12. GOLD RIDGE RESOURCE CONSERVATION DISTRICT

12.1 LOCAL HAZARD MITIGATION PLANNING TEAM

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 12-1.

Table 12-1. Local Mitigation Planning Team Members

Name	Title
Brittany Jensen	Executive Director
Adriana Stagnaro	Outreach and Project Manager
Cailin Notch	AmeriCorps CivicSpark Fellow

12.2 JURISDICTION PROFILE

12.2.1 Overview

Gold Ridge RCD was established in 1941 as one of the original Resource Conservation Districts and the first RCD in Sonoma County. Gold Ridge RCD provides free, non-discriminatory assistance and education opportunities to agricultural producers, land users, educators, and anyone with land-based resource conservation needs on a voluntary basis. Gold Ridge RCD provides non-regulatory assistance to the community on conservation education, soil erosion control, water quality enhancement, range management, vineyard development, woodland, forestry and wildlife management, watershed and stream enhancement, and wildfire prevention and preparedness.

According to a document on Sonoma County's climate from the University of California, Davis, Sonoma County has three traditional microclimate zones: marine, coastal cool, and coastal warm. The Gold Ridge RCD's boundary falls into areas that primarily experience a marine or coastal cool climate. The marine zone lies west of the first mountain ridges and is under direct ocean influence. It is the coolest of the three climates. The coastal cool climate includes the areas east of the western hills of Sebastopol and is characterized by cold foggy air. According to the North Bay Climate Adaptation Initiative, climatic trends from human-caused climate change which are projected

to occur more frequently include more extreme heat, frequent droughts, increased wildfires, warmer winters, increased floods, and higher seas.

Gold Ridge RCD is a special district that is governed by a five-member Board of Directors who are appointed by the County Board of Supervisors in lieu of elections. The Board of Directors assumes responsibility for the adoption of this plan; the Executive Director will oversee its implementation. Gold Ridge RCD currently employs a staff of 14, including two partner staff shared with Sonoma RCD. Last fiscal year Gold Ridge RCD's budget was just under $2 million. Funding primarily came through federal (37.6%), state (37.1%), and local (7.7%) grants, fees-for-service (11.9%), foundations (2.7%), parcel taxes (1.8%) and donations (1.2%).

12.2.2 Service Area

The Gold Ridge Resource Conservation District (RCD) is a 134,000-acre district in west Sonoma County, bordered by Marin County to the south, the Russian River to the north, the Pacific coastline to the west, and the Laguna de Santa Rosa to the east. Population estimates from the most available census data from within the Gold Ridge RCD boundary are listed in Table 12-2. This population information does not include unincorporated areas within the county.

Table 12-2. District Population Breakdown

Community	Population	Census	Community	Population	Census
Monte Rio	1,152	2010	Bodega	220	2010
Forestville	3,293	2010	Valley Ford	147	2010
Graton	1,707	2010	Bloomfield	345	2010
Sereno del Mar	126	2010	Sebastopol	7,674	2019 (estimate from US Census)
Carmet	47	2010	Occidental	1,115	2010
Salmon Creek	86	2010	Camp Meeker	~350 homes	
Bodega Bay	1,077	2010	TOTAL	17,339	

Based on GIS parcel data from 2019, there are 134,000 acres and approximately 3,450 residential parcels in unincorporated Sonoma County within Gold Ridge RCD's service district. Gold Ridge RCD's district boundary also includes parts of western Cotati and western Rohnert Park. From the 2019 GIS parcel data, there are approximately 733 and 5 residential parcels in Cotati and Rohnert Park respectively that fall within Gold Ridge RCD's service district.

12.2.3 Assets

Table 12-3 summarizes the assets of the District and their value.

12.3 CURRENT TRENDS

The district provides assistance on a voluntary basis to agricultural producers, land users, educators, and anyone with land-band resource conservation needs. The RCD assists on a number of conservation projects including natural and agricultural resource conservation projects for farmers through the LandSmart Planning program, water conservation, erosion control, and carbon farm planning. Gold Ridge RCD also assists residents and communities on wildfire prevention and preparedness measures, including healthy forest management education and assistance in drafting and approving neighborhood-level Community Wildfire Prevention Plans (CWPPs).

Table 12-3. Special Purpose District Assets

Asset	Value
Property	
See Valley Ford Schoolhouse below	--
Equipment	
No-till drill (6 foot)	$5,000
No-till drill (10 foot)	$10,000
Pick-up Truck	$25,000
Total:	*$40,000*
Critical Facilities and Infrastructure	
Valley Ford Schoolhouse—14355 School St, Valley Ford, CA 94972, APN 026-010-014	$350,000
Gold Ridge RCD Office (rented)—2776 Sullivan Rd, Sebastopol, CA 95472	N/A
Total:	*$350,000*

12.4 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 12-4.
- An assessment of fiscal capabilities is presented in Table 12-5.
- An assessment of administrative and technical capabilities is presented in Table 12-6.
- An assessment of education and outreach capabilities is presented in Table 12-7.
- Classifications under various community mitigation programs are presented in Table 12-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 12-9.

Table 12-4. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
County of Sonoma General Plan 2020	2008	Update currently underway.
Sonoma County Community Wildfire Protection Plan	2016	Update currently underway.
Sonoma County Hazard Mitigation Plan	2016	Update currently underway.
Public Resources Code, Section 9—Resource Conservation	2017	Enabling state legislation for natural resource conservation.
Sonoma County Recovery and Resiliency Framework	2018	Potential Actions: NR 1.2.4-.6, 1.2.8, 1.3.1, 2.1.1-.3, 2.1.5, 2.2.2, 2.4.1, 2.4.3, 2.4.5, 3.1.2, 3.1.8, 3.2.6, 3.4.3.
Fire Safe Occidental CWPP	2020	Approved Fall 2020. Assist with implementation of prioritized treatment areas and current activities.
Fire Safe Camp Meeker CWPP	2021 (est.)	In progress. Est. completion date 2021

Table 12-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes

Table 12-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Engineer, Lead Scientist, Forester, Project Manager.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineer, Lead Scientist.
Planners or engineers with an understanding of natural hazards	Yes	Engineer, Lead Scientist, Forester, Project Manager.
Staff with training in benefit/cost analysis	Yes	We can hire a consultant for this work
Surveyors	Yes	Engineer, Lead Scientist, Forester.
Personnel skilled or trained in GIS applications	Yes	Engineer, Lead Scientist, Forester, Project Manager, Project Coordinator, Program Director.
Scientist familiar with natural hazards in local area	Yes	Engineer, Lead Scientist, Forester, Outreach and Project Manager, Project Manager, Project Coordinator, Program Director, Ecologist.
Emergency manager	No	N/A
Grant writers	Yes	Executive Director, Lead Scientist, Forester, Outreach and Project Manager, Project Manager, Project Coordinator, Program Director, Ecologist.
Outreach and Education	Yes	Executive Director, Lead Scientist, Forester, Outreach and Project Manager, Project Coordinator, Ecologist.

Table 12-7. Education and Outreach

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes, we use consultants for this
Do you have hazard mitigation information available on your website? *If yes, please briefly describe*	Yes Erosion control, stormwater management, water conservation, LandSmart Planning, Carbon farm planning, etc.
Do you use social media for hazard mitigation education and outreach? *If yes, please briefly describe*	Yes Facebook, Instagram, Email Newsletter
Do you have any citizen boards or commissions that address issues related to hazard mitigation? *If yes, please briefly specify*	Yes Board of Directors

Criterion	Response
Do you have any other programs already in place that could be used to communicate hazard-related information?	Yes
If yes, please briefly describe	Webinars, Meetings, Workshops, Mailers
Do you have any established warning systems for hazard events?	No
If yes, please briefly describe	

Table 12-8. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	N/A	N/A	N/A
DUNS #	Yes	615324790	N/A
Community Rating System	N/A	N/A	N/A
Building Code Effectiveness Grading Schedule	N/A	N/A	N/A
Public Protection	N/A	N/A	N/A
Storm Ready	N/A	N/A	N/A
Firewise	N/A	N/A	N/A
Tsunami Ready	N/A	N/A	N/A

Table 12-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
Comment	
Jurisdiction-level monitoring of climate change impacts	High
Comment	
Technical resources to assess proposed strategies for feasibility and externalities	Medium
Comment	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
Comment	
Capital planning and land-use decisions informed by potential climate impacts	High
Comment	
Participation in regional groups addressing climate risks	Medium
Comment	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
Comment	
Identified strategies for greenhouse gas mitigation efforts	High
Comment	
Identified strategies for adaptation to impacts	High
Comment	
Champions for climate action in local government departments	High
Comment	
Political support for implementing climate change adaptation strategies	High
Comment	

Criterion	Jurisdiction Rating
Financial resources devoted to climate change adaptation	High
Comment	
Local authority over sectors likely to be negatively impacted	Low
Comment *No authority.*	
Public Capacity	
Local residents' knowledge of and understanding of climate risk	High
Comment	
Local residents support of adaptation efforts	High
Comment	
Local residents' capacity to adapt to climate impacts	Medium
Comment	
Local economy current capacity to adapt to climate impacts	Medium
Comment	
Local ecosystems capacity to adapt to climate impacts	Medium
Comment	

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.

12.5 INTEGRATION REVIEW

For hazard mitigation planning, "integration" means that hazard mitigation information is used in other relevant planning mechanisms, such as 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 future integration. 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.

12.5.1 Existing Integration

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

- **Gold Ridge RCD Strategic Plan**—4-year plan which outlines strategies for Gold Ridge RCD to achieve vision of healthy and sustainable natural resources and resilient landscapes. The previous strategic plan ten planned actions including carbon farming and climate resiliency. The Strategic Plan is currently being updated.
- **Sonoma County Recovery and Resiliency Framework**—Draws from structure, functions, roles, and principles in the Federal Emergency Management Agency's National Disaster Recovery Framework and focuses on five key strategic areas including community preparedness and natural resources.
- **Fire Safe Occidental CWPP**—Provides a general overview and assessment of wildfire risks and prioritizes tasks to increase fire resiliency in the community of Occidental.
- **Sonoma County Draft Local Coastal Plan**—Important planning document in managing the conservation and development of Sonoma County's coastal regions.

- **California Water Plan**—The State's strategic plan for sustainably managing and developing water resources for current and future generations.
- **CAL FIRE Strategic Plan**—The plan identifies strategies to fulfill CAL FIRE's goals of improving core capabilities, enhancing internal operations, ensuring health and safety, and building an engaged, motivated, innovative workforce.

12.5.2 Opportunities for Future Integration

The capability assessment presented in this annex identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Sonoma County CWPP Update—**The update includes more robust stakeholder participation in the planning and prioritization of wildfire risk reduction projects, and increased science-based risk assessment and GIS mapping.
- **Sonoma County Strategic Plan**—The five-year Strategic Plan will provide context to inform policies and projects that are funding for the next five years. The plan will guide how to align short and long-term objectives, so the County Board of Supervisors' actions reflect a clear sense of purpose.
- **Sonoma County General Plan Update**—The General Plan is a policy document that establishes a vision for the future of Sonoma County. It prioritizes, organizes, and directs development and conservation for 20-year increments and was last updated in 2008.
- **Sonoma County Local Coastal Plan Update**—Important planning document in managing the conservation and development of Sonoma County's coastal regions. The intent of the current update is not to encourage new or increased development.
- **Future Local CWPPs or similar plans**—Additional documents that provide a general overview and assessment of wildfire risks and prioritizes tasks to increase fire resiliency at the neighborhood level and certified by local officials.
- **Climate Action Plan/Climate Emergency Mobilization Plan**
- **Gold Ridge RCD Strategic Plan**
- **City Plans (Rohnert Park, Cotati and/or Sebastopol)**
- **Groundwater Sustainability Plan**

12.6 RISK ASSESSMENT

12.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 12-10 lists past occurrences of natural hazards for which specific damage was recorded in Gold Ridge RCD. Other hazard events that broadly affected the entire planning area, including Gold Ridge RCD, are listed in the risk assessments in Volume 1 of this hazard mitigation plan. Gold Ridge RCD did not include valuation of damage assessment to building or infrastructure in our planning or analysis. We do want to acknowledge that we qualitatively included the valuation of natural resources, for instance, natural capital in Sonoma County has been valued at $2.2 to $6.6 billion annually ($2,200 to $6,500 per acre). Damage assessment does not apply to Gold Ridge RCD as we do not have jurisdiction over buildings or other build infrastructure.

Table 12-10. Past Natural Hazard Events

Type of Event	Date	Damage Assessment
Historical CA Droughts	1841, 1864, 1924, 1928-35, 1947-50, 1959-60, 1976-77, 1986-92, 2007-09	Unknown
Heavy Rains and Flooding	December 24, 1964	Unknown
Severe Storms, Flooding	January 26, 1969	Unknown
Severe Storms, Flood, Mudslides, High Tide	December 19, 1981 – January 8, 1982	Unknown
Coastal Storms, Floods, Slides, Tornadoes	January 21 – March 30, 1983	Unknown
Severe Storms, Flooding	February 12 – March 10, 1986	Unknown
Freeze of '91	1990 – 1991	Unknown
Flood of '93	1993	Unknown
Fishing Emergency	May – September 1994	Unknown
Flood of '95, Part 1	January 8 – 31, 1995	Unknown
Flood of '95, Part 2	March 7 – 15, 1995	Unknown
December Winter Storm	1995	Unknown
Cavedale Fire	1996	Unknown
Jenner Sandbarrier	1996	Unknown
Porter Creek Fire	October 27-28, 1996	Unknown
New Year's Flood	December 30, 1996 – January 4, 1997	Unknown
Superbowl Flood	January 25, 1997	Unknown
Flood of '98/ Rio Nido Debris Flow	February 2, 1998 – January 4, 2000	Unknown
February Winter Storm	February 8-10, 1999	Unknown
December Winter Storms	December 17, 02 – April 8, 03	Unknown
Geysers Fire	September 3 – 8, 2004	Unknown
New Year's Floods	December 31, 2005 – January 3, 2006	Unknown
Late Spring Storms	March 29 – April 16, 2006	Unknown
SF Oil Spill	November 7, 2007	Unknown
H1N1 Influenza Pandemic	April – May, 2009	Unknown
Great Tohoku Tsunami	March 11, 2011	Unknown
Holiday Decoration Flood	December 2, 2012	Unknown
Drought	2014 – 2016	Unknown
South Napa Earthquake	August 24, 2014	Unknown
December Winter Storm	August 24, 2014	Unknown
Valley Fire	September 12-25, 2015	Unknown
Severe Winter Storms, Flooding, and Mudslides	January 3-12, 2017	Unknown
Severe Winter Storms, Flooding, and Mudslides	February 1-23, 2017	Unknown
LNU Complex Fires	October, 2017	Unknown
Wildfires	October 8-31, 2017	Unknown
PG&E Power Shutoff	October, 2018	Unknown
Severe Winter Storms, Flooding, Landslides, Mudslides	February 24 – March 1, 2019	Unknown
PG&E Power Shutoff	October 2019	Unknown
Kincade Fire	October 23 – November 7, 2019	Unknown
COVID-19 Pandemic	January 2020 – present	Unknown
Wildfires	August 14 – September 26, 2020	Unknown
Wildfires	September 4 – November 17, 2020	Unknown

Type of Event	Date	Damage Assessment
Green Valley Road Flood	2000-2019	Unknown
Drought	2021	Unknown
Valley Ford Freestone Road Flooding	2000-2019	Unknown

12.6.2 Hazard Risk Ranking

Table 12-11 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As an evaluation of risk for RCDs is not based solely on loss of infrastructure, we used our own ranking methodology. Gold Ridge RCD ranked risk by multiplying probability of occurrence by magnitude of impact on service by geographic extent. Hazards scoring in the top third were ranked high, hazards scoring in the middle third were ranked medium, and hazards scoring in the lower third were ranked low.

Table 12-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Category
1	Wildfire	High
2	Severe Weather	High
3	Drought	High
4	Landslide	Medium
5	Dam Failure	Medium
6	Earthquake	Medium
7	Flood	Medium
8	Sea level Rise	Low
9	Tsunami	Low

12.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Flood—**While the geographic extent of areas affected by flood in the District is less than 10 percent, floods cause a frequent and great deal of impact from loss of property, impassable or damaged roads, mudslides, habitat destruction, and pollution. There are several areas in the District that flood multiple times a year making roads impassable and sometimes strand threatened and endangered species. Disconnection of streams from their floodplains has increased downstream flooding, bank erosion, and habitat loss for aquatic species.
- **Tsunami—**Coastal towns susceptible to tsunami include Bodega Bay, Valley Ford, Rio Nido, Monte Rio, and Salmon Creek. While these areas are not a large percentage of the District the impact of a Tsunami could be significant.
- **Agricultural Hazards—**Agricultural land and rangeland are vital to the economy and important to consider when addressing issues related to groundwater, watersheds, and wildfire. Most of the agricultural hazards in the District are weather-related (e.g., freeze, hail, prolonged high temperatures, wind, rain (flood), drought. Other hazards include insects and disease.

- **Drought—**Many residents and farms and ranches in the Gold Ridge RCD jurisdiction do not have access to municipal water and instead rely on wells, riparian water, or ponds. Drought not only affects the communities' access to water for meeting basic needs but also to grow food and affect conservation efforts aimed at improving fish and wildlife habitat. Streamflow and groundwater issues are a recurring theme on private lands within the District and are specifically addressed in watershed management plans, streamflow improvement plans, and the upcoming Santa Rosa Plain Groundwater Sustainability Plan. Parts of the District are in state-recognized groundwater basins and are now affected by new legislation that was enacted in September of 2014 by Governor Edmund G. Brown, Jr. when he signed a three-bill package known as the Sustainable Groundwater Management Act.

  Crop losses and reduced plantings have occurred during past droughts. Generally, trucking water, riparian water pumping, and ground pumping were used to offset the impacts of past droughts. Both of these alternatives are becoming less reliable as surface water is diverted to other uses, and groundwater is unreliable or scarce in some areas. The District had a prolonged drought from 2012 through 2016. The winter and spring of 2017 brought a significant amount of precipitation after which the Governor declared the official end of the 5-year drought in April 2017. Additionally, water year 2019 and 2021 to date has seen precipitation totals severely below average and a local drought emergency has been declared.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

12.7 HAZARD MITIGATION ACTION PLAN

Table 12-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction. Table 12-13 identifies the priority for each action. Table 12-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 12-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action GOL-1—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
Hazards Mitigated: Earthquake, flooding, landslide, tsunami, wildfire, dam failure						
Existing	3, 4, 10	County of Sonoma	Gold Ridge RCD, Sonoma RCD, Ag & Open Space	High	HMGP, BRIC, FMA, USDA NRCS EWP	Short-term
Action GOL-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
Hazards Mitigated: All hazards						
New & Existing	1, 4, 5, 8, 12	County of Sonoma	Gold Ridge RCD	Low	Staff Time, General Funds	Short-term
Action GOL-3—Provide outreach and education to the community regarding hazards and opportunities to mitigate on a personal scale.						
Hazards Mitigated: Wildfire, flood, drought, landslide, severe storm, tsunami, earthquake						
New & Existing	4, 10, 2	County of Sonoma	Ag + Open Space, Gold Ridge RCD, Sonoma RCD, Sonoma Water, UC Cooperative Extension, local fire districts	Medium	General funds; cooperative agreements with local government agencies; grants and contracts from agencies such as CA Department of Food & Agriculture, CA Wildlife Conservation Board, CalFire	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action GOL-4—Provide technical and funding assistance to individual landowners and communities to improve soil health including organic matter content, aggregate stability, water holding capacity, and carbon sequestration.						
Hazards Mitigated: Landslide, severe weather, drought						
Existing	4, 10	Gold Ridge RCD	Ag + Open Space, Sonoma RCD, Regional Climate Protection Authority, Zero Waste Sonoma, NRCS	High	CA Department of Food & Agriculture; USDA-NRCS; Restore CA; CA Wildlife Conservation Board	Ongoing
Action GOL-5—Provide technical and funding assistance to individual landowners and communities in planning and implementing agroforestry practices including hedgerows, windrows, riparian plantings).						
Hazards Mitigated: drought, severe storms, agricultural hazards						
New & Existing	4, 6, 9	Gold Ridge RCD	Ag + Open Space, Sonoma RCD, Regional Climate Protection Authority, Zero Waste Sonoma, NRCS	High	CA Department of Food & Agriculture; USDA-NRCS; Restore CA; CA Wildlife Conservation Board	Ongoing
Action GOL-6—Provide technical and funding assistance to individual landowners and communities to install water source and storage systems including rainwater catchment projects.						
Hazards Mitigated: drought, flooding, wildfire, severe storms, tsunami						
New & Existing	4, 10	Gold Ridge RCD	Sonoma RCD, Sonoma Water	High	CA Wildlife Conservation Board, DWR, CA Dept of Fish & Wildlife, USDA NRCS EQIP	Ongoing
Action GOL-7—Protect, enhance, or restore inland buffers by improving wetland health and size, and reducing saltwater intrusion.						
Hazards Mitigated: sea-level rise, flood, tsunami						
New & Existing	4, 8, 10	Gold Ridge RCD	Ag & Open Space, Sonoma RCD, Sonoma Water, Sonoma Land Trust, USDA	High	Ag & Open Space, BRIC, Sonoma Water, Sonoma Land Trust, USDA, EPA, State Coastal Conservancy, Private Foundations	Long-Term
Action GOL-8—Support and implement streamflow enhancement projects on individual properties or with communities.						
Hazards Mitigated: Drought						
New & Existing	4, 10	Gold Ridge RCD	Sonoma RCD, Sonoma Water	High	CA Wildlife Conservation Board, DWR, CA Dept of Fish & Wildlife, USDA NRCS EQIP	Ongoing
Action GOL-9—Plan, design, and implement stormwater management and attenuation projects.						
Hazards Mitigated: Flood, drought						
New & Existing	2, 4, 9, 10	Gold Ridge RCD	Sonoma RCD, Sonoma Water, Santa Rosa Plan Groundwater Sustainability Agency, Ag + Open Space, Sonoma County Regional Parks	High	State Water Board; Department of Conservation; Wildlife Conservation Board; BRIC	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action GOL-10—Support for communities to plan and implement defensible space programs to reduce the risk of damage from catastrophic wildfire (including support for prescribed burn association, community grazing programs, forest management planning, and strategic fuel breaks along strategic locations including along evacuation routes).						
Hazards Mitigated: Wildfire, landslide, drought, severe storm						
New & Existing	2, 9, 4	County of Sonoma	Gold Ridge RCD, Sonoma RCD, Ag + Open Space, University of California Cooperative Extension	Medium	National Association of Conservation Districts; BRIC; USDA-NRCS; CalFire	Ongoing
Action GOL-11—Plan, design, and implement groundwater recharge projects.						
Hazards Mitigated: sea-level rise, drought						
New & Existing	4	Gold Ridge RCD	Gold Ridge RCD, Sonoma RCD, Sonoma Water, County of Sonoma, Santa Rosa Plan Groundwater Sustainability Agency	Medium	Department of Water Resources, USDA NRCS, BRIC	Ongoing
Action GOL-12—Provide technical and funding assistance to agricultural producers with water conservation measures including irrigation scheduling and efficiency, alternative manure management, and alternative water sources.						
Hazards Mitigated: Drought						
New & Existing	4, 6	Gold Ridge RCD	Sonoma RCD, University of California Cooperative Extension	High	CA Department of Food & Agriculture; USDA-NRCS; CA Department of Water Resources	Ongoing
Action GOL-13—Plan, design and implement slope stability and erosion control measures where necessary and feasible.						
Hazards Mitigated: Landslide, wildfire						
New & Existing	4, 9	County of Sonoma	Gold Ridge RCD, Sonoma RCD, NRCS	High	USDA-NRCS	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 a list of acronyms used here.

Table 12-13. 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	Grant Pursuit Priority
GOL-1	3	Medium	High	No	Yes	No	Low	Low
GOL-2	5	Low	Low	Yes	No	Yes	High	Low
GOL-3	3	High	Medium	Yes	Yes	No	Medium	Medium
GOL-4	2	High	High	Yes	Yes	Yes	Medium	Medium
GOL-5	3	Medium	High	No	Yes	No	Low	Medium
GOL-6	2	High	High	Yes	Yes	No	High	High
GOL-7	3	Medium	High	No	Yes	No	Low	Low
GOL-8	2	High	High	Yes	Yes	No	High	High
GOL-9	4	Medium	High	No	Yes	No	Low	Low
GOL-10	3	High	High	Yes	Yes	No	High	High
GOL-11	1	Medium	High	No	Yes	No	Low	Low
GOL-12	2	High	High	Yes	Yes	No	Medium	Medium
GOL-13	2	High	High	Yes	Yes	No	Medium	Medium

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

Table 12-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
High-Risk Hazards								
Wildfire	GOL-2	GOL-1, 10, 13	GOL-3	GOL-6, 13		GOL-1	GOL-6, 10	GOL-3, 10
Severe Weather	GOL-2	GOL-1, 10	GOL-3	GOL-4, 5, 6			GOL-4, 6, 10	GOL-3, 10
Drought	GOL-2	GOL-1, 10	GOL-3, 12	GOL-4, 5, 6, 8, 9, 11, 12			GOL-4, 6, 9, 10	GOL-3, 10
Medium-Risk Hazards								
Landslide	GOL-2	GOL-1, 10, 13	GOL-3	GOL-4, 13		GOL-1	GOL-4, 10	GOL-3, 10
Dam Failure	GOL-2,	GOL-1				GOL-1		
Earthquake	GOL-2	GOL-1	GOL-3			GOL-1		GOL-3
Low-Risk Hazards								
Sea level Rise	GOL-2	GOL-7		GOL-7, 11			GOL-7	
Flood	GOL-2	GOL-1, 7	GOL-3	GOL-6, 7, 9		GOL-1	GOL-6, 7, 9	GOL-3
Tsunami	GOL-2	GOL-1	GOL-3	GOL-1, 6, 7		GOL-1	GOL-1, 6, 7	GOL-3

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

12.8 INFORMATION SOURCES USED FOR THIS ANNEX

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

- Abt Associates (2015). *The Economic Value of Natural Capital on the Sonoma Coast*. Prepared for: Sonoma County Agricultural Preservation and Open Space District https://www.sonomaopenspace.org/wp-content/uploads/HLHE-Case-Study-Ag-Open-Space-Technical-Report-Sonoma-Coast.pdf
- Sonoma County Ag + Open Space. (2018). *Healthy Lands & Healthy Economies: The Multiple Benefits of Sonoma County Working and Natural Lands*. Santa Rosa, CA. Resource services provide natural capital that provides value to the Sonoma County economy. Table 12-15 presents a range including the low and high values estimated using the benefit transfer method for each service. This table is from page 13 of Sonoma County's Ag + Open Space report titled "Healthy Lands & Healthy Economies."https://www.sonomaopenspace.org/projects/healthy-lands-healthy-economies/
- Fresno County Multi-Jurisdictional Hazard Mitigation Plan (2018). Sierra RCD Annex
  These plans were used as an example of how an RCD can participate in a Multi-Jurisdictional Hazard Mitigation Plan and provided insight on how hazards impact agricultural and natural lands.

Table 12-15. Economic Value of Ecosystem Services in Sonoma County

Ecosystem Service	$ Millions Per Year Countywide (Low Estimate)	$ Millions Per Year Countywide (High Estimate)
Water Supply	$9 million	$180 million
Wastewater Treatment	$35 million	$117 million
Moderation of Extreme Events	$82 million	$220 million
Urban Stormwater Management	$0.2 million	$8 million
Soil Retention and Formation	$4 million	$620 million
Carbon Sequestration	$58 million	$197 million
Air Quality	$19 million	$22 million
Pollination	$218 million	$367 million
Habitat and Nursery	$4 million	$43 million
Biological Control	$8 million	$23 million
Natural Beauty	$1.214 million	$4.182 million
Recreation and Tourism	$500 million	$596 million
Total	$2.151 million (or $2.2 billion)	$6.575 million (or $6.6 billion)

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.

12.9 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Better understanding the value of ecosystem services, local food security, and biodiversity would serve to protect residents of Sonoma County from impacts of climate change including an increase of most of the hazards listed

above. Solely focusing on built infrastructure misses out on all the things humans need to survive such as clean water for people and wildlife, resilience to climate change and extreme events, and community health.