districts, and unincorporated areas of the county) to update joint emergency response and disaster response plans, as needed.

Action 5-5.3: Promote public awareness of the natural hazards and potential effects of disasters in the Planning Area through the Citizens Organized to Prepare for Emergencies (COPE) volunteer organization.

Policy 5-5.2: Continue to ensure all community members and businesses are informed and empowered to address hazard vulnerabilities, considering the specific needs of EPAs and Equity Priority Populations.

Action 5-5.4: Provide multilingual and culturally appropriate educational materials to increase awareness of hazard risks/vulnerabilities and strategies that community members and businesses can employ to mitigate risks/vulnerabilities.

Action 5-5.5: Incorporate strategies from the Community Wildfire Protection Plan, Local Hazard Mitigation Plan, and other resilience-building plans into outreach and educational information.

Policy 5-5.3: Promote emergency response and preparedness training for City staff, community members, and businesses to increase community resilience.

Action 5-5.6: Participate in emergency response exercises in the Operational Area that involve key hazards of concern for the city.

Policy 5-5.4: Prioritize projects and strategies that mitigate hazards and increase community resilience.

Action 5-5.7: Implement the Local Hazard Mitigation Plan and update it every five years.

Action 5-5.8: Integrate mitigation actions and strategies into the City's Capital Improvements Program and annual budgeting process.

Action 5-5.9: Develop a tracking methodology for potential funding sources to support retrofitting publicly and privately owned structures.

Policy 5-5.5: Ensure coordination with the City and Operational Area continuously improves to meet the changing risks of the community.

Action 5-5.10: Continue to implement mutual aid, automatic aid, and California's Mutual Master Aid System to provide effective emergency response.

Action 5-5.11: Maintain effective mutual-aid agreements with neighboring cities and Sonoma County to

support emergency management.

Action 5-5.12: *Continue to execute mutual-aid agreements with public and private entities to support community emergency management.*

Policy 5-5.6: Prioritize investments that expand and enhance evacuation capacity and capabilities.

Action 5-5.13: *Require all new development projects to provide adequate access for fire and emergency response personnel.*

Action 5-5.14: *Prohibit the creation of new single ingress/egress roadway conditions in the city.*

Action 5-5.15: *Retrofit existing single-access residential neighborhoods to include additional access routes or other provisions to increase evacuation safety.*

Action 5-5.16: *Analyze the capacity, viability, and safety of evacuation routes for areas in wildfire-prone locations (wildland-urban interface fire area) and incorporate the results into the City's Emergency Operations Plan.*

Climate Resilience

Scientists expect climate change to increase the frequency and intensity of natural hazards in the future. Santa Rosa has already experienced changes in precipitation patterns—severe storms and drought, urban flooding, extreme heat, and wildfires. According to California's

Fourth Climate Change Assessment,¹ these changes will continue, including in Santa Rosa.

In 2021 the City conducted a Climate Change Vulnerability Assessment (see **Appendix B**) to investigate how climate change may affect people, buildings, infrastructure, and other key community assets pursuant to California Government Code Section 65302(g)(4) and in accordance with the California Adaptation Planning Guide.

Table 5-1 shows how the primary climate stressors—changes to precipitation patterns and higher average temperatures—will cause secondary climate stressors at the regional and local level. The assessment evaluates how climate change exacerbates eight natural hazards (agricultural and ecosystem pests and diseases, drought, extreme heat, climate sensitive health risks, landslides, severe wind, severe storms, and wildfire) and the effects on 65 different population groups and community assets. Each population or asset received a score ranging from low to high vulnerability for each relevant hazard. The Climate Change Vulnerability Assessment indicates that among all natural hazards exacerbated by climate change Santa Rosa populations and assets are most vulnerable to wildfire. Additional details on the method, population and assets evaluated, and results are in the General Plan **Appendix B**. The results of the Climate Change Vulnerability Assessment are integrated into the Safety and Climate Resilience sections of this element.

¹ Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission).

2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCCA4-2018-013.

Table 5-1
Climate Stressors

Primary Climate Stressors	Secondary Climate Stressors	Climate Stressor Impacts
Increase in Average Temperatures	Increased frequency and intensity of extreme heat days and warm nights	<ul style="list-style-type: none"> Increased heat-related illness and death, particularly among vulnerable populations. Greater demand for emergency services, public spaces that provide relief from extreme heat (e.g., libraries, community centers), and water-dependent recreation. Increased frequency of preemptive power outages for wildfire prevention, resulting in the loss of air conditioning, greater risk of food/medication spoilage, disruptions to public services, and other impacts.
	Earlier snowpack melt and more precipitation falling as rain instead of snow	<ul style="list-style-type: none"> Less water available later in the water-year for agricultural and domestic uses.
	Increased evaporation and evapotranspiration rates	<ul style="list-style-type: none"> Reduced growth and productivity of agricultural crops and native vegetation due to heat stress and increases in evapotranspiration. Decreased vegetation moisture leading to increased susceptibility of a wildfire.
	Increased human and ecosystem pests and diseases	<ul style="list-style-type: none"> Harm to agriculture, public health, and native plants and wildlife.
Changes in Precipitation Patterns	Fewer, more intense precipitation events	<ul style="list-style-type: none"> Increased risk of injuries/death and property damage or loss during extreme flooding and landslides.
	Increased frequency and intensity of drought	<ul style="list-style-type: none"> Reduced water availability due to declining surface water supplies and groundwater recharge combined with increased demand for agricultural and household use. Increased cost of food and water. Increased stress and mortality in agricultural crops and native vegetation. Economic losses due to crop failures and loss of tourism associated with water-dependent activities.
	Increased frequency of flooding and landslides	<ul style="list-style-type: none"> Increased runoff during heavy rainfall events that follow dry periods, resulting in greater risk of landslides and flash floods.

Table 5-1 Climate Stressors		
		<ul style="list-style-type: none"> • Damage to roadways and/or temporary loss of access to isolated neighborhoods. • Interruption of public services and possible public health impacts following damage to utilities. • Economic impacts of damage to businesses and agricultural operations.
	Decrease in wildfire fuel moisture	<ul style="list-style-type: none"> • Increased potential for wildfire. • Increased risk of injuries and death due to burns and smoke inhalation, as well as longer-term health impacts related to eye and respiratory issues. • Damage and loss of homes, businesses, and other infrastructure, particularly within the wildland-urban interface (WUI). • Possible disruption of critical supply chains, access to public services, and other linkages. • Economic losses due to direct damages (i.e., to businesses) as well as declines in tourism and recreation following fire.
<p>Source: EcoAdapt, "Projected Climate Changes And Associated Impacts For Santa Rosa, CA," Workshop Handout, 2020.</p>		

Agricultural and Ecosystem Pests and Diseases

The 2021 Sonoma County Agricultural Commissioner Crop Report indicates that agriculture and livestock production had a value of \$811 million in 2021 and supported roughly 8,500 agricultural laborers. The largest-grossing crops include wine grapes and milk. Agricultural pests and diseases can affect crop plants, livestock, and nurseries, as measured in terms of pest and disease incidents, which are likely to increase because higher temperatures allow insects to reproduce more rapidly and lengthen the activity window for pests and diseases. Pests and diseases can slow the growth of and inflict damage on agricultural crops and ecosystems, harming economic drivers and people who depend on them.

Droughts

Emerging climate change projections show that Sonoma County, along with the rest of California, will experience an increase in the intensity and severity of extreme hazard events. We can expect longer, more severe droughts, which will likely strain agribusinesses, habitats, and water supplies. Droughts may be twice as frequent by 2050 than they were in the past, and precipitation will come in fewer, more intense storms with longer dry seasons. Although Santa Rosa will likely experience an increase in overall annual precipitation levels compared to historic averages, the wet season will be shorter because of climate change, which will cause droughts to last longer and be more intense.²

² EcoAdapt, 2021, "Climate Vulnerability and Adaptation Report for Santa Rosa".

³ EcoAdapt, 2021, "Climate Vulnerability and Adaptation Report for Santa Rosa".

Extreme Heat and Warm Nights

Extreme heat happens when temperatures rise significantly above normal levels. The Sonoma County Office of Emergency Management defines extreme heat as an extended period of intense heat and humidity with temperatures above 90 degrees Fahrenheit. Maximum temperatures are projected to increase by 7.5 degrees Fahrenheit by 2100, causing an increase of 20 days per year of extreme heat and 29 additional frost-free nights.³ Extreme heat poses a significant human health risk to Equity Priority Populations, especially to those without air conditioning, seniors, young children, pregnant women, persons with chronic diseases, outdoor workers, immigrant communities, and persons experiencing homelessness. Very high temperatures also can damage energy delivery and rail infrastructure and services, constraining their ability to meet community needs.

Extreme daytime temperatures intensify human health risks when there is a lack of cooling overnight. With warmer nighttime temperatures, heat stress continues to build and increases the risk of heat illnesses and death. Heat waves kill more people in the United States than any other natural disaster.⁴

Other Climate-Sensitive Health Risks

Climate influences the infection rates of various diseases, which are transmitted to humans and other animals by vectors—mosquitoes, flies, ticks, mice, rats, etc. Vectors carry bacteria and viruses that can pass from one host to another. Warmer temperatures and more precipitation often lead to larger populations of disease-carrying vectors and a greater risk of. This

⁴ National Weather Service, 2022. "Weather Related Fatality and Injury Statistics." <https://www.weather.gov/hazstat/>

includes vector-borne diseases spread by ticks, such as Lyme disease and Rocky Mountain Spotted Fever; by mosquitos, such as West Nile Virus, Zika Virus, and Dengue Fever; and by rats and mice, such as hantavirus; and water-borne diseases.

Severe Winds and Storms

Severe winds and storm events, such as thunderstorms, hail, heavy rainfall, and flooding, have become more frequent and intense as a result of climate change. In Santa Rosa, most severe storms are linked to “atmospheric rivers,” which are long, narrow storm systems that carry water vapor from the tropics to higher latitudes. When they reach land, they can quickly blanket the region in heavy precipitation. The storms are likely to become more extreme in the future because of warmer temperatures and changes in precipitation patterns.

Severe wind events have sustained winds of 40 miles per hour, or wind gusts of 58 or more miles per hour. Severe winds and storms can cause secondary hazards, such as Public Safety Power Shutoffs (PSPS), which especially affect people who rely on electrical medical devices. The types of dangers posed by severe winds and storms vary widely and include injuries or deaths, damage to buildings and structures, disrupted economic drivers, and roads blocked by debris or fallen trees.

Public Safety Power Shutoffs or PSPS are preemptive measures to reduce the risk of fire caused by electric infrastructure during extreme weather events because high winds can blow tree branches and debris into energized lines and cause fires.

Wildfires

Warmer temperatures, an increase in drought conditions, and severe wind events are likely to

create faster-moving and hotter-burning wildfires, leading to a greater chance that a spark will grow into a dangerous blaze. Climate change is also expected to extend the fire season throughout much of the year, creating an overlap with high-velocity wind events. Because wildfires burn the trees and other vegetation that help stabilize hillsides and absorb water, more areas burned by fire could lead to an increase in landslides and debris flows during or after heavy precipitation events.

Goals, Policies, and Actions

Goal 5-6: Santa Rosa is a resilient city able to adapt to, recover from, and thrive under changing climate conditions.

Policy 5-6.1: Support legislative and regulatory items that further climate resilience.

Action 5-6.1: Ensure all current and future City plans and updates include climate change considerations—include specific plans, Bicycle and Pedestrian Master Plan, Design Guidelines, Hazard Mitigation Plan, Citywide Creek Master Plan, Municipal Climate Action Plan, Urban Water Management Plan, Water Shortage Consistency Plan, “Our Water Future” Water Supply Alternatives Plan, Community Wildfire Protection Plan, and others.

Action 5-6.2: Update the City’s Climate Change Vulnerability Assessment with new climate projections and data during each Safety Element update.

Action 5-6.3: Evaluate a Zoning Code update that will include a Resilient City code to increase adaptation and resilience in the city.

Policy 5-6.2: Support neighborhood resilience during extreme weather events.

Action 5-6.4: *Invest in community predisaster planning efforts and exercises.*

Policy 5-6.3: Elevate extreme heat to a major hazard of concern in Santa Rosa.

Action 5-6.5: *Develop a plan, consistent with the California Extreme Heat Action Plan, that includes establishing community cooling centers, weatherizing City buildings, and planning cooling strategies for persons engaged in outdoor work and persons experiencing homelessness.*

Action 5-6.6: *Continue to build public awareness about extreme weather events through multilingual targeted communications campaigns focusing on EPAs and Equity Priority Populations.*

Action 5-6.7: *Coordinate with Sonoma County Transit, Santa Rosa Transit and CityBus, and SMART to increase shading and heat-mitigating materials on pedestrian walkways at transit centers, transit stops, and train stations.*

Action 5-6.8: *Increase the number of Santa Rosa Transit stops with shade cover and shelters to provide protection from extreme heat and severe storms, prioritizing stops in EPAs.*

Action 5-6.9: *Establish standardized temperature or air quality triggers for opening City-operated community resilience and cooling centers.*

Policy 5-6.4: Encourage collaboration among departments and with nonprofit organizations to create a network of equitably located

resilience centers throughout the city.

Action 5-6.10: *Partner with neighborhood groups and nonprofit organizations to establish a network of equitably located and universally accessible community resilience centers throughout Santa Rosa that are situated outside of areas at risk from hazard impacts to the extent possible.*

Policy 5-6.5: Seek funding to upgrade existing warming and cooling centers to have the ability to offer refuge from extreme heat events and poor air quality due to regional wildfire smoke and be equipped with renewable energy generation and backup power supplies.

Action 5-6.11: *Seek grant funding to identify and map existing community facilities, such as libraries, gymnasiums, community centers, and auditoriums, that can serve as community resilience centers and support people with access and functional needs during hazard events.*

Action 5-6.12: *Continue to provide backup power and emergency supplies at critical City facilities, emergency shelters, community resilience centers, and cooling centers in case of power and water outages.*

Action 5-6.13: *Coordinate with transit providers to identify and advertise ways for individuals with restricted mobility to reach resilience centers, cooling centers, and alternate care sites.*

Action 5-6.14: *Evaluate updating the Noise Ordinance to allow outdoor*

workers to shift working hours to earlier or later in the day, or alternative days, between May and September to reduce heat-related illnesses.

Action 5-6.15: *Update the City's Zoning Code and Public Improvement Standards to remove inconsistencies for promoting and expanding the use of drought-tolerant green infrastructure, including street trees and landscaped areas, as part of cooling strategies in public and private spaces.*

Action 5-6.16: *Conduct a community-wide tree canopy assessment to quantify how much of the City's land area is covered by trees, including the streets with street tree canopy cover; identify the location of those trees, and identify opportunities to plant trees.*

Action 5-6.17: *Update the Santa Rosa Street Tree list to include native, drought-tolerant, and low-water-use tree species that are appropriate for street landscaping.*

Action 5-6.18: *Create and regularly update an Urban Greening Plan, consistent with the Climate Resilient Tree List, to increase the urban tree canopy, green spaces, and green roofs to reduce the heat island effect in the most vulnerable areas of the city.*

Policy 5-6.6: **Reduce the spread of human health hazards, including pests, diseases, and viruses.**

Action 5-6.19: *Coordinate with the Marin/Sonoma Mosquito and Vector Control District to minimize mosquitos, ticks,*

rodents, and other vectors that may carry or spread human health hazards.

Action 5-6.20: *Work with local employers to provide resources to help protect employees from environmental hazards, including poor air quality and pests and diseases.*

Policy 5-6.7: **Strengthen the community's ability to respond to the risks and negative effects of power outages, including PSPS events, and other climate-related threats.**

Action 5-6.21: *Support efforts to underground electrical transmission infrastructure throughout the city, including substations, prioritizing high-voltage transmission lines and areas in the Wildland-Urban Interface Fire Area.*

Action 5-6.22: *Work with property owners to incorporate sustainable, energy-efficient, water-efficient, and environmentally regenerative features into facilities, landscapes, and structures.*

Action 5-6.23: *Collaborate with Pacific Gas & Electric, Sonoma Clean Power, and organizations such as the Disability Services and Legal Center to ensure that those who depend on electricity supply for medical devices and refrigerating medication have backup energy supplies during outages, including during extreme heat and extreme wind events.*

Policy 5-6.8: **Increase the resiliency of City-owned structures to severe weather events and support homeowners and business owners to increase the resilience of their buildings and properties**

through retrofits, weatherization, and other improvements.

Action 5-6.24: *Develop a database of information related to retrofits, weatherization, and other improvements.*

Action 5-6.25: *Install backup power, preferably from renewable energy sources, and water resources at emergency shelters, resilience centers, and cooling centers.*

Noise

Noise is unwanted sound. In most of Santa Rosa, noise can be characterized as routine background sound and unusual or intermittent events. Cars, trucks, buses, trains, air conditioning systems, and aircraft generate background noise. Intermittent and sometimes excessive noise can come from leaf blowers, helicopters, train whistles at grade crossings, chain saws, unmuffled motor vehicles, and similar sources. Excessive noise can cause annoyance, health problems, economic loss, and even hearing impairment.

Sound waves traveling outward from a source exert a sound pressure level usually measured in decibels (dB). Environmental noise is usually measured in A-weighted decibels (dBA), a metric corrected for the human ear response to various frequencies (some animals can hear sounds outside the human range). Most people can detect a change in sound level of about 3 dBA, and an increase of 10 dBA is perceived by the human ear as a doubling of loudness.

Projected Noise Sources

The major sources of noise in Santa Rosa throughout the General Plan time frame include:

U.S. Highway 101 and State Highway 12. Highways 101 and 12 generate significant noise

levels because of high traffic volumes and speeds. Tire interaction with the roadbed and truck engines create noise. In terms of sound energy, noise from one truck is equivalent to 20 autos.

Regional/Arterial streets. Major regional/arterial streets with high noise levels include Fulton Road, Guerneville Road, Bellevue Avenue, Stony Point Road, Mendocino Avenue, Fountaingrove Parkway, Calistoga Road, Summerfield Road, and College Avenue. In general, automobile traffic volumes will increase by 2050 along with noise levels.

Railroad operations. Railroad noise is most noticeable from horn soundings and at-grade crossings. The city has 14 at-grade crossings—Bellevue Avenue, Hearn Avenue, Barham Avenue, Sebastopol Avenue, W. 3rd Street, W. 6th Street, W. 7th Street, W. 9th Street, W. College Avenue, Guerneville Road, W. Steele Lane, Piner Road, and San Miguel—and one potential at-grade crossing at Jennings Avenue.

Emergency medical helicopters and vehicles. Emergency medical vehicles with sirens create intermittent but significant noise. Helicopter operations can affect a large population, and the City has received complaints regarding medical helicopter operations at Providence Santa Rosa Memorial hospital.

Landscaping equipment. Landscaping equipment, such as gasoline-powered leaf blowers, generate noise and are regulated by the City's Noise Ordinance.

Charles M. Schulz-Sonoma County Airport. Airport operation is addressed in the Sonoma County General Plan and the Comprehensive Airport Land Use Compatibility Plan (ALUC).

Industrial and commercial facilities. Industrial and commercial facilities are sometimes noise sources, particularly auto wrecking and commercial loading operations. The City receives

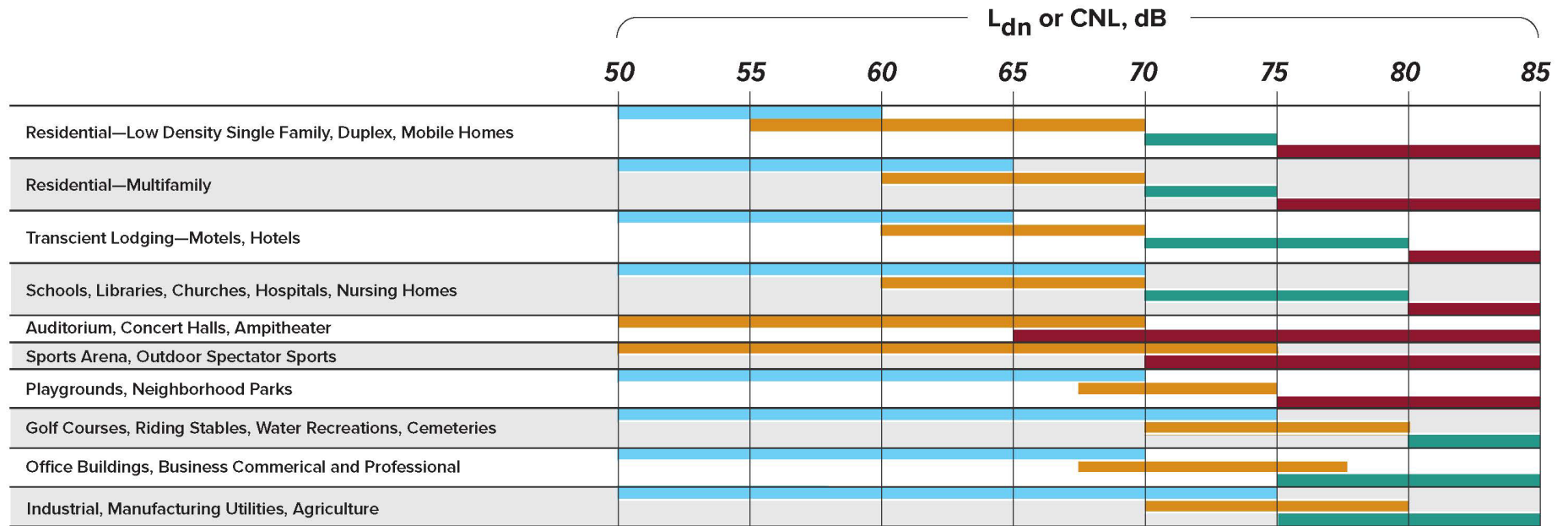
occasional complaints about noise generated by these types of businesses.

Figure 5-13 shows land uses in the city with compatible noise levels. **Figure 5-13 A** offers comparative examples of dBA noise levels. **Figure 5-14** shows the existing traffic noise levels in the city. **Figures 5-15** and **5-16** show the projected traffic noise levels; **5-15** shows future noise levels assuming there are no changes in the city beyond those planned, and **5-16** accounts for changes anticipated outside of Santa Rosa through 2050.

Noise Standards

State law requires general plans to use the Community Noise Equivalent Level (CNEL) or the Day/Night Average Sound Level (Ldn) to describe the community noise environment (in dBA) and its effects on the population; Santa Rosa uses Ldn. The noise standards used by the City include the Land Use Compatibility Standards for community noise environment, depicted in **Figure 5-13**, State of California Noise Insulation Standards (California Code of Regulations, Title 24, Part 2), and applicable standards in the City of Santa Rosa Noise Ordinance. General Plan policies and actions address noise attenuation along major regional/arterial streets through location of land uses, site design, architectural standards, barriers, and street materials.

Figure 5-13: Land Use Compatibility Standards



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

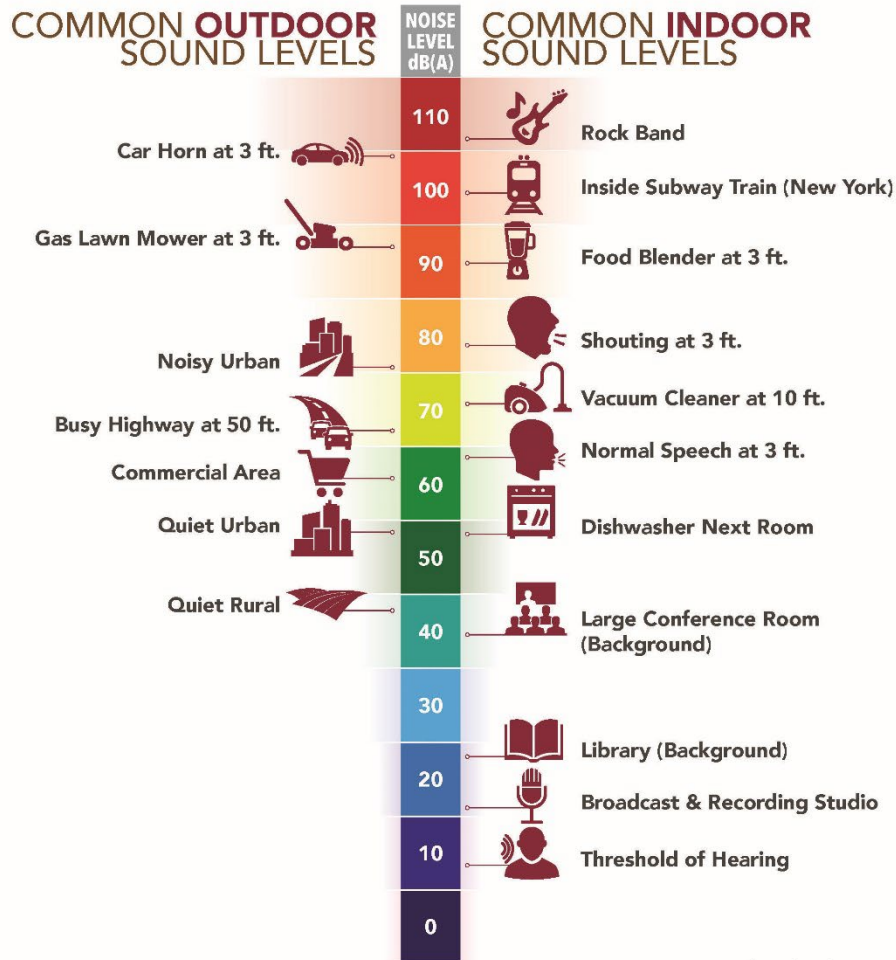
NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Figure 5-13 A: Comparative Examples of dBa Noise Levels.



source: www.faa.gov/regulations_policies/policy_guidance/noise/basics

Figure 5-14: Existing Traffic Noise Levels, 2019

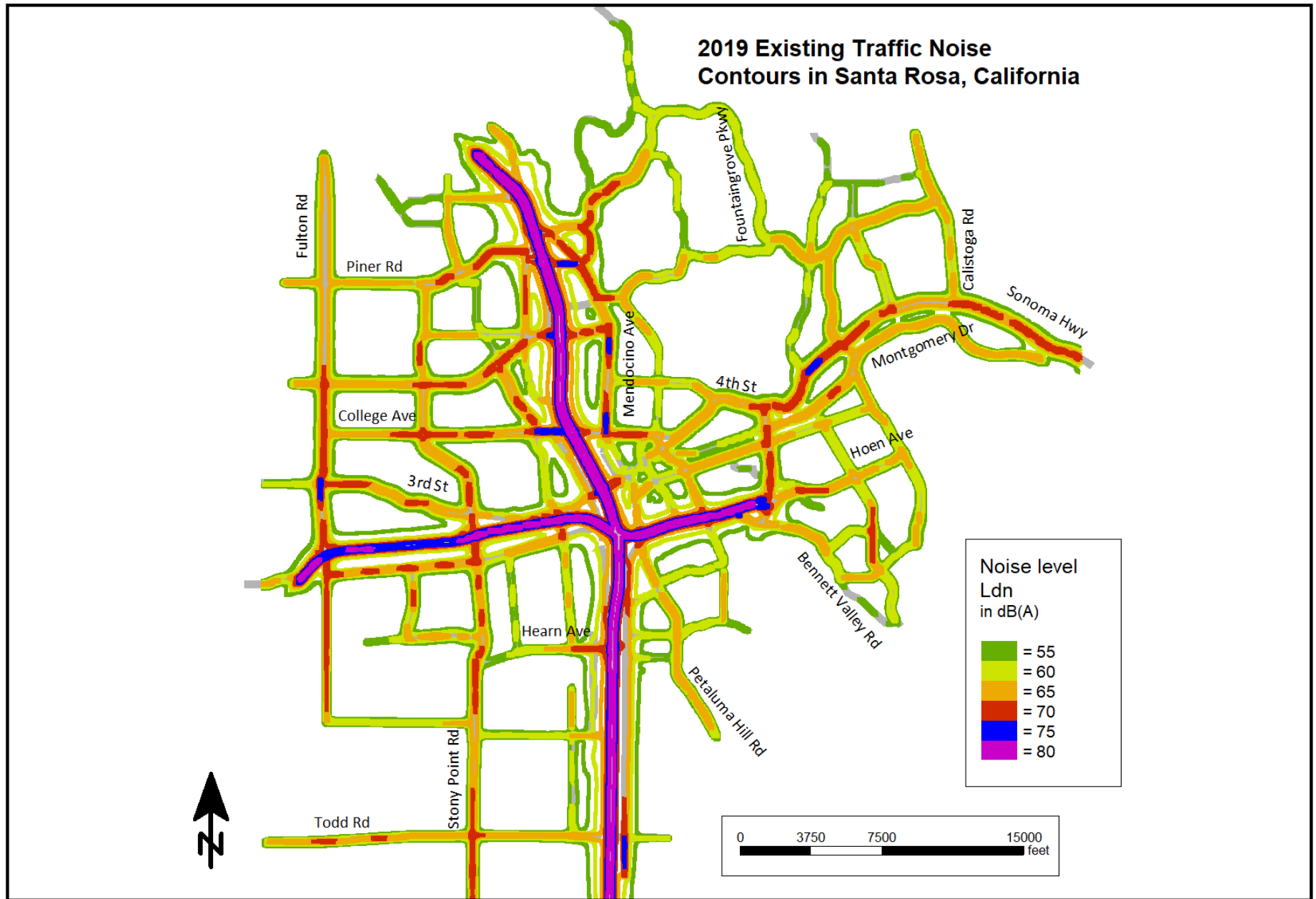


Figure 5-15: Existing Plus Project Traffic Noise Levels, 2050

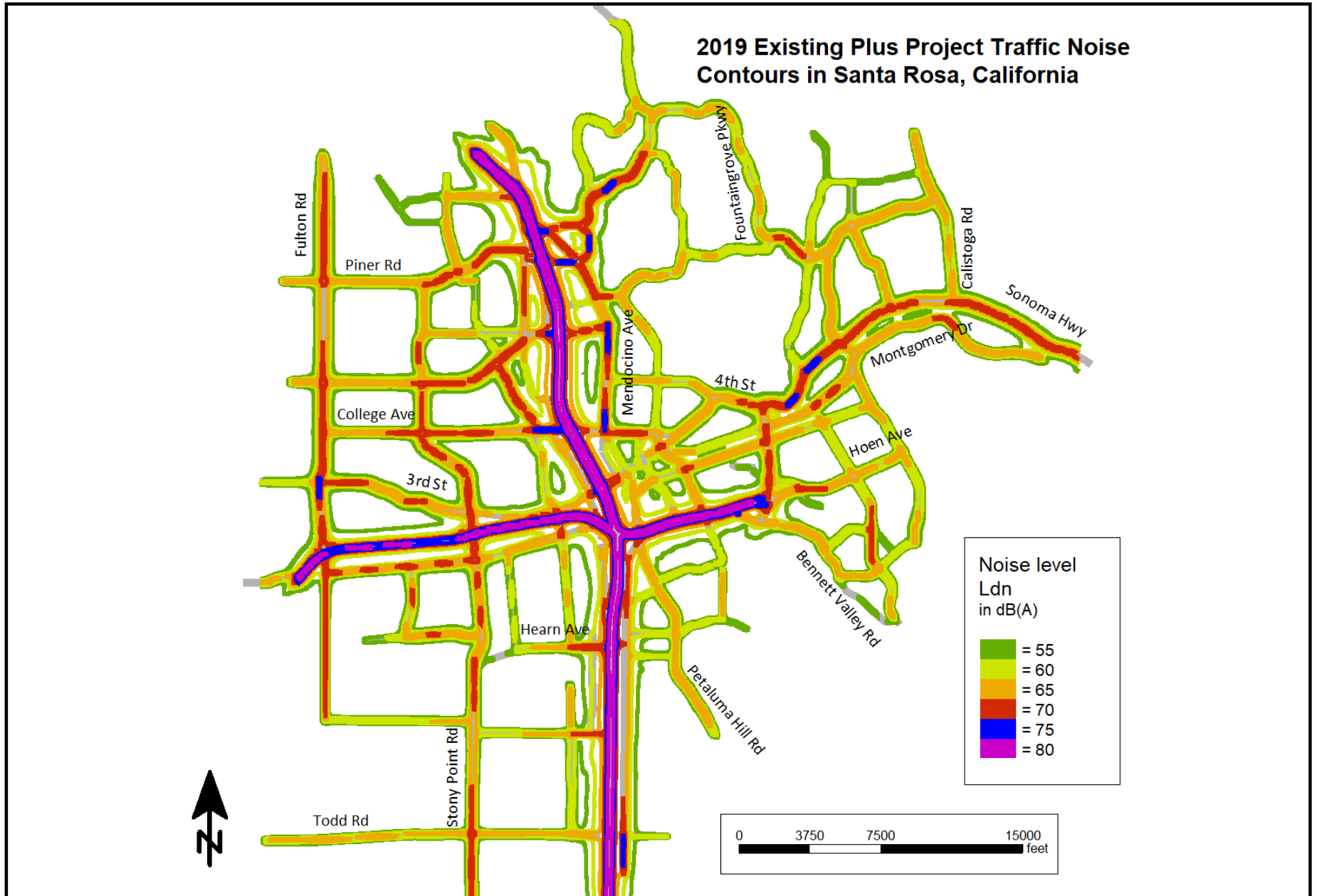
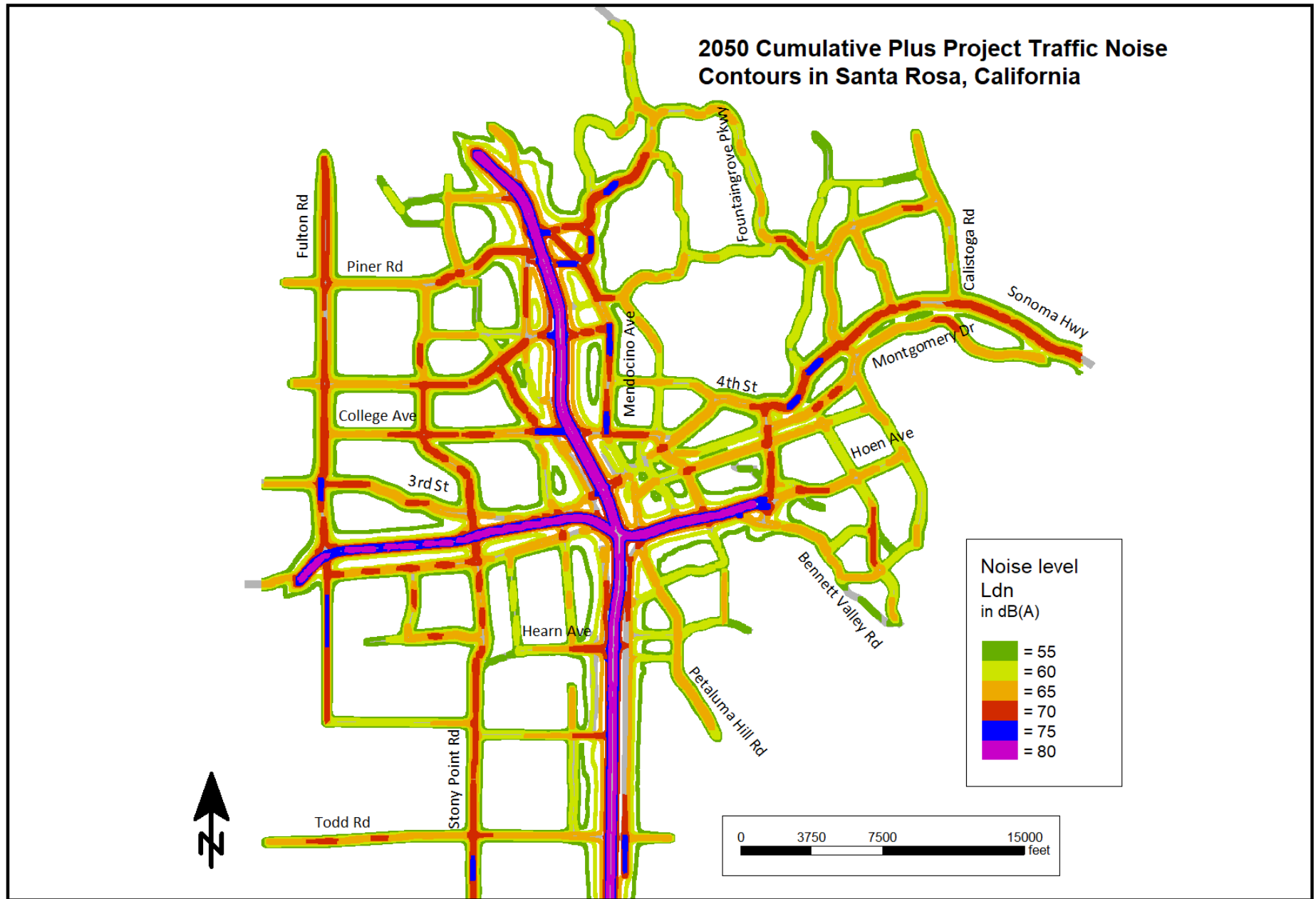


Figure 5-16: Cumulative Plus Project Traffic Noise Levels, 2050



Goals, Policies, and Actions

Goal 5-7: Protect the community from adverse noise impacts that can decrease quality of life.

Policy 5-7.1: Maintain and enforce an acceptable community noise level to protect the health and comfort of people living, working, and visiting in Santa Rosa.

Action 5-7.1: Continue to prohibit noise-sensitive uses in proximity to major noise sources, with the exception of adequately buffered residential buildings near rail stations to promote transit ridership.

Action 5-7.2: Continue to require acoustical studies prepared by qualified acoustical consultants for:

- All new projects proposed for areas with existing ambient noise above 60 dBA Ldn, and mitigation shall be required to reduce noise levels below 45 dBA Ldn in habitable rooms and 60 dBA Ldn in private and shared recreational facilities (additions to existing housing units are exempt).
- All new projects that could generate noise greater than allowed by adopted City standards.

Action 5-7.3: Use the Federal Transportation Authority's construction noise and vibration thresholds to assess impact significance at receiving land uses surrounding new projects sites.

Action 5-7.4: Use the Federal Transportation Authority's train vibration thresholds to assess land use compatibility for new projects within 150 feet of train tracks.

Action 5-7.5: Require conditions of approval or mitigation for new projects that have the potential to create ambient noise levels more than 5 dBA L_{dn} above existing background, within 250 feet of sensitive receptors.

Action 5-7.6: Require conditions of approval or mitigation for existing uses to reduce new noises exceeding normally acceptable levels unless the activities are specifically exempted by the City Council on the basis of community health, safety, and welfare, such as emergency medical vehicles, helicopters, and sirens.

Action 5-7.7: Work with private parties to reduce or eliminate nuisance noise from industrial and commercial sources that impact nearby residential areas, and if progress is not made within a reasonable time, issue abatement orders or take other legal measures.

Action 5-7.8: Consider reduced speed limits, improved paving texture, and traffic controls to reduce roadway noise to normally acceptable levels in areas where noise standards may otherwise be exceeded (e.g., where homes front regional/arterial streets and in areas of mixed-use development).

Action 5-7.9: Use conditions of approval to achieve measures to reduce noise impacts primarily through site planning, and avoid engineering

solutions for noise mitigation, such as sound walls, if possible.

Action 5-7.10: *Update the Zoning Code to require residential developers to provide buffers other than sound walls and allow sound walls only when other techniques would not prevent projected noise levels from exceeding adopted land use compatibility standards.*

Action 5-7.11: *Work with Caltrans to assign a high priority to traffic noise mitigation programs and support construction of attractive sound walls, as necessary, along Highway 101 and Highway 12.*

Action 5-7.12: *Prohibit new helipads in developments of industrial, commercial, office, or business park uses, unless the helipad will provide a significant benefit for community health, safety, and welfare.*

Policy 5-7.2: Promote opportunities for local music and entertainment venues without compromising acceptable noise levels.

Action 5-7.13: *Identify noise mitigation measures and other strategies to allow the establishment, growth, and/or continuation of music and entertainment venues.*

Public Services and Facilities

Water, Wastewater, Recycled Water, Stormwater, and Solid Waste

Water Supply

The Russian River watershed supplies the majority of the city's potable water supply, and the Sonoma County Water Agency (SCWA) delivers the water under contractual agreement. SCWA is the primary provider of potable water in Sonoma County and holds water rights to divert 92 million gallons of water per day (mgd) from the Russian River, with an annual maximum of 75,000 acre-feet per year. SCWA also has three groundwater wells in the Santa Rosa Plain that provide an additional supply averaging 3,870 acre-feet per year. SCWA uses its transmission and delivery system to serve eight major water contractors, of whom Santa Rosa is the largest. Under its current agreement with the SCWA, the city is entitled to receive 56.6 mgd (average day peak month) up to an annual volume of 29,100 acre-feet.

Santa Rosa also has two active production wells that together can pump up to 2,300 acre-feet per year to supplement the city's potable water supply. The City operates these wells for up to eight months per year, typically between April and October. These wells produce an average of 1,100 acre-feet of drinking water per year, which is about 6 percent of the city's total annual water supply. The City also owns and operates the Subregional Water Reuse System, which provides about 140 acre-feet per year of recycled water for nonpotable uses. Population and employment increases under the General Plan 2050 could result in a total water demand of 23,813 acre-feet per year (an average of 21.3 mgd) in the planning area. The 2020 Urban Water

Management Plan projects water supply (potable and recycled water), as far out as 2045, of 31,540 acre-feet per year for normal hydrological years (average rainfall), and projects water demand of 25,097 acre-feet per year by 2045, meaning that the projected demand will not surpass projected supply through buildout of the General Plan in normal hydrologic years.

Water Distribution

The City's water distribution system includes 20 booster pump stations, 24 storage tanks, 624 miles of water mains, and more than 54,000 water service connections. The City evaluated this system in 2014 as part of the Water Master Plan (WMP) update for its ability to meet established water system service and performance standards under various existing water demand conditions. In general, the evaluation found deficiencies in meeting peak-hour and maximum-day demand flows to some higher-elevation service locations. Mitigation for these peak-hour and maximum-day demand deficiencies involves the installation of individual or localized booster pumps in the affected low-pressure areas. The WMP update also identified fire-flow deficiencies at some booster pump stations in high-elevation pressure zones, where mitigation would involve the replacement of the existing booster pumps. Pipeline capacity issues under fire-flow conditions were also noted at several locations on a court or other dead-end roadway.

Wastewater

The City's sewer system collects sewage from residential, commercial, and industrial uses in the city and transports it to the Laguna Subregional Wastewater Treatment Plant (WTP) for treatment and disposal. The city sewer collection system includes approximately 610 miles of sewer mains and 17 sewer lift stations. The Laguna WTP is currently permitted to treat up to 21.34 mgd, and average dry weather flow of wastewater is 14.4 mgd per day. The WTP

existing and planned capacity is sufficient to meet the city's wastewater needs through 2050.

Recycled Water

The City of Santa Rosa manages the Laguna WTP, which also receives wastewater from the cities of Cotati, Rohnert Park, and Sebastopol, plus portions of unincorporated Sonoma County. Depending on the amount of rainfall in any year, an average of 95 percent of the wastewater treated at the Laguna WTP is recycled for urban and agricultural irrigation and to replenish the geysers steam fields to produce clean, green energy.

Stormwater

The City of Santa Rosa storm drain system consists of more than 340 miles of piped infrastructure and over 100 miles of open channels, ditches, and creeks. The system also has detention facilities that attenuate peak flows and allow sediment to settle before flows continue downstream.

Runoff from Santa Rosa ultimately drains westward via nine watershed areas into the Laguna de Santa Rosa. Santa Rosa Creek is a part of the city's largest drainage basin, draining the northern portion of the city as well as the downtown area. The eastern section of the city drains through watersheds consisting of Brush Creek, Oakmont Creek, Spring Creek, and Matanzas Creek, which are tributaries to Santa Rosa Creek. Piner Creek and Paulin Creek collect runoff from the western portion of the city and are also tributaries to Santa Rosa Creek. To the south, Colgan Creek and Roseland Creek accommodate drain system discharge and are direct tributaries to Laguna de Santa Rosa. Todd Creek also provides drainage for a southern portion of the city and is a tributary to Laguna de Santa Rosa via the Bellevue-Wilfred Channel.

Solid Waste

Santa Rosa contracts with Recology Sonoma Marin to provide weekly solid and organic waste and recyclable material collection to Santa Rosa community members. The California Department of Resources Recycling and Recovery (CalRecycle) sets the target per-capita disposal rate for jurisdictions and reported a statewide average of 5.2 pounds of waste per person per day. In 2018, the city's disposal rate was 2.8 pounds of waste per person per day (well below the CalRecycle target).

Santa Rosa complies with the goals of the 2018 Santa Rosa Zero-Waste Plan to achieve at least 75 percent diversion of waste from landfill disposal by 2030 and decrease per-capita disposal of waste collected by Recology by 10 percent each year through 2030. By 2040, the City seeks to decrease the diversion rate to less than 1 pound of waste per-capita day by reducing the amount of waste created at the source and reusing materials already in the existing waste stream.

Goals, Policies, and Actions

Goal 5-8: Provide adequate and high-quality city services for water, wastewater, recycled water, stormwater, and solid waste.

Policy 5-8.1: Ensure that a sufficient supply of water is available to serve existing and future needs of the city.

Action 5-8.1: Continue to use high-quality water from the Sonoma Water aqueduct system as the primary water supply.

Action 5-8.2: Continue to require that water supply capacity and infrastructure are in place prior to occupancy of new development.

Action 5-8.3: Maintain water, wastewater, and recycled water system integrity and capacity by seeking funding for maintenance, rehabilitation, and replacement of existing infrastructure.

Action 5-8.4: Decline requests for extension of water beyond the Urban Growth Boundary, except in cases of existing documented health hazards and in areas where the City has entered into prior contractual agreements to provide services, in collaboration with the County and LAFCO.

Action 5-8.5: Evaluate the City's long-term water supply strategies, including development of new sources of water supply, enhanced water efficiency programs, expanded use of recycled water, and implementation of appropriate growth control measures if deemed necessary by the City.

Action 5-8.6: Work with State agencies to identify water quality issues and apply for remediation funds as needed.

Action 5-8.7: Complete and implement the Water Supply Alternatives Plan to mitigate potential impacts of climate change, drought, and natural or human caused catastrophic events by enhancing water supply resiliency and reliability.

Action 5-8.8: Continue working with the Santa Rosa Plain Groundwater Sustainability Agency to implement the Groundwater Sustainability Plan and achieve sustainability of local groundwater resources.

Policy 5-8.2: Conserve water and maintain water quality.

Action 5-8.9: Regularly monitor water quality to maintain high levels of water quality for human consumption and for other life systems in the region.

Action 5-8.10: Require new development projects to provide water-efficient landscaping in accordance with the City’s Water Efficient Landscape Ordinance.

Action 5-8.11: Continue to educate community members about low-cost water efficiency improvements in homes and businesses.

Action 5-8.12: Continue to comply with statewide regulations for long-term urban water use efficiency.

Action 5-8.13: Promote water efficiency through public education, incentives, rebates, technical assistance, and information about indoor and outdoor water use efficiency measures.

Action 5-8.14: Encourage property owners to install rainwater catchment and greywater systems in new developments or major retrofits.

Action 5-8.15: Encourage property owners to install permeable paving, bioswales, and other green infrastructure components in new and significantly renovated hardscape projects.

Policy 5-8.3: Ensure water distribution lines are adequate for existing and future populations.

Action 5-8.16: Continue to require that developers improve water distribution infrastructure if needed to serve the demands of new development.

Action 5-8.17: Continue to identify funding sources for water infrastructure projects on the Capital Improvement Program list.

Action 5-8.18: Evaluate both the upfront (capital) and ongoing maintenance cost commitments of new projects and/or programs prior to approval.

Action 5-8.19: Evaluate costs and benefits of new and existing water projects before diverting funding/resources needed for proper management of existing infrastructure.

Action 5-8.20: Actively maintain an inventory of existing infrastructure and associated operations and maintenance requirements (staffing and budget) in addition to capital and operations and maintenance of planned infrastructure.

Policy 5-8.4: Ensure that adequate sewer capacity is available to serve existing and future needs of the city.

Action 5-8.21: Maintain existing levels of wastewater service by preserving and improving infrastructure, including replacing sewer mains, as necessary.

Action 5-8.22: Decline requests for extension of sewer services beyond the Urban Growth Boundary.

Action 5-8.23: Implement the Sewer Master Plan via projects identified in the Capital Improvement Program.

Action 5-8.24: Regularly review wastewater treatment and biosolids management strategies to accommodate growth.

Action 5-8.25: *Work with regional partners (notably Rohnert Park, Cotati, Sebastopol, Southpark County Sanitation District, and Sonoma Water) to build consensus on maintenance, rehabilitation, modernization, and resilience improvements at facilities that provide service to them, such as the Laguna Treatment Plant.*

Action 5-8.26: *Complete and implement the Storm Drain Master Plan.*

Action 5-8.27: *Improve stormwater management to increase infiltration, provide treatment, promote groundwater recharge, reduce flood risk, capture trash, and/or enhance the environment.*

Action 5-8.28: *Implement mitigation measures to mimic the pre-development water balance through infiltration, evapotranspiration, and capture and reuse of stormwater.*

Action 5-8.29: *Evaluate stormwater capture and reuse consistent with goals of the Santa Rosa Citywide Creek Master Plan and the MS4 NPDES permit to preserve natural conditions of waterways, minimize channelization of creeks, and protect water quality; identify, educate, label, and promote community awareness that storm drains flow untreated into creeks.*

Action 5-8.30: *Maintain an inventory of storm drain facilities and maintenance needs.*

Policy 5-8.5: Meet the city’s solid waste disposal needs, while maximizing opportunities for waste reduction and recycling.

Action 5-8.31: *Continue public education programs about waste reduction, including recycling, composting, yard waste, wood waste, and household hazardous waste.*

Action 5-8.32: *Aim to achieve multibenefit projects for a “one-water” approach to include stormwater quality (low impact development features) on a large scale, flood mitigation, creek restoration, and increased groundwater recharge.*

Policy 5-8.6: Identify and alleviate impacts from groundwater threats and solid waste.

Action 5-8.33: *Consult with appropriate regional, State, and federal agencies to monitor water quality and address local sources of groundwater and soil contamination, including possible underground storage tanks, septic tanks, and industrial uses, as necessary, to achieve State and federal water quality standards.*

Action 5-8.34: *Monitor the Solid Waste Information System (SWIS) and Closed, Illegal, and Abandoned (CIA) Disposal Sites Program to identify solid waste sites and facilities that are illegal, abandoned, or have not met the standards for closure. Work with State agencies to investigate and enforce standards for sites, with prioritization of sites within and near EPAs.*

Action 5-8.35: *Identify solid waste and hazardous waste facilities that do not comply with standards for preventing contamination of air, water, and soil with hazardous waste. Work with owners of those facilities to upgrade those*

*facilities to meet those standards,
prioritizing facilities in EPAs.*

Education and Learning

Schools

As shown on **Figure 5-17**, the Planning Area is served by eight public school districts, a community college, and 27 private schools ranging from nursery/preschool to college. The public school districts cover the entire Planning Area, and private schools are sprinkled throughout the community offering alternative religious, special-needs, and other specialized programs. Santa Rosa Junior College also offers continuing education programs. The City is not responsible for administration of any schools but works cooperatively with each district and school to support student success.

Libraries

The Sonoma County Library serves the Santa Rosa community and operates four branches in the Planning Area: Central Library, Northwest Santa Rosa Library, Rincon Valley Library, and Roseland Community Library, as shown on **Figure 5-17**.

These facilities are critical to supporting public education, supplementing local school library resources, and providing access to the internet for members of the public, including those who may lack those resources at home.

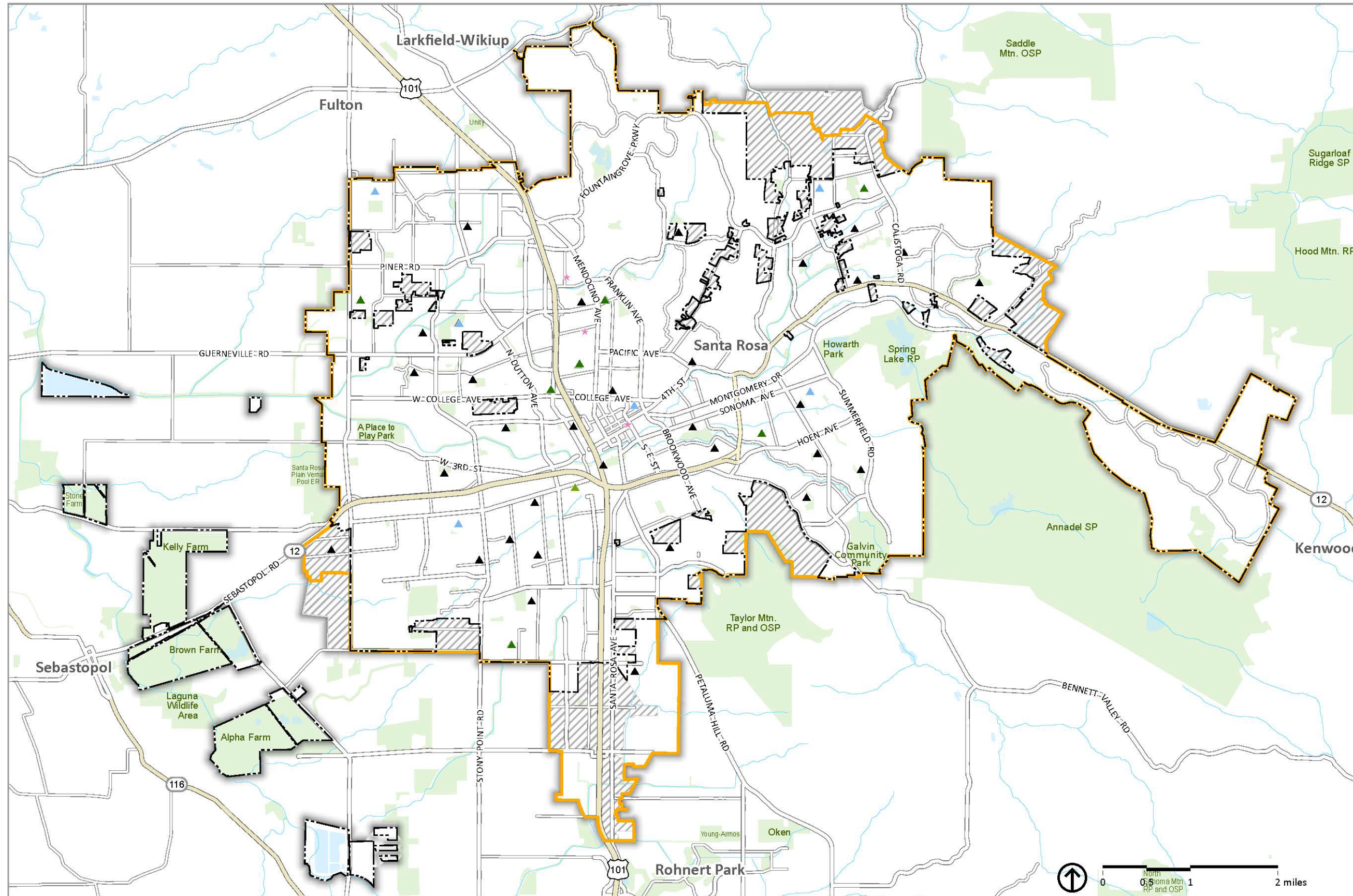


Figure 5-17
Schools and
Libraries

- City Limits
 - Urban Growth Boundary
 - City Sphere of Influence
 - Planning Area
 - Parks and Open Space
 - Creeks and Waterways
- Schools**
- ▲ Adult
 - ▲ Elementary
 - ▲ Elementary-High Combination
 - ▲ Elementary-Intermediate/Middle/Junior High
 - ▲ High School
 - ▲ Intermediate/Middle/Junior High
 - ▲ Middle-High Combination
 - ▲ Preschool
- Libraries**
- ★ Libraries



Source: CalOES, 2021.

Goals, Policies, and Actions

Goal 5-9: Help provide superior and lifelong educational opportunities for all community members.

Policy 5-9.1: Provide high-quality educational opportunities for all members of the community, especially children, youth, and seniors.

Action 5-9.1: Work with schools to locate sites and facilities to serve all neighborhoods and the educational needs of all sectors of the population, including:

- Safe pedestrian and bicycle access and traffic-calming measures in the vicinity.
- Attractive design that contributes to neighborhood identity and pride.
- Partner with the Police Department to create a safe learning environment.

Action 5-9.2: Continue cooperation with Santa Rosa Junior College administration to improve accessibility and quality of local community college education.

Policy 5-9.2: Support the ability of physical library facilities and online platforms to meet the needs of the community.

Action 5-9.3: Continue to work with County library officials to provide a wide range of library services through a strong central facility plus local branches needed to equitably serve a growing and diverse population.

Action 5-9.4: Support the development of additional library facilities,

especially where needed to serve Equity Priority Populations, and assist the library administration in its attempts to secure State and federal funds for facilities and services.

Action 5-9.5: As feasible, require community shopping centers and other major developments to incorporate sites and/or building spaces for branch facilities, pursuant to the library administration's Master Plan.

Police and Fire

Police Services and Facilities

The Santa Rosa Police Department (SRPD), Sonoma County Sheriff's Office (Sheriff), California Highway Patrol, and on-campus Santa Rosa Junior College District Police provide law enforcement services in the Santa Rosa Planning Area. The SRPD has primary responsibility within the city limits, the Sheriff's Office provides services to unincorporated areas of the Planning Area, and the California Highway Patrol provides traffic enforcement on State and local freeways and unincorporated County roadways. Mutual-aid agreements between these agencies allow for joint responses to emergencies.

SRPD services include community-oriented patrol operations and traffic enforcement. The main Santa Rosa Police Department station (shown with other law enforcement offices on **Figure 5-18**) is next to Santa Rosa Fire Department Station 1. This complex is commonly referred to as the Public Safety Building. Although SRPD does not have plans to expand its facilities, the Public Safety Building is aging and in need of extensive repairs and updates. Based on current conditions and anticipated growth, SRPD has stated that it needs:

- A larger facility with an on-site training center within the next 10 years.

- Two additional substations, one in east Santa Rosa and one in the Roseland neighborhood.

To better serve the community, the City recently formed a new crisis response program— inRESPONSE: Mental Health Support Team—that works in partnership with SRPD to answer calls for service with a “mental health first” approach. The team consists of a licensed mental health clinician, a paramedic, and a homeless outreach specialist, with multiple supporting services providers available to assist.

Fire Protection Services and Facilities

Santa Rosa Fire Department (SRFD) is responsible for protecting life, property, and the environment from fire, explosion, and hazardous materials incidents. SRFD responds to calls involving structure, wildland, and other fires; alarm responses; medical emergencies; hazardous materials incidents; automobile accidents; and citizen calls for assistance.

The City operates 10 fire stations throughout the city to expedite response times, as shown on **Figure 5-19**. In addition, the Fire Department has an automatic-aid agreement with the Sonoma County and Kenwood Fire Protection Districts, plus CAL FIRE in some areas of the City. To continue to provide high service levels in the future, SRFD has identified the need to develop one new fire station and relocate two existing stations.

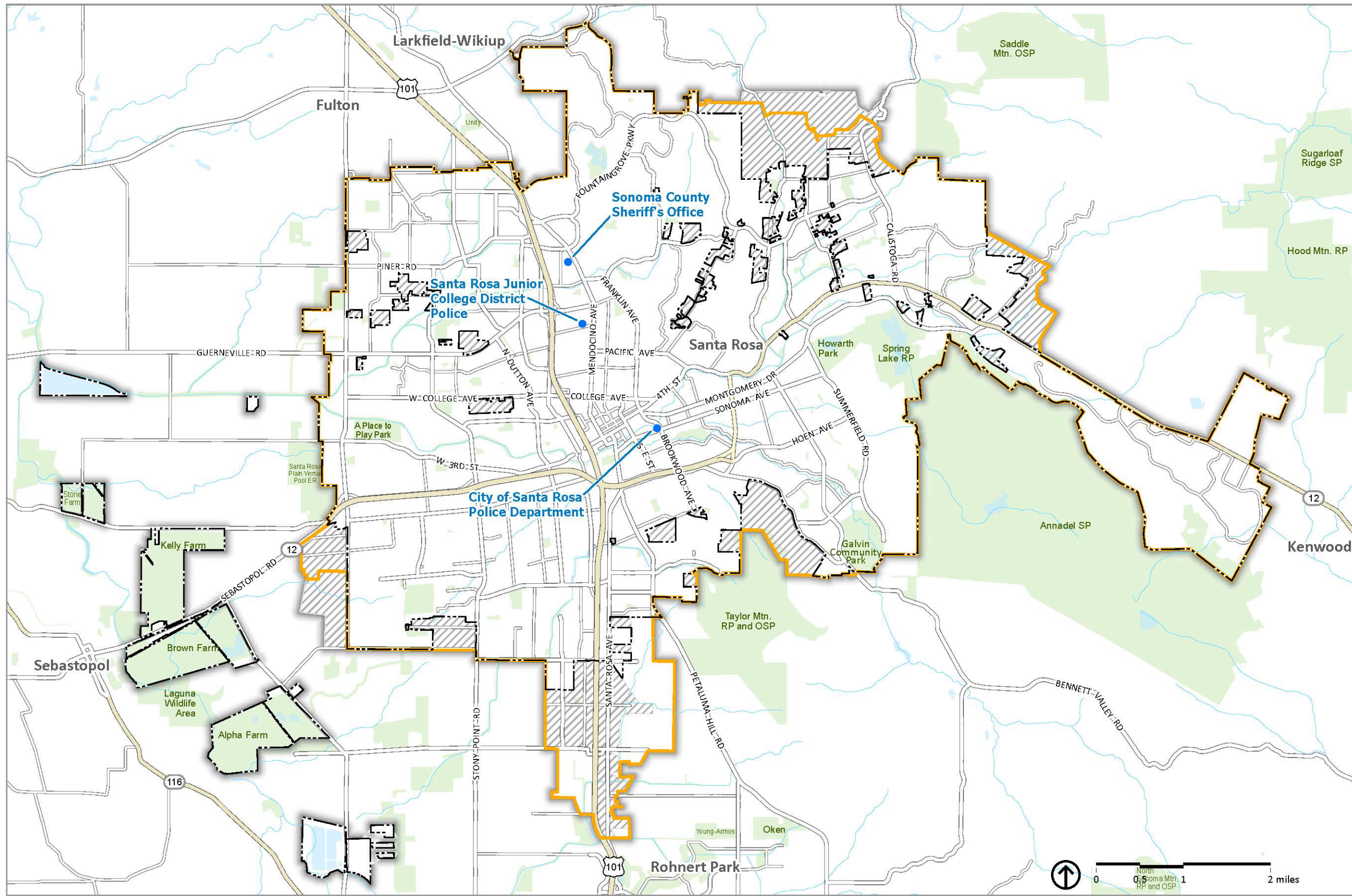
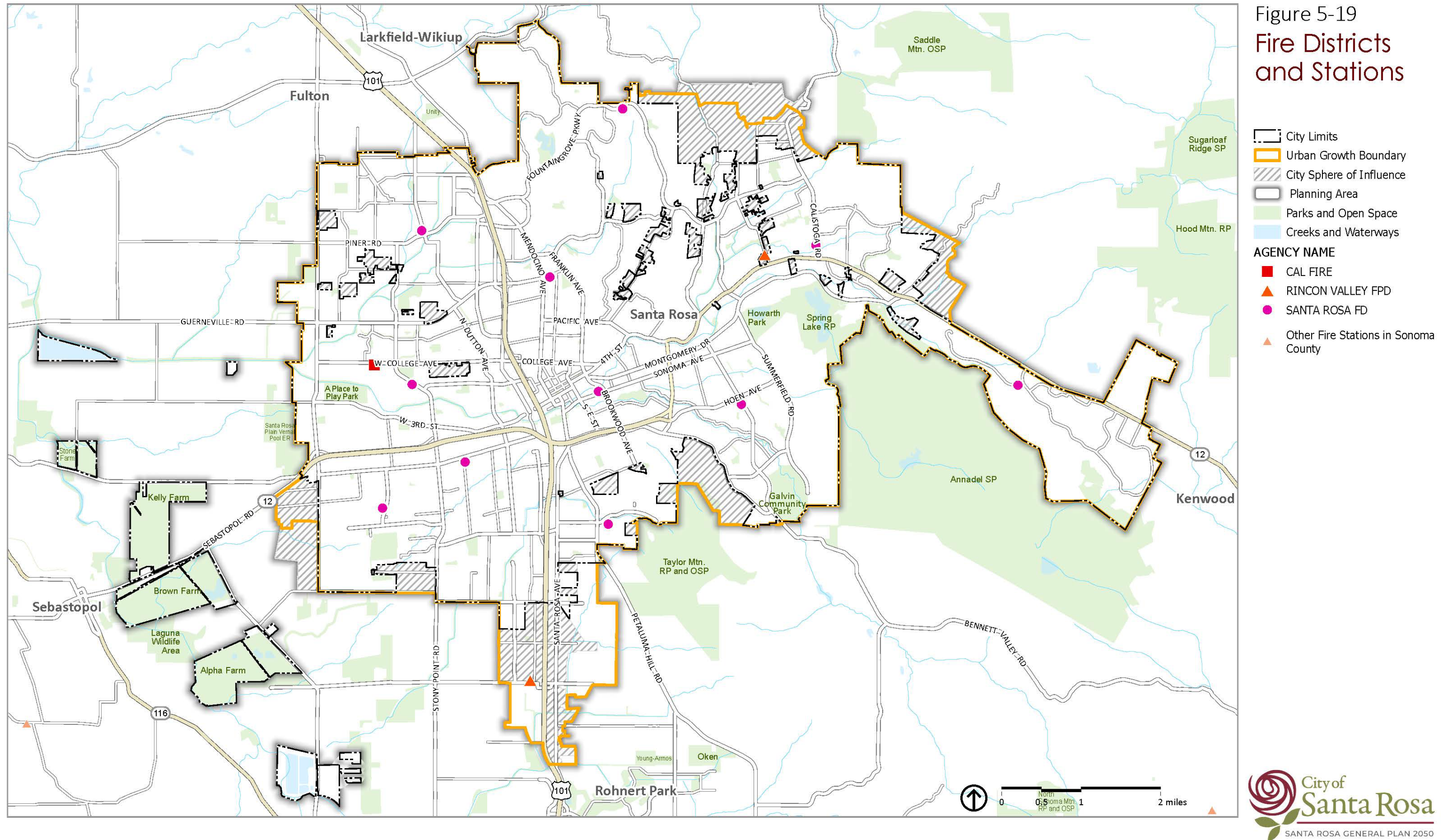


Figure 5-18
Law Enforcement Stations

- City Limits
- Urban Growth Boundary
- City Sphere of Influence
- Planning Area
- Creeks and Waterways
- Parks and Open Space
- Police Stations**
 - Police Stations

Source: CalOES, 2021.

Figure 5-19
Fire Districts
and Stations



Source: CalOES, 2021.

Goals, Policies, and Actions

Goal 5-10: Provide efficient and effective police and fire services for all members of the community.

Policy 5-10.1: Increase investments in community safety.

Action 5-10.1: *Maintain efficient, well-trained, and adequately equipped police and fire personnel.*

Action 5-10.2: *Periodically review and update the Santa Rosa Fire Department Strategic Plan and Standards of Coverage to address the following needs if necessary:*

- Staffing levels
- Station location/placement
- Changing equipment needs
- Training requirements
- Response time criteria
- Areas lacking adequate service
- Projection of future emergency service needs

Action 5-10.3: *Periodically update first responder training requirements to meet local, State, and federal standards.*

Action 5-10.4: *Enhance police department staffing to achieve a response time of under 6 minutes anywhere in the service area.*

Action 5-10.5: *Expand the equity and diversity of emergency personnel to better reflect the makeup of the city.*

Action 5-10.6: *Enhance employee wellness and mental health support to enable better service to the community by all emergency personnel.*

Policy 5-10.2: Collaborate with neighboring communities to better serve community members and businesses.

Action 5-10.7: *Coordinate with Sonoma County on police and fire services to achieve cost-effective improvements to service levels.*

Policy 5-10.3: Focus policing efforts on community-based solutions.

Action 5-10.8: *Assist neighborhoods and increase community contact through the Community Oriented Policing Program.*

Action 5-10.9: *Study and actively pursue infrastructure improvements as needed, including, but not limited to, constructing new police and fire stations (outside of high hazard risk areas) and acquiring new emergency vehicles and equipment.*

Action 5-10.10: *Study the opportunities and constraints of a community benefit fund compared to impact fees as part of the next Fee Study Update.*

Action 5-10.11: *Enhance and explore ways to expand the InRESPONSE model and continue to provide a high level of mental health support to the community.*

Action 5-10.12: *Enhance police services using innovative technology and an equitable approach for resource allocation.*

Action 5-10.13: *Prioritize violent crime reduction and traffic safety solutions through innovative strategies and partnerships with key stakeholders.*

Action 5-10.14: *Partner with other public and private organizations to create public awareness of the existence of various forms of racism and discrimination, explicit and implicit bias, and the health inequities they exacerbate.*

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