

3. CITY OF SANTA ROSA

3.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Shari Meads, City Planner
 100 Santa Rosa Avenue, Room 3
 Santa Rosa, California 95404
 Telephone: 707-544-4665
 e-mail Address: smeads@srcity.org

Alternate Point of Contact

Amy Lyle, Supervising Planner
 100 Santa Rosa Avenue, Room 3
 Santa Rosa, California 95404
 Telephone: 707-544-3410
 e-mail Address: alyle@srcity.org

This annex was developed by the primary point of contact, Shari Meads, with assistance from the members of the local mitigation planning team listed in Table 3-1.

Table 3-1. Local Hazard Mitigation Planning Team Members

Name	Title	Name	Title
Neil Bregman	Emergency Preparedness Manager	Mike Enright	Supervising Engineer
Brittany Miller	Deputy Emergency Preparedness Coordinator	Jessie Oswald	Chief Building Official
Paul Lowenthal	Assistant Fire Marshal	Ron Simi	Streets Crew Supervisor
Scott Moon	Division Chief Fire Marshal	Doug Williams	Facilities Maintenance Coordinator
Kemplen Robbins	Assistant Fire Marshal	Marcus Sprague	Police Lieutenant
Megan Basinger	Housing & Community Services Manager	Joe Schiavone	Deputy Director Water & Sewer Operations
Kelley Magnuson	Deputy Director, Recreation	Andy Allen	Supervising Engineer
Kelli Kuykendall	Housing & Community Services Manager	Dominique Blanquie	Risk Manager
Chris Greene	GIS Analyst	Sean McNeil	Deputy Director, Environmental Services
Mike Hargreaves	GIS Analyst	Colin Close	Senior Water Resource Planner
Matt Stull	GIS Coordinator	Ron Marincic	Utility System Superintendent Water
Shari Meads	City Planner	Jason Tibbals	Utility System Superintendent Water
Amy Lyle	Supervising Planner	Kyle Philip	Police Sergeant
Andy Abel	Assistant City Attorney	Jeremy Gundy	Deputy Director, Field Services

3.2 JURISDICTION PROFILE

3.2.1 Location and Features

The City of Santa Rosa is in central Sonoma County, located approximately 55-miles north of San Francisco along US Highway 101 and 20 air miles from the Pacific Ocean. Santa Rosa is bisected by US Highway 101, which runs north to south through the City and State Route (SR) 12 which runs east to west across the City,

roughly dividing Santa Rosa into quadrants. Santa Rosa is bordered by unincorporated Sonoma County on most sides. Sebastopol is to the southwest of the City and Rohnert Park is located approximately eight-miles due south. Prominent terrain features east of the City include Bennett Peak, Mount Hood, and Sonoma and Taylor Mountains. Santa Rosa is the largest city in Sonoma County with an urban growth boundary (UGB) that spans 42.81-square-miles.

Santa Rosa is in the California region known as the Coast Ranges geomorphic province and lies in the Santa Rosa Plain to the east of the Laguna de Santa Rosa catchment basin which is a major tributary of the Russian River watershed.

The City is home to the Santa Rosa Junior College, Keysight Technologies, La Tortilla Factory, Amy’s Kitchen, the Charles M. Schulz Museum, Luther Burbank Home & Gardens, the first Nissan green auto dealership in the United States, Medtronic’s Aortic and Peripheral Disease Management and Coronary and Structural Heart Disease Management business units, and many world-renowned wineries and breweries.

According to the Köppen climate classification, Santa Rosa has a warm-summer Mediterranean climate with cool, wet winters and warm, dry summers. Fog and low overcast often move in from the Pacific Ocean during the mornings and evenings usually clearing up to warm, sunny weather by late morning or noon. Santa Rosa’s average annual rainfall is 32.20-inches falling on 74 days annually.

3.2.2 History

Santa Rosa has a rich history and cultural heritage. Santa Rosa was a site of Native American habitation beginning approximately 7,000 years ago. The Pomo, Miwok, and Wappo Indians populated the area before Spanish settlement in the early 1800s. The first deeded land was held as the Rancho Cabeza de Santa Rosa and was given to Señora Maria Ignacia Lopez de Carrillo by Spanish authorities in 1841. The Gold Rush, along with California’s statehood, initially brought an influx of travelers along the roads past Santa Rosa. The region’s rich soils drew in numerous passersby creating a flourishing agricultural community. Commercial ventures followed to support the new economy creating the City’s town square in the early 1850s.

In 1867, the Sonoma County’s Board of Supervisors recognized Santa Rosa as an incorporated city and in 1868, the state officially confirmed the incorporation. Santa Rosa is the County seat.

According to the US Census, in 1870 Santa Rosa was the eighth largest city in California, and the county seat of one of the most populous counties in the state. Growth and development after that was generally steady but not rapid. The City continued to grow when other early population centers declined or stagnated, but by 1900, it was being overtaken by many of the other newer population centers in the San Francisco Bay Area and Southern California. The 1906 San Francisco Earthquake sent Santa Rosa into a period of economic downturn but had little effect on the population. Although the town reconstructed most decimated buildings, the Great Depression two decades later further stymied growth and economic development.

Santa Rosa grew substantially following World War II with wartime workers flocking to the Bay Area. The City was also a convenient location for San Francisco travelers bound for the Russian River, and population increased by two-thirds between 1950 and 1970. Between 1970 and 2000, Santa Rosa grew by approximately 3,000 residents a year—triple the average growth during the previous 20 years. Most of this growth was in new suburban neighborhoods to the north, west, and south of downtown, with additional suburban and rural growth along the hillsides and valleys to the east and northeast. Between 2000 and 2010, Santa Rosa grew at an average

of 2,000 residents a year, but growth slowed to an average of less than 900 new residents per year between 2010 and 2016. The population has decreased approximately two percent between 2017 and 2020.

In October 2017, approximately five percent of Santa Rosa’s homes were destroyed in the Tubbs and Nuns wildfires. Three years later approximately 50-percent of homes have been rebuilt and another 30-percent are in some phase of the rebuild process. Twenty percent, or roughly 500 parcels, are still inactive in the rebuild areas. As of September 15, 2020, 31-percent of the inactive parcels had been sold. It is expected that most outstanding parcels will eventually submit a permit to rebuild, but due to a variety of circumstances, these may manifest at different times. In September 2020, the Glass Fire destroyed an additional 34 housing units and damaged 23 residential units in eastern Santa Rosa.

Santa Rosa has remained an economic and cultural center for Sonoma County in the more than 150 years since inception. The rich agricultural setting that initially drew settlers to the area has continued to flourish and is a center for the tourism economy surrounding the region’s world-renowned wineries and breweries.

3.2.3 Governing Body Format

The City of Santa Rosa is governed by a seven-person City Council (Council). The Council elects one of its members to serve as Mayor, the executive head of the City; and appoints a City Manager, the administrative head of the City. The City consists of 17 departments/divisions: the City Attorney’s Office, the City Manager’s Office, Communications & Intergovernmental Relations, Community Engagement, Finance, Fire, Housing & Community Services, Human Resources, Information Technology, Parking, Planning and Economic Development, Police, Real Estate Services, Recreation & Parks, Transportation and Public Works, and Water.

The City Council assumes responsibility for the adoption of this plan; and the City Manager will oversee its implementation.

3.3 CURRENT TRENDS

3.3.1 Population

According to the California Department of Finance, the population of Santa Rosa as of January 2020 was 173,628. The City experienced small but steady population gains between the years 2000 and 2016, growing under one percent per year on average. From January 2017 through January 2020, Santa Rosa experienced a two-percent overall population loss but remains the fifth most populous San Francisco Bay Area city.

3.3.2 Development

Anticipated development levels for Santa Rosa are in the lower-moderate to moderate range consisting primarily of residential development. Most recent development has been infill. The City does not have vast tracks of vacant land for residential or industrial subdivision development.

The City of Santa Rosa adopted its General Plan in November of 2009 and is currently working on a comprehensive update which will focus on issues of the greatest concern to the community including how to make the City even more sustainable, resilient, healthy, and inclusive. City actions, such as those relating to land use, annexations, zoning, and capital improvements, must be consistent with the plan. Future growth and development in the City will be managed as identified in the General Plan.

Table 3-2 summarizes development trends in the performance period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 3-2. Recent and Expected Future Development Trends

Criterion	Response																														
<p>Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan? <i>If yes, give the estimated area annexed and estimated number of parcels or structures.</i></p>	<p>Yes</p> <p>Approximately 716 acres including 1,756 parcels</p>																														
<p>Is your jurisdiction expected to annex any areas during the performance period of this plan? <i>If yes, describe land areas and dominant uses. If yes, who currently has permitting authority over these areas?</i></p>	No																														
<p>Are any areas targeted for development or major redevelopment in the next five years? <i>If yes, briefly describe, including whether any of the areas are in known hazard risk areas</i></p>	No																														
<p>How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?</p>	<table border="1"> <thead> <tr> <th></th> <th>2016</th> <th>2017</th> <th>2018*</th> <th>2019*</th> <th>2020*</th> </tr> </thead> <tbody> <tr> <td>Single Family</td> <td>84</td> <td>164</td> <td>276</td> <td>232</td> <td>251</td> </tr> <tr> <td>Multi-Family</td> <td>42</td> <td>177</td> <td>75</td> <td>165</td> <td>309</td> </tr> <tr> <td>Other (including commercial, second dwelling units, inc.)</td> <td>29</td> <td>18</td> <td>88</td> <td>60</td> <td>71</td> </tr> <tr> <td>Total</td> <td>155</td> <td>359</td> <td>439</td> <td>457</td> <td>631</td> </tr> </tbody> </table> <p>*Not including replacement construction after the 2017 wildfires</p>		2016	2017	2018*	2019*	2020*	Single Family	84	164	276	232	251	Multi-Family	42	177	75	165	309	Other (including commercial, second dwelling units, inc.)	29	18	88	60	71	Total	155	359	439	457	631
	2016	2017	2018*	2019*	2020*																										
Single Family	84	164	276	232	251																										
Multi-Family	42	177	75	165	309																										
Other (including commercial, second dwelling units, inc.)	29	18	88	60	71																										
Total	155	359	439	457	631																										
<p>Provide the number of new construction permits for each hazard area or provide a qualitative description of where development has occurred.</p>	<p>Residential and non-residential growth has occurred in each of the City's four quadrants since the last Plan update. New residential development within the Wildland Urban Interface includes the Round Barn Village subdivision, a 237-unit multi-family residential development of which approximately 10-percent is currently in construction and Canyon Oaks, a 96-unit condominium project which has been completed. There has been no development in other hazard areas.</p>																														
<p>Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.</p>	<p>The City of Santa Rosa is relatively built out with well-established residential neighborhoods at lower densities than the greater San Francisco Bay Area. Low density, primarily single-family residential is the predominant land use in the city. Commercial uses are generally located in the heart of Santa Rosa and along US Highway 101 (Highway 101), with 15 unique commercial districts in addition to Downtown Santa Rosa, which operates as a mixed-use district. Over half of all commercial in the City is strip retail. Industrial uses are generally situated in the northern and southern outskirts of Santa Rosa, often near Highway 101, and occupy only about four percent of the City's land area.</p>																														

3.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 3-3.
- Development and permitting capabilities are presented in Table 3-4.
- An assessment of fiscal capabilities is presented in Table 3-5.
- An assessment of administrative and technical capabilities is presented in Table 3-6.
- An assessment of education and outreach capabilities is presented in Table 3-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 3-8.
- Classifications under various community mitigation programs are presented in Table 3-9.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 3-10.

Table 3-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
<i>Comment: 2019 California Code with local amendments adopted by City Council Ordinance No. 2019-022 on November 19, 2019—effective January 1, 2020.</i>				
Zoning Code	Yes	No	Yes	Yes
<i>Comment: Title 20 of the Santa Rosa City Code adopted by City Council Ordinance No. 3677 on August 3, 2004—effective September 3, 2004 and as subsequently amended.</i>				
Subdivisions	Yes	No	Yes	No
<i>Comment: Title 19 of the Santa Rosa City Code adopted by City Council Ordinance No. 2622 on August 11, 1987—effective September 11, 1987 and as subsequently amended.</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: Local jurisdiction in the Storm Water Ordinance (City Code Chapter 17-12) adopted by City Council Ordinance No. 3272 in 1996 and as subsequently amended. The City has provided design guidelines for permanent storm water features in a series of manuals since July 13, 2005. The most recent Low Impact Development Technical Design Manual is dated May 3, 2017. Federally mandated Clean Water Act requirements are enacted by State Water Resources Control Board.</i>				
Post-Disaster Recovery	No	Yes	No	Yes
<i>Comment: FEMA for flood, Stormwater Permit for State</i>				
Real Estate Disclosure	No	No	Yes	No
<i>Comment: CA State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of all real property.</i>				
Growth Management	Yes	No	No	No
<i>Comment: Chapter 21-03 of the Santa Rosa City Code adopted by City Council Ordinance No. 29060 on June 9, 1992 and as subsequently amended.</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: Through Building, Engineering and Planning requirements.</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: Title 17 of the Santa Rosa City Code adopted by City Council Ordinance No. 2587. The City complies with CEQA, Clean Air Act, Clean Water Act, Endangered Species Act and other State and Federal Laws for public and private development.</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Flood Damage Prevention <i>Comment: Local jurisdiction in the Storm Water Ordinance (City Code Chapter 17-12) adopted by City Council Ordinance No. 3272 in 1996 and as subsequently amended. City crews maintain storm drain system and some creeks for flood capacity. Sonoma Water manages the Central Sonoma Watershed Project with includes four flood attenuation reservoirs and enhanced capacity flood control channels.</i>	Yes	Yes	No	Yes
Emergency Management <i>Comment: City of Santa Rosa Emergency Operations Plan</i>	Yes	Yes	Yes	Yes
Climate Change <i>Comment: City Council adopted a Declaration of a Climate Emergency and Immediate Emergency Mobilization to Restore a Safe Climate, Resolution Number 2020-002, January 14, 2020.</i>	Yes	No	No	Yes
Other <i>Comment:</i>	N/A	N/A	N/A	N/A
Planning Documents				
General Plan <i>Is the plan compliant with Assembly Bill 2140? Yes</i> <i>Comment: The current City of Santa Rosa General Plan 2035 was adopted in 2009; however in 2019, the City began a multi-year process to comprehensively update the plan.</i>	Yes	No	Yes	Yes
Capital Improvement Plan <i>How often is the plan updated? Annually</i> <i>Comment: The City's Capital Improvement Plan is a five-year plan which is updated annually.</i>	Yes	No	Yes	Yes
Disaster Debris Management Plan <i>Comment:</i>	No	Yes	No	Yes
Floodplain or Watershed Plan <i>Comment: The City would like to partner with the flood control agency Sonoma Water to develop floodplain plans in developed areas at risk of flooding.</i>	No	No	No	Yes
Stormwater Plan <i>Comment: The City of Santa Rosa is part of the Integrated Regional Water Management Plan. See https://northcoastresourcepartnership.org/site/assets/uploads/2018/04/NCIRWMP_PhaseIII_Aug14_final_w_appendix.pdf for more information.</i>	No	Yes	Yes	Yes
Urban Water Management Plan <i>Comment: City of Santa Rosa 2015 Urban Water Management Plan is currently being updated. https://srcity.org/DocumentCenter/View/13875/Urban-Water---2015-Management-Plan-Without-Appendices</i>	Yes	Yes	Yes	Yes
Habitat Conservation Plan <i>Comment: The City of Santa Rosa is participating in a Sonoma County led effort to develop an HCP for the Santa Rosa Plain.</i>	No	No	No	Yes
Economic Development Plan <i>Comment:</i>	Yes	No	No	No
Shoreline Management Plan <i>Comment:</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: City of Santa Rosa Community Wildfire Protection Plan approved by City Council on September 18, 2020 https://srcity.org/DocumentCenter/View/30136/City-of-Santa-Rosa-Community-Wildfire-Protection-Plan-CWPP_91820</i>	Yes	No	No	Yes
Forest Management Plan <i>Comment: City of Santa Rosa Community Wildfire Protection Plan approved by City Council on September 18, 2020 exceeds the requirements of the 2003 Healthy Forests Restoration Act. https://srcity.org/DocumentCenter/View/30136/City-of-Santa-Rosa-Community-Wildfire-Protection-Plan-CWPP_91820</i>	Yes	No	No	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Climate Action Plan <i>Comment: Santa Rosa Community-wide Climate Action Plan adopted by City Council Resolution Number 28115 on June 5, 2012 https://srcity.org/DocumentCenter/View/10762/Climate-Action-Plan-PDF?bidId= Santa Rosa Municipal Operations Climate Action Plan adopted by City Council Resolution Number 28323 on August 6, 2013 https://srcity.org/DocumentCenter/View/10759/Municipal-Climate-Action-Plan-PDF?bidId=</i>	Yes	Yes	Yes	Yes
Emergency Operations Plan <i>Comment: City of Santa Rosa Emergency Operations Plan</i>	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: Sonoma County is included in the Bay Area Urban Areas Security Initiative</i>	Yes	Yes	No	Yes
Post-Disaster Recovery Plan <i>Comment:</i>	Yes	No	No	Yes
Continuity of Operations Plan <i>Comment: City of Santa Rosa Continuity of Operations Plan dated April 2017 https://srcity.org/DocumentCenter/View/16433/Continuity-of-Operation-Plan City of Santa Rosa, California Continuity of Operations / Government (COOP/COG) Plan dated March 2020 https://srcity.org/DocumentCenter/View/16434/Emergency-Operation-Plan</i>	Yes	No	No	No
Public Health Plan <i>Comment: Performed at County Level</i>	No	No	No	No
Other <i>Comment:</i>	N/A	N/A	N/A	N/A

Table 3-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i>	Yes Planning and Economic Development Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	Yes

Table 3-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes (Utility User Tax for Gas/Electric; Water/Sewer fees for service we provide)
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 3-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning and Economic Development Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Planning and Economic Development, Water, and Public Works Departments
Planners or engineers with an understanding of natural hazards	Yes	Planning and Economic Development Department
Staff with training in benefit/cost analysis	Yes	Finance Department and analysts in other departments (as specified by job description)
Surveyors	Yes	Public Works Department
Personnel skilled or trained in GIS applications	Yes	Information Technology and Water Departments. The City has three GIS Analysts and one Coordinator
Scientist familiar with natural hazards in local area	Yes	Water Department, Public Works
Emergency manager	Yes	Fire Department/ Emergency Preparedness Manager
Grant writers	Yes	Designated staff members within each City department
Other	N/A	N/A

Table 3-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe.</i>	Yes <ul style="list-style-type: none"> • Local Hazard Mitigation Plan: https://srcity.org/540/Local-Hazard-Mitigation-Plan • Community Wildfire Protection Plan: https://srcity.org/3114/Community-Wildfire-Protection-Plan • Climate Action Planning: https://srcity.org/1634/Climate-Action-Planning • Vegetation Management/ defensible space/ home hardening: srcity.org/WUI • Erosion Control: srcity.org/RainReady and srcity.org/BeRainReady
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe.</i>	Yes Various City Departments' Twitter, Instagram, Facebook handles are used for hazard mitigation outreach messaging. The City also utilizes a Nextdoor account for hazard mitigation education and outreach. A combination of graphics, video, photos and shared links are utilized for this effort.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe.</i>	No
Do you have any other programs already in place that could be used to communicate hazard-related information?	Yes The City currently utilizes the following additional tools for hazard mitigation outreach, and these tactics remain available for future needs:

Criterion	Response
<i>If yes, briefly describe.</i>	<ul style="list-style-type: none"> • Media relations strategies to gain earned news coverage for critical hazard mitigation messaging • Weekly newsletter distributed via email and SMS messaging; over 90K subscribers are on the distribution list. • Water bill inserts and direct mailers • Community/neighborhood meetings • Paid seasonal radio Public Safety Announcements
Do you have any established warning systems for hazard events? <i>If yes, briefly describe.</i>	<p>Yes</p> <p>Information on each of the City's alert and warning systems is available at srcity.org/KnowYourAlerts</p>

Table 3-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Planning and Economic Development
Who is your floodplain administrator? (department/position)	Planning and Economic Development Chief Building Official
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	2008
Does your floodplain management program meet or exceed minimum requirements? <i>If exceeds, in what ways?</i>	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	2019
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <i>If so, state what they are.</i>	No N/A
Are any RiskMAP projects currently underway in your jurisdiction? <i>If so, state what they are.</i>	Yes FEMA led update, primarily in urban growth boundary south of City limit
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i>	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? <i>If so, what type of assistance/training is needed?</i>	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If yes, is your jurisdiction interested in improving its CRS Classification?</i> <i>If no, is your jurisdiction interested in joining the CRS program?</i>	No N/A No
How many flood insurance policies are in force in your jurisdiction?^a <i>What is the insurance in force?</i> <i>What is the premium in force?</i>	157 \$50,498,400 \$91,924
How many total loss claims have been filed in your jurisdiction?^a <i>What were the total payments for losses?</i>	43 \$465,603

a. According to FEMA statistics as of October 20, 2020

Table 3-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0609770098	N/A
DUNS #	Yes	071879464	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	85.11—Residential 83.54—Commercial	06/26/2013
Public Protection	Yes	1/1Y	2016
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 3-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: City is engaging in a Climate Adaptation workshop with a non-profit group with a National Science Foundation grant January 2021 to identify and dive into local climate change impacts. The City is also updating its Climate Action Plan in conjunction with the General Plan update with an anticipated completion date in 2022.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: No assigned City staff to this task.</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: No assigned City staff to this task.</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment: All new development projects must be consistent with the City's Community Climate Action Plan adopted in 2012.</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Several Planners attend Regional Climate Meetings throughout the year and strategize with other professionals in the County.</i>	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Based on adopted Climate Action Plan (2012) and also the City Council placing implementation of the Climate Action Plan as a Tier One Council Goal. This formed a Council Subcommittee on addressing Climate Action matters.</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Included in Climate Action Plan (2012) for which all new development projects must be consistent with. There are also other measures through CEQA for mitigating GHG impacts.</i>	High
Identified strategies for adaptation to impacts <i>Comment: The adaptation strategies in the 2012 Climate Action Plan are limited. Following the Climate Adaptation workshop and updated to the General Plan and Climate Action Plan, additional strategies will be identified and implemented.</i>	Low
Champions for climate action in local government departments <i>Comment: Staff members are spread throughout the City who work on various efforts. However, no coordinator exists to spearhead these efforts.</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment:</i>	High

Criterion	Jurisdiction Rating ^a
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Unsure
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Challenging to gauge. The 2017, 2019, and 2020 wildfires have brought awareness to increase hazards and the relationship to climate change.</i>	Unsure
Local residents support of adaptation efforts <i>Comment: A number of very committed residents attend Climate Action Subcommittee and Council meetings with stated support for supporting adaptation efforts. However, this may not be representative of the community at large.</i>	Unsure
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Unsure
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Unsure
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Unsure

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

3.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

3.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Capital Improvement Plan**—The Capital Improvement Plan includes projects that can help mitigate potential hazards. The City will act to ensure consistency between the Hazard Mitigation Plan and the current and future capital improvement plans. The Hazard Mitigation Plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code and Fire Code**—The City’s adoption of the 2019 California Building and Fire Codes incorporated local modifications to account for the climatic, topographic, and geologic conditions that exist in the City.
- **General Plan**—The General Plan includes a “Noise and Safety” element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:

- Geologic and seismic hazards
- Fire hazards
- Hazardous materials
- Flood control

The General Plan’s “Open Space and Conservation” element includes goals and policies related to air quality, use of sustainable energy sources, and other issues related to climate change.

- **Climate Action Plan**—The City’s Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change. These projects were reviewed to identify cross-planning initiatives that serve both adaptation and mitigation objectives.
- **Community Wildfire Protection Plan**—The Community Wildfire Protection Plan builds upon the October 2016 City of Santa Rosa Hazard Mitigation Plan providing more site-specific wildfire assessments and an action plan to address the wildfire threat to the City.

3.5.2 Opportunities for Future Integration

The capability assessment presented in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- Local Threat & Hazard Identification & Risk Assessment (THIRA)
- Floodplain or Watershed Plan
- Post-Disaster Recovery Plan

3.6 RISK RANKING

3.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 3-11 lists past occurrences of natural hazards for which specific damage was recorded in Santa Rosa. Other hazard events that broadly affected the entire planning area, including Sonoma County, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

3.6.2 Hazard Risk Ranking

Table 3-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy. Mitigation actions target hazards with high and medium rankings. Note that the City of Santa Rosa has elevated Wildfire to a High ranking based on addition of the 2019 Kincade and 2020 Glass Fires to the Risk Assessment as well as information contained in the City’s Community Wildfire Protection Plan.

Table 3-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Drought		2021 to present	
PG&E PSPS events		Approximately nine PSPS events during 2018 – 2020	
Glass Fire (wildfire)	DR-4558-CA	September 2020	
Kincade Fire (wildfire)	DR-4569-CA	October 2019	~\$4,000,000
Nuns Fire (wildfire)	FM-5220-CA	October 2017	Included with Tubbs Fire Damage Assessment 3 fatalities
Tubbs Fire (wildfire)	FM-5215-CA	October 2017	~\$154,000,000 22 fatalities
Drought		2014-2016	unknown
Hazardous Materials Incidents		10 incidents between April 2011 and September 2015. 73 Hazardous Materials Team callouts between 2016 and 2021.	unknown
Drought		2007-2009	unknown
New Year's flooding and landslides		2005-2006	
Lofty Perch Fire (wildfire)		June 2003	One structure destroyed Several firefighters injured
Drought		1988-1991	unknown
Severe Storms, Flooding		February 12 through March 10, 1986	unknown
Drought	EM-3023-CA	1976-1977	unknown
1969 Santa Rosa earthquakes		October 2, 1969	unknown
Hanly Fire (wildfire)		September 1964	Approximately 149 structures destroyed
Nuns Canyon (wildfire)		September 1964	Approximately 20 structures destroyed
Airport Fire (wildfire)		September 1939	unknown
Statewide drought		1928-1937	unknown
Mayacamas Fire (wildfire)		September 1923	unknown
1906 San Francisco Earthquake		April 18, 1906	unknown
The Great Fire (wildfire)		October 1870	unknown

Table 3-12. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	36	High
2	Wildfire	34	High
3	Severe Weather	30	Medium
4	Dam Failure	26	Medium
5	Flood	18	Medium
6	Landslide	18	Medium
7	Drought	6	Low
8	Sea Level Rise	0	None
9	Tsunami	0	None

3.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: Two (2) as of 3/28/2021
- Number of FEMA-identified Severe-Repetitive-Loss Properties: None as of 3/28/2021
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: None as of 3/28/2021

3.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 3-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 3-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Continue to apply appropriate development conditions/ restrictions for projects in higher hazard zones to reduce risks. <i>Comment: This is an existing core capability that is now addressed by Plan Objectives 1, 7, 9 and 11.</i>		✓		
In accordance with the adaptation strategies of the Climate Action Plan integrate climate change adaptation into future updates of the Zoning Code, Building Code, General Plan, Urban Water Management Plan, and other related documents. <i>Comment:</i>			✓	SRO-1
Continue to coordinate with Sonoma County and surrounding jurisdictions on emergency notifications, including alerts of imminent threats or a need to evacuate. Alerts should be made available through multiple methods, in commonly spoken languages in Santa Rosa, and easily accessible to persons with access and functional needs. <i>Comment: This is an existing core capability that is now addressed by Plan objectives 2 and 5.</i>		✓		
To the extent possible, avoid locating new critical facilities in areas of elevated hazard risks. Use extensive mitigation measures to reduce vulnerability if no suitable alternative site exists. <i>Comment: This is addressed by Plan objectives 6 and 7.</i>		✓		
Continue to work with regional utility companies and service agencies, including energy providers, telecommunication services, and transit operators, to maintain basic services as much as possible during emergency conditions and to restore services as quickly as possible following an emergency event. <i>Comment: This ongoing capability is addressed by Plan objectives 2 and 6</i>		✓		
Work to improve estimates of potential casualties and property damage as a result of different emergency situations. <i>Comment: This is an ongoing core capability that is now addressed by Plan objective 8</i>		✓		

Action Item	Completed	Removed; No longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Continue to update the City's emergency planning documents every five years to ensure consistency with state and federal law, local conditions, and best practices and the most recent science. <i>Comment:</i>			✓	SRO-2
Assure the continuity of operations of the City's water supply system through projects that address identified vulnerabilities and/or enhance the system's capabilities following hazard events. <i>Comment:</i>			✓	SRO-3
Identify current and future vegetation management ordinance requirements in the Wildland-Urban Interface fire area for existing and new development. <i>Comment:</i>			✓	SRO-4
Continue to analyze and improve emergency response communications. This strategy should include building redundant capacity into public safety alerting and answering points as well as replacing or hardening microwave and simulcast systems. <i>Comment: This is an ongoing core capability that is now addressed by Plan objectives 5 and 6.</i>		✓		
Continue to assess the vulnerability of critical facilities to damage from natural disasters, including the availability of backup power and sufficient supplies to maintain essential functions, and make recommendations for appropriate mitigation. <i>Comment: This is an ongoing capability that is addressed by Plan objectives 3, 8, and 9</i>		✓		
Retrofit, replace, or relocate critical facilities that are shown to be vulnerable to damage in natural disasters. <i>Comment:</i>			✓	SRO-5
Continue to participate not only in general mutual-aid agreements but also in agreements with adjoining jurisdictions and special districts for cooperative response to fires, floods, earthquakes, and other disasters. <i>Comment: This is an ongoing capability that is addressed by Plan objectives 2 and 5.</i>		✓		
In accordance with the adaptation strategies of the Climate Action Plan, continue to regularly train, inform, and solicit feedback from City organizations on potential climate change risks and hazards. Emphasize climate change risk and hazards with the Fire Department, Police Department, Transportation and Public Works Department, Water Department, and other City departments as relevant. <i>Comment: This is an ongoing capability that is addressed by Plan objectives 2, 8 and 9.</i>		✓		
In accordance with the adaptation strategies of the Climate Action Plan, revise Santa Rosa's General Plan, Capital Improvement Program, and other applicable documents to better integrate and prioritize climate change issues and best practices during required updates and as funding permits. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 8 and 9.</i>		✓		
In accordance with the adaptation strategies of the Climate Action Plan, assess the possible impacts of climate change on a proposed project or area plan in the development review or policy development process. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 1, 2, 6, 8, 9 and 11.</i>		✓		
Update the City's Wildland-Urban Interface (WUI) overlay designation to reflect up-to-date information on wildfire hazards and WUI exposure to prepare for future fire risk. <i>Comment: This action item is now included with SRO-31</i>			✓	SRO-31

Action Item	Completed	Removed; No longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Identify and implement vegetation management projects in and around WUI zone (including unincorporated areas). <i>Comment: This action item is now included with SRO-31</i>			✓	SRO-31
Work with residents and property owners to develop an incentive program to replace shake roofs in the WUI. <i>Comment:</i>			✓	SRO-6
Continue to implement improvements to water flow capacity in the WUI. <i>Comment:</i>			✓	SRO-7
Ensure adequate road or fire road access for fire equipment to developed and open space areas. <i>Comment: We have determined that this action item is not currently feasible</i>		✓		
Continue to tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement. <i>Comment:</i>			✓	SRO-8
Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet NFIP requirements to: Enforce the flood damage prevention ordinance. Participate in floodplain identification and mapping updates. Provide public assistance/information on floodplain requirements and impacts. <i>Comment:</i>			✓	SRO-9
When FEMA creates, updates, and publishes flood zone mapping of the 100-year and 500-year floodplains, integrate information from the maps into the City's geographical information system and use flood information in the development review and public project review process. In areas with high flood risk, continue to evaluate and implement flood hazard mitigation projects to reduce potential for property damage, street flooding, and stream erosion. <i>Comment:</i>			✓	SRO-10
Based on identified vulnerability and/or potential for capacity enhancement, upgrade pump station to feasible specifications. <i>Comment:</i>			✓	SRO-11
Evaluate, monitor, and maintain the City's stormwater drainage system to ensure it can effectively handle anticipated stormwater volumes to the maximum extent possible, and make upgrades and repairs as needed. Coordinate with the Sonoma Water to clear debris and remove vegetation and sediment in flood control channels within the City to protect flow capacity. <i>Comment:</i>			✓	SRO-12
Identify and implement waterway restoration projects that result in bank stabilization, enhanced habitat and flood capacity. <i>Comment:</i>			✓	SRO-13
Retrofit public areas, including plazas, sidewalks, and parking lots as feasible, to use permeable paving and other low-impact development features that promote infiltration and reduce stormwater runoff. <i>Comment:</i>			✓	SRO-14

Action Item	Completed	Removed; No longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Evaluate, prioritize, and implement flood protection measures to protect wastewater treatment facilities from flooding during a predetermined recurrence interval. <i>Comment:</i>			✓	SRO-15
Replace or retrofit water-retention structures that are determined to be structurally deficient, including levees, dams, reservoirs, and tanks. Continue to analyze and identify needs for future upgrades. Evaluate, reinforce, and/or enhance wastewater treatment facility structures with seismic risk. <i>Comment:</i>			✓	SRO-16
Develop funding mechanisms to assist building owners to afford retrofits to unreinforced masonry, soft-story, and/or non-ductile concrete structures. <i>Comment:</i>			✓	SRO-17
Require the retrofit of seismically vulnerable structures consistent with City Code. This program should include community education and outreach. <i>Comment:</i>			✓	SRO-18
Identify/analyze sanitary sewer trunk lines that are determined to be structurally deficient where crossing fault zones. Retrofit/replace as necessary. <i>Comment:</i>			✓	SRO-19
Conduct seismic evaluations on City-owned leased buildings that contain critical facilities/operations to determine the need for upgrades/retrofitting. <i>Comment:</i>			✓	SRO-20
Require comprehensive geotechnical investigations prior to development approval, where applicable. Investigations shall include evaluation of landslide risk, liquefaction potential, settlement, seismically induced land sliding, or weak and expansive soils. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 1, 6, 7, 8, 9, and 11</i>		✓		
Restrict development from areas where people might be adversely affected by known natural or man-made geologic hazards, including unstable slopes, liquefiable or expansive soils, and poorly engineered fills, as determined by a California-registered geologist or engineer. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 7 and 9.</i>		✓		
Pursue implementation of regulatory requirements related to erosion and sediment control. As needed, adopt additional, mandatory, minimum sediment and erosion control measures for current properties and those under construction that exhibit high erosion potential, are in areas of steep slopes, or have experienced past erosion problems. Sediment and erosion control measures shall reduce soil erosion from primary erosional agents, including wind, construction operations, and stormwater runoff. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 7 and 9.</i>		✓		
Provide reliable water delivery and wastewater collection, treatment, and disposal services during and after disasters to reduce the risk to public health and the environment. <i>Comment: This is an ongoing capability that is addressed by Plan Objective 6.</i>		✓		
Promote public awareness and participation in household waste management, control, and recycling through County programs including the Sonoma County Household Hazardous Waste Management Plan. <i>Comment: This is an ongoing capability that is addressed by Plan Objectives 2, 4, and 12</i>			✓	

Action Item	Completed	Removed; No longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
<p>Improve Fire Department capabilities to respond to new hazardous materials incidents/emergencies by pursuing Type 1 HazMat Team status</p> <p><i>Comment:</i></p>			✓	SRO-21
<p>Update the Hazardous Materials Area Response Plan.</p> <p><i>Comment:</i></p>			✓	SRO-22
<p>Protect existing groundwater resources from former hazardous material sites.</p> <p><i>Comment:</i></p>			✓	SRO-23
<p>Continue to provide and improve outreach to businesses that store, handle, and use hazardous materials over the state threshold or generate hazardous waste.</p> <p><i>Comment: This is an ongoing capability that is addressed by Plan Objectives 6, 8, and 11</i></p>		✓		
<p>Complete and implement recommendations of the Santa Rosa Emergency Groundwater Supply project, including construction of emergency groundwater wells consistent with the recommendations of the adopted Emergency Groundwater Master Plan.</p> <p><i>Comment:</i></p>			✓	SRO-24
<p>Continue to participate in the Russian River Watershed Association to provide water conservation guidance, encourage drought-tolerant landscaping, and reduce the consumption of potable water.</p> <p><i>Comment: This is an ongoing capability that is addressed by Plan Objectives 1, 2, and 11</i></p>		✓		
<p>Replace water meters in existing development to allow customers to track real-time water use and support water conservation efforts, consistent with Climate Action Plan Action 7.1.3.</p> <p><i>Comment: Action was completed during the performance period of the prior plan.</i></p>	✓			
<p>Implement advanced metering infrastructure to facilitate water conservation, consistent with Climate Action Plan Action 7.1.4.</p> <p><i>Comment: Action was completed during the performance period of the prior plan.</i></p>	✓			
<p>Develop a plan for expediting the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies, such as those available through the Water/Wastewater Agency Response Network (WARN). Communicate that plan to local governments and critical facility operators.</p> <p><i>Comment:</i></p>			✓	SRO-25
<p>Host regular workshops and classes on water conservation strategies, including drought-tolerant landscaping and available rebates for water conservation and water efficiency actions. Continue workshops, classes, and other educational efforts even in the absence of drought conditions.</p> <p><i>Comment: This is an ongoing capability that is addressed by Plan Objectives 1, 2, and 11</i></p>		✓		
<p>Support the State’s efforts to conduct periodic inspections of local dams and implement recommended actions to ensure all safety measures are in place</p> <p><i>Comment:</i></p>			✓	SRO-26
<p>Integrate updated dam inundation mapping from the State Office of Emergency Services into the City’s geographic information system and utilize the information in the development review process.</p> <p><i>Comment: Action was completed during the performance period of the prior plan.</i></p>	✓			

3.8 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 3-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 3-15 identifies the priority for each action. Table 3-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 3-14. Hazard Mitigation Action Plan Matrix

Applies to New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
SRO-1: In accordance with the adaptation strategies of the Climate Action Plans integrate climate change adaptation into future updates of the Zoning Code, Building Code, General Plan, Urban Water Management Plan, and other related documents.						
<i>Hazards Mitigated:</i> Wildfire, Severe Weather, Flood, Landslide, Drought						
New and Existing	1, 2, 4, 6, 7, 8, 9, 10, 12	City of Santa Rosa	N/A	Medium	Staff time, General Fund, HMGP, PDM, Other grant sources, Water Enterprise Funds	Short and Long-Term
SRO-2: Continue to update the City's emergency planning documents every five years to ensure consistency with state and federal law, local conditions, and best practices and the most recent science.						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood, Landslide, Drought						
New and Existing	1, 2, 4, 5, 8, 9, 12	City of Santa Rosa	N/A	Medium	Staff time, General Fund, HMGP, PDM	Short-term
SRO-3: Assure the continuity of operations of the City's water supply system through projects that address identified vulnerabilities and/or enhance the system's capabilities following hazard events.						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood, Landslide, Drought						
New and Existing	2, 3, 4, 6, 9	City of Santa Rosa	N/A	High	General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-4: Prepare a Zoning Code update to identify vegetation management requirements in the Wildland-Urban Interface zone for existing and new development.						
<i>Hazards Mitigated:</i> Wildfire, Landslide						
New and Existing	1, 2, 4, 6, 7, 8, 9, 11, 12	City of Santa Rosa	N/A	Medium	Staff time, General Fund, PDM	Short-term
SRO-5: Retrofit, replace, or relocate critical facilities that are shown to be vulnerable to damage in natural disasters prioritizing those structures that have experienced repetitive losses and/or are located in a high or medium ranked hazard.						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood, Landslide, Drought						
New and Existing	1, 3, 6, 8, 9, 10, 11, 12	City of Santa Rosa	N/A	High	General Fund, HMGP, PDM, FMA, Other grant sources, Water Enterprise Funds	Short and Long term
SRO-6: Work with residents and property owners to develop an incentive program to replace shake roofs in the WUI.						
<i>Hazards Mitigated:</i> Wildfire						
Existing	1, 2, 3, 6	City of Santa Rosa	N/A	Medium	General Fund, HMGP, PDM, FMAG, Other Grant Sources	Ongoing

Applies to New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
SRO-7: Continue to implement improvements to water flow capacity in the WUI.						
<i>Hazards Mitigated:</i> Wildfire						
New and Existing	3, 4, 6, 8, 9	City of Santa Rosa	N/A	High	General Fund, HMGP, PDM, FMAG, Other Grant Sources, Water Enterprise Funds	Long-term
SRO-8: Continue to tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement.						
<i>Hazards Mitigated:</i> Wildfire, Landslide						
New and Existing	1, 2, 4, 6, 7, 8, 9, 11, 12	City of Santa Rosa	N/A	High	General Fund, HMGP, PDM, FMAG, Other Grant Sources	Ongoing
SRO-9: Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet NFIP requirements to:						
<ul style="list-style-type: none"> • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts. 						
<i>Hazards Mitigated:</i> Flood, Dam Failure						
New and Existing	1, 3, 5, 7, 8, 9, 10, 12	City of Santa Rosa	N/A	Low	Staff Time, General Fund	Ongoing
SRO-10: When FEMA creates, updates, and publishes flood zone mapping of the 100-year and 500-year floodplains, integrate information from the maps into the City’s geographical information system and use flood information in the development review and public project review process. In areas with high flood risk, continue to evaluate and implement flood hazard mitigation projects to reduce potential for property damage, street flooding, and stream erosion.						
<i>Hazards Mitigated:</i> Flood						
New and Existing	2, 7, 8, 9, 10, 12	City of Santa Rosa	N/A	Low	Staff time, General Fund, HMGP, PDM, FMA, Other Grant Sources	Short and Long-term
SRO-11: Based on identified vulnerability and/or potential for capacity enhancement, upgrade pump station to feasible specifications.						
<i>Hazards Mitigated:</i> Flood						
New and Existing	3, 6	City of Santa Rosa	N/A	High	General Fund, HMGP, PDM, FMA, Other Grant Sources, Water Enterprise Funds	Short-term
SRO-12: Evaluate, monitor, and maintain the City’s stormwater drainage system to ensure it can effectively handle anticipated stormwater volumes to the maximum extent possible, and make upgrades and repairs as needed. Coordinate with the Sonoma Water to clear debris and remove vegetation and sediment in flood control channels to protect flow capacity within the City..						
<i>Hazards Mitigated:</i> Flood						
New and Existing	2, 3, 10	City of Santa Rosa	Sonoma Water	High	Staff Time, General Fund, HMGP, PDM, FMA, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-13: Identify and implement waterway restoration projects that result in bank stabilization, enhanced habitat and flood capacity.						
<i>Hazards Mitigated:</i> Flood, Landslide, Drought, Dam Failure						
New and Existing	2, 3, 4, 10	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, FMA, Other Grant Sources, Water Enterprise Funds	Ongoing

Applies to New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
SRO-14: Retrofit public areas, including plazas, sidewalks, and parking lots with permeable paving and other low-impact development features that promote infiltration and reduce stormwater runoff.						
<i>Hazards Mitigated:</i> Flood, Landslide, Drought, Dam Failure						
Existing	3, 10	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, FMA, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-15: Evaluate, prioritize, and implement flood protection measures to protect wastewater treatment facilities from flooding during a predetermined recurrence interval.						
<i>Hazards Mitigated:</i> Flood, Landslide, Dam Failure						
New and Existing	2, 3, 6, 8, 10, 12	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, FMA, Other Grant Sources, Water Enterprise Funds	Short and Long-term
SRO-16: Replace or retrofit water-retention structures that are determined to be structurally deficient, including levees, dams, reservoirs, and tanks. Continue to analyze and identify needs for future upgrades. Evaluate, reinforce, and/or enhance wastewater treatment facility structures with seismic risk.						
<i>Hazards Mitigated:</i> Earthquake, Drought, Flood, Landslide, Dam Failure						
Existing	3, 4, 8, 10	City of Santa Rosa	N/A	Medium	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-17: Create inventory and develop funding mechanisms to assist building owners to retrofit unreinforced masonry, soft-story, and/or non-ductile concrete structures.						
<i>Hazards Mitigated:</i> Earthquake						
Existing	1, 2, 3	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP	Long-term
SRO-18: Require the retrofit of seismically vulnerable structures consistent with City Code. This program should include community education and outreach.						
<i>Hazards Mitigated:</i> Earthquake						
Existing	1, 2, 3, 4, 6, 8, 9, 11, 12	City of Santa Rosa	N/A	Medium	Staff Time, General Fund, HMGP	Long-term
SRO-19: Identify/analyze sanitary sewer trunk lines that are determined to be structurally deficient where crossing fault zones. Retrofit/replace as necessary.						
<i>Hazards Mitigated:</i> Earthquake, Flood						
Existing	3, 6, 8, 10	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Short-term
SRO-20: Conduct seismic evaluations on City-owned leased buildings that contain critical facilities/operations to determine the need for upgrades/retrofitting.						
<i>Hazards Mitigated:</i> Earthquake						
Existing	3, 4, 6, 8, 11, 12	City of Santa Rosa	N/A	Low	General Fund, HMGP	Short-term
SRO-21: Pursue Type 1 HazMat Team status						
<i>Hazards Mitigated:</i> Fire						
New and Existing	1, 2, 4, 8	City of Santa Rosa	N/A	Low	Staff Time, General Fund, HMGP	Short-term

Applies to New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
SRO-22: Prepare a comprehensive Hazardous Materials Area Response Plan update.						
<i>Hazards Mitigated:</i> Fire						
New and Existing	1, 2, 4, 8, 9, 11, 12	City of Santa Rosa	N/A	Medium	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Short-term
SRO-23: Protect existing groundwater resources from former hazardous material sites.						
<i>Hazards Mitigated:</i> Drought						
Existing	1, 3, 6	City of Santa Rosa	N/A	Medium	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-24: Complete and implement recommendations of the Santa Rosa Plain Groundwater Sustainability Agency, including construction of emergency groundwater wells consistent with the recommendations of the adopted Emergency Groundwater Master Plan.						
<i>Hazards Mitigated:</i> Drought						
New and Existing	3, 4, 6	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-25: Support the State’s efforts to conduct periodic inspections of local dams and implement recommended actions to ensure all safety measures are in place						
<i>Hazards Mitigated:</i> Dam Failure, Flood						
New and Existing	1, 2, 8, 10, 11	City of Santa Rosa	N/A	Medium	General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Ongoing
SRO-26: Conduct Microgrid feasibility study						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood						
New and Existing	4, 6, 8, 9, 11, 12	City of Santa Rosa	N/A	High	Staff Time, General Fund, HMGP, PDM, Other Grant Sources,	Short-term
SRO-27: Secure redundant power supply for City-owned and leased facilities and infrastructure that lack adequate back-up power						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood, Landslide, Drought						
New and Existing	2, 3, 6, 9	City of Santa Rosa	N/A	Medium	Staff time, General Fund, HMGP, PG&E settlement funds, Congressional earmark process	Short-term
SRO-28: Relocate/Update EOC to City-owned facility that can accommodate use and renovation to permanent warm/hot EOC with appropriate equipment for communication and situational awareness						
<i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Weather, Dam Failure, Flood, Landslide, Drought						
New and Existing	3, 4, 5, 6, 10	City of Santa Rosa	N/A	High	Staff time, General Fund, HMGP, PG&E settlement funds, Congressional earmark process	Short-term
SRO-29: Implement Actionable Items identified within the City of Santa Rosa Community Wildfire Protection Plan						
<i>Hazards Mitigated:</i> Wildfire, Severe Weather, Landslide						
New and Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12	City of Santa Rosa	N/A	High	Staff time, General Fund, HMGP, PDM, AFG, FMAG, AFGP, CAL FIRE, PG&E settlement funds, Congressional earmark process	Ongoing

Applies to New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
SRO-30: Actively participate in the annual maintenance protocols outlined in Volume I of this Hazard Mitigation Plan.						
<i>Hazards Mitigated:</i> Dam failure, Drought, Earthquake, Flooding, Landslide, Severe weather, Wildfire						
New and Existing	1, 5, 8, 12	City of Santa Rosa	County of Sonoma	Low	Staff Time, General Fund	Short-term
SRO-31: Support the County-wide initiatives identified in Volume I of this Hazard Mitigation Plan.						
<i>Hazards Mitigated:</i> Dam failure, Drought, Earthquake, Flooding, Landslide, Severe weather, Wildfire						
New and Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12	City of Santa Rosa	County of Sonoma	High	Staff time, General Fund, HMGP, PDM, AFG, FMAG, AFGP, CAL FIRE, PG&E settlement funds, Congressional earmark process	Short-term
SRO-32: Integrate the Hazard Mitigation Plan into other plans, ordinances and programs that dictate land use decisions within the community including the General Plan, Specific Plans, and the City Code.						
<i>Hazards Mitigated:</i> Dam failure, Drought, Earthquake, Flooding, Landslide, Severe weather, Wildfire						
New and Existing	1, 3, 4, 5, 6, 7, 8, 10, 12	City of Santa Rosa	N/A	Low	Staff Time, General Fund	Ongoing
SRO-33: Develop a plan for expediting the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies, such as those available through the Water/Wastewater Agency Response Network (WARN). Communicate that plan to local governments and critical facility operators						
<i>Hazards Mitigated:</i> Drought, Flood, Dam Failure Earthquake, Wildfire, Landslide, Severe Weather						
Existing	1, 2, 4, 6, 11, 12	City of Santa Rosa	N/A	Medium	Staff Time, General Fund, HMGP, PDM, Other Grant Sources, Water Enterprise Funds	Short-term
SRO-34: Explore the feasibility of resilience hubs within the City of Santa Rosa						
<i>Hazards Mitigated:</i> Dam failure, Drought, Earthquake, Flooding, Landslide, Severe weather, Wildfire						
New and Existing	1, 2, 4, 5, 6, 8, 10, 11,	City of Santa Rosa	N/A	Low	Staff Time, EMPG, General Fund, PDM Other Grant Sources	Long-term
SRO-35: Coordinate with Sonoma Water on grant eligible projects within the City of Santa Rosa						
<i>Hazards Mitigated:</i> Flood, Dam Failure, Drought						
New and Existing	2, 4, 6, 8, 9, 10, 11, 12	City of Santa Rosa	Sonoma Water	Medium	General Fund, Staff Time, HMGP	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

See the introduction to this volume for list of acronyms used here.

Table 3-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
SRO-1	9	Medium	Medium	Yes	Yes	Yes	High	Medium
SRO-2	7	Medium	Medium	Yes	Yes	Yes	Low	Medium
SRO-3	5	High	High	Yes	Yes	No	High	High
SRO-4	9	Medium	Medium	Yes	Yes	Yes	High	High
SRO-5	8	High	High	Yes	Yes	No	Medium	Medium
SRO-6	4	Medium	Medium	Yes	Yes	No	Low	Low
SRO-7	5	High	High	Yes	Yes	Yes	High	High
SRO-8	9	High	High	Yes	Yes	No	High	High
SRO-9	8	Medium	Low	Yes	Yes	Yes	High	High
SRO-10	6	Medium	Low	Yes	Yes	Yes	High	Medium
SRO-11	2	High	High	Yes	Yes	Yes	High	Medium
SRO-12	3	High	High	Yes	Yes	No	Medium	Medium
SRO-13	4	High	High	Yes	Yes	No	Medium	Medium
SRO-14	2	Low	High	No	Yes	No	Low	Low
SRO-15	6	High	High	Yes	Yes	No	High	High
SRO-16	4	High	Medium	Yes	Yes	No	High	High
SRO-17	3	High	High	Yes	Yes	No	High	High
SRO-18	9	High	Medium	Yes	Yes	Yes	High	High
SRO-19	4	High	Medium	Yes	Yes	Yes	High	High
SRO-20	6	High	Low	Yes	Yes	Yes	High	High
SRO-21	4	Medium	Low	Yes	Yes	Yes	Low	Low
SRO-22	4	Medium	Low	Yes	Yes	Yes	Low	Low
SRO-23	3	Medium	Medium	Yes	Yes	Yes	Medium	Medium
SRO-24	3	High	High	Yes	Yes	Yes	Medium	Medium
SRO-25	5	Medium	Medium	Yes	Yes	No	Low	Low
SRO-26	6	High	High	Yes	Yes	No	High	High
SRO-27	4	Medium	Medium	Yes	Yes	No	Medium	High
SRO-28	5	High	High	Yes	Yes	No	Medium	High
SRO-29	11	High	High	Yes	Yes	No	Medium	High
SRO-30	4	Low	Low	Yes	Yes	Yes	High	Medium
SRO-31	11	High	High	Yes	Yes	No	Medium	High
SRO-32	9	High	Low	Yes	No	Yes	High	High
SRO-33	6	High	Medium	Yes	Yes	Yes	Medium	Medium
SRO-34	8	High	Low	Yes	Yes	No	High	High
SRO-35	8	Medium	Medium	Yes	Yes	Yes	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 3-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
High-Risk Hazards								
Earthquake	SRO-2, 3, 26, 30, 31, 33, 34, 35	SRO-3, 5, 16, 17, 18, 19, 20, 27, 28, 31, 34	SRO-17,18, 20, 26, 28, 30, 32, 31, ,	SRO-3, 16, 31, 33	SRO-3, 16, 19, 26, 27, 28, 31, 33	SRO-3, 16, 17, 19, 31, 34	SRO-2, 2, 26, 27, 30, 31, 32, 34	SRO-3, 16, 17, 18, 19, 20, 26, 27, 28, 30, 31, 32, 33, 34
Wildfire	SRO-1, 2, 4, 7, 8, 22, 26, 29, 30, 31, 32, 33, 34	SRO-3, 5, 6, 27, 28, 29, 31, 34	SRO-6, 8, 21, 26, 28, 29, 30, 31, 32, 34	SRO-3, 8, 29, 31, 33	SRO-3, 7, 8, 21, 22, 26, 27, 28, 29, 31, 33, 34	SRO-3, 7, 29, 31, 34	SRO-1, 2, 4, 7, 8, 26, 27, 29, 30, 31, 32, 34	SRO-3, 6, 7, 8, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34
Medium-Risk Hazards								
Severe Weather	SRO-1, 2, 26, 29, 30, 31, 32, 33, 34	SRO-3, 27, 28, 29, 31, 34	SRO-26, 28, 29, 30, 31, 32, 34	SRO-3, 29, 31, 33	SRO-3, 26, 27, 28, 29, 31, 33, 34	SRO-3, 29, 31, 34	SRO-1, 2, 26, 27, 29, 30, 31, 32, 34	SRO-3, 26, 27, 28, 29, 30, 31, 32, 33, 34
Dam Failure	SRO-2, 10, 13, 25, 26, 30, 31, 32, 33, 34,35	SRO-3, 10, 13, 16, 25, 27, 28, 31, 34	SRO-10, 26, 28, 30, 31, 32, 33, 34, 35	SRO-3, 10, 13, 16, 25, 31, 33, 35	SRO-3, 10, 16, 26, 27, 28, 31, 33, 34	SRO-3, 10, 16, 25, 31, 34, 35	SRO-2, 10, 26, 27, 30, 31, 32, 34, 35	SRO-3, 10, 16, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35
Flood	SRO-1, 2, 9, 10, 11, 12, 13, 14, 15, 25, 26, 30, 31, 32, 33, 34, 35	SRO-3, 5, , 10, 12, 13, 15, 16, 19, 25, 27, 28, 31, 34	SRO-9, 10, 26, 28, 30, 31, 32, 33, 34, 35	SRO-3, 9, 10, 11, 12, 13, 14, 15, 16, 25, 31, 33, 35	SRO-3, 10, 11, 16, 19, 21, 22, 26, 27, 28, 31, 33, 34	SRO-3, 9, 10, 11, 12, 14, 15, 16, 19, 25, 31, 34, 35	SRO-1, 2, 1, 9, 10, 12, 14, 26, 27, 30, 31, 32, 34, 35	SRO-3, 9, 10, 11, 12, 14, 16, 19, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35
Landslide	SRO-, 13, 29, 30, 31, 32, 33, 34	SRO-3, 13, 16, 27, 28, 29, 31, 34	SRO-28, 29, 30, 31, 32, 33, 34	SRO-3, 13, 16, 29, 31, 33	SRO-3, 16, 27, 28, 29, 33, 34	SRO-3, 16, 29, 30, 31, 34	SRO-29, 30, 31, 32, 34	SRO-3, 16, 27, 28, 29, 30, 31, 32, 33, 34
Low-Risk Hazard								
Drought	SRO-1, 2, 13, 25, 30, 31, 32, 33, 34, 35	SRO-3, 13, 16, 24, 27, 28, 31, 34	SRO-28, 30, 31, 32, 33, 34, 35	SRO-3, 13, 16, 23, 24, 31, 33, 35	SRO-3, 16, 24, 27, 28, 31, 33, 34, 35	SRO-3, 16, 24, 31, 34, 35	SRO-1, 2, 24, 27, 30, 31, 32, 34, 35	SRO-3, 16, 23, 24, 27, 28, 30, 31, 32, 33, 34, 35

a. See the introduction to this volume for explanation of mitigation types.

3.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **City of Santa Rosa Municipal Code**—The Municipal Code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa Emergency Operations Plan**—The Emergency Operations Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa Municipal Climate Action Plan**—The City of Santa Rosa Municipal Climate Action Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.

- **City of Santa Rosa Community-wide Climate Action Plan**—The City of Santa Rosa Community-wide Climate Action Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa Continuity of Operations Plan**—The Continuity of Operations Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa General Plan 2035**—The General Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa Capital Improvement Plan**—The Capital Improvement Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa 2015 Urban Water Management Plan**—The Urban Water Management Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Rosa Community Wildfire Protection Plan**—The Community Wildfire Protection Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.

The following outside resources and references were reviewed:

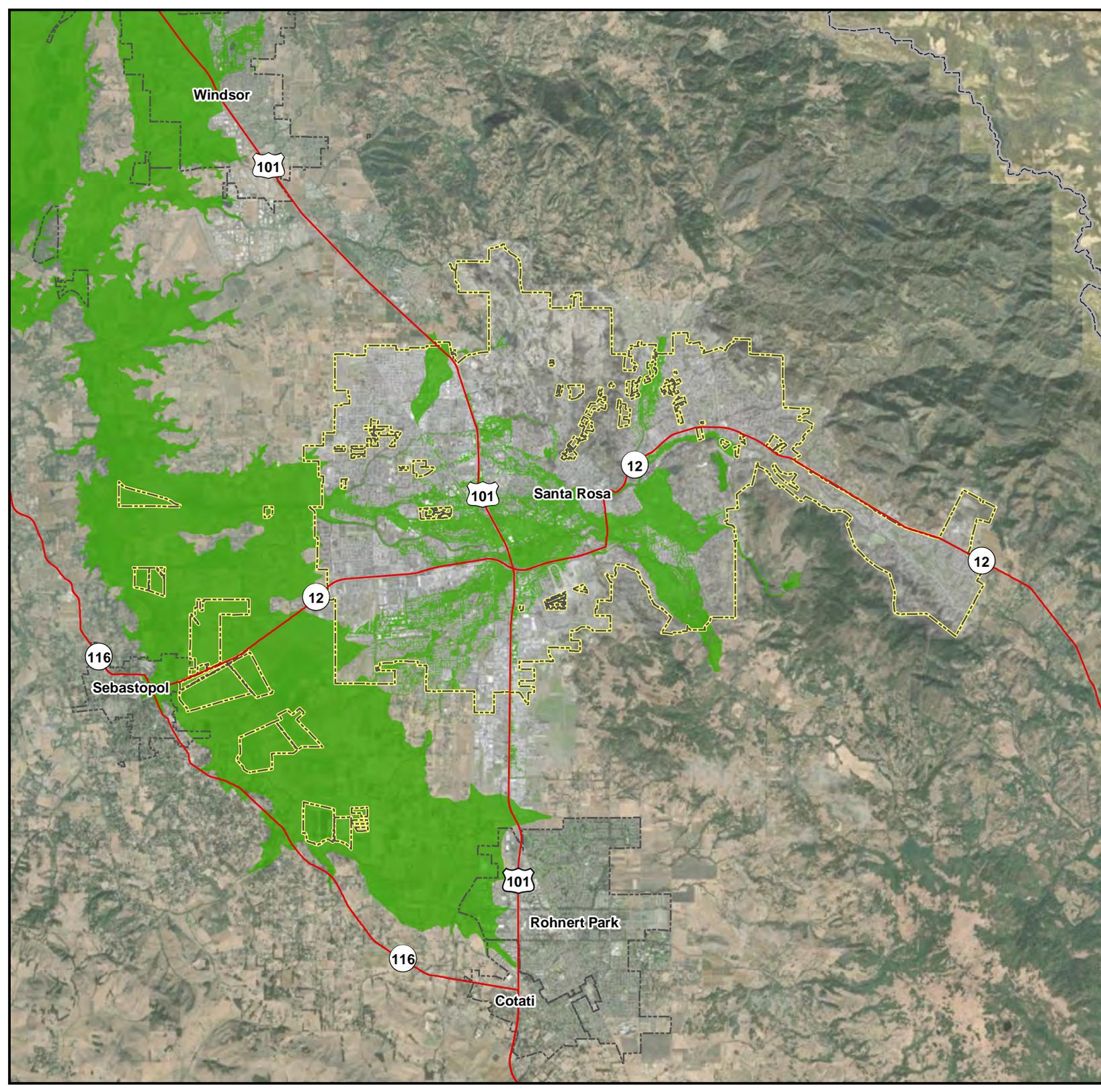
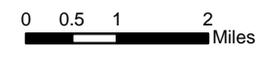
- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Santa Rosa

Dam Failure Inundation Area

-  Inundation Area
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Source: ESRI Basemap,
Sonoma Co., CA DWR



Santa Rosa

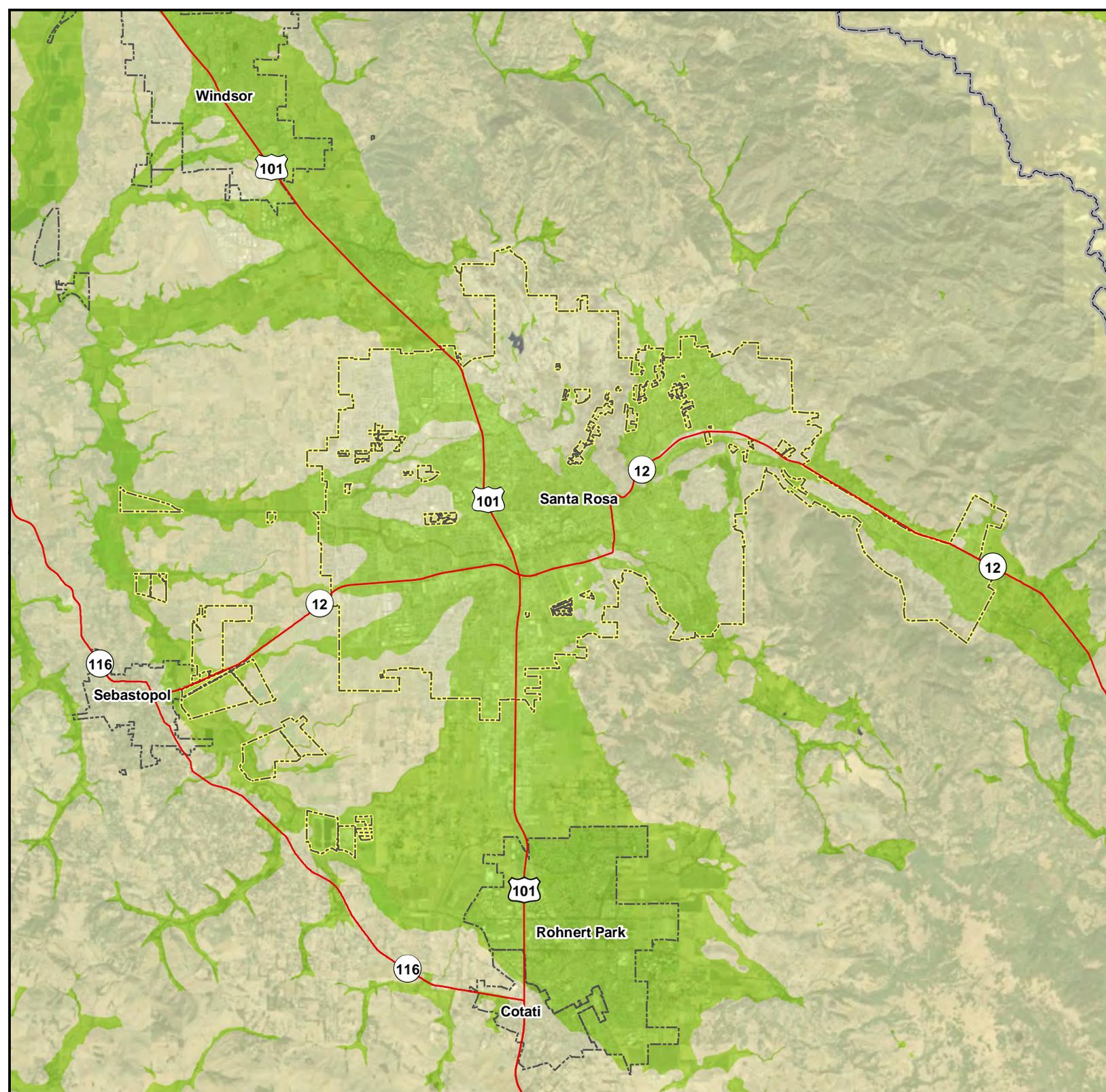
NEHRP Soil Classifications

-  C (Dense soil/soft rock)
-  D (Stiff soil)
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Source: ESRI Basemap,
Sonoma Co., CGS

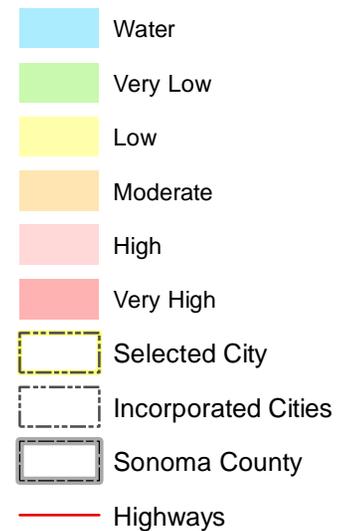


0 0.5 1 2 Miles

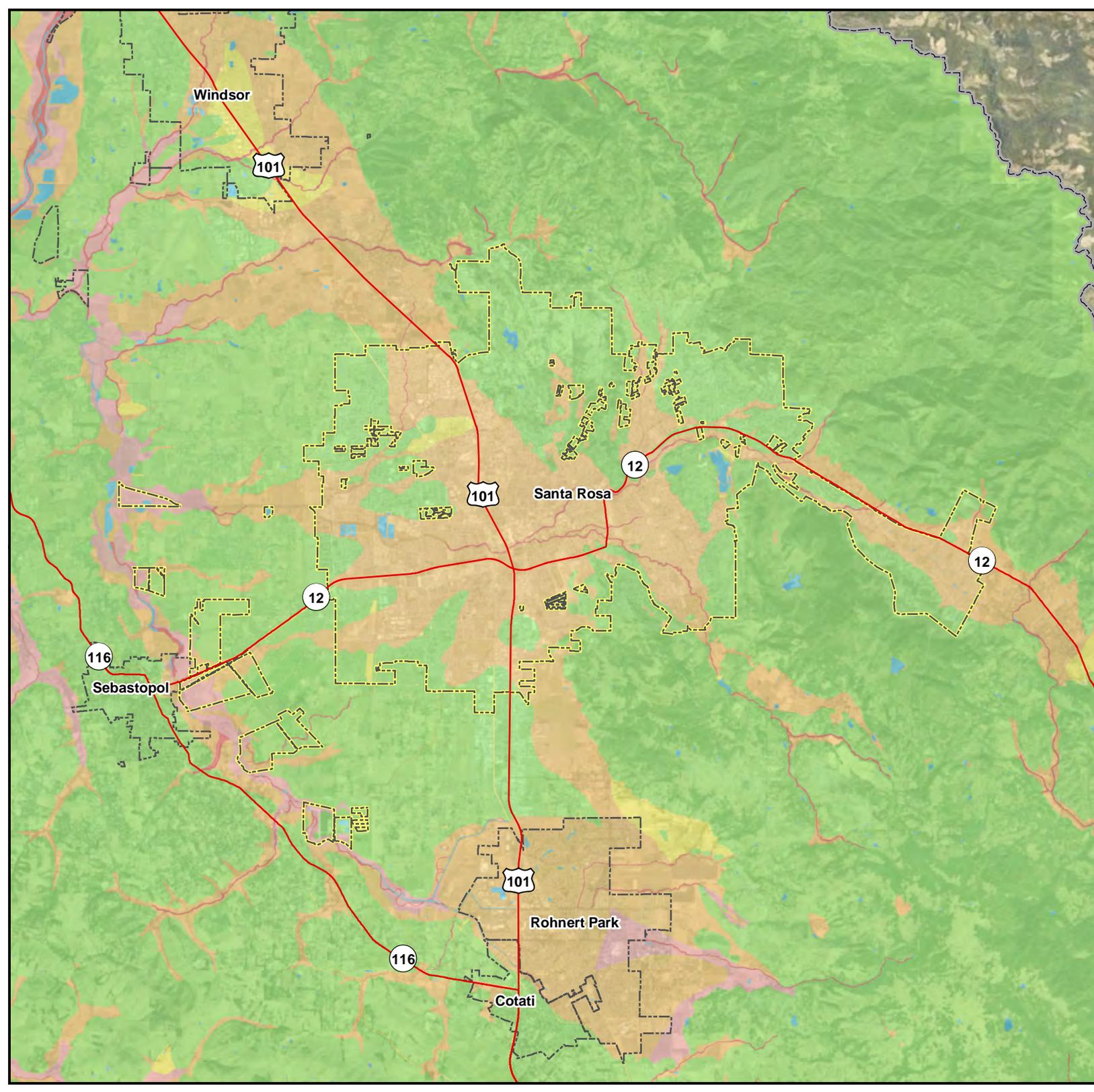


Santa Rosa

Liquefaction Susceptibility



Data Source: ESRI Basemap,
Sonoma Co., USGS



Santa Rosa

100-year Probalistic Earthquake Scenario

Mercalli Intensity Scale

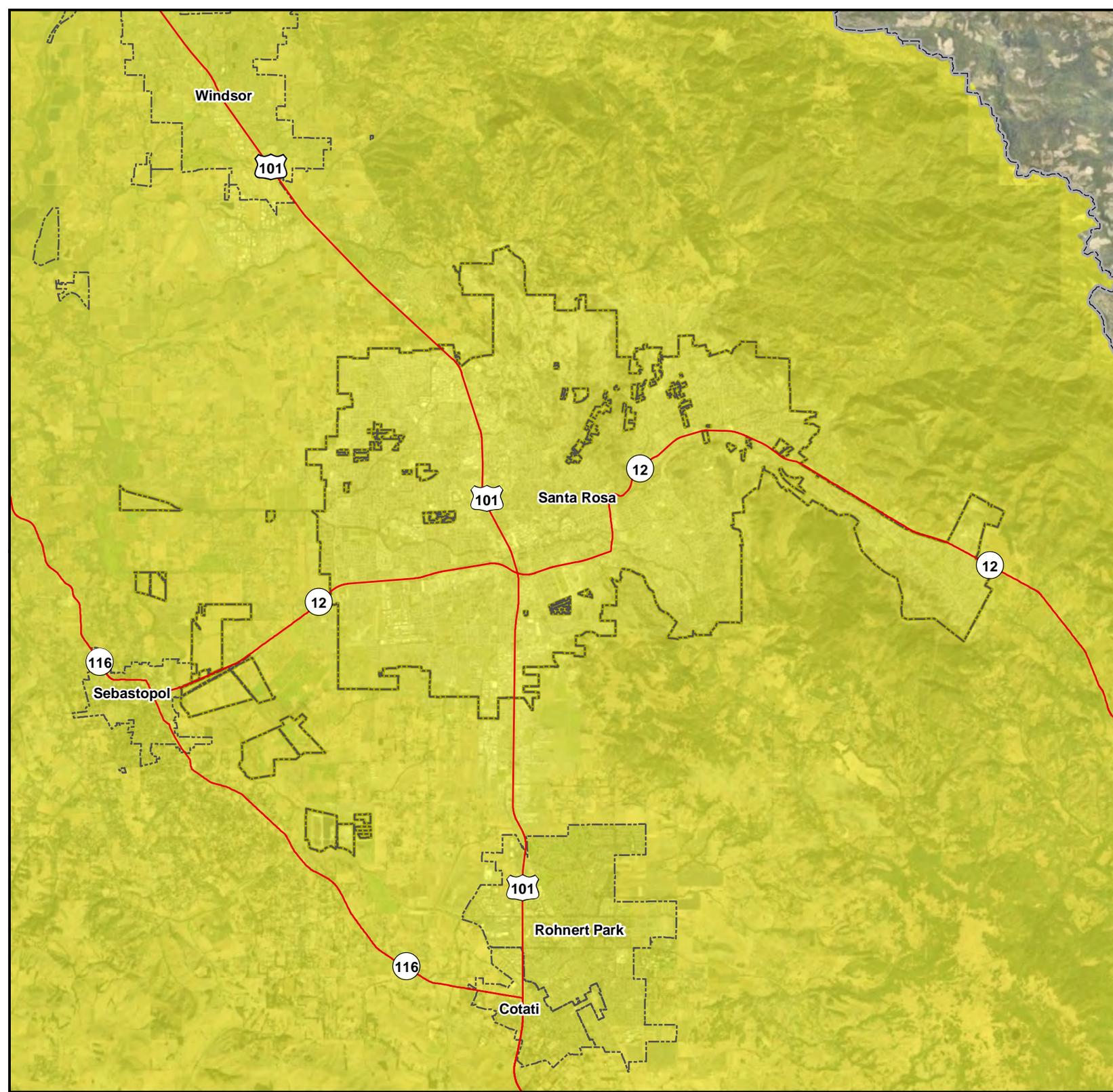
-  VII (Very Strong/Moderate)
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Intensity scale described as:
(perceived shaking / potential damage)

Data Source: ESRI Basemap,
Sonoma Co., USGS



0 0.5 1 2 Miles



Santa Rosa

Hayward M7.57 Earthquake Scenario

Mercalli Intensity Scale

VII (Very Strong/Moderate)

VIII (Severe/Moderate-Heavy)

Selected City

Incorporated Cities

Sonoma County

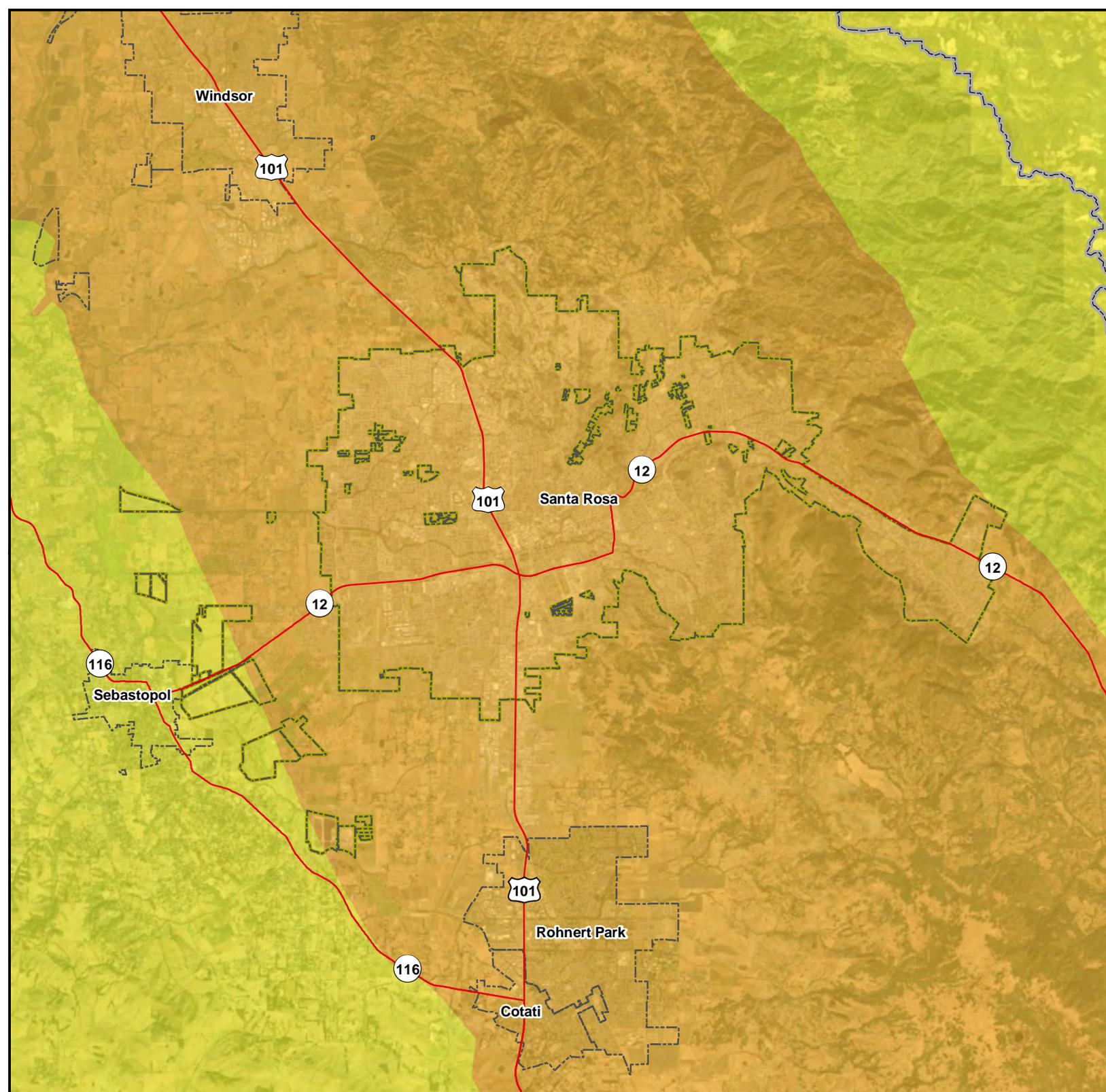
Highways

Intensity scale described as:
(perceived shaking / potential damage)

Data Source: ESRI Basemap,
Sonoma Co., USGS



0 0.5 1 2 Miles



Santa Rosa

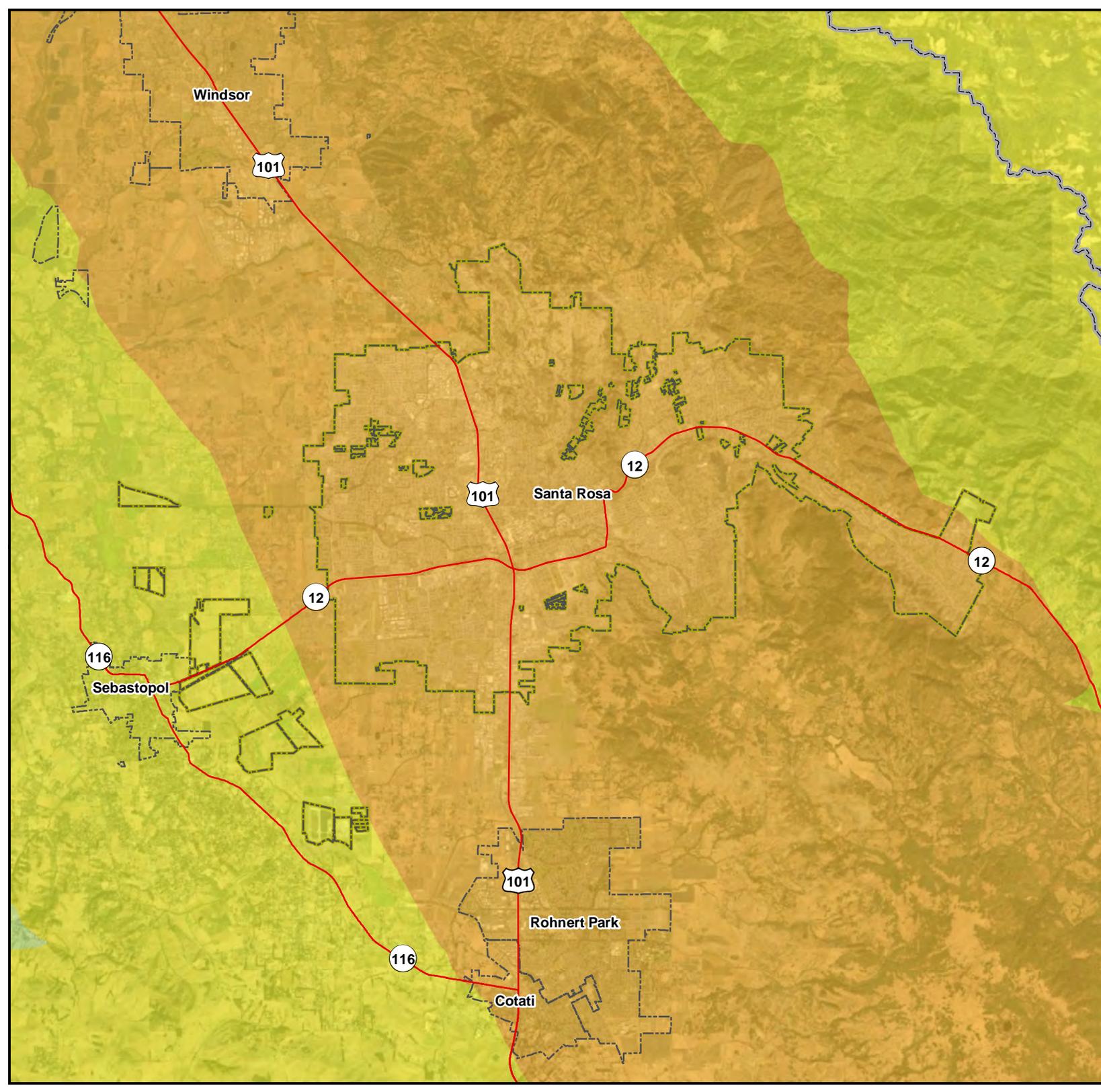
Healdsburg M7.19 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)
- Selected City
- Incorporated Cities
- Sonoma County
- Highways

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Esri Basemap,
Sonoma Co., USGS



Santa Rosa

Maacama M7.5 Earthquake Scenario

Mercalli Intensity Scale

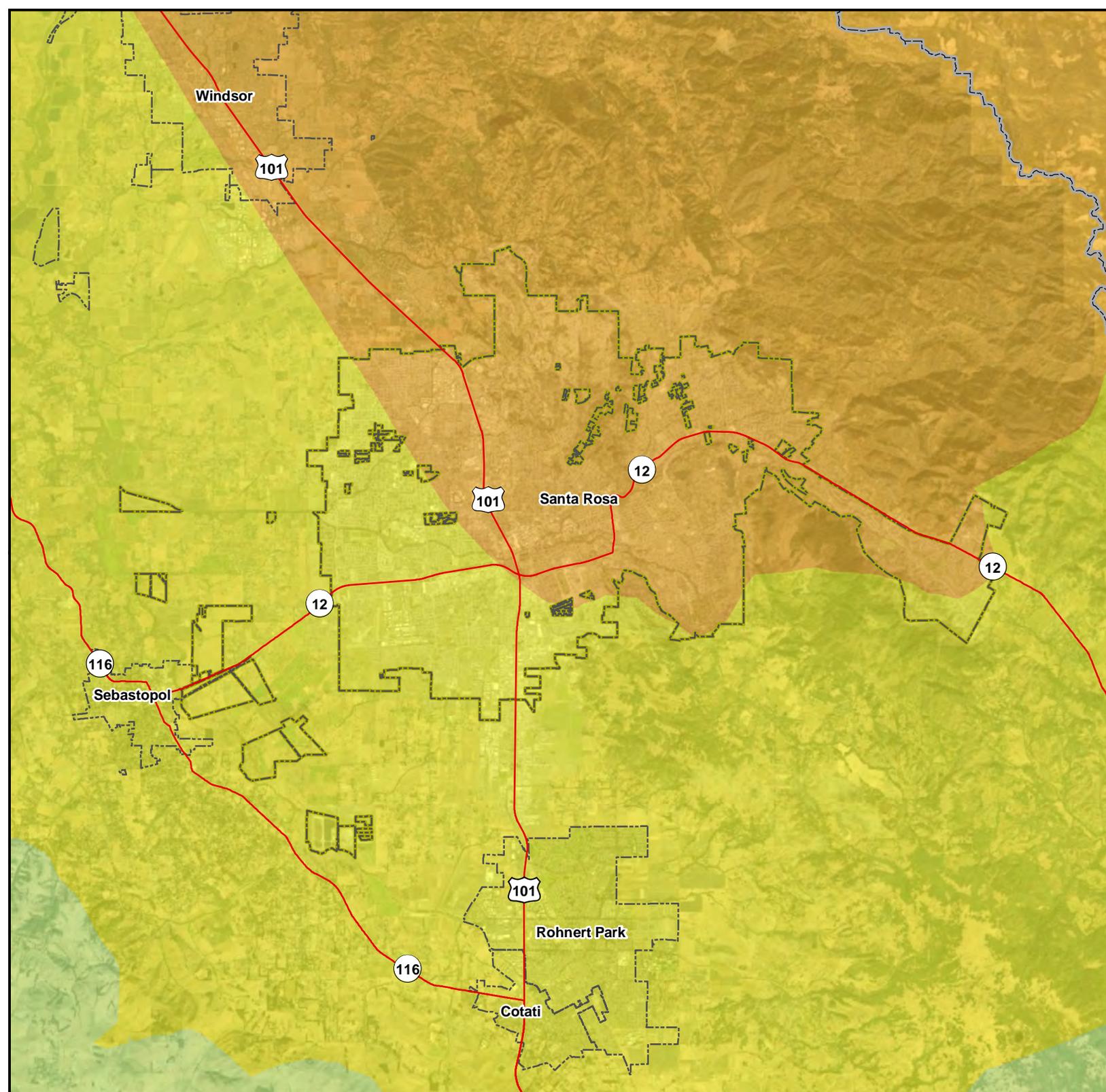
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)
- Selected City
- Incorporated Cities
- Sonoma County
- Highways

Intensity scale described as:
(perceived shaking / potential damage)

Data Source: ESRI Basemap,
Sonoma Co., USGS



0 0.5 1 2 Miles



Santa Rosa

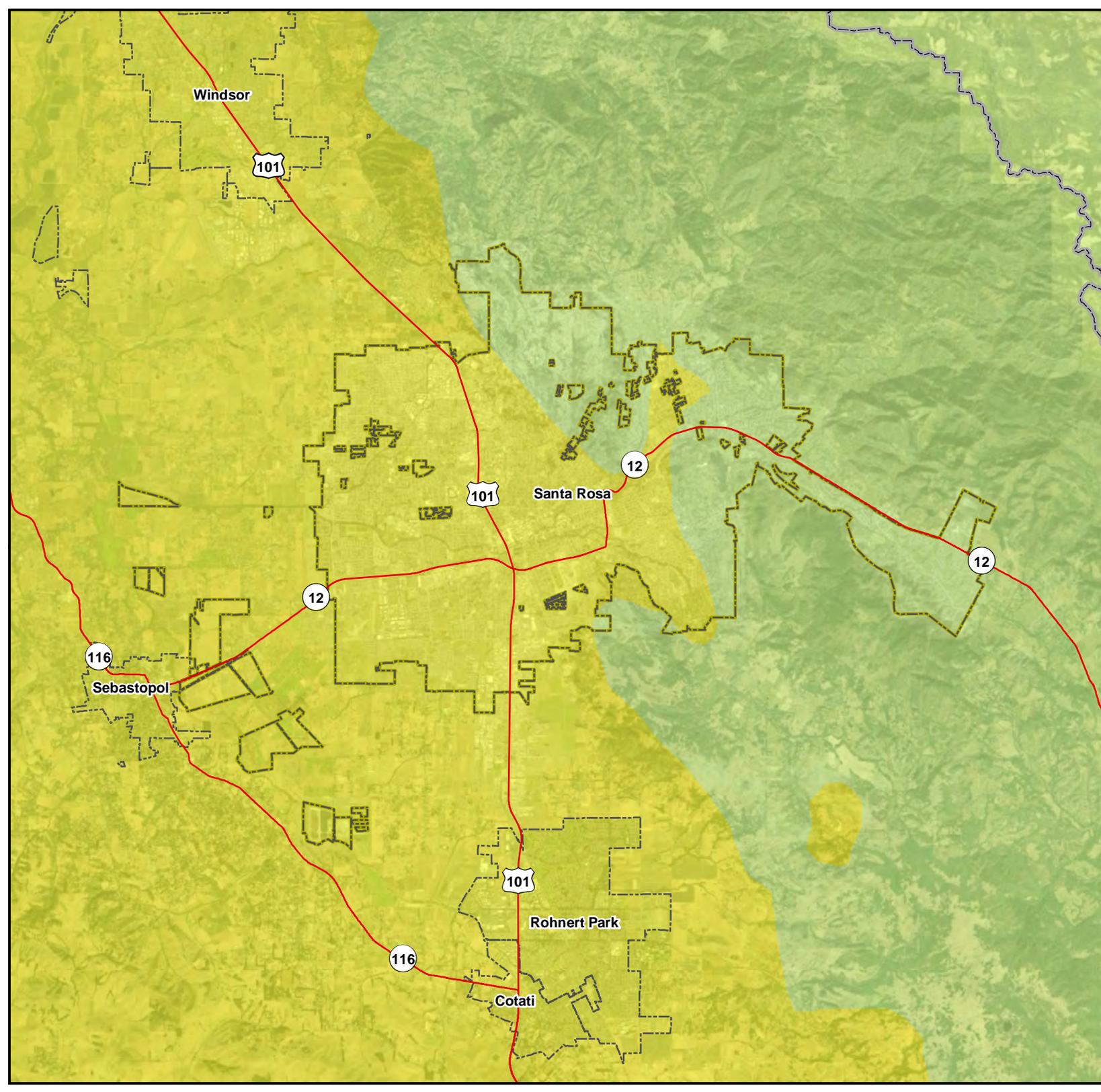
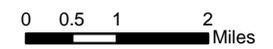
San Andreas M8.04 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- Selected City
- Incorporated Cities
- Sonoma County
- Highways

Intensity scale described as:
(perceived shaking / potential damage)

Data Source: ESRI Basemap,
Sonoma Co., USGS



Santa Rosa

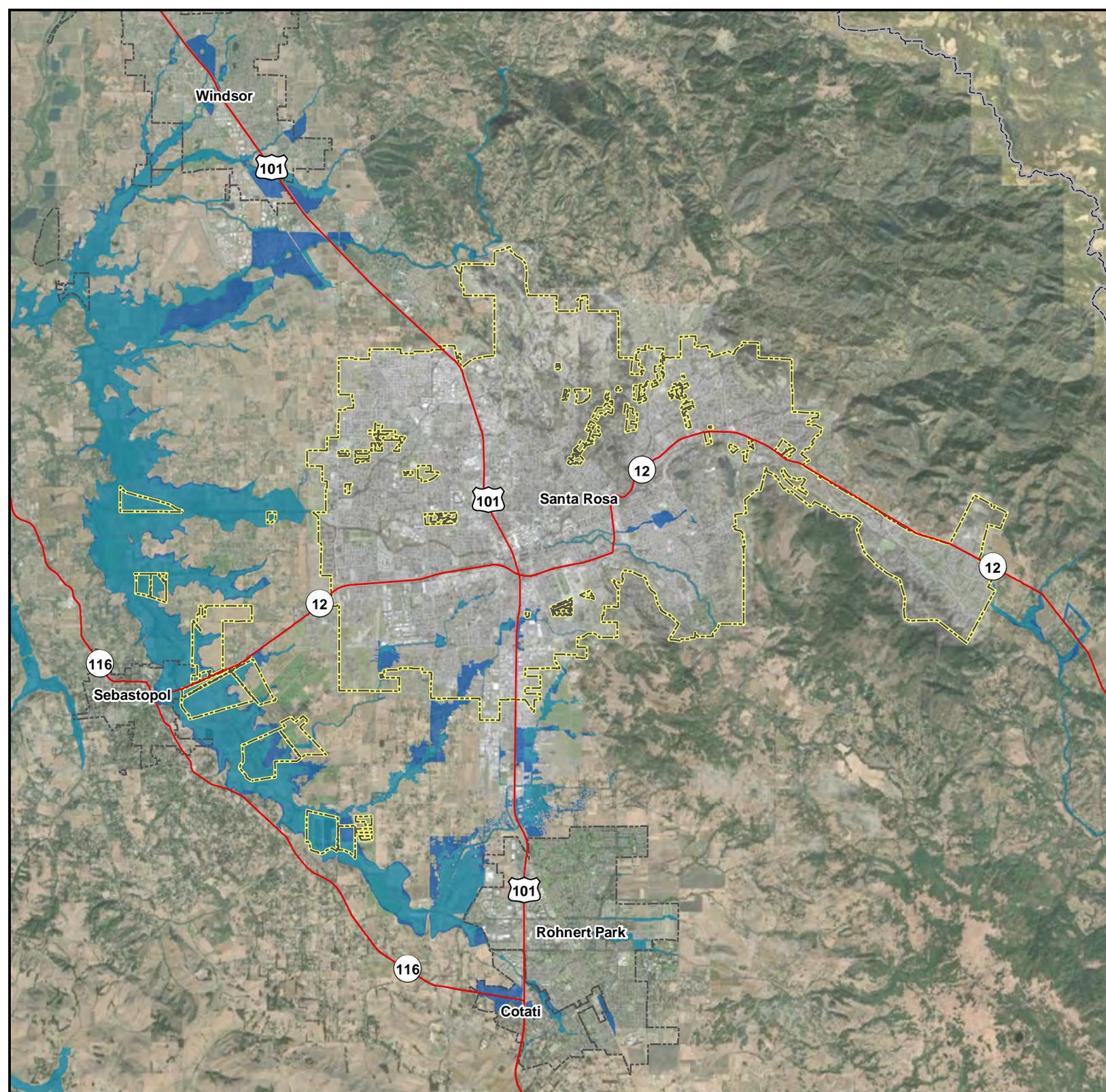
Flood Hazard Areas

-  1% Annual Chance Flood (100-Year)
-  0.2% Annual Chance Flood (500-Year)
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Sources: Esri Basemap, Sonoma Co., FEMA



0 0.5 1 2 Miles



Santa Rosa

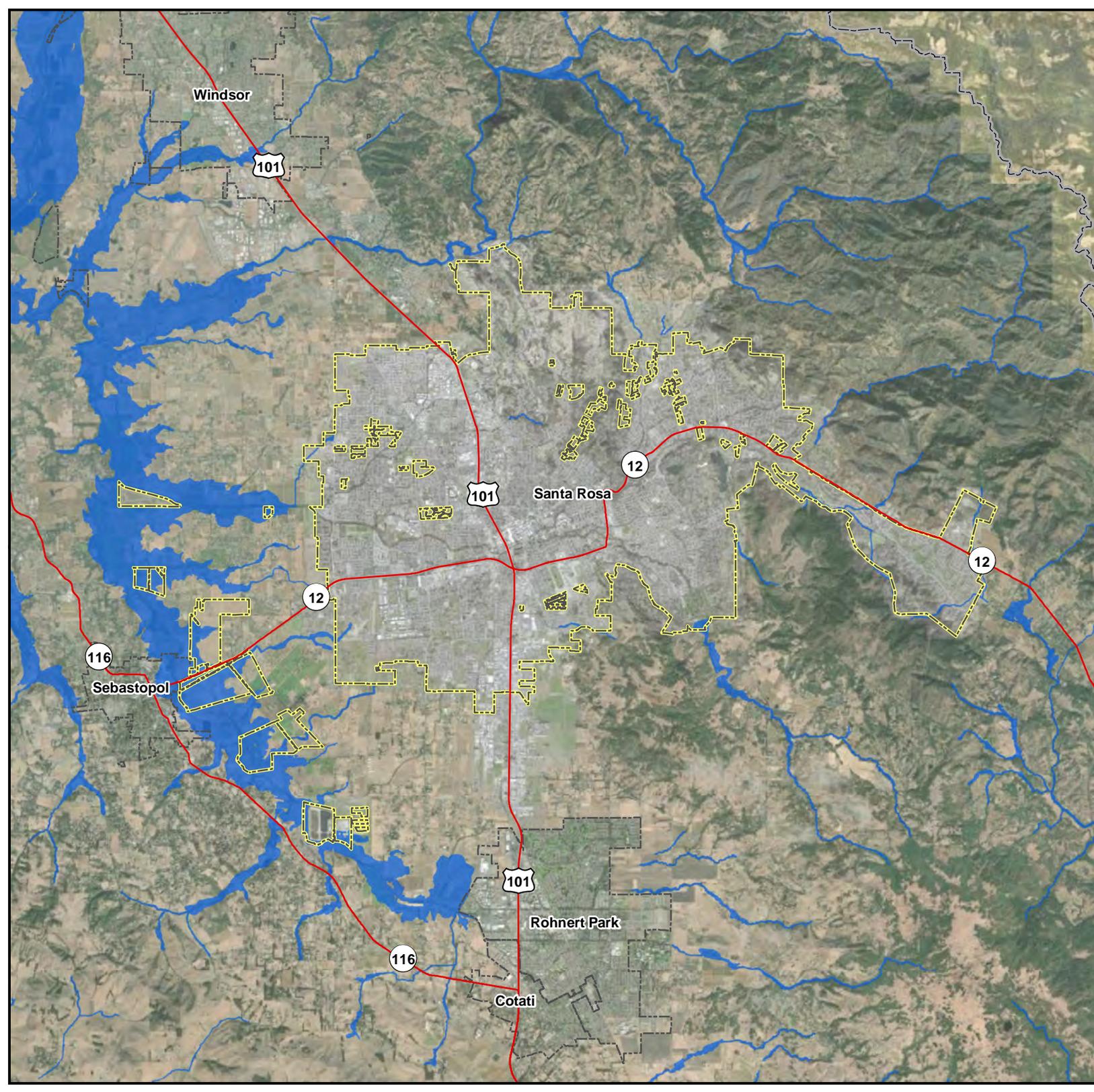
Flood Awareness Areas

-  Flood Awareness Areas
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Sources: Esri Basemap, Sonoma Co.



0 0.5 1 2 Miles

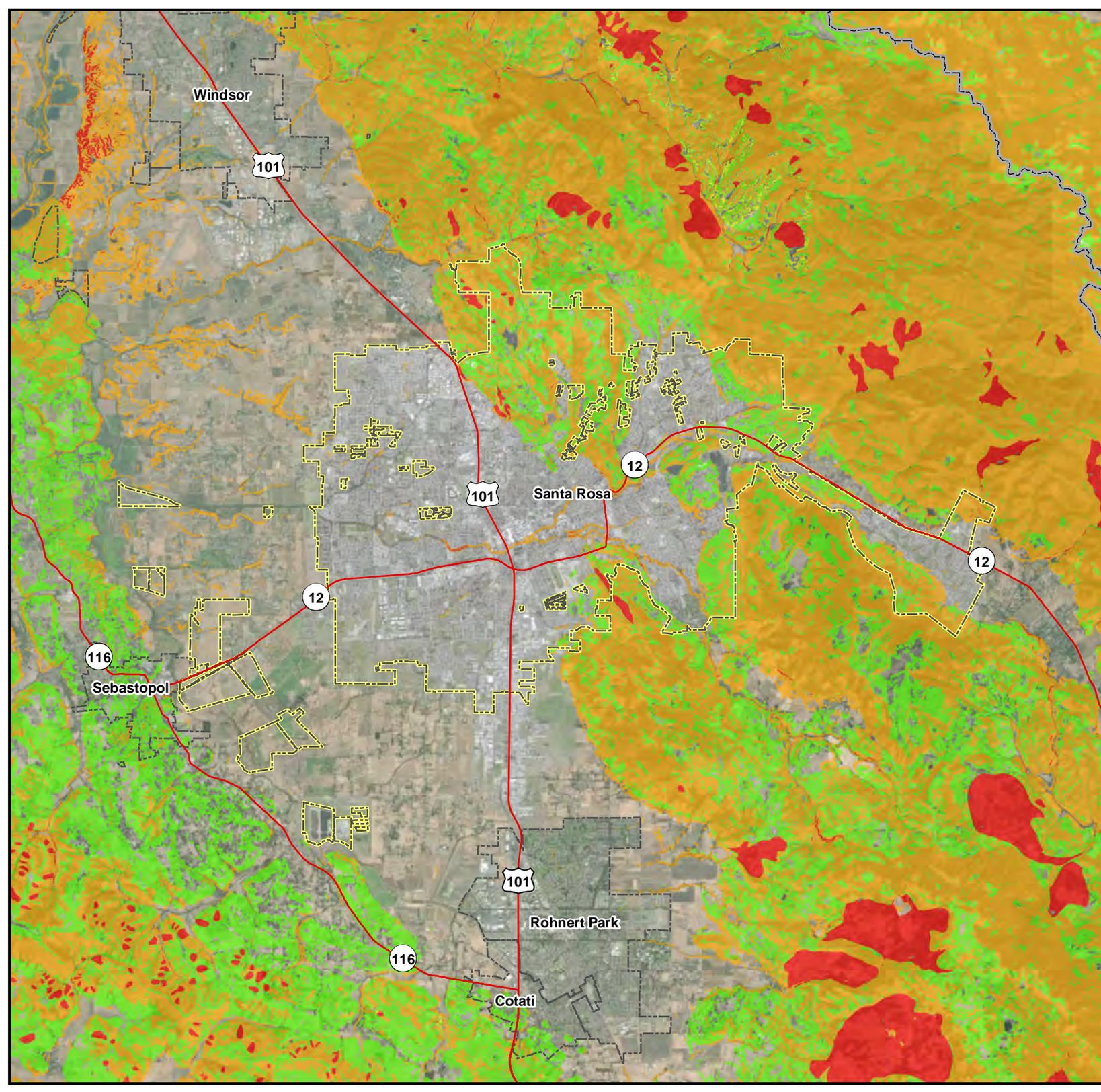
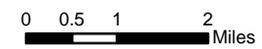


Santa Rosa

Susceptibility to Deep-Seated Landslides

-  Low
-  Moderate
-  High
-  Very High
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Sources: Esri Basemap, Sonoma Co., CGS



Santa Rosa

Wildfire Hazard Index

-  Very High Relative Hazard
-  High Relative Hazard
-  Moderate Relative Hazard
-  Low Relative Hazard
-  Very Low Relative Hazard
-  Selected City
-  Incorporated Cities
-  Sonoma County
-  Highways

Data Sources: Esri Basemap, Sonoma Co.

