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Annex to 2010 Association of Bay
Area Governments
Local Hazard Mitigation Plan
Taming Natural Disasters

City of Santa Rosa

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Introduction

The City of Santa Rosa is the largest city in Sonoma County, California, and is located about 55 miles north of San Francisco on Highway 101. The City has a population of 161,000 people, based on the 2000 census, and ACS updates, and covers 40.4 square miles. Last year, the City's General Fund budget was \$109,000,000 (\$313 Million total budget). The City employs 1,518 people. The City of Santa Rosa is a full service city and all essential services are provided by the City. A map of the City's jurisdictional boundary is provided in Exhibit A.

The Regional Planning Process

The process of preparing this plan was familiar to the City of Santa Rosa. The City has a Safety Element to its General Plan last updated November 3, 2009, and a fully SEMS compliant Emergency Operations Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. In addition, the City routinely enforces the requirements of the California Environmental Quality Act (CEQA) requirements which requires mitigation for identified natural hazards. The City's effort has focused on building on these pre-existing programs and identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation.

Many of the activities conducted by the City were fed into the planning process for the multi-jurisdictional plan. The City participated in ABAG workshops and meetings, including:

- Water workshop
- City-County workshop
- Regional Planning Committee meetings (3).

In addition, the City has provided written and oral comments on the multi-jurisdictional plan and strategies. Finally, the City provided information on facilities that are viewed as "critical" to ABAG.

The Local Planning Process

Key City staff made up of civil engineers, facility managers, building department officials, police & fire officials, emergency managers, and planners met regularly to identify and prioritize mitigation strategies appropriate for the City. Staff involved in these meetings included representatives from each of the following departments: General Services, Public Works, Utilities, Recreation & Parks, Community Development, Risk Management, Police and Fire. At the first meeting, the general priorities and appropriate City departments were identified. The second meeting identified preliminary budgets and potential funding sources for strategies designed as "High" priority.

Public Meetings

The City provided the opportunity for the public to comment on the DRAFT mitigation strategies selected by City staff at a Public Meeting on September 23, 2009, from 3:30 to 5PM at the City's Transit Center Conference Room. The DRAFT mitigation strategies were also published on the City of Santa Rosa's website for public viewing and comment for two weeks prior to the September 23rd meeting. We did not receive any comments from either of these venues. The mitigation strategies will become an implementation appendix to the General Plan Safety Element. Copies of the internet posting are included as **Exhibit B** to the Santa Rosa 2010 Annex.

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The City Council will adopt the plan in a public meeting via an official Resolution upon approval by FEMA. The mitigation strategies will become an implementation appendix of the Safety Element of the City of Santa Rosa General Plan.

Hazards Assessment

The ABAG Multi-Jurisdictional Local Hazard Mitigation Plan, to which this is an annex, lists nine hazards that impact the Bay Area, five related to earthquakes (faulting, shaking, earthquake-induced landslides, liquefaction, and tsunamis) and four related to weather (flooding, landslides, wildfires, and drought). These hazards also impact this community. Maps of these hazards and risks are shown on the ABAG website at <http://quake.abag.ca.gov/mitigation/>.

The City of Santa Rosa has reviewed the hazards identified and ranked the hazards based on past disasters and expected future impacts. The conclusion is that earthquakes (particularly shaking), flooding (including dam failure), wildfire, and landslides (including unstable earth) pose a significant risk for potential loss.

The City of Santa Rosa does not face any natural disasters not listed in the ABAG multi-jurisdictional plan and new hazards have been identified by the City of Santa Rosa since the original development of this plan in 2005.

While the City of Santa Rosa has undertaken a number of general hazard mapping activities since the first Safety Element was prepared by the City of Santa Rosa, all of these maps are less detailed and are not as current as those shown on the ABAG website at <http://quake.abag.ca.gov/mitigation/>.

Past Occurrences of Disasters (natural and human-induced)

The City of Santa Rosa has experienced a number of different disasters over the last 50 years, including numerous earthquakes, flooding, droughts, wildfires, energy shortages, landslides (12 homes damaged in 1990, and 2 in 2006), and severe storms.

The Loma Prieta Earthquake of 1989 is another example of the kind of large scale disaster which can strike the Bay Area. It killed 63 persons, injured 3,757, and displaced over 12,000 persons. With over 20,000 homes and businesses damaged and over 1,100 destroyed, this quake caused approximately \$6 Billion of damage.

More information on State and Federally declared disasters in Santa Rosa can be found at <http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2010.pdf>.

Of the declared disasters noted in Appendix D, the locally significant incident that impacted the City of Santa Rosa the most in the last several years was the January 1, 2006 flooding and subsequent landslides. The City's Emergency Operations Center (EOC) had a full activation, less the Finance Section. In addition, the following exercises were conducted with the EOC, or the Department Operations Center (DOC):

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- DOC emergency exercise 9/20/07, Utilities Department Emergency Exercise.
- DOC emergency exercise 9/25/08, Utilities Department Emergency Exercise
- “Great Shake” 10/21/08, City wide employee participation
- DOC emergency exercise 9/10/09, Utilities Department Emergency Exercise.
- “Great Shake” 10/21/09, City wide employee participation
- EOC emergency exercise 07/10 all City Departments participated.
- DOC emergency exercise 9/23/10, Utilities Department Emergency Exercise.
- “Great Shake” 10/21/10, City wide employee participation

Risk Assessment

Urban Land Exposure

The City of Santa Rosa examined the hazard exposure of its urban land based on information in ABAG’s website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. The “2005 Existing Land Use with 2009 Mapping” file was used for this evaluation (in the existing plan, the file used was “Existing Land Use in 2000”).

In general, the hazard exposure of the City of Santa Rosa is increasing over time as the amount of urban land increases (In the last 5 years, an additional 1,906 acres of land have become urban). The City of Santa Rosa actually reduced the acres of urban land in the 100 year flood zone over the last 5 years due to changes in the new FEMA flood maps, and more accurate mapping. The following table described the exposure of urban land within the unincorporated County to the various hazards.

Exposure (acres of urban land)			
Hazard	Plan Year 2005	Plan Year 2010	Change
<i>Total Acres of Urban Land</i>	23,931	25,837	1,906
Earthquake Faulting ¹ (within CGS zone)	797	794	(3)
Earthquake Shaking (within highest two shaking categories)	17,396	17,944	548
Earthquake-Induced Landslides (within CGS study zone)	Not mapped	Not mapped	Not mapped
Liquefaction (within moderate, high, or very high liquefaction susceptibility)	Not mapped	Not mapped	N/A
Flooding ² (within 100 year floodplain)	1,405	1,138	(267)
Flooding (within 500 year floodplain)	115	104	(9)
Landslides (within areas of existing landslides)	804	819	15

¹ The decrease is due to better and more accurate mapping.

² Our urban land exposure to flooding decreased, probably due to better and more accurate mapping.

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Wildfire (subject to high, very high, or extreme wildfire threat)	1,462	1,626	164
Wildland-Urban Interface Fire Threat	11,328	11,453	125
Dam Inundation (within inundation zone)	11,121	11,121	0
Sea Level Rise ³	not applicable		
Tsunamis ⁴ (within inundation area)	not applicable		
Drought ⁵	23,931	25,837	1,906

³ The sea level rise map is not a hazard map. It is not appropriate to assess infrastructure exposure to sea level rise.

⁴ The City of Santa Rosa is not subject to tsunamis.

⁵ The entire Alameda County unincorporated area is subject to drought.

Infrastructure Exposure

The City of Santa Rosa also examined the hazard exposure of infrastructure within the jurisdiction based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. Of the 563 miles of roadway in the City, the following are exposed to the various hazards analyzed.

Exposure (miles of infrastructure)						
Hazard	Roadway		Transit		Rail	
	Plan Year 2005	Plan Year 2010	Plan Year 2005	Plan Year 2010	Plan Year 2005	Plan Year 2010
<i>Total Miles of Infrastructure</i>	563	617	0	0	6	10
Earthquake Shaking (within highest two shaking categories)	448	502	0	0	6	9
Liquefaction Susceptibility (within moderate, high, or very high liquefaction susceptibility)	299	381	0	0	5	8
Liquefaction Hazard (within CGS study zone)	Not Mapped					
Earthquake-Induced Landslides (within CGS study zone)	Not Mapped					
Earthquake Faulting (within CGS zone)	17	17	0	0	0	0
Flooding (within 100 year floodplain)	4	3	0	0	0	1
Flooding (within 500 year floodplain)	0	2	0	0	0	1
Landslides (within areas of existing landslides)	129	146	0	0	1	1

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Wildfires (subject to high, very high, or extreme wildfire threat)	12	12	0	0	0	0
Wildland-Urban Interface Fire Threat	228	252	0	0	0	0
Dam Inundation (within inundation zone)	250	69	0	0	1	1
Sea Level Rise ¹	not applicable					
Tsunamis	Santa Rosa is not subject to tsunamis					
Drought ²	not applicable					

¹ The sea level rise map is not a hazard map. It is not appropriate to assess infrastructure exposure to sea level rise.

² Drought is not a hazard for roadways.

Exposure of City-Owned Buildings, Plus Critical Healthcare Facilities and Schools

Finally, the City examined the hazard exposure of critical health care facilities and schools located within the City, and City-owned buildings based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickcrit2010.html>. The City provided a list of the critical facilities it owns to ABAG. ABAG provided a detailed assessment of the hazard exposure of each of its facilities. The following number of facilities is exposed to the various hazards analyzed.

Exposure (number of facility types)								
Hazard	Hospitals		Schools		Locally owned critical facilities		Locally owned bridges and interchanges	
	Plan Year 2005	Plan Year 2010	Plan Year 2005	Plan Year 2010	Plan Year 2005	Plan Year 2010	Plan Year 2005	Plan Year 2010
<i>Total Number of Facilities</i>	46	38	48	61	42	89	46	41
Earthquake Shaking (within highest two shaking categories)	46	38	48	61	42	89	39	38
Liquefaction Susceptibility (within moderate, high, or very high liquefaction susceptibility)	34	33	28	44	22	39	25	32
Liquefaction Hazard (within CGS study)	Not Mapped	Not Mapped	Not Mapped	Not Mapped				

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zone)								
Earthquake-Induced Landslides (within CGS study zone)	Not Mapped							
Earthquake Faulting (within CGS zone)	2	3	1	1	0	5	2	2
Flooding (within 100 year floodplain)	0	0	1	0	8	0	2	2
Flooding (within 500 year floodplain)	0	1	0	1	2	0	0	0
Landslides (within areas of existing landslides)	5	3	2	6	2	34	6	3
Wildfires (subject to high, very high, or extreme wildfire threat)	0	0	0	1	0	8	1	0
Wildland-Urban Interface Fire Threat	13	12	16	22	6	46	17	14
Dam Inundation	7	5	5	12	12	13	15	14
Sea Level Rise (exposed to 16in sea level rise) ¹	-	0	-	0	-	0	-	0
Sea Level Rise (exposed to 55in sea level rise) ²	-	0	-	0	-	0	-	0
Tsunamis ³ (within inundation)	-	0	-	0	-	0	-	0

¹ Sea level rise data was not available in 2005

² Sea level rise data was not available in 2005

³ Tsunami evacuation planning maps became available inside the San Francisco Bay in 2009. It should be noted that this map is not a hazard map and should be used for evacuation planning purposes only. The inundation line represents the highest inundation at any particular location from a suite of tsunami sources. It is not representative of any single tsunami.

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area)								
Drought ⁴	-	-	-	-	-	-	-	-

⁴ Drought will not affect locally owned facilities directly.

Repetitive Loss Properties

There are 5 repetitive loss properties in the City based on the information at <http://quake.abag.ca.gov/mitigation/floodloss/>. In 2004 the City had 8 repetitive loss properties, with 3 that were outside the flood plain. It is currently unknown if the 2009 data repetitive loss properties are in or out of the flood plain. It is also unknown whether this property is residential, commercial, institutional, etc.

Other risks

The City has no risks or vulnerabilities that differ from the other nine counties, but the City plans to work with ABAG to develop specific information about the kind and level of damage to buildings, infrastructure, and critical facilities which might result from any of the hazards previously noted.

National Flood Insurance Program

The City of Santa Rosa has participated in the National Flood Insurance Program since June 26, 1974. The City does not participate in the Community Rating System.

The City Council an ordinance on October 28, 2008 to adopt the new FIRM maps (effective December 2, 2008). That ordinance provided for an "automatic" adoption of any subsequent amendments and / or revisions to those maps. The 2008 maps were not based on any new studies. Primarily they added aerial views of the city and reflected statutory changes to the flood zone information.

The southwest corner of the City is not currently mapped on the Flood Insurance Rate Maps (FIRM) as being a flood hazard area. A meeting was held on October 22, 2009, where FEMA made a presentation about the proposed flood maps for the southwest side of the City. The City does not have any additional information about when those maps will be provided in draft form for the City to adopt. It is the City's understanding is that the FEMA / COE information was being cross-checked with proposed city projects to see which city projects would result in changes to the flood maps.

Mitigation Goals and Objectives

The goal of the ABAG MJ-LHMP is to maintain and enhance a disaster-resistant region by reducing the potential for loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters. This goal is

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unchanged from the 2005 plan and continues to be the goal of the City of Santa Rosa in designing its mitigation program.

Additional, the City has the specific objective of reducing the number of public and private buildings within the City that are vulnerable to the effects of earthquakes, flooding, wildfire, and landslides. The City is also cooperating with the County of Sonoma to provide water infrastructure that is less vulnerable to seismic episodes.

If your jurisdiction has other mitigation goals or specific mitigation objectives, specify them here.

Mitigation Activities and Priorities

Evaluation of Progress from 2005 Plan

In 2005, mitigation actions and priorities were identified. The City included Fire Station No. 2 as at a significant risk due to shaking exposure, and that Station was re-modeled, addressing any seismic issues. The City also committed to developing better hazard and risk information in the intent to creating a more disaster-resistant jurisdiction. To that end, the City continued to apply programs as outlined in the infrastructure, housing and land use categories of the 2006 Mitigation Strategies regarding earthquakes, landslides and fire hazards. These are programs that analyze and establish wild-fire severity zones, enforce Building Codes, seismically upgrade water reservoirs, increase abilities to communicate in emergency situations, plan for emergency water supplies, etc. These programs are on-going, and are overseen by the Community Development, Fire, Police, Public Works, and Utilities Departments.

Future Mitigation Actions and Priorities

As a participant in the 2010 ABAG multi-jurisdictional planning process, the staff of Santa Rosa helped in the development and review of the comprehensive list of mitigation strategies in the overall multi-jurisdictional plan. The decision on priority was made based on a variety of criteria, not simply on an economic cost-benefit analysis. These criteria include being technically and administratively feasible, politically acceptable, socially appropriate, legal, economically sound, and not harmful to the environment or our heritage. Representatives from multiple departments then met on a regular basis to review progress on the City's 2005 strategies, to identify and prioritize additional mitigation strategies to update the list.

These draft priorities were submitted to City Departments and the City Manager's Office for review. The draft priorities will be provided to the City Council for adoption pending approval of this LHMP by FEMA.

The City Capital Improvement Program planning team also prioritized specific mitigation tasks for the next 5 years. This list includes implementation process, funding strategy, responsible agency, and approximate time frame.

1. Seismic upgrade of existing water reservoirs R3, R7, and R12b.

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- a. 2010 MJ-LHMP Strategy number INFR-b-5
 - b. This project is the next series of reservoir upgrades based on most critical facilities, and in most need of retrofit, and is under the Utilities Department direction. The cost analysis of seismic retrofit versus reservoir failure made the project an easy choice.
 - c. The funding will come from the Utilities water rates and is slated to receive funding in the 2011-2012 fiscal year.
2. Emergency Aqueduct Zone Storage project.
- a. 2010 MJ-LHMP Strategy number INFR-b-5.
 - b. This project is designed to provide water to the City if water supply from a regional water supply line is cut due to earthquakes. The City's Master Water Plan identified the need to have this emergency storage.
 - c. The funding comes from the Utilities water rate-payers and is partially funded in the 2011-2012 fiscal year, and will receive additional funding as rates and time allows. Current estimates for full funding is fiscal year 2014-2015.
3. Completion of radio communications upgrade and 2-way radio upgrade projects.
- a. 2010 MJ-LHMP Strategy numbers GOVT-c-6, -c-7 & -c-8
 - b. This project improves the City's public safety and local government radio communications capacity, which is vital during emergencies when other forms of communication are down.
 - c. This project is mostly complete with funding coming from the general fund, the Department of Justice (grant), and a Workforce Housing grant. The project will be complete in the 2010-2011 fiscal year.

On-Going Mitigation Strategy Programs

The City has many on-going mitigation programs that help create a more disaster-resistant region (see the City's mitigation strategies at <http://www.abag.ca.gov/bayarea/eqmaps/mitigation/strategies.html> for a comprehensive review of existing mitigation programs). The following list highlights those programs identified as *Existing Programs* in the mitigation strategy spreadsheet. Others are on-going programs that are currently underfunded. It is the County's priority to find additional funding to sustain these on-going programs over time.

- Vulnerability assessments of City facilities and infrastructure (GOVT-a-1) :
- Coordination with the State Division of Safety of Dams to ensure that city is aware of the timeline for the maintenance and inspection of dams whose failure would impact this jurisdiction; (GOVT-a-2);
- Ensure adequate fire equipment road or fire road access to developed and open space areas. (GOVT-c-8);
- Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities of various departments within the local government organization, and that outlines a structure and process for policy-making involving elected officials and appointed advisory committees. (GOVT-d-13);

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- Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters. (GOVT-c-13);
- Participation in FEMA’s National Flood Insurance Program (GOVT-d-5)
- Develop a plan for speeding 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. (INFR-a-6);
- Include “areas subject to ground failure” in the list of criteria used for determining a replacement schedule (along with importance, age, type of construction material, size, condition, and maintenance or repair history) for pipelines. (INFR-e-1);
- Continue to enforce State-mandated requirements, such as the California Environmental Quality Act, to ensure that mitigation activities for hazards, such as seismic retrofits and vegetation clearance programs for fire threat, are conducted in a way that reduces environmental degradation such as air quality impacts, noise during construction, and loss of sensitive habitats and species, while respecting the community value of historic preservation. (ENVI-a-1);
- Enforce and/or comply with the State-mandated requirement that site-specific geologic reports be prepared for development proposals within Alquist-Priolo Earthquake Fault Zones, and restrict the placement of structures for human occupancy. (This Act is intended to deal with the specific hazard of active faults that extend to the earth’s surface, creating a surface rupture hazard.) (LAND-a-1)

| Incorporation into Existing Planning Mechanisms

The City has several planning mechanisms including

- ◆ General Plan Safety Element
- ◆ Capital Improvement Program
- ◆ Santa Rosa Strategic Plan <http://ci.santa-rosa.ca.us/departments/fire/aboutus/Pages/StrategicPlan.aspx>

The City has a Safety Element in its General Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. The Local Hazard Mitigation Plan was adopted as an implementation appendix to the Safety Element. In addition, the City enforces the requirements of the California Environmental Quality Act (CEQA), which requires mitigation for identified natural hazards. The City has used these pre-existing programs as a basis for identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation.

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Plan Update Process

As required by the Disaster Mitigation Act of 2000, the City of Santa Rosa will update this plan annex at least once every five years, by participating in a multi-agency effort with ABAG and other agencies to develop a multi-jurisdictional plan.

The Director of the Community Development Department will ensure that monitoring of this Annex will occur. The plan will be monitored on an on-going basis. However, the major disasters affecting our City, legal changes, notices from ABAG as the lead agency in this process, and other triggers will be used. Finally, the Annex will be a discussion item on the agenda of the meeting of Department leaders at least once a year in April. At that meeting, the department heads will focus on evaluating the Annex in light of technological and political changes during the past year or other significant events. The Department leaders will be responsible for determining if the plan should be updated.

The City is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. The Community Development Department will contact ABAG four years after this plan is approved to ensure that ABAG plans to undertake the plan update process. If so, the County again plans to participate in the multi-jurisdictional plan. If ABAG is unwilling or unable to act as the lead agency in the multi-jurisdictional effort, other agencies will be contacted, including the County's Office of Emergency Services. Counties should then work together to identify another regional forum for developing a multi-jurisdictional plan.

The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, the County will provide the opportunity for the public to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics.

Mitigation Plan Point of Contact

Name:

Title:

Mailing Address:

Telephone:

Email:

Alternate Point of Contact

Name:

Title:

Mailing Address:

Telephone:

Email:

Exhibit A - Jurisdiction Boundary Map

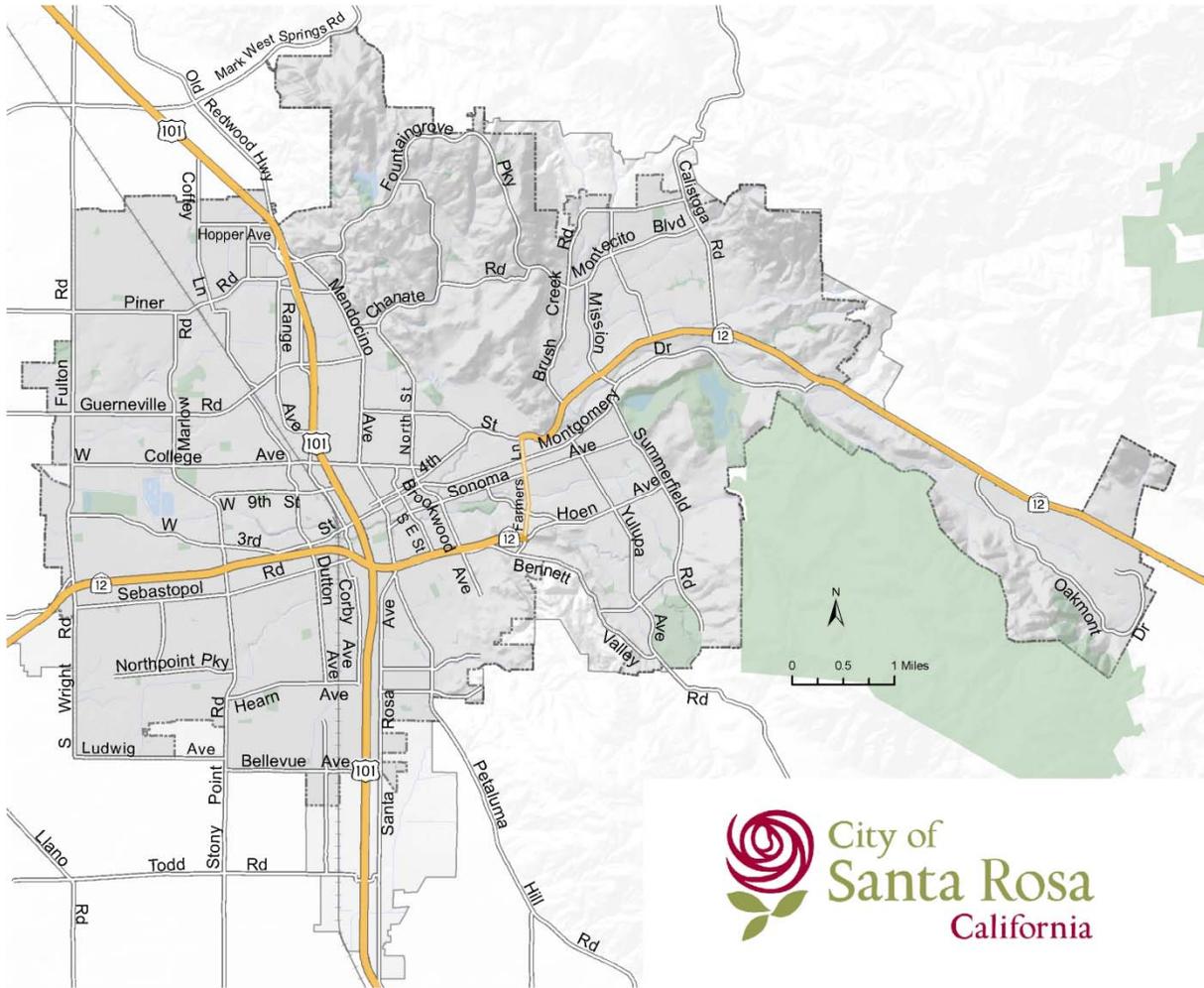


Exhibit B - Public Meeting Announcements

Local Hazard Mitigation Strategy - Windows Internet Explorer

http://webeditor.srcty.org/news/Pages/LocalHazardMitigationStrategy.aspx

Version: Draft (0.9) Status: Approved and scheduled for publication on 9/16/2009 12:00 AM. Publication Start Date: 9/16/2009 12:00 AM

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Local Hazard Mitigation Strategy

9/26/2009 City of Santa Rosa

The City of Santa Rosa invites residents to comment on the Local Hazard Mitigation Strategy.

There are two ways for residents to submit comments and questions about the Local Hazard Mitigation Strategy

1) ONLINE
By reviewing the documents in the left navigation bar and submitting your comments and questions to Steve Allen, Quality Control Associate at sallen@srcty.org

2) IN PERSON
By attending a Public Meeting

Wednesday, September 23
3:30 PM - 4:30 PM
City of Santa Rosa
Transit Operations Bldg.
55 Stony Point Road
Santa Rosa, CA 95401

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