

Chapter 5 Mitigation Strategy

Requirement §201.6(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for the Sacramento County Local Hazard Mitigation Plan Update. It describes how the County and participating jurisdictions met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

5.1 Mitigation Strategy: Overview

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the hard work of the Hazard Mitigation Planning Committee (HMPC) led to the mitigation strategy and mitigation action plan for this Local Hazard Mitigation Plan (LHMP) Update, previously known as a Multi-Hazard Mitigation Plan. As part of the Plan Update process, a comprehensive review and update of the mitigation strategy portion of the plan was conducted by the HMPC. Some of the initial goals and objectives from the 2011 plan were refined and reaffirmed, some goals were deleted, and others were added. The end result was a new set of goals, reorganized to reflect the completion of 2011 actions, the updated risk assessment and the new priorities of this Plan Update. To support the new LHMP goals, the mitigation actions from 2011 were reviewed and assessed for their value in reducing risk and vulnerability to the planning area from identified hazards and evaluated for their inclusion in this Plan Update (See Chapter 2 What’s New). Section 5.2 below identifies the new goals and objectives of this Plan Update and Section 5.4 details the new mitigation action plan.

Taking all of the above into consideration, the HMPC developed the following umbrella mitigation strategy for this LHMP Update:

- Communicate the hazard information collected and analyzed through this planning process as well as HMPC success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.
- Implement the action plan recommendations of this plan.
- Use existing rules, regulations, policies, and procedures already in existence.
- Monitor multi-objective management opportunities so that funding opportunities may be shared and packaged and broader constituent support may be garnered.

5.1.1. Continued Compliance with NFIP

Given the flood hazard in the planning area, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) by all communities and participation by Sacramento County, the

City of Sacramento and others, as appropriate, in the Community Rating System (CRS). Detailed below is a description of Sacramento County’s flood management program to ensure continued compliance with the NFIP. Also to be considered are the numerous flood mitigation actions contained in this LHMP that support the ongoing efforts by the county to minimize the risk and vulnerability of the community to the flood hazard and to enhance their overall floodplain management program. A summary of the flood management programs and continued compliance with the NFIP for the incorporated communities are detailed in their jurisdictional annexes.

Sacramento County’s Flood Management Program

Sacramento County has participated in the Regular Phase of the NFIP since 1979. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country.

The County will continue to manage their floodplains in continued compliance with the NFIP. An overview of the County’s NFIP status and floodplain management program are discussed on Table 5-1.

Table 5-1 Sacramento County NFIP Status

NFIP Topic	Comments
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	10,468 \$5,542,955 \$2,939,536,100
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	1,193 \$22,391,339 95
How many structures are exposed to flood risk within the community?	3,862 (1% Annual Chance) 21,778 (0.2% Annual Chance)
Describe any areas of flood risk with limited NFIP policy coverage	Undetermined
Compliance History	
Is the Community Floodplain Administrator or NFIP Coordinator certified?	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Floodplain Management reviews and approves permits,
What are the barriers to running an effective NFIP program in the community, if any?	Public acknowledgment of the hazards
Compliance History	
Is the community in good standing with the NFIP?	Yes
Are there any outstanding compliance issues (i.e., current violations)?	
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	October 2015
Is a CAV or CAC scheduled or needed?	No

NFIP Topic	Comments
Regulation	
When did the community enter the NFIP?	1979
Are the FIRMs digital or paper?	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meet and Exceed: See Appendix C for Details
Provide an explanation of the permitting process.	Clearly outlined in the floodplain ordinance. This process is strictly enforced.
Community Rating System (CRS)	
Does the community participate in CRS?	Yes
What is the community's CRS Class Ranking?	2
What categories and activities provide CRS points and how can the class be improved?	Sacramento County actively maintains programs that satisfy or surpass all CRS activities in the 300s, 400s, 500s and some 600s. These programs are regularly improved by staff for completeness. Two activities that have room for improvement are 610 and 620.
Does the plan include CRS planning requirements?	Yes, in accordance with the CRS Activity 510 requirements of the 2013 CRS Coordinator's Manual

Source: FEMA/Sacramento County

The Community Rating System (CRS) was created in 1990. Sacramento County has been in the CRS program since 1992. The program is designed to recognize floodplain management activities that are above and beyond the NFIP's minimum requirements. CRS is designed to reward a community for implementing public information, mapping, regulatory, loss reduction and/or flood preparedness activities. On a scale of 10 to 1, Sacramento County is currently ranked Class 2 community, which gives a 40% premium discount to individuals in the Sacramento County Special Flood Hazard Area (SFHA), and a 10% discount to policyholders outside the SFHA. Sacramento County is one of four only CRS Class 2 communities, ranking them in the top fifth in the nation (where there are three other Class 2's and one Class 1) and second in California of all CRS communities.

The activities credited by the CRS provide direct benefits to Sacramento County and its residents, including:

- Enhanced public safety;
- A reduction in damage to property and public infrastructure;
- Avoidance of economic disruption and losses;
- Reduction of human suffering; and
- Protection of the environment.

The activities that Sacramento County implements and receives CRS credits include:

- **Activity 310** – Elevation Certificates: The Water Resources Department maintains elevation certificates for new and substantially improved buildings. Copies of elevation certificates are made

available upon request. Elevation Certificates are also kept for post-FIRM and pre-FIRM buildings. (67 points)

- **Activity 320** – Map Information Service: Credit is provided for furnishing inquirers with basic flood zone information from the community’s latest Flood Insurance Rate Map (FIRM). Credit is also provided for the community furnishing additional FIRM information, information about problems not shown on the FIRM, and historical flood information. The service is publicized annually and records are maintained. (90 points)
- **Activity 330** – Outreach Projects: Credit is provided for informational outreach projects that include brochures in public buildings, general outreach projects that include mailer to the entire community, posts on social media and community events, and targeted outreach projects that include letters to repetitive loss areas and flood prone properties. These projects are disseminated annually. Credit is also provided for having a pre-flood plan for public information. Credit is enhanced by having a Program for Public Information (PPI), and by having the information disseminated by stakeholders outside the local government. (350 points)
- **Activity 340** – Hazard Disclosure: Credit is provided for the local real estate agents disclosure of flood hazards to prospective buyers. Credit is also provided for state regulations requiring disclosure of flood hazards. Real estate agents provide a brochure advising prospective buyers about insurance and checking property flood hazards. (56 points)
- **Activity 350** – Flood Protection Information: Documents relating to floodplain management are available in the reference section of the Sacramento Public Library. Credit is also provided for floodplain information displayed on the community’s website. Credit is enhanced by having a PPI. (101 points)
- **Activity 360** – Flood Protection Assistance: Credit is provided for offering one-on-one advice regarding property protection and making site visits before providing advice. Credit is enhanced by having a PPI. (85 points)
- **Activity 370** – Flood Insurance Promotion: Credit is provided for assessing the community’s current level of flood insurance coverage and assessing shortcomings. Credit is also provided for development and implementation of a coverage improvement plan, and providing technical advice regarding flood insurance. Credit for implementing a coverage improvement plan is enhanced by having a PPI and stakeholder involvement. (90 points)
- **Activity 410** – Floodplain Mapping: Credit is provided for conducting and adopting flood studies for areas not included on the FIRM and that exceed minimum mapping standards. (30 points)
- **Activity 420** – Open Space Preservation: Credit is provided for preserving approximately 35 percent of the Special Flood Hazard Area (SFHA) as open space, protecting open space land with deed restrictions, and preserving open space land in a natural state. Credit is also provided for regulations and incentives that minimize development in the SFHA. Credit is enhanced by having a PPI. (1020 points)
- **Activity 430** – Higher Regulatory Standards: Credit is provided for enforcing regulations that require development limitations, freeboard for new and substantial improvement construction, foundation protection, cumulative substantial improvement, enclosure limits and local drainage protection. Credit is also provided for the enforcement of building codes, a BCEGS Classification of 3/3, other higher standards, state mandated regulatory standards, and regulations administration. (571 points)
- **Activity 440** – Flood Data Maintenance: Credit is provided for maintaining and using digitized maps in the day to day management of the floodplain. Credit is also provided for establishing and maintaining a system of benchmarks and maintaining copies of all previous FIRMs and Flood Insurance Study Reports. (227 points)
- **Activity 450** – Stormwater Management: The community enforces regulations for stormwater management, low impact development, soil and erosion control, and water quality. Credit is also provided for watershed master planning. (261 points)
- **Section 502** – Repetitive Loss Category: Based on the updates made to the NFIP Report of Repetitive Losses as of December 11, 2011, Sacramento County, CA has 100 repetitive loss properties and is a

Category C community for CRS purposes. The community is required to submit either a Repetitive Loss Area Analysis or Floodplain Management Plan. (No credit points are applicable to this section)

- **Activity 510** – Floodplain Management Planning: Credit is provided for the adoption and implementation of the Sacramento County Local Hazard Mitigation Plan adopted on December 6, 2011. A progress report must be submitted on an annual basis. An update to the credited plan will be due by October 1, 2016. Credit is also provided for conducting a repetitive loss area analyses. (404 points)
- **Activity 520** – Acquisition and Relocation: Credit is provided for acquiring and relocating 19 buildings from the community’s regulatory floodplain. (74 points)
- **Activity 530** – Flood Protection: Credit is provided for 81 buildings that have been elevated to protect them from flood damage. (160 points)
- **Activity 540** – Drainage System Maintenance: A portion of the community’s drainage system is inspected regularly throughout the year and maintenance is performed as needed. Credit is also provided for listing problem sites that are inspected more frequently, and for implementing an ongoing Capital Improvements Program. The community enforces a regulation prohibiting dumping in the drainage system, and annually publicizes the regulation. Credit is enhanced by having a PPI. (201 points)
- **Activity 610** – Flood Warning and Response: Credit is provided for a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. Credit is also provided for the designation as a Storm Ready Community by the National Weather Service. (241 points)
- **Activity 630** – Dams: Credit is provided for a State Dam Safety Program. (37 points)
- **Activity 710** – County Growth Adjustment: All credit in the 400 series is multiplied by the growth rate of the county to account for growth pressures. The growth rate for Sacramento County, CA is 1.03.

5.1.2. Integration of Mitigation with Post Disaster Recovery and Mitigation Strategy Funding Opportunities

Hazard Mitigation actions are essential to weaving long-term resiliency into all community recovery efforts so that at-risk infrastructure, development, and other community assets are stronger and more resilient for the next severe storm event. Mitigation measures to reduce the risk and vulnerability of a community to future disaster losses can be implemented in advance of a disaster event and also as part of post-disaster recovery efforts.

Mitigation applied to recovery helps communities become more resilient and sustainable. It is often most efficient to fund all eligible infrastructure mitigation through FEMA’s Public Assistance mitigation program if the asset was damaged in a storm event. Mitigation work can be added to project worksheets if they can be proven to be cost-beneficial.

Integration of mitigation into post disaster recovery efforts should be considered by all communities as part of their post disaster redevelopment and mitigation policies and procedures. As previously described in Section 4.4, the Capability Assessment for the Unincorporated County, the City of Sacramento’s Annex, and Annex’s for the other incorporated communities, post-disaster redevelopment and mitigation policies and procedures are being evaluated and updated as part of the Emergency Operations Plan (EOP) updates for each community and other community efforts.

These EOP’s, through its policies and procedures, seek to mitigate the effects of hazards, prepare for measures to be taken which will preserve life and minimize damage, enhance response during emergencies and provide necessary assistance, and establish a recovery system in order to return the community to their

normal state of affairs. Mitigation is emphasized as a major component of recovery efforts. In addition, many of the individual mitigation actions identified for this LHMP Update in Table 5-2 below include additional measures for establishing and updating comprehensive post-disaster redevelopment and mitigation policies and procedures that fully integrate loss reduction activities into post disaster recovery efforts.

Mitigation Strategy Funding Opportunities

An understanding of the various funding streams and opportunities will enable the communities to match identified mitigation projects with the grant programs that are most likely to fund them. Additionally, some of the funding opportunities can be utilized together. Mitigation grant funding opportunities available pre- and post- disaster include the following.

FEMA HMA Grants

Cal OES administers three main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Pre-Disaster Mitigation Program, and (3) Flood Mitigation Assistance Program. Eligible applicants for the HMA include state and local governments, certain private non-profits, and federally recognized Indian tribal governments. While private citizens cannot apply directly for the grant programs, they can benefit from the programs if they are included in an application sponsored by an eligible applicant

FEMA Public Assistance Section 406 Mitigation

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. The regulations contain a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events.

Community Development Block Grants

The California Department of Housing and Community Development administers the State's Community Development Block Grant (CDBG) program with funding provided by the U.S. Department of Housing and Urban Development. The program is available to all non-entitlement communities that meet applicable threshold requirements. All projects must meet one of the national objectives of the program – projects must benefit 51 percent low- and moderate-income people, aid in the prevention or clearance of slum and blight, or meet an urgent need. Grant funds can generally be used in federally declared disaster areas for CDBG eligible activities including the replacement or repair of infrastructure and housing damaged during, or as a result of, the declared disaster.

Small Business Loans

SBA offers low-interest, fixed-rate loans to disaster victims, enabling them to repair or replace property damaged or destroyed in declared disasters. It also offers such loans to affected small businesses to help them recover from economic injury caused by such disasters. Loans may also be increased up to 20 percent of the total amount of disaster damage to real estate and/or leasehold improvements to make improvements that lessen the risk of property damage by possible future disasters of the same kind.

Increased Cost of Compliance

Increased Cost of Compliance (ICC) coverage is one of several resources for flood insurance policyholders who need additional help rebuilding after a flood. It provides up to \$30,000 to help cover the cost of mitigation measures that will reduce flood risk. ICC coverage is a part of most standard flood insurance policies available under NFIP.

5.2 Goals and Objectives

Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Up to this point in the planning process, the HMPC has organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals, objectives, and mitigation actions were developed based on these tasks. The HMPC held a series of meetings and exercises designed to achieve a collaborative mitigation strategy as described further throughout this section. Appendix C documents the information covered in these mitigation strategy meetings, including information on the goals development and the identification and prioritization of mitigation alternatives by the LHMP Update Steering Committee and HMPC working group.

During the initial goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and objectives and to develop the mitigation strategy for the Sacramento County Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- A time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

HMPC members were provided with the list of goals from the 2011 plan as well as a list of other sample goals to consider. They were told that they could use, combine, or revise the statements provided or develop new ones, keeping the risk assessment in mind. Each member was given three index cards and asked to write a goal statement on each. Goal statements were collected and grouped into similar themes and displayed on the wall of the meeting room. The goal statements were then grouped into similar topics. New goals from the HMPC were discussed until the team came to consensus. Some of the statements were

determined to be better suited as objectives or actual mitigation actions and were set aside for later use. Next, the HMPC developed objectives that summarized strategies to achieve each goal.

Based on the risk assessment review and goal setting process, the HMPC identified the following mission statement, goals, and objectives, which provide the direction for reducing future hazard-related losses within the Sacramento County Planning Area.

Mission Statement: This Local Hazard Mitigation Plan assesses natural hazards of concern to the Sacramento community; evaluates risk to life safety, public health, property, and the environment; and evaluates mitigation measures to reduce these risks and vulnerabilities, minimize losses, and increase community resilience.

GOAL 1: Minimize risk and vulnerability of the Sacramento County community to the impacts of natural hazards and protect lives and reduce damages and losses to property, public health, economy, and the environment.

Objectives:

- Protect, preserve, and promote public health and safety, livability, and the environment
- Assure long term protection and resiliency of existing and future development (including infill areas) from natural hazards
- Protect critical facilities from natural hazards and minimize interruption of essential infrastructure, utilities, and services
- Protect natural resources; Protect and enhance water quality and supply, critical aquatic resources and habitat for beneficial uses.
- Maintain/enhance the flood mitigation program to provide 100/200/500-year flood protection
- Minimize risk of levee breach, overtopping or other failures
- Mitigate Repetitive Loss Properties
- Continued enhancement of CRS programs
- Address localized drainage issues
- Reduce the potential of wildfire in Sacramento County and protect the community
- from adverse effects of wildfire, including secondary impacts such as air quality
- Protect vulnerable populations from the threat of natural hazards
- Address climate change influence in project design and development
- Promote hazard mitigation as an integrated public policy and as a standard business practice

GOAL 2: Improve public outreach, awareness, education, and preparedness for all hazards to minimize hazard related losses

Objectives:

- Increase outreach, communication and awareness of natural hazards and reduce exposure to all hazard related losses, including climate change
- Improve the communities' understanding of natural hazards and how to effectively be prepared and take action to mitigate the impacts of hazard events
- Develop and target outreach and education for each hazard type and risk area
- Increase access to natural hazard information via enhanced web and mobile applications before, during, and after a disaster

- Enhance public outreach programs to target all vulnerable populations, including multi-language communications and multi-mode delivery
- Continued promotion of flood insurance

GOAL 3: Improve the capabilities of the community to mitigate losses and to be prepared for, respond to, and recover from a disaster event

Objectives:

- Promote interagency coordination of mitigation planning and implementation efforts
- Minimize hazard-related damage in order to maintain current service levels
- Continued enhancements to emergency services capabilities, integrating new technologies to reduce losses and save lives
- Promote intergovernmental and interagency coordination, planning, training, exercising and communication to ensure effective community preparedness, response, and recover
- Increase the use of coordinated, shared resources between agencies
- Promote public/private partnerships in hazard mitigation and preparedness programs
- Identify, coordinate, and implement countywide evacuation and shelter in place planning for all populations and increase community awareness of these activities

GOAL 4: Assure conformance to Federal and State Hazard Mitigation Initiatives and Maximize Potential for Mitigation Implementation

Objectives:

- Maintain FEMA Eligibility/Position Jurisdictions for Grant Funding
- Maintain good standing with FEMA and State hazard mitigation programs, regulations and requirements
- Develop an overall mitigation funding strategy to prioritize and pursue mitigation projects in an equitable manner to benefit all populations
- Maximize funding opportunities through identification and tracking of all types of Federal and state grant programs to implement identified mitigation projects

5.3 Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified in Section 4.1 was evaluated. Only those hazards that were determined to be a priority hazard were considered further in the development of hazard-specific mitigation actions.

These priority hazards (in alphabetical order) are:

- Agricultural Hazards
- Bird Strike
- Climate Change

- Dam Failure
- Drought and Water Shortage
- Earthquake
- Earthquake: Liquefaction
- Flood: 100/200/500-year
- Flood: Localized/Stormwater Flooding
- Levee Failure
- River/Stream/Creek Bank Erosion
- Severe Weather: Extreme Temperatures – Heat
- Severe Weather: Heavy Rain and Storms
- Wildfire

The HMPC eliminated the hazards identified below from further consideration in the development of mitigation actions because the risk of a hazard event in the County is unlikely or nonexistent, the vulnerability of the County is low, or capabilities are already in place to mitigate negative impacts. The eliminated hazards are:

- Landslides
- Severe Weather: Extreme Temperatures – Cold/Freeze
- Severe Weather: Fog
- Severe Weather: Wind and Tornadoes
- Subsidence
- Volcano

It is important to note, however, that all the **Hazards Addressed** in this plan are included in the countywide multi-hazard public awareness mitigation action as well as in other multi-hazard, emergency management actions.

Once it was determined which hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of categories of mitigation actions, which originate from the Community Rating System:

- Prevention (required to be evaluated)
- Property protection
- Structural projects
- Natural resource protection
- Emergency services
- Public information

The HMPC was provided with examples of potential mitigation actions for each of the above categories. The HMPC was also instructed to consider both future and existing buildings in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix C provides a detailed review and discussion of the six mitigation categories to assist in the review and identification of possible mitigation activities or projects. Also utilized in the review of possible mitigation measures is FEMA’s publication on Mitigation Ideas, by hazard type. Prevention type mitigation

alternatives were discussed for each of the priority hazards. This was followed by a brainstorming session that generated a list of preferred mitigation actions by hazard.

5.3.1. Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE sustainable disaster recovery criteria; Smart Growth principles; and others, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- Social: Does the measure treat people fairly? (e.g., different groups, different generations)
- Technical: Is the action technically feasible? Does it solve the problem?
- Administrative: Are there adequate staffing, funding, and other capabilities to implement the project?
- Political: Who are the stakeholders? Will there be adequate political and public support for the project?
- Legal: Does the jurisdiction have the legal authority to implement the action? Is it legal?
- Economic: Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- Environmental: Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action includes:

- Contribution of the action to save life or property
- Availability of funding and perceived cost-effectiveness
- Available resources for implementation
- Ability of the action to address the problem

In addition to reviewing and incorporating the actions from the 2011 plan, the committee also considered and defined several new actions. A comprehensive review of mitigation measures was performed using the criteria (alternatives and selection criteria) in Appendix C.

With these criteria in mind, HMPC members were each given a set of nine colored dots, three each of red, blue, and green. The dots were assigned red for high priority (worth five points), blue for medium priority (worth three points), and green for low priority (worth one point). The team was asked to use the dots to prioritize actions with the above criteria in mind. The point score for each action was totaled. Appendix C contains the total score given to each identified mitigation action.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more important objectives while eliminating some of the actions which did not garner much support.

Benefit-cost was also considered in greater detail in the development of the Mitigation Action Plan detailed below in Section 5.4. The cost-effectiveness of any mitigation alternative will be considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this plan.

Recognizing the limitations in prioritizing actions from multiple jurisdictions and departments and the regulatory requirement to prioritize by benefit-cost to ensure cost-effectiveness, the HMPC decided to pursue actions that contributed to saving lives and property as first and foremost, with additional consideration given to the benefit-cost aspect of a project. This process drove the development of a determination of a high, medium, or low priority for each mitigation action, and a comprehensive prioritized action plan for the Sacramento County Planning Area.

5.4 Mitigation Action Plan

Requirement §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This action plan was developed to present the recommendations developed by the HMPC for how the Sacramento County Planning Area can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. The action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. Each action summary also includes a discussion of the benefit-cost review conducted to meet the regulatory requirements of the Disaster Mitigation Act.

Table 5-2 identifies the mitigation actions and lead jurisdiction for each action. Only those actions where the County is the lead jurisdiction are detailed further in this section. Actions specific to other participating jurisdictions, or where other jurisdictions are taking the lead, are detailed in each respective jurisdictional annex to this plan.

The action plan detailed below contains both new action items developed for this Plan Update as well as old actions that were yet to be completed from the 2011 plan. Table 5-2 indicates whether the action is new or from the 2011 plan and Chapter 2 contains the details for each 2011 mitigation action item indicating whether a given action item has been completed, deleted, or deferred.

Table 5-2 identifies all mitigation actions for all participating jurisdictions to this LHMP Update. For each mitigation action item included in Table 5-2, the section that follows includes a detailed mitigation implementation strategy by mitigation action. This Chapter includes the mitigation implementation strategy for all County actions; the jurisdictional Annexes (and Chapters) include the detailed mitigation implementation strategy for the projects where they are the lead jurisdiction.

It is important to note that Sacramento County and the participating jurisdictions have numerous existing, detailed action descriptions, which include benefit-cost estimates, in other planning documents, such as stormwater and drainage plans, community wildfire protection plans/fire plans, and capital improvement budgets and reports. These actions are considered to be part of this plan, and the details, to avoid duplication, should be referenced in their original source document. The HMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this plan.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The participating communities are not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the community to mitigate the risks and vulnerabilities from identified hazards. The actual selection, prioritization, and implementation of these actions will also be further evaluated in accordance with the CRS mitigation categories and criteria contained in Appendix C.

It should be noted that many of the projects submitted by each jurisdiction in Table 5-2 benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority.

Table 5-2 Sacramento County Planning Area's Mitigation Actions

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Sacramento County						
Multi-Hazard Actions						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	1, 2, 3, 4	2011 Action	X	X	X	Public Information Emergency Services
Increase pedestrian and bicycle evacuation routes by constructing regional bike/pedestrian trail infrastructure, and expanding connection to neighborhoods (particularly in vulnerable areas)	1, 2, 3, 4	New Action	X	X		Emergency Services
Community Rating System (CRS) Program for Public Information (PPI)	1, 2, 3, 4	2011 Action	X	X	X	Prevention Public Information
Flood Insurance Assessment, Awareness, and Promotion	1, 2, 3, 4	New Action	X	X	X	Prevention Public Information
Public Outreach Mailers	1, 2, 3, 4	2011 Action	X	X	X	Public Information
Toxic Substance Release	1, 2, 3, 4	New Action	X	X	X	Natural Resource Protection Property Protection
Climate Change Actions						
Increase average fuel efficiency and reduce GHG emissions from the County Fleet and Fuels	1, 2, 3, 4	New action	X	X		Prevention Natural Resource Protection
Reduce Sacramento County's vulnerability to Climate Change by reducing GHG emissions in the commercial and residential sectors by making energy efficiency a priority through building code improvements	1, 2, 3, 4	New action	X	X		Prevention Natural Resource Protection

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Mitigate Climate Change impacts by integrating climate change research and adaptation planning into County operations and services	1, 2, 3, 4	New action	X	X		Prevention
Reduce Sacramento County's vulnerability to extreme heat events and associated hazards by Increase tree planting/canopy preservation/enhancement	1, 2, 3, 4	New action	X	X		Prevention Natural Resource Protection
Drought Actions						
Implement Water Supply CIP	1, 2, 3, 4	New Action	X	X		Prevention Property Protection Natural Resource Protection Structural
Flood, Levee Failure, and Localized Flood Actions						
Keep the PPI current	1, 2, 3, 4	New action	X	X	X	Public Outreach
Alder Creek flood control	1, 2, 3, 4	New action	X	X	X	Property Protection Structural
Alder Creek flood mitigation (dam)	1, 2, 3, 4	New action	X	X	X	Structural
Alder Creek miners reservoir, property owned by the City of Folsom	1, 2, 3, 4	New action	X	X	X	Structural
Delta Small Communities flood protection - structural and nonstructural mitigation	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Gum Ranch flood control - joint use basin	1, 2, 3, 4	New action	X	X	X	Structural
Implement Storm Drain CIP	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Laguna Creek at Triangle Aggregate flood control -joint use basins	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Laguna Creek mitigate flood hazard south of Jackson Highway	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Model Sacramento River levee breach (LAMP) south of Freeport	1, 2, 3, 4	New action	X	X	X	Emergency Services Property Protection Natural Resource Protection Structural
Morrison Creek Miners Reach Flood Insurance Study	1, 2, 3, 4	New action	X	X	X	Prevention
Morrison Creek Miners Reach levee improvements	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Outreach stormwatch guide (ALERT, Stormready, weather radio)	1, 2, 3, 4	New action	X	X	X	Emergency Services Public Information
Peak flow floodplain mitigation Arcade Creek near Auburn Blvd	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Risk Map (flood frequency, depth, velocity)	1, 2, 3, 4	New action	X	X	X	Prevention Emergency Services
Elevation & Acquisition Projects (to Mitigate Flood Risk)	1, 2, 3, 4	2011 Action	X	X	X	Property Protection
Repetitive Loss Properties (to Mitigate Flood Risk)	1, 2, 3, 4	2011 action	X	X	X	Property Protection
Five-Year Capital Improvement Plan – Drainage Projects	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Arcade Creek Corridor Plan	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Elevate Homes on Long Island (Grand Island Road, Sacramento River)	1, 2, 3, 4	New action	X	X	X	Property Protection
Repetitive Loss Church Building on Dry Creek	1, 2, 3, 4	New action	X	X	X	Property Protection
South Branch Arcade Creek – Gum Ranch Basin (with Fair Oaks Park District) and Kenneth Avenue Bridge Improvements (with Sacramento County Department of Transportation)	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Dry Creek Flood Hazard Mitigation Acquisitions with County Regional Park Department	1, 2, 3, 4	New action	X	X	X	Property Protection
Arcade Creek at Evergreen Estates Floodwall Improvements	1, 2, 3, 4	New action	X	X	X	Structural
Linda Creek Peak Flow Mitigation	1, 2, 3, 4	New action	X	X	X	Property Protection Structural
Flood Preparation in the American River Parkway	1, 2, 3, 4	New action	X	X	X	Emergency Services Prevention
Improve County ALERT (Automated Local Evaluation in Real Time) System of Stream and Rain Gauges	1, 2, 3, 4	2011 Action	X	X	X	Emergency Services
Update County Hydrology Standards	1, 2, 3, 4	New action	X	X	X	Prevention
Woodside Condominiums Repetitive Flood Loss Property	1, 2, 3, 4	New action	X	X	X	Property Protection Structural
Bridge Replacement on Elk Grove Florin Road at Elder Creek	1, 2, 3, 4	New action	X	X	X	Structural
Michigan Bar Bridge Replacement at the Cosumnes River	1, 2, 3, 4	New action	X	X	X	Structural
El Camino Avenue Phase 2 Road Improvements	1, 2, 3, 4	New action	X	X	X	Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Improve Flood Protection and/or Evacuation Planning for Mobile Home/RV Park at Manzanita/Auburn. Alternatively, the Park Should Establish Flood Warning and evacuation procedures.	1, 2, 3, 4	2011 action	X	X	X	Emergency Services Property Protection Structural
Hydromodification and Stormwater Quality Countywide	1, 2, 3, 4	2011 action	X	X	X	Property Protection Structural
Evacuation Mapping	1, 2, 3, 4	New Action	X	X	X	Emergency Services
Regional Flood Management Plan Projects	1, 2, 3, 4	New Action	X	X	X	Prevention Natural Resource Protection Property Protection Structural
River/Stream/Creek Bank Erosion						
Erosion Site Repairs	1, 2, 3	New action	X	X	X	Structural
Wildfire Actions						
Wildfire Suppression	1, 2, 3, 4	New Action	X	X		Property Protection
Wildfire Fighting - Support	1, 2, 3, 4	New Action	X	X		Emergency Services
Wildfire Suppression – Regional Parks and Open Space (urban interface)	1, 2, 3, 4	New Action	X	X		Property Protection Natural Resource Protection
City of Citrus Heights						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan, as well as other Local Planning Efforts	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Rinconada Flood Wall	1, 2, 3, 4	2011 Action	X	X	X	Structural
Drainage Project Implementation	1, 2, 3, 4	New Action	X	X	X	Property Protection Structural
City of Elk Grove						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan, as well as other Local Planning Efforts	1, 2, 3, 4	2011 Action	X	X	X	Prevention

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Mutual Aid Agreements	1, 2, 3, 4	New action	X	X		Prevention Emergency Services
Elk Grove Green Street Project: Repurposing Urban Runoff with Green Infrastructure Technologies	1, 2, 3	New action	X	X		Property Protection Structural
Hazard Education and Risk Awareness	1, 2, 3, 4	New action	X	X	X	Public Information
City of Elk Grove's Storm Drainage Master Plan (SDMP)	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
City of Folsom						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan, as well as other Local Planning Efforts	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Stormwater Basin Maintenance and Operation Project	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Alder Creek Watershed Council	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Drainage System Maintenance Tax Assessment	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Floodplain Mapping	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Redevelopment Area Drainage Improvements	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Stormwater Basin Maintenance and Operation Project	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Heating and Cooling Centers	1, 2, 3, 4	2011 Action	X	X		Emergency Services
Public Education/Outreach Extreme Weather	1, 2, 3, 4	2011 Action	X	X	X	Public Information
Weed Abatement Program	1, 2, 3, 4	New Action	X	X		Prevention

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Arson Prevention and Control Outreach	1, 2, 3, 4	2011 Action	X	X		Prevention
Wildfire Hazard Identification	1, 2, 3, 4	2011 Action	X	X		Prevention
Ignition Resistant Building Construction Upgrades	1, 2, 3, 4	2011 Action	X	X		Property Protection
Wildfire Prevention Outreach	1, 2, 3, 4	2011 Action	X	X		Public Information
City of Galt						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan, as well as other Local Planning Efforts	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Increase Redundancy/Functionality of Water Wells and Sewer Lift Stations	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Drain Inlet Retrofit Capital Improvement Plan (CIP)	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Creek/Streams Vegetation Management Plan	1, 2, 3, 4	2011 Action	X	X		Natural Resource Protection
Increase Data Capacity of Emergency Frequencies	1, 2, 3, 4	2011 Action	X	X		Emergency Services
City of Isleton*						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	1, 2, 3, 4	New Action	X	X		Prevention
Storm Water Runoff Rehabilitation Project	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Wastewater Treatment Plant Pond Levee Elevation Raise to 200-year Flood Standard	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
City of Rancho Cordova						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Sunrise Boulevard Widening Kiefer to Jackson	1, 2, 3	2011 Action	X	X		Property Protection Natural Resource Protection Structural
City of Rancho Cordova Disaster Debris Management Plan	1, 2, 3, 4	New Action	X	X		Emergency Services
Transportation Interconnectivity	1, 2, 3, 4	New Action	X	X		Emergency Services
Intergovernmental Agreement between the County of Sacramento and the City of Rancho Cordova	1, 2, 3	New Action	X	X		Emergency Services
Land Use (Long range)	1, 2, 3, 4	New Action	X	X		Prevention
Post disaster training for staff	1, 2, 3, 4	New Action	X	X		Emergency Services
Update/Maintain Emergency Operation Plans (EOPs)	1, 2, 3, 4	New Action	X	X	X	Emergency Services
Increase Everbridge Enrollment	1, 2, 3, 4	New Action	X	X	X	Emergency Services Public Information
Developing and maintaining a database to track community vulnerability.	1, 2, 3, 4	New Action	X	X		Prevention Public Information
City Website HMP and City Website, Press Notification, and Social Media Emergency Information	1, 2, 3	New Action	X	X	X	Emergency Services Public Information
Building & Safety Division Disaster Inspector Training	1, 2, 3, 4	New Action	X	X		Prevention
Landscape and Irrigation Requirements/Retro	1, 2, 3, 4	New Action	X	X		Prevention
Landscape Ordinance	1, 2, 3	New Action	X	X		Prevention
Impervious surface	1, 3, 4	New Action	X	X	X	Property Protection
Porous pavement and vegetative buffers	1, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Storm Water Pump Station Infrastructure Upgrades	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
SB-5 Urban Level of Flood Protection	1, 2, 3, 4	New Action	X	X	X	Prevention Property Protection Structural
Channel Vegetation Management and Erosion Control	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection
Adoption of Hydromodification and Low Impact Development (LID) Standards	1, 2, 3, 4	New Action	X	X	X	Prevention Property Protection
Stormwater Capital Improvement Program Master Plan	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Sunrise Blvd. & Monier Circle Drainage Improvements	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Roundabouts	1, 2, 3, 4	New Action	X	X	X	Property Protection
City of Sacramento						
Multi-Hazard Actions						
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	1, 2, 3, 4	2011 action	X	X	X	Prevention
Coordination with Relevant Organizations and Agencies to Consider the Impacts of Urbanization and Climate Change on Long-Term Natural Hazard Safety	1, 2, 3, 4	New action	X	X		Prevention
Maintain and Identify Changes in Critical Facilities GIS Layer to Support Emergency Management Efforts	1, 2, 3, 4	New action	X	X	X	Emergency Services

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Community Outreach on Multi-Hazard Preparation & Pre-mitigation	1, 2, 3, 4	New action	X	X	X	Public Information
Evaluation and Mitigation of Critical Facilities in Identified Hazard Areas	1, 2, 3, 4	2011 Action	X	X	X	Emergency Services
Retrofit of Repetitive Loss Properties	1, 2, 3, 4	2011 Action	X	X	X	Property Protection
Safeguard Essential Communication Services	1, 2, 3, 4	New action	X	X		Emergency Services
Multi-lingual Disaster Education	1, 2, 3, 4	New action	X	X		Emergency Services Public Information
Cal OES Safety Assessment Program Evaluators	1, 2, 3, 4	New action	X	X		Emergency Services
National Flood Insurance Program & Community Rating System Continuation	1, 2, 3, 4	New action	X	X	X	Prevention Property Protection Natural Resource Protection Structural Public Information
Coordinate with Sacramento Area Flood Control Agency on Completion of South Sacramento Streams Group Projects	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Develop a Master Generation Plan for Pump Stations	1, 2, 3, 4	New action	X	X	X	Prevention Property Protection
Develop a Disaster Housing Plan	1, 2, 3, 4	New action	X	X	X	Emergency Services
Disaster Resistant Business Program	1, 2, 3, 4	New action	X	X	X	Prevention
Develop Enhanced Emergency Planning for Special Needs Populations in the City of Sacramento Emergency Operations Plan and Other Planning Documents	1, 2, 3, 4	New action	X	X	X	Emergency Services Public Information
Establish a Post-Disaster Action Plan	1, 2, 3, 4	New action	X	X	X	Emergency Services
Flood Recovery Plan	1, 2, 3, 4	New action	X	X	X	Emergency Services
Public Information Flood Response Plan	1, 2, 3, 4	New action	X	X	X	Public Information

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Construction of a new Emergency Operation Center (EOC)	1, 2, 3, 4	New action	X	X	X	Emergency Services
Emergency Operation Center (EOC) Expansion and Information Technology Upgrade	1, 2, 3, 4	New Action	X	X		Emergency Services
Protection of Transportation Infrastructure	1, 2, 3, 4	New action	X	X	X	Emergency Services Property Protection Structural
Public Education Campaign for Everbridge System	1, 2, 3, 4	New action	X	X	X	Emergency Services Public Information
Regional Emergency and Disaster Preparedness Exercises to Test Operational & Emergency Plans	1, 2, 3, 4	New action	X	X	X	Emergency Services
Special Needs and Critical Facilities Database and Advanced Warning System	1, 2, 3, 4	New action	X	X	X	Emergency Services Public Information
Assets Inventory	1, 2, 3, 4	New Action	X	X		Prevention Property Protection
Protection of City Assets from Cyber Terrorism	1, 2, 3	New Action	X	X		Property Protection
Protection of City Information Technology Infrastructure	1, 2, 3, 4	New Action	X	X		Property Protection
Climate Change Actions						
Map and Assess Vulnerability to Sea Level Rise	1, 2, 3, 4	New action	X	X	X	Prevention
Emission Study of City Sump and Pump Stations	1, 2, 3	New Action	X	X		Prevention
Drought and Water Shortage Actions						
Aquifer Storage	1, 2, 3, 4	New action	X	X	X	Structural
Perform a Groundwater Recharge Feasibility Study	1, 2, 3, 4	New action	X	X	X	Prevention
Earthquake Actions						
Map and Assess Community Vulnerability to Earthquakes	1, 2, 3, 4	New action	X	X	X	Prevention
Seismic Vulnerability Assessment on Sacramento Levees, Infrastructure & Buildings	1, 2, 3, 4	New action	X	X	X	Property Protection Structural
Retrofit Historical Buildings	1, 2, 3, 4	New action	X	X		Property Protection

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Extreme Cold and Heat Actions						
Heating Centers in High Priority Locations	1, 2, 3, 4	New action	X	X		Prevention Emergency Services
Cooling Centers in High Priority Locations	1, 2, 3, 4	New action	X	X		Prevention Emergency Services
Extreme Weather Outreach Strategy	1, 2, 3, 4	New action	X	X	X	Prevention
Severe Weather Action Plan	1, 2, 3, 4	New Action	X	X		Prevention Emergency Services
Flood, Localized Flood, and Levee Failure Actions						
Coordinate with Stakeholder on Proposed Flood Control Project on Magpie Creek	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural Public Information
Adopt Additional Floodplain Development Standards	1, 2, 3, 4	2011 action	X	X	X	Prevention
Drainage Projects for Repetitive Loss Properties	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Emergency Notification and Evacuation Planning	1, 2, 3, 4	2011 Action	X	X	X	Emergency Services
Historic Magpie Creek	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Natomas Internal Drainage Canals/Levees	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Drainage Projects from the City's Priority Drainage Project List	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection Structural
Projects Identified in the Combined Sewer System Improvement Plan Update	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Easements for Open Land Along Levees	1, 2, 3, 4	New action	X	X	X	Prevention Property Protection Natural Resource Protection
Emergency Management Planning and Levee Security	1, 2, 3, 4	New action	X	X	X	Emergency Services
Flood Fighting Equipment	1, 2, 3, 4	New Action	X	X	X	Emergency Services
Flood Management Land Use Planning and Development	1, 2, 3, 4	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Florin Creek Pump at Pomegranate Avenue	1, 2, 3, 4	New Action	X	X	X	Property Protection
Internal Drainage System Improvements	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Levee and Structural Flood Management Improvements	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Master planning to identify facilities needed to prevent 10-year event street flooding and 100-year event structure flooding	1, 2, 3, 4	New Action	X	X	X	Prevention Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Retrofit Pumping Plants with Discharge Monitoring Devices	1, 2, 3, 4	New Action	X	X	X	Property Protection
Risk Communication and NFIP/CRS Projects	1, 2, 3, 4	New Action	X	X	X	Public Information
Steamers and Rio City Café Floodwalls	1, 2, 3, 4	New Action	X	X	X	Structural
Trash Racks and Debris Cages	1, 2, 3, 4	New Action	X	X	X	Property Protection
Multi-Jurisdictional Modeling for Drainage Watersheds Greater Than 10 Square Miles	1, 2, 3, 4	New action	X	X	X	Prevention Property Protection
Wind and Tornado Actions						
Tree Trimming & Debris Removal	1, 2, 3, 4	New action	X	X		Property Protection
Upgrading Overhead Utility Lines & Burying Critical Power Lines	1, 2, 3, 4	New action	X	X		Property Protection
Install Redundancies and Loop Feeds for Power Lines & Infrastructure	1, 2, 3, 4	New Action	X	X		Property Protection
Erosion Actions						
Stabilization of Erosion Hazard Areas	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Wildfire Actions						
Implement a Fire Education and Information Program	1, 2, 3, 4	New action	X	X		Public Information
Fuels Reduction on the American River Parkway	1, 2, 3, 4	2011 Action	X	X		Property Protection Natural Resource Protection
Outreach on the Effects of Smoke on Air Quality	1, 2, 3, 4	New Action	X	X		Public Information
Cosumnes Community Services District						
Flood Response Equipment	1, 2, 3, 4	2011 Action	X	X	X	Emergency Services
Flood Response Training	1, 2, 3, 4	2011 Action	X	X	X	Emergency Services

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Los Rios Community College						
District Wide Roofing Renovations	1, 2, 3	2011 Action	X	X		Property Protection
ARC Drainage at Arcade Creek	1, 2, 3	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Protect District Property	1, 2, 3	New Action	X	X		Property Protection
Metro Fire District						
Relocate the essential facilities in the 200-year flood plain	1, 2, 3, 4	New Action	X	X	X	Emergency Services Property Protection Structural
Perform seismic study of all district facilities and identify those facilities at greatest risk for earthquake damage.	1, 3, 4	New Action	X	X		Prevention
Implement a Wildland Urban Interface (WUI) Building/Fire Code	1, 3, 4	New Action	X	X		Prevention
Develop and Implement a comprehensive WUI fuels management program.	1, 2, 3, 4	New Action	X	X		Prevention Property Protection Natural Resource Protection
Deploy 2 remote automated weather stations (RAWS) in Metro Fire jurisdiction	1, 2, 3, 4	New Action	X	X		Emergency Services
Defensible space ordinance	1, 2, 3, 4	New Action	X	X		Prevention
Brannan Andrus Levee Maintenance District						
Implement Bioengineered Bank Stabilization techniques	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Development of Dredge Stockpile Site	1, 2, 3, 4	New Action	X	X		Property Protection Natural Resource Protection

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Georgiana Slough Waterside Erosion Repair	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Hydrographic surveys and data collection	1, 2, 3, 4	New Action	X	X	X	Prevention
Mokelumne River Crown Raising	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
San Joaquin River Waterside Erosion Repair	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Sevenmile Slough French Drain and Seepage Berm	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Reclamation District #3*						
Levee Improvements	1, 3	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Reclamation District #341*						
San Joaquin River Setback Levee/Habitat Bench Multi-Benefit Project, Phase 1	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Complete Projects from Regional Flood Management Plan	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
RD 551*						
Levee Improvements	1, 3	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Reclamation District #554*						
Apply for a Letter of Map Revision (LOMR) to bring the District back into Zone X. (outside of the 100-year flood zone)	1, 2, 3, 4	New Action	X	X	X	Prevention
Fill Abandoned Slough	1, 2, 3, 4	New Action	X	X		Property Protection Natural Resource Protection
Geotechnical Investigation	1, 2, 3, 4	New Action	X	X	X	Prevention
Snodgrass Slough Levee Improvements	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Reclamation District #556*						
Flood Response Activities, Georgiana Slough Weir	1, 2, 3, 4	New Action	X	X	X	Emergency Services
Georgiana Slough Vegetation Management	1, 2, 3	New Action	X	X	X	Natural Resource Protection
Georgiana Slough Waterside Erosion Repair	1, 2, 3, 4	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Topographic and Hydrographic Surveys and Data Collection	1, 2, 3, 4	New Action	X	X	X	Prevention

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Reclamation District #563*						
Rock Slope Protection Project	1, 3	New action	X	X		Property Protection Structural projects Natural resource protection
HMP and PL-8499 Levee Improvement Projects	1, 3	New action	X	X	X	Property Protection Structural projects Natural resource protection
Reclamation District #800						
Erosion Repair	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Emergency Supplies	1, 2, 3, 4	New action	X	X		Emergency Services
Reclamation District #1000						
River Berm and Levee Erosion	1, 2, 3, 4	2011 action	X	X	X	Property Protection Natural Resource Protection Structural
Erosion Protection Canal Banks	1, 2, 3, 4	2011 action	X	X	X	Property Protection Natural Resource Protection Structural
Implement Security Measures at Key Facilities	1, 2, 3, 4	2011 action	X	X	X	Emergency Services
2014 Capital Improvement Plan	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
Implement Supervisory Control and Acquisition Data system (SCADA) on District canals and pump stations	1, 2, 3	New Action	X	X	X	Prevention

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Public Outreach and Education	1, 2, 3, 4	New action	X	X	X	Public Information
Stockpile and pre-stage flood emergency response materials	1, 2, 3, 4	New action	X	X	X	Emergency Services
Emergency response improvements including radios for communications	1, 2, 3, 4	New action	X	X	X	Emergency Services
Emergency Back-up Generator for pump stations	1, 2, 3, 4	New action	X	X	X	Emergency Services
Reclamation District #1002*						
Geotechnical Investigation	1, 2, 3	New Action	X	X		Prevention
Snodgrass Slough Levee Improvements	1, 2, 3	New Action	X	X	X	Property Protection Natural Resource Protection Structural
Snodgrass Slough Vegetation Management	1, 2, 3	New Action	X	X	X	Property Protection Natural Resource Protection
Reclamation District #1601*						
Levee Improvement Project	1, 3	New action	X	X	X	Property Protection Structural projects Natural resource protection
Reclamation District #2111*						
Rock Slope Protection Project	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural
HMP and PL-8499 Levee Improvement Projects	1, 2, 3, 4	New action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Sacramento Regional County Sanitation District						
South River Pump Station Flood Protection Project	1, 2, 3, 4	2011 action	X	X	X	Property Protection Protection Structural
Reduction of Fire Hazard SRCSD Bufferlands	1, 2, 3, 4	2011 action	X	X		Property Protection
Sacramento Area Sewer District						
MOU for Dedicated Cell Phone Tower and Cell Phone Pack	1, 2, 3	New Action	X	X		Emergency Services
Southgate Recreation and Park District						
Drought Mitigation Actions/Drought Contingency Plan	1, 2, 3, 4	2011 Action	X	X		Prevention
Flood Mitigation Actions/Land Acquisition	1, 2, 3, 4	2011 Action	X	X	X	Prevention Property Protection Natural Resource Protection Structural
Conservation Easements	1, 2, 3, 4	2011 Action	X	X		Prevention
Multi-jurisdictional Cooperation within Watersheds	1, 2, 3, 4	2011 Action	X	X	X	Prevention
Storm Water Management Practices – Implement Storm Water Management Practices as identified in Stormwater Quality Design Manual	1, 2, 3, 4	2011 Action	X	X	X	Property Protection Natural Resource Protection
Severe Weather: Heavy Rains and Storms Mitigation Actions/Tree Management	1, 2, 3, 4	2011 Action	X	X		Property Protection Natural Resource Protection
Twin Rivers School District						
New drainage plans to sites within the flood areas including, site drainage, storm drain upgrades and re-grading fields to shed water (on-site) away from buildings	1, 2, 3, 4	2011 action	X	X	X	Property Protection Natural Resource Protection Structural

Action Title	Goals Addressed	New Action/ 2011 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	CRS Category
Work with City/County/Water departments to create defensible spaces at sites where nearby creeks are prone to flooding. Build-up earthen berms (off-site) to shed water away from critically located schools.	1, 2, 3, 4	2011 action	X	X	X	Prevention Property Protection
Working with the Department of the State Architect (DSA) on Earthquake Retrofit Plan on all sites.	1, 2, 3, 4	2011 action	X	X		Property Protection
Revise and update district-wide Storm Water Prevention Plan	1, 2, 3, 4	2011 action	X	X	X	Prevention Property Protection Natural Resource Protection Structural
Create defensible perimeter space – for fire areas. Trees trimmed and vegetation removed to minimize impact during fire season.	1, 2, 3, 4	2011 action	X	X		Property Protection Natural Resource Protection

* These jurisdictions are included in the Delta Annex to this plan

Multi-Hazard Actions

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: All hazards

Goals Addressed: 1, 2, 3, 4

Issue/Background: Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (AB 2140). Specifically, this section requires that each jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office: Sacramento County Planning Department

Priority (H, M, L): High

Cost Estimate: Jurisdictional board/staff time

Potential Funding: Local budgets

Benefits (avoided Losses): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Schedule: As soon as possible

Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: All (priority and non-priority) hazards

Goals Addressed: 1, 2, 3, 4

Issue/Background: Sacramento County, its incorporated jurisdictions, and special districts are participating jurisdictions to the Sacramento County Local Hazard Mitigation Plan Update. Each jurisdiction plays a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The County, cities, and special districts will work with other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms, will include elements to meet the objectives of Goal 3 of this LHMP Update, and will consider:

- Using a variety of information outlets, including websites, local radio stations, news media, schools, and local, public sponsored events;
- Creating and distributing (where applicable) brochures, leaflets, water bill inserts, websites, and public service announcements;
- Displaying public outreach information in County and City office buildings, libraries, and other public places and events;
- Developing public-private partnerships and incentives to support public education activities.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing County, City, and other special district outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office: Sacramento County, Cities, and all other participating jurisdictions

Priority (H, M, L): High

Cost Estimate: Annual costs to be determined, and will depend on the scope and frequency of activities and events as well as volunteer participation

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding: Local budgets, grant funds

Schedule: Ongoing/Annual public awareness campaign

Action 3. Increase pedestrian and bicycle evacuation routes by constructing regional bike/pedestrian trail infrastructure, and expanding connection to neighborhoods (particularly in vulnerable areas)

Hazards Addressed: Multi-Hazard – Climate Change, Flood, Wildfire

Goals Addressed: 1, 2, 3, 4

Issue/Background: During extreme weather events and other emergencies, the public may frequently have to walk or bicycle out of areas to seek safety. In the event of an evacuation, pedestrian and bicycle trails can be used and have often served as the secondary transportation backbone.

Filling gaps in trail segments and connections and maintaining important trail infrastructure is not only an important measure for evacuation, but can also provide additional access for emergency vehicles and workers, and provide access for other mitigation work such as fuel reduction.

Project Description: Maintain existing regional and local trail systems and infrastructure. Design and construct new trail segments to better connect neighborhoods and communities. Coordinate with cities throughout the county in comprehensive planning of a well-design trail network. Coordinate with Sac Metro Fire, SMUD and others in designing trails.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Coordinate with County Dept of Transportation in expanding trail network and connecting with public roads, easements and points of access.
- Coordinate with County Dept of Transportation in prioritizing bicycle and pedestrian facilities and improvements, on and off street.
- Coordinate with other partners in trail planning and construction
- Include trails and construction in Specific Plans, Subdivisions and new projects

Responsible Office/Partners:

- Department of Regional Parks
- Department of Transportation
- Community Development-Planning

Project Priority: Medium-High

Cost Estimate: \$20,000,000

Benefits (Losses Avoided): Increase evacuation options and provide a secondary transportation network

Potential Funding:

- Measure A Bond Funding-Trails
- State Grants
- Projects with partners
- New Development – included in project

Timeline: On-going and new activities

Action 4. *Community Rating System (CRS) Program for Public Information (PPI)*

Hazards Addressed: Flood, Dam Failure, Levee Failure

Goals Addressed: 1, 2, 3, 4

Issue/Background: Well-informed people make better decisions and they take steps to protect themselves from flooding by retrofitting their homes, buying flood insurance, and planning the actions they will take

during the next flood. They are also more likely to support local floodplain management efforts and measures to protect the natural functions of their community's floodplain.

The CRS provides credit for a full range of public information activities that inform people about flooding and ways to address potential flood damage to their property, including map information, outreach projects, real estate disclosure, libraries, websites, and providing technical advice and assistance. Research shows that when public information efforts are planned and coordinated, people will take steps to protect themselves from flood damage. The CRS provides additional credit for public outreach efforts that are coordinated through an adopted program for public information.

Project Description: A program for public information (PPI) is an ongoing local effort to identify, prepare, implement, and monitor a range of public information activities that meet specific local needs. The CRS credits the implementation of public outreach PROJECTS identified in a PPI. Through the PPI planning process, projects are monitored, evaluated, and revised to improve their effectiveness. The PPI will be reviewed annually and updated if needed.

Other Alternatives: Continue designing and carrying out public outreach projects without a PPI.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Resolution #2015-0864 approves Sacramento County Department of Water Resources' (DWR) efforts to continue participation in the CRS. The PPI was identified as a document that direct continued progress in an important floodplain management activity.

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: High

Cost Estimate: Public outreach and planning activities within the PPI and additional programs, estimated to be \$50,000 annually, are included in the Fiscal Year 2015-16 Sacramento County Water Agency Zone 13 Adopted Budget.

Benefits (Losses Avoided): Research has found that floodplain residents in communities with outreach projects know more about their flood risk and are more likely to take protection measures such as buying flood insurance.

Potential Funding: None identified

Timeline: Ongoing

Action 5. *Flood Insurance Assessment, Awareness, and Promotion*

Hazards Addressed: Flood, Dam Failure, Levee Failure

Goals Addressed: 1, 2, 3, 4

Issue/Background: A flood insurance assessment (FIA) is an analysis of a community's level of flood insurance coverage that identifies where increased coverage would be beneficial. It is the first step toward

developing a flood insurance coverage improvement plan in the community. In the case of Sacramento County, the FIA was done within the Program for Public Information (PPI).

Project Description: There are five steps in the FIA assessment process: 1) Collect flood insurance information, 2) Determine the level of flood insurance coverage, 3) Prepare the document, 4) Submit to the governing body, and 5) Reassess. This process was conducted with the PPI process and is within the PPI document. The PPI will be reviewed annually and updated if needed.

Other Alternatives: Continue flood insurance awareness and promotion without the assessment

Existing Planning Mechanism(s) through which Action Will Be Implemented: Resolution #2015-0864 approves Sacramento DWR's efforts to continue participation in the CRS. The PPI was identified as a document that direct continued progress in an important floodplain management activity. The FIA is within the PPI.

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: High

Cost Estimate: Public outreach and planning activities within the PPI and additional programs, estimated to be \$50,000 annually, are included in the Fiscal Year 2015-16 Sacramento County Water Agency Zone 13 Adopted Budget.

Benefits (Losses Avoided): Research has found that floodplain residents in communities with outreach projects know more about their flood risk and are more likely to take protection measures such as buying flood insurance.

Potential Funding: None identified

Timeline: Ongoing

Action 6. Public Outreach Mailers

Hazards Addressed: Flood, Dam Failure, Levee Failure

Goals Addressed: 1, 2, 3, 4

Issue/Background: A program for public information (PPI) is an ongoing local effort to identify, prepare, implement, and monitor a range of public information activities that meet specific local needs. The CRS credits the implementation of public outreach PROJECTS identified in a PPI. The PPI identified mailers as one of the projects.

Project Description: Every year a mailer communicating, Sacramento County's 10 messages identified in the PPI, is developed for inclusion in the Sacramento County utility bill (CUBS bill) which is mailed directly to each resident. In addition to the 10 message points, the following topics for other activity requirements, are included in the CUBS mailer:

- Activity 320 – Publicize Availability of Elevation Certificates
- Activity 360 – Publicize Flood Protection Assistance
- Activity 540 – Publicize Stream Dumping Regulations
- Activity 610 – Publicize Flood Warnings and Safety Measures

Other Alternatives: Develop another project that is distributed yearly with the 10 messages

Existing Planning Mechanism(s) through which Action Will Be Implemented: Resolution #2015-0864 approves DWR’s efforts to continue participation in the CRS. The PPI was identified as a document that direct continued progress in an important floodplain management activity.

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: High

Cost Estimate: Public outreach and planning activities within the PPI and additional programs, estimated to be \$50,000 annually, are included in the Fiscal Year 2015-16 Sacramento County Water Agency Zone 13 Adopted Budget.

Benefits (Losses Avoided): Research has found that floodplain residents in communities with outreach projects know more about their flood risk and are more likely to take protection measures such as buying flood insurance.

Potential Funding: None identified

Timeline: Ongoing

Action 7. Toxic Substance Release

Hazard Addressed: Flood, Localized Flood, Levee Failure

Goals Addressed: 1, 2, 3, 4

Issues/Background: In Sacramento County, farming occurs in the large floodplain areas. It is common to store large quantities of various chemicals near these agriculture activities. The chance of floodwater dislodging the chemical tanks is a risk of concern. Facilities storing chemical products within flood prone areas would benefit from mitigation measures such as elevation, flood proofing, and/or ring levees.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: The business owners under the counsel of the Sacramento County floodplain manager.

Cost Estimate: Dependent on the scale and location of each individual business and the type of mitigation measure employed.

Priority: Medium

Benefits (Losses Avoided): Mitigating the potential for a toxic chemical spill would avoid substantial impacts to local water resources. A large-scale chemical spill could impact drinking water to millions of people and have harmful, disruptive effects to other biological resource systems in surface and ground water. These water bodies also support major fishing and recreation industries that could be economically impacted. Impacts may include health effects to people and wildlife from contamination of drinking water, large financial losses from disruption in water supply and the recreation industry along with the costs of cleanup after a spill. Floodwater is often quite contaminated; however, taking measures to mitigate against a release of chemicals that can have such a large impact on water resources is proactive and practical.

Potential Funding: To be determined.

Timeline: As soon as possible.

Climate Change Actions

Action 8. *Increase average fuel efficiency and reduce GHG emissions from the County Fleet and Fuels.*

Hazards Addressed: Climate Change

Goals Addressed: 1, 2, 3, 4

Issue/Background: Greenhouse gases (GHG) trap heat and make the planet warmer. The largest source of greenhouse gas emissions in the United States is from burning fossil fuels for electricity, heat, and transportation. According to the US EPA, over 26% of GHG emissions in the US comes from transportation primarily come from burning fossil fuel for cars, trucks, ships, trains, and planes. Over 90 percent of the fuel used for transportation is petroleum based, which includes gasoline and diesel. Reducing GHG emissions in the transportation sector can help reduce the continued warning of the planet and our environment.

Project Description: Increase the average fuel efficiency and reduce GHG emissions of municipal fleet vehicles by progressively converting fleet to zero emission vehicles; reduce reliance on fossil fuels utilizing electricity, water, renewable fuels and gas; launch an employee education program on: ZEV's, driving practices that improve fuel efficiency including anti-idling messages; utilize renewable diesel fuel in diesel vehicles; utilize renewable CNG in CNG vehicles as available. Procure and install PEV chargers as needed as well as other infrastructure to support this action.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Implementation has been occurring for several years and this is an on-going action. Existing fleet is regularly turned over and new purchases made. Current practices have been to replace fleet with cleaner and more environmentally-friendly vehicles and fuels. This is evidenced through the new CNG fueling station constructed by the county and the conversion of the Waste Management Fleet to CNG. Existing fleet also includes electric, hybrid and hydrogen fuel vehicles. Existing fuel contracts include renewable diesel.

Responsible Office/Partners:

- Department of General Services (DGS), Fleets Division
- Sacramento Metropolitan Utility District (SMUD)
- Sacramento Metropolitan Air Quality Management District (SMAQMD)
- Clean Cities
- State and National Departments of Energy
- State Air Resources Board

Project Priority: Medium-High

Cost Estimate: \$12,000,000

Benefits (Losses Avoided): Reduce Sacramento County’s vulnerability to extreme heat events and associated hazards

Potential Funding:

- County DGS Fleet and Fuels Budget
- State and Federal Grants
- Funding partnerships with others including SMUD, SMAQMD
- Other funding sources (i.e. Volkswagen Settlement Fund)

Timeline: On-going and new activities

Action 9. Reduce Sacramento County’s vulnerability to Climate Change by reducing GHG emissions in the commercial and residential sectors by making energy efficiency a priority through building code improvements

Hazards Addressed: Climate Change

Goals Addressed: 1, 2, 3, 4

Issue/Background: Greenhouse gases (GHG) trap heat and make the planet warmer. According to the US EPA, over 12% of GHG emissions in the US come from commercial and residential. GHG emissions. Emissions from businesses and homes arise primarily from fossil fuels burned for heat, the use of certain products that contain greenhouse gases, and the handling of waste. The greatest contributor of GHG emissions is Electricity production. In 2014 approximately 67% of our electricity comes from burning fossil fuels, mostly coal and natural gas Reducing GHG emissions in the transportation sector can help reduce the continued warning of the planet and our environment.

Project Description: Make energy efficiency a priority through building code improvements. Encourage Developers, Businesses, Architects and Engineers to incorporate Tier 1 or 2 of the Ca Green Building Code into their projects. Include these Tiers as negotiating points in Development Agreements.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Developer Agreements
- Incentive funding for projects

Responsible Office/Partners:

- County Office of Sustainability
- Sacramento Metropolitan Utility District (SMUD)
- Sacramento Metropolitan Air Quality Management District (SMAQMD)
- Clean Cities
- State and National Departments of Energy
- State Air Resources Board

Cost Estimate: \$8,000,000

Benefits (Losses Avoided): Reduce Sacramento County’s vulnerability to Climate Change and associated hazards

Potential Funding:

- State and Federal Grants
- Funding partnerships with others including SMUD, SMAQMD
- Other funding sources

Timeline: On-going and new activities

Project Priority: Medium-High

Action 10. Mitigate Climate Change impacts by integrating climate change research and adaptation planning into County operations and services

Hazards Addressed: Climate Change, Extreme Heat, Flooding, Drought

Goals Addressed: 1, 2, 3, 4

Issue/Background: The County Vulnerability Assessment provides an overview of the primary and secondary threats associated with climate change, and identifies the ones most likely to affect Sacramento County. Climate adaptation strategies are supported by mitigation activities to address and reduce these threats. Adverse effects on natural resources and the human population include: rising sea levels and increased local/regional flooding; changes in rainfall and snowpack leading to changes in water supply, flood and drought; increased stress to vegetation, agriculture, biological resources and sensitive species; changes in frequency and duration of heat events and drought; and increased wildfire hazards.

Project Description: Integrate climate adaptation into county operations and services. Working with departments, and utilizing the established County Green Team, integrate adaptation planning and actions into county projects, programs, policies and community development. Various departments have already started climate change integration (DOT-complete and sustainable streets, bike/ped projects; Water Resources-Green Street, River friendly landscape design guidelines, creek naturalization; Planning-Tree Shading/Greenprint policies, open space preservation, design guidelines; etc. Provide increased education and training on climate mitigation and sustainable projects and program development.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Education and training with support from the Capital Region Climate Readiness Collaborative, State Departments (OPR, Natural Resources, Air Resources Board, etc).
- Other training and education on Green Infrastructure

- On-going implementation of Zoning Codes and Design Guidelines, particularly those directed at sustainability, energy efficiency, urban greening, active design, detention and groundwater recharge basins.
- Provide training on the basic science and impacts of climate change and on climate adaptation strategies.
- Integrate climate change adaptation considerations, with particular attention on how the public's health will be impacted, into templates for staff reports to the Planning Commission and Board of Supervisors.

Responsible Office/Partners:

- Each respective County Department
- Support and assistance provided by the Sustainability Manager
- County Green Team Members

Project Priority: Medium-High

Cost Estimate: \$750,000

Benefits (Losses Avoided): Reduce the potential for loss of life, injury and economic damage to Sacramento County residents and businesses from: extreme heat events, flooding, drought, wildland-urban interface fire/smoke, climate change and the cascading impacts of these hazards.

Potential Funding:

- Existing County Departmental Operational Budgets
- State & Federal Grants
- Utilization of education services provided at no charge by others

Timeline: On-going and new activities

Action 11. Reduce Sacramento County's vulnerability to extreme heat events and associated hazards by Increase tree planting/canopy preservation/enhancement

Hazards Addressed: Climate Change, Extreme Heat

Goals Addressed: 1, 2, 3, 4

Issue/Background: Trees have many benefits, of particular importance during extreme heat events is that trees create cooler environments through the process of evapotranspiration. Evapotranspiration occurs when trees transpire, and trees transpire water to cool themselves. When the transpired water evaporates, the area surrounding the tree cools as well. The EPA notes that evapotranspiration and shade can help to lessen peak summer temperatures by 2 to 9 degrees. Planting and maintaining trees is one of the best ways to combat harmful environmental effects. Introducing more vegetation, like trees, into urban environments helps with everything from basic shade refuge to cleaner air to the reduction of energy costs. Trees and the related shading will help mitigate climate impacts particularly during extreme heat events.

Project Description: Maintain healthy urban forests; restore trees and tree canopy in commercial parking lots. Promote and increase tree planting to increase shading and to absorb CO₂, PM to improve air quality, reduce urban heat islands and associated hazards.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Tree Preservation Ordinance (existing) and planned update. Code enforcement efforts with commercial property owners to replace lost trees in parking lots (enforcement of parking lot tree canopy requirements).

Additional mechanisms:

- Through support from the Capital Region Climate Readiness Collaborative; monitor and support regional and State-level efforts to forecast the impact of climate change on temperatures and incidence of extreme heat events in Sacramento and the region.
- Create and maintain shading by sustaining municipal tree planting efforts and continuing to maintain the health of existing trees.
- On-going implementation of Zoning Code and Design Guideline Tree Planting requirements and recommendations.
- (New) In collaboration with the Sacramento Tree Foundation, Implementation of a Neighborhood Forest Certification (NFC) program that offers guidelines and educational services on how to optimize the performance of trees in the design and build-out of new neighborhoods.

Responsible Office/Partners:

- Planning & Environmental Review Division staff, Tree Coordinator
- Sacramento Tree Foundation

Cost Estimate: \$8,000,000

Benefits (Losses Avoided): Reduce Sacramento County's vulnerability to extreme heat events and associated hazards

Potential Funding:

- Tree planting: Tree Mitigation Fund, State grants, SMUD, PG & E
- PG & E Mitigation Funding
- Collaboration with Sacramento Tree Foundation

Timeline: On-going and new activities

Drought Actions

Action 12. Implement Water Supply CIP

Hazards Addressed: Drought

Goals Addressed: 1, 2, 3, 4

Issue/Background: Water supply is an ongoing issue within the planning area. The Water Supply CIP contains a variety of actions to protect and provide for a sustainable water supply.

Project Description: Implement projects under the Water Supply CIP.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Water Supply CIP

Responsible Office/Partners: Sacramento County DWR

Project Priority: high

Cost Estimate: Varies from project to project

Benefits (Losses Avoided): Maintain water supply to the Planning Area

Potential Funding: Local fees, development impact fees, state and federal grants

Timeline: To be determined from project to project

Flooding, Levee Failure, and Localized Flooding Actions

Action 13. Keep the PPI current

Hazards Addressed: Flooding and Localized Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: Table 5-3 contains initiatives that are in place that support the goal and CRS messages that are conducted by organizations other than Sacramento County. The list was composed by County staff research and PPI Committee members' feedback.

Table 5-3 PPI Outreach Initiatives

OP#	Organization/Stakeholder	Project	Subject Matter	Frequency	Outreach Classification	Target Audience
16	Homeowner's Association	Association meeting	Message: 1-10	Once a year	General Outreach	All County Residents
17	SAFCA	website	Message: 1, 2, 4, 6	Year-round	Informational Material	All County Residents
18	Sacramento Stormwater Quality Partnership	website	Message: 6, 9, 10	Year-round	Informational Material	All County Residents
		Events	Message: 6, 9, 10	Year-round	General Outreach	All County Residents
19	Department of Water Resources' (DWR) FloodSAFE California Initiative	Levee Mailer	Message: 1, 2, 3, 5	Fall	Targeted Outreach	Areas Protected by Levees
20	Sacramento Association of Realtors	member newsletter	Message: 1,2,7	Year-round	Informational Material	All County Residents
21	Sacramento Area Creeks Council	Creek Week	Message: 9	April	General Outreach	All County Residents
		Tours	Message: 6	multiple	General Outreach	School-Aged Children
		Website	Message: 9	Year-round	Informational Material	All County Residents
22	U.S. Fish & Wildlife Service (Stone Lakes National Wildlife Refuge)	Website	Message: 6	Year-round	Informational Material	All County Residents
		Tours		All County Residents	Tours	General Outreach
23	Sacramento County Parks and Recreation District	Scoop the Poop	Message: 10	Year-round	General Outreach	All County Residents
24	Sacramento Valley Conservancy (Deer Creek Hills)	Website	Message: 6	Year-round	Informational Material	All County Residents
		tours			General Outreach	All County Residents

OP#	Organization/Stakeholder	Project	Subject Matter	Frequency	Outreach Classification	Target Audience
25	Cosumnes River Preserve	Website	Message: 6	Year-round	Informational Material	All County Residents
		Tours			General Outreach	All County Residents
26	Sacramento Splash	Website	Message: 6	Year-round	Informational Material	All County Residents
		tours			General Outreach	School-Aged Children
27	American River Flood Control District	levee maintenance	Message: 1, 2, 4, 6	Year-round	Informational Material	SFHA residents along American River
28	Water Education Foundation	tours, lectures	Message: 1, 4, 5, 6	Year-round	Informational Material	School-Aged Children
29	Sacramento Regional County Sanitation District	Environmental Protection	Message: 6, 9, 10	Year-round	General Outreach	All County Residents
		Walk on the Wild Side	Message: 6	May	General Outreach	All County Residents
30	American Red Cross Sierra-Delta Chapter	trainings, community events, social media messaging, website, telephone/tablet applications	Message: 1,2, 3	Year-round	General Outreach	All County Residents

Project Description: Implementation of the outreach projects detailed above and keep the PPI current.

Other Alternatives: Implement outreach projects outside of the PPI.

Existing Planning Mechanism(s) through which Action Will Be Implemented: The PPI

Responsible Office: Sacramento County DWR

Priority (H, M, L): H

Cost Estimate: Staff time and other administrative costs to be determined

Benefits (Losses Avoided): Life Safety, property protection

Potential Funding: Local funding

Schedule: Annually

Action 14. Alder Creek flood control

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: The drainage study for the development plan at the AeroJet site includes flood control work on Alder Creek

Project Description: Bike/pedestrian crossing upstream and drainage structure at the Regional Transit crossing downstream. Additional work may be needed at the Ford dealership, Folsom Automall.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Glenborough at Easton development plan, Folsom also has land planning in the upper Alder Creek watershed

Responsible Office/Partners: Water Resources with the City of Folsom

Cost Estimate: To be determined

Project Priority: Medium

Benefits (Losses Avoided): Property protection, natural resource protection

Potential Funding: FEMA funding, CIP, others

Timeline: 2017-2022

Action 15. Alder Creek flood mitigation (dam)

Hazards Addressed: Flood and Miner's sediment containment

Goals Addressed: 1, 2, 3, 4

Issue/Background: Circa 1890, gold miners constructed a dam in Alder Creek. The reservoir is loaded with sediment and the dam is in a state of disrepair

Project Description: The City of Folsom happens to own the property which is surrounded by AeroJet. Folsom should investigate the stability of the dam and determine what repairs are needed.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: City of Folsom, with AeroJet and County Water Resources

Project Priority: high

Cost Estimate: \$3,000,000 (?)

Benefits (Losses Avoided):

Potential Funding: Local, AeroJet, developers, state and federal grants

Timeline: 2017-2022

Action 16. Alder Creek miners reservoir, property owned by the City of Folsom

Hazards Addressed: Sediment behind the dam, water quality

Goals Addressed: 1, 2, 3, 4

Issue/Background: The gold miner beginning in about 1890 constructed a dam in Alder Creek. It is nearly full of sediment. The quality of the water and constituents in the sediment is a possible concern.

Project Description: Inspect water quality and sediment samples and assure that corrective actions, if necessary, are prosecuted

Other Alternatives: Remove the dam and reservoir sediment or assure that it is safe and secured in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Water Resources is working with the City of Folsom and AeroJet

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: Not known until the sampling is analyzed in 2017

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): There is much redevelopment planned for the AeroJet site. The miners reservoir will be an attraction for residents new to the Alder Creek area.

Potential Funding: AeroJet, the developer, the City of Folsom.

Timeline: 2016-2019

Action 17. Delta Small Communities flood protection - structural and nonstructural mitigation

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Sacramento County Delta communities of Pleasant Grove, Hood, Courtland, Walnut Grove (east and west), Locke, and Isleton, as well as, the mobile home and recreational vehicle resorts and small subdivisions are subject to potential catastrophic flooding should a levee breach occur.

Project Description: Levee fragility, Risk-map and Hazus analyses to determine flood hazard risk. Consider structural flood control improvements and non-structural measures to reduce the flood risk. This effort will be planning level, engaging the community.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: High

Cost Estimate: The 2017-2020 planning cost is about \$3,000,000 and the construction cost will be estimated as part of the Plan.

Benefits (Losses Avoided):

Potential Funding: CA DWR, FEMA hazard mitigation, the Army Corps of Engineers

Timeline: 2017-2020

Action 18. Gum Ranch flood control - joint use basin

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: There is an existing flood hazard, from South Branch of Arcade Creek, at Manana Way and Hoffman Way and upstream of Kenneth Avenue.

Project Description: South Branch Arcade Creek downstream of Kenneth Avenue, Gum Ranch Subdivision Map, there is an opportunity to mitigate peak flow, reduce downstream flooding, improve capacity under Kenneth Avenue, potential reduction in base flood elevation upstream, and there may be an opportunity for a joint use recreation property, working with Fair Oaks Park and Recreation.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Water Resources is working with the developer and his engineer and talking with Fair Oaks Park and Recreation.

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency / Fair Oaks Park and Recreation

Project Priority: high

Cost Estimate: \$2,500,000

Benefits (Losses Avoided): Flood control, park, open space

Potential Funding: Local funding with state or federal grants

Timeline: 2017-2020

Action 19. Implement Storm Drain CIP

Hazards Addressed: Local drainage and flooding hazards

Goals Addressed: 1, 2, 3, 4

Issue/Background: Annually, the storm drain capital improvement plan (CIP) is updated looking forward several years. Many of these projects are will reduce flood risk to structures.

Project Description: The projects include creeks and channel improvement, basins, pump station upgrades, and pipes

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Storm Drain CIP

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency

Project Priority: high

Cost Estimate: Varies from project to project

Benefits (Losses Avoided): property protection, natural resource protection

Potential Funding: Stormwater Utility, developer impact fees, state and federal grants

Timeline: Over the next 5 years

Action 20. Laguna Creek at Triangle Aggregate flood control - joint use basins

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: There is an interim detention basin on the north side of Florin Road west of Sunrise Blvd and there is more development planned in the City of Rancho Cordova. This is downstream of an existing flooding problem on Sunrise Blvd.

Project Description: Construct a weir on Laguna Creek at the area excavated by the Triangle miners, the project may include groundwater infiltration, a pump station, open space and active recreation

Other Alternatives: The proposed developments upstream could determine an alternate way to mitigate flood impacts

Existing Planning Mechanism(s) through which Action Will Be Implemented: Suncreek development plan in Rancho Cordova

Responsible Office/Partners: Water Resources and City of Rancho Cordova with Southgate Recreation and Park District

Project Priority: medium

Cost Estimate: \$2,000,000

Benefits (Losses Avoided):

Potential Funding: Local developer impact fees, state and federal grants

Timeline: 2018-2025

Action 21. Laguna Creek mitigate flood hazard south of Jackson Highway

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: Existing condition flooding (about 1:20 year frequency) on Sunrise Blvd between Highway 16 and Grantline Road

Project Description: There is much planned development in the area (County and City of Rancho Cordova). SacDOT must determine if flooding on Sunrise is acceptable (there is alternate routing available) and the developers must mitigate their impacts. Ultimately, there should be a plan to reduce flooding on this roadway.

Other Alternatives: Status quo- allow this section of Sunrise to be flood prone

Existing Planning Mechanism(s) through which Action Will Be Implemented: Suncreek land development planning upstream in the City of Rancho Cordova

Responsible Office/Partners: Water Resources, Sacramento County Transportation, City of Rancho Cordova

Project Priority: medium

Cost Estimate: \$3,000,000

Benefits (Losses Avoided): Life safety, property protection

Potential Funding: CA gas tax, development impact fees

Timeline: 2018-2025

Action 22. Model Sacramento River levee breach (LAMP) south of Freeport

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Sacramento River levees south of Freeport were de-accredited on the effective Flood Insurance Rate Map, dated August 16, 2012. An estimate of the levee breach base flood elevation was included on the map, but it did not include breach of the existing historic railroad embankment. Neither did it use the levee analysis mapping procedure (LAMP).

Project Description: Analyze the levee system south of Freeport, using LAMP

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency

Project Priority: medium

Cost Estimate: \$300,000

Benefits (Losses Avoided): Better understanding of floodplain water surface elevation allows for better application of building standards.

Potential Funding: FEMA Cooperative Technical Partner Grant

Timeline: 2017-2021

Action 23. Morrison Creek Miners Reach Flood Insurance Study

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: Open pit aggregate miners, in the alignment of Morrison Creek (near Highway 16 and Bradshaw Road), relocated the stream and constructed a side channel weir.

Project Description: Analyze the existing condition floodplain.

Determine what constitutes high ground and what is a levee.

Develop a long-term plan to assure functionality.

Other Alternatives: Status quo, there is a weir maintenance agreement and FEMA mapped much of the mined area in Zone A.

Existing Planning Mechanism(s) through which Action Will Be Implemented: West Jackson development planning

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency

Project Priority: medium

Cost Estimate: \$200,000

Benefits (Losses Avoided): Life Safety, property protection

Potential Funding: The miners

Timeline: 2016-2018

Action 24. Morrison Creek miners reach levee improvements

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: Beginning 25 years ago, construction/mining companies removed aggregate from the Morrison Creek floodplain. They squeezed Morrison Creek into a constructed channel and constructed a weir to spill flood peak flow into the mined area.

Project Description: Improve the constructed flood system in a manner that will be sustainable and adequate for the necessary flood protection.

Other Alternatives: Status quo, the area is mapped Zone A

Existing Planning Mechanism(s) through which Action Will Be Implemented: West Jackson development proposal

Responsible Office/Partners: The aggregate miner and Water Resources, there will also be input from FEMA and the CA Central Valley Flood Protection Board

Project Priority: medium

Cost Estimate: \$5,000,000 to \$50,000,000

Benefits (Losses Avoided): Cost depends if anyone desires to construct structures that would be protected by the flood control system.

Potential Funding: Miners, developers, state or federal grants

Timeline: 2019-2030

Action 25. *Outreach stormwatch guide (ALERT, Stormready, weather radio)*

Hazards Addressed: Local flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: There is a system of stream and rain gages in Sacramento County, and various maps and analyses that have been prepared by staff over the years. How can a property owners know based on a weather forecast and real time rain and stream gage information whether to flood fight at his property?

Project Description: Seeking a system to help the public understand how to answer the above question.

Other Alternatives: Status quo is working okay, but this outreach plan could improve understanding

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency

Project Priority: medium

Cost Estimate: \$100,000

Benefits (Losses Avoided):

Potential Funding: Federal or state grant

Timeline: 2017-19

Action 26. *Peak flow floodplain mitigation Arcade Creek near Auburn Blvd*

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Auburn Blvd bridge over Arcade Creek may be improve by the City of Sacramento, the County is asking for hydraulic improvement such as a larger opening to reduce overtopping and to mitigate existing upstream flood fighting measures.

Project Description: The floodwall at Evergreen Estates is de-accredited but it still serves as a significant flood fighting measure. The County desires to make that system even more flood resistant. This requires more flow capacity under Auburn Blvd and may require peak flow basin downstream of Auburn Blvd.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Sacramento County Department of Water Resources / Sacramento County Water Agency

Project Priority: high

Cost Estimate: \$5,000,000

Benefits (Losses Avoided):

Potential Funding: State and federal grants, CA gas tax, local, developers

Timeline: 2017-20

Action 27. Risk Map (flood frequency, depth, velocity)

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: FEMA Flood Insurance Rate Maps only describe the water surface elevation and aerial extent of a floodplain in the 1:100-year storm event. It does not tell property owners the true risk of flooding.

Project Description: Additional information may be developed using FEMA Risk Map modeling and mapping thereby reporting the water surface elevation in a range of storm events, as well as depth and velocity.

Other Alternatives: Defer to the DFIRMs

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Sacramento County DWR

Project Priority: medium

Cost Estimate: \$200,000

Benefits (Losses Avoided): Life safety, property protection

Potential Funding: FEMA Cooperating Technical Partner Grant, local and state funding

Timeline: 2018-2025

Action 28. Elevation & Acquisition Projects (to Mitigate Flood Risk)

Hazards Addressed: Structural Damage to Buildings and Property Loss from Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: Many residential and business structures in Sacramento County are at risk of flooding from various sources. The County constructs many capital improvements to stormwater conveyances to improve drainage, yet many structures can only be protected by elevation or otherwise, acquisition and removal from the floodplain.

Project Description: Home elevation is a process that lifts the existing home from the foundation while a (engineered) foundation is built higher whereby the finished floor elevation is above the base flood elevation (BFE).

Home acquisition is a process whereby the jurisdictional agency purchases the home for the appraised value and, after the owner moves to another location, and the home is destroyed leaving the land unimproved. This process is ideal for areas where multiple homes experience repeated flooding. When multiple homes are removed, it allows more capacity for floodwater while creating open space and habitat.

Other Alternatives: Flood-proofing (for lower flooding depths), create berms (for homes with acreage).

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County has successfully completed over seventy home elevations to bring each structure 1' above the BFE. The County has a proven process to assist homeowners elevated their homes when funding is available through grants. County DWR staff make application for funding from FEMA grants to perform this work.

Responsible Office/Partners: Sacramento County Department of Water Resources/Office of Emergency Services & FEMA

Project Priority: Medium

Cost Estimate: Home elevation is approx. \$100k per 1500 sf– Acquisition is market value of each home.

Benefits (Losses Avoided): Avoidance of property damage and (potentially) loss of life and avoidance of flood insurance claims.

Potential Funding: FEMA Grants, local share (match) and like-kind project management contribution

Timeline: Home elevations take approximately six – ten months to complete once funding is available

Action 29. Repetitive Loss Properties (to Mitigate Flood Risk)

Hazards Addressed: Damage to buildings and property loss from flooding, and health and safety of residents

Goals Addressed: 1, 2, 3, 4

Issue/Background: Over 100 homes in Sacramento County are Repetitive Loss structures, having flooded two or more times in a ten-year period with insurance claims over \$1,000 after each event.

Project Description: Home elevation is a process that lifts the existing home from the foundation while a (engineered) foundation is built higher whereby the FFE is above the BFE by at least 1.5 feet.

Home acquisition is a process whereby the jurisdictional agency purchases the home for the appraised value and, after the owner moves to another location, the home is destroyed leaving the land unimproved. This process is ideal for areas where multiple homes experience repeated flooding. When multiple homes are removed, it allows more capacity for floodwater while creating open space and habitat.

Flood-proofing – where flood depths are low, use materials that impede water infiltration.

Other Alternatives: For homes with acreage, ring levees may work though this option is expensive, requires more land areas and extensive environmental review.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County does annual outreach to owners of repetitive loss properties to educate them on flood risk, insurance and options to mitigate. When funds are available, DWR offers assistance with home elevation mitigation for to these homeowners.

Responsible Office/Partners: Sacramento County Department of Water Resources/

Office of Emergency Services and FEMA

Project Priority: Medium

Cost Estimate: Home elevation is approx. \$100k per 1500 sf, acquisition is market value of each home, flood-proofing depends on house. Staff costs depends on how the homes and how lengthy the grant application.

Benefits (Losses Avoided): Avoidance of property damage and (potentially) loss of life and avoidance of flood insurance claims.

Potential Funding: FEMA Grants, local share (match) and like-kind project management contribution

Timeline: Grants are available annually. Elevations take approximately six – ten months to complete.

Action 30. *Five-Year Capital Improvement Plan – Drainage Projects*

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Sacramento County Board of Supervisors approved a Five-Year Capital Improvement Plan (CIP) that addresses improvements to drainage. The Department of Water Resources designs and oversees the construction of these improvements which mitigate flooding by replacing, rehabilitating, and upgrading existing facilities as well as installing new facilities. Drainage facilities include inlets, manholes, pipes, creeks/channels, pump stations, generators and basins.

Project Description: On June 14, 2016, the current Five-Year CIP was approved for Fiscal Years 2016-17 thru 2020-21. The Five-Year CIP includes 26 drainage improvement projects consisting of 12 pipe projects, eight pump station projects, three creek/channel projects, two maintenance projects, and one dam project. Individual projects are described in detail in Appendix I of the Five-Year CIP.

The following is a list of the 26 projects: Channel Lining Rehabilitation – Chicken Ranch Slough, Cordova Creek Naturalization Project, D01 Hagginbottom Storm Drain Pump Station Rehabilitation, D05 Howe Avenue Storm Drain Pump Station Rehabilitation, D06 North Mayhew Storm Drain Pump Station Rehabilitation, D10 Manlove Storm Drain Pump Station Generator Improvement, D24 North Lindale Storm Drain Pump Station Rehabilitation, D45 Franklin/Morrison Storm Drain Pump Station Rehabilitation, El Camino Transportation Project – Phase 1, Foster Way Storm Drain Improvement, I Street/32nd Street Storm Drain Improvement, Keeney Way Storm Drain Improvement, Kings Way/Verna Way Storm Drain Improvement, Mather Dam Improvement, Miramar Storm Drain Improvement, Ravenwood Avenue/Eastern Avenue Storm Drain Improvement, Rich Hill Drive Storm Drain Improvement, Silver Legends Storm Drain Improvement, Storm Drain Improvements – 2020, Storm Drain Improvements – 2021, Storm Drain Maintenance & Operations Equipment, Storm Drain Maintenance & Operations Projects – Various Locations, Storm Drain Pump Stations Rehabilitation – Phase 5, Storm Drain Pump Stations Rehabilitation – Phase 6, Storm Drain Rehabilitation – Job Order Contracts (JOCs), and Upper Gerber Creek Improvements.

Other Alternatives: Do nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Sacramento County Board of Supervisors approves the Five-Year CIP annually and each project individually when its design is finalized and it is ready to go out to bid for construction.

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Priority: High

Cost Estimate: \$41,649,227

Benefits (Losses Avoided):

Potential Funding: Sacramento County Stormwater Utility, Sacramento County Water Agency Zone 11, U.S. Air Force Cooperative Agreement, State of California Natural Resources Agency Grant

Timeline: 2016-2021

Action 31. Arcade Creek Corridor Plan

Hazards Addressed: Improve water quality, reduce flooding potential, provide recreational opportunities, improve habitat.

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Arcade Creek Watershed Group was formed in 2002 with initial support from the City of Sacramento and the US EPA. The group's mission is to improve water quality, reduce flood damage, enhance habitat, increase recreational opportunities, and encourage local participation in protection efforts. A CALFED grant administered by the State Water Resources Control Board was used to conduct studies and implement some projects within the City of Sacramento. Most of the Phase II projects and studies have been completed. Remaining is execution of the Arcade Creek Corridor Plan. This plan identifies numerous remedial and maintenance projects along Arcade Creek and Cripple Creek that will fulfill the goals of the Arcade Creek Watershed Group.

Project Description: The types of projects identified are as follows: remove debris jam and flow obstructions, remove invasive nonnative vegetation, stabilize banks, improve pipe outfalls, restore recreational trails, improve floodplain function, reconfigure the channel, control runoff from parking lots, stabilize swales, remove sediment and vegetation at creek crossings, remove concrete lined channel. Identified projects are located within the City of Sacramento, Sacramento County and the City of Citrus Heights.

Other Alternatives: Do nothing.

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Services, FEMA and/or the California State Department of Water Resources, Arcade Parks and Recreation.

Project Priority: Medium

Cost Estimate: \$2.5 to \$4.5 million

Benefits (Losses Avoided): Improve water quality, reduce flood damage, enhance habitat, increase recreational opportunities, and encourage local participation in protection efforts.

Potential Funding: California State Office of Emergency Services, FEMA and/or the California State Department of Water Resources.

Timeline: 24-48 months after grant approval and environmental review

Action 32. *Elevate Homes on Long Island (Grand Island Road, Sacramento River)*

Hazards Addressed: Residential flooding.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Long Island is located within the Sacramento River in the delta area of Sacramento County. The structures located there are pre-FIRM and have all been elevated except for the three remaining low structures. To prevent neighborhood checker-boarding and for the furtherance of good floodplain management, these two structures should be elevated. There are no structural project options available to provide flood protection at this location.

Project Description: The project would comprise removing the three structures from their foundations, hydraulically lifting them, supporting them with temporary cribbing, constructing new foundations beneath them at the elevation required by the floodplain management ordinance, then lowering the homes and attaching them to their new foundations.

Other Alternatives: Do nothing.

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Services and FEMA.

Project Priority: Medium

Cost Estimate: \$300,000

Benefits (Losses Avoided): Prevent flooding of residences.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs.

Timeline: 24-36 months from grant approval to project completion.

Action 33. *Repetitive Loss Church Building on Dry Creek*

Hazards Addressed: Structure flooding.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Structure was built too low adjacent to a creek. Flood damage occurred in 1986, 1995, 1997, 1998, 2000, 2005.

Project Description: The structure should be elevated, flood proofed, or torn down and reconstructed in accordance with the Sacramento County Floodplain Management Ordinance.

Other Alternatives: Do nothing, insurance, flood proofing, mitigation after next flood

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Services and FEMA.

Project Priority: Medium

Cost Estimate: \$300,000 to \$1,000,000 depending on form of mitigation.

Benefits (Losses Avoided): Prevent flooding of structure.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions from the church congregation.

Timeline: 24-36 months from grant approval to project completion and agreement by owner.

Action 34. South Branch Arcade Creek – Gum Ranch Basin (with Fair Oaks Park District) and Kenneth Avenue Bridge Improvements (with Sacramento County Department of Transportation)

Hazards Addressed: Reduce flooding potential, provide recreational opportunities, improve habitat.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Gum Ranch is a large master planned project located within the South Arcade watershed. The extensive flooding that occurs downstream of the project location can be reduced with the installation of an oversized flood detention basin on the Gum Ranch project. In addition, by improving a bridge crossing on Kenneth Avenue upstream of the basin, upstream flooding could be reduced.

Project Description: The basin planned at Gum Ranch could be upsized to comprise greater flood capacity and in addition, recreational facilities for a dual use facility. The bridge crossing at Kenneth Avenue upstream of the basin currently is undersized and caused the flooding to backup upstream of the bridge. By opening up the structure, the backup could be reduced or prevented and the greater flows could be mitigated in the basin.

Other Alternatives: Do nothing.

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Services, FEMA and/or the California State Department of Water Resources.

Project Priority: Medium

Cost Estimate: \$0.5 to \$1.5 million

Benefits (Losses Avoided): Improve water quality, reduce flood damage, increase recreational opportunities, and encourage local participation in protection efforts.

Potential Funding: California State Office of Emergency Services, FEMA and/or the California State Department of Water Resources.

Timeline: 24-48 months after grant approval and environmental review

Action 35. Dry Creek Flood Hazard Mitigation Acquisitions with County Regional Park Department

Hazards Addressed: Residential structure flooding and emergency access issues.

Goals Addressed: 1, 2, 3, 4

Issue/Background: The Dry Creek Parkway project is a multi-agency project designed to return an area of Dry Creek floodway to a regional park site and open space. The floodway at this location is very broad compromising access during flood emergencies. The Parkway project goals and good floodplain management mandate the removal of the remaining residential structures located within the floodway. At this time, 17 residential structures are still remaining.

Project Description: The structures would be torn down and the land returned to open space under the ownership of the County of Sacramento.

Other Alternatives: Do nothing, insurance, flood proofing, mitigation after next flood

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Service, FEMA, and the County of Sacramento Parks and Recreation Department.

Project Priority: Medium

Cost Estimate: Market value, approximately \$3 million.

Benefits (Losses Avoided): Prevent flooding of structures; prevent emergency access issues in the Dry Creek floodway during flood events.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions from the church congregation.

Timeline: 24-36 months from grant approval and agreement by owner to project completion

Action 36. *Arcade Creek at Evergreen Estates Floodwall Improvements*

Hazards Addressed: Residential structure flooding.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Evergreen Estates is a low lying pre-FIRM development located next to Arcade Creek. It is currently protected to a maximum 25 year event by a de-accredited levee. Site improvements necessary to provide 100 year flood protection include raising the levee and also raising an adjacent street named Winding Way. These improvements have been identified in a feasibility level study.

Project Description: Enhance protection offered by levee/floodwall system on Arcade Creek. In addition, regrade surface streets in the vicinity of the area to cut off flood water.

Other Alternatives: Do nothing, insurance, flood proofing, mitigation after next flood

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with California State Office of Emergency Service, FEMA.

Project Priority: Medium

Cost Estimate: \$2.2 million in 2008 dollars.

Benefits (Losses Avoided): Prevent flooding of structures.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions from the church congregation.

Timeline: 24-36 months from grant approval to project completion

Action 37. *Linda Creek Peak Flow Mitigation*

Hazards Addressed: Residential structure flooding.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Linda Creek and its tributaries comprise a 3,580 acre watershed in Orangevale area draining to the City of Roseville, which is a tributary to Dry Creek, which ultimately drains back to Elverta and Rio Linda in Sacramento County. The Linda Creek watershed is 99.5% developed. Flooding impacts within Placer County can be mitigated with a detention basin project in Sacramento County.

Project Description: Construct a detention basin to mitigate flooding impacts in Placer County.

Other Alternatives: Do nothing, insurance, flood proofing, mitigation after next flood

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Sacramento County DWR in partnership with Placer County, California State Office of Emergency Service, and FEMA.

Project Priority: Medium

Cost Estimate: To be determined

Benefits (Losses Avoided): Prevent flooding of structures.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions from the church congregation.

Timeline: 24-36 months from grant approval to project completion

Action 38. Flood Preparation in the American River Parkway

Hazards Addressed: Mitigation flood impacts to park infrastructure.

Goals Addressed: 1, 2, 3, 4

Issue/Background: The American River Parkway is a Designated Floodway within the State of California. All of our park facilities may be exposed to flooding during high flow events.

Project Description: Evacuation Planning for park areas during various flood stages

Pre-flood preparation (such as) evacuation planning for park areas during various flood stages, pumping and sealing vault toilets, removing electrical panels, Removing trash cans, closing gates and setting out barricades, evacuating park areas, including homeless “camps”, and securing bridge railings for flooding, and/or river bank erosion protection.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Coordination with local agencies including Sacramento County Sheriff and Office of Emergency Services and Metro Fire. Planned procedures on securing facilities with direction from Parks’ Sr. Maintenance staff and evacuation by Parks’ Rangers with assistance from Sacramento County Sheriff and Metro Fire.

Responsible Office/Partners: Sacramento County Department of Regional Parks, U.S. Bureau of Reclamation, Sacramento Area Flood Control Agency

Project Priority: High

Cost Estimate: Flexible, depending on size and scope of project

Benefits (Losses Avoided): Minimize damage to our park infrastructure, including restrooms, bridges, as well as keeping park visitor safe from by effectively evacuating park areas.

Potential Funding: Agency Funds and post disaster grant funds.

Timeline: Real Time

Action 39. Improve County ALERT (Automated Local Evaluation in Real Time) System of Stream and Rain Gauges

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: The County's ALERT system has been in operation since 1985. The collection and dissemination of real time stream and rain data through the Internet provides County staff, as well as local agencies and the public, with real time rainfall amounts and stream levels. This information is used to warn of imminent and/or in progress flooding. Archived data is also used in support of studies on a variety of floodplain and watershed issues. Currently, the County's ALERT system is being upgraded to utilize a newer radio protocol called ALERT2. The newer protocol will improve data quality. Additionally, the County's FIRM maps were updated to use the North American Vertical Datum 1988 (NAVD88) datum in March 2012. And although the ALERT system reports in NAVD88, the staff gauges at the ALERT stream gauge locations need to be converted from National Geodetic Vertical Datum 1929 (NGVD29) to NAVD88 to allow for field verification of reported stream levels. Lastly, new ALERT stations are added to the system as gaps in the rain gauge network are identified or when stream levels need to be monitored in developing areas. One ALERT station was added to the system since 2011, a weather station located at the Vineyard Surface Water Treatment Plant in the Gerber/Elder Creeks watershed.

Project Description: 1. Finish upgrade to ALERT2 protocol. Six ALERT stations still require an upgrade pending approval of a CA DWR grant. 2. QA/QC, format and then upload archived ALERT data to the new data collection system. 3. Fix staff gages to be in NAVD88 vertical datum. 4. Add additional ALERT stations when identified to fill gaps in the rain gauge network or to provide warning of local flooding issues.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Maintenance of the ALERT system is required by the MOU between the County and the National Weather Service which allows the County to use the Federal hydrologic frequencies. Additionally, maintenance of the ALERT system is required in order to receive credit under the CRS program.

Responsible Office/Partners: Sacramento County DWR – Drainage Development Review/Hydrology

Project Priority: Medium

Cost Estimate: \$150,000

Benefits (Losses Avoided): Life Safety, Property Protection

Potential Funding: Various grants and local cost share

Timeline: 3 – 5 years

Action 40. Update County Hydrology Standards

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4

Issue/Background: The effective Sacramento County Hydrology Standards were developed in the early/mid 1990's and might be due for updating.

If necessary, update County Hydrology Standards, consider climate change affect on Q100 and Q200 at local level

Project Description: Attain expert advice whether or not the hydrology standards should be updated.

In particular, look at the 1:200 year hydrology and consider climate change studies.

Other Alternatives: none

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Department of Water Resources / Sacramento County Water Agency

Responsible Office/Partners: Department of Water Resources

Project Priority: high

Cost Estimate: \$150,000

Benefits (Losses Avoided): Allow better planning for local drainage and flood control

Potential Funding: Federal or state grant

Timeline: 2016-2018

Action 41. Woodside Condominiums Repetitive Flood Loss Property

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: This is a 700+ unit condominium development., 60+/- units flooded four times (in February 1986, twice in January 1997, and on December 31, 2005, many more flooded once (in 1986).

Project Description: Elevate the lowest buildings, dry flood-proof others

Other Alternatives: Prepare a plan to mitigate using NFIP Increased Cost of Compliance insurance to mitigate after next flood event

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Partner: Water Resources

Project Priority: Depends on property owner willingness

Cost Estimate: \$5,000,000

Benefits (Losses Avoided): When the flooded 12/31/2005, a 20 year storm event, they experienced about \$3M damage, plus affected residents were displaced for ½ year.

Potential Funding: FEMA flood mitigation grant programs

Timeline: Depends on Woodside's willingness to apply for the grant

Action 42. Bridge Replacement on Elk Grove Florin Road at Elder Creek

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: The existing Bridge is inundated in the 100-year flood and constricts the flow of Elder Creek, increasing the upstream 100-year water surface and related flooding.

Project Description: The bridge will be replaced. The replacement bridge soffit will be two feet above the 200-year storm water surface.

Other Alternatives: None.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Capital project. Implementation based on funding and the project priority list

Responsible Office/Partners: Sacramento County DOT

Project Priority: The project is considered a high priority project and so it is funded.

Cost Estimate: Construction cost is estimated to be \$4,100,000

Benefits (Losses Avoided): The project raises the County roadway, with an average daily traffic volume of 23,000 vehicles, out of the 100-year flood zone and so improvement transportation in the region during flood events. The project also reduces upstream flooding.

Potential Funding: The project is funded by the federal Highway Bridge Program.

Timeline: Construction is planned for the summer of 2018.

Action 43. Michigan Bar Bridge Replacement at the Cosumnes River

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4

Issue/Background: Existing bridge is structurally deficient and so replacement is necessary. In future flood conditions there is the possibility that the existing structure could fail and increase flooding.

Project Description: The new bridge will be constructed about a foot higher than the existing bridge is over the river, allow for better flow in flood conditions. The new bridge will have only one supporting column in the river as compared with the two existing supports. With less supporting structures in the river, the river will be better able to convey flows. The new bridge will provide many decades of service without the current concern about failing in flood conditions.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: The project has been funded and is currently in design.

Responsible Office/Partners: Sacramento County DOT

Project Priority: The project's priority is high and so it is a funded.

Cost Estimate: \$3,600,000

Benefits (Losses Avoided): Decreased flooding and a long lasting bridge that will provide decades of good service to replace a failing structure.

Potential Funding: The project is funded by federal Highway Bridge Program funds.

Timeline: Construction is planned for the summer of 2018.

Action 44. El Camino Avenue Phase 2 Road Improvements

Hazards Addressed: Flooding

Issue/Background: The Del Paso Mainor neighborhood to the north of El Camino had flooding issues and the Count's Water Resources Dept. has a project in design to resolve the problem, but that plan required

additional piped drainage capacity in El Camino Avenue. The current project on El Camino Avenue installed a new truck drainage pipe and resolved localized flooding issues. In addition, stub pipes from El Camino Avenue to Roslyn Way and Verra Way were installed for connections to the future drainage project.

Project Description: This project will add larger storm drain pipes and extended drain inlets to better pick up neighborhood storm drain runoff and upgrade existing drainage inlets to the current standard.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Capital project. Implementation based on funding and the project priority list

Responsible Office/Partners: Sacramento County DOT with cooperation from the Dept. of Water Resources

Cost Estimate: \$2,020,000

Benefits (Losses Avoided): Improved storm drainage helps prevent further degradation of the roadway and damage to abutting private properties.

Potential Funding: Storm Water Utility Fees, Measure A Sales Tax and Federal ATP funds

Timeline: Project is currently under construction. Expected completion date is October 30, 2016

Project Priority: High

Action 45. Improve Flood Protection and/or Evacuation Planning for Mobile Home/RV Park at Manzanita/Auburn. Alternatively, the Park Should Establish Flood Warning and evacuation procedures.

Hazards Addressed: Flood overtopping creek and a floodwall that was not design reviewed by the County.

Goals Addressed: 1, 2, 3, 4

Issue/Background: The tributary of Arcade Creek tends to rise very rapidly. On 12/31/2005 this property flooded leaving many people without a place to live.

Project Description: Analyze, engineer and potentially reconstruct wall.

Other Alternatives: Do nothing, evacuation planning, insurance

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: Property owner with assistance from County DWR.

Project Priority: Medium

Cost Estimate: To be determined

Benefits (Losses Avoided): Prevent damage to structures, health and safety of residents.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions.

Timeline: 24-36 months from grant approval to project completion

Action 46. *Hydromodification and Stormwater Quality Countywide*

Hazards Addressed: Levee failure, erosion and deposition in streambeds.

Goals Addressed: 1, 2, 3, 4

Issue/Background: The County of Sacramento stormwater group is working on a hydromodification plan to improve stormwater quality and reduce erosion and deposition in streambeds.

Project Description: Analyze priority sites for protection and design hydromodification standards.

Other Alternatives: Do nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: By inclusion in the LHMP, this project would be eligible for grant funding by FEMA through the HMGP, PDM, or potentially FMA grant programs.

Responsible Office/Partners: County DWR/ USCOE, SAFCA, US Reclamation Boards, Local Reclamation Districts

Project Priority: Medium

Cost Estimate: To be determined

Benefits (Losses Avoided): Manage degradation of flood conveyance and levee features.

Potential Funding: FEMA through the HMGP, PDM, or FMA grant programs and local contributions.

Timeline: 24-36 months from grant approval to project completion

Action 47. *Evacuation Mapping*

Hazards Addressed: Levee failures

Goals Addressed: 1, 2, 3, 4

Issue/Background: Evacuation route maps have been developed for the Delta Area and a separate evacuation route map was developed for Sacramento City, RD 1000 & American River Flood Control District.

Project Description: Develop one map that brings together both the Delta and non-delta evacuation route maps. This will assist in the movement of people if and when we have levee failures in either area. It will create a plan for evacuations of people but will also give responding agencies the ability to plan for movement of emergency workers, equipment and supplies into the affected area.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Sacramento County OES & Sacramento County DWR

Cost Estimate: \$50,000

Benefits (Losses Avoided): Increased life safety for those fleeing rising floodwaters.

Potential Funding: Possible funding from CA DWR

Timeline: 6 months

Project Priority: High

Action 48. Regional Flood Management Plan Projects

Hazards Addressed: Flood, Levee Failure, Erosion

Goals Addressed: 1, 2, 3, 4

Issue/Background: Levee and other flood management improvements need to be undertaken at various locations in the County, both in Urban areas and in Sacramento County Small Communities.

Project Description: The Regional Flood Management Plan contains many flood management improvement actions that the County, in conjunction with flood control agencies, reclamation districts, and other agencies can partake in that will work to improve levee integrity and otherwise manage the flood risk throughout the County to potential reduce flood related losses. These projects include but are not limited to the following project types: system-wide flood control projects, levee improvements, environmental enhancement projects, operation and maintenance improvements, structure raising, ring levees, fixing of perimeter levees, crown raising, Zone D designations, seepage repair and protection, erosion/bank/slope protection, vegetation maintenance and removal, encroachment modification, and others.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Regional Flood Management Plan; Small Communities Program

Responsible Office/Partners: County DWR and all Reclamation Districts; State DWR, SAFECA, USACE, others

Project Priority: High

Cost Estimate: Varies by nature and extent of each project

Benefits (Losses Avoided): Reduced risk to people, property, and environmental resources from a possible levee failure or other flood event.

Potential Funding: FEMA and Cal DWR grants, County, Reclamation Districts, Other

Timeline: Ongoing.

River/Stream/Creek Bank Erosion Projects

Action 49. Erosion Site Repairs

Hazards Addressed: Erosion

Goals Addressed: 1, 2, 3

Issue/Background: All areas of the County where water flows are at risk to erosion. The areas of greatest risk are the levees in the County.

Project Description: The County Department of Water Resources – Drainage Department tracks areas of erosion troubles and mitigates, to the extent possible, the root causes of erosion.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: County DWR – Drainage Department

Project Priority: High

Cost Estimate: Varies by year and water flow.

Benefits (Losses Avoided): If erosion sites are found and mitigated quickly, levee integrity remains high. This helps to protect all homes, businesses, and residents who reside in levee protected areas.

Potential Funding: County budget.

Timeline: Ongoing.

Wildfire Actions

Action 50. Wildfire Suppression

Hazards Addressed: Wildfire

Goals Addressed: 1, 2, 3, 4

Issue/Background: Large areas of Sacramento County’s rural areas and open space are susceptible to wildfire. Areas of concern include Regional Parks and Open Space areas, especially at the urban interface. The multi-year drought conditions have stressed trees and other vegetation, increasing flammability and lengthening the fire season. The County has recently experienced more and larger wildfires than in years past. Wildfire suppression is needed to reduce fire loads and to reduce response time to minimize wildfire size and intensity.

Project Description: Mitigation includes: Clearance for access roadways and firebreaks, adding fire access signage, new technology to report fires and share information on access routes, hydrants, sensitive habitat, and cultural resource areas. Providing areas for wildfire training (burns) for fire departments,

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: American River CWPP and other area fire plans and programs

Responsible Office/Partners: Sacramento County Department of Regional Parks, Sacramento Metropolitan Fire District, City of Sacramento Fire Department

Project Priority: High

Cost Estimate: Flexible, depending on size and scope of project

Benefits (Losses Avoided): Protecting park lands and facilities, adjacent neighborhoods, high priority forests, wildlife habitats, and cultural resources.

Potential Funding: FEMA grants, Fire grants, County Budgets

Timeline: Periodic scheduled work, at minimum implemented on an annual timetable.

Action 51. Wildfire Fighting - Support

Hazards Addressed: Wildfire risk within Sacramento County Regional Parks and in Open Space at the urban interface.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Large areas of Sacramento County’s rural areas and open space are susceptible to wildfire. The multi-year drought conditions have stressed trees and other vegetation, increasing

flammability and lengthening the fire season. The County has experienced more and larger wildfires than in years past. Wildfire suppression is needed to reduce fire loads

and reduce response time to minimize wildfire size and intensity.

Project Description: Mitigation includes: Clearance for access roadways and firebreaks, adding fire access signage, new technology to report fires and share information on access routes, hydrants, sensitive habitat, and cultural resource areas. Providing areas for wildfire training (burns) for fire departments,

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: Parks has identified locations for road clearance and has evaluated new technology to report emergency events in real time. Planning with other agencies is ongoing to prioritize hazardous conditions and make efficient use of funds.

Responsible Office/Partners: Sacramento County Department of Regional Parks / Sacramento Metropolitan Fire District, City of Sacramento Fire Department

Project Priority: High

Cost Estimate: \$40,000

Benefits (Losses Avoided): Protecting park lands, adjacent neighborhoods, high priority forests, wildlife habitats, and cultural resources.

Potential Funding: Agency funding, FEMA grants with local and like-kind match.

Timeline: Periodic scheduled work, at minimum on an annual timetable.

Action 52. *Wildfire Suppression – Regional Parks and Open Space (urban interface)*

Hazards Addressed: Hazard - Loss of residential and business structures and loss of habitat from wildfire. Post hazard results in sedimentation of creeks and rivers.

Goals Addressed: 1, 2, 3, 4

Issue/Background: Large areas of Sacramento County’s rural areas and open space are susceptible to wildfire. The multi-year drought conditions have stressed trees and other vegetation, increasing flammability and lengthening the fire season. The County has experienced more and larger wildfires than in years past. Wildfire suppression is needed to reduce fire loads and reduce response time to minimize wildfire size and intensity.

Project Description: Mitigation includes: Fire fuel reduction and firebreaks maintenance. The method used depends on the terrain and type of fire fuel to remove (dry vegetation, limb ladders, etc), such as hand crews with manual tools, livestock grazing, prescribed burns, mechanical fuels removal, planting of fire resilient vegetation and/or invasive species removal.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Parks has a fire fuel reduction plan in place with prioritized areas based on the threat level and proximity to people and structures balanced against the available funding. Parks coordinates with other agencies for efficiencies in use of funds and man power.

Responsible Office/Partners: Sacramento County Department of Regional Parks / Sacramento Metropolitan Fire District, City of Sacramento Fire Department

Project Priority: High

Cost Estimate: \$150,000

Benefits (Losses Avoided): Protecting park lands, adjacent neighborhoods, high priority forests, wildlife habitats, and cultural resources.

Potential Funding: Agency funding, FEMA grants with local and like-kind match.

Timeline: Periodic scheduled work, at minimum on an annual timetable.