

Comprehensive Flood Management Plan

City of Sacramento Department of Utilities



City of
SACRAMENTO
Department of Utilities

May 2024



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1	INTRODUCTION	
1.1	Background	1.1
1.1.1	Relation to the City of Sacramento 2035 General Plan	1.3
1.2	Understanding Flood Risk	1.3
1.2.1	Flood Risk	1.4
1.2.2	The Seven Risk Reduction Tools	1.4
1.3	CFMP Purpose and Overview	1.7
1.3.1	2016-2021 CFPM: Plan Purpose	1.7
1.3.2	2016-2021 CFPM: Plan Overview	1.7
1.3.3	City Staff Department Roles and Responsibilities	1.9
1.3.4	CFMP Update Process	1.10
2	HISTORICAL PERSPECTIVE	
2.1	Introduction and Background	2.1
2.1.1	Growth, Development, and Flooding	2.1
2.1.2	Official Flood Control Efforts	2.3
2.1.3	City of Sacramento Floodplains and Floodplain Mapping	2.7
2.2	History of Major Flooding	2.12
3	LAND USE PLANNING AND DEVELOPMENT GUIDELINES	
3.1	Introduction and Background	3.1
3.1.1	Land Use Planning	3.1
3.1.2	Development Guidelines	3.2
3.2	Current Implementation Status	3.2
3.2.1	Federal Flood Protection Measures	3.2
3.2.2	State Flood Protection Measures	3.5
3.2.3	Local Flood Protection Measures	3.6
3.2.4	Floodplain Land Use Planning & Development Standards Summary	3.12
3.2.5	Development Regulations in A99 Flood Zone	3.13
3.3	Implementation Strategies and Action Items	3.14
4	EMERGENCY MANAGEMENT	
4.1	Introduction and Background	4.1
4.2	Current Implementation Status	4.1
4.2.1	Technical Responsibilities	4.2
4.2.2	Departmental Coordination	4.26
4.2.3	Public Education and Outreach	4.28
4.3	Implementation Strategies and Action Items	4.34
5	LEVEE AND OTHER STRUCTURAL IMPROVEMENTS	
5.1	Introduction and Background	5.1
5.1.1	Reducing Flood Risk	5.1
5.1.2	Seeking Long-Term Flood Solutions	5.3
5.2	Current Implementation Status	5.10
5.3	Implementation Strategies and Action Items	5.21

6	INTERNAL DRAINAGE IMPROVEMENTS	
6.1	Introduction and Background	6.1
6.1.1	Internal Drainage System.....	6.1
6.2	Current Implementation Status	6.4
6.3	Implementation Strategies and Action Items	6.6
7	RISK COMMUNICATION	
7.1	Introduction and Background	7.1
7.2	Implementation Strategies and Action Items	7.39
8	NATIONAL FLOOD INSURANCE PROGRAM/COMMUNITY RATING SYSTEM	
8.1	Introduction and Background	8.1
8.1.1	National Flood Insurance Program Background.....	8.1
8.2	Current Implementation Status	8.3
8.2.1	Flood Zones and Insurance Rates	8.3
8.2.2	Flood Insurance in Sacramento.....	8.5
8.3	Community Rating System Background	8.10
8.3.1	Community Rating System in Sacramento	8.12
8.4	Implementation Strategies and Action Items	8.17
9	LEVEE SECURITY PLAN	
9.1	Introduction and Background	9.1
9.2	Current Implementation Status	9.4
9.3	Implementation Strategies and Action Items	9.6

APPENDICES

- A. SUMMARY IMPLEMENTATION PLAN
- B. RISK COMMUNICATION (PPI) PLANNING PROCESS DOCUMENTATION
- C. RESCUE & EVACUATION AREA MAPS
- D. REPETITIVE LOSS AREA ANALYSIS
- E. PROCEDURES FOR FLOOD RESPONSE PROJECTS

ACRONYMS AND ABBREVIATIONS

AAR	After-Action-Report
AB	Assembly Bill
ADA	American Disabilities Act
ALERT	Automated Local Evaluation in Real Time
ATC	Applied Technology Council
ARFCD	American River Flood Control District
BAM	Best Available Map
BCEGS	Building Code Effectiveness Grading Schedule
BFE	Base Flood Elevation
BMP	Best Management Practice
Cal OES	California Governor’s Office of Emergency Services
CDBG	Community Development Block Grant
CDD	Community Development Department
CDEC	California Data Exchange Center
CFM	Certified Floodplain Manager
CFMP	Comprehensive Flood Management Plan
CIP	Capital Improvement Projects
CIS	Community Information System
City	City of Sacramento
CP	Coverage Improvement Plan
CRS	Community Rating System
CSS	Combined Sewer System
CTP	Cooperating Technical Partner
CVFPP	Central Valley Flood Protection Plan
DFIRM	Digital Flood Insurance Rate Map
DI	Drain Inlets
DOC	Department Operations Center
DOU	Department of Utilities
DWR	California Department of Water Resources

EIR	Environmental impact report
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
FIA	Flood Insurance Coverage Assessment
FIRM	Flood Insurance Rate Map
GRR	General Reevaluation Report
HSEEP	Homeland Security Exercise and Evaluation Program
HMA	Hazard Mitigation Assistance
IA	Individual Assistance
ICC	Increased Cost of Compliance
ICS	Incident Command System
IP	Improvement Plan
JFP	Joint Federal Project
LHMP	Local Hazard Mitigation Plan
MA9	Maintenance Area 9
MEP	Maximum Extent Practicable
NDRF	National Disaster Recovery Framework
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NLIP	Natomas Levee Improvement Project
NOAA	National Oceanic and Atmospheric Agency
O&M	Operation and Maintenance
OES	Sacramento County's Office of Emergency Services
PCA	Project Cooperation Agreement
PIO	Public Information Officer
PPI	Program for Public Information
PRP	Preferred Risk Policy
QPF	Quantitative Precipitation Forecasts
RAC	Rate Advisory Commission
RLAA	Repetitive Loss Area Analysis
RD 1000	Reclamation District 1000
RFMP	Regional Flood Management Plan

RM	River Mile
Sac Bank	Sacramento River Bank Protection Program
SAFCA	Sacramento Area Flood Control Agency
SB	Senate Bill
SBA	Small Business Administration
SDE	Substantial Damage Estimator
SEMS	Standardized Emergency Management System
SFHA	Special Flood Hazard Area
SOP	Standard Operating Procedure
SPD	Sacramento Police Department
SQIP	Stormwater Quality Improvement Program
SUALRP	Sacramento Urban Area Levee Reconstruction Project
SRFCP	Sacramento River Flood Control Project
SRFCS	Sacramento River Flood Control System
SSSG	South Sacramento Streams Group
WMP	Watershed Management Plan
ULDC	Urban Levee Design Criteria
ULOP	Urban Level of Flood Protection
USACE	US Army Corps of Engineers

1 INTRODUCTION

1.1 Background

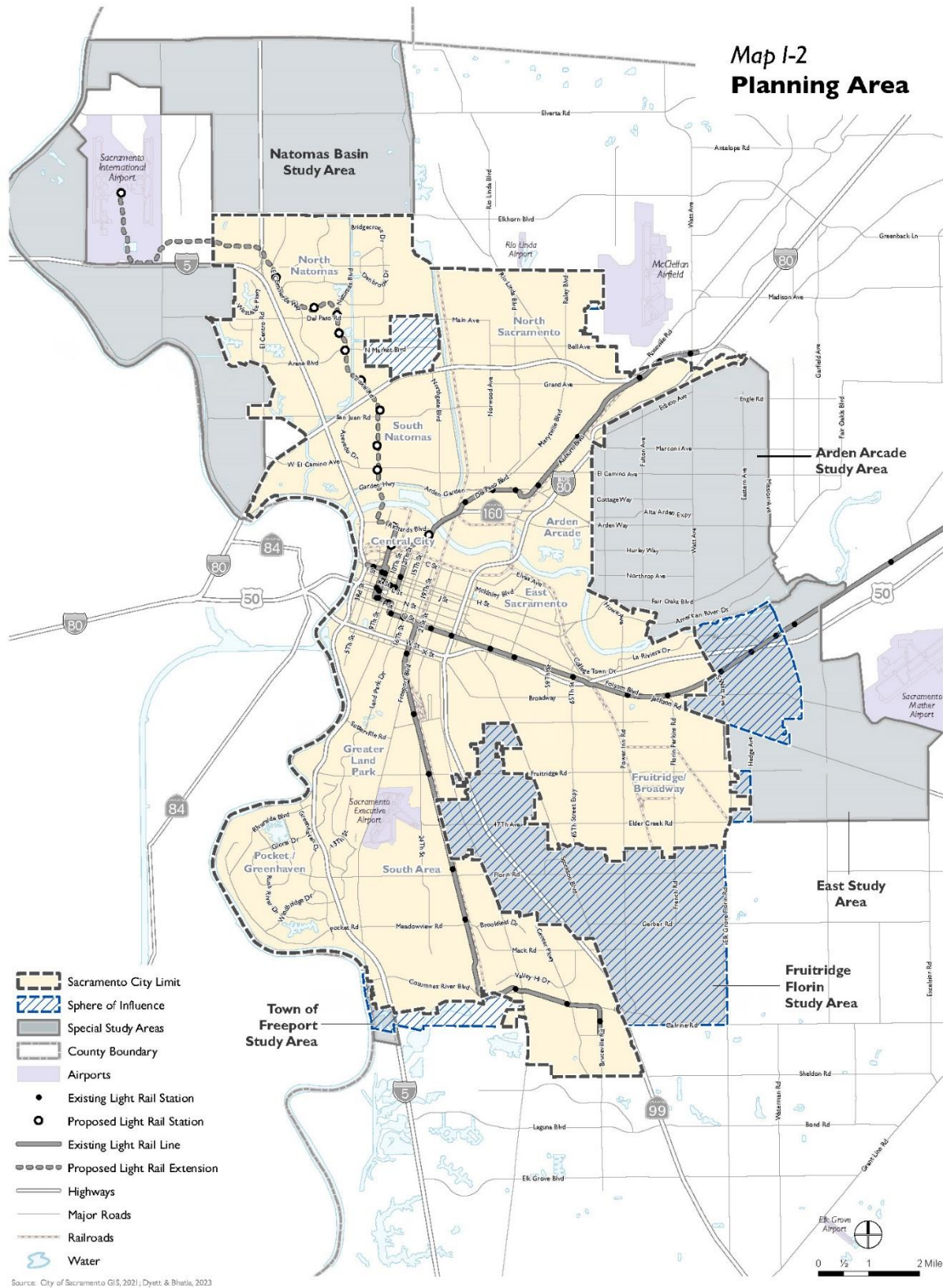
The City of Sacramento (City) is located in the heart of California’s Central Valley at the confluence of the Sacramento and American rivers (see Figure 1.1). The Central Valley is a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. The northern part is the Sacramento Valley drained by the Sacramento River, and the southern part is the San Joaquin Valley drained by the San Joaquin River. It is surrounded by the Sierra Nevada Mountains to the east, the Tehachapi Mountains to the south, Coastal Range to the west, and Cascade Range to the north. The topography of the area is relatively flat. There is a gradual slope rising from elevations as low as sea level in the southwestern portion of the Valley up to approximately 75 feet above sea level in the northeastern portion.

Sacramento is the cultural and economic center of the six-county metropolitan area (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties) and the largest city in the Central Valley. The regional location of Sacramento is roughly halfway between San Francisco to the west and Lake Tahoe to the east. Sacramento covers a total area of approximately 99 square miles and is the seventh most populous city in California with a 2020 Census Bureau population of 528,001 individuals. Sacramento has a Mediterranean climate that is characterized by mild winters and dry, hot summers. Rain typically falls between November and March, with the rainy season tapering off almost completely by the end of April. Average daily high temperatures range from the 50s in December and January to the 90s in July (with many days of over 100° Fahrenheit).

The City, like other urban areas, faces risks to life and property from many natural and man-made hazards, including fire, earthquake, terrorism, toxic spills, wind, drought, wildfire, and flood. Most notably, of all these risks, flooding poses the greatest threat to the residents of Sacramento.

Given the City’s high flood risk and vulnerability, this Comprehensive Flood Management Plan (CFMP) is maintained and implemented by City government to guide the City’s flood risk reduction and mitigation efforts. This CFMP, initiated by the City’s Department of Utilities (DOU), will serve as the City’s strategic plan to reduce flood risk over the next five years (2024-2029).

Figure 1.1. City of Sacramento Location



1.1.1 Relation to the City of Sacramento 2040 General Plan

It is anticipated that by the year 2040, Sacramento will add 77,000 new jobs; and 69,000 new homes. The City has historically relied on Greenfield development to meet the housing, retail, and service needs generated by growth. The City’s new 2040 General Plan, adopted February 27, 2024, takes a different approach, and focuses growth inward, encouraging infill development.

The 2040 General Plan also reflects the City’s commitment to the protection of life and property from the risks of natural and man-made hazards. This commitment is based on the premise that a safe environment enhances quality of life, contributes to a city’s livability, and is important for attracting and retaining businesses needed to sustain a thriving economy. Flood management is primarily referenced in the Environmental Resource and Constraints Element of the General Plan, which addresses interagency coordination, funding for 200-year flood protection, maintenance of facilities, levee setbacks, and new development.

The 2040 General Plan includes policies and maps to address flood risks and higher standards for flood protection. Policies proposed include levee requirements, new development evaluations, and flood management planning efforts, all resulting in a minimum flood protection standard of a 200-year event. The 2040 General Plan expands upon established goals to focus on infill and growth, by integrating sustainability and equity policies and implementation actions. To accompany the General Plan Update, the City has also prepared a Climate Action and Adaptation Plan to reduce the City’s greenhouse gas emissions and adapt to climate change. The Climate Adaptation Plan identified flood control infrastructure as critical facilities, and established adaptation strategies for use into the future. The Climate Action and Adaptation Plan was adopted by City Council on February 27, 2024. Additional flood-related policies in the 2040 General Plan address response and disaster preparedness for potential emergencies in the Public Health and Safety Element and the Mobility Element. The Utilities Element calls for the implementation of master planning programs, including identifying facility and infrastructure needs for flood management.

1.2 Understanding Flood Risk

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities and create significant life safety issues.

The City of Sacramento is susceptible to various types of flood events: riverine, flash, and localized stormwater flooding; and levee and dam failure flooding. Regardless of the type of flood, the cause is most often the result of severe weather patterns and excessive rainfall, either in the flood area or upstream reach. Flooding is the most significant natural hazard that the City faces.

1.2.1 Flood Risk

As measured by the risk of flooding and the value of at-risk assets in the floodplain, the City of Sacramento has significant flood risk compared to other parts of California and the nation. The definition of flood risk can be stated as:

$$\text{Flood Risk} = \text{Probability of Flood} \times \text{Consequences}$$

Therefore, effective flood risk reduction works at reducing both the probability *and* the consequences of flood. Flood risk reduction can be accomplished through implementation of a range of structural (through levee improvements and maintenance, internal drainage improvement, etc.) and non-structural tools (e.g., land use planning, public outreach and preparedness activities, etc.).

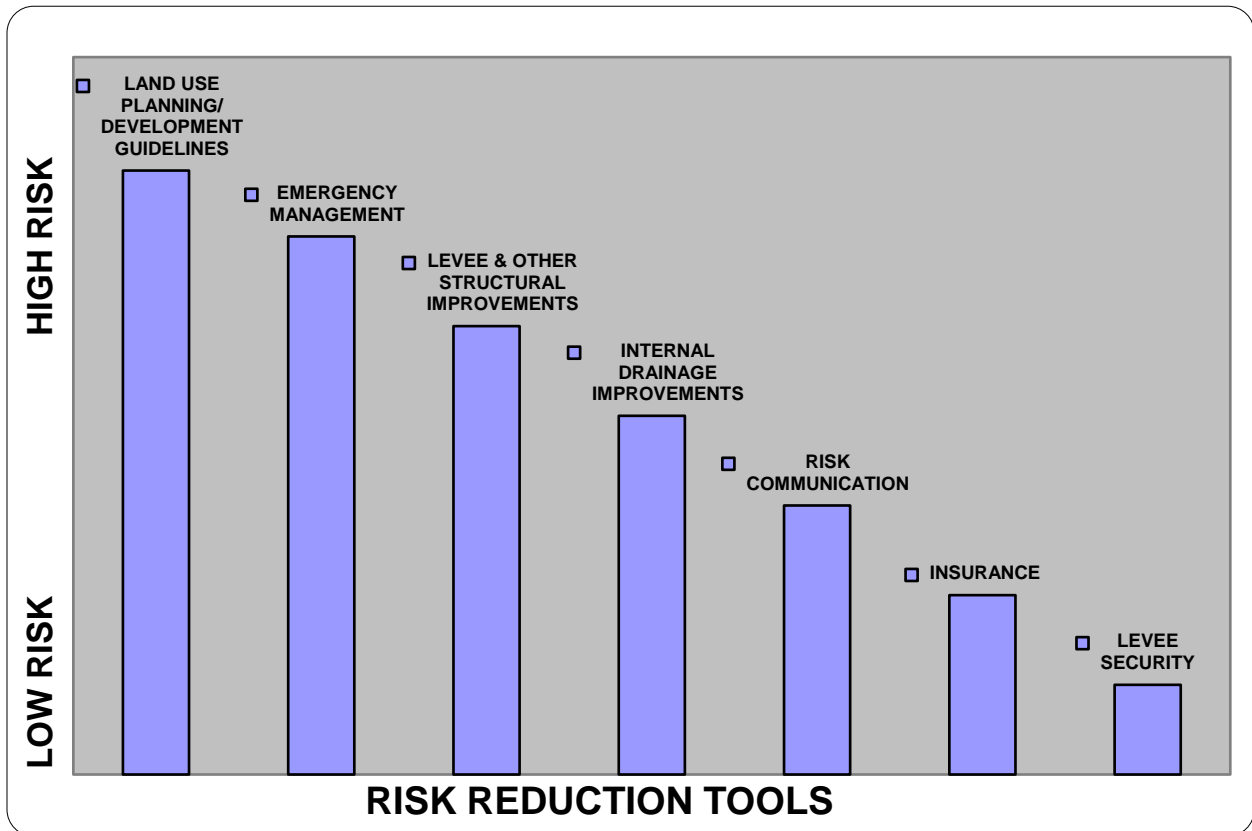
There is often a temptation to focus all risk reduction activities and resources on structural protection (e.g., levees, dams, flood gates, etc.) as over 100 miles of levees protect more than two-thirds of the City. However, since levees can be overtopped or fail due to a variety of circumstances, flood risk cannot be completely eliminated by structural flood control projects alone. While the City continues to partner with others such as the US Army Corps of Engineers (USACE) and the Sacramento Area Flood Control Agency (SAFCA) on levee improvements and other structural projects, further risk reduction within the City can be achieved through other, non-structural measures. Thus, flood risk reduction is best achieved by employing a suite of risk reduction tools, with each one adding to the overall reduction in flood risk.

1.2.2 The Seven Risk Reduction Tools

Figure 1.2 shows seven risk reduction tools utilized by the City to reduce flood risk:

- Land Use Planning and Development Guidelines
- Emergency Management
- Levee and Other Structural Improvements
- Internal Drainage Improvements
- Risk Communication (Program for Public Information)
- National Flood Insurance Program (NFIP)/Community Rating System (CRS)
- Levee Security

Figure 1.2. Flood Risk Reduction Tools



Source: DOU 2016

For each of the seven risk reduction tools, the City has identified a number of critical questions related to flood risk reduction:

1. Land Use Planning and Development Guidelines:

- Because flood risk reduction begins with planning, what kind of development will the City allow in areas protected by levees?
- How will the City plan this development, with consideration for climate change?
- What kind of buffer will be required adjacent to levees?
- What special restrictions or requirements will the City place on development in areas protected by levees?
- What ordinances need to be drafted or modified?
- What does the City need to do to ensure that codes and ordinances are implemented and followed?
- How can the City prioritize risk reduction activities related to future conditions affected by increased flooding and/or climate change?

2. *Emergency Management:*

- How can the City assist its citizens in preparing for, responding to (including possible evacuations), and recovering from a serious flood event?
- What does the City need to do to be prepared to respond successfully and recover quickly from a serious flood event?
- How best can the City define and identify critical facilities and include them in the emergency strategy?

3. *Levees and Other Structural Improvements:*

- How will the City work with Sacramento Area Flood Control Agency (SAFCA) and other local, state and federal agencies to ensure that the flood control system protecting our citizens is properly operated and maintained?
- How will these agencies work together to make sure that improvements to the system are continually being made?

4. *Internal Drainage Improvements:*

- What will the City do over the next five years to reduce flood risk through effective operation and maintenance of the City's internal storm drain system?
- How will the City make improvements to the system, including solutions to accommodate intense bursts of precipitation in urbanized areas?

5. *Risk Communication (Program for Public Information):*

- What does the City need to do to effectively communicate flood risk to the citizens so that they are motivated to take all necessary steps and use all available tools to reduce their flood risk?
- How can staff effectively communicate risk to the City Manager and City Council so that they will fully support the implementation of this CFMP?

6. *National Flood Insurance Program (NFIP)/Community Rating System (CRS):*

- What does the City need to do to maximize the flood risk reduction offered by these federal programs?
- How do we get more residents to take advantage of flood insurance, including customizable coverage amounts and deductible options?
- How can the City achieve the best possible rating in the CRS program?

7. *Levee Security:*

- What steps is the City taking to protect urban and urbanizing area levee systems from acts of terrorism and other malicious or negligent acts?

-
- Who is responsible for managing security planning efforts and establishing a chain of command for emergency operations?
 - What vulnerabilities are being addressed with network detection, deterrence, physical security, and intrusion interdiction during high threat periods?

1.3 CFMP Purpose and Overview

The City adopted its first CFMP in 1996, and has modified, updated, and enhanced plan components at regular intervals. Initial iterations of the CFMP were educational in nature. As planning and hazard mitigation practices evolve through the National Flood Insurance Program (NFIP) Community Rating System (CRS), this CFMP has continued to integrate ever improving best-practices. The CFMP purpose and overview focuses on strategic efforts to make the City more resilient to flood hazards, further described in the sections below.

1.3.1 2024-2029 CFMP: Plan Purpose

This City of Sacramento CFMP establishes a strategic, comprehensive management approach to reducing flood risk through the implementation of seven risk reduction tools utilized by the City. It is the intent of this CFMP to communicate these tools to City staff, the community, and other key stakeholders to better facilitate an integrated, unified approach by the City to flood risk reduction. The CFMP is also consistent with related City hazard reduction documents (such as the Local Hazard Mitigation Plan), as an implementation tool for flood mitigation efforts.

This CFMP will guide the City's flood risk reduction and mitigation efforts from the current year (2024) through 2029. As a comprehensive management document, the plan includes a detailed description of each risk reduction tool and includes implementation strategies with goals, schedules, specified responsibilities, and accountability for City departments, and potential funding sources (where appropriate). While both City government officials and Sacramento residents must understand that flood risk cannot be eliminated, the CFMP will guide the City's ongoing efforts to reduce the overall flood risk to the community. The intent of this CFMP is not to quantify the flood risk reduction specific to each of the tools, but to demonstrate that by using all of the tools, flood risk can be reduced for the City.

1.3.2 2024-2029 CFMP: Plan Overview

This CFMP provides an overview of flood history in Sacramento and addresses how, using a number of flood risk reduction tools, the City proposes to: (1) reduce the frequency of damaging floods; (2) respond to future flood disasters through emergency management activities; and (3) minimize risk from flooding through adherence to land use planning and development guidelines, improvement of levees and other structures, and promotion of public education and awareness that among other things, encourages residents to purchase flood insurance.

Specifically, this plan document outlines how the City will utilize all seven risk reduction tools and associated implementation strategies, each of which are discussed in detail in subsequent chapters of the plan. This 2024-2029 CFMP is organized into eight chapters as described below:

Chapter 1: Introduction

Chapter 1 introduces this CFMP update which includes:

- Background
- Relation to the City's 2040 General Plan
- Understanding Flood Risk and Risk Reduction Tools
- CFMP Purpose and Overview
- Staff Roles and Responsibilities
- CFMP Update Process

Chapter 2: Historical Perspective

This Chapter provides a historical perspective of flooding in the City and surrounding area. A summary of past flood efforts is provided. Current conditions are also outlined.

Chapters 3-9: The Seven Risk Reduction Tools

Chapters 3 through 9 in the CFMP each discuss one of the seven risk-reduction tools and all include: 1) a brief Introduction and Background of the chapter's contents and the risk reduction tool being discussed; 2) the Current Implementation Status of the tool and how it is being used to reduce flood risk today; and 3) Implementation Strategies and Actions Items for 2024-2029 and beyond, which outline the action items identified for implementation to reduce flood risk in the City of Sacramento as part of this CFMP.

The implementation strategies and action items for each risk reduction tool also includes an implementation schedule. The implementation schedule is broken down by three implementation timeframes: short term (1-3 years), mid-term (3-5 years), and long term (greater than 5 years). The chapters detailing the seven risk reduction tools are:

- Chapter 3: Land Use Planning and Development Guidelines
- Chapter 4: Emergency Management
- Chapter 5: Levee and other Structural Improvements
- Chapter 6: Internal Drainage Improvements
- Chapter 7: Risk Communication/Program for Public Information (PPI)
- Chapter 8: NFIP/CRS
- Chapter 9: Levee Security

Appendix A: Summary Implementation Plan

A Summary Implementation Plan organized by risk reduction tool is included in Appendix A. This includes a summary table that details a list of implementation strategies, responsible parties, potential funding, and implementation schedule. Complete implementation action items for each risk reduction tool from each chapter are also included in this Appendix.

Appendix B: Risk Communication (PPI) Review Process Documentation

Appendix B includes documentation supporting the review process as part of the PPI. PPI meeting invitations, and agendas are included here.

Appendix C: Rescue and Evacuation Area Maps

Appendix C includes the detailed Rescue and Evacuation Maps that are used for development purposes and support Chapter 3 Land Use Planning and Development Chapter.

Appendix D: Repetitive Loss Area Analysis

The Repetitive Loss Area Analysis (RLAA) incorporates requirements for repetitive loss properties from Section 510 of the 2017 *CRS Coordinator's Manual*.

Appendix E: Procedures for Flood Response Projects

Appendix E includes flood response outreach projects that have been developed in advance to allow for quick implementation during and after a flood event.

City Staff Department Roles and Responsibilities

The 2024-2029 CFMP is a city-wide document that affects most City departments and many City staff. The departments responsible for its implementation include:

- DOU, Field Services Division
- DOU, Engineering Services, Floodplain Management
- DOU, Security and Emergency Preparedness
- City Office of Emergency Management (OEM)
- Community Development Department (CDD), Long Range and Current Planning
- Police and Fire Departments

For this 2024-2029 CFMP to be implemented effectively, input and consensus will be needed from all responsible City departments. In addition, one City staff position will be identified as being ultimately responsible for overall plan implementation and reporting. The head of the Floodplain Management Section, housed in the DOU, will assume that position, and he or she will be

responsible for holding all departments involved with the CFMP accountable for their multiple implementation tasks and time frames.

1.3.3 CFMP Update Process

Once adopted, the City of Sacramento will be responsible for CFMP implementation and maintenance. The status of implementation actions identified in this CFMP will be updated on an annual basis as part of the Annual Progress Report prepared in accordance with the implementation requirements of the Sacramento County Local Hazard Mitigation Plan (LHMP) Update, of which the City is a primary partner and participating jurisdiction, and as required by the NFIP's CRS program. The update schedule for this CFMP is aligned with future five-year updates of the LHMP. Thus, this CFMP will be formally reviewed and revised as a strategic plan every five years.

2 HISTORICAL PERSPECTIVE

2.1 Introduction and Background

Flooding and the threat of a flood emergency have historically been linked to the Sacramento area and the Central Valley. The City has always been susceptible to major flood events because of its location at the confluence of two great waterways: the Sacramento and American Rivers. The City has been flooded periodically during major storms that traditionally occur in December, January, and February.

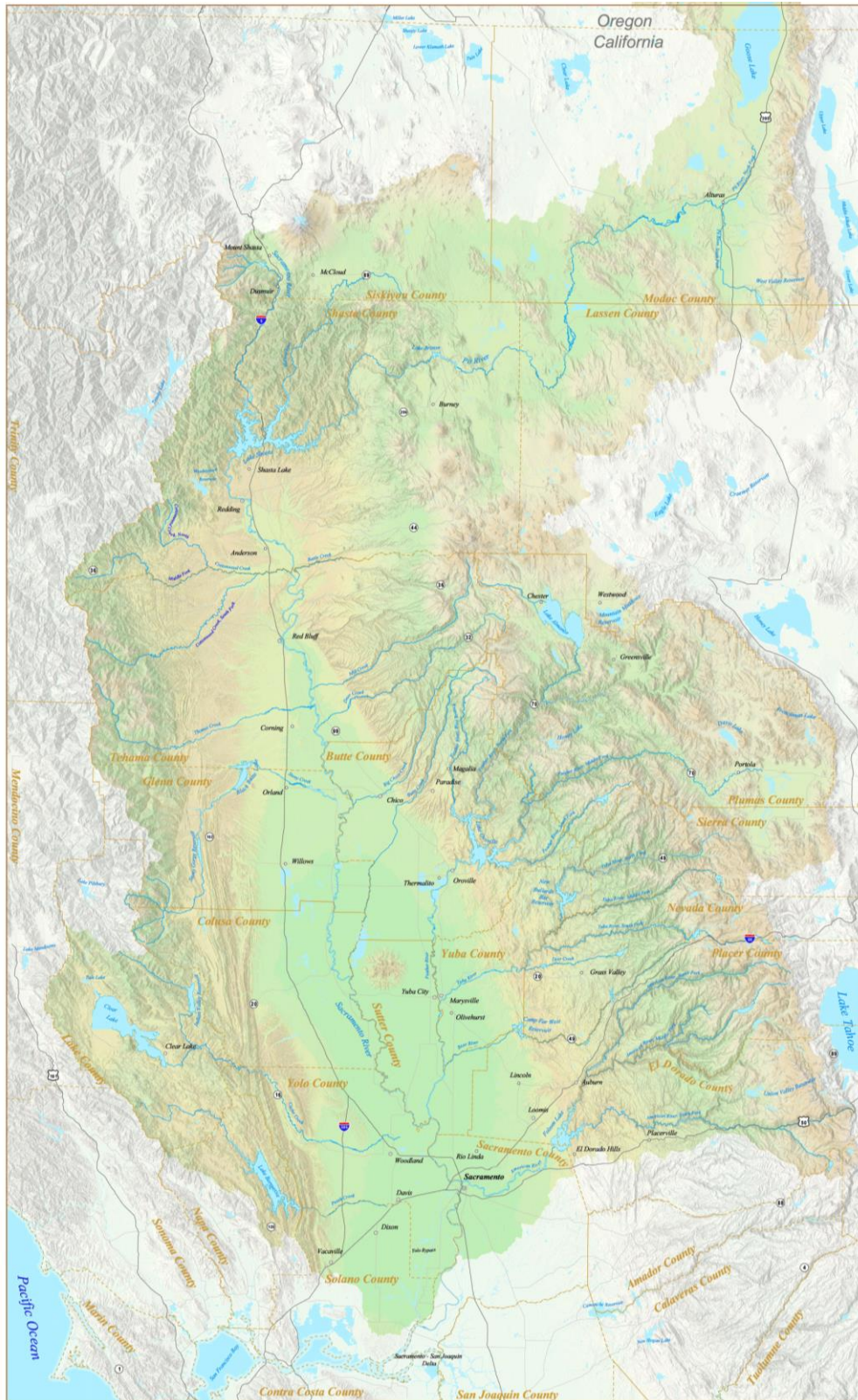
In the Sierra Nevada Mountains, small creeks and high streams are fed by underground springs, storm run-off, and melting snow. Descending from the upper watershed, these creeks and streams form large rivers such as the Sacramento, American, Feather, Yuba, San Joaquin, Mokelumne, and Cosumnes. These waterways are characterized by: (1) small riverbeds conveying normal flow from the mountains; and (2) wide overbank floodplains carrying flood flows caused by heavy mountain rainfall. The Sacramento River Watershed, which includes the American River, encompasses some 27,000 square miles and drains most of Northern California (see Figure 2.1).

In the City of Sacramento, much of the flood damage occurs in the floodplains of the Sacramento River and the American River. Six small tributaries of the Sacramento River pass through and provide drainage for the City of Sacramento. These tributaries are Dry Creek, Magpie Creek, and Arcade Creek in the northern portion of the City (north of the American River), and Morrison Creek, Elder Creek, Florin Creek, Unionhouse Creek, and Laguna Creek in the southern portion of the City (south of the American River). Additional natural drainages within the City include Chicken Ranch and Strong Ranch sloughs, and Rio Linda Creek. Man-made drainage canals that provide drainage for a large portion of the urbanized area that is not served by the City's combined sewer system or the storm drainage collection system include the Natomas East Main Drain Canal and the East, West, and Main Drainage canals. These waterways and drainages are discussed in greater detail in Chapter 5 and 6.

2.1.1 Growth, Development, and Flooding

By the 1840s, settlers slowly began to move westward across the Great Plains from crowded cities in the eastern United States. Many wagon trains of Americans looking for fresh land to farm and new homes in California came through John Sutter's Fort near Sacramento. However, the boom to growth and development in the Central Valley really began with the discovery of gold in 1849 at Sutter's Mill, just east of Sacramento in the Sierra foothills.

Figure 2.1. Sacramento River Watershed



Source: caringforourwatersheds.com, retrieved 11/14/2014

The gold mining era reached its peak several decades later, ending in the late 1800s. By then, however, the dredge tailings – sands and gravels produced by hydraulic mining activity – had clogged many of the Valley’s waterways; damaged farms, fields, and orchards; and exacerbated the area’s frequent flooding. In 1884, the farmers filed a lawsuit against the mine owners to make them stop dumping debris in rivers and streams. A new federal law known as the Sawyer Decision, considered by many the first environmental protection legislation, virtually outlawed destructive hydraulic mining.

At the same time, farmers who now relied on the fertile Valley soil to grow crops for themselves and for export worldwide recognized the need to devise ways of controlling the rivers from flooding their banks and destroying local houses and farms. In an independent fashion, area farmers built a piecemeal flood control system of levees, embankments, and channels to protect themselves from the frequent river inundations. However, this early patchwork of levee improvements provided little protection for the larger flood events of the late 1800s.

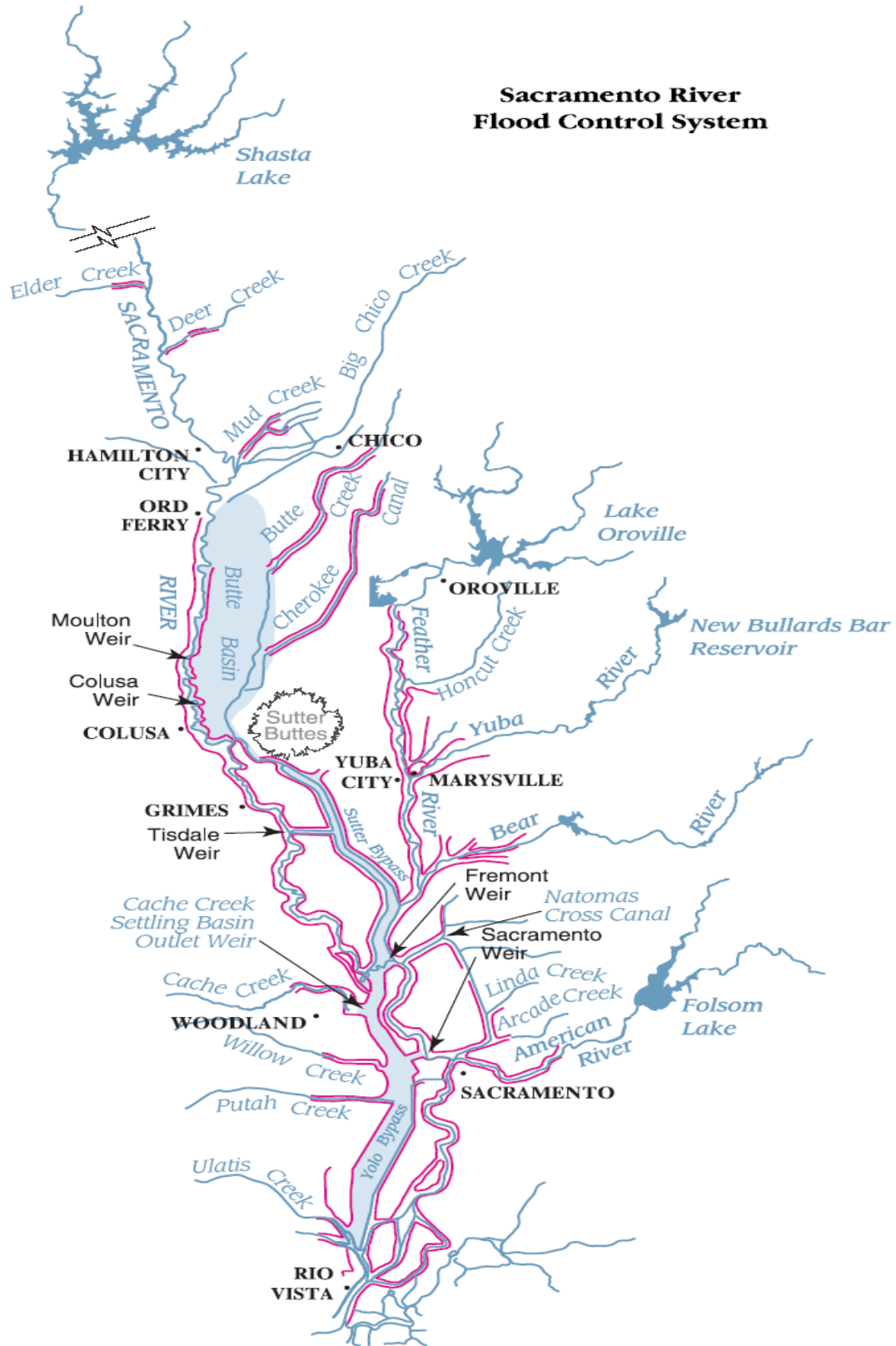
2.1.2 Official Flood Control Efforts

A coordinated effort to control flooding in the Valley did not come about until the State of California and the federal government became involved in the early 1900s. Joint efforts by the California Reclamation Board (now the California Central Valley Flood Protection Board) and the USACE culminated in 1917 with authorization from the U.S. Congress for the Sacramento River Flood Control Project (SRFCP). The original project envisioned systematic construction of levees along the river channels, paralleled by large, leveed overflow channels connected to the rivers through a series of weirs and by-pass channels. Together, the new system would safely convey flows in excess of river channel capacity to the Sacramento-San Joaquin River Delta.

The Central Valley Project, a later companion to the SRFCP, established a series of multipurpose dams and reservoirs in the Sierra foothills to augment the existing flood control system. Folsom Dam and Reservoir, a prominent feature of the project in the Sacramento area, regulates run-off for some 1,860 square miles of drainage area of the American River.

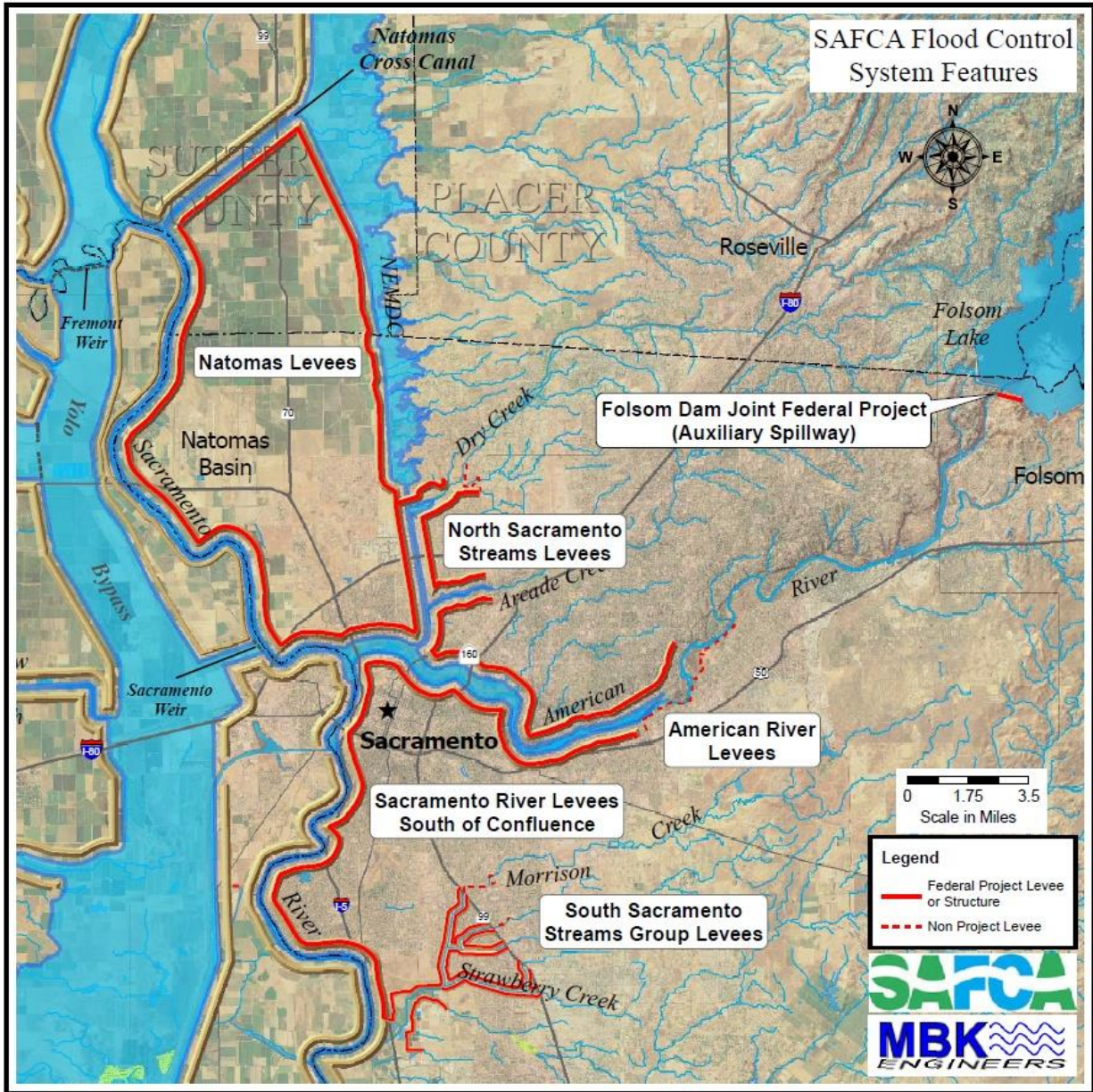
The original congressional approval for the project was followed by subsequent reauthorizations in 1928, 1937, 1941, 1944, and 1950, which increased the federal government’s involvement and expanded the Sacramento River Area Flood Control System, as it is now called. Today, the flood control system is essentially complete as originally planned. Figures 2.2 and 2.3 show the current flood control system from a regional and more local perspective. Figure 2.4 illustrates internal levees in Natomas, to provide additional context for flood protection. The responsibility for operating and maintaining the system locally is divided between the City of Sacramento, American River Flood Control District (ARFCD), Reclamation District 1000 (RD 1000), and Maintenance Area 9 (MA9). While this comprehensive flood control system of dams, levees, overflow weirs and flood bypasses plays a critical role in protecting the City from serious flood damage, it does not eliminate the flood risk entirely.

Figure 2.2. Sacramento River Flood Control System Regional Perspective



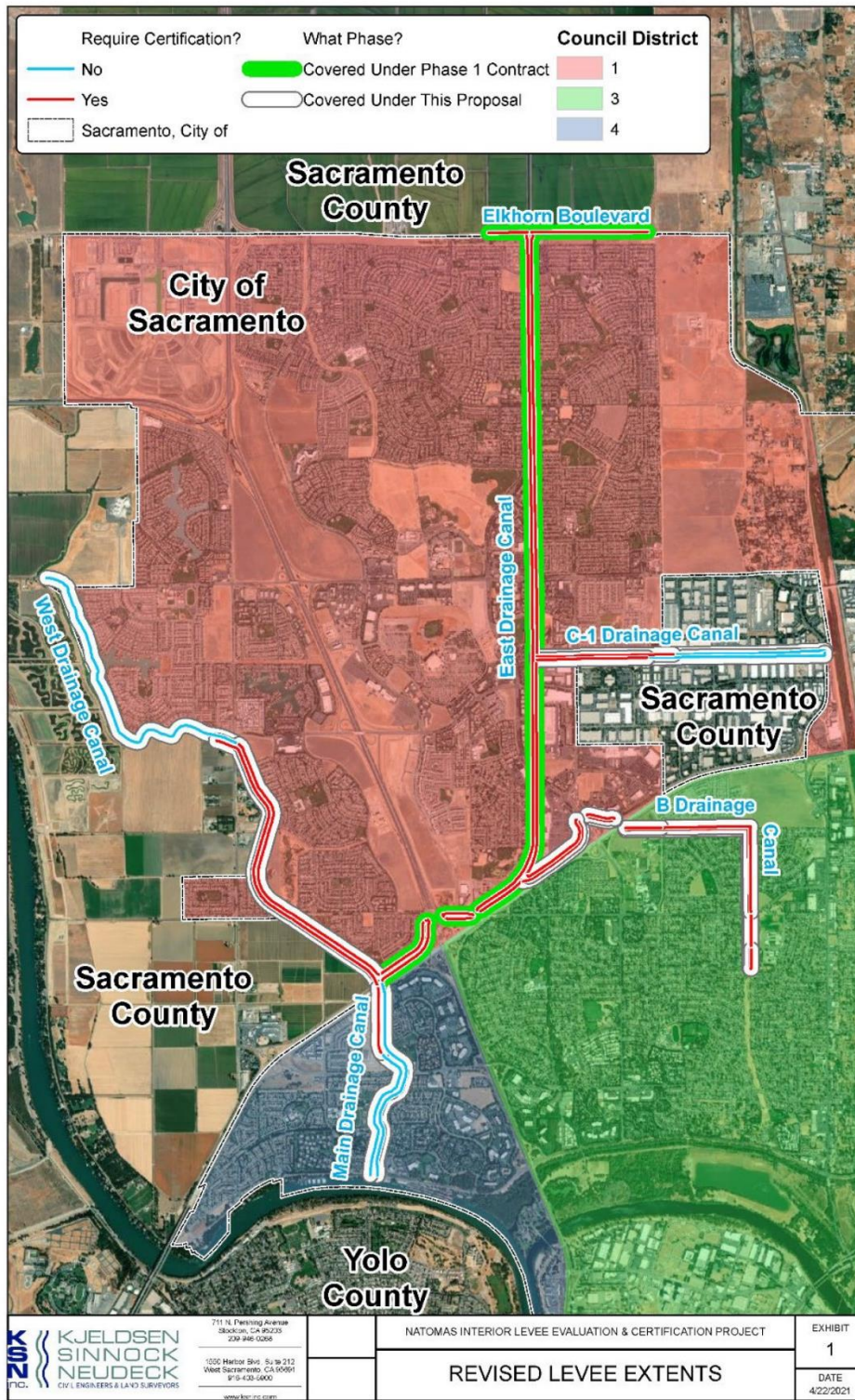
Source: DWR, November 2003

Figure 2.3. Sacramento Flood Control System Local Perspective



Source: SAFCA, MBK Engineers

Figure 2.4. NILEC Project Map



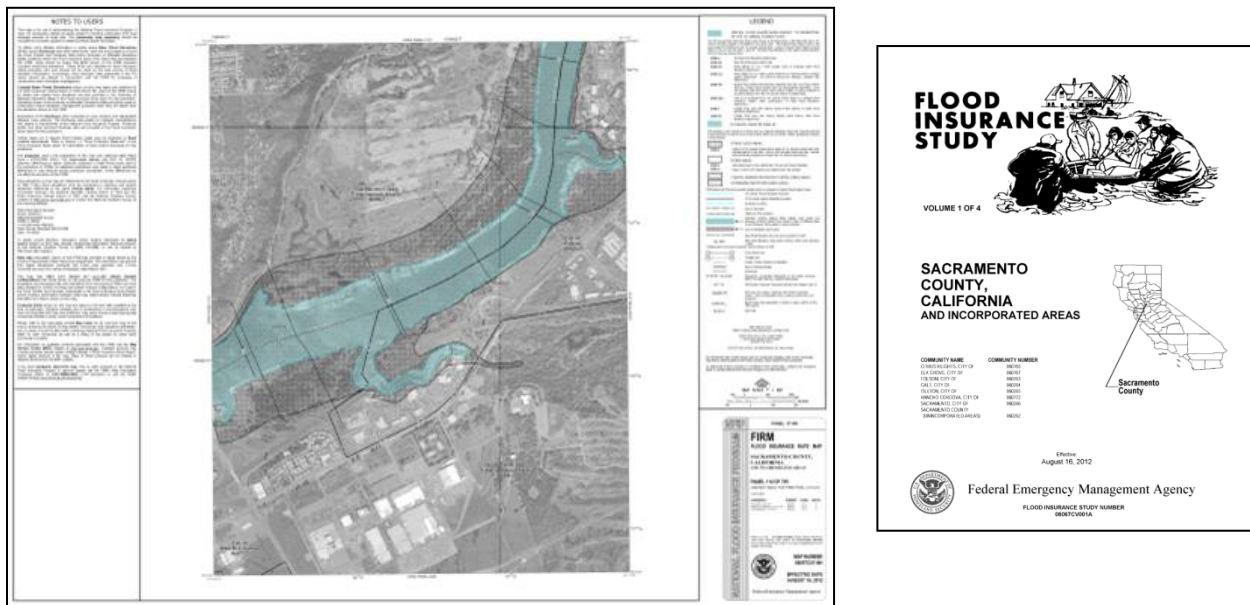
Source: City of Sacramento DOU, January 2024

2.1.3 City of Sacramento Floodplains and Floodplain Mapping

In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories. Most areas of flood hazard are commonly identified on Digital Flood Insurance Rate Maps (DFIRMs).

- DFIRMs identify risk in a community. It is the official map of a community on which FEMA has delineated the SFHAs, BFEs, and the risk premium zones applicable to the community. DFIRMs are regularly reviewed and updated for the City of Sacramento, as flood hazards are dynamic and change frequently for a variety of reasons. The most current DFIRMs for the City became effective on February 22, 2024.
- Flood Insurance Studies (FISs) are a compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information and maps are assembled into an FIS. The FIS report contains detailed flood elevation data in flood profiles and data tables. The current FIS for the City of Sacramento also became effective on February 22, 2024.

Figure 2.5. FEMA Regulatory Products



Source: FEMA

FEMA Non-Regulatory Products

FEMA began a new initiative in 2010, the Risk Mapping, Assessment, and Planning (Risk MAP) program. The program takes a watershed-based approach to flood studies, which creates a more accurate, holistic picture of the flood risk. The Risk MAP program provides communities with additional flood risk products and datasets (cumulatively called the flood risk database) to enhance mitigation plans and better protect their citizens. The non-regulatory products include the following:

-
- Flood Risk Database
 - Changes Since Last FIRM (CSLF)
 - Flood Depth and Analysis Grids
 - Flood Risk Assessment
 - Areas of Mitigation Interest
 - Flood Risk Report
 - Flood Risk Map

Non-regulatory products have not been prepared for the City of Sacramento at this time. Flood hazard mapping information for the City of Sacramento, as defined below, is available on the City’s website: <https://www.cityofsacramento.gov/utilities/flood-preparedness>

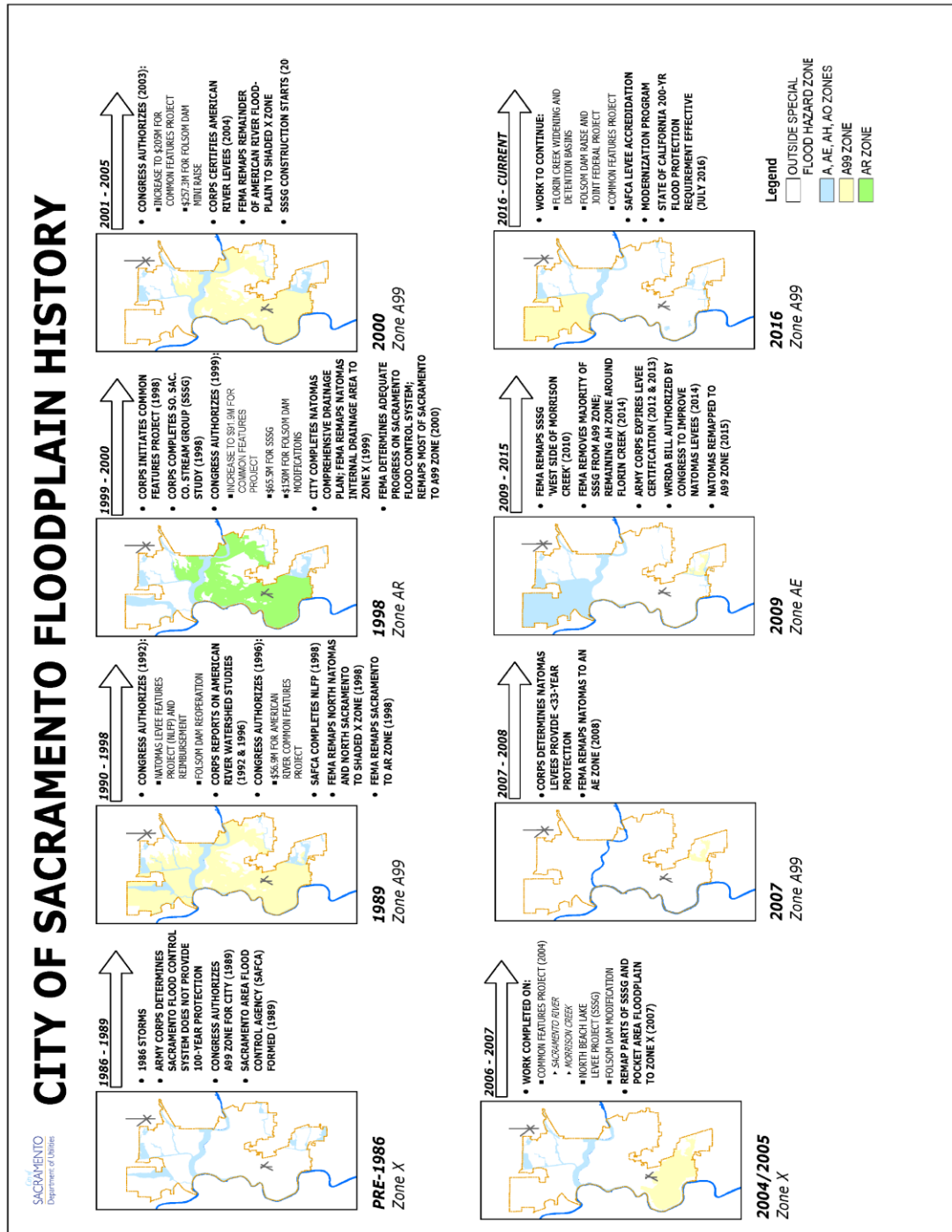
The City has had many changes to its designated floodplain since joining the NFIP, administered by Federal Emergency Management Agency (FEMA), on September 15, 1978. Figure 2.6 provides an historical perspective of the City’s floodplains and Flood Insurance Rate Maps (FIRM) and Figure 2.7 provides the current Digital Flood Insurance Rate Map (DFIRM) for the City.

Based on the current FIRM for the City and analysis conducted for the Sacramento County Local Hazard Mitigation Plan Update (2021), over 34,000 parcels totaling in excess of \$19 billion are located in the Special Flood Hazard Area (SFHA). The SFHA, also known as the 100-year floodplain, is the area expected to be inundated from a flood that has a 1% chance of being equaled or exceeded in any given year. There are over 84,438 parcels valued at over \$54 billion located in the 0.2% annual chance (or 500-year) floodplain. In addition, there are over 24,000 parcels valued in excess of \$14 billion that are located in an area protected by a levee from the 1% annual chance flood. The LHMP further breaks down parcel by land use/property use and improvements to illustrate risk within each flood hazard zone.

There are over 80,000 individuals residing within the 100-year flood zone, and over 27,000 individuals living within the 500-year flood zone. Over 288 critical facilities were mapped within the 100-year flood zone, including essential service facilities, at-risk population facilities, and hazardous materials and solid waste facilities. Over 1,500 critical facilities are mapped within the 500-year flood zone, and 545 mapped within an area protected by a levee from the 1% chance annual flood. Cumulatively, there are 2,377 critical facilities mapped within a flood hazard zone in the City of Sacramento. Further discussion regarding flood risk and vulnerability is included as part of the Local Hazard Mitigation Plan.

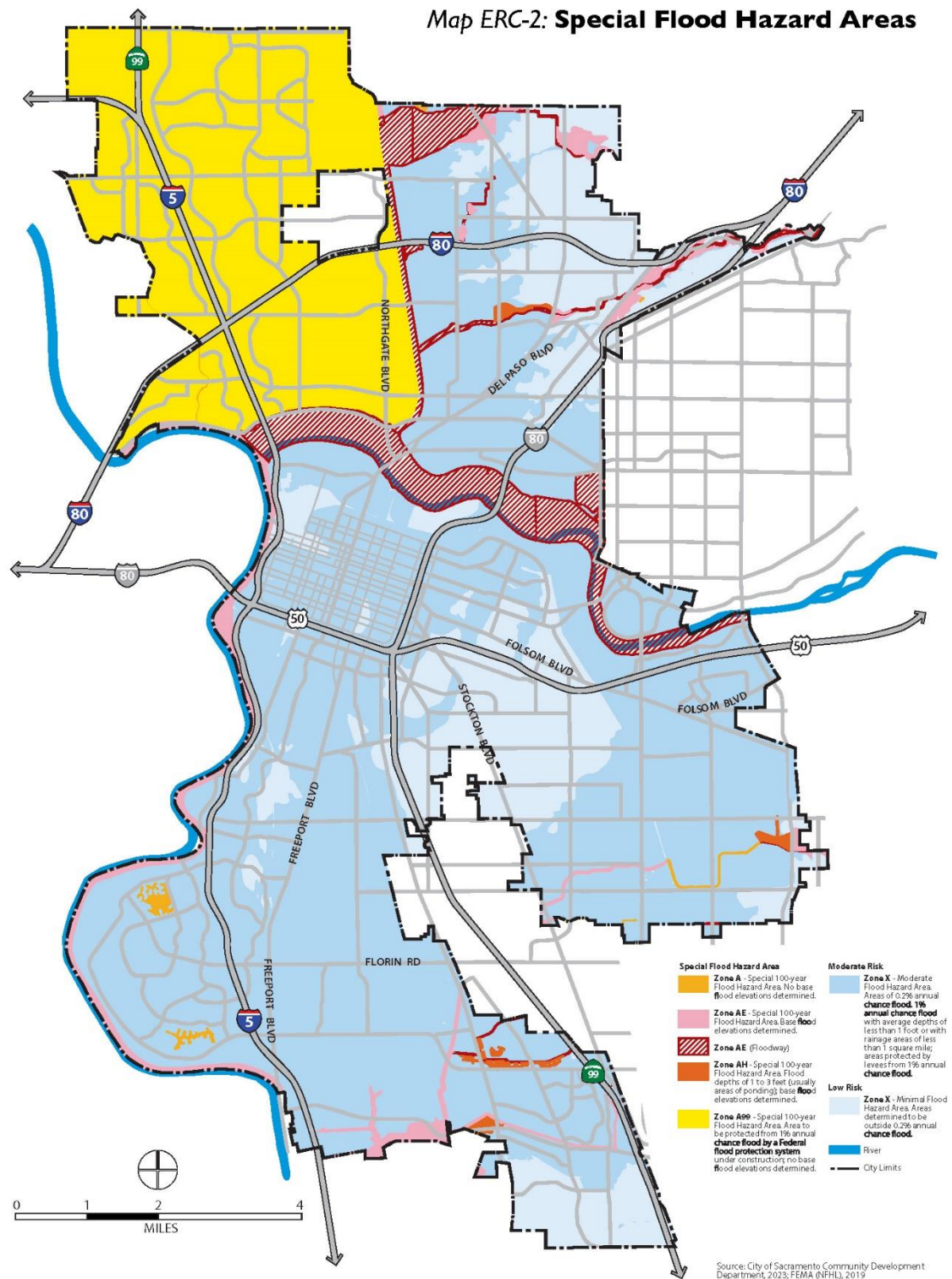
In addition to 1% and 0.2% annual chance floodplains regulated under the NFIP, California legislation resulting from Senate Bill 5 (SB 5, 2007), later amended to SB 1278, requires cities and counties within the Sacramento-San Joaquin Valley to address new flood protection standards of the 200-year (0.5% chance of being equaled or exceeded in any given year) flood when considering development. This legislation (SB 5 and AB 162) intended to improve local land use decisions by strengthening the link between land use and flood management. These standards, discussed in more detail in Chapter 3, became effective in 2016.

Figure 2.6. City of Sacramento Floodplain History



Source: 2016 City of Sacramento

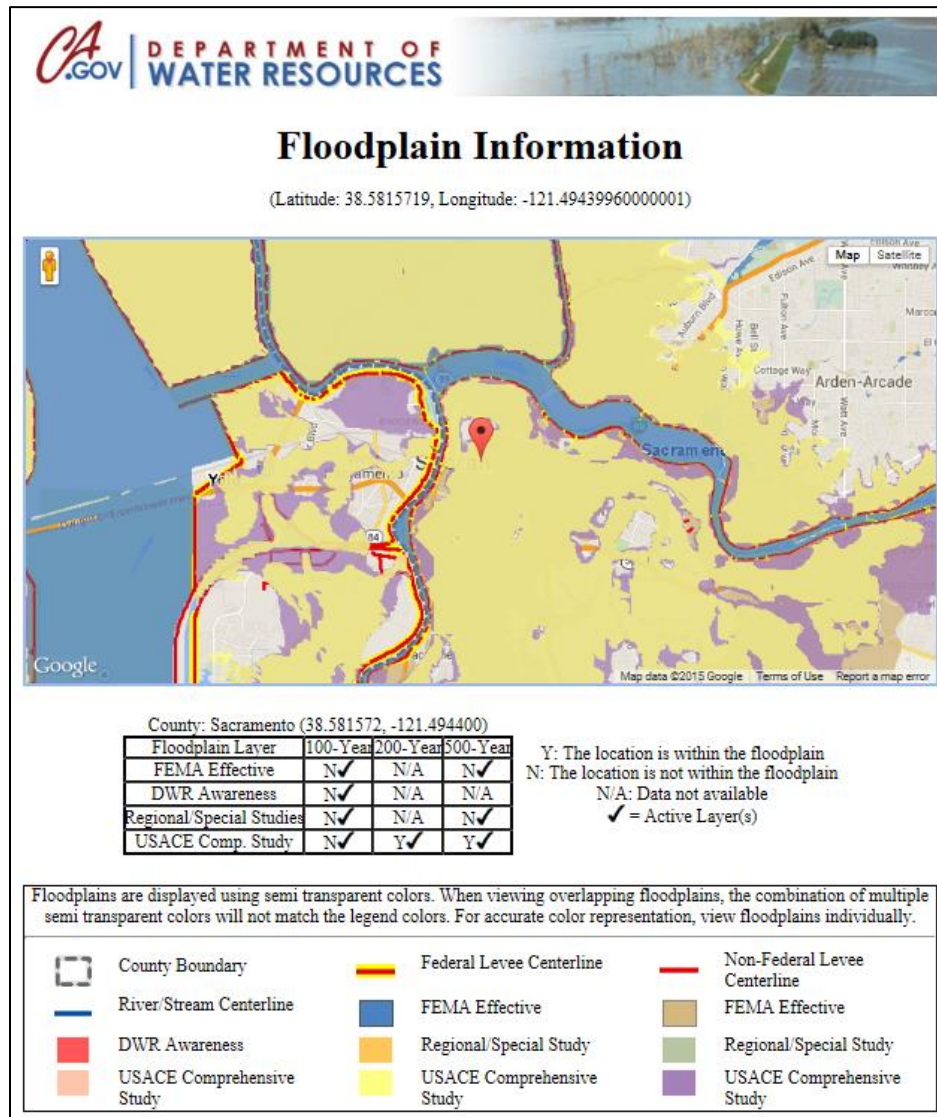
Figure 2.7. City of Sacramento Current Effective DFIRM



Source: City of Sacramento 2040 General

As part of the SB 1278 initiative, the DWR developed preliminary 200-year flood maps for floodplains located within the Sacramento-San Joaquin Valley watershed. These maps were developed to better reflect the most accurate information about the flooding potential in a community and were designed to provide a better understanding of the true risk of flooding to public safety and property. These DWR Best Available Maps (BAM), have no regulatory status for floodplain development and do not replace the existing FEMA regulatory floodplain maps (i.e., FIRMs and DFIRMs), and therefore do not make any changes in federal flood insurance requirements for homes and businesses. These maps were used by the City to identify areas that warranted further 200-year studies and to help make informed floodplain management and land use decisions. These studies are discussed in more detail in Chapter 5. A sample BAM from the DWR website for the City is presented in Figure 2.8.

Figure 2.8. Sample of BAM Data for the City of Sacramento

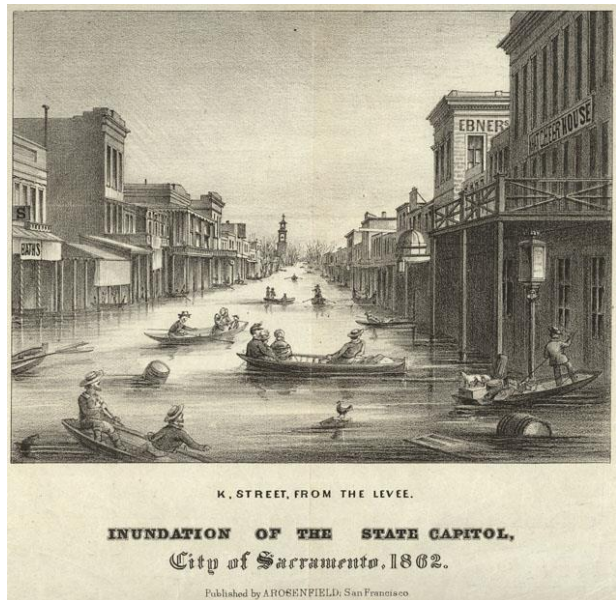


Source: <http://gis.bam.water.ca.gov/bam/>

2.2 History of Major Flooding

Historically, the City of Sacramento has always been vulnerable to flooding because of its relatively flat terrain and number of watercourses that traverse the City and surrounding County area. Flooding frequently occurred before a flood control system existed. Early residents of downtown Sacramento were forced to build on top of the original town level to avoid floods.

Flooding can occur in the City of Sacramento anytime from October through April. Flooding generally results from prolonged heavy rainfall and is characterized by high peak flows of moderate duration and by a large volume of runoff. Flooding can be more severe when antecedent rainfall has resulted in saturated ground conditions. Several areas of the City are subject to flooding by the overtopping of rivers and creeks, levee and dam failures, and the failure of urban drainage systems that cannot accommodate large volumes of water during severe rainstorms.



SAFCA has concluded that Sacramento faces an unacceptably high risk of flooding for two primary reasons:

1. The cores of today's levees are often the levees built by farmers and settlers as much as 150 years ago. Early levees were not constructed to current engineering standards, and little care was given to the suitability of foundation soils. These remnants of the past make today's levees unreliable. It was believed prior to 1986 that the levees containing the Sacramento River and the American River were of sufficient height and stability to protect the county from 100-year or greater storms. The storms that occurred in February 1986 demonstrated that those levees are not always sufficient.

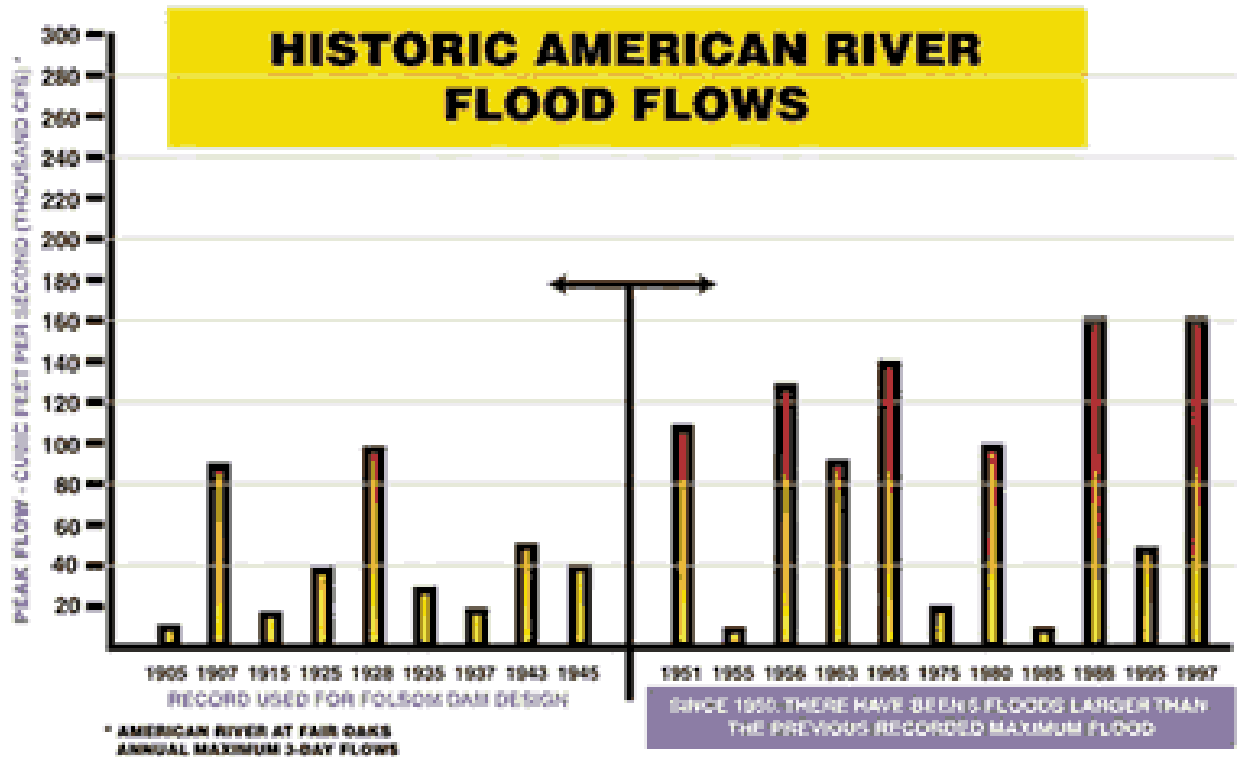
To address this issue, levee improvements to strengthen levees and to make them less susceptible to seepage-induced failures are a major portion of SAFCA's efforts to reduce the risk of flooding in Sacramento. An overview of these ongoing levee improvements is included in Chapter 5 of this CFMP.

2. The quantity of water flowing out of the Sierra Nevada Mountains during large floods appears to be increasing. Folsom Dam was designed to reduce flood flows in the American River to a flow rate that could be safely carried by downstream levees. Construction on Folsom Dam began in 1950. The first storm that occurred after beginning the construction of Folsom Dam was larger than any occurring in the prior 45 years. Since that 1951 storm,

Sacramento has experienced four more “record floods” each somewhat larger than the previous. A comparative analysis run on the two periods (1905 to 1950 and 1950 to 2000) shows that a storm with a one in 500 chance of occurring in any given year based on the earlier period is approximately the same size as a storm with a one in 50 chance of occurring using the entire 95-year period.

The graphic below shows the relative size of large floods over the past 100 years.

Figure 2.9. Historic American River Flood Flows



Source: SAFCA

Sacramento experienced great floods in 1850, 1852, 1862, 1911, 1913, 1951, 1956, 1963, 1964, 1986, 1995, 1997, 2005, and 2017. Record breaking flood events are detailed further below:

1850 Flood - During the night of January 7, 1850, a great storm swept in from the west. Almost overnight the water posed a grave threat to life and property. Within two days of the storm’s beginnings, downpours that reached an inch an hour, had transformed the rivers into raging torrents. There was no levee protecting the new city, which started right at the riverbanks. Within hours, the entire community, for a mile back from the river, was deep under rushing waters. Houses were toppled; businessmen watched as thousands of dollars in inventory was washed out their doors; and a small steamboat navigated the town's streets to deliver goods. Very few homes escaped having water on the first floors. Many were swept from their underpinnings.

Figure 2.10. Sketch of the City of Sacramento during the Flood of 1850



Source: California State Library

1852-53 Flood – In December of 1852, the Sacramento Valley was again inundated, even more deeply than they had in the high water of 1850. On March 29, 1853, the Sacramento River rose twelve feet within twenty-four hours. When the water finally broke through the levees, it was at a point south of the city, toward Sutterville. The out rush of waters on the flatlands were sweeping and violent. By April 2, 1853, the water had backed up into the city. Again the City was under water. Sacramento was a city submerged. The City was a lake, boats were in the streets and the water didn't drain away for two months. The City had levees along both the Sacramento and American Rivers. Although levees served to prevent the rivers from invading the growing city, they also served to trap storm and refuse water that would otherwise drain directly into those rivers.

1861-1862 Flood – Sacramento had enjoyed eight winters of the rivers staying in-bank. The City had prospered and became the State capital. On December 9, 1861, at 8:00 A.M., the American River suddenly went over the levee at Smith's Gardens, about 31st & B Streets, in the northeastern part of the City. The water took its old channel, rushed through the slough west of the Fort and over its banks in less than 30 minutes, the low lots between O & R Streets were overflowed two to three feet deep. The R Street levee stopped its flow, causing it to back up into the City. By 9 A.M., the entire City, south of J Street, was inundated. By 11:30 A.M., only J, K and the levee streets (I, R, and Front) were above water. Within an hour and a half, J and K Streets were under water.

1951 Record Flood – Just after ground is broken on Folsom Dam, the American River watershed experiences the first of five record storms.

Figure 2.11. January 1862 K Street Flooding



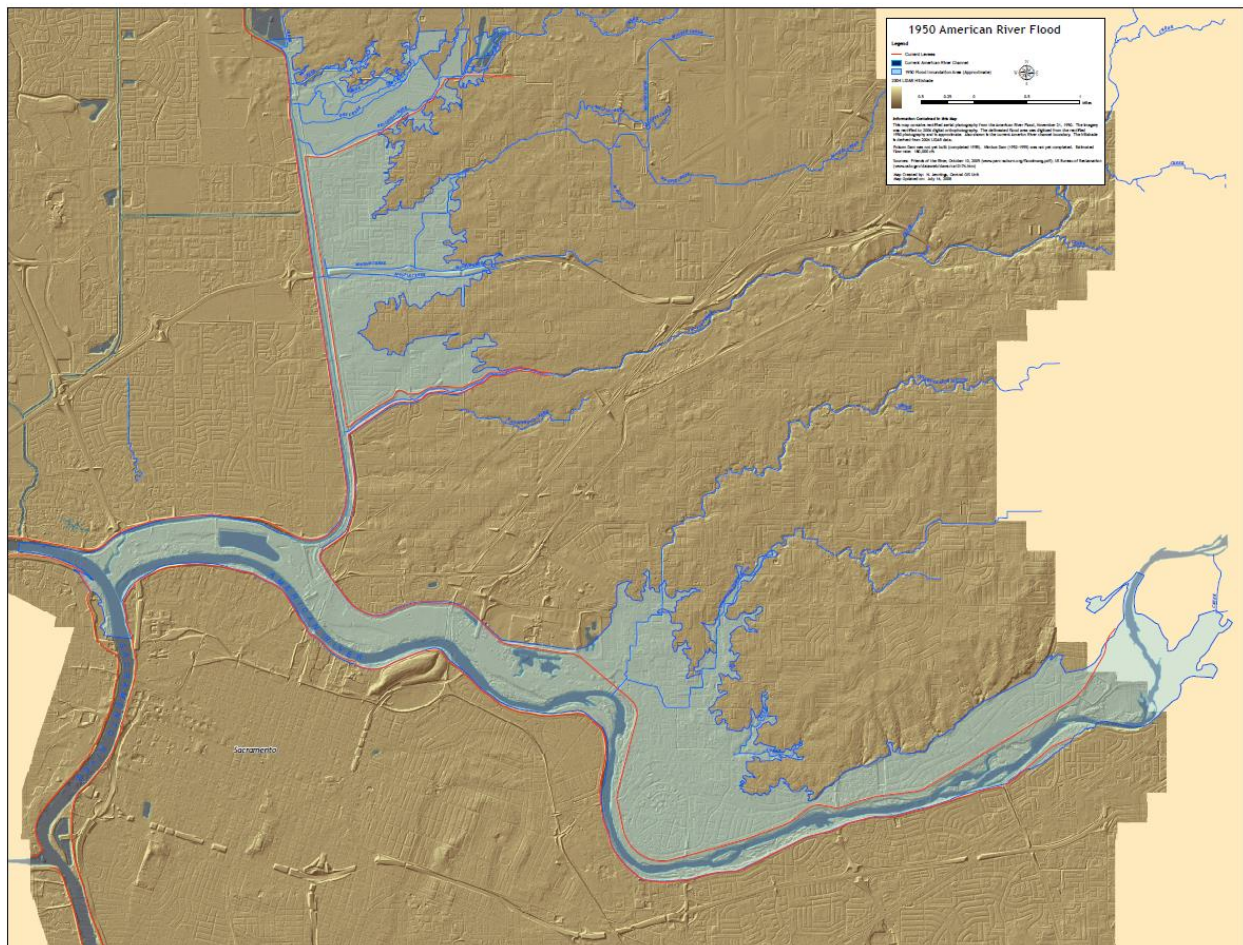
Source: Drainage and Flood Control, 152 Years.

Figure 2.12. 1950 Flood – H Street Bridge



Source: SAFCA

Figure 2.13. 1950 Flood Coverage



Source; Friends of the River, October 10, 2005 (www.parc-auburn.org/floodmang.pdf); US Bureau of Reclamation (www.usbr.gov/dataweb/dams/ca10174.htm)

1956 Record Flood – Though engineers had been predicting it would take a year to fill the nearly completed upstream Folsom Dam, the second record storm filled the dam in a week and Sacramento is saved from flooding.

1964 Record Flood – The 3rd record flood in less than 15 years. Engineers concluded that Folsom Dam was only designed to handle a 120-year storm, not a 500-year storm.

Figure 2.14. Flooding on Franklin Boulevard in 1964



Source: Drainage and Flood Control, 152 Years.

1986 Record Flood: In February 1986, major storms in northern California caused record flood flows in the American River basin. Overflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the safety margin on levees protecting the Sacramento area. A series of tropical storms roared through the State that month. Ten inches of rain fell in 11 days. The levee overtopped in a low spot of Strawberry Manor, flooding approximately 500 homes. Outflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the safety margin on levees protecting the Sacramento area. The storm brought large flood flows into Folsom Reservoir with a maximum six-day record inflow of 1.14 million acre-feet, exceeding the six-day design inflow of 987,000 acre-feet. To relieve the pressure on the dam, 115,000 cubic feet per second (cfs), the design capacity of the levees downstream, was released from the reservoir for two days. As the rain continued, officials boosted those releases to 130,000 cfs for 24 hours. Officials considered increasing releases to 150,000 cfs, but the rain let up, and disaster was averted. At that point, it was estimated by flood officials that three more hours of rainfall would have overwhelmed the system, flooding thousands of homes. Runoff in the American River quickly filled the temporary diversion dam built at the Auburn Dam site, approximately ten years earlier, causing it to burst, and sending 100,000 acre-feet of water rushing into Folsom Reservoir. The level of flood protection provided by Folsom Dam was determined to be a little more than a 63-year level of protection to people and property. The USACE determined that a majority of the City did not have 100-year level of flood protection.

Figure 2.15. 1986 Flood – H Street Bridge



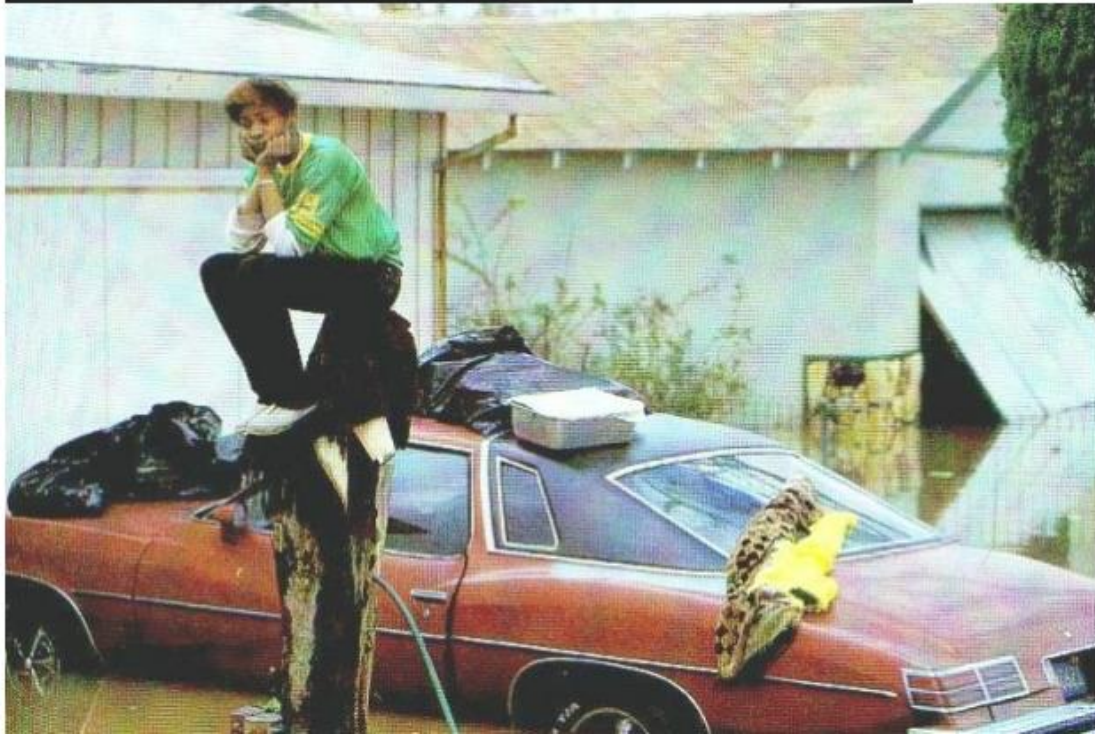
Source: SAFCA

Figure 2.16. Aerial View of 1986 Flood



Source: SAFCA

Figure 2.17. 1986 Flood



Source: SAFCA

1997 Record Flood: This flood occurred on the New Year's Day holiday. Unprecedented flows from rain and melted snow surge into the Feather and the San Joaquin. Sacramento is spared when the fury of the storm hits 40 miles north in the Feather River. Levee failures flood Olivehurst, Adboga, Wilton, Manteca, and Modesto. By the end of January 1997, 48 counties were declared disaster areas and 290 square miles of property, valued at about \$2 billion, including homes, farmlands, bridges, roads and flood management infrastructures were damaged. Nine people were killed and 120,000 people were evacuated from their homes.

Figure 2.18. Tower Bridge – Jan 2003



Source: SAFCA

Figure 2.19. December 30, 2005 Pomegranate Ave along Florin Creek in south Sacramento



Source: SAFCA

2017 Record Flood: The City of Sacramento was impacted by a series of atmospheric rivers and storm systems during January 2017, complicated by the several years of persistent drought. After several years of drought conditions, the state of California received historical amounts of precipitation, causing widespread flooding in the Sacramento metropolitan area. The City's Emergency Operations Center was activated and ordered raising the floodgates at Del Paso and Union Pacific Railway. The Sacramento Weir was opened during January and February to divert flows into the Yolo Bypass, to alleviate flooding downstream in the City of Sacramento. Flooding occurred in Garcia Bend Park, the I Street Bridge, NEMDC and Magpie Creek. Heavy flows were discharged into the spillway at Nimbus Dam. The worst impacts primarily occurred outside of the City, and no deaths or major evacuations occurred.

Other large flood events will certainly occur in the future, leaving the City vulnerable to additional, potentially catastrophic flooding. Further localized flooding problems, both in and outside of the natural floodplains, are likely to continue as drainage channels are altered and confined with new development.

3 LAND USE PLANNING AND DEVELOPMENT GUIDELINES

3.1 Introduction and Background

Land use planning is a tool used to guide the future use, or reuse, of land within a jurisdiction. Such planning helps determine where people, jobs, and structures will be located and where different types of uses will occur. Public safety and flood risk are also taken into consideration in land use planning. The City of Sacramento General Plan provides a comprehensive framework to guide development in Sacramento over time, establishing land use designations, development intensity standards, and general characteristics of desired development.

Development guidelines are used to ensure that structures built within the floodplain are located and constructed so that potential flood impacts are minimized. Development guidelines apply to residential structures (i.e., single family and multifamily development) as well as non-residential structures (i.e., commercial, industrial, and office buildings; permanent material storage; and tanks). Some development guidelines can be applied to both new and existing development.

This chapter discusses the importance and relevance of land use planning and development guidelines to flood control in the Sacramento area.

3.1.1 Land Use Planning

Under the General Plan, **infill development** (i.e., that which occurs on *previously developed land*) is encouraged over **greenfield development** (i.e., that which occurs on *previously undeveloped land*), requiring the City to: (1) build more compactly; (2) redevelop underutilized property; (3) develop more intensely near transit; and (4) locate jobs closer to housing. One of infill development's key benefits is the reduced need for future development in undeveloped floodplain areas.

In addition to policies governing *which* land is developed, the 2040 General Plan also includes policies that influence *how* land is developed. For example, levee integrity is enhanced by requiring development to meet state and federal setback requirements. Other land use planning policies support the requirement that development adjacent to levees must dedicate land for the levee footprint to the City, thus preserving rivers and creeks for floodplain storage. In addition, the 2040 General Plan calls for adequate stormwater internal drainage through master planning for facilities needed to prevent 10-year-event street flooding and 100-year-event structure flooding. These policies are then implemented by the Sacramento City Code, Floodplain Management Regulations (Chapter 15.104) and the City Zoning Code.

3.1.2 Development Guidelines

The focus of development guidelines is twofold. Some measures are directed at protecting public safety, while others are designed to safeguard property. Development guidelines address building design, building location, and land use; they change as greater levels of flood protection are achieved. The four levels of flood protection applied to both federal and local guidelines are:

- Less than 100-year level of flood protection.
- 100-year level of flood protection.
- 200-year level of flood protection.
- Greater than 200-year level of flood protection.

Local guidelines require additional development guidelines for Evacuation and Rescue Areas.

3.2 Current Implementation Status

Both land use planning and development guidelines are implemented using the City’s zoning, building, and subdivision codes. The City is currently implementing various federal, state, and local mandates for land use planning and development.

(Note: For a summary comparison of these three different levels of government requirements, see Section 3.2.4.)

3.2.1 Federal Flood Protection Measures

FEMA coordinates federal response actions for a variety of natural disasters, including floods, fires, earthquakes, or other emergency situations in the United States for which a Presidential Disaster Declaration is made. More than 50 percent of these declarations are due to flooding.

Flood protection measures relating to development guidelines focus on either saving lives or protecting property. While the supporting protective measures described below may result in higher construction costs, they are necessary to reduce potential flood damages to levels acceptable by FEMA.

- Where property is concerned, “floodproofing” is the term applied to a broad category of measures, including “any combination of structural or non-structural changes or adjustments incorporated in design, construction or alteration of individual buildings or properties that will reduce flood damages.”¹
- Floodproofing measures such as relocating or raising existing buildings are applicable to buildings already in the floodplain and often concentrate on individual structures.

¹ U.S. Army Corps of Engineers, *Flood-proofing Techniques, Program and References*, National Flood-proofing Committee, February 1993, p.3.

-
- The cost of floodproofing existing structures can be expensive if a large number of structures are involved or the structures are located in a deep floodplain. In these situations, other methods such as raising the ground level by fill or building levees often prove more cost effective.

In a typical 100-year flood zone, FEMA requires protective development guidelines be in place prior to the issuance of building permits. Information regarding these measures is provided to developers before construction begins. The primary focus of these measures is to raise the lowest floor of a dwelling above the base flood elevation (BFE) or to floodproof the structure (non-residential structures only).

In considering flood protection measures, elevating and dry floodproofing of structures and establishment of refuge areas are viable alternatives for new development. In existing development, elevating and dry floodproofing structures are neither practical nor financially feasible without grant funds. Therefore, refuge areas are the most feasible flood protection measure for existing development.

Structure Elevation

Elevating an existing structure so that damageable (non-flood resistant) portions are above expected flood waters provides one floodproofing technique. Methods of raising a structure include construction on piles or columns with no lower area enclosures except access, garage, and storage. (This is the only recommended method in areas where flooding is accompanied by currents or waves.)

- An advantage of this method over others (e.g., relocation, which is discussed below) is that no land costs are involved, and neighborhoods are left intact.
- Typically, structures are raised by jacking them up onto a new foundation or by cribbing, a method that works better on lighter wood frame buildings than on stucco or masonry, which can crack.
- Utilities and electrical systems should be located above the BFE or be floodproofed.
- If raised high enough, the structure's new lower portions may be used for storage of easily moved items. However, the structure's lower portion cannot be used for habitation or occupied during high water.

Elevated structures may be most effective in areas of the City with flood depths up to five feet. The design, however, may not be consistent with existing development, especially for infill areas. Structure elevation may also preclude disabled access per the American Disabilities Act (ADA) and California Title 24 requirements. Where elevated structures and raised foundations are neither practical nor feasible, building pads should be elevated so that the lowest floor elevation of a structure sits above the BFE.

As with most floodproofing measures, the substantial increase in construction costs presents a major drawback to elevating existing structures. FEMA provided examples of typical elevation

project costs in its 1986 Design Manual for Retrofitting Flood-prone Residential Structures. The manual serves as an excellent technical reference for most floodproofing techniques and includes design details and technical notes as well as cost information.² FEMA has also developed a similar manual for non-residential structures.³ These costs would need to be significantly increased today in Sacramento, not only for present dollar values, but to reflect the higher cost of construction and permits in this region as compared with other areas of the country.

Structure Relocation

This measure involves physically relocating a structure out of the flood hazard area, either to higher ground on the same property or onto another lot. Relocation is particularly appropriate for high hazard areas and structures that would be unsafe if continually occupied. Relocation can have the added benefits of creating more open space in the floodplain for other appropriate activities and increasing the conveyance capacity of a floodway (i.e., the path of water flow).

As with structure elevation, the cost of structure relocation presents the major drawback to this measure, since the purchase of a new lot is often required. In an area such as Sacramento, this alternative is often not feasible. However, relocation may be viable in creek areas subject to localized flooding due to the limited number of structures in these locations.

Construction of Barriers/Wet and Dry Floodproofing

Barriers include traditional structures such as levees and floodwalls. These types of barriers can be built for individual structures in addition to being used on a region-wide basis, although in most instances this is impractical. Other barriers include the concept of wet and dry floodproofing of non-residential structures.

Wet and dry floodproofing methods use waterproof methods to seal portions of structures below the BFE, thereby preventing damage to the structure. Buildings are designed, along with attendant utility and sanitary facilities, so that the area of the structure below the BFE is waterproof. Building walls should be substantially impermeable to the passage of water; structural components should have the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.

- The dry floodproofing method seals a building with waterproof methods and materials up to the flood level, thereby preventing damage by not allowing water to enter the structure. Dry floodproofing generally involves placing sealant along the lower portion of the structure; raising window openings; providing closures for doors and other openings; and raising and/or

² Federal Emergency Management Agency (FEMA), *Manual for Retrofitting Flood-prone Residential Structures*, September 1986, pp. 55-60.

³ FEMA, *Flood Proofing Non-residential Structures*, May 1986

floodproofing utilities and electrical service. Costs for this measure vary widely depending on the features needed.

- The wet floodproofing method minimizes damage to a structure and its contents from water that is allowed into a building. Flood water flows through the building, which is protected from flood damage by using flood-resistant materials below the flood level and elevating items above the BFE that are subject to flood damage. For flood depth of more than three feet, this method must be coupled with design improvements to enable the structure to withstand the hydrostatic pressure.

3.2.2 State Flood Protection Measures

Senate Bills (SB) 5 and 17 and Assembly Bills (AB) 5, 70, 156, and 162 (Legislation) were signed into law in 2007 to address flood problems, direct use of bond funds, and support local land-use planning. As part of this Legislation, DWR was required to develop a Central Valley Flood Protection Plan (CVFPP). The CVFPP was adopted in 2012 and updated every 5 years (most recently updated in 2022). In 2012, SB1278 and AB1965 were enacted, revising provisions related to planning and zoning for flood protection.

At the time, the City amended the General Plan to include the data and analysis contained in the 2012 CVFPP. The City's General Plan was amended in February 2015, and the Zoning Code was amended in 2016. The City now makes findings related to an urban level of flood protection as stipulated in California Government Code Sections 65865.5, 65962, and 66474.5, using criteria consistent with, or developed by DWR after July 2016. DWR has developed draft criteria, *Urban Level of Flood Protection (ULOP)* (November 2013).

The ULOP required a minimum urban level of 200-year flood protection before a community can issue a building permit or approve a parcel map. This requirement affects areas in the Sacramento-San Joaquin Valley where flood depths are anticipated to exceed three feet and are in a watershed greater than 10 square miles for the 200-year flood event. If a ULOP plan is in place to reach 200-year flood protection and adequate progress is shown annually, then these requirements can be delayed until 2025. The City presented the Sacramento Flood Control Agency (SAFCA) ULOP plan to City Council in 2016, and consideration for 200-year flood protection was integrated into the City's regulatory practices.

Many areas of the City that are in watersheds greater than 10 square miles and exceed three feet in depth will not be covered by a ULOP plan. The 200-year floodplain in these areas were mapped and will be utilized for development purposes.

The Legislation also required DWR to propose updated requirements to the California Building Standards Code for adoption and approval by the California Building Standards Commission. These requirements apply to construction in the Sacramento and San Joaquin valleys, where flood levels are anticipated to exceed three feet for a 200-year flood event.

Appendices G and K of the California Building Standards Codes were added in January 2010 by DWR with an optional adoption by local communities. Appendix G requires the minimum requirements of the NFIP, which includes anchoring structures (including fuel tanks) and gas shut-off valves. The City has added portions of Appendix K to its floodplain ordinance. Appendix K requires accessibility to:

- Refuge and staging locations with exits (e.g., second-floor areas with windows or balconies).
- Exit locations when the way out is in an extraordinary location for persons with disabilities (e.g., a roof hatch).
- Evacuation points/routes for transport to safety.

The requirements listed above were incorporated into the City's Floodplain Management Ordinance and took effect in 2016.

3.2.3 Local Flood Protection Measures

The City has adopted the following local measures to guide development in the floodplain. These measures are to be applied in compliance with, or in addition to, FEMA and state requirements. Each of the measures described in the development guidelines should comply with FEMA regulations, the City Building Code, and the California Building Standards Code.

Elevating and Floodproofing Structures

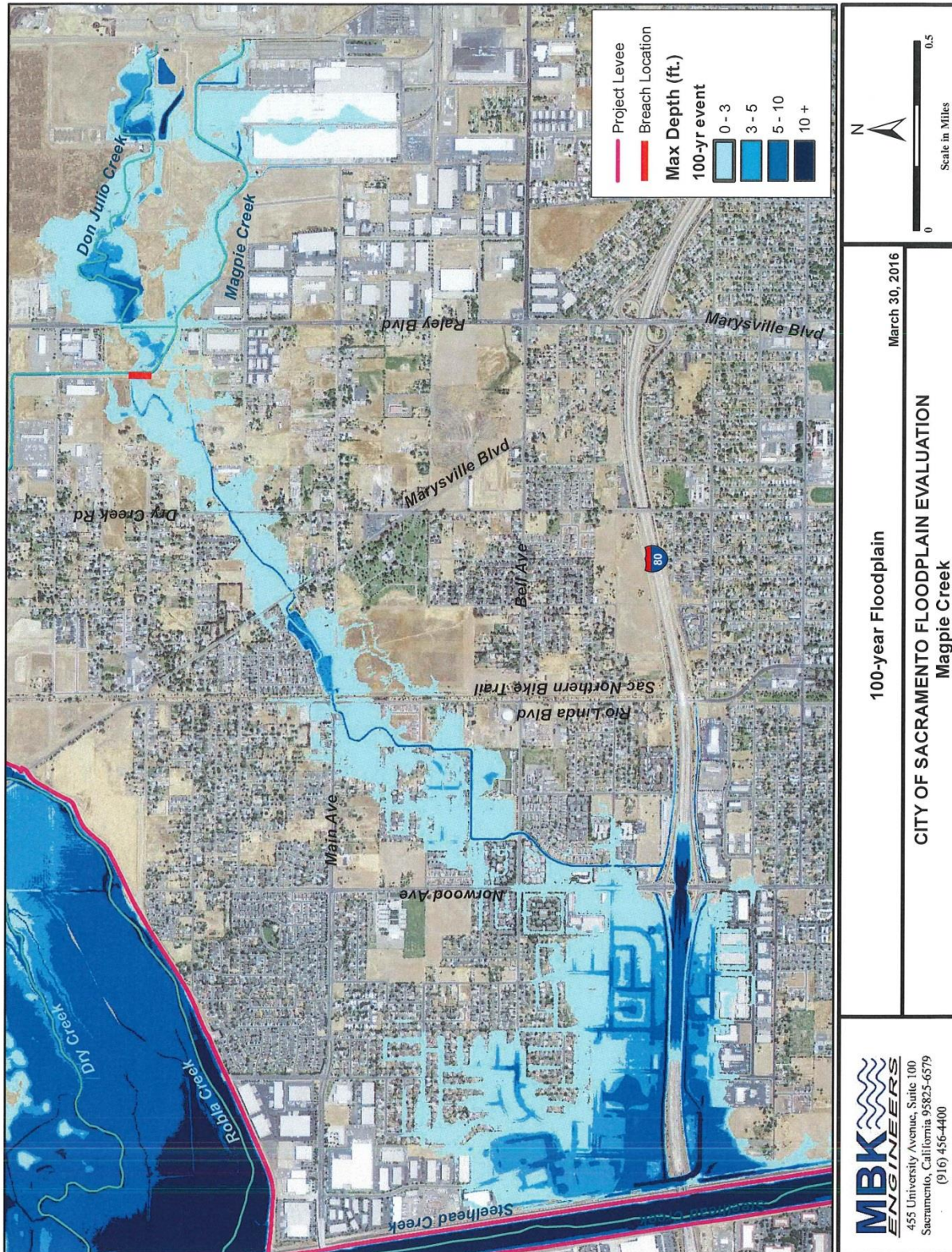
Structural and non-structural building components at or below one foot above the BFE should be flood-resistant; residential structures should be elevated one foot above the BFE. All mechanical equipment (e.g., hot water heaters, furnaces, air-conditioners, and water softeners), utilities, and drains should also be above the BFE or floodproofed. New structures should be designed and adequately anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads. The City's floodplain management regulations require:

- Non-conversion agreements for any proposed enclosed areas below the BFE.
- Hold Harmless Agreements for new development or substantial improvements in floodplains.
- No increase in flood levels from development.

Magpie Creek Floodplain

The City uses a local floodplain along historical Magpie Creek for new development purposes. This is the best available information for this area. Eventually this area will be mapped on the City's DFIRMs. Figure 3.1 shows the Magpie Creek floodplain.

Figure 3.1. 100-year Magpie Creek Floodplain

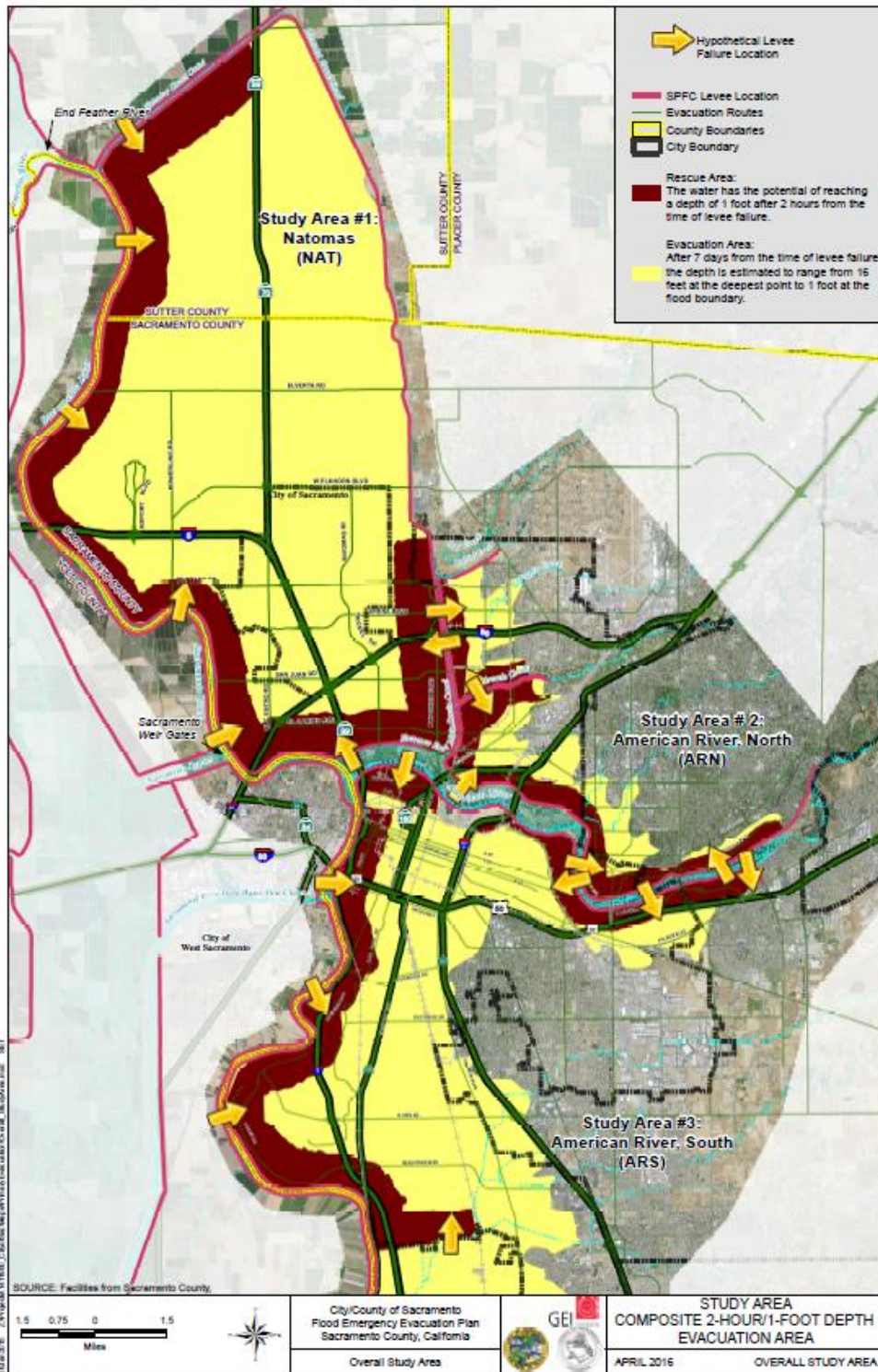


Source: City of Sacramento Department of Utilities, 2024

Local Public Safety Measures

Complementing those measures that protect property, the second component of land use planning and development guidelines focuses on public safety for proposed structures in rescue and evacuation areas based on the City’s Rescue and Evacuation Areas Map (Figure 3.2) The rescue areas are areas that water has the potential of reaching a depth of at least 1 foot after 2 hours from the time of levee failure, depending on the location of the failure. Evacuation areas are areas that water travels to when the City has a levee break based on modeling. See Appendix C for detailed maps of these areas.

Figure 3.2 City of Sacramento Rescue and Evacuation Areas



Source: City of Sacramento Department of Utilities, 2024

Rescue Areas

Within the rescue areas, local public safety measures address refuge areas for the following:

- Public facilities and commercial buildings (excluding industrial occupancies) with an enclosed building area greater than 40,000 square feet;
- Residential subdivisions occupying an area greater than two acres; and
- Special Needs Facilities.

Refuge Areas

The concept of refuge areas is based on providing a temporary safe haven for residents in the event of a catastrophic flood emergency until they can be rescued. Refuge areas are not intended to provide food, clothing, or shelter against the elements. Their sole purpose is to prevent drowning and loss of life.

- Refuge areas include locations within immediate walking distance of residents or workers that are above the highest expected flood depths.
- Building roofs, accessible attics, upper story floors, high ground, and levees are all potential refuge areas.

To be effective as a refuge area, a structure must include a way to access its roof top or attic. Both external and internal ladders and stairways that have exit doors or hatches can provide such access. Building roofs or attics must also be designed or retrofitted to carry the load of many people closely packed together. If private buildings are to be used as refuge sites, legal agreements would most likely have to be executed.

In developed portions of the City, potential refuge areas need to be identified and access provided if none already exists. In areas of new development, refuge areas can be incorporated into community plans and phased in as needed. Maps that clearly show refuge areas and access points should be prepared and distributed to neighborhoods as part of the community education effort discussed in Chapter 7, Risk Communication (Public Education and Awareness).

Public Facilities and Commercial Buildings Refuge Areas

In order to allow more time for evacuation and emergency services in the event of a flood event, major public facilities and commercial building projects greater than 40,000 square feet (excluding industrial) must have roof access and a top plate at least one foot above the BFE or contain second-story construction. Refuge at private structures will be required to accommodate employees only. Additional public access will require agreements with developers. Additional engineering will be necessary to accommodate increases in loads.

New Residential Development Refuge Areas

New residential subdivisions greater than two acres must provide or identify refuge locations. Refuge locations may include commercial and office buildings (these require agreements with developers), levees, schools, or other public facilities with roof access. The refuge locations must be located within walking distance of a project site.

Special Needs Facilities

In areas of deep flooding, evacuation and rescue efforts during a flood event may prove more difficult and time-consuming than in areas of shallower flooding. Residents with mobility problems may be most impacted. Therefore, planning for special needs facilities such as hospitals, schools, and elder care facilities located in rescue zones must anticipate a potentially extended rescue or evacuation time. In fact, the location of some special needs facilities may be inappropriate in rescue zones where flood depths exceed three feet.

Rescue and Evacuation Areas

Within rescue and evacuation areas, local public safety measures address the following additional requirements:

- Title 15 requirements;
- Special Need Facilities; and
- Emergency Vehicle Access.

Title 15

- Approved lever handle gas valves shall be used for all residential and nonresidential gas appliances as required under Title 15.
- Above ground fuel tanks shall be securely anchored to a foundation to prevent movement or flotation during a flood as required under Title 15.

Special Needs Facilities

The City's floodplain management regulations require:

- Special needs facilities have a flood warning and response plan approved by the local administrator prior to occupancy of the structure.

Emergency Vehicle Access

To facilitate rescue and evacuation services prior to and during a flood event, new subdivisions located in both rescue and evacuation zones must have two or more entrance and exit points. Knox boxes shall be provided in gated communities to facilitate emergency vehicle access.

3.2.4 Floodplain Land Use Planning & Development Standards Summary

Federal (FEMA) Mandates

- Require standard FEMA measures (e.g., elevation, flood proofing, etc.) for less than 100-year protection.
- Require flood insurance for less than 100-year protection.

State (DWR) Mandates

- Require minimum urban level of 200-year flood protection for issuing development permits. (The plan for 200-year flood protection must be in place by July 2016 with the 200-year flood protection provided by 2025.)

Local (City) Mandates

- Elevate or floodproof structures one foot above the BFE.
- Anchor structures.
- Elevate or floodproof utilities.
- Require non-conversion agreements for enclosed areas below the BFE.
- No increase in flood levels from development.
- Hold Harmless agreements for new development or substantial improvements in Special Flood Hazard Areas.
- Public refuge areas and evacuation locations for certain new development, as described below.

Public Refuge Areas and Evacuation Locations for Rescue Areas

- The following categories of new development must provide refuge and a means for evacuation:
 - Special needs facilities (e.g., hospitals, senior centers, etc.).
 - Non-residential development greater than 40,000 square feet.
 - Residential subdivisions greater than two acres.
- New construction must have a public refuge that is:
 - Not less than one foot above the rescue flood elevation and within one mile of the location where occupants are expected to congregate pending evacuation; or
 - A building space not less than one foot above the rescue flood elevation from which occupants may be evacuated during conditions of flooding, such as a space within the building that has an exit door or operable window; a deck, balcony, porch, rooftop platform, or rooftop area; or combinations thereof.
- New construction must provide evacuation locations such that:
 - An evacuation route is provided through any number of intervening rooms or spaces without the use of a key, combination, tool, or special knowledge or effort.
 - Evacuation locations provide at least seven square feet per occupant.

-
- Evacuation locations that are spaces within buildings provide the occupants a means to be evacuated out of the building, and at least one window or door meets the egress requirements of the California Residential Building Code.
 - Evacuation spaces that are balconies must have finished floors not less than one foot above the rescue elevation; and must be designed for the live load required for building occupancy.
 - Evacuation spaces that are rooftop platforms and areas must not be less than one foot above the rescue flood elevation; must support the live load required for occupancy; and must provide access by way of stairway, ramp, ladder, or other means.
 - Evacuation spaces that are located in building attics must not be less than one foot above the rescue flood elevation; must provide adequate headroom (as defined by the city’s floodplain management ordinance); must be solidly sheathed; must support the live load required for occupancy; and must provide access by way of stairway, ramp, ladder, or other means.

Rescue and Evacuation Areas Additional Requirements

- New subdivisions shall have two or more vehicular ingress and egress points.
- Approved lever handle gas valves shall be used for all residential and nonresidential gas appliances.
- Above ground fuel tanks shall be securely anchored to a foundation.
- Special needs facilities must have a flood warning and response plan approved by the local administrator prior to occupancy of the structure.

3.2.5 Development Regulations in A99 Flood Zone

Projects that propose new construction or substantial improvement/damage (SI/SD) must meet the following flood related requirements, effective July 1, 2024:

- Residential structures must elevate so that the lowest floor (include basement) is a minimum of one-foot above the highest adjacent 100-year event HGL of the City’s drainage system and at least 18-inches above the Controlling Overland Release Point in the public right-of-way and provide Elevation Certificates (ECs) signed by a registered Professional Engineer, Survey, or Architect.
- Commercial structures must elevate OR floodproof to a minimum of one-foot above the highest adjacent 100-year event HGL of the City’s drainage system and at least 18-inches above the Controlling Overland Release Point in the public right-of-way and provide ECs signed by a registered Professional Engineer, Surveyor, or Architect. If floodproofing, a Floodproofing Certificate is required in addition to the ECs and must be signed by a registered Professional Engineer, Surveyor, or Architect.
- Execute a hold harmless agreement with the City.

3.3 Implementation Strategies and Action Items

The following implementation strategies are for land use planning and locally mandated development guidelines that are intended to protect both public safety and property, in addition to those measures required by minimum FEMA development standards.

Table 3.1. Land Use Planning and Development Action Items Summary

Action	Responsible Office	Schedule
1. Improve Methods for Providing Development Guideline Information to the Public and Developers.	DOU, Community Development	Short Term
2. Enforce Existing Development Guidelines.	DOU, Community Development	Short Term and Ongoing
3. Improve the Building Permit Process with Respect to Floodplain Management.	DOU, Community Development	Short Term and Ongoing
4. Continue Implementation of Phased Development for A99 Natomas Floodplain.	Community Development	Short Term
5. Update the Design and Procedures Manual, On-Site Design Manual and City code to include new development requirements in the A99 Natomas Floodplain.	Department of Utilities	Short Term

1. Improve Methods for Providing Development Guideline Information to the Public and Developers.

Issue/Background Statement: Implementing development standards for new construction and substantial improvements is very important in order to remain in the National Flood Insurance Program. City departments will continue to improve the procedures/methods for implementing development standards required by federal, state, and local codes.

Implementation Strategy: As city codes and ordinances are updated, staff will develop materials summarizing the guidelines for the general public and developers.

Responsible Office: DOU, Community Development

Potential Funding: Staff time

Schedule: Short Term

2. Enforce Existing Development Guidelines.

Issue/Background Statement: In areas defined as rescue/evacuation zones of flooding, the following development guidelines must be enforced as follows:

- Major projects (40,000 square feet and larger) shall provide refuge areas and means for evacuation.
- New residential subdivisions greater than two acres shall provide or identify refuge locations and means for evacuation.
- Special facilities such as hospitals and elder care facilities will be required to have refuge areas and have flood emergency response plans in place prior to occupancy.
- New subdivisions shall have multiple entrance and exit points where feasible to facilitate evacuation and other emergency services.

Implementation Strategy: City staff will continue to enforce the development guidelines above, and merge the requirements for refuge areas, exits, and evacuation routes following adoption of the revised floodplain management ordinance.

Responsible Office: DOU, Community Development

Potential Funding: Staff time

Schedule: Short Term and ongoing

3. Improve the Building Permit Process with Respect to Floodplain Management.

Issue/Background Statement: In 2010, the City submitted a corrective action plan to FEMA and implemented building permit process improvements. Since then, the City has successfully incorporated floodplain development requirements into the building permit process.

Implementation Strategy: The City will continue on an ongoing basis to train staff and improve building permitting, plan check, and inspection.

Responsible Office: DOU, Community Development

Potential Funding: Staff time

Schedule: Short Term and ongoing

4. Continue Implementation of Phased Development Guidelines for the A99 Natomas Floodplain.

Issue/Background Statement: The Natomas Basin was remapped from an AE to A99 flood zone in June 2015. Because the levee improvements are only partially complete in the Natomas Basin

and levee construction within City of Sacramento is ongoing, the City implements a conservative approach on development in Natomas.

Implementation Strategy: The City will continue on an ongoing basis to continue implementation of the phase development guidelines.

Responsible Office: Community Development

Potential Funding: Staff time

Schedule: Short Term

5. Update the Design and Procedures Manual, On-Site Design Manual and City Code to include new development requirements in the A99 Natomas Floodplain.

Issue/Background Statement: To satisfy FEMA’s prerequisites for a Class 9 and Class 4 in the 2017 CRS Coordinators Manual, the City of Sacramento will be making changes to its Design and Procedures Manual (DPM), Onsite Desing Manual (ODM), and City code.

Implementation Strategy: Changes will consist of adding language for projects in a SFHA (including A99) that requires lowest floor (including basement) to be at least 12-inches above the highest adjacent 100-year event HGL of the City’s drainage system and at least 18-inches above the Controlling Overland Release Point in the public right-of-way.

Section 10 in the ODM Flood Related Requirements, will be revised to include the A99 flood zone for the requirement of providing Elevation and/or Floodproofing Certificates (commercial properties have the option of floodproofing if elevation is not feasible) for proposed new construction and Substantial Improvement/Substantial Damage.

Additionally, all new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities elevated or dry floodproofed one foot above the 100-year event HGL.

The City will begin the collection of Elevation and Floodproofing Certificates for new construction or substantial improvement/substantial damage projects in the A99 flood zone that apply for a building permit on or after July 1st, 2024.

Responsible Office: Department of Utilities

Potential Funding: Staff time

Schedule: Short Term

4 EMERGENCY MANAGEMENT

4.1 Introduction and Background

Emergency management is a critical risk reduction tool in the arsenal of any municipality. The effects of a natural disaster can either be mitigated or worsened depending on the government’s response. The role of city government in a disaster is to take all possible actions in order to provide protection of life and property. To accomplish this task, the City has an aggressive emergency management system in place that includes comprehensive hazards planning. City staff and the Sacramento Fire and Police departments work closely together to actively engage in the four phases of emergency management: *preparedness/planning, response, recovery, and mitigation (or risk reduction)*. These efforts are comprehensive in nature and cover an all-hazard approach, including emergencies involving flooding.



Multiple departments and agencies have direct roles and responsibilities in each of the phases of emergency management. These departments are typically focused on operational/function specific roles and responsibilities. It is necessary that these discipline-specific efforts are well-coordinated and integrated into the larger system. This is the foundation of the Standardized Emergency Management System (SEMS), a system for management of multiagency and multijurisdictional emergencies in California. SEMS is integrated with the National Incident Management System (NIMS) to meet all federal requirements and timeframes. SEMS/NIMS is a comprehensive system that improves local response operations through the use of the Incident Command System (ICS) and the application of standardized procedures and preparedness measures. City staff are regularly trained on SEMS/NIMS and the ICS.

The City also works closely with the Sacramento County’s Office of Emergency Services (OES) and SAFCA during major flood events which impact both jurisdictions, demanding an integrated response prior to, during and following an emergency. This coordination provides consistent emergency management service delivery to the Sacramento community.

4.2 Current Implementation Status

Emergency management activities within the City, as related to flood events, were reviewed and evaluated for each of the four phases of emergency management: preparedness, response, recovery, and mitigation. A summary of activities for each phase is provided in the following sections of this chapter. Recommended implementation strategies and actions were also identified to assist the City in enhancing the level of flood protection and are provided in Section 4.3.

4.2.1 Technical Responsibilities

A. PREPAREDNESS

Flood Hazard Information

Knowing and understanding the flood risks for the community is paramount to being prepared for proper response to an event. The risk of flooding is the potential for damage, loss, or other impacts that are caused by the interaction of the flood hazard with community assets. Understanding the flood hazard for the community is achieved through research and review of existing flood hazard studies, flood hazard mapping, historical documentation of previous flood events, and field visits. Flood hazard mapping information for the City of Sacramento is presented in Chapter 2 *Historical Perspective*, Subsection 2.1.3 and in Chapter 8 *National Flood Insurance Program/Community Rating System*, Subsection 8.2.1.

City of Sacramento, Department of Utilities

- Ultimate Flood Depths map – This map displays what the levels of flooding in the City of Sacramento would be if there were no levee protection. This map shows the ultimate depth of water for areas within City limits if there were nothing to protect the area or if nothing was done to stop flooding. The map is available here:
 - <https://www.cityofsacramento.gov/utilities/flood-preparedness/flood-maps>
- Areas Dependent on Levees map – This map displays areas in Sacramento dependent on levees. This map does not show depth of the flooding but does show areas vulnerable to flooding because they rely on levees to protect them. The map is available here:
 - <https://www.cityofsacramento.gov/utilities/flood-preparedness/flood-maps>
- Rescue and Evacuation maps - These maps show the depth of flooding with a 300- to 800-foot levee break, 200-year storm, and running 7 days straight without mitigation. These maps are available on the City website. A separate set of maps show the rescue and evacuation areas for development purposes (Appendix C). The rescue areas show which areas would have 2' of water within an hour.
 - <https://www.cityofsacramento.gov/utilities/flood-preparedness/evacuation-maps>

California Department of Water Resources (DWR)

- Best Available Maps (BAM) –The BAM have been compiled by the DWR and are provided for informational purposes only, and are intended to reflect current 100-, 200-, and 500-year event risks using the best available data. The maps are available here:
 - <http://gis.bam.water.ca.gov/bam/>
- Levee Flood Protection Zone (LFPZ) Maps – The LFPZ maps were prepared for the Lower Sacramento Valley Region as part of the FloodSAFE initiative. The LFPZ maps identify the areas that are protected by a project levee. The LFPZ maps are also used as part of the DWR's levee risk notification program. The maps are available as part of the BAM website.

Community Assets

With an understanding of the location, extent, and probability of flood events, familiarity with the community assets exposed to the flood hazard is also important. This includes people, property, infrastructure, and other critical facilities.

- People – The following vulnerable and special needs facilities are identified within the community. These facilities serve members of the community who may have additional needs before, during, and after a flood event. This facility information is updated on a regular basis by the DOU and is presented on the Rescue and Evacuation maps noted above.
 - Daycare and schools (K-12)
 - Disabled and elderly care facilities
 - Adult education centers
 - Community and health centers
 - Major hospitals
 - Animal Shelters
- Existing Structures – All structures are exposed to risk, but certain buildings or concentrations of buildings may be more vulnerable because of their location, age, construction type, condition, or use. Information on land use, zoning, parcel boundaries and ownership, and types and numbers of structures is available from the Sacramento County Assessor’s Office (<http://www.assessor.saccounty.net>) and the City of Sacramento’s Community Development Department (<https://www.cityofsacramento.gov/community-development>). Ideally, a photo of each structure should also be taken to accompany structure data. This helps identify the structure and document the condition of the structure prior to a flood event.
- Repetitive Loss Structures – Repetitive loss structures are costly and pose a high-risk threat to residents who may be threatened by continual flooding. The NFIP defines a repetitive loss property as “any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. At least two of the claims must be more than 10 days apart.” There are currently 21 repetitive loss properties within the City of Sacramento.
- Infrastructure – Infrastructure systems, critical for life safety and economic viability, include the following: transportation, power, communication, water, and wastewater systems. The DOU has an Asset Management Group who tracks all utility infrastructure which includes water, sewer, drainage, wastewater treatment, water treatment plants, pump stations, etc.
- Critical Facilities – Critical facilities are structures and institutions necessary for a community’s response to and recovery from emergencies. Critical facilities must continue to operate during and following a disaster to reduce the severity of impacts and accelerate recovery. Critical facilities are identified in the Local Hazard Mitigation Plan and displayed on the Rescue and Evacuation maps noted above.

Flood Warning System

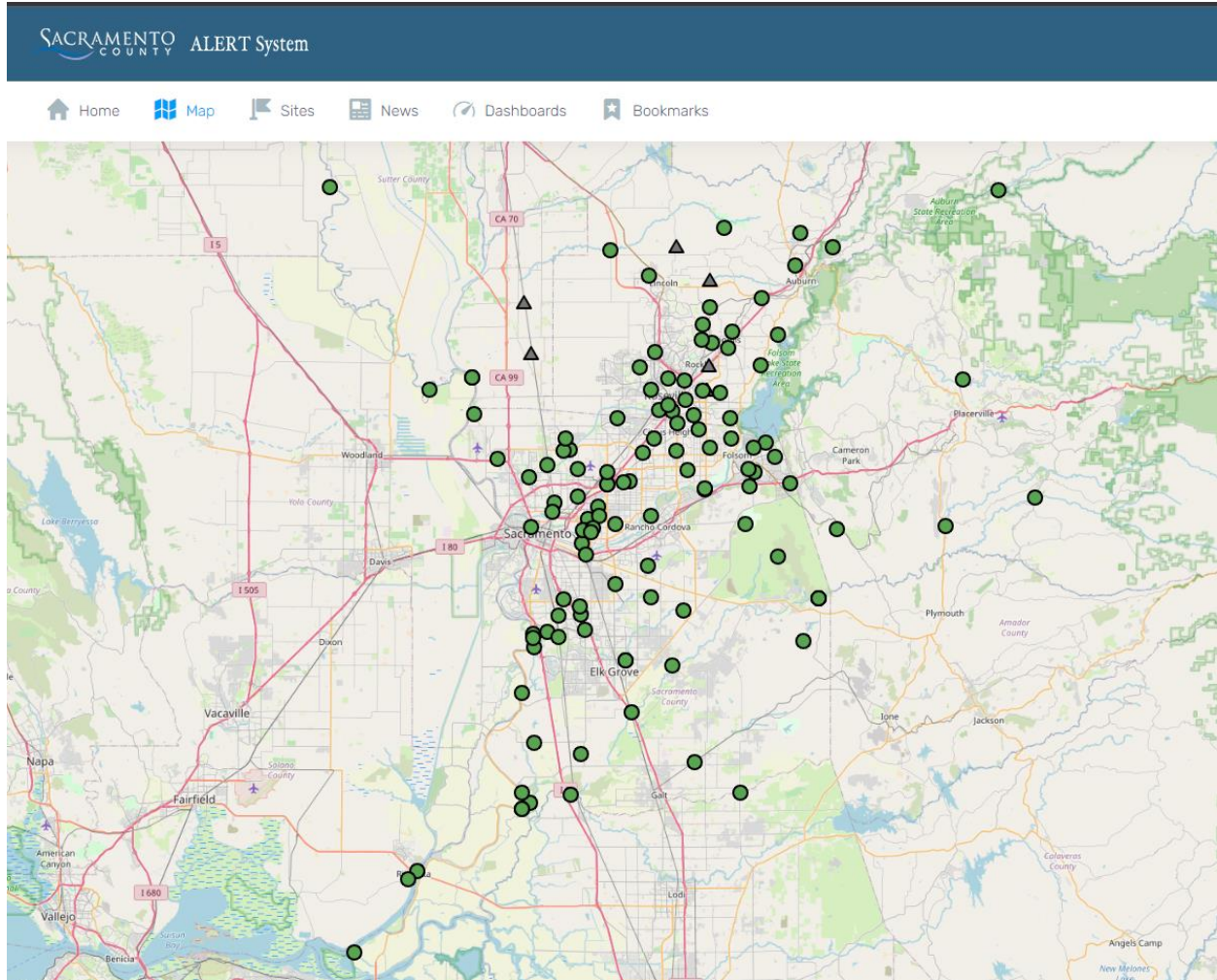
The City uses the California Data Exchange Center (CDEC, <http://cdec.water.ca.gov/>) for flood forecasting information. The CDEC installs, maintains, and operates an extensive hydrologic data collection network including automatic snow reporting gages for the Cooperative Snow Surveys Program and precipitation and river stage sensors for flood forecasting.

The City also uses the Automated Local Evaluation in Real Time (ALERT) system for local creeks. ALERT was created by the National Weather Service to signal us about possible flooding. ALERT provides us with continuous and automatic reports from river levels and rainfall gauges to help us detect impending high water levels. The ALERT system website is maintained by the County and is located here: <http://www.sacflood.org/>. ALERT information includes the following:

- Rainfall Summary
- Stage Summary
- Storm Ready
- Sandbag Information
- Detailed Forecast
- Quantitative Precipitation Forecasts (QPF) are maps depicting the amount of liquid precipitation expected to fall in a defined period of time.
- NWS River Forecasts

Figure 4.1 shows the location of available ALERT sensors.

Figure 4.1. Sacramento County ALERT System Sensor Locations



Source: Sacramento County Alert System, 2023

Emergency Planning

While several planning efforts have been developed, recently updated, and integrated into other planning mechanisms; emergency planning is never complete. Planning activities must be continuous to reflect ongoing changes in the community – demographic, geographical, political, legal, economic, sociological, and cultural changes – that have profound impacts on plan effectiveness. An emergency plan must be able to adapt to these changes, or else the plan’s effectiveness may be compromised.

City departments with field response roles need to have developed Standard Operational Procedures (SOPs) to be implemented during emergency situations. During an emergency, departments may need to activate their own department operations centers (DOC) and manage their field resources from those facilities. DOU is one such department which activates a DOC. The DOC, in turn, coordinates with the City’s Emergency Operation Center (EOC). While staff in

some departments truly understand and are ready to implement these concepts, others have further to go to be prepared.

The primary plan that guides the City during any major emergency, including a flood, is the Emergency Operations Plan (EOP). State law requires that the City maintain an EOP to direct the organizational response during emergency situations. Response issues and responsibilities contained in the EOP include:

- Emergency public information and warning
- Situation survey and analysis
- Allocation and mobilization of response resources
- Implementation of health and safety measures
- Enforcement of police powers
- Access control and movement
- Evacuation and rescue
- Care and treatment of casualties
- Control and allocation of vital resources and supplies
- Protection and restoration of facilities and systems
- Mass care for displaced individuals and families
- Collection, identification and disposal of the deceased

The City has recently developed or updated many of the key emergency plans that would be employed during flooding or other major emergencies:

- Emergency Operations Plan (EOP), 2016
- Evacuation Plan for Floods and Other Emergencies, 2016
- Continuity of Operations/Continuity of Government, 2009
- Field Services – Drainage Collection, Standard Operating Procedures (SOPs) for Emergency Response, 2007
- Utilities Operation Center Plan, 2021
- Resources & References – Drainage Collection, 2007
- Local Hazard Mitigation Plan (City of Sacramento, Annex F), Update 2021 – Current and upcoming emergency planning efforts, as presented in Section 4.3, will address sheltering and evacuation initiatives and include the functions of mass care, temporary housing, and human services. These emergency support functions are further defined as follows:
 - Mass Care – this includes planning for mass sheltering, feeding, distribution of emergency supplies, and reunification of children with their parent(s)/legal guardians and adults with their families;
 - Temporary Housing – options including rental, repair and loan assistance; replacement; factory-built housing; semi-permanent construction; referrals;

- identification and provision of safe, secure, functional and physically accessible housing; and access to other sources of temporary housing assistance; and
- Human Services – disaster assistance programs that help survivors address unmet disaster-caused needs and/or non-housing losses through loans and grants; also includes supplemental nutrition assistance, crisis counseling, disaster case management, disaster unemployment, disaster legal services, and other state and federal human services programs and benefits to survivors.

Exercises and Training

The DOU’s emergency exercise and training programs have grown recently to focus on enhanced organizational understanding of existing planning expectations, roles and responsibilities during major emergencies and to improve organizational capability and capacity. Providing training to Utilities staff and opportunities for them to exercise their functional responsibilities is essential to ensuring that the City can address the enormous demands presented by an emergency. Additionally, simulating an emergency provides the optimal forum for testing emergency planning efforts by gauging plan assumptions, capacities and effectiveness. A workforce responsible for community welfare that does not adequately train and practice will likely fail in its mission.

In line with industry best practices, DOU’s exercise program complies with FEMA’s Homeland Security Exercise and Evaluation Program (HSEEP). The exercise program consists of a variety of exercise types including tabletop exercises, operational drills, functional exercises, and full-scale exercises. An After-Action-Report (AAR) and Improvement Plan (IP) are prepared following execution of each exercise and are used to improve DOU’s operating procedures and emergency response. Table 4.1, below, provides a summary of the exercise schedule for the DOU.

Table 4.1. Exercise Schedule for Department of Utilities

Exercise Type	Recommended Frequency for DOU	Number for Immediate Implementation (0-6 Months)	Number for Near-Term Implementation (6-18 Months)	Number for Long-Term Implementation (18-36 Months)
Tabletop Exercises	Annually		1	2
Other Discussion-Based Exercises per HSEEP (Seminars, Workshops, Games)		As Needed		
Drills	Twice Annually		2	3
Functional Exercises	Every 2 Years			1

The City is mandated by the federal government to ensure that staff members who would participate in responding to a major emergency are adequately trained. This requirement essentially affects many City workers, and each employee’s level of responsibility determines the NIMS and ICS training that he or she must complete. DOU’s training program consists of two main elements:

- NIMS and ICS training classes, delivered to staff members according to their respective roles in DOU’s ICS organization, namely, Command Staff, General Staff, and/or other supporting roles. These courses are delivered in a classroom setting or can be taken online through the FEMA Independent Study Program when appropriate.
- Staff classroom training specific to DOU’s implementation of its DOPs and the City of Sacramento EOP. The training will complement the common ICS and related material presented in the standard courses indicated, and be consistent with any other applicable local existing related plans.

DOU’s training plan and participation is incorporated into a centralized training tracking system to facilitate program management and compliance. Table 4.2, below summarizes DOU’s current training plan. All staff has been directed to obtain the identified training appropriate for their level in the ICS organization.

Table 4.2. Training Plan for Department of Utilities

Course	DOU Employee Categories			
	Awareness Level	Responder Level	Supervisor Level	Command/EOC Level
	All employees	Entry-level responders	Field command staff, section chiefs, unit leaders, division/group supervisors, and branch directors	Command and general staff, emergency managers, EOC managers, and DOC or EOC staff
IS-906	✓	✓	✓	✓
IS-907	✓	✓	✓	✓
IS-100	✓	✓	✓	✓
IS-200.b		✓	✓	✓
IS-700.a	✓	✓	✓	✓
IS-800.B		✓	✓	✓
ICS-300/MGT-346			✓	✓
ICS 400				✓
IS-201/MGT-347			✓	✓
IS-860.A			✓	✓
IS-2200/G775				✓

The funding mechanism to provide this current effort has been primarily based on grant funding from the Department of Homeland Security and the DWR. As with all grant funding opportunities, funds are not guaranteed for multiple years, and there is currently no other identified funding mechanism to ensure a continued citywide exercise and training program.

In addition to response training, the training topics below are recommended for staff. Additional course detail is provided in Section 4.3 Implementation Strategies and Action Items.

- Certified Floodplain Manager Program

-
- Managing Floodplain Development through the National Flood Insurance Program
 - Introduction to Incident Command System
 - National Incident Management System (NIMS): An Introduction
 - National Response Framework, an Introduction
 - National Disaster Recovery Framework (NDRF) Overview
 - Local Damage Assessment
 - Introduction to Individual Assistance (IA)
 - Introduction to FEMA’s Public Assistance Program
 - Substantial Damage Estimator (SDE) Tool, 2.0
 - Introduction to Hazard Mitigation
 - Mitigation eGrant System for the Subgrant Applicant
 - Benefit-Cost Analysis Fundamentals
 - Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures

Training for City staff, not only Department of Utilities, is conducted by the City’s Office of Emergency Services.

B. RESPONSE

The EOC functions as the coordination center during emergencies, including flood events. Representatives from multiple City operating departments, along with allied partners, are stationed at the EOC, working within an organizational framework outlined in SEMS/NIMS and ICS to ensure close interaction and rapid emergency response. Other critical functions provided at the EOC include coordination of resources and public information releases.

The Utilities Department will activate the Department Operations Center (DOC) at 5730 24th Street, building 22 and will notify the EOC upon activation. The DOC will provide administration and coordination for all Utilities Department emergency response and recovery personnel. Coordination with the EOC will streamline response efforts and avoid any potential duplication or redundancy. For flood events, the Utilities Department monitors and assesses all weather-related data and provides technical assistance for interpreting weather-related data and its impacts in the City. Initial response follows the receipt of a flood advisory or special weather statement.

Department contacts present at the DOC include the following:

- Department Director
 - Alternate - Field Service Manager
 - Alternate - Engineering Division Manager
- Public Information Officer
- Operations Section
- Planning Section
- Logistics Section

-
- Finance Section

The DOC will open for the following flood and severe weather event criteria:

- Flood Events
 - Significant street flooding
 - Sacramento and American River at warning stage
 - Creeks, channels, and canals at warning stage
 - Levee failure
 - Dam failure
- Severe Weather
 - Intensity and duration of storm – Forecasted ½ inch of rain or more in 1-hour period, or National Oceanic and Atmospheric Agency (NOAA) quantitative precipitation forecast of 1.4" in 6 hours, or 1.9" in 12 hours equating to 1 in 5 year or greater storm event
 - Sustained winds over 35 mph with rainfall
 - Forecasted sustained freezing temperatures

Activation of the DOC outside of the above criteria, may be necessary, should the flood or severe weather event present an unexpected situation requiring increased departmental coordination, data collection, and resource management.

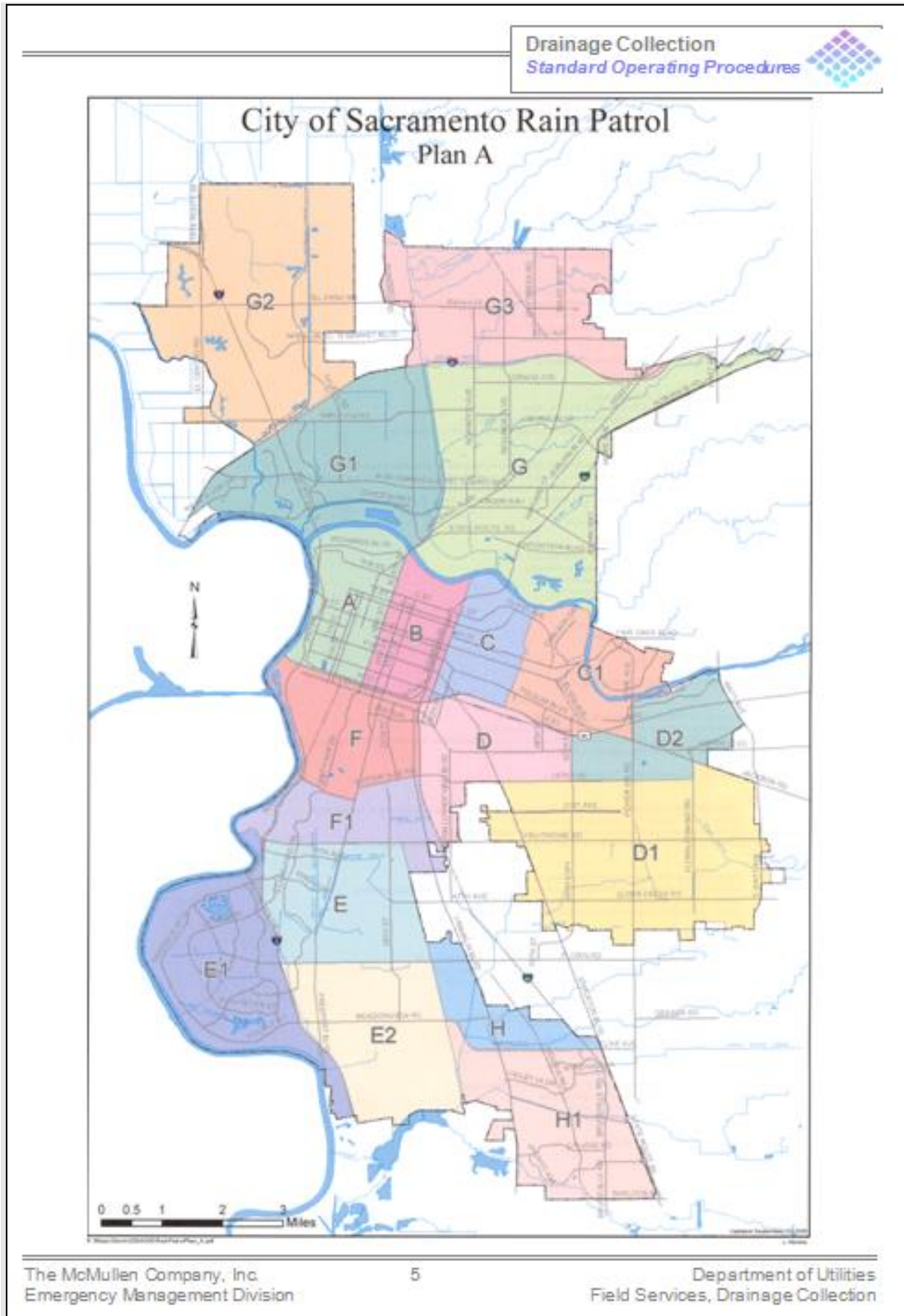
Emergency Response SOP

For flood events, the SOP for Emergency Response for the Drainage Collection Section outlines response activities as follows:

- Rain patrol
- Storm event situation report
- Levee patrol
- Controls of boils
- Major floodgate closures on primary levees
- Winter preparations

During a storm event, the Utilities Field Services Division patrol the stormwater drainage collection system, pumping plants and the combined sewer system service area, and report on major street flooding that close streets. Figure 4.2 presents the Rain Patrol Plan. Information collected during the patrols is reported back to the DOC and onto the EOC and is utilized to control access to flood impacted areas through notification to the Fire and Police departments, as well as, incorporated into a broad-scope impact assessment of the flood event. A broad-scope impact assessment (windshield survey) is conducted to verify the extent and impact of damage immediately following or during a disaster to expedite the start of the recovery process.

Figure 4.2. Rain Patrol SOP



Source: City of Sacramento

Evacuations

The City's EOP Plan identifies that the Law Enforcement Branch has the responsibility to coordinate evacuation and manage the Evacuation Movement Unit. This responsibility also includes the drafting and issuing of all evacuation orders. Evacuation routes are established for 20 areas within the City.

Safety for Field Staff

People participating in flood response activities should take precautions when working in floodwater. Floodwaters may contain raw sewage or other hazardous substances that can cause infections such as E. coli, Hepatitis A, or Tetanus.

First responders should take the following precautions during flood response activities:

- Hand Washing – To avoid exposure to waterborne illness, wash your hands with soap and clean, running water or use alcohol-based hand gels before work and meal breaks, at the end of work shifts, and after handling contaminated clothing or equipment.
- Protective Clothing – If you will be working in or near a flooded area, wear chemical-resistant outer clothing, boots, protective eye goggles, and plastic or rubber gloves. Protective clothing is especially necessary when working in flooded areas with known chemical storage or chemical release hazards.
- If possible, layer latex disposable gloves over cut-resistant gloves. Avoid touching your face with contaminated gloves and properly discard or disinfect gloves after use.
- Do not place equipment or clothing that has come into contact with contaminated floodwater in personal vehicles.
- If possible, shower and launder contaminated clothing before returning home.
- Other Hazards – If working in or around flooded homes or buildings, minimize exposure to mildew and mold by wearing N-95 masks. Wear gloves and eye protection as well.
- Discard mold-damaged materials in plastic bags and clean wet items and surfaces with detergent and water.
- Be aware of exposure to potential chemical or electrical hazards when participating in flood response activities. If working with portable generators, keep them dry and follow instructions for proper handling and safety. Never use a generator indoors or in poorly ventilated areas, due to the risk of carbon monoxide poisoning. Place portable generators outdoors and away from doors, windows, and vents.
- If working near roads or highways, remain aware of work zones and traffic control plans and the locations of signs, cones, barrels, and barriers.
- Ground may become saturated with water during heavy flooding, causing sinkholes and unstable terrain. Be aware of these hazards when working in water trenching operations or flooded areas.

When to seek medical care:

- Seek first aid or medical treatment if you experience nausea, vomiting, diarrhea, headache, muscle aches, fever, abdominal cramps, skin rashes, dizziness, or fatigue after working in a contaminated area.
- If skin is broken and has come into contact with contaminated material and it has been five years since your last Tetanus shot, you should talk to your healthcare provider about receiving another Tetanus vaccination. The Occupational Safety and Health Administration (OSHA) recommends a 5-year vaccination interval for first responders.

For more information, visit the Center for Disease Control at <http://www.cdc.gov/niosh/topics/emres/responders.html> and OSHA at <https://www.osha.gov/SLTC/emergencypreparedness/index.html>.

C. RECOVERY

The City’s EOP identifies overall tasks for short-term and long-term recovery. Short-term recovery operations begin during the response phase and include rapid debris removal and cleanup and restoration of essential services (electricity, water, and sanitary systems). Long-term recovery operations work to restore the community to pre-disaster conditions and include hazard mitigation activities, restoration or reconstruction of public facilities, and disaster response cost recovery. The focus of this section of the CFMP is to outline those recovery tasks specific to floodplain management.

Documentation of Flood Impact Areas

Documentation of flood impacts includes (a) assessing the damage of impacted structures; (b) posting building safety information; and (c) collecting high water marks. Photographs and/or video can also assist in documenting the extent of damage to the community.

Damage Assessments

In a post-disaster environment, one of the most important recovery needs is the assessment of damaged structures prior to issuing a permit for reconstruction in order to remain in compliance with the NFIP and the community’s flood damage prevention ordinance (SCC 115.104 Floodplain Management Regulations).

The process for performing damage assessments includes the following steps:

Step 1. Obtain and/or prepare mapping which combines the SFHA with community street/address or tax maps. Only structures found within the mapped SFHA will need ‘substantial damage’ estimations.

Step 2. Next, incorporate your broad-scope impact assessment from the Response Phase (derived from patrols by the Drainage Collection Section) into this mapping to identify general locations within the SFHA that are most likely to have damaged structures.

Step 3. Based upon your identified locations and the potential number of damaged structures, begin to outline a plan and logistics for conducting the damage assessments. This includes:

- Identifying staff and/or contract inspectors to form inspection teams; and
- Prioritizing areas to conduct assessments.

Step 4. Prior to beginning assessments, data preparations will need to include:

- Field maps for inspection teams with addresses and/or individual lot locations;
- Worksheets for data collection and/or digital forms/tablets;
- Data population into FEMA’s SDE Tool, including:
 - Owner and location information
 - Structure information
 - Unit costs for determining reasonable structure value, and
 - Square footage (if possible).
- Identification of any inspection areas that may require permission or special access; and
- Procedures for performing damage assessments on locked or occupied structures.

Additional field equipment needs include:

- Digital data collection tools (i.e., laptop, tablets);
- Tape measure;
- Camera;
- White board and marker, or other method for identifying street address; and
- Appropriate field attire.

Step 5. Assessments for those damaged structures located within the SFHA, should be conducted using:

- FEMA’s SDE Tool and Worksheets; and/or
- Rapid Depth Damage Field Estimate.

While documenting the damage, it is advised to leave a door tag notice to inform the owner that an initial damage assessment has been done and that they are to contact the local floodplain administrator and/or building official before proceeding with repair/ reconstruction, and provide contact information for the Utilities Department and Community Development/Codes.

It is important to be consistent in the method(s) of assessment used. Consistency will leave little room for argument about equality or appeals. All damage assessment documentation should be

maintained in the individual permit file. This will become especially important when the community is reviewed by the State NFIP Coordinator or by FEMA for NFIP compliance. Damage assessment methods include the following:

FEMA Substantial Damage Estimator (SDE)

FEMA has developed the Substantial Damage Estimator (SDE) Tool version 3.0, to assist state and community officials in estimating substantial damage to residential and non-residential structures.

The SDE tool is based on the concept of using damage estimates for individual building elements to determine whether the structure as a whole has incurred Substantial Damage. Users are able to estimate damage percentages for each described building element. Using these percentages, SDE produces an aggregate “percent damage” for the structure as a whole. Using the calculated element percentages, the user can apply a “percent damaged” or “percent improved” value to each building element, to establish a Substantial Damage/Substantial Improvement determination for each building.

The SDE tool includes assessment options for both residential structures (single-family homes, town or row houses, and manufactured homes) and common non-residential structures (e.g., office buildings, strip malls, restaurants).

Figure 4.3. FEMA Substantial Damage Estimator (SDE) User Manual and Workbook

Substantial Damage Estimator (SDE) User Manual and Field Workbook

Using the SDE Tool to Perform Substantial Damage Determinations

FEMA P-784 / Tool Version 3.0 / August 2017

FEMA

Substantial Damage Estimator

The SDE is used by field-level officials to determine whether a building meets the Substantial Damage requirements of their Building Management Ordinance in keeping with the minimum requirements of the NFIP.

FEMA Building Science Publication

August 2017

Announcing Version 3.0 of the Substantial Damage Estimator (SDE) Tool

Improvements to SDE 3.0 Tool

The SDE 3.0 Tool release focuses on enhancing three key areas: Performance, Data Accessibility, and Usability:

- Updates to the tool's embedded functionality create significant performance enhancements over previous versions. The SDE 3.0 Tool can:
 - Import over 1000% faster than the previous version for over 1,200 records
 - Export over 6,000% faster than the previous version for over 700 records
- Users can now access the underlying SDE database to run queries, perform bulk updates of data, or generate custom reports using their own databases and reporting tools.
- The updated tool has dozens of enhancements that address user feedback from previous SDE: data collection efforts.

Note that the *Substantial Damage Estimator (SDE) User Manual and Workbook* (FEMA P-784) has been updated to reflect the enhanced functions in the SDE tool and is more concise. It focuses on the tool's functionality and refers

users to the *Substantial Improvement/Substantial Damage Desk Reference* (FEMA P-758) for policy and other non-tool issues.

What is the SDE tool?

- Developed to assist State and local officials in determining Substantial Damage in accordance with a local floodplain management ordinance meeting the requirements of the National Flood Insurance Program (NFIP)
- Can be used to assess flood, wind, wildfire, seismic, and damage caused by other hazard or sources
- Helps communities to provide timely Substantial Damage determinations so that reconstruction can begin following a disaster

How is the SDE tool used?

The tool is based on the concept of using estimates of damage to individual building elements to determine whether the building as a whole has incurred Substantial Damage.

Depending on the type of structure and specific attributes, the tool calculates the value of each building element as a percentage of the total building.

Using the calculated element percentages, the user can apply a “percent damaged” or “percent improved” value to each building element to establish a Substantial Damage/Improvement determination for each building.

Questions?

- Visit FEMA's Building Science Web site at <http://www.fema.gov/building-science>
- Download FEMA Building Science publications at <http://www.fema.gov/building-science-publications>
- View FEMA's Building Science and SDE FAQs at <https://www.fema.gov/frequently-asked-questions-building-science>
- Contact FEMA's Building Science Helpline by email at FEMA-BuildingScienceHelp@fema.dhs.gov or by calling 866-927-2104

SCAN THIS CODE TO VISIT THE FEMA BUILDING SCIENCE WEB PAGE

FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

Source: FEMA

SDE is customizable, allowing users to develop estimated repair costs and market values, or to input professional estimates or valuations. The SDE tool is intended to be used in conjunction with an industry-accepted construction cost-estimating guide.

Building-specific attributes that affect the estimates that the software produces are input by the user. The required attributes include the quality of construction, foundation type, number of stories, square footage, superstructure type, exterior finish, roof covering, and presence of HVAC systems. Additional inputs are requested for non-residential buildings, including building use, presence of elevators, escalators, and fire suppression systems.

Field Inspectors should be familiar with the SDE data requirements, how to use the SDE tool or the SDE Damage Inspection Worksheets to record the data, and safety precautions for working in and around damaged structures.

Rapid Depth Damage Field Estimate

Another method for determination of substantial damage is to utilize the Rapid Depth Damage Field Estimate. Using the Depth Damage Field Estimate allows a community to quickly separate flood-damaged structures into three groups:

- 1) Clearly non-substantial damage (less than 40%);
- 2) Clearly substantial damage (greater than 50%); and
- 3) Uncertain whether substantial damage (40-50%).

For structures which are clearly NOT substantially damaged, permits can be issued to repair at the existing elevation; provided no additional improvements or additions will be made and it does not conflict with any other regulations.

The Depth Damage Field Estimate captures essential information to make substantial damage determinations for flood-related damages. The damage estimations are based upon the USACE published Generic Depth-Damage Relationships. A Depth Damage Field Estimate worksheet is completed for each structure, indicating the depth (in feet) of floodwaters. This is done by actual measurement based on visual watermarks and/or observed flood damage to the structure. Ideally a photo of each structure should also be taken to accompany the worksheet. This helps identify the structure and document the condition of the structure.

There may be occasion when obvious structural damage has occurred, possibly from fire, floating debris, or contaminated water, or the condition of the existing home may be so poor such that even lesser depths of flood waters have caused significant damage. This should be noted on the Depth Damage Field Estimate worksheet. If it is uncertain whether substantial damage has occurred, additional improvements and/or additions are proposed, or there is a dispute regarding a damage assessment, more information will be required in order to accurately determine whether they or not they are substantially damaged.

Post-Flood Building Entry

Structures which have been inundated by the flood event (both inside and outside of the SFHA) may not be safe to enter. Information should be posted advising property owners a safety inspection is required before re-occupancy is authorized and entry to any flood-damaged building requires approval by local officials. This effort may occur simultaneously with the broad-scope impact assessment during the response phase and/or damage assessments.

The ATC-45 *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods* provides guidelines and procedures to determine whether damaged or potentially damaged buildings are safe for use after windstorms or floods, or if entry should be restricted or prohibited. This publication of the Applied Technology Council (ATC) is not a manual for making substantial damage determinations. It provides guidelines and procedures for conducting both rapid evaluations and more detailed evaluations to determine the safety of damaged structures.

Green, yellow, and red placards are used to designate what types of restrictions are imposed on the building. The following are brief descriptions of the intent of the placards:

- Green – the building has been inspected and no restrictions on use or occupancy have been found.
- Yellow – the building has been inspected and found to be damaged as described on the placard. This placard can be used as a catchall to cover a wide range of hazards that may limit use of the building or portions of the building but not make it completely unsafe. Examples of such hazards include water saturated ceiling drywall, collapsed chimney on a portion of the roof or creating a falling hazard on an adjacent structure, electrical power lines that had been inundated during flooding, or a portion of the building has collapsed but other portions do not appear to have been damaged. A yellow card may allow for limited use of the building for removal of property, but restrict continuous habitation or sleeping in the building.
- Red – the building has been inspected and is damaged and unsafe. No entry is allowed, except as specifically authorized in writing by the jurisdiction. A red placard does NOT imply that the structure is condemned and must be demolished. It may be possible that repairs can be made to mitigate the hazard.

Figure 4.4. ATC-45 Placards

The figure displays three ATC-45 placards side-by-side. Each placard is a rectangular form with a specific color and header. The 'INSPECTED' placard is green and indicates 'LAWFUL OCCUPANCY PERMITTED'. The 'RESTRICTED USE' placard is yellow and indicates that entry, occupancy, and lawful use are restricted. The 'UNSAFE' placard is red and indicates 'DO NOT ENTER OR OCCUPY (THIS PLACARD IS NOT A DEMOLITION ORDER)'. Each placard contains fields for Date, Time, Facility Name and Address, and Inspector ID / Agency, along with checkboxes for inspection scope and a section for emergency conditions.

Source: ATC

Events after the inspection, exacerbating conditions such as severe weather, could require additional inspections and a change of the placard. It should be emphasized that the placement and removal of placards needs to be performed under the authority of the City of Sacramento.

The ATC-45 Field Manual describes the differences between rapid and detailed building evaluations. The rapid evaluation procedure is primarily an assessment of the exterior of the structure and identifies if the building is apparently safe, unsafe or should have restricted use. Often after a disaster it is important to allow people to return to as many of the affected buildings as possible because of a shortage of shelter and housing or to collect personal belongings. The ATC inspection protocols can be used to quickly determine if a building is habitable. If it is not apparent what the condition of the building is, then a detailed evaluation may be required. This should especially be done for any of the red placard buildings that have not been condemned.

A detailed evaluation includes visual observations of the external walls, cladding, parapets, and foundations; observation of geotechnical conditions; inspection of the internal structural framing, including vertical and lateral load carrying components; inspection for non-structural hazards such as falling ceiling tiles, or hazardous material spills; and any other potential hazards like debris blocking the exits. ATC-45 recommends that all essential facilities such as hospitals or fire stations receive a detailed inspection if any damage is suspected.

In addition, FEMA also publishes supporting guidance regarding post-flood building entry. The Post-Disaster Building Safety Evaluation Guidance (November 2019) summarizes and references best practice guideline documents, identifies recommended improvements, and needs, and provides interim recommendations for issues without best practice guidance. This report concludes that post-disaster building safety evaluations for flood incidents have a proven track record of success (largely due to ATC-45 recommendations as listed above), and provides a detailed discussion of habitability requirements as applied following an incident.

High Water Marks

Capturing and documenting the maximum flood elevations observed at different locations within the impacted area is beneficial to your community for several reasons. High water marks may be used to:

- Estimate the flood frequency;
- Assess the accuracy of the FIRM or DFIRM;
- Calibrate the hydraulic models;
- Conduct Losses Avoidance Studies;
- Prioritize mitigation projects;
- Assist in the preparation of benefit-cost analyses;
- Provide input for building performance assessments; and
- Determine the depth of flooding for structures.

In addition, posting permanent markers in these locations can:

- Raise awareness of flood risk in the community (see Figure 4.5);
- Drive action to reduce risk in the community; and
- Earn CRS points to reduce the cost of flood insurance across the community.

Figure 4.5. High Water Mark Sign at Garcia Bend Park



Source: City of Sacramento DOU

High water marks should be collected for riverine flooding events, in accordance with DWR's High Water Event Data Collection Manual, and include the following:

- Annual coordination with DWR to determine data collection efforts for the upcoming flood season, which may include DOU participation;
- Reconnaissance of areas adjacent to significant flood sources to identify mudlines or waterlines of trees or structures;
- Maps showing the extent of high water staking, frequency of staking, and information on the format of expected high water staking data;
- Appropriate markers placed on selected items; and
- Survey conducted to record elevations of high water marks.

Code/Ordinance Enforcement

Once location of the structure relative to the SFHA has been determined and damage assessments completed, the Code Compliance Division may proceed to the next step in the permit process. The Code Compliance Division is responsible for seeing that all the applicable requirements of the floodplain regulations are met.

Triage Process

Implementing a “triage” process will help the Code Compliance Division staff keep the permit process on a timely and efficient schedule, helping to aid in the recovery process for your community. Permit requests can be triaged as follows:

- For damaged structures located outside of the SFHA, permits can be issued and the homeowner can begin to repair.
- For structures which are clearly NOT substantially damaged (<40%), permits can be issued to repair at the existing elevation; provided no additional improvements or additions will be made and it does not conflict with any other regulations. This includes structures constructed both post-FIRM and pre-FIRM.
- Pre-FIRM structures that possibly have received substantial damage (40% to 60%) should undergo a detailed assessment (SDE). To more accurately determine the extent of damage, the permit official needs to have two pieces of information: the structure’s pre-damaged fair market value and the cost to restore the structure back to its pre-damaged condition. If additional improvements or additions are planned, the cost of the additional improvements or additions must also be considered. Post-FIRM regulatory standards apply to all substantially damaged structures. Provide information to property owners of the applicable flood safety standards, reconstruction, and permit requirements. Pre-FIRM standards apply to the structures that are determined not substantially damaged. Floodplain development permits are required.
- All pre-FIRM structures that have obviously received substantial damage (60% or more) can forego a more detailed assessment. Post-FIRM regulatory standards apply. Notify property owners of the applicable flood safety standards and maintain enough documentation of the damage to avoid misunderstandings. Floodplain development permits are required.

Permitting Process

Following the “triage” process, the Code Compliance Division may begin to issue permits for reconstruction. The following strategies can assist by simplifying the permit process.

General Communication

- Develop a practical reference guide for the applicant that easily describes and guides them through the permitting process, including flow charts and checklists. Consider Special Populations and Disadvantaged Communities as identified in the Local Hazard Mitigation Plan when developing reference guides, including cultural competency and providing guides in languages spoken by the community.
- Consider locations for the provision of a “one-stop shop” for permit applicants. The “one-stop shop” may also include:
 - Process for concurrent application submittal, if development projects require multiple permits; and

-
- Technical review teams with representatives from boards and commissions involved in land use permitting for permit application review.
 - Standardized forms and procedures
 - Maximize available local websites by providing access to documents and required forms from several departments or agencies, agendas, announcements, and guidance on the permitting process.
 - Consider the use of electronic permit tracking systems that may help decrease administrative costs and provide more transparency, speed, and accuracy to the permitting process.

Fair Market Value

The structure's pre-damaged value is the fair market value of the structure only, excluding the land. The City determines the value by a professional appraisal or tax assessment records. It is important to be consistent in the method(s) of determining value. Consistency will leave little room for argument about equity or appeals.

The County tax assessment record is used as a pre-screening tool. If the structure value is greater than the County tax assessment, then an appraisal must be done. The property owner may provide an appraisal of the property (at their own expense) that represents the fair market value of the structure. Only accept appraisals performed by trained, qualified, state-licensed real estate appraisers.

Cost to Restore Structure to Pre-Damaged Condition

The two main items on a cost of repairs list should include the materials used and the cost of labor. When calculating the cost of materials and labor, the fair market value must be used – even if the materials and/or labor are donated. Some exclusions from the cost of repair include debris removal, clean-up, building plans, and permit fees.

Building Protection Requirements

Buildings located in a SFHA that are determined to be substantially damaged/improved, must be brought into compliance with the minimum requirements of the community's ordinance. This includes: elevating the structure to one-foot above the BFE; using flood resistant materials to/below the BFE; adequate/compliant flood vents for enclosures below the BFE; protecting utilities; using flood damage resistant materials below the BFE; elevating utilities and mechanical/electrical equipment; and ensuring that all other local floodplain regulations are met. An "as-built" elevation certificate is needed to verify compliance.

The regulations may require a residential building to be elevated, resulting in additional costs for the homeowner. Such costs may be covered under the NFIP's Increased Cost of Compliance (ICC) coverage. Information on the ICC is available on the FEMA website, linked here: <https://www.fema.gov/floodplain-management/financial-help/increased-cost-compliance>

Documentation of Permitting

Copies of all flood-related documents should be kept in the community's permit files. Examples of the items that should be kept are:

- Elevation certificates or “as-built” certifications
- Floodproofing certificates
- Correspondence with structure owners
- Photographs of structures
- Damage assessments;
- Appraisals
- Inventory of flood-damaged structures
- Copies of FIRMs or FIRMettes
- Any other supporting documentation.

Temporary Housing

Damage assessments also reveal the magnitude of the flood impact across the community and can assist in determining the feasibility of citizens returning to affected residential areas. This may help determine the placement of families into disaster housing based on the projected time to return to their homes after infrastructure and residential repairs have been completed.

Planning for the transition for displaced families from evacuation and sheltering to secure housing alternatives is vital. However, the City currently does not have a disaster housing plan. A disaster housing plan will outline the transition from temporary shelters to short-term/interim housing to permanent housing for displaced citizens. Disaster housing planning efforts, further outlined in Section 4.3, will address the following:

- Disaster housing options;
- Communication;
- Land use planning;
- Inspections, building permitting, and temporary permit suspension;
- Construction; and
- Other housing recovery-related issues.

D. MITIGATION

Local Hazard Mitigation Planning

The Federal Disaster Mitigation Act (DMA) of 2000 requires communities to develop an approved local hazard mitigation plan to remain eligible to apply for certain federal Hazard Mitigation Assistance grants. Active development of the Local Hazard Mitigation Plan should occur during the Preparedness Phase, as it pertains to assessment of flood risk and identification of flood-related

mitigation actions that would make the community more resistant to damage from future flood events. The Sacramento County Multi-jurisdictional Local Hazard Mitigation Plan was developed in 2021 as an update to the 2016 Sacramento County LHMP. The multi-jurisdictional LHMP included planning and coordination between Sacramento County, seven incorporated communities and 24 special districts. The City of Sacramento Annex to the LHMP includes hazard mitigation planning elements that are specific to the City of Sacramento. The current Local Hazard Mitigation Plan for Sacramento was updated and approved by FEMA in 2021 with internal progress reports completed annually. The plan is available here:

- <https://waterresources.saccounty.gov/Pages/Drainage---Local-Hazard-Mitigation-Plan.aspx>

In addition to the annual progress report, the Local Hazard Mitigation Plan should be reviewed after a major flood event. The flood event may have revealed additional vulnerabilities that were previously unknown. If so, this should be added to the Risk Assessment portion of the Hazard Mitigation Plan. In addition, the Mitigation Strategy of the Hazard Mitigation Plan should be reviewed to determine if any of the identified actions should be pursued in the post-flood environment to prevent similar damages from occurring during the next flood event. Documentation of the plan review should include:

- Description of the flood event and damages caused. If known, the flood frequency should be provided.
- New information relating to flood risk. Did the flood occur in areas known to be at risk? Or, were areas flooded, and structures damaged, that are outside the mapped flood hazard areas?
- Are there mitigation initiatives included in the current Local Hazard Mitigation Plan that should be pursued in light of the recent event?
- Are there additional mitigation initiatives that should be added to the Local Hazard Mitigation Plan?

Applications submitted for funding from the FEMA Hazard Mitigation Assistance (HMA) Programs must “be consistent with” the mitigation strategy outlined in the Local Hazard Mitigation Plan. If new mitigation projects are identified for funding as a result of the recent event, a formal amendment to the Local Hazard Mitigation Plan may be necessary if the project is not consistent with the currently approved mitigation strategy.

Grant Funding

It is important to maintain an understanding of the various grant programs and how they relate specifically to flood mitigation. An understanding of the various funding streams and opportunities will enable the City to match up identified mitigation projects with the programs that are most likely to fund them. Additionally, some of the funding opportunities can be utilized together. Mitigation grant funding opportunities available following a disaster include the following:

FEMA Hazard Mitigation Assistance (HMA) Grants

The California Office of Emergency Services (Cal OES) administers the Hazard Mitigation Assistance (HMA) Grants. There are three main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Building Resilient Infrastructure and Communities, and (3) Flood Mitigation Assistance Program. The Hazard Mitigation Grant Program (HMGP) provides funding to develop hazard mitigation plans and rebuild in a way that reduces future disaster losses in their communities. Eligible mitigation projects include long-term efforts to reduce the risk and potential impact of future disasters. This grant program can fund a wide variety of mitigation projects including planning and enforcement, flood protection, retrofitting and construction projects. Building Resilient Infrastructure and Communities (BRIC) also funds hazard mitigation projects. The BRIC program prioritizes projects that focus on capability- and capacity-building, encouraging and enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency. Flood Mitigation Assistance (FMA) is a competitive grant program that provides funding for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance 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.

- More information about FEMA’s Hazard Mitigation Assistance grants can be found on the FEMA HMA Web site at <https://www.fema.gov/grants/mitigation>
- Applications for the FEMA Hazard Mitigation Assistance grants can be found on the Cal OES website at: <https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/hazard-mitigation-grant-program/>

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 (CDBG)

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.

There are three ways CDBG funds can impact hazard mitigation. First, CDBG funds can be used as local planning grants for up to \$50,000. This is another opportunity for assuring local comprehensive plans and regulations address state and regional hazard mitigation objectives. Second, annual CDBG appropriations are used for community development projects, which often include local mitigation projects. Third, CDBG Disaster Recovery funds are allocated after some federally declared disasters. 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.

Department of Water Resources Grants

The Department of Water Resources (DWR) offers several grant and loan programs that support flood management and address flood risk. Public agencies are eligible for grant funding and other applicants may be eligible depending on the program. Flood related grants and programs that may be applicable include the Delta Levees Maintenance Subventions Program; Delta Levees Special Flood Control Projects Program; Flood Emergency Response Projects grants; and Floodplain Management, Protection and Risk Awareness (FMPRA) Grant Program. The Delta Levees Maintenance Subventions Program provides funding on a cost-share basis to local levee maintaining agencies for rehabilitation and maintenance of levees in the Sacramento-San Joaquin Delta. The Delta Levees Special Flood Control Projects Program works directly with local agencies to provide critical financial assistance for flood protection in the Sacramento-San Joaquin Delta. The Program provides funding to safeguard public benefits from flood hazards. Flood Emergency Response Projects grants include three emergency response grant programs, Statewide Grants, Delta Grants, and Delta Emergency Communication Equipment Grants, which are available for California public agencies whose primary responsibility is flood emergency response and coordination. The FMPRA grant program supports local agency efforts to prepare for flooding by providing financial assistance for flood risk reduction activities. Eligible project activities include planning and monitoring projects and implementation projects for flood risk related to stormwater flooding, mudslides, and flash floods.

Small Business Administration (SBA) 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 Coverage

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. ICC coverage can help pay for four different types of mitigation activities to bring a building into compliance with the community's floodplain management regulations:

- Elevation is the process that consists of raising the building to or above the BFE.
- Floodproofing applies only to non-residential buildings. For a building to be certified as floodproofed, it must be watertight below the BFE. The walls must be substantially impermeable to water and designed to resist the stresses imposed by flood waters.
- Relocation involves moving the entire building to another location on the same lot, or to another lot, usually outside the floodplain.
- Demolition may be necessary in cases where damage is too severe to warrant elevation, floodproofing, or relocation; or where the building is in such poor condition that it is not worth the investment to undertake any combination of the above activities.

4.2.2 Departmental Coordination

The City's operating departments serve the public on a day-to-day basis, focusing on their respective disciplines. During an emergency, individual departments naturally tend to determine what best course of action to take before, during, and after the event. Minimal information flow and response coordination often result, especially before an EOC activation. While operating department employees are the subject matter experts in their field, what is frequently lacking is a global sense of the emergency event, and this insight from all departments is needed to determine overall incident significance, projections, response efficiency, resource needs, political concerns, regional impacts, etc. Departmental coordination efforts include the following, at a minimum:

- Local Agencies/Staff
 - Elected officials – There will be pressures to rebuild quickly and perhaps less on current building requirements. It is essential to brief local officials on the NFIP ordinance requirements and the permitting process, including the damage assessments. Rebuilding after provides the opportunity to build back stronger, by choosing to rebuild beyond minimum requirements and instead opt for more resilient solutions with considerations for climate change.
 - Public Information Officer (PIO) – Can disseminate information to the general public on the recovery process. Coordinate with the PIO regarding applicable topics and information, as provided in Section 4.2.3.
 - Community Development/Building – Community Development will be the primary agency for issuing building permits during recovery. Coordination with this agency is essential in sharing information on substantially damaged structures and enforcement of the NFIP flood ordinance. The permit official is responsible for seeing that all the applicable requirements of the community's floodplain regulations are met or exceeded.
 - Community Development/Planning – Coordinate regularly with planning officials and participate in planning initiatives in the City. The best form of mitigation is prevention of

the risk. As the City is developing other plans such as Comprehensive Plans, Master Plans, Capital Improvement Plans, and Future Growth Plans, provide flood risk information to ensure planned development areas will not increase the City's vulnerability to flooding. Integrate considerations for Special Populations and Disadvantaged Communities as identified in the LHMP, to ensure planned development will not increase flood risk to vulnerable populations.

- Utilities Department – Will coordinate cleanup activities within streams and flood control facilities/assets, as well as support the following functions: public information, evacuations, construction and engineering, situation status, and documentation/GIS.
- Public Works – Should provide information on public infrastructure that has been damaged as well as provide insight on how damages could be avoided in the future.
- Information Technology – Coordinate digital mapping data including flood risk layers, broad-scope impact assessments, parcel data, damage assessments, etc. With these GIS services, the City can compare flood risk layers such as the DFRIM with other planning products such as future land use maps. This up-front coordination in the early planning stages can help communities avoid future development in areas at risk to flooding.
- Geographic Information System Department and the Assessor's Office, City & County – Will provide parcel information and assessed values.
- Transportation – Provide personnel and resources for road closures and traffic diversion, if required. Provide damage assess for roads and bridges. Open and close specific floodgates.
- Local utilities and electric cooperatives – Should be instructed not to turn service on to damaged homes without an "approved to connect" sign. Public utility providers can also provide information on damages incurred as well as ideas on prevention of similar future damages. This includes the Sacramento Municipal Utility District (SMUD) and Pacific Gas & Electric (PG&E).
- Reclamation District No. 1000 (RD1000) – This special district, formed by the California State Legislature, is one of the joint power's authorities forming SAFCA. RD1000 maintains 42 miles of levees surrounding Natomas, over 30 miles of large drainage canals and seven pump stations that collect and pump the stormwater and agricultural runoff back into the adjacent river system. During a flood event, RD1000 provides field response staff. The District has a stockpile of sandbags and rock to initiate a flood fight. Should the need be greater than the available resources, the District will call upon local contractors who are ready to respond 24 hours a day, seven days a week to an emergency with major equipment, flood fight materials and labor, as necessary.
- American River Flood Control District – This special district maintains 40 miles of levees along the American River and portions of Steelhead, Arcade, Dry, and Magpie creeks. During a flood event, the District provides field response staff. Flood fight materials are stockpiled for quick deployment to an emergency site. Early detection of a problem and a quick response are essential to saving a levee during a flood emergency.
- Maintenance Area 9 – This special district, run by the California Department of Water Resources, maintains approximately 20 miles of levees along the east side of the Sacramento River from Sacramento to Courtland.

4.2.3 Public Education and Outreach

Chapter 7 outlines a Program for Public Information (PPI) that addresses outreach efforts across the community outside of response during emergency scenarios. Public education, outreach topics, and template messages in case of emergency specific to a flood response and recovery are defined herein. Given Sacramento's unique vulnerability to flooding the City cannot realistically eliminate the need to respond to a major flood event. The City also recognizes the advantage of providing public education for its citizens ahead of such an event. Coping with a disaster is much more difficult and dangerous if the community is unprepared. Indeed, as residents become better prepared for emergencies, fear, confusion, and losses before, during and after a disaster can be greatly minimized. This also results in allowing authorities to concentrate on protecting life and ending the emergency because citizens are better equipped to maintain increased levels of self-sufficiency.

If a major flood event threatens Sacramento, local government and disaster organizations will likely be strained beyond their capacities. Emergency preparedness on the part of the community can make a tremendous difference in dealing successfully with the disaster. With adequate planning, families can be educated on how to evacuate their homes, take care of basic medical needs, and make temporary living in public shelters more comfortable. Residents can even be taught how to provide basic lifesaving skills, thus enhancing community-based response efforts.

The City's strategy for public emergency alerts and notifications involves multiple methods of communication. Included in the City's Alert and Notification toolbox are:

- Use of local media outlets
- Emergency Alert System
- Everbridge
- Emergency sirens
- Use of staff or community volunteers
- Use of the SacramentoReady.org website

However, even with access to several different methods, providing adequate and timely notification to the public involves tremendous challenges – especially with sudden or no-notice events, which present even greater problems. A wide variety of factors can limit government's ability to provide complete alert and notification services:

- Power outages may limit phone contact and access to media sources.
- Emergency sirens may not be well-maintained and may not be fully deployed throughout the City.
- Not all methods of communication will reach some special needs populations.
- Many residents who had land-line phones now only use cellular phones.

Education and Outreach Topics

Appendix E includes the draft flood response projects and the distribution procedures.

Flood victims will want to return to their homes to begin the process of clean-up and rebuilding as soon as possible. The following information should be provided to the general public:

- Outline the damage assessment process and substantial damage requirements.
- Describe the ATC-45 green, yellow, and red placards.
- It should be clear that property owners obtain appropriate permits from the Community Development Department before beginning repairs or reconstruction.
- Clearly outline which activities do and do not require permits.
- Special attention should be given to any local, state, or federal regulations that may conflict or overlap, as whichever imposes the more stringent restrictions shall prevail.
- Recommendations on contacting insurance agents to discuss claims.
- Advisory information on contractors. If homeowners hire cleanup or repair contractors, they should check references and be sure they are qualified to do the job. Be wary of people who drive through neighborhoods offering help in cleaning up or repairing your home.
- Where and how to access disaster program assistance and other resources.
- Advisory information on floodwaters. Water may be contaminated by oil, gasoline or raw sewage.
- Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible. Damaged sewer systems are serious health hazards.
- Listen for news reports to learn whether the community's water supply is safe to drink.
- Clean and disinfect everything that got wet from floodwaters or rain. Mud left from floodwaters can contain sewage and chemicals.
- Rest often and eat well.
- Keep a manageable schedule. Make a list and do jobs one at a time.
- Discuss your concerns with others and seek help. Contact the Red Cross for information on emotional support available in your area.

Figure 4.6. Sample Emergency Broadcast Messages

FOR IMMEDIATE RELEASE:	
City of Sacramento Street Address City, CA Zip	Contact: _____
DATE & TIME: _____	
WHAT: _____ has occurred at _____.	
WHERE: _____ (specific location) at _____.	
WHEN: _____ am / pm today.	
EVACUATIONS in the _____ (be specific) area are underway.	
RED CROSS SHELTERS are located at _____.	
<u>WHAT SHOULD PEOPLE DO?</u>	
Residents are asked to: _____	

<u>MESSAGES:</u>	
Avoid the areas/intersections of _____.	
Remain vigilant, prepared to leave _____.	
Be prepared to move animals to: _____.	
Animal shelters are located at: _____.	
<u>FOR MORE INFORMATION:</u>	
o Listen to Emergency Radio	
o Monitor Local TV stations	
o Call the Emergency Public Information Number 916.264.5011	
o Go online to City of Sacramento Website, www.cityofsacramento.gov	
<u>OTHER IMPORTANT INFORMATION:</u>	

ASSISTING FIRE AGENCIES include:	ASSISTING OTHER AGENCIES include:
<ul style="list-style-type: none"> • City of Sacramento Fire • California Dept. of Forestry • Sacramento County Fire 	<ul style="list-style-type: none"> • City Police • Sacramento County Sheriff • CA Highway Patrol • Other

**HAZARD SPECIFIC EMERGENCY BROADCAST FORMAT
WINTER STORM – NWS STREAM ADVISORY**

The U.S. Weather Service has issued a small stream advisory for western Sacramento County during the hours of _____ to _____. City of Sacramento Emergency Operations Center urges you to be aware that the grounds are heavily saturated, which means a heavy rainstorm could cause localized flooding. You are advised to watch the water level of creeks and other drainages in your neighborhood carefully, particularly if you live in an area, which has a history of winter flooding.

Low-lying sections of road and bridges may become impassable and pose a danger due to high water. Avoid areas that are flooded. Do not drive across a flooded road. If your car stalls abandon it immediately and seek higher ground. Never try to walk across a flowing stream where the water is above your knees.

If your home is in a flood-prone area, and flooding seems likely, be prepared to leave while you can get out safely.

Please stay tuned to this station or other local stations for emergency information updates. Do not call 9-1-1 except to report an emergency situation.

You can receive more information by monitoring this local radio or television station, or by visiting the City of Sacramento website at www.cityofsacramento.gov.

Figure 4.7. Sample Press Release

FOR IMMEDIATE RELEASE:

City of Sacramento

Street Address

City, CA Zip

Date & Time _____

Contact: 916.264.5011

SACRAMENTO -- Mayor *NAME* has issued an Executive Order to declare a City emergency in response to rising flood waters. The declaration activates the City's Emergency Operations Center to coordinate response among City departments and services, along with outside partner agencies, such as the Sacramento Area Flood Control Agency, Reclamation District

1000, the Red Cross, Salvation Army, and the United Way. It also allows the City to request state resources and reimbursement, as necessary.

The *NAME* River levels are expected to quickly crest by *DATE* to ## feet. City crews have closed ## flood gates along the *NAME* River and have begun a 24-hour watch along both the *NAME* River and the *NAME* to monitor and quickly act upon signs of distress, such as boils.

The City's Department of Utilities will begin a sandbagging operation to fortify parts of the *NAME* River levees between *STREET LOCATION*.

City drivers also should be aware that while flooding can occur on any street, *STREET NAME* will remain closed until flood waters recede.

The Sacramento City Fire Department's Swift Water Rescue Team, which operates ## boats, has been deployed for rescue missions. Emergency responders remind drivers to both slow down and "turn around, don't drown."

Residents should always call 911 for emergencies, but are encouraged to use 311 for non-emergencies. Report City service needs, such as street light and signal outages, downed trees, or flooded roads, to the 311 Call Center at [311](#).

Psychological Impact of Flood Disasters

The City of Sacramento's public outreach efforts should include information on the psychological impacts a flood disaster can have on the affected community as well as the first responders that are involved in the disaster.

Flood Victims

Floods are the most common type of natural disaster in the U.S. and U.S. territories. Depending on the severity of impact, survivors may experience psychological impacts and distress, particularly if lives and livelihoods are devastated. Special care should be given to survivors, including:

- Children and teens
- Those who have suffered damage to their homes, or have been displaced from their homes or businesses
- Evacuees
- Loved ones of victims
- First responders, rescue, and recovery workers
- Special Populations and Disadvantaged Communities that have been found to be more vulnerable to climate impacts and natural hazards
- Survivors in impacted areas (including children and teens)

Feelings such as overwhelming anxiety, constant worrying, trouble sleeping and other depression-like symptoms are common responses to disasters and traumatic events (before, during and after the event), although reactions can vary from person-to-person. Public outreach efforts should include information that most people impacted by floods are able to 'bounce back' in a short period of time, but others may need additional support in order to cope and move forward on the path of recovery.

Once flood warnings and/or evacuation orders are issued, the risk for distress becomes greater:

- Feeling unprepared, isolated, overwhelmed or confused.
- Evacuees may be conflicted about evacuating due to concerns or lack of clarity about where to go. Fear about leaving their home and what may happen if they leave, fear that a shelter may not accept pers, and concern they don't have enough medication to sustain them.
- Not being able to reach a loved one living in an impacted area during the event because cell and land lines are tied up, their power is out and so no access to internet, etc.
- Triggers of difficult memories and emotions associated with similar traumatic experiences in the past for those in/around or anywhere outside of the impacted areas, particularly for those who may have had a difficult recovery from the experience.
- Stress associated with temporary relocation: unfamiliar environment (particularly difficult for teens and children to adjust); accessibility for people with disabilities; separation from pets; difficulty sleeping, etc.
- Those with limited physical mobility, economic means (no car or access to mass transit), limited English-speaking, or those who may have pre-existing mental health concerns are all also particularly vulnerable to isolation.

After evacuation orders are lifted, additional distress may occur upon return to the impacted area if a home, business, school, place of worship or a beloved community landmark such as a neighborhood park or wildlife refuge is damaged or destroyed.

Flood First Responders

Risk factors for emotional distress among first responders and rescue and recovery workers include:

- Prolonged separation from loved ones.
- Mental fatigue brought on from working long hours.
- Working under difficult or challenging conditions that may also be unstable during or immediately after disasters; risk to physical safety and other threats to life during rescue and recovery operations.
- Disruption in home or work life brought on by deployment.
- Vicarious trauma brought on by witnessing or being exposed in some way to difficult stories of survival or loss.
- Difficulty readjusting to home or work life post-deployment.

Signs of emotional distress or psychological issues among first responders related to floods may include:

- Eating or sleeping too much or too little.
- Pulling away from people and things.
- Having low or no energy.
- Feeling numb or like nothing matters.
- Having unexplained aches and pains like constant stomachaches or headaches.
- Feeling helpless or hopeless.
- Excessive smoking, drinking or using drugs (including prescription medication).
- Feeling unusually confused or forgetful.
- Worrying a lot of the time; feeling guilty but not sure why.
- Feeling like you have to keep busy.
- Hyper-vigilant – constantly thinking that something is going to happen, including when forecasts for any storm are issued whether or not they have the chance to produce flooding.
- Constant yelling or fighting with family and friends; irritable.

For more information, visit the U.S. Department of Health and Human Services at <http://www.samhsa.gov/disaster/>.

4.3 Implementation Strategies and Action Items

Table 4.30 summarizes implementation strategies and action items and provides information on the schedule and current status. The individual action items, as recommended and prioritized by the Utilities Department, are presented in order of priority. Each action item in Table 4.3, below includes the background information and ideas for implementation, responsible office, potential funding, and timeline for each identified action.

Table 4.3. Emergency Management Action Items

Action	Responsible Department	Schedule
1. Continue National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS) Exercises and training within DOU	DOUOEM	Short Term
2. Continue Exercise and Training Program within DOU	DOU	Annually
3. Conduct Ongoing Emergency and Recovery Planning and Development	OEM, DOU	Short Term
4. Develop a Disaster Housing Plan	OEM	Short Term
5. Develop Intergovernmental Flood Management and Control	City of Sacramento, DOU, ARFCD, RD1000, SAFCA, USACE, DWR	Long Term
6. Increase Public Education Efforts	OEM, PIO, DOU	Short Term

Action	Responsible Department	Schedule
7. Coordinate Outreach Efforts	OEM, PIO, DOU	Short Term
8. Enhance Public Alert and Notification	OEM, SPD	Long Term
9. Increase Personal Preparedness of City Staff	OEM	Short Term
10. Develop a Coordination and Information Reporting System	OEM	Short Term
11. Substantial Damage Assessment Training	DOU, CDD	Short Term
12. Develop Post-Disaster Briefing Memo for Elected Officials	DOU,, OEM CDD	Short Term
13. Participate in Risk MAP Process	DOU, OEM	Long Term
14. Review City's Flood Warning System	DOU (for City sensors), OEM,	Short Term
15. Develop a Post-Earthquake Remediation Plan, if required by ULDC	DOU, OEM, SAFCA, RD1000, ARFCD, MA 9	Long Term
16. Flood Relief Plan, if required by the ULDC	DOU, OEM, SAFCA	Long Term

1. Continue National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS) Exercises and training within DOU.

Issue/Background Statement: One of the systemic improvements for the emergency management system both statewide and in the City is the implementation of the Standardized Emergency Management System (SEMS), a system for management of multiagency and multijurisdictional emergencies in California. SEMS consists of five organizational levels that are activated as necessary:

- Field response
- Local government (City or special district)
- Operational area (County geographic boundaries)
- Regional agencies
- State agencies

NIMS/SEMS incorporate the use of the ICS, the Master Mutual Aid Agreement, existing mutual aid systems, the operational area concept, and multiagency or interagency coordination. By standardizing key elements of the emergency management systems, NIMS/SEMS facilitate the flow of information within and between levels of the system and enhance coordination among all responding agencies. Use of NIMS/SEMS will improve mobilization, deployment, utilization, tracking, and demobilization of needed resources. NIMS/SEMS is designed to be flexible and adaptive to various disasters and the needs of all emergency responders.

Local governments need to be compliant with NIMS/SEMS to be eligible for funding of their personnel-related costs under state disaster assistance programs and/or federal grant funding.

NIMS/SEMS, which is applicable to all facets of emergency management, must be incorporated into the planning process, training and exercise programs, response, and after-action reporting.

Implementation Strategy: FEMA offers independent study courses, as identified in Section 4.2.1 Preparedness, for the Incident Command System, NIMS, and the National Response Framework. Recommend DOU staff take the online courses and once completed, all departmental training should be tracked and updated every three years. Details for training are presented in Action Item #2.

Responsible Office: DOU for internal staff; OEM for citywide compliance and coordination

Potential Funding: Training courses are free; staff time to complete

Schedule: Short Term

2. Continue Exercise and Training Program within DOU

Issue/Background Statement: It is important to maintain exercise and training programs in which the City can successfully train staff to perform to expectations during emergencies by exercising needed skills in simulated scenarios. This program must become a standard method of conducting business so that employees can truly be part of an exercise and training culture.

Implementation Strategy: Exercise and training is funded through grant opportunities and the DOU's operating budget. DOU will continue to look for ways to obtain grant funding to provide exercises and training for DOU staff. Online training is also available through FEMA's Emergency Management Institute (EMI). A variety of training courses are applicable to flood preparedness, response, recovery, and mitigation activities. Information on EMI courses and schedules is available here: <http://training.fema.gov/emicourses/>

Recommended courses include:

- Introduction to Incident Command System for Public Works Personnel (FEMA Independent Study IS-100.PWb)
- National Incident Management System (NIMS): An Introduction (FEMA Independent Study IS-700.a)
- National Response Framework, an Introduction (FEMA Independent Study IS-800.b)
- National Disaster Recovery Framework Overview (FEMA Independent Study IS-2900)
- Certified Floodplain Manager Program (ASFPM-accredited certification program; FEMA 480 Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials)
- Managing Floodplain Development through the National Flood Insurance Program (EMI Course 273)
- Local Damage Assessment (FEMA Independent Study IS-559)
- Introduction to Individual Assistance (FEMA Independent Study IS-403)

- Introduction to FEMA’s Public Assistance Program (FEMA Independent Study IS-634)
- Substantial Damage Estimator Tool, 2.0 (FEMA Independent Study IS-284)
- Introduction to Hazard Mitigation (FEMA Independent Study IS-393.a)
- Mitigation eGrant System for the Subgrant Applicant (FEMA Independent Study IS-30.B)
- Benefit-Cost Analysis Fundamentals (FEMA Independent Study IS-276)
- Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures (FEMA Independent Study IS-279)

Responsible Office: DOU

Potential Funding: Possible grant funding and operating budget; staff time

Schedule: Figure 4.8, Table 4.4, and Table 4.5, outline the exercise and training schedules for DOU staff:

Figure 4.8. Training Level Complexity by Course

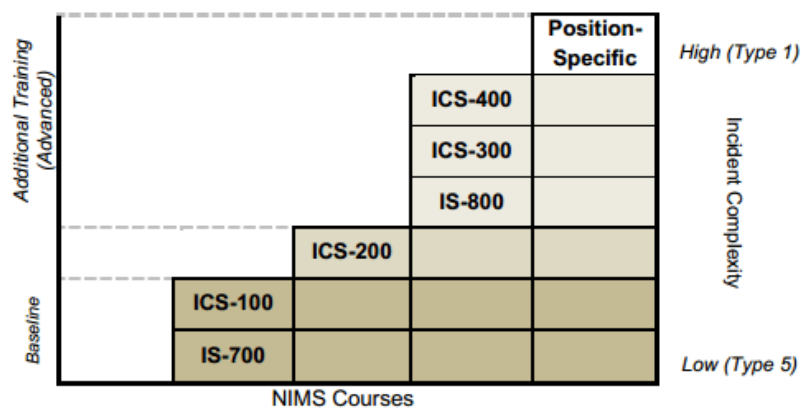


Table 4.4. DOU Exercise Schedule

Exercise Type	Recommended Frequency for DOU	Number for Immediate Implementation (0-6 Months)	Number for Near-Term Implementation (6-18 Months)	Number for Long-Term Implementation (18-36 Months)
Tabletop Exercises	Annually	0	1	2
Drills	Twice Annually	0	2	3
Functional Exercises	As Needed	0	0	1
Other Discussion-Based Exercises per HSEEP (Seminars, Workshops, Games)		As Needed		

Table 4.5. DOU Training Schedule

Course	DOU Employee Categories				Course Type	Course Title
	Awareness Level	Responder Level	Supervisor Level	Command/EOC Level		
	All employees	Entry-level responders	Field command staff, section chiefs, unit leaders, division/group supervisors, and branch directors	Command and general staff, emergency managers, EOC managers, and DOC or EOC staff		
NIMS BASELINE COURSES						
IS-700.a	✓	✓	✓	✓	Independent Study	National Incident Management System (NIMS), and Introduction
ICS-100 IS-100.b	✓	✓	✓	✓	Independent Study	Introduction to Incident Command System, I-100 for Public Works Personnel
IS-800.b		✓	✓	✓	Independent Study	National Response Framework, an Introduction
NIMS ADDITIONAL TRAINING - EOC						

Course	DOU Employee Categories				Course Type	Course Title
	Awareness Level	Responder Level	Supervisor Level	Command/EOC Level		
	All employees	Entry-level responders	Field command staff, section chiefs, unit leaders, division/group supervisors, and branch directors	Command and general staff, emergency managers, EOC managers, and DOC or EOC staff		
IS-706				✓	Independent Study	NIMS Intrastate Mutual Aid, an Introduction
IS-775/G775			✓	✓	Independent Study/State Course	EOC Management and Operations
NIMS ADDITIONAL TRAINING – FIELD OPERATIONS						
ICS-200		✓	✓	✓		ICS for Single Resource and Initial Action Incidents
ICS-300			✓	✓		Intermediate ICS for Expanding Incidents
ICS-400				✓		Advanced ICS
OTHER						
IS-906	✓	✓	✓	✓	Independent Study	Basic Workplace Security Awareness
IS-907	✓	✓	✓	✓	Independent Study	Active Shooter: What You Can Do
IS-106.12	✓	✓	✓	✓	Independent Study	Workplace Violence Awareness Training
IS-860.A			✓	✓	Independent Study	National Infrastructure Protection Plan (NIPP)
FLOODPLAIN MANAGEMENT						
FEMA 480			✓	✓	Independent Study	Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials
FEMA-273			✓	✓	EMI Campus Course	Managing Floodplain Development through the National Flood Insurance Program
FLOODPLAIN MANAGEMENT – DISASTER RECOVERY						

Course	DOU Employee Categories				Course Type	Course Title
	Awareness Level	Responder Level	Supervisor Level	Command/EOC Level		
	All employees	Entry-level responders	Field command staff, section chiefs, unit leaders, division/group supervisors, and branch directors	Command and general staff, emergency managers, EOC managers, and DOC or EOC staff		
IS-559	✓	✓	✓	✓	Independent Study	Local Damage Assessment
IS-284	✓	✓	✓	✓	Independent Study	Using the Substantial Damage Estimator 2.0 Tool
IS-2900	✓	✓	✓	✓	Independent Study	National Disaster Recovery Framework (NDRF) Overview
IS-403			✓	✓	Independent Study	Introduction to Individual Assistance (IA)
IS-634			✓	✓	Independent Study	Introduction to FEMA's Public Assistance Program
IS-279			✓	✓	Independent Study	Retrofitting Flood-Prone Residential Structures
FLOODPLAIN MANAGEMENT – MITIGATION						
IS-393.a			✓	✓	Independent Study	Introduction to Hazard Mitigation
IS-30			✓	✓	Independent Study	Mitigation eGrants for the Subgrant Applicants
IS-276			✓	✓	Independent Study	Benefit-Cost Analysis (BCA) Fundamentals

3. Conduct Ongoing Emergency and Recovery Planning and Development.

Issue/Background Statement: The City must continue its aggressive approach to creating and periodically updating internal emergency plans and exercising those plans regularly. Analysis and modification of existing plans need to be prioritized and adequately resourced. A dedicated planning effort needs to be provided to examine the recovery process and City actions during the recovery phase of the emergency.

The City’s emergency management system must provide adequate response activities and supplement and restart community systems. These systems include both the most obvious infrastructure – electric power, communications, and water and sewer systems – and the community’s human service support system, including health and medical systems, schools, police and fire departments, and businesses. Extended disruption of community systems can cause additional losses and suffering beyond the direct impact of the flood event, often called the “disaster after the disaster.”

Implementation Strategy: The Emergency Operations Plan should be reviewed and updated to reflect changes impacting its effectiveness. The last revision was completed in 2016, and is generally reviewed every three years. Numerous communitywide, economic, geographic, and regulatory changes have occurred within this timeframe that necessitate this update. In addition, the 2018, Utilities Emergency Operation Plan outlines the emergency management policies identified for the Department of Utilities and provides a response framework consistent with NIMS and SEMS. This plan was updated in 2021 and will be reviewed every three years to reflect changes that may impact its effectiveness. The DOC Plan/Field Response will be updated starting in the fall of 2014 through a grant from DWR.

Responsible Office: City OEM with DOU participation

Potential Funding: Dependent upon federal and state resources.

Schedule: Short Term

4. Develop a Disaster Housing Plan.

Issue/Background Statement: Following a major flood event, citizens of the City of Sacramento may be displaced due to damage or loss of residential structures, environmental contamination, or other environmental factors. A Disaster Housing Plan will detail a framework for providing temporary housing options for displaced residents and the transition to permanent housing in order to expedite long-term community recovery. This plan would elaborate on the temporary housing outline provided in this Chapter. This action was incorporated into the City LHMP as Action #13.

Implementation Strategy: Preparation of the Disaster Housing Plan, in conjunction with the ESF#6 elements of the EOP, will be facilitated by City’s OEM and will address the following elements:

-
- Temporary housing siting criteria, provision, and removal;
 - Repairs and the ability to reconstruct homes rapidly;
 - Reconstruction and the incorporation of mitigation measures during rebuilding;
 - Transitioning residents back to permanent housing; and
 - Rebuilding affordable housing.

Responsible Office: OEM

Potential Funding: Cost estimated at \$25,000 to \$50,000; possible grant funding

Schedule: Short Term

5. Develop Intergovernmental Flood Management and Control.

Issue/Background Statement: There are many separate federal, state, special district, County, and City agencies involved in flood control along the Sacramento and American rivers. This has focused flood protection on the funding and construction of flood projects. Although better collaboration in the planning and implementation of such structural enhancements is important, coordination of flood watch and warning as well as the actual response to a flood event are also in need of improvement.

Implementation Strategy: The City should work closely with emergency planners and response personnel from as many organizations as possible such as the DOU, RD 1000, ARFCD, SAFCA, USACE, and DWR to establish a coordinated plan for flood emergency response. This effort should focus on better definition of responsibilities, improved communication, utilization of the ICS and SEMS for flood control management, and development of an interagency tabletop exercise.

Responsible Office: City of Sacramento, DOU, ARFCD, RD1000, SAFCA, USACE, DWR

Potential Funding: Staff time; cost estimated at \$100,000; possible grant funding

Schedule: Long Term

6. Increase Public Education Efforts

Issue/Background Statement: Public education for emergency preparedness and flood awareness must be increased. Given current staffing constraints, Emergency Planning's current Public Education Program is provided only on an "as requested" basis. No ongoing funding exists to support a citywide public education program. Declining budgets have continued to lower the priority of these programs. The issues of prioritization and resulting funding/staff support should be considered throughout the term of this strategic plan.

Implementation Strategy: Coordinate public education and outreach methods with the Program for Public Information.

Responsible Office: See Chapter 7, Table 7.8 PPI Projects and Initiatives

Potential Funding: See Chapter 7, Table 7.8 PPI Projects and Initiatives

Schedule: See Chapter 7, Table 7.8 PPI Projects and Initiatives

7. *Coordinate Outreach Efforts*

Issue/Background Statement: In order to ensure that the public receives consistent, accurate and timely information, outreach efforts must be effectively coordinated. In addition, to ensure that limited resources are utilized most efficiently in public education and outreach efforts, coordination activities must occur within one central location.

Implementation Strategy: DOU has begun this effort with the development of the Program for Public Information (PPI) as presented within Chapter 7 of this document. DOU will continue to develop a coordinated outreach program working with OEM, the City’s Public Information Officer (PIO), and other department PIOs within the first two years of this strategic plan.

Responsible Office: See Chapter 7, Table 7.8 PPI Projects and Initiatives

Potential Funding: See Chapter 7, Table 7.8 PPI Projects and Initiatives

Schedule: See Chapter 7, Table 7.8 PPI Projects and Initiatives

8. *Enhance Public Alert and Notification*

Issue/Background Statement: It is imperative to have as many ways as possible to reach the public quickly and efficiently in times of need. While the City employs a variety of methodologies to contact its residents, further analysis and development are needed. Systems currently exist that allow for the public to register contact information and receive messages through text or voice format in addition to Reverse 911-like processes. These systems have the capacity to reach a variety of technologies currently in use and gaining greater use frequency such as cellular phones, e-mail, text, etc.

Implementation Strategy: The County OEM has replaced the Reverse 911 system with “Everbridge”, a faster system than Reverse 911. Residents who had registered for Reverse 911 were transferred to the new system. Ongoing funding and maintenance of the Everbridge system is essential. Grant funding has covered the initial implementation years, but moving forward regionally, ongoing funding to maintain the system will be need.

Responsible Office: OEM and SPD will be the primary responsible office. DOU may assist with grant funding requests and applications by providing flood impact and/or evacuation information.

Potential Funding: Possible grant funding

Schedule: Medium to Long Term

9. Increase Personal Preparedness of City Staff

Issue/Background Statement: The recent Continuation of Operations/Continuation of Government (COOP/COG) planning included an effort to develop personal disaster education for the use of City staff at home. This initiative was designed to enhance the City staff's ability to survive the emergency at home, enhancing survivability, and provide for an environment that enables staff to have confidence in family safety. If these factors are met, employees are more likely to continue service to the public during a disaster.

Implementation Strategy: The City should provide training and means to raise the level of personal preparedness and safety of its staff during disaster. The City has an obligation to the community to provide for public safety and maintain essential services. Without the availability of City staff, these services are greatly compromised, as is the City's ability to maintain government operations.

OEM will provide preparedness information and materials to City staff on the OEM intranet site.

Responsible Office: OEM

Potential Funding: Possible grant funding; staff time

Schedule: Short Term

10. Develop a Coordination and Information Reporting System

Issue/Background Statement: When incidents impact multiple departments or extend beyond day-to-day, routine operations, OEM needs a coordination and information reporting system. In order to adequately centralize the global incident picture development, OEM must be provided departmental incident reporting. Many incidents may not appear to be significant from a departmental perspective, but may well be important when all information pieces are put together.

Implementation Strategy: The City should determine the appropriate mechanism to ensure departmental participation in a well-coordinated response and/or recovery. This may be through the use of the EOP, City policy or other method. The development of the mechanism may be completed within the first two years of this strategic plan term, but the culture shift may require greater time.

Responsible Office: OEM

Potential Funding: Possible grant funding; staff time

Schedule: Short Term

11. Substantial Damage Assessment Training

Issue/Background Statement: This update to the CFMP includes the addition of two damage assessment methods for implementation following a flood event. Local staff that is responsible for assessing, collecting, and reporting damages during and after any event should be trained in both data collection/assessment methods. Well-planned data collection will increase the efficiency of the inspectors while ensuring the accuracy and consistency of the data.

Implementation Strategy: FEMA SDE training is offered at the Emergency Management Institute and often by the local chapters of ASFPM. Training for the Rapid Damage Assessment Method using USACE tools may be led by in-house staff or outside contractor. Training for both methods should include:

- Aspects of data collection such as the structure address, photographs, curbside information, exterior and interior inspections, and interaction with the structure owner.
- Group pilot inspections for residential buildings and non-residential buildings to familiarize the inspectors with the required data collection and worksheets.
- Software and field materials
- Guidance for resident and occupant interaction

Responsible Office: CDD, with the assistance of DOU and PW (public works)

Potential Funding: Online courses, staff time

Schedule: Short Term

12. Develop Post-Disaster Briefing Memo for Elected Officials

Issue/Background Statement: The success of disaster recovery operations is often tied to the speed of recovery. The ability to return to a sense of normalcy after an event is a common goal among those impacted by the event, including elected officials who often face intense pressure to quickly distribute post-disaster assistance, pick up debris and clear roads, restore utilities, re-open schools, rebuild communities, and provide public services.

With the intense pressure to show progress with recovery, elected officials may want to either lessen current building requirements or forego the post-disaster planning process altogether. It is essential to brief local officials on the NFIP ordinance requirements and the permitting process, including the damage assessments.

Implementation Strategy: Prepare a memo for elected officials which summarizes the recovery process. This will help elected officials manage public expectations and understand short-term

restoration and long-term redevelopment. The briefing memo will be distributed to elected officials at the start of the recovery process following a flood event.

Responsible Office: CDD with assistance from DOU and PW

Potential Funding: Staff time

Schedule: Short Term

13. Participate in the Risk MAP Process

Issue/Background Statement: There are improved opportunities to assess flood risks and identify actions to reduce vulnerability to those risks. As mapping activities move into Risk MAP, resilience meetings will be held to review FEMA non-regulatory products and identify flood mitigation actions. The resilience meetings will bring new stakeholders to the Risk MAP table, collaborate efforts across all agencies, and utilize GIS to visualize and communicate risk. The Resilience process will include coordination with the existing mitigation plans, as well as, identification of new action items.

Implementation Strategy: DOU will participate in all aspects of the Risk MAP process and provide data support, as necessary.

Responsible Office: DOU

Potential Funding: Staff time; coordination with FEMA

Schedule: Medium to Long Term

14. Review City's Flood Warning System

Issue/Background Statement: Sacramento County's ALERT system consists of 2 base stations and 49 gauging stations. The system provides access to stage and rainfall information during storm events.

Implementation Strategy: Update sensors

Responsible Office: DOU (for City sensors), OEM

Potential Funding: DWR Grant

Schedule: Medium to Long Term

15. Develop a Post-Earthquake Remediation Plan, if required by ULDC

Issue/Background Statement: A Post-Earthquake Remediation Plan is required by the 2012 *Urban Levee Design Criteria* (ULDC) if seismic damage from 200-year-return-period ground

motions is expected after an urban level of flood protection is achieved. A seismic vulnerability analysis is to be developed to determine a rough estimate of seismic damage to the levee or floodwall system.

Implementation Strategy: Develop plan by 2029 in accordance with the ULDC. The plan should include emergency preparedness, mobilization, data gathering, actions, interim repairs, long-term repairs, extent of damage, and public notifications.

Responsible Office: DOU, OEM, SAFCA, RD1000, ARFCD, MA9

Potential Funding: Funding from DWR Grant or Staff Time

Schedule: Long Term, 2029

16. Flood Relief Plan, if required by the ULDC

Issue/Background Statement: A Flood Relief Plan is required by the ULDC in the operation and maintenance manual (or emergency action plan) if flood relief structures such as culverts, gates, weirs, pumping plants, and levee relief cuts are relied upon for performing as designed to the urban level of flood protection.

Implementation Strategy: Develop plan by 2029 in accordance with the ULDC. The plan must include specified triggers, procedures, and responsible agencies for flood relief structures.

Responsible Office: DOU, OEM, SAFCA, RD1000, ARFCD

Potential Funding: Funding from DWR Grant or Staff Time

Schedule: Long Term, 2029

5 LEVEE AND OTHER STRUCTURAL IMPROVEMENTS

5.1 Introduction and Background

In the aftermath of the 1986 floods, several flood control projects were identified to address the flood risks in the Sacramento area. Some of these projects were designed to correct structural deficiencies observed during the flood, while other projects were added once the water had receded and revealed levee conditions. Additional projects were intended to increase the level of protection provided by the system. The 1997 flood event also highlighted additional deficiencies that are now being corrected to increase the level of community flood protection. Much of the City is currently dependent on levees to prevent flooding. This can be seen in Figure 5.1.

This chapter provides a brief description of levee and other structural improvement projects that have been implemented to reduce flood risk in the City, or that will be implemented over the next five years and beyond.

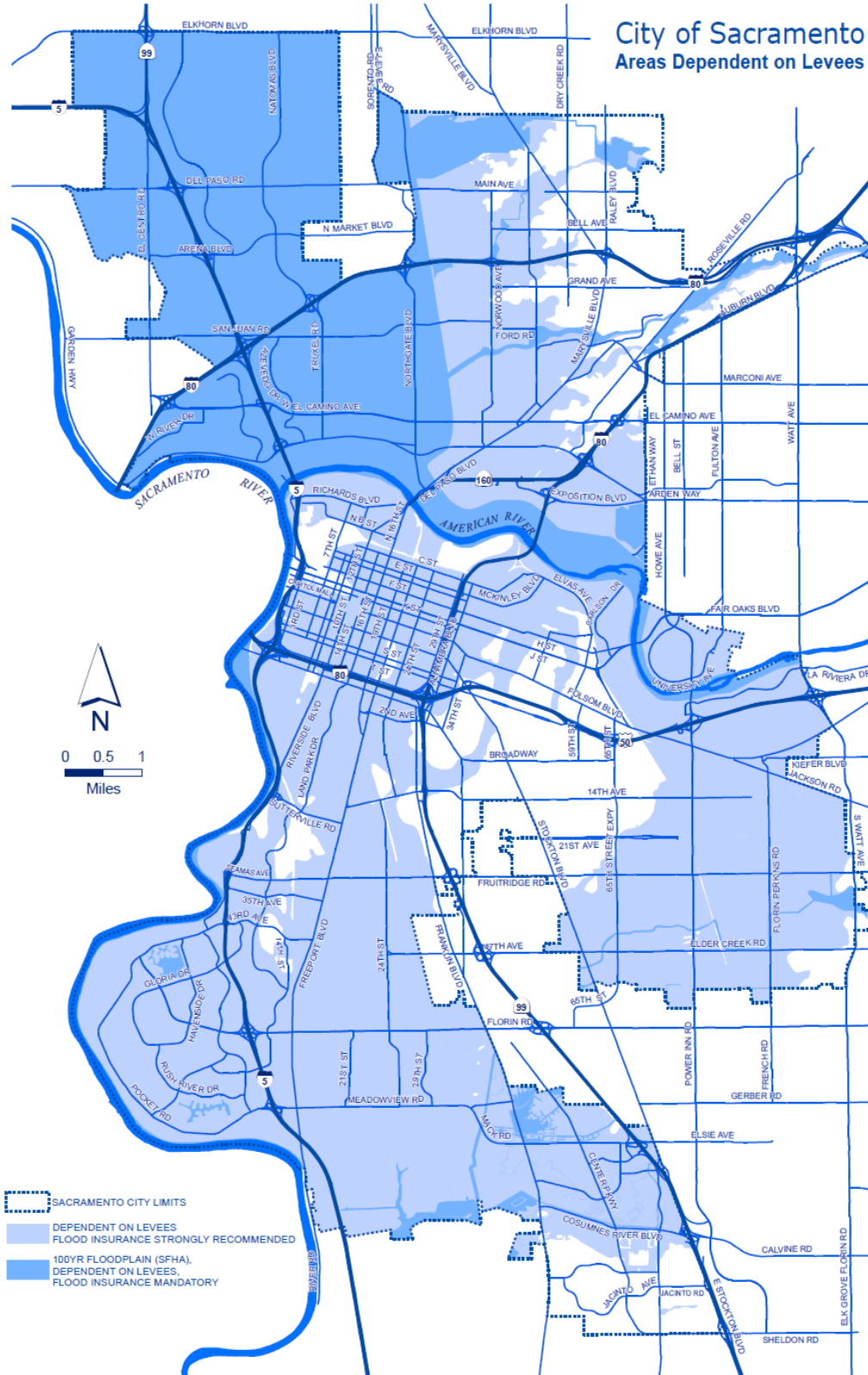
5.1.1 Reducing Flood Risk

To more effectively address problems that became evident following the 1986 floods, the US Army Corps of Engineers (USACE) recommended the separation of projects connected with the Sacramento and American Rivers. The Sacramento River improvements would focus predominately on rehabilitating the existing system, while the American River required a significant increase in the system's flood control capacity. The State of California joined these efforts as a non-federal sponsor through DWR and Central Valley Flood Protection Board (CVFPB), formerly known as the State Reclamation Board.

Local agencies responsible for operating and maintaining the Sacramento metropolitan area levee system and managing land use in the floodplain reacted to these developments by requesting that the California State Legislature create the Sacramento Area Flood Control Agency (SAFCA). Established in 1989, SAFCA is a regional joint-exercise-of-powers agency consisting of the City, Sacramento and Sutter counties, Reclamation District 1000, and the American River Flood Control District. SAFCA's long-term goal is to provide the urbanized portions of Sacramento with a minimum 200-year level of flood protection in order to reduce the risk of catastrophic damages and loss of life associated with a failure of the flood control system in the City.

SAFCA initiated a number of studies to determine the best implementable approach to address the area's flood problems. These flood control projects are in various stages of implementation; some have been completed, others are under construction, and a number are still being planned. The descriptions that follow include the purpose of each project and the anticipated completion schedule for projects still in design or under construction.

Figure 5.1. Areas of the City Dependent on Levees



Source: City of Sacramento Department of Utilities, 2024

5.1.2 Seeking Long-Term Flood Solutions

During the flood season, the level of Folsom Reservoir is controlled by operating Folsom Dam in accordance with criteria set forth by the Secretary of the Army. When Folsom Dam was constructed in the early 1950s, it was believed that Folsom Reservoir would provide Sacramento with a 250-year level of flood protection. However, this estimate has been steadily downgraded over the years as better data was gathered on American River flows. In the aftermath of the 1986 and 1997 floods, USACE determined that the reservoir provides little more than a 63-year level of protection to people and property in the American River floodplain based on available operational criteria at that time.

SAFCA and the U.S. Bureau of Reclamation (Bureau) then considered options for reoperation (i.e., modifying the operation) of Folsom Dam and Reservoir.

- Reoperation would provide as much immediate flood protection as possible pending federal authorization and implementation of a long-term project to improve the existing American River flood control system.
- SAFCA and the Bureau would achieve this goal through an agreement under which Folsom's existing flood control diagram, governing reservoir storage space allocations and outflows during flood control operations, would be revised to permit safe containment of a 100-year or larger flood event in the watershed.
- In exchange for the additional flood protection, SAFCA would be obligated to reimburse the Bureau for a portion of the costs due to lost water or power resulting from the reoperation.

SAFCA and the Bureau also considered alternatives to increase space available for flood control at Folsom Dam. They decided to require a variable reduction in the reservoir pool when a designated amount of empty space was no longer available for flood storage in the three largest watershed hydropower reservoirs (French Meadows, Hell Hole, and Union Valley) located upstream from Folsom. Since the dam was not designed for efficient flood releases with a low reservoir pool, substantial increases in empty space in the reservoir would yield only marginal increases in flood protection, thereby limiting the additional protection achieved through a reoperation plan to around a 100-year level. In 1994, SAFCA and the Bureau executed an agreement to operate Folsom Dam and Reservoir to take advantage of incidental flood control provided by upstream water and power reservoirs at French Meadows, Hellhole, and Union Valley. The intent was for reoperation to continue until it either becomes part of the permanent long-term plan for flood control improvements or is replaced by an alternative means of protection.

American Rivers Common Features & Folsom Dam

SAFCA and the CVFPB have been working with USACE to identify an American River project that will address the low level of flood protection provided by the existing system. As part of this effort, in 1992 SAFCA joined the state and USACE in proposing federal legislation to authorize:

-
- Construction of an expandable flood control dam along the north fork of the American River near Auburn.
 - Improvement of the existing levee system around Natomas.
 - Reoperation of Folsom Dam to create additional space for flood storage on an interim basis, pending completion of improvements to the dam.

The proposed dam would have increased the capacity of the existing flood control system to permit safe containment of floods up to a 200-year flood event level in the American River. However, in view of environmental and cost concerns, Congress deferred any action on the flood control dam and reoperation of Folsom, but authorized USACE to either proceed with construction of the Natomas levee improvements or credit SAFCA for undertaking these improvements as a local project.

In 1996, SAFCA again tried to build support for a flood control dam, but as in 1992, failed to gain the support of Congress. SAFCA also identified features that were “common” to any project associated with controlling flood flows at Folsom Dam. These common features focused on the conveyance of higher flood flows through the leveed portion of the American River. The American River Common Features Authorization was adopted as part of the Water Resources Development Act of 1996. This authorization called for the strengthening of the American River levees to pass a design flow of 160,000 cfs with freeboard.

Being unable to gain support for an Auburn Dam, SAFCA and its state and federal partners identified a way to improve low-level flood releases from Folsom Dam by modifying the existing outlet gates. In 1999, Congress authorized the Folsom Dam Outlet Modifications Project (Mods) to increase low-level flood releases from the dam by enlarging the eight existing outlets and constructing two additional outlets. This would allow larger releases earlier in a storm event, providing additional flood storage in the reservoir. Once implemented, the plan was expected to provide the community with a 140-year level of flood protection.

Also in 1999, additional features were added to the Common Features Authorization to include:

- Additional levee raising on the American River’s right bank.
- Levee strengthening on the right bank near the mouth of the Natomas East Main Drain Canal.
- Levee reshaping of the right bank near Jacob’s Lane.
- Levee strengthening and raising of the Mayhew Levee.
- A closure structure for the Mayhew Drain.

Improvements identified in 1996 and 1999 under the American River Common Features Authorization would be completed in 2016. However, additional bank and levee erosion improvements along the lower American River would be initiated to increase the channel capacity to 160,000 cfs.

In 2004, Congress acted again, approving a plan to raise Folsom Dam by seven feet under the Folsom Dam Raise Project. This project would allow additional flood water to be stored in the reservoir during a major flood event, and when implemented and combined with the outlet modifications and downstream levee improvements, would provide a greater than 200-year level of flood protection.

In 2005, improvements to American River levees and operational improvements for Folsom Dam provide 100-year protection for much of the American River Floodplain. However, the Mods project was stopped when construction bids for the first phase of work were significantly higher than expected. This unanticipated high cost created the need to re-evaluate the two authorized projects (Mods and Raise). As a result, USACE, CVFPB, SAFCA, and the Bureau looked at options that could address dam safety concerns and still provide at least 200-year protection.

In June 2006, a joint report was issued entitled Folsom Dam Raise and Auxiliary Spillway Project Alternative Solutions Study II, which identified an auxiliary spillway alternative with a 3.5-foot dam raise that would provide at least 200-year level of protection for the community. Costs of implementing this alternative are similar to the existing authorized projects, but have significantly less risk in the construction. In addition, this project requires less construction time, resulting in an increased flood protection level sooner. Congress would approve construction of a new dam and auxiliary spillway at Folsom Dam in 2007, and construction began on the Folsom Dam Joint Federal Project in 2008. The new dam and auxiliary spillway project was completed in 2017, providing increased flood protection for properties in the American River floodplain.

In 2016, Congress authorized additional levee improvements including 11 miles of bank and levee erosion protection under the American River Common Features project. Bank and levee erosion work would begin in 2022 along the lower American River to increase the channel capacity from 115,00 cfs to 160,000 cfs. This authorization also included WRDA 16, including up to 12 miles of erosion remediation on the Sacramento River and addressing levee stability along the Sacramento River south of the American River.

The Folsom Dam Raise project began construction in 2019, and as of 2023 USACE continues Folsom Dam Raise projects by initiating construction on raising the Right and Left Wing Dams, Dikes 1 through 6, and strengthening and top sealing the Main Dam gates and concrete piers.

Sacramento River Projects

Sacramento Urban Area Levee Reconstruction Project (SUALRP)

During the 1986 flood, through-levee seepage occurred along much of the Sacramento River levees in the Natomas and Pocket areas. This was evidenced by serious landside sloughing of the levee in Natomas and “seepage boils” along the landside toe in the Pocket. This system deficiency, caused by porous levee materials and poor compaction, was corrected by the Sacramento Urban Area Levee Reconstruction Project (SUALRP). The SUALRP addressed through-levee seepage problems within the Sacramento River Flood Control System (SRFCS) by installing a slurry wall

(lean concrete mix) or adding a landside stabilizing berm along most of the levee from Verona on the north to Freeport on the south.

SUALRP was completed in 1993 under the direction of USACE. While it improved flood protection for the community, SUALRP did not increase the design level of flood protection. The federal government (through USACE), the CVFPB, and SAFCA shared the project cost of approximately \$37 million.

Sacramento Riverwall

The Sacramento Riverwall, a project feature of the SRFCS, is a concrete floodwall adjacent to Old Sacramento. The Riverwall is located on the east side slope of the Sacramento River between the I Street Bridge and the extension of R Street. Constructed in 1917 by the Southern Pacific Railroad, the Riverwall was determined to be unstable because of serious erosion on the waterside toe and design deficiencies found with the original construction. Failure of this section of the SRFCS at flood stage on the Sacramento River would cause flooding to Old Sacramento, downtown, and portions of Interstate 5. Reconstruction of the Riverwall was addressed by USACE as an additional element of SUALRP described above. The project was completed in the late 1990s.

Levee Slump on Garden Highway south of I-5

In 2002, RD 1000 noticed a gradual dip of the levee south of Interstate 5. The lowest point of the dip occurred near an existing agriculture well. Around the well was a fine sand, likely pumped from the ground during irrigation. Enough material was pumped over time to cause the levee to settle. RD 1000 and SAFCA agreed to put in a slurry cutoff wall to prevent seepage from going through the levee and to raise the levee back to its original height. The seepage fix was designed to provide 200-year level of protection. The project was completed at a cost of \$1 million.

Little Pocket and Sump 132 Underseepage Remediation

In 2003, SAFCA completed approximately 2,400 feet of a levee underseepage cutoff wall in the Little Pocket area and 400-feet of levee underseepage cutoff wall construction at Sump 132 in the Pocket area. This project addressed known underseepage problems in the respective areas by creating a slurry wall approximately 110' deep to prevent high seepage pressures from weakening the foundation of the levee. The project was designed to protect against the 200-year storm event. The project was completed in 2004 for a cost of \$6.4 million.

Pocket Underseepage – Reach 2 and Reach 9

In order to pass the criteria for providing 100-year event protection against underseepage in the Pocket area, two reaches of levee needed to be treated for underseepage. Approximately 2,500 feet of cutoff wall were constructed in 2006. Completion of this work by USACE, along with erosion repairs, allowed USACE to certify that the Sacramento River levees in the Pocket area provided a minimum of 100-year level of protection.

Sacramento River Bank Protection Program (Sac Bank)

The Sacramento River Bank Protection (Sac Bank) Program is an ongoing effort to address systemic erosion issues along the Sacramento River and its tributaries, including the American River. Erosion constantly eats away at the river banks and can eventually threaten the levee section. The two greatest threats are high water events, which lead to scour and high bank erosion, and summer boat traffic, which creates wave-induced erosion at the levee toe.

In 2004, USACE completed levee toe erosion protection at River Mile (RM) 56.7, located downstream of Miller Park on the Sacramento River; this site is part of the Sac Bank program. This stretch of river is located in an area where there is no waterside berm, and the levee has an extremely steep waterside slope. It was identified as a critical erosion site that would need to be fixed prior to the levee being recognized as providing a 100-year level of flood protection. The erosion fix (a waterside rock berm with a soil planting trench) addressed existing erosion problems by remediating some large holes that were forming in the levee at the low water mark. The project prevents summer wave wash from eroding the levee and provides habitat for out-migrating salmonids.

Pioneer Reservoir

Pioneer Reservoir is located in the area on the proposed “Docks Project” development area along the Sacramento River just upstream of the California Auto Museum. This project constructed a seepage berm and six relief wells to address high seepage pressures in the area. The project was completed in 2007.

Sacramento River East Levee Projects

Under the WRDA 16 work effort, several levee improvement projects have been completed or are in progress to remediate deep under-seepage. Several contracts have been completed for exploratory drilling, tree removal/trimming, and levee construction improvements (installation of seepage cutoff walls). At the time of this writing, three erosion control contracts are in progress, with work anticipated to be completed by February 2024.

Natomas Area Flood Control Improvements (Local Project)

The 1986 flood demonstrated the inadequacy of the levee system protecting the Natomas basin and the lower Dry and Arcade Creek watersheds from high flows in the American River and tributary streams east of the basin. To address this problem, USACE proposed a series of levee improvements and other flood control improvements designed to address through-levee seepage and work in tandem with increased storage on the American River to provide affected areas with better flood protection. After SAFCA completed the work, FEMA recognized the Natomas Basin as having a 100-year level of flood protection. In addition, the project provided a minimum 100-year level of protection to the lower Dry and Arcade Creek watersheds, including portions of Rio Linda and North Sacramento.

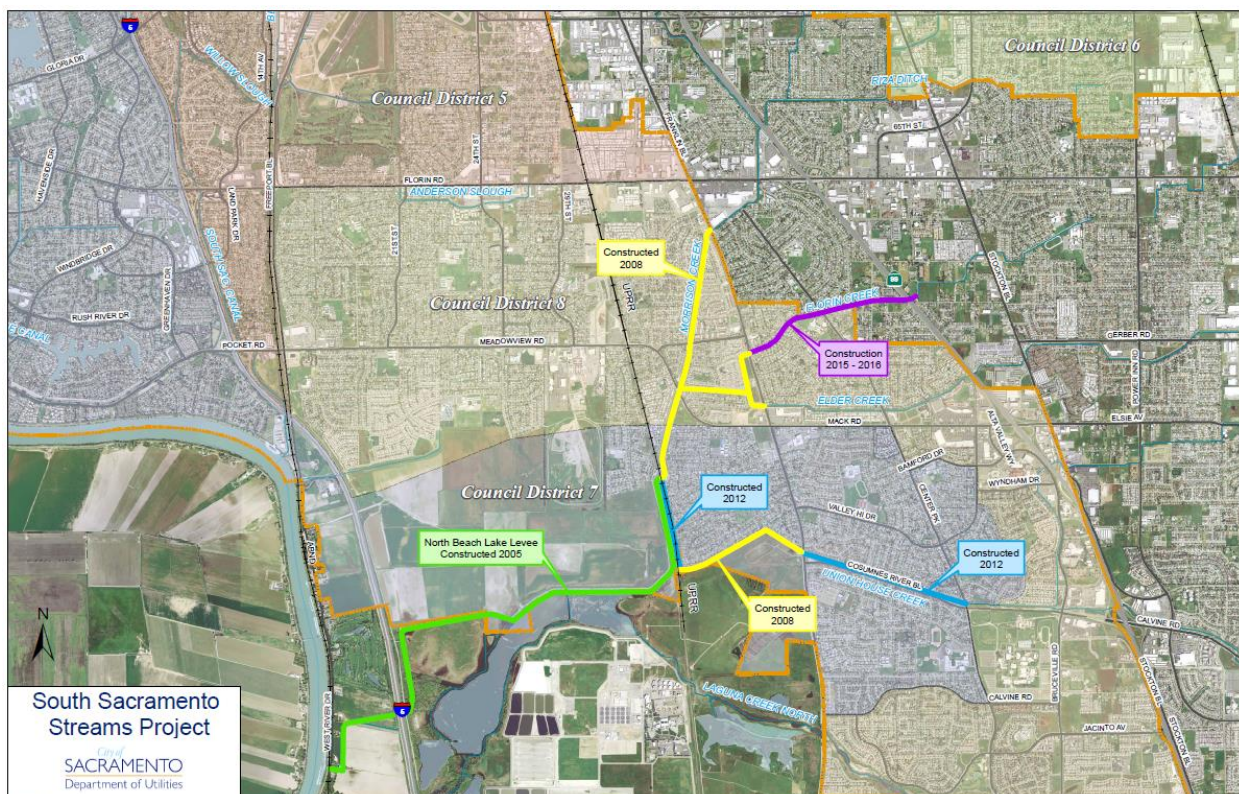
South Sacramento Streams Group (SSSG)

Morrison Creek Levee System

The existing levee system along Morrison Creek and its major tributaries was found to have insufficient capacity to carry a 100-year flood event. The decrease in flood protection provided by the system is based on: (1) increased water surface elevations projected in the Delta; and (2) higher flows coming through the system from the upper reaches of the watershed. The problem could be further exacerbated as new development occurs upstream unless the additional run-off is either detained upstream or the downstream channel capacity is increased.

USACE, in cooperation with SAFCA and the City and County of Sacramento, completed a study of alternatives, including both upstream detention and modifications to the downstream levee system. Results of the study supported work to be done to the existing Morrison Creek levees as well as to the Unionhouse, Florin, and Elder Creek levees. The County collected development impact fees from upstream developers, which were used to build detention basins to hold the additional run-off generated as new development occurs. A map of the affected area is shown in Figure 5.2 below.

Figure 5.2. Areas benefited by improvements to the Morrison Creek, Unionhouse, Florin, and Elder Creek levees



Source: DOU

In 2005, USACE completed the construction of nearly four miles of levee from Freeport Boulevard/Sacramento River Levee on the west to the Union Pacific Railroad to the east, raising the existing levee system to protect against a 200-year flood.

USACE constructed floodwalls along the four creeks (Elder, Unionhouse, Florin, and Morrison) up to Franklin Boulevard. At the end of 2012, the final piece of the Morrison Creek project downstream of Franklin was completed. A 3,300-ft floodwall was constructed along the Union Pacific Railroad tracks on the east bank. The cost of this floodwall was \$5.9 million.

Unionhouse Creek Channel Improvements

In 2012, SAFCA, in partnership with the City of Sacramento and DWR, improved over a mile and a half of Unionhouse Creek between Franklin Blvd. and Bruceville Road. The project increased the amount of water that can be contained in the channel, resulting in 100-year flood protection. The cost of the construction project was a little under \$2.5 million.

Florin Creek Improvements

In 2017, SAFCA, in partnership with the City of Sacramento and DWR, constructed a 35-acre foot detention basin along Florin Creek near Persimmon Avenue in conjunction with channel improvements by USACE and in cooperation with the CVFPB and SAFCA. These improvements provide a FEMA level of flood protection along much of Florin Creek from Highway 99 downstream to Franklin Blvd.

American River–Related Projects

Mayhew Levee

The Mayhew Levee parallels the American River starting at the mouth of the Mayhew Drain and proceeding upstream for about 4,000 feet. In 2008, the levee was raised about three feet, widened to USACE standards, and a slurry wall was constructed through the center of the levee to a depth of about 60 feet. These levee improvements allowed 160,000 cfs to pass and provided a 100-year level of protection. The Mayhew Drain Closure Structure was completed in 2009 to prevent drainage backup from the American River, which had previously led to additional strain on drain levees.

Upper Levee Slope Protection

Through the area between Cal Expo to Rio Americano High School (the narrowest portion of the American River Parkway), flood events can create extremely high scour velocities on the upper face of the levee. As a result, high levee slope protection was needed for portions of the parkway. In order to reduce visual impacts of using rock to protect against scour, all the rock that was placed was buried under 6 to 12 inches of soil. In other areas with lower velocities, creeping wild rye was utilized to hold the soil together.

Slurry Wall Construction

After the 1997 flood, USACE recognized that levee underseepage could destabilize the levee foundation due to sand layers under the levee. As a result of this finding, slurry walls were constructed from 60 to 80 feet deep in order to prevent underseepage from affecting the levee foundation. Approximately 24 miles of slurry wall along the American River was constructed by 2016.

Bank Protection

Portions of the American River are subject to extremely high velocities during a major flood event. These velocities can quickly erode banks and levee toes, leading to levee failure. Five major bank erosion sites along the American River have been fixed to date by USACE (constructed between 1996 and 2000). The lower end of this work is just downstream of Highway 160, while the upstream portion is downstream of Watt Ave. This work prevents additional erosion from occurring at these sites, thus preserving levee integrity. In addition to the flood protection provided by these sites, they were also designed to provide habitat values. These sites now provide refuge to fish, and the tree plantings are reaching maturity.

SAFCA has improved other erosion protection sites outside of USACE program along the American River including locations downstream of the Highway 160 bridge on the left bank, and upstream of Watt Avenue on the left bank.

Regional Sanitation Perimeter Levee

In order to protect the regional sanitation plant from flooding, a perimeter levee was required. The project was completed in 1996 for over \$7 million.

5.2 Current Implementation Status

There are currently six federally authorized projects that are being implemented to reduce flood risk to the Sacramento area:

- Natomas Levee Improvement Project
- American River Common Features WRDA 96/99 (Completed)
- American River Common Features WRDA 2014 (Natomas)
- American River Common Features WRDA 2016
- Folsom Dam Modifications/Joint Federal Project (Recently Completed)
- Folsom Dam Raise Project
- South Sacramento Streams Group Project (Recently Completed)
- Sacramento River Bank Protection Program

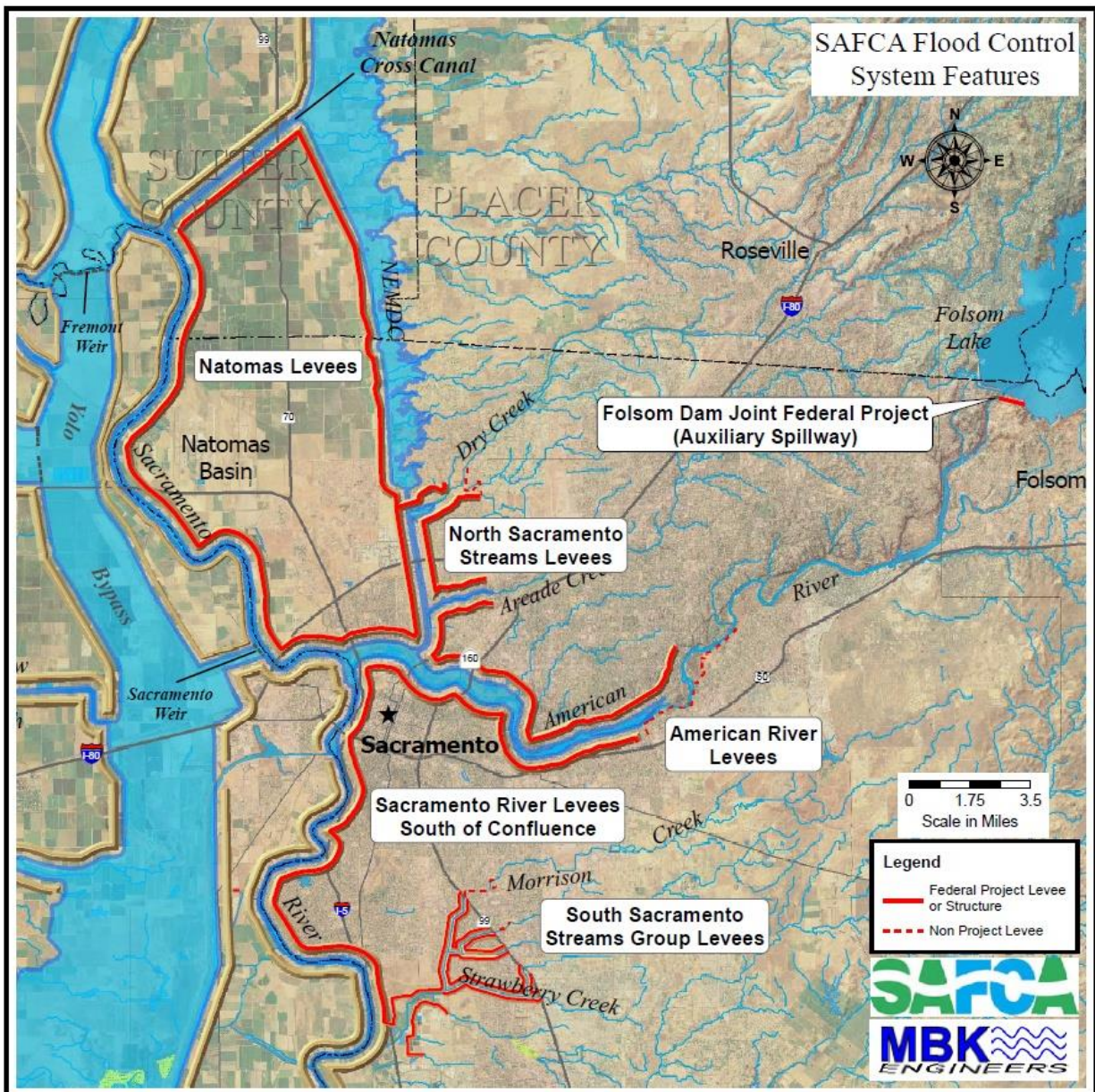
Other ongoing efforts:

- SAFCA levee accreditation for FEMA level of protection

- Regional planning as part of the Central Valley Flood Protection Plan
- SAFCA and City plan development for 200-year flood protection to meet state requirements for Urban Level of Protection and Urban Levee Design Criteria

The flood control system features that protect the City are shown in Figure 5.3.

Figure 5.3. Flood Control System Features that Protect the City of Sacramento



Source: SAFCA and MBK Engineers

Natomas Levee Improvement Project (NLIP)

In December 2008, Natomas was mapped into the FEMA 100-year floodplain. SAFCA's efforts have been to restore, at a minimum, a 100-year level of protection while working toward a 200-year level of protection. SAFCA, in partnership with DWR and the CVFPB, began constructing levee improvements in 2007 in advance of the full authorization of the federal project, with the expectation of receiving credit for such work towards the non-federal share of the authorized project. SAFCA's work included levee improvements along the Natomas Cross Canal and the upper reaches of the Sacramento River levees in Natomas. By 2013, SAFCA and the state completed 18.3 miles of the 42-mile levee improvements to meet current flood control standards. See Figure 5.4 below.

Figure 5.4. Natomas Levee Slurry Wall Construction



Source: Kleinfelder

With passage of the Water Resources Reform and Development Act of 2014, USACE is taking the lead on completion of the remaining components of the NLIP. USACE will commence construction of levee improvements along the southern and eastern portions of the Natomas Basin leading to 100-year and 200-year levels of flood protection over time. The estimated authorized project cost is approximately \$1.1 billion. In 2019, the USACE initiated levee improvements on the remaining 24 miles and divided the project into several sections, namely Reaches A - I. As of 2023, construction on each Reach is ongoing.

American River Common Features

In 2015, SAFCA and its partners identified needed improvements to meet a 200-year standard of protection for Sacramento's levee system. These improvements were identified in the American River Watershed Common Features General Re-evaluation Report (GRR). The GRR identified improvements to the levee system to meet the goal of 200-year level flood protection and address erosion protection, vegetation, seepage, and access requirements. The American River levees, the Sacramento River levees downstream of the American River, and the north area streams (Natomas East Main Drain Canal, Magpie Creek Diversion Channel, and Arcade Creek) were reviewed as part of the GRR. Projects identified in the GRR included 24 miles of slurry walls in the American River levees, 12 miles of levee improvements along the Sacramento River east levee in Natomas, as well as other significant levee improvements and levee widening along reaches of the American River and Sacramento River. Most of these improvements were completed by the end of 2016. Additional levee improvements would be presented by SAFCA in the 2017 Comprehensive Flood Risk Reduction Program with the goal of achieving a 500-year level of protection.

This project evolved into WRDA 2014 and WRDA 2016. Additional improvements include the NAS stream improvements, erosion control on Sacramento and American Rivers, levee stability improvements on the Sacramento River, and the Sacramento River weir/bypass widening.

Folsom Dam Modifications/Joint Federal Project (JFP)

This joint federal project (JFP) shown in Figure 5.5 consists of a six-gated control structure, a 2,100-foot auxiliary spillway with a stilling basin, and an approach channel in the reservoir leading to the control structure. The auxiliary spillway design can be used for flood control as well as ensuring dam safety. As a result of its joint purpose, portions of these improvements were being constructed by the Bureau, which has completed Phase 1 and Phase 2. The two phases of work almost finished the spillway. USACE in 2010 awarded Phase 3 (construction of the control structure itself) with approximate cost of \$220 million. Work on Phase 3 was completed in 2015. Phase 4 (the last part needed for flood control) was awarded in 2013 with a completion of all flood control features achieved in 2017. Total project cost was estimated at \$810 million.

Figure 5.5. JFP Work on Folsom Dam



Source: SAFCA

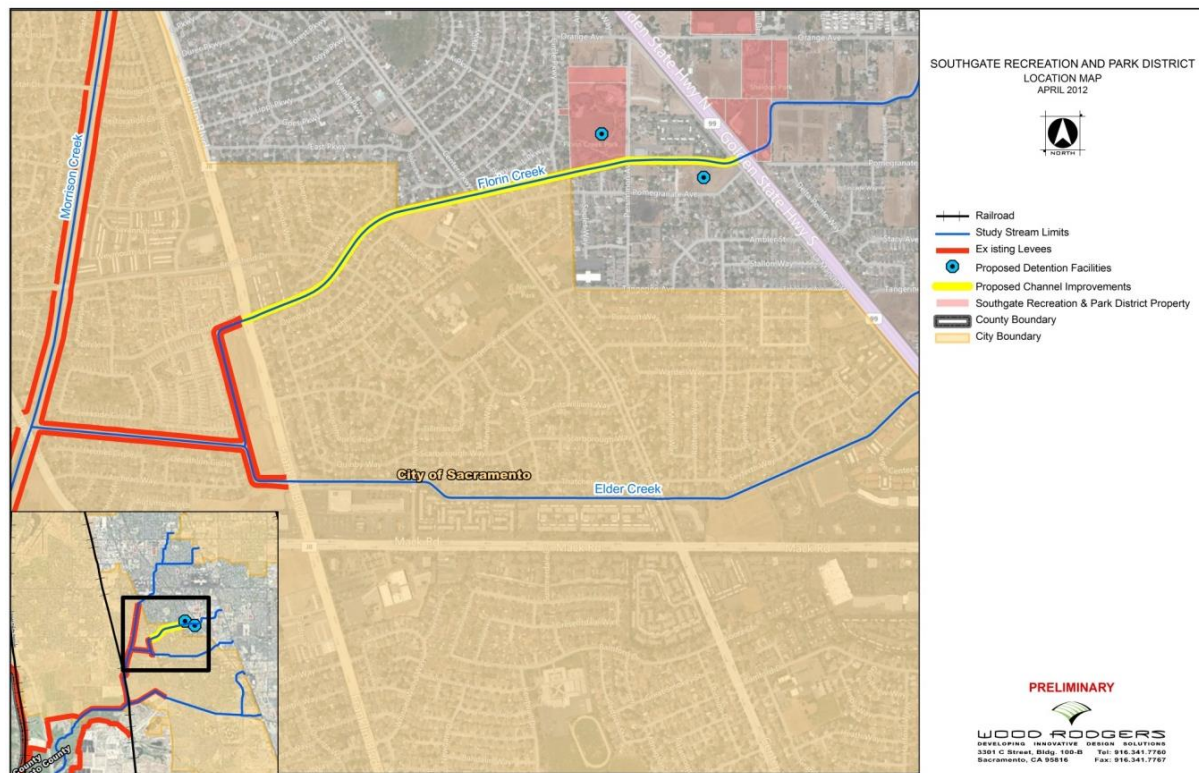
Folsom Dam Raise Project

The Folsom Dam Raise project will raise the height of the dikes, left and right wing dams, Mormon Island Auxiliary Dam, and the main dam around Folsom Lake by about 3.5 feet. The implementation of the JFP and the Dam Raise, along with downstream levee improvements, will give the City greater than a 200-year level of flood protection along the American River, and thus reducing overall flood risk for the Sacramento area. Improvements on Dike 8 were completed in 2020. Construction on Dikes 1 to 6 began in September 2023, and are scheduled for completion by summer 2025. The remainder of project components are set to be raised 3.5 feet by 2027.

South Sacramento Streams Group

This project was completed in 2017 by the U.S. Army Corps of Engineers, State of California and SAFCA. The Union Pacific Railroad embankment was completed at the end 2012, and the Florin Creek Channel Project and Florin Creek Multi-Use Basin Project channel improvements and detention basin were completed in 2017. These projects allow the 100-year flood event to be non-damaging to surrounding properties. As a result, FEMA re-mapped the Florin Creek floodplain area, effective March 25, 2019. The new floodplain designation removed most of the Special Flood Hazard Area. See Figure 5.6.

Figure 5.6. Areas benefit from the Florin Creek Channel Project and the Florin Creek Multi-use Basin Project



Source: Wood Rogers

SAFCA Levee Accreditation for FEMA Level of Protection

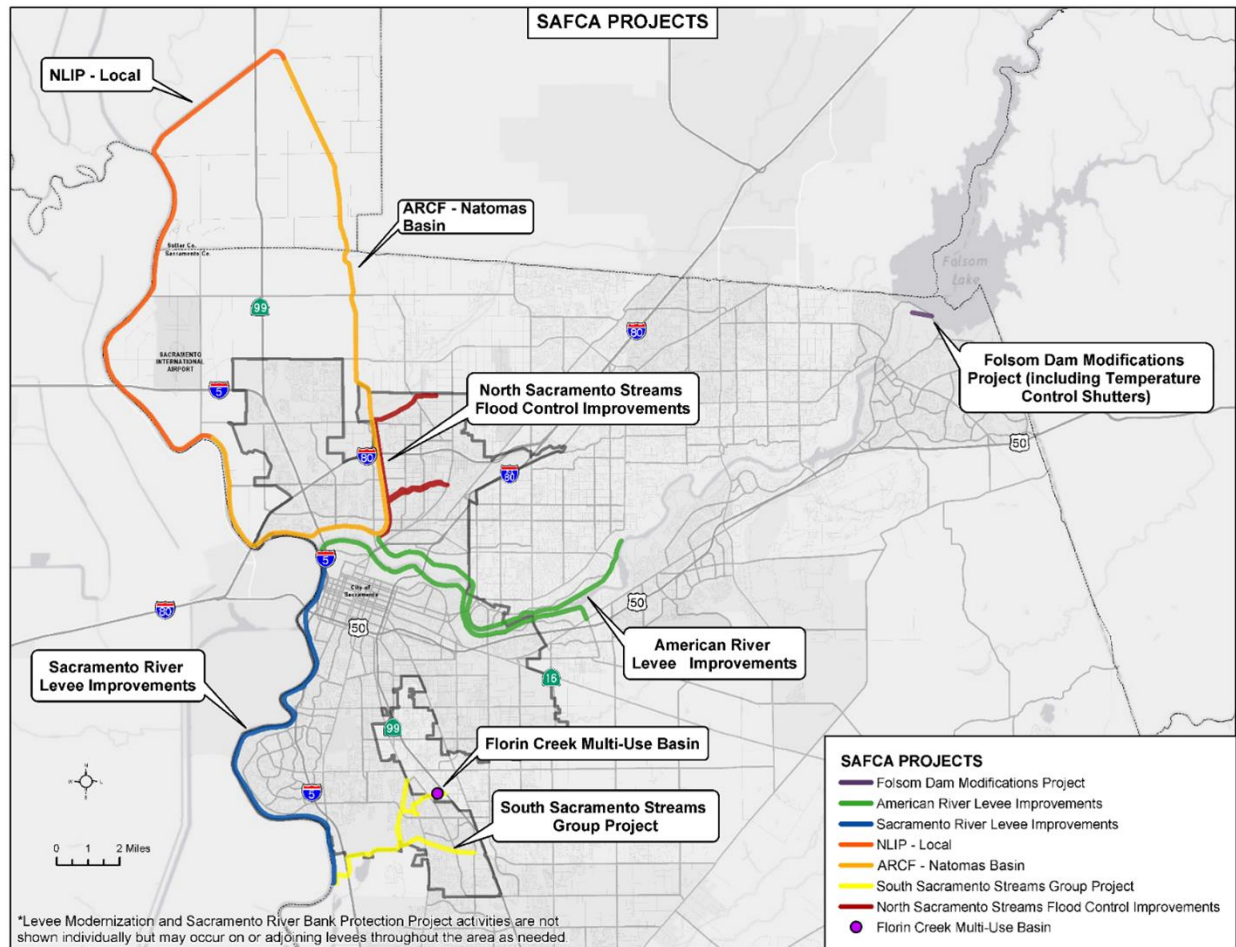
USACE expired the City’s levee certifications in 2012 and 2013 because the certifications no longer met USACE’s risk & uncertainty criteria or were older than 10 years. This is shown in Table 5.1.

Table 5.1. USACE Levee Certification Expiration Dates

Stream	Reach	Expiration Date
Dry Creek	North levee	March 19, 2012
Robla Creek	South levee from approximately Sully Street to City border on the east	August 31, 2013
Robla Creek	South levee from junction with Natomas East Main Drainage Canal to approximately Sully Street	March 19, 2012
Arcade Creek	North and south levees	March 19, 2012
Natomas East Main Drainage Canal	East levee from junction with American River north levee to the pump station north of Dry Creek	March 19, 2012
American River	North and south levee (not including Natomas)	August 31, 2013
Sacramento River	Left bank levee from the junction with the American River to the southern City limits	August 31, 2013
Morrison Creek	Junction with Sacramento River to Unionhouse Creek Right bank from Unionhouse Creek to Brookfield Drive	August 31, 2013

The status of the City’s levees is shown in Figure 5.7.

Figure 5.7. City of Sacramento Levee Status



Source: DOU

In 2012, SAFCA, local communities, and maintaining agencies began developing a levee accreditation program to determine whether the levees protecting Sacramento along the lower American and Sacramento rivers and their tributaries (outside the Natomas Basin) adequately met the minimum requirements of the NFIP. The Urban Level of Flood Protection (ULOP) must be achieved by the year 2025 in order for land use agencies, in approving new development, to make a finding that adequate progress is being made on the construction of a flood protection system. The following projects constitute the project scope, to help attain the ULOP in SAFCA protected areas.

- Folsom Dam JFP (complete)
- WRDA 2014 Natomas Basin Project (in progress, substantially complete by 2026)
- NLIP Local Project (complete)
- WRDA 2016 (in progress, complete by 2025)
- LAP (in progress, complete by 2023)
- SSSG (complete)

-
- Florin Creek Multi-Use Basin (complete)
 - Additional South Sacramento SPFC Projects at Beach Lake Levee (in progress, complete by 2025)

The levees must also meet the State of California’s Urban Levee Design Criteria (ULDC), which requires the City to address additional criteria including encroachments, vegetation, and levee access. It was decided that the levee deficiencies would be addressed in two phases – accreditation and modernization.

Figure 5.8 shows areas that need to be addressed in the short-term to meet the NFIP accreditation and immediate ULDC requirements. At the time of this writing, these projects are currently in progress. The second phase is the modernization phase, which will be accomplished over 10-30 years. This will address encroachments, access, and vegetation that are categorized as low risk at the sites shown in Figure 5.9.

SAFCA issued a Notice of Preparation in May of 2014 indicating its intent to issue a program-level environmental impact report (EIR) for the proposed levee accreditation activities. California Environmental Quality Act (CEQA) documentation was finalized in 2016, as part of the Updated Local Funding Mechanisms for Sacramento Area Flood Control Improvements Subsequent Environmental Impact Report (SEIR).

To support ongoing levee accreditation efforts and to comply with the Central Valley Flood Protection Act of 2008, SAFCA prepares annual adequate-progress reports. The purpose of the report is to demonstrate that the local flood management agency has made adequate-progress on construction of a flood protection system that will result in flood protection equal or greater than:

- The urban level of flood protection (ULOP); OR
- The national Federal Emergency Management Agency (FEMA) standard of flood protection in non-urbanized areas intended to be protected by the system. Consistent with regulatory requirements, SAFCA prepared a baseline document to support future findings of adequate progress in 2016. An ULOP Adequate Progress Annual Report is now prepared in Q4 every year and presented to the City Council for adoption by resolution.

Figure 5.8. Areas That Need to be Addressed in the Short Term to Meet the NFIP Accreditation and Immediate ULDC Requirements

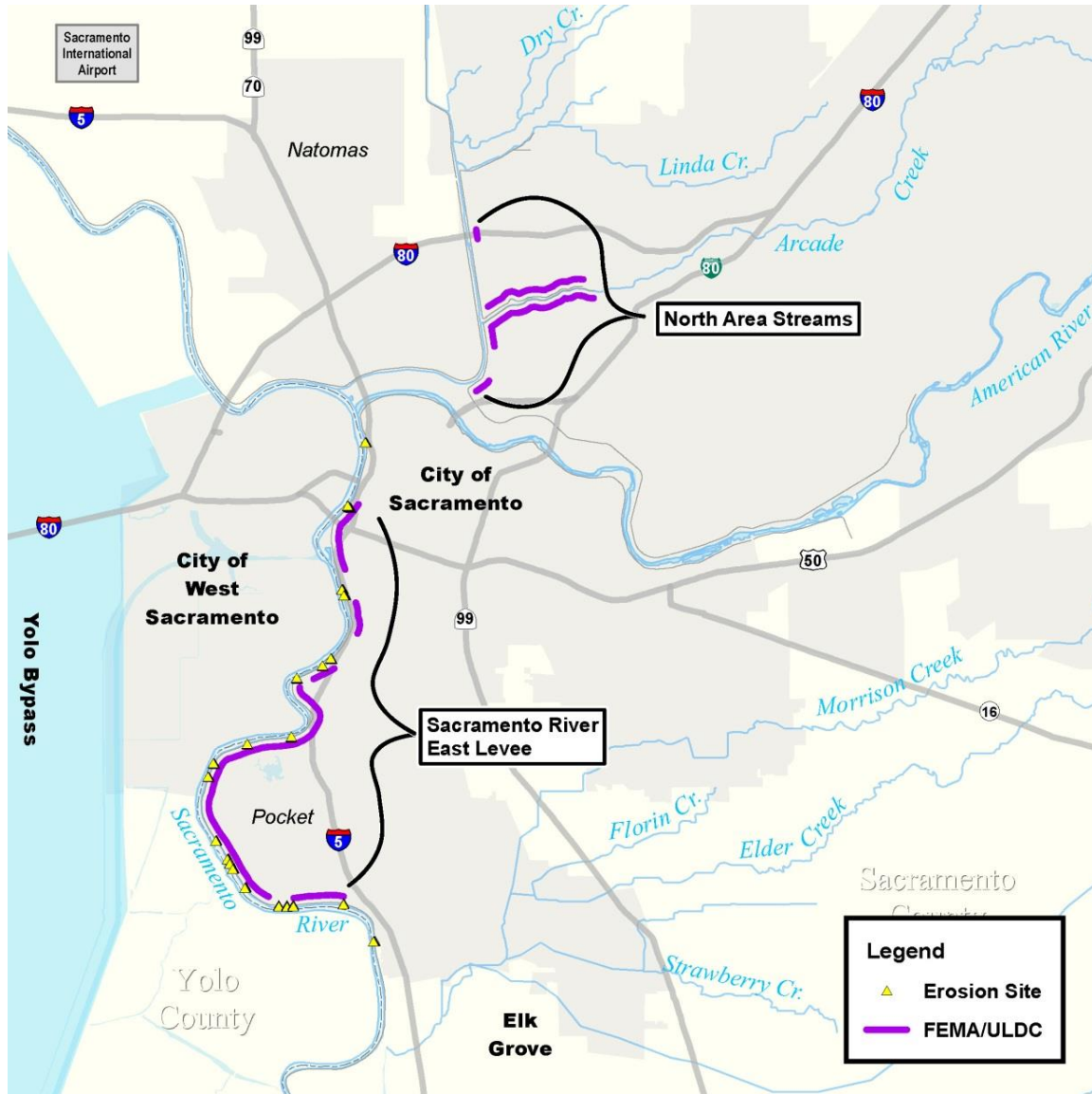
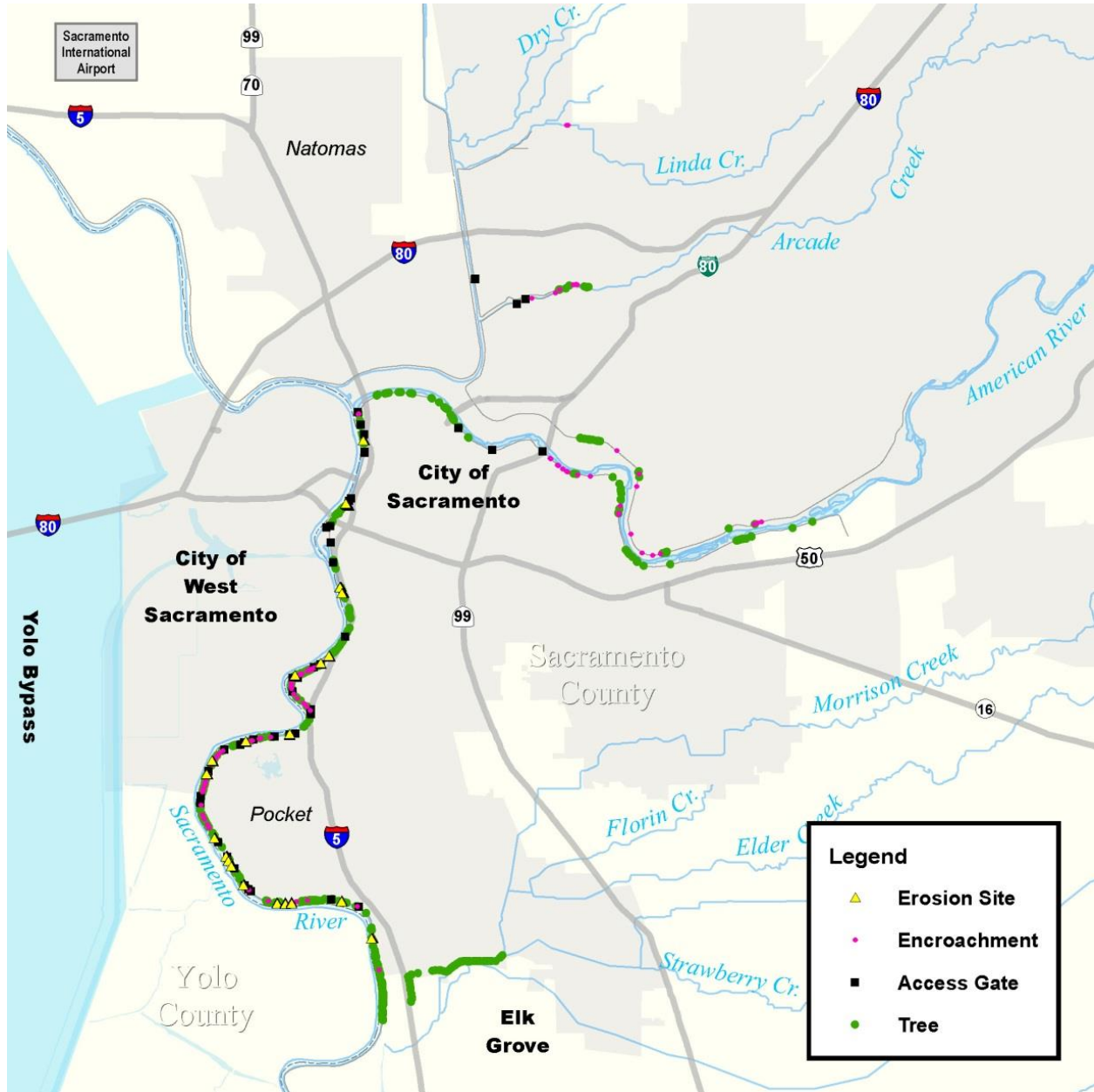


Figure 5.9. Sites Involved in the Long-Term Modernization Phase



Regional Planning

DWR launched the Regional Flood Management Plan (RFMP) effort to assist local agencies in developing long-term regional flood management plans that address local needs, articulate local and regional flood management priorities, and establish the common vision of regional partners. DWR is currently providing funding and resource support to help develop regional plans consistent with the CVFPP. There are six regions; the City is part of the Lower Sacramento River/Delta North

region. When the regional plans are completed, DWR will incorporate feasible components of the regional plans in the next CVFPP update.

5.3 Implementation Strategies and Action Items

Implementation actions described above are summarized in Table 5.2 and explained in the text that follows.

Table 5.2. Levee and Structural Improvement Action Items

Action	Responsible Department	Schedule
1. Support Local Efforts to Improve Flood Facilities	DOU, Engineering Services, Community Development, elected officials	Short term and ongoing
2. Plan and Implement Modernization Phase of Levee Accreditation and ULDC	DOU, Engineering Services	Long term
3. Participate in Regional Flood Management Plan	DOU, Engineering Services	Short term and ongoing

1. Support Local Efforts to Improve Flood Facilities.

Issue/Background Statement: The major flood projects that protect the City are joint USACE/CVFPB/SAFCA projects. As a parent agency of SAFCA, the City plays an important role in supporting local efforts to achieve timely improvements in flood protection.

Implementation Strategy: City staff and elected officials will continue to advocate for local flood improvements to achieve a minimum of 200-year level of flood protection.

Responsible Office: DOU, Engineering Services, Community Development, elected officials

Potential Funding: Staff time

Schedule: Short term and ongoing

2. Plan and Implement Modernization Phase of Levee Accreditation and ULDC.

Issue/Background Statement: Along with RD 1000, the ARFCD, and MA 9, the City maintains a portion of the levees protecting it. The modernization phase of this program will occur in 10-30 years, and will address encroachments, access, and vegetation on the levees.

Implementation Strategy: City staff responsible for levee maintenance will carry out a program to bring encroachments and vegetation into compliance with federal and state requirements. Maintenance access issues will also be addressed at that time.

Responsible Office: DOU, Engineering Services

Potential Funding: Staff time

Schedule: Long term

3. Participate in Regional Flood Management Plan.

Issue/Background Statement: The City has been an active participant in DWR's RFMP for the lower Sacramento River region.

Implementation Strategy: City staff will continue to participate in the RFMP to develop regional flood actions in order to improve operations and maintenance of existing facilities, along with formulating new flood projects that increase the level of flood protection.

Responsible Office: DOU, Engineering Services

Potential Funding: Staff time

Schedule: Short term and ongoing

6 INTERNAL DRAINAGE IMPROVEMENTS

6.1 Introduction and Background

In addition to the risk of flooding from levee failure, a considerable flood risk exists due to inadequate internal drainage infrastructure. This chapter discusses the flood risk reduction that can be realized from improvements to the City’s internal storm drainage system. The chapter includes background material on the system, a review of the current system’s status as a flood risk reduction tool, and a discussion of goals to improve the system.

6.1.1 Internal Drainage System

In Sacramento, as in most areas, runoff from rainwater enters storm drain inlets (DIs), which lead to an extensive underground storm drainpipe system. Because of the flat nature of the terrain in Sacramento, runoff is pumped through levees to a creek or river. If this system fails to operate properly (e.g., DIs are clogged, or pump stations are down), there is considerable risk of property damage from flooding during intense storms, see Figures 6.1 and 6.2.

Figure 6.1. Flooding Caused by Internal Drainage Issues, Anita Avenue and 23rd Street



Source: DOU

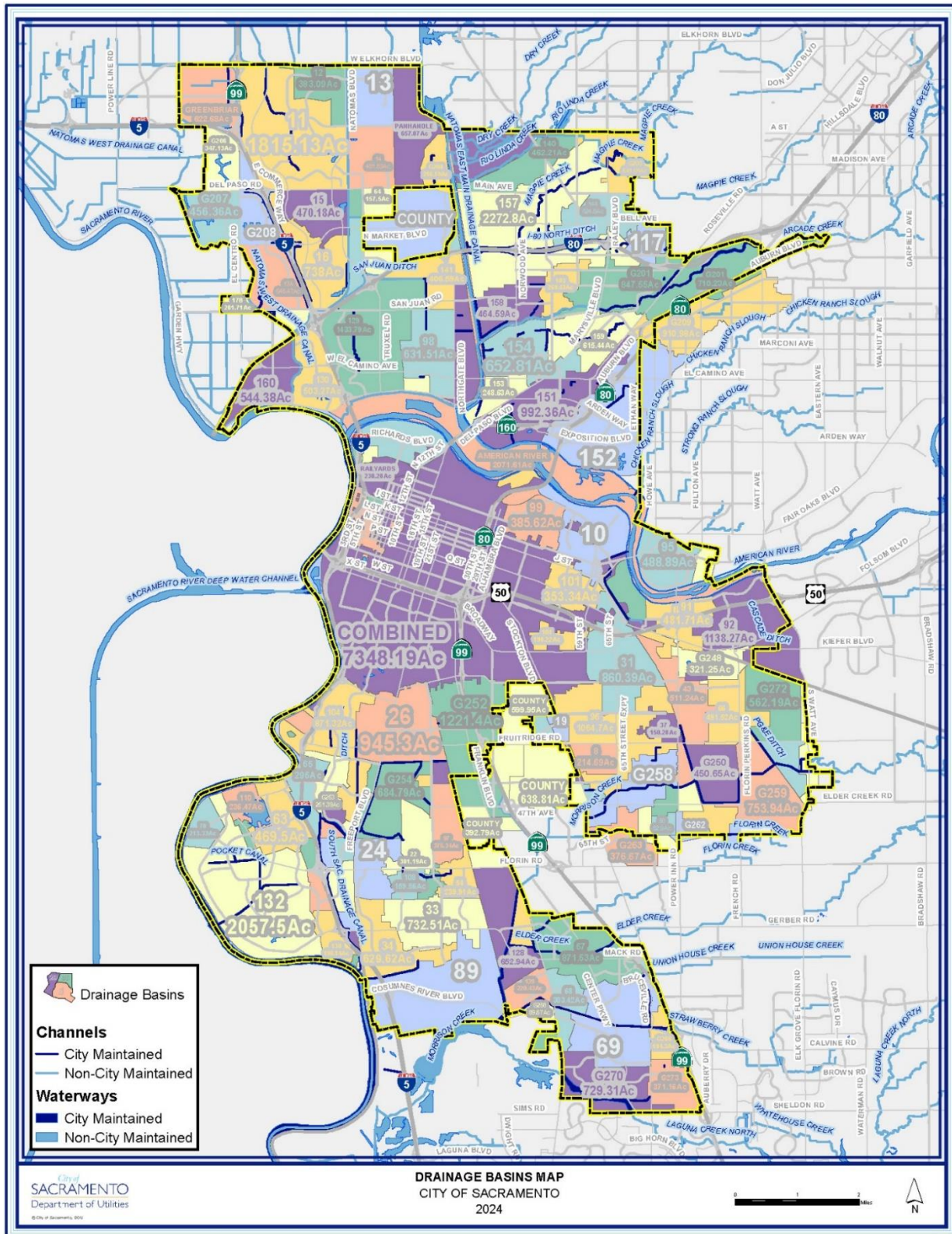
Figure 6.2. Flooding Caused by Internal Drainage Issues, Springman Street and 65th Avenue.



Source: DOU

Although levee failure may result in much more catastrophic damage than flooding from internal drainage, most of the City’s flood damage since 1955 has resulted from drainage deficiencies. In 1995, for instance, approximately 100 homes in four south area drainage basins incurred flood damage due to internal drainage system failure during a particularly intense storm. The City has a total of 869 miles of storm drain pipelines, 71 miles of creeks/ditches/canals, 219 miles of DI leads, 31,639 drain inlets and 106 pump stations. The City’s drainage basins are shown in Figure 6.3. Much of this infrastructure was constructed before current storm drainage design guidelines were in place. In many areas, the system is sized based on outdated hydrology and does not have capacity to drain a 100-year storm event.

Figure 6.3. City of Sacramento Drainage Basins



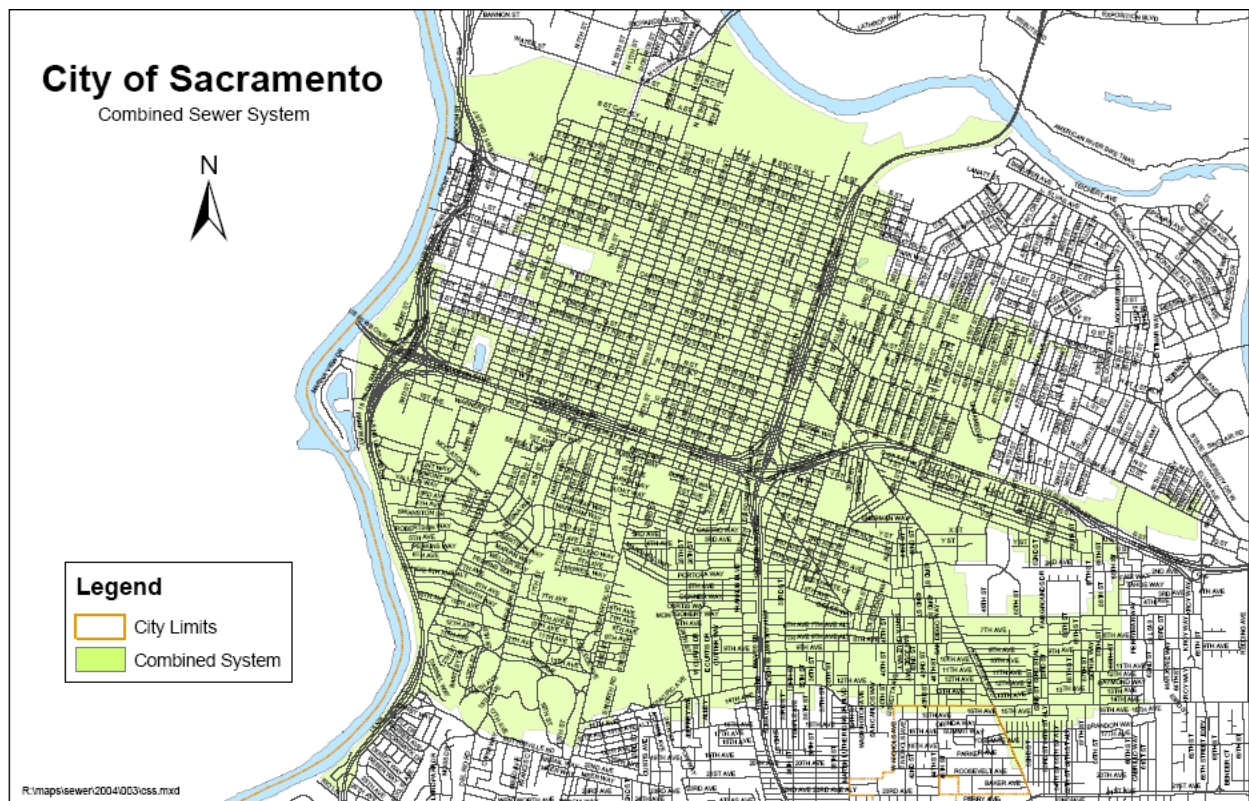
Source: City of Sacramento DOU 2024

6.2 Current Implementation Status

Drainage Fund Shortfall

The combined sewer system (CSS), located primarily in the central part of the City, is unique in that, within its 7,500 acres, the drainage system and sewer systems are combined into a common network of pipes (see Figure 6.4). Because utility customers pay both sewer and drainage rates, in the past, DOU has apportioned the cost for the state-mandated CSS Improvement Program between the Sewer Fund and Drainage Fund. However, due to a steady decline of the Drainage Fund, the CSS had received minimal financial support from this source, greatly impacting the program.

Figure 6.4. City of Sacramento Combined Sewer System



Source: City of Sacramento DOU 2004

The DOU is responsible for operating, maintaining, and making improvements to the storm drainage system. Upgrades to the system are achieved through drainage capital improvement projects (CIPs). These projects are identified through a master planning process and prioritized based on criticality, including the amount of flood risk reduced by the project. Approximately \$70 million of the highest priority projects have been completed over the last 11 years, but a backlog of over \$178 million identified by CIP prioritization for flooding issues remains, leaving many

areas in the City with inadequate protection from a 100-year storm event (see **Error! Reference source not found.**).

Table 6.1. 5-Year Drainage Capital Improvement Program

Project	Cost
Base CIP Contingency Drainage Program	\$4,334,955
Ditch Repair Program	\$6,239,227
Drain Inlet Replacement Program	\$416,026
Drainage Unplanned Repairs Program	\$1,763,159
Drainage Channel Improvements Program	\$1,108,215
Drainage Sump Replacement And Rehabilitation Program	\$9,155,276
Drainage Improvement Program	\$5,145,477
Drainage Collection System Repair And Rehabilitation Program	\$3,750,390
Drainage Trash Capture Program	\$6,300,000
Drainage Facility Electrical Rehabilitation Program	\$16,600,000
Assessment District Basin 141 Improvements	\$1,650,000
Total	\$50,225,725

Source: 2023 – 2027 Approved Capital Improvement Program

Repairs and upgrades to the system as well as its operation and maintenance (O&M) are funded from storm drainage user fees and sewer fees in the CSS. From the mid-1990s to 2004, the City spent around \$8 million per year on CIPs. However, due to increased operational, maintenance, regulatory costs, and zero rate increases since 1996, the money available for storm drainage CIPs was greatly diminished. At the time of the previous CFMP preparation during 2015 – 2016, limited funding was available for storm drainage CIPs.

Tackling this drainage project backlog will require significant investment from the City over the next 50 years. If the City wants to continue to design and construct the backlogged CIPs, it will have to address the health of the Storm Drainage Fund. Storm drainage user fees, like other City utility fees, are set (or approved) by the City Council with consideration of recommendations from the DOU’s newly appointed Rate Advisory Commission (RAC). An effort to increase the funds available for CIPs should include the strategies outlined below.

Storm Drain Utility Fee Increase

The viability of the Storm Drainage Fund has been consistently eroding in the recent past due to increasing O&M costs and an ever increasing state and federal regulatory burden. In 1996, California voters passed Proposition 218 requiring that any storm drain rate increase must be put to a vote of the rate payers and approved by at least 50 percent of those who vote. In the past 17 years, there was no rate increase which created a backlog of needed storm drain improvements. Any strategy to address the backlog of storm drain system improvement projects must include a strategy to raise the storm drain fee.

In 2022, the City of Sacramento rate payers voted to pass a new storm drainage fee to fund CIPs. This rate increase was subject to regulations established in Proposition 218, and about 52 percent of property owners approved the measure to increase the storm drain fee. The fee increase for most single-family homeowners is about \$70 per year (representing an annual increase from about \$135 to \$205), though the ultimate fee is assessed based on the size of impervious surface at the property. This fee increase would raise approximately \$15 million to address the storm drain CIP background and continue improvements on the stormwater system. Due to ongoing litigation, collected funds are frozen until such litigation is resolved.

Grants

There are several sources of grant funding for drainage improvement, including grant funds from FEMA, Cal OES and DWR. For example, grant funding may be procured to build a detention basin that would eliminate the flooding of homes on the City’s NFIP Repetitive Loss list. Funding from the DWR’s FloodSafe program and the State Water Resources Control Board’s grants and loans program are also available.

Regulatory Fees

A sizable portion of the money spent from the Storm Drainage Fund is used to comply with federal and state regulatory requirements. Funding these expenditures through a regulatory fee collected expressly for that purpose would free up a commensurate amount of the drainage fund for CIPs. This fee would not address the Storm Drainage Fund’s structural problems, but would increase the amount of money available for CIPs.

6.3 Implementation Strategies and Action Items

The following implementation strategies outline DOU implementation strategies and action items to reduce flood risk from inadequate internal drainage. Individual action items were recommended and prioritized by the Utilities Department. Each action in Table 6.2 below includes background information and ideas for implementation, responsible office, potential funding, and timeline for each identified action.

Table 6.2. Internal Drainage Improvement Action Items

Action Item	Responsible Department	Schedule
1. Pursue Grant Funding for Drainage Improvements	Engineering Services, Business Services	Short term and ongoing
2. Evaluate and Explore Regulatory Fee Implementation	DOU Public Information Office, Engineering Services, Business Services	Long term
3. Develop Drainage Master Plans	Engineering Services	Short term and ongoing
4. Update the 2021 Watershed Management Plan (WMP)	Engineering Services	Short-term and ongoing

Action Item	Responsible Department	Schedule
5. Master Generator Plan for Back-Up Pump Station Power	Engineering Services, Business Services	Short term
6. Drainage Projects for Repetitive Loss Properties	Engineering Services, Business Services	Short term and ongoing

1. Pursue Grant Funding for Drainage Improvements.

Issue/Background Statement: Pursue grant funding opportunities from FEMA, CA DWR, and the State Water Resources Control Board for drainage improvement projects.

Implementation Strategy: Develop a grant program that will identify and pursue grant programs averaging \$500,000 per year to augment other funds for drainage improvements. Prioritize storm drainage improvements identified in the CIP and LHMP. One full-time City employee or commensurate level of effort from a consultant will be required.

Responsible Office: Engineering Services, Business Services

Potential Funding: City staff

Schedule: Short term and ongoing

2. Evaluate and Explore Regulatory Fee Implementation.

Issue/Background Statement: City staff has completed research and development of a regulatory fee that has the potential to provide up to \$1.5 million per year for drainage improvements. Implementation of a regulatory fee would allow for additional fund raising to support increased regulatory costs.

Implementation Strategy: Present planning level and exploratory assessments of regulatory fee implementation to upper management and internal decision makers. Discuss costs, benefits, and strategic timing opportunities to implement the fee beyond the active period of this CFMP.

Responsible Office: DOU Public Information Office, Engineering Services, Business Services

Potential Funding: City staff.

Schedule: Long-term.

3. Develop Drainage Master Plans.

Issue/Background Statement: The City has completed 35 Basin Master Plans. All high-risk and limited medium risk basins have completed master plans.

Implementation Strategy: Over the next five years, complete five Drainage Master Plans for high and medium risk basins. Update at least one Drainage Master Plan per year. Increased funding may allow team to produce additional plans per year in the future.

Responsible Office: Engineering Services

Potential Funding: City staff

Schedule: Short term and ongoing

4. Update the 2021 Watershed Management Plan (WMP).

Issue/Background Statement: The WMP should be updated every 5 years along with the County-wide LHMP. The WMP is located in Appendix I of the 2021 LHMP. FEMA CRS, under the Insurance Services Office, recommends not limiting watershed management planning to corporate boundaries. Under CRS Activity 450, a participating community may receive points toward improved rating and lowered flood insurance premiums for preparing a plan such as this and updating that plan every 5 years.

Implementation Strategy: Update the WMP by 2026 and coordinate as needed with FEMA for CRS credit.

Responsible Office: Engineering Services

Potential Funding: City staff

Schedule: Short term and ongoing

5. Master Generator Plan for Back-Up Pump Station Power

Issue/Background Statement: The City is divided into approximately 134 drainage basins with most of the drainage from these basins flowing into local rivers, creeks, or drainage channels through pumping. The City owns and operates 106 storm drainage pumping stations throughout the City. The drainage canals and local creeks eventually drain into the Sacramento and American Rivers. Establishing a plan for back-up generator power could avoid flooding during power outages to pumping stations.

Implementation Strategy: Develop a plan for identifying, prioritizing, and implementing power generation needs for pumping stations. Procure a consultant to prepare plan, if necessary.

Responsible Office: Engineering Services, Business Services

Potential Funding: FEMA/DWR/State Water Resources Control Board Grant

Schedule: Short term

6. Drainage Projects for Repetitive Loss Properties

Issue/Background Statement: The City has set a goal to remove at least four repetitive loss (RL) structures from FEMA’s Repetitive Loss List. Many of the RL structures have flooded due to undersized local drainage issues. Potential drainage projects are identified in the City’s existing Drainage Master Plans (Implementation Action #3, above).

Implementation Strategy: Update and rank potential drainage projects identified in the City’s Drainage Master Plans including upsizing pipelines, adding detention basins, adding bypass pipelines, retrofitting pump stations, and land acquisition.

Responsible Office: Engineering Services, Business Services

Potential Funding: FEMA/DWR/State Water Resources Control Board Grant, Corrective Action Plan funding, and DOU

Schedule: Short-term and ongoing

7 RISK COMMUNICATION

7.1 Introduction and Background

The Community Rating System (CRS) is a part of the NFIP. Participating in CRS provides reductions to flood insurance premiums in participating communities. The reductions are based on community floodplain management programs, including public information activities. To keep those discounts, communities must continue to implement their programs and provide status reports to the NFIP each year. Sacramento has been an active participant of the CRS since October of 1991. The City is currently rated as a Class 3, which results in a 35% flood insurance discount for all properties within the City, including structures outside of the SFHA.

A Program for Public Information (PPI) is an ongoing effort to improve communication with citizens and provide relevant information about flood hazards, flood safety, flood insurance, and ways to protect property. The objective of CRS credit for a PPI is to provide additional credit for information programs that are designed to meet local needs and that are monitored, evaluated, and revised to improve their effectiveness. Sacramento has developed its PPI in accordance with the *2017 CRS Coordinator's Manual* and *2021 Addendum to the CRS Coordinator's Manual* credit criteria found within Activity 330.

Over the years, the City of Sacramento, through many departments and in coordination with various stakeholder groups and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, this Chapter of the CFMP was prepared to bring together ideas from the various departments under one comprehensive document.

With advances in technology and a greater familiarity with web-based services, Sacramento has realized that mailing information directly to property owners may not be the most effective method. The PPI process now provides the ability for communities to decide how to best deliver messages to various groups in throughout the City; and for Sacramento, this was a welcomed change.

Step 1: Establish a PPI Committee

A PPI should assess all the community's needs for flood-related information and coordinate all the resources that can deliver information. It should recommend a range of activities that convey information to residents, businesses, tourists, school children, and other audiences in and around the community. It should have an objective review of what is being done and how public information activities could be improved. Therefore, a PPI needs to be developed by a committee that consists of members from both inside and outside local government. A PPI Committee was established in 2014 as part of the previous 2016 CFMP update. Thus, this section describes previous and continued efforts of outreach and collaboration on the City's PPI.

Membership and Stakeholders

The PPI Committee’s membership must meet the following CRS criteria:

- There must be at least five people on the committee.
- There must be representation from the community’s floodplain management office.
- There must be representation from the community’s public information office, if there is one.
- At least half of the members must be from outside the local government (“stakeholders”).
- Additional credit may be given for representation from the insurance industry, such as a local insurance agency.

The CRS encourages engagement of groups and people outside the local government in planning and conducting outreach projects. As outlined above, at least one-half of the members of the PPI committee must be representatives from outside the local government. Sacramento focused on a diverse membership including city staff, citizens located in flood prone areas, and other outside stakeholders involved most directly in the buying and selling of real estate.

The participants comprising the PPI Committee for Sacramento were selected in accordance with the above CRS criteria and include the following:

- 1) Connie Perkins, PE, CFM – Floodplain Manager (DOU)
- 2) Jessica McCabe – Public Affairs/ Outreach and Education (DOU)
- 3) Jim McDonald, AICP, CFM – Sacramento Community Development Department
- 4) Lisa Deklinski – Security and Emergency Preparedness (DOU)
- 5) Yanelis Rios– Junior Engineer (DOU)
- 6) BG Heiland – Sacramento Resident (Natomas)
- 7) Tom Reavey – Sacramento Resident (Natomas)
- 8) Sam Yee –Lyon Realty, Realtor (Sam4Homes Realty in Pocket Area)
- 9) Jeffery Beck – Flood Insurance Agent (Jeffery Beck Insurance Services)
- 10) Ashley Sanchez – Mortgage Lender (Vitek Mortgage Group)
- 11) Kevin Littlefield – Mortgage Lender (West Coast Mortgage Group)

Figure 7.1. PPI Committee



Source: David Stroud

Committee Meetings

The PPI Committee was established in 2014 and met three times during the planning process to complete the outreach program. Each of the PPI meetings was held at the Belle Coolidge Library at 5600 South Land Park Drive, Sacramento, CA 95822. The meeting dates and objectives covered included:

- Meeting # 1 – July 23rd, 2014 – Assessing the community’s current public information needs (PPI planning process, assessment of flood hazards, exposed buildings, flood insurance coverage, identification of target audiences and identification of target areas)
- Meeting # 2 – September 10th, 2014 – Define outreach messages and potential outreach projects (Review July 23rd meeting, discuss and debate outreach project messages to target audiences and target areas and discuss and debate the outreach projects (six CRS priority topics) to deliver those messages along with the dissemination methods)
- Meeting # 3 – October 29th, 2014 – Examine other outreach project initiatives and evaluate flood response preparations. (Reviewed September 10th meeting including the six CRS priority topics and outreach messages, discussion of existing CRS outreach project initiatives and flood response preparations.)

Each committee meeting was held in the evening to allow fuller participation. Based on discussion from the PPI Committee, the meetings lasted approximately 1.5 to 2 hours with the first meeting lasting just over 2 hours.

The responsibilities of the PPI Committee included not only participation throughout the development of the PPI through the 3 meeting and meeting on an annual basis to review implementation progress for this plan. Appendix B includes the invitations, agendas, and sign-in sheets from the three PPI Committee Meetings.

After the PPI Committee was established in 2014, the Committee met annually to review the CFMP and the PPI Program. Most recently, the PPI Committee met in November 2023. Objectives

of the meeting included flood response preparation, insurance coverage, repetitive loss areas, and evaluation of PPI outreach projects. The list of invited meeting attendees included is included below. The agenda and meeting invitation for this most recent PPI Committee meeting is included in Appendix B.

- 1) Jamie McKinley – Admin Analyst (City of Sacramento)
- 2) Rosa Millino – Senior Civil Engineer (City of Sacramento)
- 3) Jessica McCabe – Admin Analyst (City of Sacramento)
- 4) Remi Mendoza – Senior Planner (City of Sacramento)
- 5) Brigid Burdock – Sacramento Resident
- 6) Deniece Ross-Francom – Sacramento Resident
- 7) Brian Messer – Flood Insurance Agent (HUB International)
- 8) Tong Veu – Real Estate Agent (Lyon)

Step 2: Assess the Community’s Public Information Needs

Sacramento is located in north central Sacramento County. The City comprises approximately 99 square miles in total area. The United States Census Bureau estimates the 2020 City of Sacramento population at 528,001 individuals. The majority of the land use within Sacramento is residential (rural, suburban, traditional, and urban) according to the City of Sacramento 2040 General Plan Land Use.

Most buildings are slab-on-grade (Diagram 1 on the FEMA Elevation Certificate) and therefore susceptible to flood damage from shallow flooding and drainage problems. Because the City is located in a unique low-lying area, it is particularly susceptible to flooding from major rain events.

Flood Hazards:

The City is located among a complex system of waterways and levees creating potentially the most flood prone community in the nation. Sacramento is located at the confluence of the Sacramento and American Rivers. The Sacramento River is fed by the Feather River and the Sutter Bypass to the north, running along the western edge of the City. The Sacramento River splits and forms the Yolo Bypass in the Natomas Basin area. Additionally, the American River runs eastward from the Sacramento River and forms a linear transects through the City.

Approximately 75-percent of the City is currently dependent on levees to prevent flooding. The USACE expired the certifications for the City’s levees in 2012 and 2013 because the certifications no longer met the USACE’s risk & uncertainty criteria and/or were older than 10 years. In 2012, SAFCA along with the local communities and maintaining agencies began developing a levee accreditation program to determine whether the levees protecting the City along the lower American and Sacramento rivers and their tributaries adequately met the minimum requirements of the NFIP. This ongoing accreditation program, along with specific project components, are discussed in further detail in Chapter 5. Currently, the areas behind the levees are still identified on the Flood Insurance Rate Maps (FIRMs) as providing 100-year flood protection.

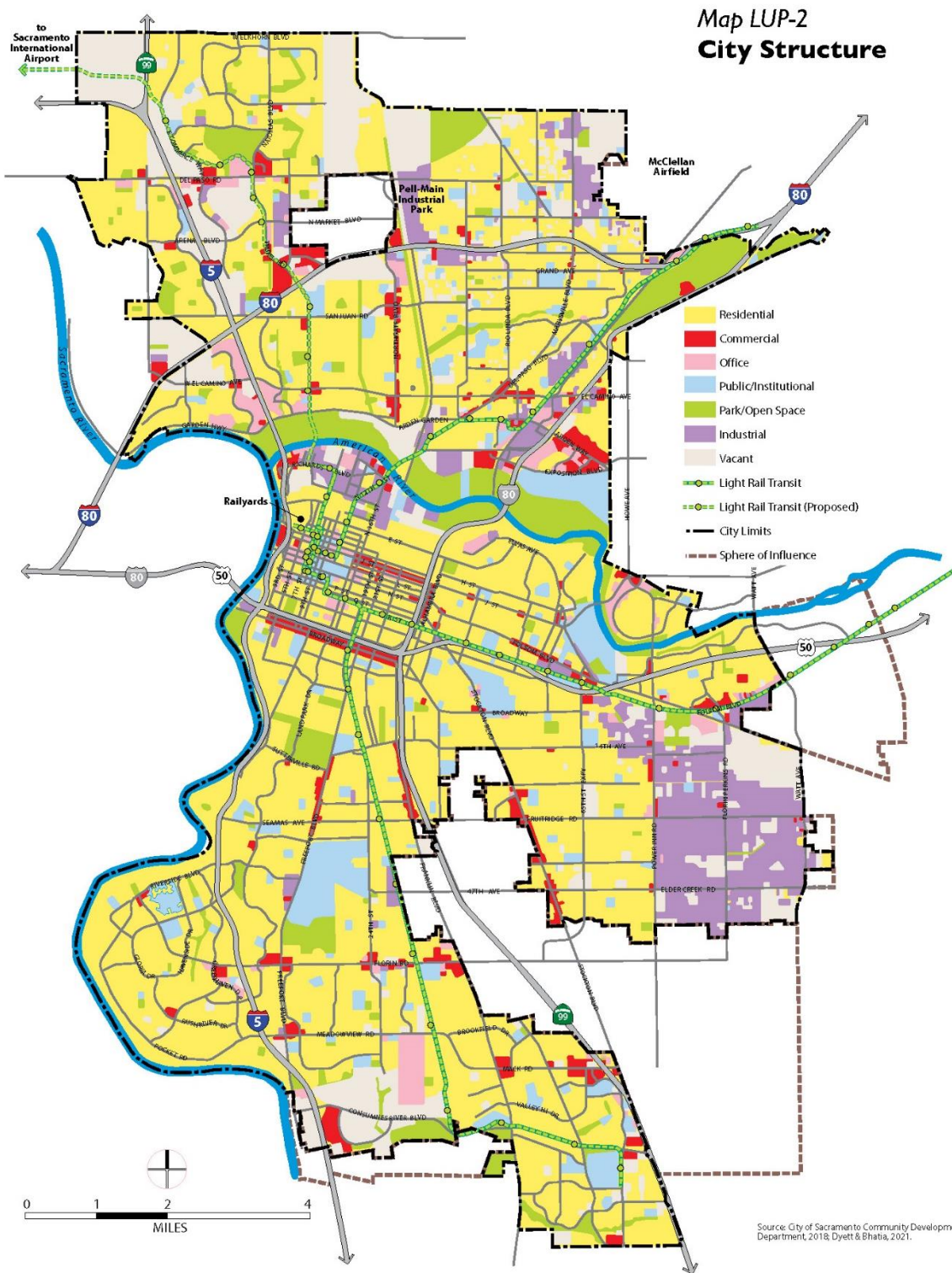
Internal drainage creates a considerable risk in the City for shallow flooding. Internal storm drainage creates flood issues for many buildings because of the flat nature of terrain and runoff, which is pumped through levees to a creek or river. If drainage inlets are clogged or pump stations fail, there is a potential for damage to properties. Part of the problem can be attributed to a combined drainage and sanitary sewer system. Over 7,500 acres of the City is subject to a combined system.

The PPI Committee's assessment of the major causes of flooding include:

- Internal drainage issues/combined sewer system
- Levee river flooding
- Dam breach
- Upstream development

The PPI Committee is concerned about the message that the new FIRMs for Sacramento provide to residents, since many of the levee certifications have expired but are recognized as providing 100-year flood protection. Because many residents are not shown to be in a 1-percent annual chance flood zone, the perception of being damaged from flooding is highly reduced.

Figure 7.2. 2040 General Plan, Land Use



Source: City of Sacramento 2040 General Plan

The City of Sacramento realizes the importance of respecting, protecting, and maintaining the natural flood protection benefits and wetlands within the City. Several land use policies in the 2040 General Plan are designed to achieve these goals, including:

- Resource Protection
- Conservation Open Space
- Natural Lands Management
- Retain Habitat Areas
- Riparian Habitat Integrity
- Wetland Protection
- Annual Grasslands
- Oak Woodlands
- Wildlife Corridors
- Habitat Assessment
- Agency Coordination
- Natomas Basin Habitat Conservation Plan
- Support Habitat Conservation Plan Effects
- Public Education
- Community Involvement

The PPI Committee is aware that the environmental preservation and protection of floodplain functions, which includes hydrologic and hydraulic processes, geomorphic processes, and biologic processes, are important. The seasonal and storm-generated variations in water flow, including periodic flooding, are part of the normal functions of the floodplain. These variations keep erosion and accretion in equilibrium, replenish soils, recharge groundwater, and filter impurities. Therefore, maintaining the natural areas of the City can be helpful in reducing flood damage.

Social and Economic Needs

According to the 2010 US Census, 19.0% of Sacramento residents are Asian, while 28.9% of residents are Hispanic or Latino. Additionally, 37.3% of residents speak a language other than English at home. Approximately 14.8% of the population is considered to be living below the poverty level and 13.6% of the population has not obtained a high school diploma or equivalent. These social and economic factors were considered by the committee in ensuring that the right messages, tools, and resources were used to overcome communication obstacles. The committee recognized that messages would need to be distributed in different forms and using different sources, in order to reach all target audiences.

Determine Priority Audiences

A priority audience is a group of people who require information or communication regarding one or more flood-related topics. Priority audiences are also closely correlated with the priority areas,

as listed in the following section. The following groups have been identified by the PPI Committee as target audiences who need special messages on flood protection:

Priority Audience #1: Businesses, Homeowners, and Renters (entire City)

An analysis of FEMA flood zones and repetitive loss properties shows that the entire City and all flood zones including X zones are subject to flooding, and the PPI should strive to reach all businesses and residents (both homeowners and renters).

Priority Audience #2: School Children

School children tend to take the messages they learn back home which can change behavior within the family itself.

Priority Audience #3: Real Estate, Lending, and Insurance Companies

These groups play a key role in conveying information about flood insurance to homeowners. The PPI Committee will make sure these groups are informed and equipped with the tools needed to convey flood risk and flood insurance information to residents, especially before final property transactions take place.

Priority Audience #4: Vulnerable Populations (Special Needs, Elderly, etc.) and Disadvantaged Communities

An unknown number of residents in Sacramento are vulnerable in terms of their condition and ability to safely evacuate in case of an emergency. This group can include blind/visually impaired, cognitive impairments, culturally diverse, deaf/hard of hearing, homeless, mental health conditions, mobility impaired, and seniors.

Priority Audience #5: Political Leaders

Change in promoting flood safety and flood response occurs when political leaders understand the value of such efforts. Many on the PPI Committee wanted the City Council and other elected officials to be listed as a Target Audience since they have decision making authority which can benefit flood protection and flood response programs. Therefore, this PPI will encourage political leaders to provide the appropriate resources necessary to protect the residents and businesses within Sacramento.

Priority Audience #6: Language Barriers

Many languages are represented within the City of Sacramento. Complex issues related to floodplain management including the 1% annual chance flood, elevation certificates, substantial improvement, etc. may need to be explained in languages other than English. In 2022, the United States Census Bureau – American Community Survey indicated that 18% of the City’s total population spoke Spanish at home most or all of the time while 11.9% of the total population speak

a language native to Asia or the Pacific Islands at home most or all of the time. As such, providing materials in native languages could make for better understanding of flood protection materials.

In addition to the target audiences detailed above, the PPI Committee identified the following stakeholders as being able to provide support and informational materials to supplement and enhance the outreach efforts detailed in this PPI:

- FEMA
- California Department of Water Resources
- California NFIP State Coordinator
- California Office of Emergency Services
- City Office of Emergency Services/County Office of Emergency Services
- Sacramento Ready
- Floodsmart.gov
- Ready.gov
- Red Cross

Identify Priority Areas

In order to develop an effective local outreach program that raises public awareness about flood related issues, it is necessary to identify and assess the areas within the community that are considered to be flood prone. The PPI Committee identified the following target areas and concluded that outreach projects should be directed to all properties (residential, commercial and public) within these areas:

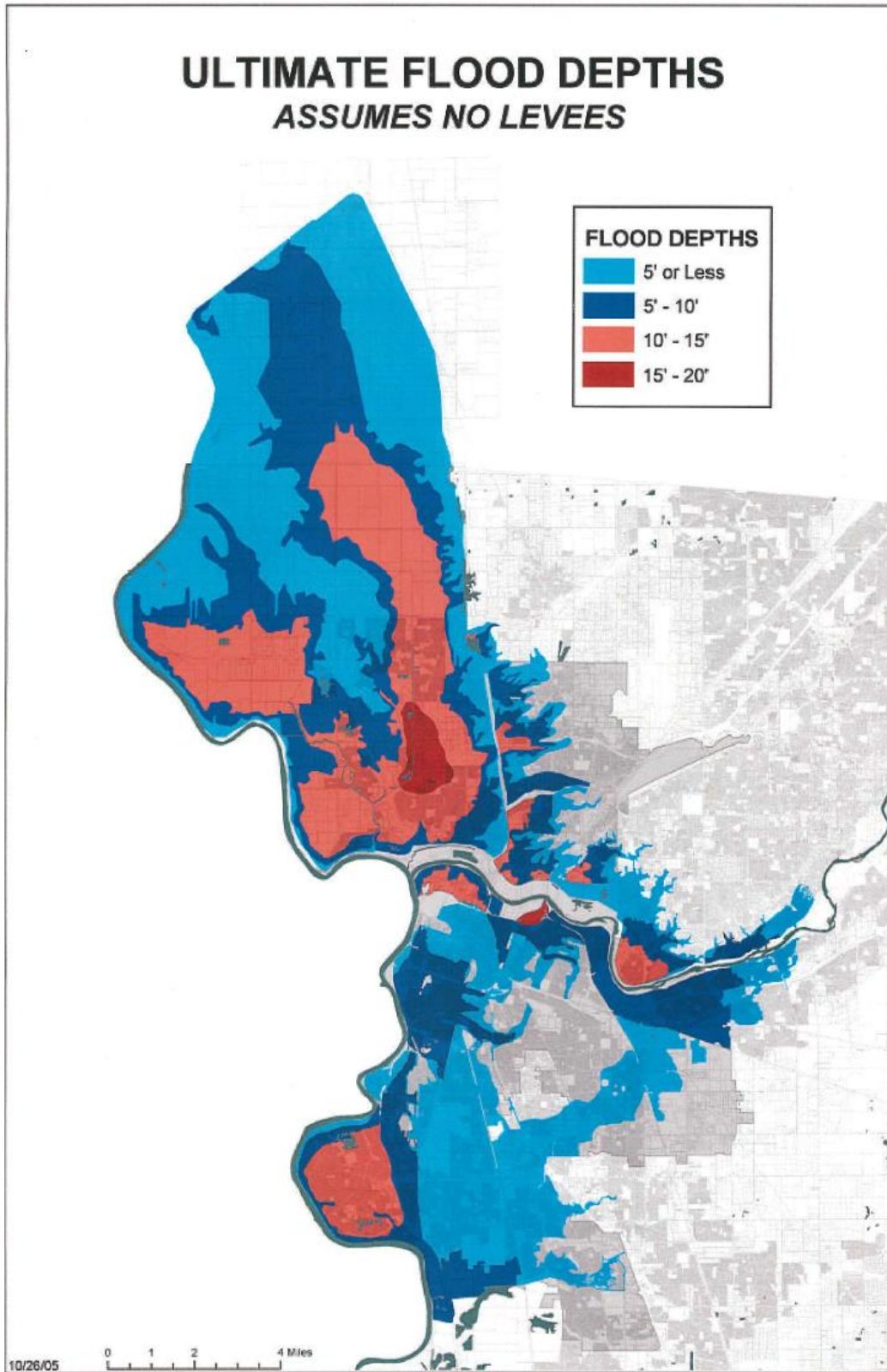
Priority Area #1: The Entire City of Sacramento

The City of Sacramento is approximately 100 square miles and contains 316.96 acres of inland waters. Approximately a quarter of the City is located within an SFHA, including the 1% and 0.2% annual chance flood year. Substantial parts of the City are mapped Zone X, as an area protected by levees from the 1% annual chance flood. Figure 2.6 in Section 2.1 reflects the flood insurance zones for Sacramento. Figure 7.3 depicts the depth of flooding that can be expected within the City during the 100-year flood event, assuming no levee protection.

Summary

The entire City and all flood zones (including the X zone) are subject to flooding, and the PPI should strive to reach all residents and businesses within the City with a variety of messages for flood protection and flood safety.

Figure 7.3. Flood Depths in the City of Sacramento Area



Source: City of Sacramento

Priority Area #2: Repetitive Loss Properties and Insurance Claims (areas)

Properties categorized as repetitive loss properties have a greater need for flood protection. According to 2023 NFIP records, there are 23 unmitigated repetitive loss properties in Sacramento. FEMA places a high priority on mitigating repetitive losses. The City has mitigated 22 properties. The City has investigated the causes of repetitive flooding and some of the causes include:

- Properties have combined storm and sanitary system.
- Properties in low lying area of drainage basin have undersized conveyance systems.
- Properties receive drainage from adjoining property at higher elevations.
- Properties have created problems with lot grading and obstructions to flow; and
- Properties need further investigation.

Information on property protection and financial assistance programs for mitigation measures is needed for each property located in the repetitive loss properties target area. Residents in this area will also have an increased need for site visit services. Table 7.1 below details the repetitive loss building count categorized by FEMA flood zone.

Table 7.1. Repetitive Loss Building Count by FEMA Flood Zone

Flood Zone	Repetitive Loss Building Count
AE, A1-30, AO, AH, A99, & A	4
B, C, X	19
Total	23

Source: FEMA 2023 Data

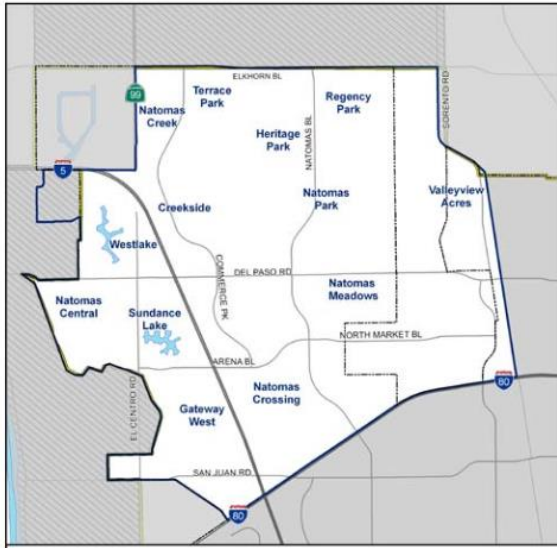
Summary

Information on repetitive loss properties and properties with flood insurance claim location data is kept confidential. Generally, repetitive loss property locations and insurance claims properties are distributed across all flood zone types within the City. All repetitive loss areas are notified of this problem, and provided information on property protection measures, risk factors, insurance requirements, and types of grant funding which can provide mitigation monies. Appendix D contains the Repetitive Loss Area Analysis which shows the details of the City’s repetitive loss areas and outreach project.

Priority Area #3: Natomas (North Natomas/South Natomas)

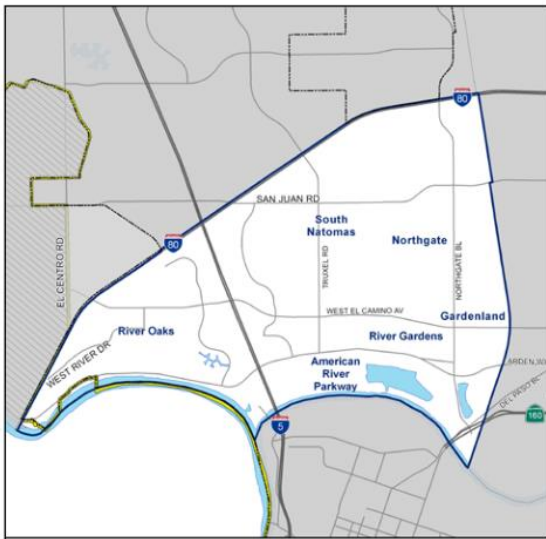
The greater Natomas basin is 55,000 acres in size and extends into the northwest portion of Sacramento County. Within the City, the area of the Natomas basin is approximately 12,500 acres and is surrounded by levees. This area of the Natomas basin is identified within the SFHA and is at risk to internal drainage issues, riverine flooding, and potential levee beach. The Natomas area is broken into North Natomas (see Figure 7.4) and South Natomas (see Figure 7.5) with Interstate 80 as the dividing line.

Figure 7.4. North Natomas



Source: Sacramento 2040 General Plan

Figure 7.5. South Natomas



Source: Sacramento 2040 General Plan

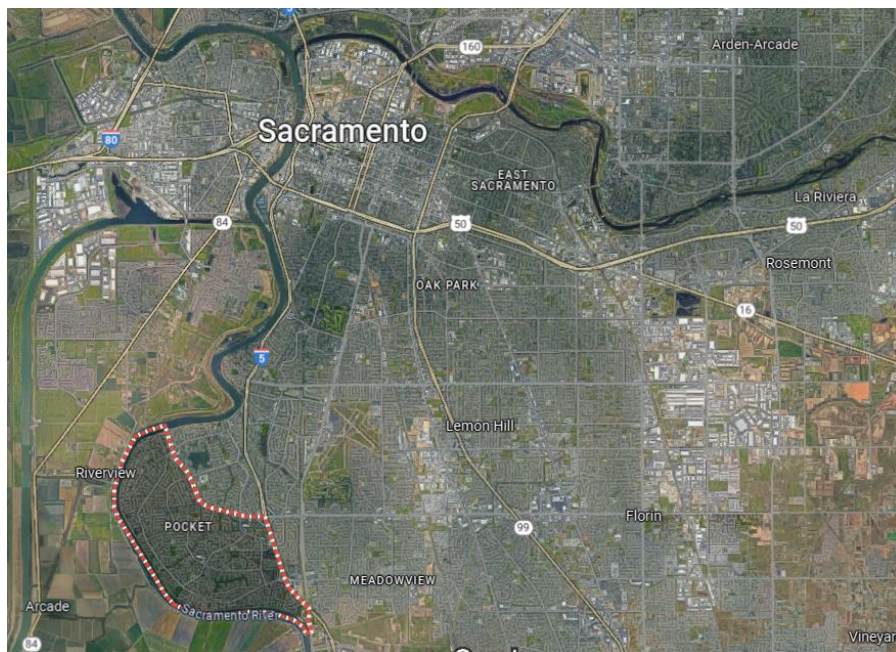
Summary

The Natomas area in the northwest portion of the City is 12,500 acres and bounded by both the Sacramento and American rivers. Major levees provide flood protection to this vulnerable area, and the ongoing Natomas Levee Improvement Project will result in 200-year flood protection over time. Identifying evacuation routes, discussing property protection measures and promoting flood insurance are essential tools to be implemented in this area.

Priority Area #4: Pocket-Greenhaven (The Pocket)

The Pocket area is located within the southwest portion of Sacramento, immediately south of downtown. This area is approximately 7.9 square miles and just over 5,000 acres in size. The Pocket is an area of the City located adjacent to a bend of the Sacramento River, and experiences flood damage. This area is subject to internal drainage issues, riverine flooding, and potential levee breaches. The Sacramento River curves around the west side of the Pocket Area making it difficult for the community to evacuate. Major canals are also present in the Pocket Area as shown in Figure 7.6.

Figure 7.6. The Greenhaven/Pocket Area



Source: Google Earth

Figure 7.7. Greenhaven/Pocket Funnel Area



Source: Protect the Pocket.com

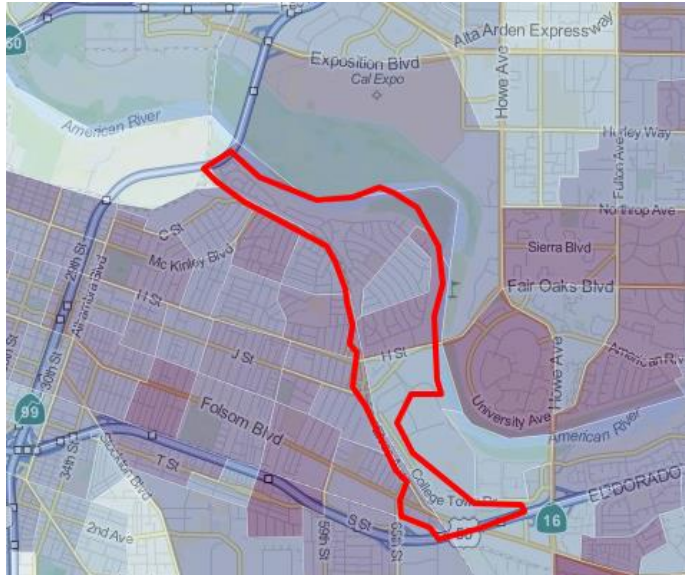
Summary

The Pocket-Greenhaven (The Pocket) is over 7.9 square miles in the southwest portion of the City and is located at the bend of the Sacramento area. The Sacramento River narrows as it enters the Pocket Area, which accelerates water flows and ultimately contributes to eastern back erosion. There are limited egress routes out of the neighborhood if evacuations are necessary, as all residents would be required to evacuate eastbound. Providing increased awareness of evacuation routes is necessary for the life safety of residents.

Priority Area #5: River Park Neighborhood by Sacramento State

The River Park neighborhood is located north of Sacramento State University and follows the American River (see Figure 7.8). This neighborhood is 1.23 square miles with a 2020 population of approximately 5,700. Because this neighborhood is adjacent to the American River, the potential for flood damage is also high. If a levee were to break along the American River, the majority of water would remain in River Park because elevated railroad tracks along Elvas Avenue would block flow into adjacent neighborhoods.

Figure 7.8. River Park Neighborhood



Source: City-Data.com

Summary

The River Park Neighborhood is just south of the American River and is vulnerable to levee break flooding and other internal drainage issues. As other areas of Sacramento, this is a densely developed area which requires residents to understand the hazards of living adjacent to a major river and the property protection and life safety issues associated with living in this location.

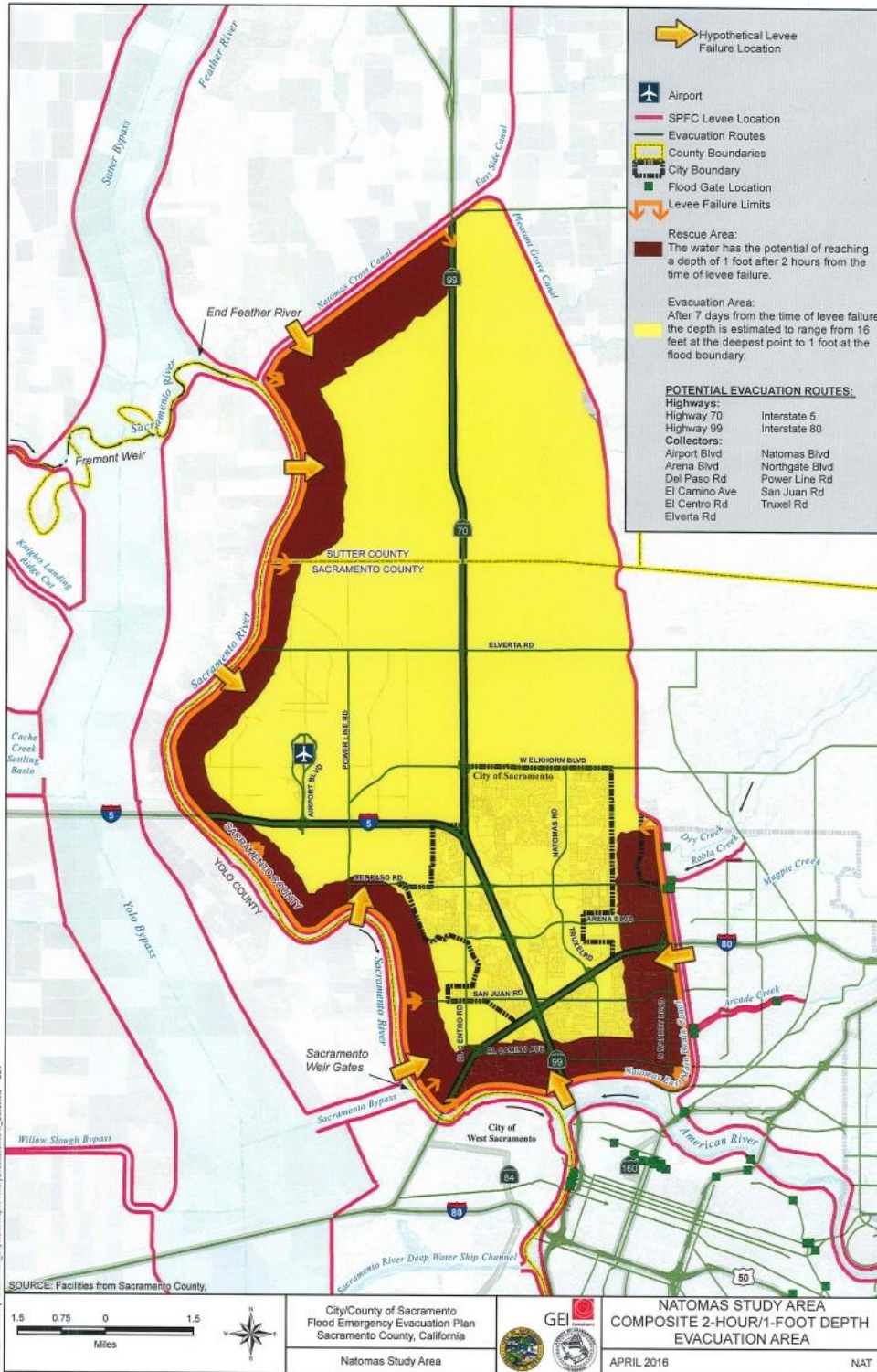
Priority Area #6: Rescue Areas (Defined by Levee Breach Scenarios)

As discussed in Section 4.2.1, the City has identified rescue areas where evacuation may not be possible during an emergency. Thus, the City has mapped primary rescue areas where water has the potential of reaching a depth of one foot after two hours from the time of levee failure and rescue operations are likely to be required. The rescue areas are primarily adjacent to the Sacramento and American Rivers, with consideration for other major creeks. Rescue areas, along with flood depth and evacuation maps are available on the City's website, linked here: <https://www.cityofsacramento.gov/utilities/flood-preparedness/evacuation-maps>.

Summary

Rescue areas identified by the City and these areas were mapped to provide emergency responders information on which areas residents will need to be rescued because they will not have time to evacuate. Figure 7.9 shows the rescue areas identified in Natomas. Appendix C shows the detailed rescue areas.

Figure 7.9. Rescue Areas in Natomas



Source: 2016 City of Sacramento Rescue and Evacuation Maps

Real Estate Disclosure Evaluation

California Civil Code 1103 relating to a Natural Hazard Disclosure requires that the seller or the seller's agent make appropriate disclosures if the property is in a Special Flood Hazard Area (SFHA) or in an area of potential flooding shown on a dam failure inundation map. However, this regulation only applies if the agent has actual knowledge that a property is located in the SFHA, or the local jurisdiction has compiled and posted a list of parcels in the SFHA.

Based on feedback from members of the PPI Committee, disclosures provided to the buyers are not consistent. The primary concern is that disclosures outside of the SFHAs do not clearly indicate the floodplain status. Additionally, the official disclosure or notification of mandatory flood insurance requirements within the community's SFHAs can be improved upon. The local Relator association has agreed to partner with the City of Sacramento to increase educational information on flood insurance and flood hazards provided to its membership.

The PPI Committee recommended the following two action items to improve real estate disclosure compliance within the City of Sacramento.

1. Increase communication and education efforts with the real estate community. The City will develop an information bulletin or brochure which explains to real estate agents the importance of disclosures and mandatory flood insurance laws. (OP 21)
2. The City will research the possibility of posting a list of all parcels located in the SHFA. This list would be published on a secure webpage which link would only be provided to real estate agents within the community.

Flood Insurance Coverage Assessment

One valuable source of information on flood hazards is current flood insurance data for both active policies and past claims. Flood insurance is required as a condition of federal aid or a mortgage or loan that is federally insured for a building located in a FEMA high hazard flood zone (A or V Zone). An analysis of the NFIP data provided the following insight into areas susceptible to flooding in the City:

- 1) Where do active flood insurance policies exist?
- 2) Where have flood insurance claims been paid in the past?
- 3) How many buildings are exposed to the flood hazard versus how many buildings have coverage?
- 4) How does the average amount of coverage compare to the amount of expected flood damage from the 100-yr flood?

There are 32,669 active flood insurance policies in the City of Sacramento as of October 2, 2023, according to FEMA's Community Information System (CIS). The CIS shows a few policies located in flood zones that no longer exist in Sacramento because of updates to the Sacramento County FIRM. Flood zones such as A, AO, and AR have become X Zones. Because policies were issued

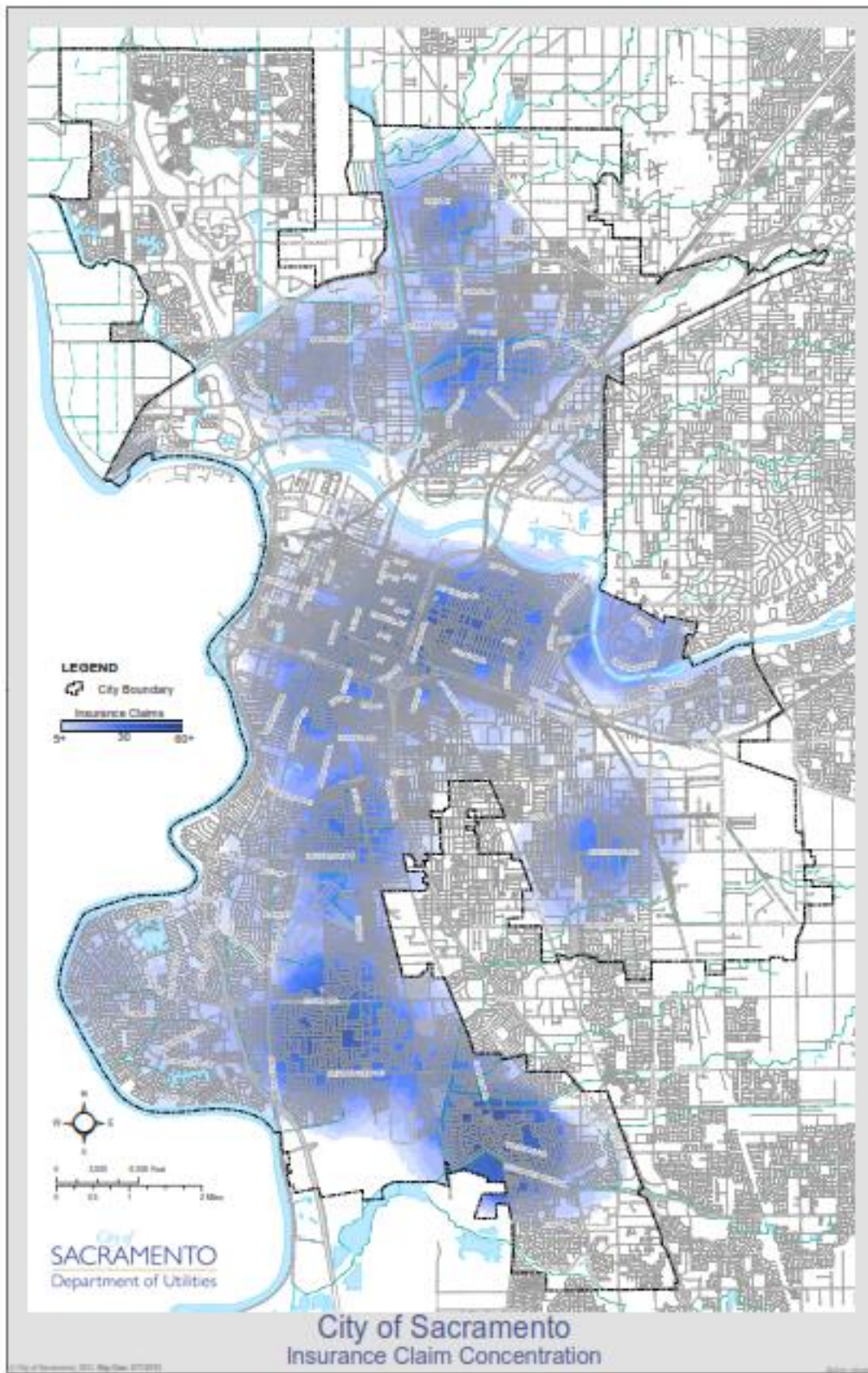
under these original zone classifications, information is still reported out under the original zone classification in CIS.

The 32,669 flood insurance policies generate annual premiums of more than \$17 million for the NFIP. This produces flood insurance coverage within Sacramento of over \$11 billion. To date, there have been 1,907 total paid claims against the NFIP totaling more than \$10.1 million dollars.

Because of the updated FIRM (based on levee de-certifications), the X-Zone has the highest percentage of flood insurance coverage within the City presently. Further, the makeup of flood insurance policies held within the City changed substantially when the Preferred Risk Policies (PRPs) were phased out as of April 2022 for property owners within B, C, and X zones. The PRP was a voluntary lower-cost Standard Flood Insurance Policy that offered fixed combinations of building/contents coverage limits or contents-only coverage available only within the B, C, and X zones. PRPs were ultimately phased out under the Risk Rating 2.0 as FEMA can differentiate flood risk outside of high-risk flood zones.

Therefore, within the City of Sacramento, flood insurance policies across each zone remained relatively stable between 2017 to 2021. During 2021, a significant decrease in PRP participation was reported before ultimately phased out in 2022. Those who maintained flood insurance policy within a B, C, or X zones are now classified as standard policies. During 2020, a total of 43,303 flood insurance policies were in place compared to 32,701 reported during 2023, representing a decrease of over 10,602 policies. This decrease may be attributed to the elimination of the PRP program, unemployment and inflation associated with the COVID-19 pandemic. Data shows similar decreases in voluntary flood participation programs during the Great Recession as well. Refer to Chapter 8 for further detail regarding the historic PRP program and flood insurance policy data for the City.

Figure 7.10. Flood Insurance Policies Claims Concentration



Source: City of Sacramento, Department of Utilities

Table 7.2 summarizes key statistics of policies in force and past claims by flood zone.

Table 7.2. NFIP Policy and Claims Data by Flood Zone

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	36	\$15,094	\$12,475,000	51	\$503,592.03	\$20,294.98
A Zones	0	\$0	\$0	32	\$239,984.28	\$11,212.87
AO Zones	0	\$0	\$0	16	\$75,317.77	\$4,075.00
AH Zones	79	\$54,919	\$19,106,000	31	\$183,102.47	\$13,840.00
AR Zones	1	\$1,144	\$300,000	33	\$380,263.95	\$17,667.02
A99 Zones	21,880	\$10,949,641	\$7,645,176,000	1,426	\$6,338,180.99	\$443,683.30
Standard x	11,541	\$5,928,586	\$3,950,546,000	200	\$1,743,687.32	\$77,826.79
Preferred x	0	\$0	\$0	115	\$539,935.71	\$67,035.00
Total	33,537	\$16,949,384	\$11,627,603,000	1,904	\$9,995,064.52	\$655,634.96

Source: FEMA Community Information System 2023

Table 7.3 provides a comparison of percentage of buildings insured by flood zone.

Table 7.3. Percentage of Buildings Insured

Flood Zone	Number of Policies in Force	Number of Buildings	% Insured
A01-30 & AE Zones	36	368	9.78%
A Zones	0	3	0%
AO Zones	0	0	0%
AH Zones	79	264	29.92%
AR Zones	1	0	0%
A99 Zones	21,880	51,992	42.08%
Total	21,996	52,627	81.78%
B, C, & X Zones	11,541	191,006	6.04%

Source: (Buildings)_Sacramento County Parcel Data and FEMA DFIRM – October 2022
(Policies) FEMA CIS Insurance Overview May 2023

Table 7.4 provides a comparison of flood loss estimates by flood zone.

Table 7.4. Flood Loss Estimates by Flood Zone

<i>Flood Zone</i>	<i>Number of Buildings</i>	<i>Number of Policies in Force</i>	<i>Total Coverage</i>	<i>Loss Estimate</i>
A01-30 & AE Zones	368	36	\$12,475,000	\$7,720,441.49
A Zones	3	0	\$0	
AO Zones	0	0	\$0	
AH Zones	264	79	\$19,106,000	
AR Zones	0	1	\$300,000	
A99 Zones	51,992	21,880	\$7,645,176,000	
B,C, & X Zones	191,006	11,541	\$3,950,546,000	\$2,274,623.03
Total	243,633	33,537	\$11,627,603,000	\$9,995,064.52

Source: (Buildings) Sacramento County Parcel Data and FEMA DFIRM – October 2022
(Policies) FEMA CIS Insurance Overview May 2023

Based on the data reviewed above, the PPI committee concludes:

- There are over 33,000 flood insurance policies in the City and over 80% of buildings in the SFHA are insured.
- Drastic increase in A99 policy percentage and building count likely due to the remapping of Natomas area from AE zone to an A99 zone.
- Increase of SFHA policies may be due to increased housing costs requiring federally backed mortgages and mandatory insurance requirements.

Based on the information the PPI committee has learned from the insurance coverage assessment, the goals are to:

1. **Insurance Coverage Improvement Plan:** Increase the number of flood insurance policies as the cumulative number of policies held has decreased since 2019.
2. **Repetitive Loss Area Analysis (RLAA):** Update the RLAA, which is included as Appendix D as part of this CFMP.
3. **Open Space Education:** As the American River Parkway is the largest open space within the City, highlight the recreation areas, the Parkway’s history and many habitats located within the Parkway.
4. **Stream Dumping Regulations:** DOU Floodplain Management staff is to coordinate with DOU Water Quality staff to implement outreach material related to trash-free water ways.
5. **Flood Protection Assistance:** Flooding information and property protection information handouts to the public, including potentially using FEMA grants to fund different options.
6. **Levee and Dam Safety:** The City sent out an updated “Be Flood Ready, Plan Ahead, Levees are not Sacramento’s only Flood Risk”, Dams Brochure to city residents in September 2022 and will continue to send them annually.

In Table 7.6, outreach projects containing messaging related to “Topic B - You need Flood Insurance” align with the committee’s coverage improvement goals. These projects were designed by the committee to reach the entire community and specific target areas. The desired outcomes of each project and the responsible parties are outlined in Table 7.6. Additionally, the City annually hosts Emergency Preparedness Meetings (OP. 15) which highlight the importance of flood insurance as part of one’s preparedness planning. These meetings are hosted and facilitated by a City Council Member.

Repetitive Flooding

An analysis of repetitive loss was completed to examine the number of insured repetitive loss properties against FEMA flood zones. According to 2022 NFIP records (when the PPI committee last convened), there were 23 unmitigated repetitive loss properties evaluated with total payments of \$691,637.

Table 7.5. Repetitive Loss Summary (Unmitigated Properties)

Flood Zone	Building Count		Total Number of Losses	Total Building Payment	Total Content Payment	Total Paid
	Insured	Uninsured				
X	1	17	41	\$453,235	\$85,499	\$538,734
AE & A99	3	2	10	\$150,873	\$2,030	\$152,903
Total	4	19	51	\$604,108	\$87,529	\$691,637

Source: FEMA RL List 2021/2022

Therefore, the PPI Committee came to the following repetitive flooding conclusions:

1. Repetitive flooding can occur anywhere in Sacramento. The location of repetitive loss areas and associated repetitive loss properties are evenly distributed throughout the City and amongst various flood zones (including B, C and X-zones).
2. Internal drainage plays a major role in these properties flooding.

Inventory Other Public Information Efforts

A key part of developing a public information program is becoming aware of other public information activities targeting Sacramento residents. The information in Table 7.6 summarizes information obtained from past projects, staff research, and PPI Committee members.

Table 7.6. Public Information and Flood Response Projects

Project Number	Organization	Project	Subject Matter	Frequency
OP 1.	City of Sacramento Department of Utilities,	Be Flood Ready Brochure	Flyer in Utility Bill	Annually - November

	Floodplain Management, & PIO Staff			
OP 2.	City of Sacramento Department of Utilities, & Floodplain Management	Repetitive Loss Outreach	Letter with advice on property protection, site visits, and financial assistance for mitigation measures and Be Ready Flood Brochure	Annually – Late Fall
OP 3.	City of Sacramento Department of Utilities, & Floodplain Management	Map Inquiry Service	Flood, Hazard Areas, mandatory insurance purchase requirements	Year-round
OP 4.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	High Water Marks	Program to monitor and establish high water marks after flood events	Year-round
OP 5.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Outdoor Ad Placement	Flood related messaging	Annually - Fall
OP 6.	City of Sacramento Department of Utilities, Water Quality & PIO Staff	No Dumping Signs	Signs throughout floodplain	Year-round
OP 7.	City of Sacramento Department of Utilities, Floodplain Management, Drainage, & PIO Staff	Flood Protection Assistance Site Visits	Drainage problems, flood protection, historical flood damage	Year-round
OP 8.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, California Department of Water Resources & PIO Staff	Various Brochures at City Offices	How to develop in a floodplain, living next to a levee, stormwater pollution, substantial improvement rule, permit requirements	Year-round
OP 9.	California Department of Water Resources	Levee Flood Protection Zone Map (Flood Risk Notification: Living with Levees)	Indication of properties estimated to be at a depth of greater than 3 feet	Year-round
Project Number	Organization	Project	Subject Matter	Frequency
OP 10.	Federal, State, City of Sacramento and Sacramento County	Flood Preparedness Week	Promote awareness of flood damage	Annually November
OP 11.	City of Sacramento Department of Utilities, & Water Quality	No Dumping Stencils & Permanent Markers	Promote on storm drains that only rainwater should go down drain	Year-round
OP 12.	Office of Emergency Services	Booklets	“Are You Prepared” Information	Year-round
OP 14.	American River Flood Control District	Newsletter	Flood Control Information	At least Annually
OP 16.	City of Sacramento – Several Departments participate	Earth Day	Information provided on flood insurance, emergency kits, pay attention during storm events	Annually - April
OP 19.	City of Sacramento Department of Utilities, Floodplain Management & PIO Staff	Dam Safety Outreach	Brochure that describes inundation area and identification of risks, evacuation procedures and routes	Annually

OP 20.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, & PIO Staff	SPLASH program	Provide messages to elementary students on flood protection, stormwater pollution	Quarterly
OP 21.	Real Estate Agents	Disclosure of the Flood Hazard Informational Guide	Explains State Requirement for Flood Disclosure to Real Estate Agents	Year-round
OP 22.	City of Sacramento Department of Utilities, OES, PIO	Translation Services Provided	City will provide translation services to help understand all flood-related information	Year-round
OP 23.	Insurance Agencies	Bi-lingual Insurance Agents	Flood Insurance information presented in native language	Year-round
OP 24.	City of Sacramento Department of Utilities, & OES	Levee Breach Scenario Maps – 18 Rescue Areas	Website mapping which shows "Red "rescue areas where water has the potential to reach 1' in 2 hours	Year-round
OP 25.	California Nature Conservancy	Conserving Natural Resources in California	Newsletters and website Information on natural & beneficial functions of floodplains	Year-round
OP 26.	Real Estate Agents and Lenders	Real Estate Agent's Brochure	Brochure for potential homebuyers to provide floodplain information	Year-round
Project Number	Organization	Project	Subject Matter	Frequency
OP 27.	City of Sacramento Department of Utilities	Flood Ready Website	Provides information on all flood related topics	Year-round
OP 28.	American River Parkway Foundation	The American River Parkway Brochure	Provides information on wildlife, habitat protection, and recreational activities	Year-round
OP 29.	National Flood Insurance Program (NFIP)	NFIP Risk Notification Mailing	Provides flood insurance holders with flood risk information for their area	Annually
OP 30.	Congresswoman Doris Matsui's Office	Flood Insurance Promotion: Web Page and Community Newsletter	Congresswoman Matsui promotes the importance of flood insurance through her website and newsletter	Year-round
OP 31.	Flood Insurance Outreach Letter	Mail Flood Insurance Promotion Brochures	Provide flood insurance information and encourage purchasing a policy	Annually
OP. 32	Federal Emergency Management Agency (FEMA)	Hazard Mitigation Grant Program Brochures	Provides information on grants that are available for structure retrofit and flood mitigation.	Year-round
Flood Response Projects				
Project Number	Organization	Project	Subject Matter	Frequency
FRP 1.	Primary: Public Information Officer and City Manager Secondary: Community Development Department and Depart of Utilities	Media Release (TV and Radio and Newspapers)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event

FRP 2.	Emergency Operations Center and Public Information Officer	Everbridge/Emergency Broadcast System	Use Everbridge and EBS to notify residents of information during a flood	During a flood event
FRP 3.	Primary: Public Information Officer and Neighborhood Services Secondary: Community Development Department and Department of Utilities	Media Release and Post of social media (Facebook, Twitter, Next Door, and others)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event
FRP 4.	Department of Utilities, Operations & Maintenance, Water Quality Lab	Drinking Water Quality Incident Response	Prevent consumption of contaminated water after a flood. Outreach materials drafted, translated and delivered to warehouse.	During and after a flood event, if needed
FRP 5.	Department of Utilities, Operations & Maintenance	Combined Sewer System Warning Signs	Signage posted after flood to prevent people from entering potentially contaminated water	During and after a Combined Sewer System flood event (including street flooding events)
FRP 6.	Primary: Police Secondary: Code Enforcement, Building Department, and Department of Utilities	After flood event handouts when in the field	Re-entry safety, permit & reconstruction requirements, flood protection methods	Upon re-entry of flooded areas
FRP 7.	City of Sacramento Neighborhood Services and Department of Utilities	Flood Insurance and Grant Information Handouts	Information on filing flood insurance claims and grant opportunities	Provided to flood damaged properties during an inspection or upon re-entry to area

The following figures identify examples of past public information efforts and outreach materials provided by the City of Sacramento, other organizations and agencies which benefit the City.

Figure 7.11. Public Information Examples

SAFCA
The Sacramento Area Flood Control Agency

Board of Directors | Board Meetings | Flood Insurance | Development Impact Fee Program | Assessments | Finances

South Sacramento Streams Group Project

OVERVIEW:

The southern portion of the Sacramento urbanized area has historically been vulnerable to flooding from high water events in the Sacramento-San Joaquin Delta as well as high flows on Morrison Creek, Florin Creek, Elder Creek and Unionhouse Creek. The South Sacramento Streams Group Project (SSSG), which encompasses these creeks has been the vehicle to improve these creeks. The SSSG project consists of levee improvements starting south of the town of Freeport and running easterly along the southern edge of the urbanized area.

This levee eventually meets up with the Union Pacific Railroad (UPRR) tracks, near Detroit Way. From UPRR heading eastward, the project extends up four creeks. Along these four creeks, a combination of raising the levee, constructing floodwall and channel improvements are being used to provide protection to the community.

Cost: Authorized cost for the entire project is \$100,000,000

Click to be routed directly to the following Projects:

- FLORIN CREEK MULTI-USE DETENTION BASIN CREEK PROJECT
- FLORIN CREEK CHANNEL PROJECT
- MORRISON CREEK UNION PACIFIC RAILROAD PROJECT
- UNIONHOUSE CREEK CHANNEL IMPROVEMENTS

facebook

Email or Phone | Password | Log In

Fun, Family Friendly Event! Celebrate Natomas is on Facebook. To connect with Celebrate Natomas, sign up for Facebook today. Sign Up | Log In

Celebrate Natomas
Community

Timeline | About | Photos | Likes | More

PEOPLE | 162 likes

ABOUT

The 12th Annual "Celebrate Natomas Festival" is just around the corner! Please join us in supporting the 2014 Celebrate Natomas festival by becoming a... READ MORE

<http://portal.cityofsacramento.org/Mayor-Council/Di...>

Like | Comment | Share

Levees are not Sacramento's only Flood Risk

Potential dam failure brings flooding risk to Sacramento

Schedule Your Splash-in-the-Class Presentations

Treat your students to a fun and educational classroom experience! Splash-in-the-Class presentations are an engaging, hands-on way to teach 3rd – 6th grade students about stormwater quality and how they can be the solution to stormwater pollution.

Please fill out the form below. Our program coordinator will normally confirm your presentations within 48 hours except during peak reservation periods. If you do not hear back within one week, please feel free to contact him at david@sacsplash.org.



Photo by David Rosen

Thank you! We look forward to spending time with you and your students very soon!

Figure 7.12. Public Information Examples (continued)

AMERICAN RIVER FLOOD CONTROL DISTRICT

FloodWise

WINTER 2014

PROTECTING LIVES AND PROPERTY IN OUR COMMUNITY SINCE 1927

Preparing for the Next Big Flood

DURING THE DRIEST YEAR ON RECORD, IT'S EASY TO FORGET THAT WE LIVE IN AN AREA MANY CONSIDER SECOND ONLY TO NEW ORLEANS FOR DANGEROUS FLOODING RISK. The flood control system built in the last hundred years has protected the Sacramento Valley from being submerged under an inland sea that once routinely stretched 400 miles long by 30 miles wide during the rainy season.

To ensure our continued safety, we must also protect the man-made system from developing problems that put us at risk. At American River Flood Control District (ARFCD), it's our job to maintain 40 miles of levees along the American River and parts of Sloughhead, Arcadio, Dry and Maggie Creeks so that they're ready to perform when the inevitable next big flood comes.

Frequency of Multiyear Droughts & Flood Years

Though we haven't experienced a flood in the past decade, history shows how quickly that can change. We live in a flood-prone region with a carefully engineered system of traverses and levees that protect us from the devastating floods of Sacramento's past.

It's Our Job To:

- Ensure levee integrity
 - Perform inspections from land and water
 - Repair erosion
 - Plant native grasses to control erosion
 - Mow levees
 - Trim trees and shrubs
 - Control burrowing rodents
 - Work with neighbors to keep levees clear
- Maintain access roads, gates, and equipment
- Undergo yearly flood-fight training
- Stockpile flood-fight supplies
- Participate in special projects, such as completing slurry-wall construction
- Remove encroachments – We're also charged with enforcing a new law (SB-753) that requires removal of private structures and levee alterations (also called encroachments) that could weaken levees. Although the law has us enforcing ordinances, our approach of working with levee neighbors has so far proven successful.

The tasks we perform – big and small – will make all the difference in how well our levees hold back the next big flood.

FOR MORE INFORMATION about our activities, please visit our website at www.arfd.org.

Be Flood Ready.

Buy Flood Insurance.

www.cityofsacramento.org/utilities/flood-ready

City of
SACRAMENTO
Department of Utilities

Figure 7.13. High Water Mark Initiative Kick-Off – November 2013



Source: USACE, 2023.

Step 3: Formulate Messages

After reviewing the Community Needs Assessment, the PPI Committee identified the following priority messages. Table 7.7 summarizes each message and the desired outcome(s).

Table 7.7. Messages and Desired Outcomes

Topic	Message	Outcome(s)
A. Know your flood hazard	1. Your property is subject to flooding. Call the flood information hotline for details	Increase number of map information services inquires
	2. Your property is in a repetitively flooded area	Reduce future repetitive loss properties
	3. Don't drive through flooded streets (know where to drive and where not to drive)	Reduce damages to vehicles, emergency rescues, and deaths
	4. Pay attention to your escape routes in the rescue area	Reduce emergency rescues and injury
	5. You are in a combined sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
	1. Protect yourself now! You need flood insurance	Increase number of flood insurance policies

Topic	Message	Outcome(s)
B. You need flood insurance	2. You need flood insurance because your homeowner's policy does not cover flood damage	Increase number of flood insurance policies
	3. Renters should protect contents with flood insurance	Reduce damage to contents
C. Protect people from the hazard	1. Turn around, don't drown	Reduce rescues and deaths
	2. Know the flood warning signals	Reduce rescues and deaths
	3. Know how to sign up for reverse-911 Everbridge (Sacramento-Alert)	Increase in number of Everbridge (Sacramento-Alert) subscriptions
	4. Go to the City's website or call 311 for drinking water quality updates	Increased awareness of water quality and prevents sickness
	3. You are in a combine sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
D. Protect your property from the hazard	1. Elevate HVAC exterior units	Reduce number of flood damaged HVAC units
	2. Don't dig, plant or build at the base of a levee	Prevent seepage and other problems from human intervention on levees
	3. Know encroachment levee regulations. Visit http://www.cvpfb.ca.gov	Prevent seepage and other problems from human intervention on levees
	4. Don't begin work without proper permits	Reduce red tag violations
	5. Don't throw trash or debris in streams, channels or open bodies of water	Reduce pollution and overbank flow
	6. Grant monies are available to help elevate your home	Increase financial opportunities
E. Build responsibly	1. Get a permit before you start construction	Reduce citations
	2. Know the substantial damage rules	Reduce citations
	3. Keep areas open (setbacks) between homes and property lines	Maintain proper drainage
F. Protect natural floodplain functions	1. Don't dump in storm drains	Improve water quality
	2. Report erosion control measures not working	Contain erosion on construction sites
	3. Don't disturb natural floodplain areas	Reduce grading, fill, and earth movement
	4. Protect, preserve, and appreciate our natural resources	Maintain open space and habitat protection
G. Levee Preparedness	1. Pay attention when your evacuation route is identified	Reduce number of evacuation rescues
	2. Call 311 to report water seepage or suspicious activities along the levees	Increase community awareness and quicker response time to potential problems
H. Flood Education	1. Promote floodplain management and NAI concepts	Reduce damage to buildings and natural floodplain functions
	2. Promote flood education for children	Increase flood awareness
	3. Promote FEMA's High Water Mark Initiative	Increase flood awareness
I. General Preparedness	1. Identify and document your personal belongings	Reduce delays in receiving insurance payments

Topic	Message	Outcome(s)
	2. Prepare emergency flood kit & plan	Save important insurance, real estate, and other important documents, pictures, etc. and know how to contact other family members
	3. Don't forget your pet!	Pet owners will be prepared with necessary pet care items during an emergency and at a shelter

Step 4: Identify Outreach Projects to Convey the Messages

The PPI Committee identified 25 projects and initiatives that would continue to be implemented into 2024 and beyond. These are organized by target audience and message in Table 7.8.

Flood Response Preparations

In addition to projects that are implemented every year, the PPI Committee recommends projects that will be implemented during and after a flood. These projects are drafted and made ready for production and dissemination after a flood warning. The PPI Committee also discussed the use of the City’s website during a flood event. General emergency preparedness information and citywide evacuation routes are available on the city’s website; however, incident-specific information will need to be added during a flood threat. Press releases providing information about the flood threat levels, conditions, evacuation routes, and preparedness actions will be posted on the City’s website. If necessary, notices regarding the community’s water quality will also be placed on the City’s website. These projects are listed at the end of Table 7.8 and are marked with the heading “Flood Response Projects”. The draft copy of the projects and procedures to disseminate the information is located in Appendix E.

Flood Protection Assistance

The City of Sacramento provides residents with two avenues to discuss flooding or to request assistance. Typically, flooding reports and drainage problems are received through our 311 system and routed to the Department of Utilities’ Operations and Maintenance. If the resident wants property protection advice, the call is routed to floodplain management staff or the floodplain hotline, (916) 808-5061. Staff will discuss the resident’s concern and provide information and resources. For complex issues, staff will visit the site to fully assess the situation. Protection, mitigation, and insurance information is provided during site visits. Information about financial assistance is provided if applicable. These services are mainly publicized through OP 1, OP 2, and OP 7. No committee recommendations to change current activities.

Open Space Education

The main natural functions open space within the City is the American River Parkway (Parkway). The American River Parkway Foundation (ARPF) is a volunteer organization that supports the preservation of the Parkway. The ARPF has created many recreational activities including hiking

paths, bike trails, equestrian trails, picnic areas, and more. At the volunteer station, visitors can obtain an American River Parkway map (OP 28) which highlights the recreational areas, the Parkway's history, and the many habitats located within the Parkway. The committee recommended that the City coordinate future information materials with the ARPF and consider adding ARPF resources to the City's website.

Stream Dumping Regulations

The City of Sacramento prohibits a person from dumping refuse in any water or waterway, or upon the levees or banks. A citywide mailer (OP 1), permanent signage (OP 6) and stenciling (OP 11) are the three main methods of publicizing these regulations. No committee recommendations to change current activities.

Step 5: Examine Other Public Information Initiatives

The PPI Committee looked at other outreach initiatives including more coordination among city, county, and state agencies to reduce duplicative efforts and to share resources. The committee also recognized that enhancements to the City's website will be required to make it more usable by the public through more interactive approaches. The current website provides a great deal of information on Sacramento's flood hazards, flood insurance, and emergency preparedness. The committee determined that additional content focusing on building requirements within the floodplain and the floodplain's natural benefits are necessary.

The committee also discussed what kinds of technical assistance might be necessary beyond what is already provided by individual agencies. Many of the technical inquiries are received through the City's Floodplain Hotline. This hotline is used for map question, flood insurance, flood mitigation, and any other flood question. The Floodplain Hotline is publicized through the City's website and various outreach materials. The Hotline is also used a resource for elected officials and other agencies to provide to constituents. Additionally, the committee looked at other potential ways to publicize flood protection methods.

Most of these challenges cover the following CRS flood protection activities:

- Activity 320 – Map Information Service
- Activity 330 – Outreach Projects (other sections of the PPI)
- Activity 350 - Websites
- Activity 360 – Flood Protection Assistance
- Activity 630 – Dam Safety (outreach requirement)

Step 6: Implement, Monitor and Evaluate the Program

Adoption

This document will become effective when it is adopted by the City Council.

Evaluation

The City of Sacramento Department of Utilities Floodplain Manager will monitor the projects as they are developed, as well as the results. Inputs from PPI Committee members will be recorded along with suggestions from other City employees and stakeholders participating in the activities. That input will be sent by e-mail to committee members for consideration and evaluation.

The PPI Committee will meet at least twice each year to review the implementation of these projects and initiatives. At that time, the status of the projects will be explained and progress toward the outcomes will be discussed. The Committee will recommend to the appropriate City offices and the stakeholders who implement projects whether the projects should be changed or discontinued.

At least once each year, staff will draft an update to the table and send it to the Committee members. The Committee will meet and review the outcomes of each individual activity to change, add, or approve them. Table 7.8 will be revised as needed. The outcomes and revisions will be included in an evaluation report which will be provide to City Council and submitted as part of the City’s annual recertification package to the Community Rating System.

Table 7.8. PPI Projects and Initiatives

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	Nov each year	N/A
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities - FPM	Year-round	N/A
			OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities - FPM	Year-round	DRW/USACE /FEMA/USGS
			OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (continued)	(continued)	(continued)	OP 6. No Dumping Signs	City of Sacramento Department Dept. of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities - FPM	Year-round	DWR/ CVFPB
			OP 10. Flood Preparedness Week	City of Sacramento Department of Utilities – FPM & PIO	Oct. each year	Sacramento County/DWR/ USACE/USGS
			OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	UC Davis Medical Center & Sacramento County
			OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD
			OP 16 Earth Day	City of Sacramento Department of Utilities, PIO, OEM, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (continued)	(continued)	(continued)	OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)
			OP 30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
1. Entire City (continued)	(continued)	(continued)	OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A
			OP 32. FEMA Grant Brochures	City of Sacramento Department of Utilities	Year-round	FEMA
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Developed by October 1, 2016	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent’s Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 I. 1, 2 & 3	OP 5. Outdoor Ad Placement	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
Target Areas 3.Natomas (North Natomas/ South Natomas) 4.Greenhaven/ Pocket 5.Riverpark Neighborhood by Sac State	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE /USGS/FEMA
			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
6. Rescue Areas (Defined by Levee Breach Scenarios) Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	F. Protect Natural Floodplain Functions G. Levee Preparedness I. General Preparedness		OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
			OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A
Flood Response Projects (FRP)						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Develop by May1, 2015	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

7.2 Implementation Strategies and Action Items

The implementation strategies outlined in Table 7.8 include strategies and actions to increase risk communications with residents of the City. Specific implementation actions, responsible agencies or departments responsible for implementation, and a schedule for implementation is also included.

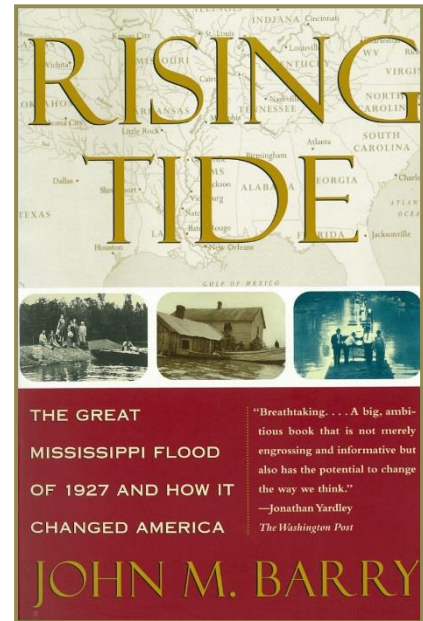
8 National Flood Insurance Program/Community Rating System

8.1 Introduction and Background

8.1.1 National Flood Insurance Program Background

The evolution of the National Flood Insurance Program (NFIP) began prior to the 1960s. The 1909 Galveston hurricane and the 1927 Mississippi River flood are two major flood events where there was no flood insurance available and no effort to mitigate loss to life or property. Throughout the 1920s and 1930s, the federal government responded to major flood events by constructing structural flood-control projects such as dams and levees with the passage of the Flood Control Act of 1936. Both catastrophic flood events, along with other incidents, caused the insurance industry to consider flood insurance as a component of a standard homeowner's policy.

Before 1950, flood insurance was included in a standard homeowner's policy. The insurance industry then reconsidered this offering because of a high correlation of losses by holders of flood policies from a single company. Insurance companies began excluding flood coverage from standard insurance policies and started selling flood insurance separately. Over the next few years, the collection of insurance premiums was insufficient to cover payouts after major flooding events. A 1956 study by the American Insurance Association confirmed that the private insurance industry could not provide flood insurance to the public and remain solvent because only those who were exposed to the highest risk purchased insurance. In the 1960's, flood insurance became completely unprofitable and private insurance companies no longer offered flood insurance.



Because homes and businesses were left without flood insurance coverage, Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. This program allows property owners in participating communities to purchase insurance against flood losses in exchange for state and community floodplain regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces minimum floodplain regulations for new construction and substantial improvements to reduce future flood risk in designated floodplain areas, the federal government will make insurance available within that community as a financial protection against flood losses.

The NFIP has three specific components:

- 1) Floodplain identification and mapping;
- 2) Floodplain management; and
- 3) Flood insurance.

When the NFIP was created in 1968, Congress realized that insuring existing buildings constructed before a community joined the NFIP would be prohibitively expensive if the flood insurance premiums were not subsidized. Therefore, this subset of buildings was provided with insurance coverage which did not accurately reflect the true hazard risk. Most communities that participate in the NFIP have pre-FIRM properties, including Sacramento. Pre-FIRM subsidies are projected to be phased out in the future, based on the actuarial rates resulting from the Risk Rating 2.0 program.

The NFIP was first amended in 1973 with the Flood Disaster Protection Act, which made the purchase of flood insurance mandatory within the SFHA or the 1-percent-annual-chance flood area. The NFIP was amended again in 1982 by the Coastal Barrier Resources Act (CBRA), in which flood insurance for new construction and substantial improvements would be unavailable for certain environmentally sensitive coastal lands. In 1994, the NFIP was amended to define penalties for lending institutions that did not implement the mandatory purchase of flood insurance, create ICC coverage, create the Flood Mitigation Assistance (FMA) Fund and codify the Community Rating System (CRS) Program as a permanent part of the NFIP. Then, in 2004, the NFIP was amended again with the goal of reducing losses to repetitive flood properties.

Today, over 22,000 communities and tribal governments participate in the NFIP in 56 states and territories. In California, 99 percent of communities participate in NFIP. As of October 2019, there were almost over 5 million residential and commercial flood insurance policies in place with nearly \$1.3 trillion in written coverage. This generates approximately \$4 billion in annual premiums for the NFIP.

The City of Sacramento joined the NFIP and FIRM maps became effective on September 15, 1978. By joining the NFIP, the City agreed to adopt floodplain regulations and enforce those regulations on new construction and substantial improvements of existing buildings according to the requirements of the FIRM maps in affect at the time of construction. Structures built in the City prior to September 15, 1978 are considered pre-FIRM buildings and are subject to increased flood insurance premiums from the 2012 Biggert-Waters Flood Insurance Reform Act and the Homeowner Flood Insurance Affordability Act of 2014.

Because the NFIP was approximately \$24 billion in debt, Congress passed the Flood Insurance Reform Act of 2012 (Biggert-Waters), which required FEMA to make a number of changes to the NFIP. The legislation required the NFIP to gradually raise flood insurance rates on pre-FIRM subsidized buildings until the true hazard risk for that building is captured, make the program more financially stable, and change how FIRM updates impact policyholders.

In 2014, Congress passed the Homeowner Flood Insurance Affordability Act which delayed some premium increases for buildings where residents reside full time; however, those who own second homes or vacation homes where they were not considered full time residents, and all businesses were not protected from premium increases under the 2012 Biggert-Waters Flood Insurance Reform Act. Premiums for these buildings are required to increase until the true risk value for that structure is captured. An elevation certificate should be obtained from each property owner (if one does not exist) to confirm the elevation of the lowest livable level of that building to ensure that the proper premium rate for that elevation is assigned by the insurance company or the NFIP.

8.2 Current Implementation Status

In April 2023, the Department of Homeland Security submitted to the 118th Congress 17 legislative proposals to reform the NFIP. Since the NFIP's last multi-year reauthorization on September 30, 2017, NFIP has received 25 short-term extensions (most recently in November 2023) and experienced three brief lapses. The Legislative package reform included the four following principles to outline the Administration's priorities for multi-year NFIP reauthorization:

- Ensuring more Americans are covered by flood insurance by making insurance more affordable to low-and-moderate income policyholders.
- Building climate resilience by transforming the communication of risk and providing Americans with tools to manage their flood risk.
- Reducing risk, losses, and disaster suffering by strengthening local floodplain management minimum standards and addressing extreme repetitive loss properties.
- Instituting a sound and transparent financial framework that allows the NFIP to balance affordability and fiscal soundness.

At the time of this writing, no legislation has been approved or updated regarding the reform proposed above.

8.2.1 Flood Zones and Insurance Rates

Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. The FIRM for the City of Sacramento contains the following zone designations:

A Zone: These areas on the FIRM represent the 1-percent-annual-chance flood zones where no BFEs have been established. Areas designated as A zones traditionally have shallow flooding to flood depths of up to 30 feet. For areas which are developed, the property owner or the developer is required to establish BFEs. Flood insurance can be required in the A zone depending on the established BFE.

AE Zone: These areas represent the 1-percent-annual-chance flood zones where BFEs have been established. The City does have some areas designated as AE zones. Flood insurance is required in the AE zone.

AH Zone: Flood depths of one to three feet (usually sheet flow) designate AH zones, where the BFE is determined on the FIRMs. The City does have a very small AH zone on the north side of Arcade Creek. Flood insurance is required in the AH Zone.

The zones defined above, along with AR, AO, V, VE and D zones, are all designated by FEMA as Special Flood Hazard Areas (SFHA). The City does not currently have any areas designated as AR, AO, V, VE, or O zones. See the FIRMs for definitions of these zones.

A99 Zone: Areas to be protected from the 1-percent-annual-chance flood zone by a federal flood protection system under construction are called A99 zones. As of 2015, the only A99 zone in the City is in the Natomas area. Levee projects are currently under construction in this area.



The average flood insurance policy costs about \$650 per year.

Shaded X- Zone: Areas with less than the 0.2-percent-annual-chance flood protection; areas with less than the 1-percent-annual-chance flood protection with average depths of less than one foot (or drainage areas less than one square mile); or areas protected by levees from the 1-percent-annual-chance flood zone. Flood insurance is not mandatory, and there are no federally imposed restrictions on development in the Shaded X zone. Most of Sacramento lies in a Shaded X zone.

X Zone: Areas determined to be outside the 0.2-percent-annual-chance flood zone. There are no restrictions on development or mandatory flood insurance.

Zones B and C also represent areas outside the SFHA. These zones, however, are no longer depicted on Flood Insurance Rate Maps. The current Shaded X-Zone corresponds to the former Zone B and the Unshaded X-Zone corresponds to the former Zone C.

Flood Insurance Policy Rates

The following is a discussion of flood insurance rates and building restrictions in SFHAs:

- Flood insurance premiums for A99 and AR zones reflect the Standard X zone rate, which is approximately \$900 for structure coverage only.
- For A, AE, AH, and AO zones, the policy cost is based on the difference between the elevation of the building's lowest floor (determined by having a surveyor filling out an elevation certificate) and the BFE.
- Floodproofing is an alternative option to elevating the structure for commercial buildings.

Areas designated as X zones with over 1-percent-annual-chance flood level protection do not require flood insurance, although it is recommended.

Structures that were issued building permits prior to the effective FIRM date (September 15, 1978) are considered pre-FIRM. Previously, these structures had a special subsidized flood insurance rate separate from the flood zones mentioned above. With the updated NFIP pricing approach, Risk Rating 2.0 (effective April 2022), these structures are on a glide path to their actuarial rate.

Lower flood insurance premiums are available for post-FIRM structures by using the FEMA “grandfathering rule,” where the rate is based on the zone in place when the building permit was issued. For example, if the FIRM for a specific area changes to a SFHA but a building permit in that area was issued in an X Zone, then the building can be grandfathered using the Standard X zone rate. Property owners may need to have continuous flood insurance coverage to qualify for the grandfathering rule.

8.2.2 Flood Insurance in Sacramento

Most primary buildings or substantial improvement within the City of Sacramento’s SFHA must have a flood insurance policy if there is a federally backed mortgage. The majority of mortgage loans are backed by the federal government through either Fannie Mae or Freddie Mac. Since flood insurance rates are driven by distance to the flooding source, ground elevation, first-floor height, and foundation type, structures in the SFHA usually pay higher rates than do those buildings located outside the designated higher risk areas.

While flood insurance cannot prevent actual flood damage or loss of life, it can help to mitigate the economic risk associated with flooding to the insured. Flood insurance is a property owner’s first line of defense against flood damage. A property that is damaged or destroyed can be replaced more quickly, without using financial resources devoted to other expenses such as the mortgage, utilities or maintenance. Additionally, compensation for flood losses (through flood insurance payments) can help families to recover from a flood event with minimal financial hardship. Similarly, this can also aid businesses in reopening to avoid potential financial ruin.

Table 8.1 shows the number of flood insurance policies in the A, AE, AH and AO Zones and the number of Standard X Zone policies in AR and A99-Zones. The table also shows the average number of flood insurance policies by flood zone from 2021 to 2023.

As of April 2022, Preferred Risk Policies (PRPs) are no longer available for property owners in B, C, and X Zones. A PRP was a voluntary lower-cost Standard Flood Insurance Policy that offered fixed combinations of building/contents coverage limits or contents-only coverage, available only within the B, C and X Zones. PRPs were phased out in April 2022, under the Risk Rating 2.0, as FEMA can differentiate flood risk outside of high-risk flood zones.

Flood insurance policies across each Zone remained relatively stable between 2017 – 2021. Between 2021 – 2022, a significant decrease in PRP participation occurred and as mentioned previously, PRPs were phased out in 2022 resulting in zero participation for 2023. The notable decrease between 2021 – 2022 may also be related to high levels of unemployment and inflation

associated with the COVID-19 pandemic. Data shows similar decreases in voluntary flood insurance programs during the Great Recession as well.

While the PRP program was eliminated, residents and property owners within Zone X can now purchase a standard insurance policy that accounts for decreased flood risk. This accounts for the increase in X-STD policies between 2022 and 2023. Overall, there was a 7.5 percent decrease in flood insurance policy holders between 2022 and 2023, likely attributed both to the elimination of PRP and continued challenging economic factors influencing the purchasing habits of consumers.

Table 8.1. Flood Insurance Policies in Sacramento by Zone and Year

Year	SFHA*	X-STD, AR, A99**	PRP	Total
2017	352	25,522	16,349	42,223
2018	285	27,762	15,353	43,400
2019	N/A	N/A	N/A	N/A
2020	202	28,738	14,363	43,303
2021	183	29,059	13,037	42,279
2022	157	27,583	7,592	35,332
2023	144	32,557	0	32,701

Source: FEMA's Community Information System

*SFHA (Zones A, AE, A1-A30, V, V1-V30, AO and AH)

**SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO)

***Preferred Risk Policies, phased out in April 2022

Table 8.2 indicates that as of October 2, 2023, the City of Sacramento had 32,701 active flood insurance policies in force with total premiums of more than \$17 million. These active policies represent more than \$11 billion of insurance coverage in place covering both structure and contents. Historically, the City has had 1,927 claims paid against the NFIP totaling \$10.3 million in paid losses.

Table 8.2. Flood Insurance Policies by Occupancy Type (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
Single Family	28,929	\$15,134,778	\$9,881,435,000	1,654	\$7,611,743.57	\$566,830.30
2-4 Family	823	\$386,306	\$255,952,000	120	\$520,101.50	\$35,230.00
All Other Residential	2,204	\$781,175	\$797,955,000	49	\$381,645.68	\$19,080.26
Non Residential	745	\$739,637	\$392,244,000	104	\$1,848,270.24	\$84,141.88
Total	32,701	\$17,041,896	\$11,327,586,000	1,927	\$10,361,760.99	\$705,282.44

Table 8.3 presents the number of insurance policies in force, as of October 2, 2023, by occupancy type in relation to condominiums.

Table 8.3. Flood Insurance Policies by Condominiums compared to Non-Condominiums (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
Condo	1,739	\$320,973	\$406,603,000	35	\$206,425.28	\$15,233.89
Non Condo	30,962	\$16,720,923	\$10,920,983,000	1,892	\$10,155,335.71	\$690,048.55
Total	32,701	\$17,041,896	\$11,327,586,000	1,927	\$10,361,760.99	\$705,282.44

Source: FEMA's Community Information System

Table 8.4 indicates the number of flood insurance policies by flood zone as of October 2, 2023. Since the previous iteration of the 2016 CFMP, participation in flood insurance programs has declined by approximately 25 percent. In January 2016, the City had 43,937 flood insurance policies in force and by October 2023 the total policies in force dropped to 32,669.

The total number of flood insurance policies in the A, AE, AH and AO Zones decreased by nearly 70 percent from 360 in January of 2016 to 112 in October 2023. The number of flood insurance policies in the A99, AR, and STD-X Zones increased by over 10,000 from 22,170 in January of 2016 to 32,557 in October 2023. This increase can be attributed by PRP policies phased out in 2022, as participants now purchase standard policies.

Table 8.4. Flood Insurance Policies by Flood Zone (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	35	\$14,600	\$12,410,000	51	\$503,592.03	\$20,294.98
A Zones	0	\$0	\$0	32	\$239,984.28	\$11,212.87
AO Zones	0	\$0	\$0	16	\$75,317.77	\$4,075.87
AH Zones	77	\$52,613	\$18,821,000	31	\$183,102.47	\$13,840.00
AR Zones	1	\$1,144	\$300,000	33	\$380,263.95	\$17,667.02
A99 Zones	21,252	\$11,018,666	\$7,416,040,000	1,429	\$6,401,705.71	\$461,703.30
B, C & X Zones	11,304	\$5,945,263	\$3,872,155,000	315	\$2,320,780.89	\$168,789.27
Standard	11,304	\$5,945,263	\$3,872,155,000	200	\$1,780,845.18	\$101,754.27
Preferred	0	\$0	\$0	115	\$539,935.71	\$67,035.00
Total	32,669	\$17,032,286	\$11,319,726,000	1,907	\$10,104,747.10	\$697,582.44

Source: FEMA's Community Information System

As of October 2, 2023, the City of Sacramento had 8,240 pre-FIRM flood insurance policies in force as shown in Table 8.5. These pre-FIRM policies in the AE, A, and AH zones were most affected by rate increases through the Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowner’s Flood Insurance Affordability Act of 2014, as certain subsidies were phased out.

Table 8.5. Pre-FIRM Flood Insurance Policies by Zone (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	10	\$6,364	\$2,672,000	43	\$452,410.24	\$17,419.98
A Zones	0	\$0	\$0	31	\$235,697.81	\$10,862.87
AO Zones	0	\$0	\$0	7	\$22,042.13	\$1,950.00
AH Zones	64	\$45,972	\$15,386,000	11	\$15,559.40	\$7,015.00
AR Zones	0	\$0	\$0	24	\$373,440.03	\$15,417.02
A99 Zones	1,335	\$599,591	\$444,788,000	988	\$3,240,465.36	\$269,744.06
B, C & X Zones	6,831	\$3,660,476	\$2,372,023,000	238	\$1,894,989.65	\$135,319.27
Standard	6,831	\$3,660,476	\$2,372,023,000	152	\$1,503,505.54	\$79,454.27
Preferred	0	\$0	\$0	86	\$391,484.11	\$55,865.00
Total	8,240	\$4,312,403	2,834,869,000	1,342	\$6,234,604.61	\$457,728.20

Source: FEMA's Community Information System

Table 8.6 shows there were 24,429 post-FIRM flood insurance policies as of October 2, 2023; 4,473 were Standard Flood Insurance Policies.

Table 8.6. Post-FIRM Flood Insurance Policies by Zone (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	25	\$8,236	\$9,738,000	8	\$51,181.79	\$2,875.00
A Zones	0	\$0	\$0	1	\$4,286.47	\$350.00
AO Zones	0	\$0	\$0	9	\$53,275.64	\$2,125.00
AH Zones	13	\$6,641	\$3,435,000	20	\$167,543.07	\$6,825.00
AR Zones	1	\$1,144	\$300,000	9	\$6,823.92	\$2,250.00
A99 Zones	19,917	\$10,419,075	\$6,971,252,000	441	\$3,161,240.35	\$191,959.24
B, C & X Zones	4,473	\$2,284,787	\$1,500,132,000	77	\$425,791.24	\$33,470.00
Standard	4,473	\$2,284,787	\$1,500,132,000	48	\$277,339.64	\$22,300.00
Preferred	0	\$0	\$0	29	\$148,451.60	\$11,170.00
Total	24,429	\$12,719,883	\$8,484,857,000	565	\$3,870,142.48	\$239,854.24

Source: FEMA's Community Information System

Many factors can affect the number of flood insurance policies held by residents or property owners in the City. For example, in 2015, the City saw a drop in the number of A99 policies in Pre-FIRM and Post-FIRM policies due to over 3,000 residents being removed from the A99 Zone on May 12, 2014 in South Sacramento. Similarly, the Natomas area was remapped from AE to A99 in June 2015, resulting in an increase in A99 policies for 2016. Data was also affected because many Natomas residents participated in historical subsidized programs since 2008, such as the Preferred Risk Policy Eligibility and Properties Newly Mapped.

Nearly 20% of flood insurance claims come from moderate-to-low risk areas.

As of April 2022, the most substantial change affecting the number of flood insurance participation was the phasing out of PRPs for property owners in B, C and X Zones. Residents and property owners within these zones can now purchase a standard insurance policy that accounts for decreased flood risk. While there was an increase in X-STD policies between 2022 and 2023, there was an observed decrease in flood insurance purchasing within the City during 2023. As previously mentioned, this is likely attributed both to the elimination of PRP and continued challenging economic factors influencing the purchasing habits of consumers.

Public Perception of Flood Insurance

Participation by communities in the NFIP and the purchase of policies by individual homeowners and businesses has been shown to lower the financial risk of flooding. However, the majority of people who live in an area at risk of flooding and who are not required to purchase flood insurance usually do not. There are many reasons why residents and businesses avoid purchasing flood insurance. Some of these include:



- Levees and dams provide a false sense of security. These structural barriers convince people that they are protected from flooding without realizing that factors such as lack of maintenance, earthquakes, or overtopping, that would cause flooding to occur.
- Some surveys suggest that the risk of being flooded in your home during the life of a 30-year mortgage is only between 0 to 10 percent. Any place within a 1% chance or higher of experiencing a flood event each year is considered to have a high risk. Those areas have at least a one-in-four chance of flooding during a 30-year mortgage period. This lack of knowledge creates a retention problem for the NFIP.
- Many people believe that because they are not located in a higher risk zone such as an AE, A, or any other 1 percent change annual flood area that they are not subject to flood damage. People within moderate- to low-risk areas filed more than 40% of all flood insurance claims between 2015 and 2019, and receive one-third of flood disaster assistance. In addition, many believe that their homeowner's policy covers flood damage when it does not.
- There is a misconception about the cost of flood insurance. The average cost of a flood insurance policy in California is approximately \$910 per year. Many consider the fire hazard or other risks to a home to be more important than the flood risk.

8.3 Community Rating System Background

The NFIP's CRS program is a voluntary incentive program that encourages communities to exceed the minimum federal requirements for development within the floodplain. The better job a community does of protecting buildings from flood damage, the cheaper flood insurance rates are for policy holders. Under the CRS, flood insurance premiums are adjusted (discounted) to reflect a community's work in reducing flood damage to existing buildings, manage development in areas not yet mapped by the NFIP, protect new buildings or substantial improvements above the minimum NFIP flood protection levels, preserve or renewing natural floodplain functions, help real estate and insurance agents obtain flood-related data, inform the public of flood hazards and help them to obtain flood insurance.

The CRS program is based upon the following three primary goals:

- 1) Reduce and avoid damage to insurable buildings,
- 2) Strengthen and support the insurance aspects of the NFIP, and
- 3) Foster comprehensive floodplain management

The CRS is a point-based program where 19 floodplain management activities can be implemented to obtain one of 10 CRS classifications. A community must obtain at least 500 points to achieve a Classification 9 and enable their policy holders to receive a 5% discount on their flood insurance. Table 8.7 shows the 10 CRS classes and the associated points necessary to achieve each class:

Table 8.7. CRS Classes, Credit Points, and Premium Discounts

CRS Credit Points	CRS Class	CRS Discount (Premium Reduction)
4,500+	1	45%
4,000 – 4,499	2	40%
3,500 – 3,999	3	35%
3,000 – 3,499	4	30%
2,500 – 2,999	5	25%
2,000 – 2,499	6	20%
1,500 – 1,999	7	15%
1,000 – 1,499	8	10%
500 – 999	9	5%
0 – 499	10	0

Source: National Flood Insurance Program's 2013 Community Rating System (CRS) Manual, FIA15

The 19 CRS floodplain management activities are divided into four series, including:

- 1) 300 Series – Public Information Activities,
- 2) 400 Series – Mapping and Regulations,
- 3) 500 Series – Flood Damage Reduction Activities; and
- 4) 600 Series – Warning and Response

Each series has three to seven floodplain management activities. Certain activities also have elements of credit which further define each activity. The elements further break down the credit within each activity, usually through the use of an acronym.

A CRS Coordinator's Manual outlines the credit points, background information on each activity and element, and the documentation required to support the credit. The current *CRS Coordinator's Manual* is dated 2017 and is supplemented by the 2021 Addendum to the Coordinator's Manual (effective January 2021).

8.3.1 Community Rating System in Sacramento

Sacramento applied to the CRS in December of 1990 and modified its application in December of 1992. The CRS program requires that communities recertify their application every August and complete a cycle application every three or five years depending on classification status. Sacramento completed cycle applications in 1994, 2000, 2007, 2010, 2013, 2017, 2020 and 2023. The City currently ranks at Class 3, where premium holders receive a 35% discount. This accounts for a savings of \$1.9 million dollars annually for the community. The City of Sacramento implements the following CRS activities as outlined in the subsections below, which have been verified as of November 2023. Additional implementation goals are listed at the end of this chapter.

Activity 310: Elevation Certificates

The Community Development Department (CDD) requires that any new construction or substantial improvement in the SFHA file an elevation certificate. Prior to July 1, 2024, A99 zones are excluded from SFHAs because there are reduced floodplain development regulations that apply. New requirements to A99 zones will require the collection of elevation or floodproofing certificates (floodproofing is only allowed for commercial properties) as specified in Chapter 3 of this Plan update. Currently, the City requires a flood risk acknowledgement agreement (hold harmless) for all developments in A99 zones. The Department of Utilities (DOU) maintains FEMA elevation certificates for new and substantially improved buildings in the SFHA. Copies of elevation certificates are made available upon request. The City maintains hard copies in folders at DOU (away from the permit office) and electronically in the City's building permit database.

Activity 320: Map Information Service

The City will continue to provide floodplain information to Sacramento citizens at the DOU office (1395 35th Avenue), as well as over the phone and by email. Telephone and email requests will be responded to within two business days. A Floodplain Hotline (916-808-5061) and email (floodinfo@cityofsacramento.org) have been reserved for this purpose. The City will provide grandfather letters for residents upon request. The City publicizes this service through various outreach projects annually.

Activity 330: Outreach Projects

The City will continue to provide floodplain information through utility inserts, mailings to residents in the SFHAs, floodplain information booths at community events, billboards, buses, and other methods. The City also has a PPI, as presented in Chapter 7, which provides a 40% multiplier for outreach projects the City undertakes. *(Note: For more details on outreach projects and other outreach plans to inform the public, see Chapter 7, Risk Communication.)*

Activity 340: Hazard Disclosure

The State of California requires real estate agents to notify prospective buyers of SFHAs. The City will notify real estate agencies and/or boards on an annual basis of this requirement, and where they can obtain disclosure statement forms.

Activity 350: Flood Protection Information

DOU will continue to provide flood information materials to the Sacramento Central Library. The library collection contains materials on natural and beneficial functions, including the National Wetlands Inventory Maps for Sacramento and “Classification of Wetlands and Deepwater Habitats of the United States.” The City also continues to provide flood protection information on the DOU website, where it is maintained and updated, and work to increase public awareness of these resources.

Activity 360: Flood Protection Assistance

The DOU will continue to provide technical advice and assistance to citizens with individual flood protection needs, including site visits to determine cause of flooding, solutions to local flooding problems, and assistance with flood fights. CDD and DOU will provide information on how to select a contractor and retrofitting structures, and the City will continue efforts to make the public aware of this resource through proper outreach.

Activity 370: Flood Insurance Promotion

This is a new activity in the *2013 CRS Coordinator’s Manual*. The activity includes conducting a flood insurance coverage assessment (FIA), coverage improvement plan (CP), and implementation of the CP (CPI). The FIA is a document to identify target areas, map flood insurance coverage and determine the level of flood insurance coverage. The CP is a plan to improve the insurance coverage identified in the FIA. The City has analyzed flood insurance coverage in the past, and these new activities are implemented as part of the PPI.

Activity 410: Floodplain Mapping

The City continues to conduct new studies that produce base flood elevations or floodways. These studies are usually conducted when flood control improvements are constructed or better data such as hydrology or topography is available that makes the floodplain contours more accurate. Some projects and studies are funded partially by local and state funds. Depending on the circumstance, the City enforces development restrictions on special flood-related hazards that are not mapped on the DFIRMs such as Magpie Creek and the CFMP Rescue and Evacuation Maps.

The City signed a Cooperating Technical Partner (CTP) agreement with FEMA Region IX on February 18, 2003. California’s Department of Water Resources also signed a CTP with FEMA Region IX on March 4, 2009.

Activity 420: Open Space Preservation

The City's General Plan contains policy to conserve and protect natural resources and planned open space areas. The City will continue to provide open space for the preservation and conservation of natural resources. Riparian forests and grassland vegetation will also be conserved. The City protects planned open space areas that support wildlife habitat, working with the County of Sacramento to protect unique physical features. Open space for recreation will continue to be provided, and the American and Sacramento River parkways will be conserved and protected.

The City has other open space areas that can also be developed to their recreational use potential. These areas, which include easements, floodways and floodplains, are either: (1) located in a floodplain and in an undeveloped, natural state; (2) have been restored to a natural state; or (3) protect natural and beneficial functions. These areas include the American River Parkway, Del Paso Park, Bannon Creek Parkway, Chorley Park, Laguna Creek, Magpie Creek, Marconi Station Park, and Reichmuth Park. The American River is considered to protect the natural and beneficial functions.

Activity 430: Higher Regulatory Standards

The City requires several higher regulatory standards for new development above the minimum NFIP regulations. All new construction or substantial improvements must have the lowest floor, including the basement, elevated one foot above the BFE. Compensatory storage is required for development through the Stormwater Quality Improvement Program (SQIP) hydromodification program. The City maintains a Building Code Effectiveness Grading Schedule (BCEGS) classification of 3/2 and adopted the California State Building Codes in 2007. City Code Section 16.40 requires adequate, positive drainage for all lots. The City requires "non-conversion" agreements for crawl spaces.

The City continues to employ staff members who have obtained their Certified Floodplain Manager (CFM) certificate and individuals who have attended credited training courses. The City will continue to encourage staff to obtain this CFM certification and attend more floodplain management training.

Activity 440: Flood Data Maintenance

The City continues to maintain its online GIS DFIRM viewer. This GIS viewer helps improve access, quality, and ease of updating flood data for development and flood insurance purposes. The City maintains copies of all FIRMs that have been issued for the community, including previous FIRMs and Flood Insurance Study Repots. The City Surveyor maintains the City's benchmarks, so surveyors completing elevation certificates can find them and obtain accurate information.

Activity 450: Stormwater Management

The City will continue efforts to improve the quality of stormwater runoff and protect receiving water bodies to the maximum extent practicable (MEP) through the City's SQIP. The City will also continue to implement the federally mandated NPDES Stormwater Discharge Permit. The SQIP identifies and measures the effectiveness of best management practices (BMPs) implementation. This program includes implementation of BMPs for construction activities in accordance with the City's Grading, Erosion and Sediment Control Ordinance and associated manual. The Stormwater Program, through low impact development standards and the hydromodification program, requires new developments to implement BMPs such as grassy swales and detention basins to reduce increases of stormwater pollution and peak flows to the MEP.

The City and County have a Watershed Management Plan (WMP) that is a tool for reducing flooding caused by development on a watershed-wide basis. A list of all existing drainage master plans is documented in the WMP. This WMP is an appendix to the 2021 Local Hazard Mitigation Plan and will be updated every 5 years.

The goal of the drainage master plans listed in the WMP is to provide a higher level of flood protection to the residents of Sacramento. In conjunction with improving the drainage system, the City's overall planning program encourages consideration of water quality; preservation and restoration of natural areas such as wetlands, riparian corridors, streams, and heritage oaks; and public facility enhancements in the master planning process. For example, the staff has identified several opportunities for creation of detention basins that can also serve as public parks.

Activity 510: Floodplain Management Planning

DOU will continue to provide an annual progress report on the *2021 Sacramento County Local Hazard Mitigation Plan* to the City Council, local media, and the state NFIP Coordinating Office.

DOU continues to map all repetitive loss sites, conduct a repetitive loss area analysis, and mail letters to all repetitive loss areas on an annual basis. A spreadsheet of all repetitive loss sites and reasons for flooding is updated annually and used for applying for FEMA grants when appropriate.

Activity 520: Acquisition and Relocation

The City will continue to make efforts to acquire and relocate buildings from SFHAs, especially repetitively flooded properties.

Activity 530: Flood Protection

The City will continue to flood proof, elevate, or otherwise modify buildings to protect them from flood damage.

Activity 540: Drainage System Maintenance

The City, along with other local agencies, will continue to maintain all above-ground channels, basins, canals, ditches, and culverts. Maintenance work includes weeding, clearing, minor repairs, and debris removal. Drainage fees are collected to maintain the local system. The City is aware of problem sites and inspects them on a more frequent basis. Records are maintained for both inspections and regular maintenance. The City has also developed an ordinance for stormwater management and discharge control that prohibits dumping of pollutants in streams. DOU has a CIP that prioritizes/ranks drainage projects and corrects drainage problems.

Activity 610: Flood Warning Program

The State of California has the California Data Exchange Center website, which contains all types of water level gages. The City has an ALERT system, which gages stream and creek levels through six monitoring stations that warn of impending floods. Water levels on the H Street and I Street Bridges are used to determine when to initiate evacuation procedures. The City has 31 sirens located throughout the jurisdiction and also broadcasts emergency notices/warnings on two radio stations. In the event of an evacuation, the City will utilize loudspeakers, reverse 911, law enforcement support and any additional resources, as necessary. These efforts will be led by the City of Sacramento Office of Emergency Management and the County's Office of Emergency Services. Citizens can report issues of flooding by calling 3-1-1 (outside unincorporated county, call: 916-875-4311). Citizens can also sign up for a web-based alert system managed through Sacramento County at [Smart911](#). Sacramento Alert is a web-based application that enables authorized County, City and Special District public safety officials to disseminate public safety information rapidly and efficiently to the residents of Sacramento. Sacramento County is also designated as a StormReady community by NOAA.

Activity 620: Levees

The City will continue to support flood protection projects developed by the SAFCA, DWR, and USACE. The City will continue to assist the DWR in performing its annual levee inspection and maintain the levees in accordance with the O&M plans. The City will continue to monitor levee conditions and open the Department Operation Center and/or the Office of Emergency Management's Emergency Operation Center when predicted flood levels may be reached or a levee breach may occur. The City will continue to maintain a list of critical facilities and emergency response plans.

Activity 630: Dam Safety

FEMA has accepted the State's dam safety program. The City will continue to participate in this program as well as in a dam failure emergency action plan.

8.4 Implementation Strategies and Action Items

The following actions are recommended to reduce risk of flooding by increasing the number of flood insurance policies in Sacramento.

Table 8.8. NFIP/CRS Action Items

Action Item	Responsible Department	Schedule
1. Reassess the Flood Insurance Coverage Assessment (FIA) and Coverage Improvement Plan (CP) as Part of the Program for Public Information (PPI) every CRS verification cycle visit	DOU	Ongoing
2. Continue to Distribute a Brochure for Real Estate Agents to Provide to Their Potential Buyers	DOU Public Relations	Ongoing
3. Continue to Provide Property Owners with an Opportunity for a City Staff Site Visit for Providing Property Protection Advice	DOU Engineering Staff	Ongoing
4. Continue to maintain a Memorandum of Agreement with the County of Sacramento for Flood Control Planning of the South Sacramento County Streams	DOU	Ongoing
5. Increase the Freeboard for Development to 2.0 Feet above the Base Flood Elevation (BFE)	DOU, CDD	Medium term
6. Write a Levee Failure Response Plan for Critical Facilities	DOU, OES	Short to medium term
7. Petition FEMA for Modifications to the NFIP that would make Reduced-Cost Flood Insurance Available for Urban Areas Protected by Levees by Creating a New Flood Zone	DOU	Long term
8. Alleviate the Workload in Administering the NFIP Program	DOU	Short to medium term
9. Partner with the State, FEMA and Local Entities on Flood Risk Outreach	DOU Public Relations	Ongoing
10. The City will maintain a CRS Level 3 Designation	DOU	Medium term and ongoing
11. Develop a Dam Outreach Brochure on an annual basis	DOU	Ongoing
12. Continue to participate in the Northern Central CRS User Group	DOU	Short term and ongoing

1. Reassess the Flood Insurance Coverage Assessment (FIA) and Coverage Improvement Plan (CP) as Part of the Program for Public Information (PPI)

Issue/Background Statement: Efforts, on the part of FEMA, to market flood insurance and enforce lender compliance for areas within the 1-percent-annual-chance floodplain are encouraged. In the absence of mandatory flood insurance for areas behind levees with more than the 1-percent-annual-chance flood protection, comprehensive efforts to educate the public would be beneficial. This includes education on the residual risk behind levees, the potential flood depths that could be expected in those areas, and the availability of flood insurance to mitigate property

damage should a flood occur. Assembly Bill 156 requires DWR to annually notify property owners at risk of flooding in a levee protection zone.

Implementation Strategy: Under CRS Activity 370 - Flood Insurance Promotion, credit is given for conducting a flood insurance coverage assessment, coverage improvement plan, and implementation of the CP. These documents were completed as part of the Program for Public Information (PPI), Chapter 7 of this CFMP.

Responsible Office: DOU

Potential Funding: Staff time

Schedule: Ongoing. The FIA and CP as part of the PPI will be reassessed every CRS verification cycle visit.

2. Continue to Distribute a Brochure for Real Estate Agents to Provide to Their Potential Buyers.

Issue/Background Statement: Many residents who call the floodplain hotline complain that they were not informed that they were in a floodplain or are going to be placed into a floodplain requiring mandatory insurance. Under Activity 340, credit is given for creating a brochure or handout for real estate agents to give to their potential buyers encouraging them to investigate the flood hazards for a property. The Program for Public Participation (PPI) Committee prepared a brochure to educate real estate agents to discuss flood zones and insurance requirements as applicable per property.

Implementation Strategy: The City will continue to distribute the flood hazard brochure to local brokers, real estate agents, and professional real estate organizations. The City will continue to advise real estate agents to discuss with clients the importance of reading and understanding the NHD form that discloses if a property is located within the SFHA and requires flood insurance.

Responsible Office: DOU Public Relations

Potential Funding: Operating Budget

Schedule: Ongoing

3. Continue to Provide Property Owners with an Opportunity for a City Staff Site Visit for Providing Property Protection Advice.

Issue/Background Statement: Many residents have drainage issues and complaints, as well as questions on how they can protect their property or potentially retrofit their structure.

Implementation Strategy: Under Activity 360, the City can provide site visits to individual homeowners to give them advice on retrofitting techniques and drainage improvements. Also, City

staff should provide these homeowners with financial assistance programs. The City staff providing these site visits should take an EMI course on retrofitting and/or grant programs.

Responsible Office: DOU Engineering Staff

Potential Funding: Operating Budget/Staff time

Schedule: Ongoing.

4. Continue to maintain a Memorandum of Agreement with the County of Sacramento for Flood Control Planning of the South Sacramento County Streams

Issue/Background Statement: Section 402 of the Water Resources Development Act of 1986, as amended, requires the non-federal sponsor to have prepared a floodplain management plan within one year after the date of signing the Project Cooperation Agreement (PCA). The plan shall be designed to reduce the impacts of future flood events in the project area, including but not limited to addressing those measures to be undertaken by the local sponsor to preserve the level of flood protection provided by the project.

Implementation Strategy: A Watershed Management Plan was written by the City and County as part of Activity 450 that specifically addresses the flows on Morrison, Elder, Florin, Unionhouse, Strawberry, and Laguna creeks. This was conducted in conjunction with the 2011 Sacramento County Local Hazard Mitigation Plan Update.

The modeling of the South Sacramento Streams is currently being conducted and will be submitted to FEMA for implementation and update to the DFIRMs. A Memorandum of Agreement (MOA) will be signed between the County and City.

Responsible Office: DOU

Potential Funding: Staff time

Schedule: Ongoing.

5. Increase the Freeboard for Development to 2.0 Feet above the Base Flood Elevation (BFE)

Issue/Background Statement: The City of Sacramento currently uses 1.0 foot above the BFE as a requirement for development in a Special Flood Hazard Area.

Implementation Strategy: CRS Activity 430 encourages using a higher standard for development within the floodplain areas. A higher standard of 2.0 feet above the BFE was also recommended by the Task Force as part of the 2010 Corrective Action Plan. The City should work with the local building industry and investigate the potential for raising the current freeboard requirement.

Responsible Office: DOU, CDD

Potential Funding: Staff Time

Schedule: Medium term.

6. Write a Levee Failure Response Plan for Critical Facilities

Issue/Background Statement: The levee system in Sacramento can provide residents with a false sense of protection. Likewise, critical facilities including shelters, police and fire facilities, etc. can be unusable if a levee were to fail. Identification and flood protection of critical facilities is important to ensure the safety of the public.

Implementation Strategy: Create a plan that lists all critical facilities that would be considered critical in a levee failure emergency. Make a list of the names and phone numbers of the operators of all the public and private critical facilities affected by a levee failure. Work with facilities to create their own levee failure response plan. Also, identify those facilities which may need to be flood protected.

Responsible Office: DOU, OES

Potential Funding: State of California Emergency Management Grants

Schedule: Short to medium term.

7. Petition FEMA for Modifications to the NFIP that Would Make Reduced-Cost Flood Insurance Available for Urban Areas Protected by Levees by Creating a New Flood Zone

Issue/Background Statement: If a levee does not provide 100-year flood protection, it will not be accredited by FEMA. However, some levees provide less than a 100-year flood protection and do protect buildings. Affordable insurance could encourage more residents to purchase coverage.

Implementation Strategy: If a levee is not accredited, FEMA maps the floodplain assuming the levee is not there, which makes the BFE unrealistic. Creating a new flood zone that is modeled based on levee breaks at weaker areas, overtopping, or seepage would be more realistic. The City should petition FEMA to make modifications to the NFIP that would (1) recognize this new levee flood zone and (2) make flood insurance available at a reduced cost.

Responsible Office: DOU

Potential Funding: Staff Time

Schedule: Long term.

8. Alleviate the Workload in Administering the NFIP Program

Issue/Background Statement: City staff is spending an inordinate amount of time on two specific aspects of administering the NFIP program:

- 1) Educating insurance and mortgage companies regarding insurance requirements in flood zones; and
- 2) Providing grandfather letters to individuals needing to purchase insurance

This has become especially problematic since the Natomas Basin was converted to an AE zone in December of 2008.

Implementation Strategy: The City coordinate education efforts with FEMA to reach insurance and mortgage companies regarding the flood insurance requirements in SFHAs. The City will also consider charging a nominal fee for grandfather letters to offset the cost of the staff time.

Responsible Office: DOU

Potential Funding: User Fees

Schedule: Short to medium term.

9. Partner with the State, FEMA and Local Entities on Flood Risk Outreach

Issue/Background Statement: The City, County, SAFCA, the State, and FEMA all perform outreach to educate the public regarding flood-risk. Each of these outreach efforts takes place independently, resulting in inefficiencies and conflicting messages.

Implementation Strategy: The City will work to coordinate all outreach efforts and develop cost-share opportunities.

Responsible Office: DOU Public Relations

Potential Funding: Operating Budget/Staff time

Schedule: Short term and ongoing

10. The City Will Maintain a CRS Level 3 Designation

Issue/Background Statement: Currently, the City has achieved and maintains a CRS Classification 3. This provides policyholders with up to a 35% discount on certain flood insurance policies within the City.

Implementation Strategy: The City will work toward obtaining a Classification 2, thus providing policy holders a 40% discount on certain flood insurance policies within the City.

Responsible Office: DOU

Potential Funding: Operating Budget/Staff time

Schedule: Ongoing.

11. Continue to Participate in the Northern Central CRS User Group

Issue/Background Statement: The Northern Central CRS User Group meets on a quarterly basis to discuss CRS activities, share tips on how to get the most credit, band together to improve floodplain management programs, and brainstorm on new methods of outreach.

Implementation Strategy: The City should continue to participate in the Northern Central CRS User Group and continue to improve CRS performance for the benefit of all community residents.

Responsible Office: DOU

Potential Funding: Operating Budget/Staff time

Schedule: Short term and ongoing.

9 LEVEE SECURITY PLAN

9.1 Introduction and Background

The Sacramento Region is considered to be one of the country's most at-risk major metropolitan areas for hazardous flooding. One of the major risks of flooding in the City of Sacramento (City) stems from the possibility of the failure of area levees. As the City levee system is located within an urbanized area within a major metropolitan region, a security plan is required to protect infrastructure from terrorism and other malicious or negligent acts.

Although there have been no credible threats directed toward levees as potential targets, the Department of Homeland Security (DHS) advises that levee owners and operators should be aware of the possibility of an attack targeting levees and other flood risk reduction infrastructure. A Vulnerability Assessment (VA) conducted by the Sacramento Department of Utilities (DOU) as required by the Local Hazard Mitigation Plan (LHMP) found that, while the risk of a terrorist attack against DOU is unlikely, it is a possibility. The VA also found that DOU is at risk of malevolent threats by criminals and vandals. Enhancements to the security of DOU facilities, including the levee system, would provide benefits in the event of any type of attack (terrorism or otherwise). This chapter addresses current and proposed efforts to enhance the security of Sacramento's levee system and identifies security personnel, responsibilities, resources, and measures.

This chapter also meets the requirements for a Levee Maintaining Agency (LMA) by California law for urban and urbanizing areas. The guidance for a Levee Security Plan is found in the California Department of Water Resources (DWR) May 2012 *Urban Levee Design Criteria* (ULDC). At the time of this writing, it was confirmed with DWR that the 2012 ULDC is the most current guidance on levee security.

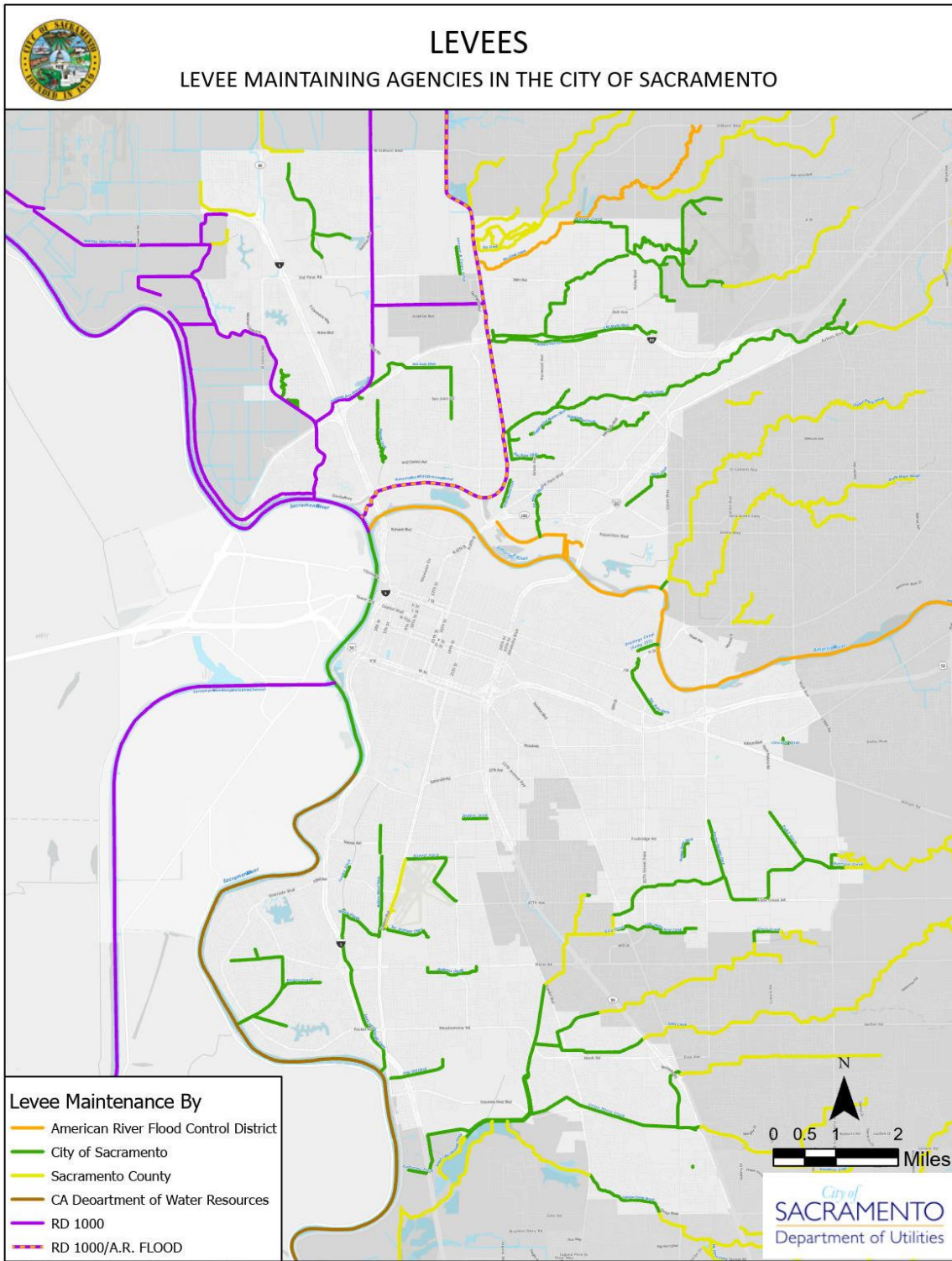
Background

The levee system protecting the City from local creeks and the Sacramento and American Rivers is well over 100 miles long. Several dozen pump stations are incorporated into the system, pumping local storm drainage into the adjacent river or creek. Although there is significant security at the pump stations and lesser security in other places along the levees, the system is largely open to the public. Due to this openness, the levees are vulnerable to activities such as planting explosive devices or illegal digging on a levee to weaken its structure.

If a weakened levee were to fail during a significant storm event, the results could be catastrophic. The geographic extent of levee failure is discussed in-depth within the City of Sacramento's Annex F of the Sacramento County Local Hazard Mitigation Plan (LHMP) Update (September 2021), including impacts to critical facilities. The LHMP does not report any past occurrences of levee failure within the City due to terrorism or other intentional sabotage attacks.

The City is the LMA for a portion of the levee system located within the jurisdiction. Figure 9.1 shows the areas that the City is responsible for as the LMA, and other relevant levee system owners/management.

Figure 9.1 Levee Maintaining Agencies in the City of Sacramento



Source: City of Sacramento Department of Utilities, 2024

9.2 Current Implementation Status

The ULDC requires each LMA to develop a levee security plan to protect urban and urbanized area levee systems from acts of terrorism and other malicious or negligent acts. The ULDC also provides guidance on developing this plan.

The City appointed the Security and Emergency Preparedness section of DOU to be the Security Director for this Levee Security Plan. The Security Director will manage the security planning efforts and establish a chain of command for emergency operations. The Security Director is also responsible for annual review and update of this plan as part of the Comprehensive Flood Management Plan (CFMP) annual progress report, which is led by the Floodplain Management staff in Engineering and Water Resources Division of DOU.

The ULDC criteria require agencies to consider and prioritize vulnerabilities and employ an array of security measures from four basic categories to address vulnerabilities.

These required security measures are:

- Networked detection
- Deterrence
- Physical security
- Intrusion interdiction during high threat periods

The ULDC criteria provide recommendations and options for consideration in each of the four areas. The Department of Utilities (DOU) already employs a number of these recommended security measures from the four basic categories:

Networked Detection provides for monitoring and reporting of security information between the levee maintaining agencies and the Intelligence Community, which is comprised of multiple federal, state, and local agencies. Recommended detection measures include improved personnel and public awareness, suspicious activity reporting, and integration with the existing Terrorism Liaison Officer (TLO) program.

The DOU Security and Emergency Preparedness Section currently participates in the California Water/Wastewater Agency Response Network (CalWARN) and Water Information Sharing and Analysis Center (WaterISAC), along with utilizing resources from the Sacramento Police Department (SPD) and the Sacramento Regional Terrorism Threat Assessment Center (RTTAC). In addition, the Security Section routinely uses the National Suspicious Activity Reporting System (SAR) to report suspicious activity to the local fusion center for analysis and regularly provides awareness training to personnel on a number of topics including levee security and recognizing and reporting suspicious activity.

Deterrence consists of visible security measures such as signs, gates, visible patrols, and controlled access to levees and associated critical facilities that create an atmosphere of vigilance and security. These measures are designed to hinder criminal activity and maximize the potential for security and law enforcement intervention.

DOU currently uses a combination of patrols, signs, and gates that prohibit trespassing at critical facilities and prohibit motor vehicles at all gated accesses. DOU personnel patrol the levees on a daily basis during normal conditions to monitor levee conditions, suspicious activity, and the conditions of signs, locks and gates. During high water levels or elevated threat periods, the levees are patrolled continuously. Contract private security patrols are also used at critical sites to deter and report suspicious or criminal activity.

Physical Security is divided between deterrence (discussed above), access control, intrusion detection, and levee performance alerting mechanisms.

Access Control

DOU levee access controls are generally to be limited to restricting motor vehicle access. Non-vehicular public access along levees is not considered to be a security problem, except at specific critical locations such as treatment plants or sumps. DOU currently uses a combination of physical security measures (signs, fences, locks, lighting, and security patrols) to stop, inhibit, or delay access by unauthorized persons. The goal of access control is to force intruders who enter restricted areas to do so knowingly through unauthorized means, thereby limiting the number of unintentional intruders and establishing intent on the part of intruders.

Intrusion Detection

DOU currently uses intrusion alarms and patrols by DOU personnel and contract security guards to detect unauthorized intrusion. DOU has high water levee patrolling protocols that provide for the safety of patrollers and emphasize detection of vehicular trespass.

Levee Performance

DOU currently uses water elevation sensors and levee patrols to monitor levee performance. The elevation sensors can be remotely monitored through the Sac City Alert 2 System. In addition, the National Weather Service monitors several gauges on both the Sacramento and American Rivers; unusual water levels reported at gauges would warrant and prompt further investigation.

Intrusion Interdiction capabilities are determined by the preparedness and willingness of the local first responders. The goal is to facilitate awareness of and investment in swift response to reported intrusions during high water or increased threat periods.

DOU regularly participates in seminars, workshops, and tabletop exercises with local agencies to familiarize, update and validate the security and evacuation plans related to levee security and breaches. The City anticipates participation in future exercises and continued emergency training.

9.3 Implementation Strategies and Action items

The following implementation strategies outline both long-term DOU activities and short-term activities within the next five years to improve levee security and reduce flood risk from levee failure caused by acts of terrorism and other malicious or negligent acts.

Given the challenge of increasing security for such a large and open system, the general goals of this risk reduction tool would be to: (1) increase public awareness of levee safety and security issues and develop a coordinated partnership with the community to report suspicious activity/intrusions to the appropriate authorities; and (2) Provide incremental increases in levee safety and security by enhancing DOU's ability to monitor levee penetration and performance, and to detect unauthorized intrusion at critical sites.

Meeting these goals would involve promoting increased public and local agency awareness of the nature of the threats to the levee system. These strategies would also require the identification and acquisition of sensor systems designed to remotely detect levee penetrations and performance problems, and the addition of monitoring systems to enhance DOU's ability to detect intrusion at critical sites.

Implementation Actions (2024 - 2029)

Over the next five years, progress toward these general goals could be achieved by taking the following actions:

1. Incorporate levee security risk information in flood risk outreach material and presentations. The ULDC recommends that LMAs should establish a coordinated network partnership consisting of the public and community entities or citizens who have access to the levee and to report suspicious activity/intrusions to the appropriate authorities. Currently, the City conducts flood risk outreach including a public outreach event known as the Highwater Jamboree. This public event hosted by the Department of Utilities includes outreach and education on levee safety, security and emergency preparedness. Levee safety and security could also be integrated into existing City of Sacramento Mitigation Education, Outreach and Partnerships as identified in the LHMP. Messaging may tie off of the U.S. Department of Homeland Security messaging "See something, say something" campaign, designed to raise public awareness of the signs of terrorism and terrorism-related crime. Presentations to the public, which include leaders in the community, on such topics as disaster preparedness could also include information on levee safety and security. Security information should also include how to report suspicious activity to local law enforcement.

2. Add additional sensor systems related to levee penetration and performance. The ULDC recommends that security measures related to levee penetrations and performance be considered, and recommends that sensor systems should be considered for detecting problems, remotely if practical. Such systems may include levee movement sensors, water pressure sensors, motion

sensors, disturbance detection cables, and water flow detectors, such as water level gauges and piezometers. DOU currently only uses water level gauges to monitor river and creek levels, and these additional types of sensors would be used to identify potential levee performance problems.

3. Enhance intrusion detection capability. The ULDC recommends that LMAs consider using security systems such as cameras, motion detectors, and alarms at critical nodes, especially during high water or periods of increased threat. DOU currently has only alarms at critical nodes, and the addition of cameras and motion detectors at these sites would greatly enhance the ability to detect unauthorized intrusion.

4. Annual review and update. The Security Director is also responsible for annual review and update of this plan as part of CFMP annual progress report, which is led by the Floodplain Management staff in Engineering and Water Resources Division of DOU.

The overall 5-year goal is to improve levee security and reduce flood risk from levee failure caused by acts of terrorism and other malicious or negligent acts.

Table 9.1 Levee Security Action Items

Action Item	Responsible Department	Schedule
1. Incorporate levee security risk information in flood risk outreach material and presentations	Engineering Services, Security and Emergency Preparedness	Short term and ongoing
2. Add additional sensor systems related to levee penetration and performance	Operations and Maintenance, Engineering Services, Business Services, Security and Emergency Preparedness	Short term and ongoing
3. Enhance intrusion detection capability	Operations and Maintenance, Engineering Services, Business Services, Security and Emergency Preparedness	Short term and ongoing
4. Annual Review and Update	Engineering Services, Security and Emergency Preparedness	Short term and ongoing

1. Incorporate levee security risk information in flood risk outreach material

Issue/Background Statement: Incorporate levee security risk information into flood risk outreach material.

Implementation Strategy: Currently the City conducts flood risk outreach and presentations on topics such as disaster preparedness. However, this effort’s main purpose has been to comply with NFIP and CRS requirements. The program could be expanded relatively easily to include outreach

and education on levee safety and security. Levee safety and security could also be integrated into existing City of Sacramento Mitigation Education, Outreach and Partnerships as identified in the LHMP. The LHMP Section F.6.4 identifies several existing outreach programs, including the Be Flood Ready brochure/billboard, dam brochure, storm preparation outreach, Sacramento Ready, and Flood Watch Newsletter.

Messaging may tie off of the U.S. Department of Homeland Security messaging “See something, say something” campaign, designed to raise public awareness of the signs of terrorism and terrorism-related crime. Presentations to the public, which includes leaders in the community, on such topics as disaster preparedness could also include information on levee safety and security. Security information should also include how to report suspicious activity to local law enforcement.

Responsible Office: DOU - Engineering Services, Business Services, Security and Emergency Preparedness

Potential Funding: City staff

Schedule: Short term and ongoing

2. Add additional sensor systems related to levee penetration and performance.

Issue/Background Statement: Pursue grant funding opportunities from FEMA, DHS, DWR, and the State Water Resources Control Board for security improvement projects.

Implementation Strategy: Develop a grant program that will identify and pursue grant programs that will average \$500,000 per year to augment other funds for additional sensor systems related to levee penetration and performance. One full-time City employee or commensurate level of effort from a consultant will be needed.

Responsible Office: DOU - Operations and Maintenance and/or Engineering Services

Potential Funding: City staff

Schedule: Short term and ongoing

3. Enhance intrusion detection capability

Issue/Background Statement: Pursue grant funding opportunities from FEMA, DWR, and the State Water Resources Control Board for enhanced intrusion detection projects.

Implementation Strategy: Develop a grant program that will identify and pursue grant programs that will average \$500,000 per year to augment other funds for enhanced intrusion detection projects. One full-time City employee or commensurate level of effort from a consultant will be needed.

Responsible Office: DOU- Security and Emergency Preparedness

Potential Funding: City staff

Schedule: Short term and ongoing

4. Annual Review and Plan Update

Issue/Background Statement: The Security Director is responsible for annual review and update of this plan.

Implementation Strategy: DOU Security and Emergency Preparedness Section will annually review and update this plan and include it as part of CFMP annual progress report, which is led by the Floodplain Management staff in DOU Engineering and Water Resources Division.

Responsible Office: DOU- Security and Emergency Preparedness, Engineering Services

Potential Funding: City staff

Schedule: Short term and ongoing

APPENDIX A
SUMMARY IMPLEMENTATION PLAN

APPENDIX A

SUMMARY IMPLEMENTATION PLAN

Action	Responsible Office	Schedule
LAND USE PLANNING AND DEVELOPMENT ACTION ITEMS		
1. Improve Methods for Providing Development Guideline Information to the Public and Developers.	DOU, Community Development	Short Term
2. Enforce Existing Development Guidelines.	DOU, Community Development	Short Term and Ongoing
3. Improve the Building Permit Process with Respect to Floodplain Management.	DOU, Community Development	Short Term and Ongoing
4. Continue Implementation of Phased Development for A99 Natomas Floodplain.	Community Development	Short Term
5. Update the Design and Procedures Manual, On-Site Design Manual and City code to include new development requirements in the A99 Natomas Floodplain.	Department of Utilities	Short Term
EMERGENCY MANAGEMENT ACTION ITEMS		
1. Continue National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS) Exercises and training within DOU	DOU, OEM	Short Term
2. Continue Exercise and Training Program within DOU	DOU	Annually
3. Conduct Ongoing Emergency and Recovery Planning and Development	OEM, DOU	Short Term
4. Develop a Disaster Housing Plan	OEM	Short Term
5. Develop Intergovernmental Flood Management and Control	City of Sacramento, DOU, ARFCD, RD1000, SAFCA, USACE, DWR	Long Term
6. Increase Public Education Efforts	OEM, PIO, DOU	Short Term
7. Coordinate Outreach Efforts	OEM, PIO, DOU	Short Term
8. Enhance Public Alert and Notification	OEM, SPD	Long Term
9. Increase Personal Preparedness of City Staff	OEM	Short Term
10. Develop a Coordination and Information Reporting System	OEM	Short Term
11. Substantial Damage Assessment Training	DOU, CDD	Short Term

Action	Responsible Office	Schedule
12. Develop Post-Disaster Briefing Memo for Elected Officials	DOU, OEM, CDD	Short Term
13. Participate in Risk MAP Process	DOU, OEM	Long Term
14. Review City's Flood Warning System	DOU (for City sensors), OEM	Short Term
15. Develop a Post-Earthquake Remediation Plan, if required by ULDC	DOU, OEM, SAFCA, RD1000, ARFCD, MA 9	Long Term
16. Flood Relief Plan, if required by the ULDC	DOU, OEM, SAFCA	Long Term
LEVEE AND OTHER STRUCTURAL IMPROVEMENTS ACTION ITEMS		
1. Support Local Efforts to Improve Flood Facilities	DOU, Engineering Services, Community Development, elected officials	Short term and ongoing
2. Plan and Implement Modernization Phase of Levee Accreditation and ULDC	DOU, Engineering Services	Long term
3. Participate in Regional Flood Management Plan	DOU, Engineering Services	Short term and ongoing
INTERNAL DRAINAGE IMPROVEMENTS ACTION ITEMS		
1. Pursue Grant Funding for Drainage Improvements	Engineering Services, Business Services	Short term and ongoing
2. Evaluate and Explore Regulatory Fee Implementation	DOU Public Information Office, Engineering Services, Business Services	Long term
3. Develop Drainage Master Plans	Engineering Services	Short term and ongoing
4. Update the 2021 Watershed Management Plan (WMP)	Engineering Services	Short-term and ongoing
5. Master Generator Plan for Back-Up Pump Station Power	Engineering Services, Business Services	Short term
6. Drainage Projects for Repetitive Loss Properties	Engineering Services, Business Services	Short term and ongoing
NATIONAL FLOOD INSURANCE PROGRAM/COMMUNITY RATING SYSTEM		
1. Reassess the Flood Insurance Coverage Assessment (FIA) and Coverage Improvement Plan (CP) as Part of the Program for Public Information (PPI) every CRS verification cycle visit	DOU	Ongoing
2. Continue to Distribute a Brochure for Real Estate Agents to Provide to Their Potential Buyers	DOU Public Relations	Ongoing
3. Continue to Provide Property Owners with an Opportunity for a City Staff Site Visit for Providing Property Protection Advice	DOU Engineering Staff	Ongoing
4. Continue to maintain a Memorandum of Agreement with the County of Sacramento for Flood Control Planning of	DOU	Ongoing

Action	Responsible Office	Schedule
the South Sacramento County Streams		
5. Increase the Freeboard for Development to 2.0 Feet above the Base Flood Elevation (BFE)	DOU, CDD	Medium term
6. Write a Levee Failure Response Plan for Critical Facilities	DOU, OEM	Short to medium term
7. Petition FEMA for Modifications to the NFIP that would make Reduced-Cost Flood Insurance Available for Urban Areas Protected by Levees by Creating a New Flood Zone	DOU	Long term
8. Alleviate the Workload in Administering the NFIP Program	DOU	Short to medium term
9. Partner with the State, FEMA and Local Entities on Flood Risk Outreach	DOU Public Relations	Ongoing
10. The City will maintain a CRS Level 3 Designation	DOU	Medium term and ongoing
11. Develop a Dam Outreach Brochure on an annual basis	DOU	Ongoing
12. Continue to participate in the Northern Central CRS User Group	DOU	Short term and ongoing
LEVEE SECURITY ACTION ITEMS		
1. Incorporate levee security risk information in flood risk outreach material and presentations	Engineering Services, Security and Emergency Preparedness	Short term and ongoing
2. Add additional sensor systems related to levee penetration and performance	Operations and Maintenance, Engineering Services, Business Services, Security and Emergency Preparedness	Short term and ongoing
3. Enhance intrusion detection capability	Operations and Maintenance, Engineering Services, Business Services, Security and Emergency Preparedness	Short term and ongoing
4. Annual Review and Update	Engineering Services, Security and Emergency Preparedness	Short term and ongoing

APPENDIX B
RISK COMMUNICATION (PPI) PLANNING
PROCESS DOCUMENTATION

APPENDIX B

RISK COMMUNICATION (PPI)

PLANNING PROCESS DOCUMENTATION

Program for Public Information (PPI) Committee

- Meeting # 1 – July 23rd, 2014 – Agenda and Sign-In Sheet
- Meeting # 2 – September 10th, 2014 – Agenda
- Meeting # 3 – October 29th, 2014 – Agenda and Email Announcement
- Meeting # 4 – April 7th, 2017 – Agenda, Program for Public Information Evaluation Report, and Public Information and Flood Response Projects
- Meeting # 5 – July 16th, 2019 – Agenda, Program for Public Information Evaluation Report, and Public Information and Flood Response Projects
- Meeting # 6 – June 9th, 2021 – Agenda, Program for Public Information Evaluation Report, and Public Information and Flood Response Projects
- Meeting # 7 – September 28, 2022 – Agenda, Zoom Meeting Invitation, Meeting Summary
- Meeting # 8 – November 3, 2023 – Agenda, Public Information and Flood Response Projects, PPI Projects and Initiatives, PPI Evaluation Report

Meeting #1 Documentation

July 23, 2014

City of Sacramento

Program for Public Information Committee (PPIC) Agenda

July 23rd, 2014 – 6:00 PM

1. Introductions
2. Background on the Community Rating System (CRS) Program and Activity 330 - Program for Public Information
3. Identification of flooding problems affecting Sacramento (flood hazards, exposed buildings, and flood insurance coverage)
4. Inventory of existing public information and outreach efforts
5. Identify target areas (portions of the community that should be covered by the PPI Program)
6. Identify target audiences (Identify groups of people who needs special messages on flood protection)
7. Questions
8. Adjourn

PROGRAM FOR PUBLIC INFORMATION COMMITTEE

Wednesday, July 23, 2014 & Wednesday, September 10, 2014 - 6:00PM

Belle Coolidge Community Center - 5699 S Land Park Dr., Sacramento, CA 95822

Name	Title	Email	Phone Number	July 23, 2014	Sept. 10, 2014	OCT 21, 2014
Connie Perkins	City Floodplain Mgmt	cperkins@cityofsacramento.org	916-808-1914	<i>CP</i>	<i>CP</i>	<i>CP</i>
Jessica McCabe	City Public Relations	JMcCabe@cityofsacramento.org	916-808-5921	<i>JM</i>	<i>JM</i>	
Jim McDonald	City Community Development Dept	jmcDonald@cityofsacramento.org	916-808-5723	<i>JM</i>	<i>JM</i>	<i>JM</i>
Jason Sirney or Steve Winton	City EOC	SWinton@pd.cityofsacramento.org jsirney@cityofsacramento.org	916-808-6457			
Pete Willmore or Doreen Hansen Lisa Deklins	City DOC	PMillino@cityofsacramento.org ljohnson@pd.cityofsacramento.org				
Nancy Dorfer	City Floodplain Mgmt	ndorfer@cityofsacramento.org		<i>ND</i>	<i>ND</i>	<i>ND</i>
Yanelis Rios	City Floodplain Mgmt	YRios@cityofsacramento.org	916-808-8891	<i>YR</i>	<i>YR</i>	
BG Heiland	Floodplain Resident	Brian.Heiland@water.ca.gov	(916) 207-6620	<i>BH</i>		
Tom Reavey	Floodplain Resident	treavey@yahoo.com	N/A	<i>TR</i>	<i>TR</i>	
Alan Haynes	Floodplain Resident	alan.haynes@noaa.gov	916-979-3056 x328	<i>AH</i>	<i>AH</i>	<i>AH</i>
Sam Yee - Lyons	Real Estate Agent	Sam4Homes@aol.com	(916) 505-7722	<i>SY</i>	<i>SY</i>	
Jeff Beck - Jeffrey Beck Insurance Services	Flood Insurance Agent	jeff@sactoflood.com	(916)684-3753	<i>JB</i>	<i>JB</i>	
Bobby Peterson	Flood Insurance Agent	Robert.Peterson@libertymutual.com	(916) 681-3300 Ext. 59808	<i>BP</i>	<i>BP</i>	
Ashley Sanchez Willard	Local mortgage lender/bank	asanchez@teamvitek.com	916-834-5999	<i>AS</i>	<i>AS</i>	<i>AS</i>
Kevin Littlefield	Local mortgage lender/bank	kevin@wcmig.com	866-868-2022	<i>KL</i>	<i>KL</i>	<i>KL</i>

Meeting #2 Documentation

September 10, 2014

City of Sacramento

Program for Public Information Committee (PPIC) Agenda

September 10th, 2014 – 6:00 PM

1. Introductions
2. Review of previous meeting
 - a. Identification of target areas
 - b. Identification of target audiences
3. Define outreach project messages
4. Identify outreach projects to disseminate the messages
5. Questions
6. Adjourn

Meeting #3 Documentation

October 29, 2014

City of Sacramento

Program for Public Information Committee (PPIC) Agenda

October 29th, 2014 – 6:00 PM

Belle Cooledge Library, 5600 S. Land Park Dr., Sacramento, CA

1. Review of previous meeting (September 11th)
 - a. Six priority topics
 - b. Other topics
 - c. Formulate messages and outcomes
2. Examine other outreach project initiatives
3. Evaluate Flood Response Preparations
4. Questions
5. Adjourn

From: Connie Perkins [mailto:CPerkins@cityofsacramento.org]

Sent: Friday, October 24, 2014 6:13 PM

To: Brian.Heiland@water.ca.gov; Tom Reavey (treavey@yahoo.com); Sam4Homes@aol.com; jeff@sactoflood.com; asanchez@teamvitek.com; kevin@wcmtg.com; Robert.Peterson@libertymutual.com; alan.haynes@noaa.gov

Cc: Foster, Jeanine; Stroud, David A; Pete Millino; Jessica McCabe; Jim McDonald; Yanelis Rios; Tony Bertrand

Subject: Program for Public Information Meeting - City of Sacramento

Good afternoon. This a reminder that our last meeting is next **Wednesday, October 29, 2014, 6pm**, at Belle Cooledge Library, 5600 S. Land Park Dr., Sacramento, CA (same location). We look forward to wrapping up this outreach program.

Thank you and have a great weekend,

Connie Perkins, PE, CFM

Senior Engineer

916-808-1914

From: Connie Perkins

Sent: Thursday, October 02, 2014 8:59 AM

To: 'Brian.Heiland@water.ca.gov'; Tom Reavey (treavey@yahoo.com); 'Sam4Homes@aol.com'; 'jeff@sactoflood.com'; 'asanchez@teamvitek.com'; 'kevin@wcmtg.com'; 'Robert.Peterson@libertymutual.com'; 'alan.haynes@noaa.gov'

Cc: 'Foster, Jeanine'; 'Stroud, David A'; Pete Millino; Jessica McCabe; Jim McDonald; Yanelis Rios; Tony Bertrand

Subject: Final Program for Public Information Meeting - City of Sacramento

Good afternoon. Thank you to everyone who responded to the poll. Our last meeting will be on **Wednesday, October 29, 2014, 6pm**, at Belle Cooledge Library, 5600 S. Land Park Dr., Sacramento, CA (same location). At this meeting, we will examine other outreach project initiatives and determine other flood response efforts.

I have attached the presentation from the September 11 meeting for those who were unable to make it.

Please let me know if you have any questions.

City of Sacramento
Program for Public Information Committee (PPIC)

Research has shown that awareness of the flood hazard is not enough to make most people to take action to protect themselves or their homes. To change people's behavior, they often need to be told several times of the hazard, through various dissemination methods, and what specific actions to take. Based on this research, the Community Rating System (CRS) program encourages communities to be "critical thinkers" in their public information needs and what their citizens need to know about the available floodplain resources and flood hazards.

Based on your specialized area of expertise and interest, you have been identified as a participant to help Sacramento develop a Program for Public Information (PPI) which is a strategy that looks holistically at a community's public information program. This evaluation will examine the effectiveness of the existing program and determine if there are any gaps (for example, not reaching a certain constituency).

The resulting PPI will be an ongoing public education program that provides the most important flood safety messages along with messages for the protection of a floodplain's natural functions. These messages must be disseminated to a variety of target audiences such as children or elderly citizens, etc.

We realize your time is valuable; therefore, the City is estimating that two meetings will be required to complete this project, but a third meeting may be necessary. The PPI meetings and meeting objectives are scheduled as follows:

- Meeting # 1 (July 23, 2014, Belle Cooleedge Library, 5600 S. Land Park Dr.) – Assessing the community's current public information needs – See attached agenda
- Meeting # 2 (September 10, 2014, Belle Cooleedge Library, 5600 S. Land Park Dr.) – Defining outreach messages and potential outreach projects
- Meeting # 3 (Date and Location TBD) – Examining other outreach project initiatives and determining other flood response efforts

Once again thank you for your willingness to serve on this important PPI Committee which will help the City further reduce the cost of flood insurance for its citizens. Additional questions can be directed to me at 916-808-1914 or cperkins@cityofsacramento.org.

Connie Perkins, PE, CFM
Senior Engineer
City of Sacramento, Department of Utilities
Floodplain Management

Meeting #4 Documentation

April 7, 2017

Program for Public Information Evaluation Report

(May 2016 – April 2017)

Community Rating System Program

The City of Sacramento (City) has been actively participating in the Community Rating System (CRS) program since 1992. CRS is a component of the National Flood Insurance Program (NFIP). It provides a reduction to flood insurance premiums to residents and businesses within participating communities. The reductions are based on a community's flood hazard mitigation programs, including risk communication activities. The City of Sacramento is currently a Class 5 providing a discount up to 25% for residents and businesses.

Even before joining the CRS program, the City, through many departments and in coordination with various stakeholders and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, in 2014, the City prepared a Program for Public Information (PPI) by following the guidelines in the 2013 CRS Manual. The City's PPI, prepared through a committee made up of City staff and stakeholders, is now an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for the community's flood problems.

The PPI is part of the 2016 Comprehensive Flood Management Plan, which was adopted by City Council in May 2016.

PPI Committee Annual Evaluation Meeting

Annually, the City must monitor the implementation of the outreach projects with the PPI Committee. An assessment is made as to whether the desired outcomes are achieved and what, if anything, should be changed.

The PPI Committee met on Friday, April 7, 2017 at 10:00am. See Attachment 1 for agenda. The Committee members are as follows:

Committee Members	Title
Connie Perkins	Senior Engineer, City of Sacramento, Department of Utilities, Floodplain Management
Jessica McCabe	Program Analyst, City of Sacramento, Public Relations
Remi Mendoza (replaced Jim McDonald)	Associate Planner, City of Sacramento, Community Development Department
Lisa Deklinski	Program Specialist, City of Sacramento, Department of Utilities Emergency Operation Center
Kelly Sherfey (replaced Nancy Dorfer)	Program Analyst, City of Sacramento, Department of Utilities, Floodplain Management
BG Heiland	Floodplain Resident
Tom Reavey	Floodplain Resident
Alan Haynes	Floodplain Resident
Sam Yee	Real Estate Agent, Lyons
Jeff Beck	Flood Insurance Agent, Jeffrey Beck Insurance Services
Ashley Sanchez Willard	Local mortgage lender, Land Home Financial Services
Kevin Littlefield	Local mortgage lender, Capital City Lending

The committee was provided with new outreach materials and an update to Table 7.8 from the PPI.

Assessment of Outreach Projects

A total of 30 Outreach Projects (OP) and 7 flood response preparation (FRP) projects are listed in the City’s PPI. Each of the projects were reviewed and evaluated. In addition, the City introduced the new real estate brochures for real estate agents and potential homebuyers, the updated Repetitive Loss Area Analysis (RLAA), the Insurance Coverage Improvement Plan goals, and the “Be Flood Ready” website improvements. City staff also reviewed the FRP projects with the committee.

A more detailed assessment of each OP is included in Attachment 2. Attachment 3 is the revised Table 7.8 that contains the recommendations from the PPI Committee.

There was a consensus in the Committee that the current PPI has been and continues to be effective in getting the messages out to the community.

Recommendations/Developments for Outreach Projects

There were several recommendations and development of outreach projects to improve the PPI in FY 2017/2018.

- With all of the changes over recent years with the NFIP, the committee recommended that an additional Coverage Improvement Plan goal be added that would address changes in premiums. The goal would be to reduce the amount of policy rating errors found within the community. This goal will be achieved through an additional outreach project that targets residents who are paying above normal premiums for their flood zone. The City will also work with Congresswoman Doris Matsui to assist in this effort. Congresswoman Matsui promotes the importance of flood insurance through her website and newsletter.
- In the future, add an “Adopt a Drain” program where residents would be able to adopt a drain from a website. That resident would be responsible for keeping it clean from debris during rain storms. This has been very successful in other communities.
- The NFIP is now sending Flood Risk Notifications on an annual basis. It was added as an Outreach Project and part of the Insurance Coverage Improvement Plan.
- Real Estate brochures for real estate agents and potential buyers were created and distributed to the Sacramento Association of Realtors. Electronic and professional hard copies of the brochures were provided. The City added information on Magpie Creek, which is our local floodplain that potential buyers are not aware that it is a floodplain. These are newly implemented outreach projects, so the impact of this outreach will be monitored over the next year. However, the initial introduction of the information was well received by the real estate community.
- “Be Flood Ready” Website improvements include:
 - More user-friendly
 - Promotion of floodplain management for kids and schools;
 - Added FloodSmart link;
 - Added Real Estate Brochures;
 - Added FEMA grant flyers; and
 - Added 200-year flood map with paragraph explaining the new State requirements.

Flood Response Preparations (FRP) Material Review

The committee reviewed the FRP materials (i.e., press releases, handouts). With the recent storms at the beginning of 2017, City staff asked the committee if any additional outreach material would have been helpful during the storms. The only recommendation was adding brochures on, “How to File an Insurance Claim”. The City will be utilizing flyers from Red Cross and FEMA for this new FRP project. The committee determined that the rest of the materials were still current and appropriate.

Insurance Coverage Improvement Plan

One of the City’s desired outcomes was increasing the number of flood insurance policies. The number of policies increased in 2016, but dropped down in 2017. This desired outcome is hard to measure with all the recent flood insurance rate map and NFIP changes.

City of Sacramento Flood Insurance Policies						
Year	Total	SFHA	X/AR/A99	PRP	Average Premium	Community CRS Savings
January 2017	42,223	352	25,522	16,349	\$ 465	\$ 1,533,010
February 2016	43,937	360	22,170	21,407	\$ 472	\$ 1,401,157
April 2015	41,967	372	13,350	28,245	\$ 514	\$ 1,056,896

The committee also discussed having the additional outreach project (discussed in the first bullet above) be part of Coverage Improvement Plan. The additional outreach project will address the recent changes in insurance premiums. The City has been successful so far through current outreach activities in reducing the average premium within the community, but a concentrated effort is needed to reach long-term policy holders that are not aware of premium reductions due to changes in flood zones and policies.

Repetitive Loss Area Analysis

The City staff discussed the survey distributed to the repetitive loss areas. City staff walked the neighborhood, dropping off surveys, and talked to the residents about flooding in their neighborhood. The majority of flooding was from undersized drainage pipes causing street flooding and grading issues. The City received four surveys back from the repetitive loss areas. The revised Repetitive Loss Area Analysis report is on the website, and the public comment deadline is April 14, 2017.

Open Space Education

The main natural function open space within the City is the American River Parkway. The American River Parkway foundation continues to provide an American River Parkway Map which highlights recreational areas, the Parkway’s history, and many habitats located within the Parkway. The committee recommended in the original PPI that the City coordinate information material in the future with the American River Parkway Foundation, which is still one of our goals.

Stream Dumping Regulations

The Committee discussed how the City continues to have No Dumping Signs on our creeks and rivers, stenciling on our storm drain inlets, and a citywide mailer. The City also will soon implement a Trash Total Maximum Daily Load, which is being enforced by the State Water Boards. This will assist further in keeping trash out of the City’s waterways.

Flood Protection Assistance

The Committee discussed how the City still provides flooding information or property protection assistance to the public. In the light of recent storms and the Repetitive Loss Area Analysis, more interest has been generated around financial assistance. Staff has used FEMA's Hazard Mitigation Grant handouts to explain the different options and what may be beneficial to the resident. The Committee recommended that the FEMA Hazard Mitigation Grant brochures be added to the PPI outreach projects.

Levee and Dam Safety

The committee discussed the outreach projects regarding levee and dam safety. The California Department of Water Resources sent out their annual Flood Risk Notification in October 2016 on those property owners living behind levees. The City sent out a Dam Safety brochure in the City's utility bill in December 2016.

This PPI Evaluation Report will be submitted as part of the City's reverification package on May 19, 2017 and presented to the Sacramento City Council as an informational item.

Attachment 1

**Program for Public Information Committee
Annual Review
Agenda**

Date and Time: *Friday, April 7, 2017*

Teleconference: **916-808-1580**

Invited Attendees: *Jessica McCabe, Remi Mendoza, Tom Reavey, BG Heiland, Alan Haynes, Sam Yee, Jeff Beck, Ashley Sanchez, Bobby Patterson, Kevin Littlefield, Connie Perkins, Kelly Sherfey*

Meeting Materials:

- *Comprehensive Flood Management Plan (CFMP) - <http://www.cityofsacramento.org/Utilities/Education/Flood-Ready/City-Flood-Prep>*
- *Flood Ready Website Pages - <http://www.cityofsacramento.org/floodready>*
- *Documents Attached to Meeting Reminder - Real Estate Brochure, Real Estate Disclosure Flyer, Flood Insurance Policy Statistics*

1. Welcome

2. Review of Flood Response Preparation (CFMP Pages E.1 to E.15)

- a. Review of Flood Response Preparation Projects
- b. Evaluation of Projects
- c. Future Needs

3. Insurance Coverage Improvement Plan (CFMP Pages 7.17 to 7.23 & Topic B)

- a. Coverage Improvement Plan Project Review
- b. Evaluation of Projects
- c. Future Needs

4. Repetitive Loss Area Analysis (CFMP Pages D.1 to D.62)

- a. Review of Repetitive Loss Area Analysis
- b. Discuss Outreach Efforts – Public Comment Period Ends: April 14, 2017
- c. Committee Comments

5. Review of the Program of Public Information (CFMP 7.1 to 7.39)

- a. Outreach Projects Implementation Review (CFMP 7.23 to 7.38)
- b. Evaluation of Projects
- c. Flood Ready Website Updates
- d. Future Needs

6. Committee Member Recommendations

ACTION ITEMS

Attachment 2
Public Information and Flood Response Projects

The recommended changes are bolded below.

Project Number	Organization	Project	Subject Matter	Frequency	Implementation 2016-2017
OP 1.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Flyer in Utility Bill	Be Flood Ready Brochure	Annually - November	November 2016
OP 2.	City of Sacramento Department of Utilities, & Floodplain Management	Repetitive Loss Outreach	Letter with advice on property protection, site visits, and financial assistance for mitigation measures and Be Ready Flood Brochure	Annually – Late Fall	March 2017
OP 3.	City of Sacramento Department of Utilities, & Floodplain Management	Map Inquiry Service	Flood, Hazard Areas, Insurance, mandatory purchase	Year-round	Year-round
OP 4.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	High Water Marks	Program to monitor and establish high water marks after flood events	Year-round	Year-round
OP 5.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Messages on Transit Buses	Flood related messaging	Annually - Fall	February 2017
OP 6.	City of Sacramento Department of Utilities, Water Quality & PIO Staff	No Dumping Signs	Signs throughout floodplain	Year-round	Year-round
OP 7.	City of Sacramento Department of Utilities, Floodplain Management, Drainage, & PIO Staff	Flood Protection Assistance	Drainage problems, flood protection, historical flood damage	Year-round	Year-round
OP 8.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, California Department of Water Resources & PIO Staff	Various Brochures at City Offices	How to develop in a floodplain, living next to a levee, stormwater pollution, substantial improvement rule, permit requirements	Year-round	Year-round

OP 9.	California Department of Water Resources	Levee Flood Protection Zone Map (Flood Risk Notification: Living with Levees)	Indication of properties estimated to be at a depth of greater than 3 feet	Year-round	Year-round
OP 10.	Federal, State, City of Sacramento and Sacramento County	Flood Preparedness Week	Promote awareness of flood damage	Annually November	November 2016
OP 11.	City of Sacramento Department of Utilities, & Water Quality	No Dumping Stencils & Permanent Markers	Promote on storm drains that only rain water should go down drain	Year-round	Year-round
OP 12.	Office of Emergency Services	Booklets	"Are You Prepared" Information	Year-round	Year-round
OP 13.	Sacramento Area Flood Control Agency	Newsletter	Flood and Levee Information	At least Annually	February 2016
OP 14.	American River Flood Control District	Newsletter	Flood Control Information	At least Annually	
OP 15.	Neighborhood Services with Council Members	Community Meetings	Emergency Preparedness Fair	At least 2 per year	March 2016 – Dare to Prepare
OP 16.	City of Sacramento – Several Departments participate	Earth Day	Information provided on flood insurance, emergency kits, pay attention during storm events	Annually - April	April 2016
OP 17.	City of Sacramento – Several Departments participate with Council Members	Celebrate Sacramento	Information provided on flood insurance, why you should pay attention in a flood event, water quality, how to volunteer, etc.	Annually - May	May 2016
OP 18.	City of Sacramento – Several Departments participate with Council Members	Celebrate Natomas	Information provided on flood insurance, why you should pay attention in a flood event, water quality, how to volunteer	Annually - September	September 2016
OP 19.	City of Sacramento Department of Utilities, Floodplain Management & PIO Staff	Dam Safety Outreach	Brochure that describes inundation area and identification of risks, evacuation procedures and routes	Annually	December 2016
OP 20.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, & PIO Staff	SPLASH program	Provide messages to elementary students on flood protection, stormwater pollution	Quarterly	Quarterly
OP 21.	Real Estate Agents	Disclosure of the Flood Hazard Informational Guide	Explains State Requirement for Flood Disclosure to Real Estate Agents	Year-round	Year-round

OP 22.	City of Sacramento Department of Utilities, OES, PIO	Translation Services Provided	City will provide translation services to help understand all flood-related information	Year-round	Year-round
OP 23.	Insurance Agencies	Bi-lingual Insurance Agents	Flood Insurance information presented in native language	Year-round	Year-round
OP 24.	City of Sacramento Department of Utilities, & OES	Levee Breach Scenario Maps – 18 Rescue Areas	Website mapping which shows “Red “ rescue areas where water has the potential to reach 1’ in 2 hours	Year-round	Year-round
OP 25.	California Nature Conservancy	Conserving Natural Resources in California	Newsletters and website Information on natural & beneficial functions of floodplains	Year-round	Year-round
OP 26.	Real Estate Agents and Lenders	Real Estate Agent’s Brochure	Brochure for potential homebuyers to provide floodplain information	Year-round	Year-round
OP 27.	City of Sacramento Department of Utilities	Flood Ready Website	Provides information on all flood related topics	Year-round	Year-round
OP 28.	American River Parkway Foundation	The American River Parkway Brochure	Provides information on wildlife, habitat protection, and recreational activities	Year-round	Year-round
OP. 29	National Flood Insurance Program (NFIP)	NFIP Risk Notification Mailing	Provides flood insurance holders with flood risk information for their area	Annually	Annually
OP.30	Congresswoman Doris Matsui’s Office	Flood Insurance Promotion: Web Page and Community Newsletter	Congresswoman Matsui promotes the importance of flood insurance through her website and newsletter	Year-round	Year-round
Flood Response Projects					
Project Number	Organization	Project	Subject Matter	Frequency	
FRP 1.	Primary: Public Information Officer and City Manager Secondary: Community Development Department and Depart of Utilities	Media Release (TV and Radio and Newspapers)	Various flood- related topics (Turn around, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event	January 2017- March 2017
FRP 2.	Emergency Operations Center and Public Information Officer	Everbridge/Emergency Broadcast System	Use Everbridge and EBS to notify residents of information during a flood	During a flood event	Not needed in recent storms

FRP 3.	Primary: Public Information Officer and Neighborhood Services Secondary: Community Development Department and Department of Utilities	Media Release and Post of Social Media (Facebook, Twitter, Next Door, and others)	Various flood-related topics (Turn around, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event	January 2017-March 2017
FRP 4.	Department of Utilities, Operations & Maintenance, Water Quality Lab	Drinking Water Quality Incident Response	Prevent consumption of contaminated water after a flood. Outreach materials drafted, translated and delivered to warehouse.	During and after a flood event, if needed	January 2016
FRP 5.	Department of Utilities, Operations & Maintenance	Combined Sewer System Warning Signs	Signage posted after flood to prevent people from entering potentially contaminated water	During and after a Combined Sewer System flood event (including street flooding events)	January 2017-March 2017
FRP 6.	Primary: Police Secondary: Code Enforcement, Building Department, and Department of Utilities	After flood event handouts when in the field	Re-entry safety, permit & reconstruction requirements, flood protection methods	Upon re-entry of flooded areas	Not needed in recent storms
FRP 7.	Neighborhood Services and Department of Utilities	Handouts on flood Insurance claim information and grant funding opportunities	Provide information to residents and business on how to file a flood insurance claim and what grant funding opportunities may be available for recovery	After a flood event	Not needed in recent storms

Attachment 3
Revised Table 7.8

The recommended changes are bolded below.

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
Outreach Projects						
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5,6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	November each year	N/A
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities -FPM	Year-round	N/A
			OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities -FPM	Year-round	DRW/USACE/FEMA/USGS
			OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A
			OP 6. No Dumping Signs	City of Sacramento Department of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities -FPM	Year-round	DWR/ CVFPB
			OP 10. Flood Preparedness Week	City of Sacramento Department of Utilities – FPM & PIO	Nov. each year	Sacramento County/DWR/USACE/USGS
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	N/A
1. Entire City (continued)	E. Build Responsibly F. Protect Natural Floodplain Functions	(continued)	OP 13. Flood and Levee Newsletter	SAFCA	Annually	SAFCA

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
	I. General Preparedness		OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD
			OP 15. Emergency Preparedness fair	Department of Parks and Recreation- Neighborhood Services and City Council	Twice+ per year	N/A
			OP 16, 17 & 18. Earth Day, Celebrate Sacramento, Natomas	City of Sacramento Department of Utilities, PIO, OES, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	Dept. Utilities	Year-round	N/A
1. Entire City (continued)	(continued)	(continued)	OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP. 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	NA
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Developed by October 1, 2016	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5,6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5,6 E. 1 & 2 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 5. Messages on Transit Buses	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5,6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
Target Areas 3.Natomas (North Natomas/ South Natomas) 4.Greenhaven/ Pocket 5.Riverpark Neighborhood by Sac State 6. Rescue Areas (Defined by Levee Breach Scenarios)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5,6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE/USGS/ FEMA
			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE
			OP 15. Emergency Preparedness Fair	Office of Emergency Services	2 per year	N/A

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	F. Protect Natural Floodplain Functions G. Levee Preparedness I. General Preparedness		OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
Flood Response Projects						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Develop by May1, 2015	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A

Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

Meeting #5 Documentation

July 16, 2019

Program for Public Information Evaluation Report

(July 2018 – June 2019)

Community Rating System Program

The City of Sacramento (City) has been actively participating in the Community Rating System (CRS) program since 1992. CRS is a component of the National Flood Insurance Program (NFIP). It provides a reduction to flood insurance premiums to residents and businesses within participating communities. The reductions are based on a community's flood hazard mitigation programs, including risk communication activities. The City of Sacramento is currently a Class 2 providing a discount up to 40% for residents and businesses.

Even before joining the CRS program, the City, through many departments and in coordination with various stakeholders and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, in 2014, the City prepared a Program for Public Information (PPI) by following the guidelines in the 2013 CRS Manual. The City's PPI, prepared through a committee made up of City staff and stakeholders, is now an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for the community's flood problems.

The PPI is part of the 2016 Comprehensive Flood Management Plan, which was adopted by City Council in May 2016.

PPI Committee Annual Evaluation Meeting

Annually, the City must monitor the implementation of the outreach projects with the PPI Committee. An assessment is made as to whether the desired outcomes are achieved and what, if anything, should be changed.

The PPI Committee met on Tuesday, July 16, 2019 at 9:00am. See Attachment 1 for agenda. The Committee members are as follows:

Committee Members	Title
Neal Joyce	Supervising Engineer, City of Sacramento, Department of Utilities, Floodplain Management
Bradley Howard	Assistant Engineer, City of Sacramento, Department of Utilities, Floodplain Management
Jessica McCabe	Program Analyst, City of Sacramento, Public Relations
Remi Mendoza	Associate Planner, City of Sacramento, Community Development Department
Lisa Deklinski	Program Specialist, City of Sacramento, Department of Utilities Emergency Operation Center
BG Heiland	Floodplain Resident
Tom Reavey	Floodplain Resident
Alan Haynes	Floodplain Resident
Sam Yee	Real Estate Agent, Lyons
Jeff Beck	Flood Insurance Agent, Jeffrey Beck Insurance Services
Ashley Sanchez Willard	Local mortgage lender, Land Home Financial Services
Kevin Littlefield	Local mortgage lender, Capital City Lending

Assessment of Outreach Projects

A total of 30 Outreach Projects (OP) and 7 Flood Response Preparation (FRP) projects are listed in the City’s PPI. Each of the projects were reviewed and evaluated. The OPs provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains. In addition, the City introduced the new real estate brochures for real estate agents and potential homebuyers, the updated Repetitive Loss Area Analysis (RLAA), the Insurance Coverage Improvement Plan goals, and the “Be Flood Ready” website improvements. City staff also reviewed the FRP projects with the committee.

A more detailed assessment of each OP is included in Attachment 2.

There was a consensus in the Committee that the current PPI has been and continues to be effective in communicating the Flood Ready messages to the community.

Recommendations/Developments for Outreach Projects

There were several recommendations and development of outreach projects to improve the PPI in FY 2018/2019.

- Based on the success of the 2018 flood preparedness event the recommendation was made that the City should continue to host a citywide event that educates residents on how to become Flood Ready and what the City and fellow stakeholders are willing to do during a flood event. Continued effort should be made to market this event to schools and bring in children.
- Participation in this year’s PPI review was limited. Several past members had moved out of state or were no longer working in the real estate / flood insurance business. Prior to the next review, a new committee member list should be made in order to obtain increased participation. Among others, staff will seek to include Lon Peterson, DOU Media and Outreach Specialist and Daniel Bower, City Emergency Preparedness manager. These new members may have suggestions for changes to our FRP materials.
- It is becoming harder for the city to obtain specific flood insurance premium information for policies held by City residences. This information is used to identify individual policy holders who may be paying too much for flood insurance due to incorrect flood zone information. Unless individual policy data is more easily obtained, it is recommended that this insurance premium review no longer be done on an annual basis. This project would be better served being done after map revisions. To the extent that it is practicable, this will allow the City to help reduce flood insurance cost for residents who may be paying far more than the PRP rates. The goal would be to have the individuals pay the lower rate and maintain the policy instead of not renewing their current policy.

Flood Response Preparations (FRP) Material Review

The committee reviewed the FRP materials (i.e., press releases, handouts) and the committee determined that the rest of the materials were still current and appropriate. These materials are the foundation of information to be distributed to the community during and after a flood event.

Insurance Coverage Improvement Plan

One of the City’s desired outcomes was increasing the number of flood insurance policies. The total number of policies has increase. The SFHA policies have decreased, but this may be due to amendments of our flood zones. The number of policies in the City’s Natomas Basin and X flood zone areas have increase.

City of Sacramento Flood Insurance Policies						
Year	Total	SFHA	X/AR/A99	PRP	Average Premium	Community CRS Savings
March 2019	43,400	285	27,762	15,353	\$ 435	\$ 1,508,853
January 2017	42,223	352	25,522	16,349	\$ 465	\$ 1,533,010
February 2016	43,937	360	22,170	21,407	\$ 472	\$ 1,401,157
April 2015	41,967	372	13,350	28,245	\$ 514	\$ 1,056,896

The outreach project discussed as the third bullet point recommendation above may have also influenced a drop in SFHAs. This letter typically targeted policies that were paying SFHA rates after their property had been mapped into a new X flood zone. This is an effective outreach project but will better serve the community if it is conducted mainly after larger areas within the city are remapped.

Repetitive Loss Area Analysis

The City staff discussed the new properties to add to the 2021 Repetitive Loss Area Analysis. Based on flood insurance claims made during recent storm events, it is recommended that areas within regions 2, 3, and 5 be expanded to encompass properties that recently experience storm damage. Also, it is recommended that a new region be created due to a new repetitive loss property within the City. The 2018 repetitive loss area outreach letter was sent to the newly expanded areas.

Open Space Education

The main natural function open space within the City is the American River Parkway. The American River Parkway foundation continues to provide an American River Parkway Map which highlights recreational areas, the Parkway's history, and many habitats located within the Parkway. The committee had no new recommendations for this outreach.

Stream Dumping Regulations

The Committee discussed how the City continues to have No Dumping Signs on our creeks and rivers, stenciling on our storm drain inlets, and a citywide mailer. It was recommended that Floodplain Management staff reach out to the Water Quality staff to see if they will be implementing new outreach material related to the trash-free waterways program.

Flood Protection Assistance

The Committee discussed how the City still provides flooding information or property protection assistance to the public. In the light of recent storms and the Repetitive Loss Area Analysis, more interest has been generated around financial assistance. Staff has used FEMA's Hazard Mitigation Grant handouts to explain the different options and what may be beneficial to the resident. The Committee had no new recommendations on this item.

Levee and Dam Safety

The committee discussed the outreach projects regarding levee and dam safety. The California Department of Water Resources sent out their annual Flood Risk Notification in October 2018 to those property owners living behind levees. The City sent out a Dam Safety brochure in the City's utility bill in December 2018.

This PPI Evaluation Report will be submitted as part of the City's August 2019 recertification package and presented to the Sacramento City Council as an informational item.

Attachment 1

**Program for Public Information Committee
Annual Review
Agenda**

Date and Time: *Tuesday, July 16th, 2019*

Teleconference: **415-655-0001**

Invited Attendees: *Bradley Howard, Neal Joyce, Jessica McCabe, Remi Mendoza, Tom Reavey, BG Heiland, Alan Haynes, Sam Yee, Jeff Beck, Ashley Sanchez, Bobby Patterson, Kevin Littlefield*

Meeting Materials:

- *Comprehensive Flood Management Plan (CFMP) - <http://www.cityofsacramento.org/Utilities/Education/Flood-Ready/City-Flood-Prep>*
 - *Flood Ready Website Pages - <http://www.cityofsacramento.org/floodready>*
-

1. Welcome

2. Review of Flood Response Preparation (CFMP Pages E.1 to E.15)

- a. Review of Flood Response Preparation Projects
- b. Evaluation of Projects
- c. Future Needs

3. Insurance Coverage Improvement Plan (CFMP Pages 7.17 to 7.23 & Topic B)

- a. Coverage Improvement Plan Project Review
- b. Evaluation of Projects
- c. Future Needs

4. Repetitive Loss Area Analysis (CFMP Pages D.1 to D.62)

- a. Review of Repetitive Loss Area Analysis
- b. Discuss Outreach Efforts
- c. Committee Comments

5. Review of the Program of Public Information (CFMP 7.1 to 7.39)

- a. Outreach Projects Implementation Review (CFMP 7.23 to 7.38)
- b. Evaluation of Projects
- c. Flood Ready Website Updates
- d. Future Needs

6. Member Recommendations

ACTION ITEMS

Attachment 2
Public Information and Flood Response Projects
(Table 7.8 from the City’s Comprehensive Flood Management Plan)

See Attachment 3 for further explanation of Messages and Outcomes

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard	A. 1, 3 & 4 B. 1, 2, 3 & 4 C. 2 & 3 D. 1,2,3,4,5, 6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	November each year	N/A
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities -FPM	Year-round	N/A
			OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities -FPM	Year-round	DRW/USACE/FEMA/USGS
			OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A
			OP 6. No Dumping Signs	City of Sacramento Dept. of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities -FPM	Year-round	DWR/ CVFPB
			OP 10. Flood Prepared-ness Week	City of Sacramento Department of Utilities – FPM & PIO	Nov. each year	Sacramento County/DWR/USACE/USGS
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	N/A
			OP 13. Flood and Levee Newsletter	SAFCA	Annually	SAFCA
			OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD
1. Entire City (continued)	E. Build Responsibly F. Protect Natural Floodplain Functions	(continued)				

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
	I. General Preparedness		OP 15. Emergency Prepared-ness fair	Department of Parks and Recreation- Neighborhood Services and City Council	Twice+ per year	N/A
			OP 16, 17 & 18. Earth Day, Celebrate Sacramento, Natomas	City of Sacramento Department of Utilities, PIO, OES, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	Dept. Utilities	Year-round	N/A
1. Entire City (continued)	(continued)	(continued)	OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP. 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	NA
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Developed by October 1, 2016	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 5. Messages on Transit Buses	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
<u>Target Areas</u> 3.Natomas (North Natomas/ South Natomas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE/USGS/ FEMA
4.Greenhaven/ Pocket 5.Riverpark Neighborhood by Sac State 6. Rescue Areas (Defined by Levee Breach Scenarios)			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE
			OP 15. Emergency Prepared-ness Fair	Office of Emergency Services	2 per year	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	F. Protect Natural Floodplain Functions G. Levee Preparedness I. General Preparedness		OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
Flood Response Projects (FRP)						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Develop by May1, 2015	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

Attachment 3
Messages and Desired Outcomes

These Topics, Messages and Outcomes are from the City’s Comprehensive Flood Management Plan.

Topic	Message	Outcome(s)
A. Know your flood hazard	1. Your property is subject to flooding. Call the flood information hotline for details	Increase number of map information services inquires
	2. Your property is in a repetitively flooded area	Reduce future repetitive loss properties
	3. Don’t drive through flooded streets (know where to drive and where not to drive)	Reduce damages to vehicles, emergency rescues, and deaths
	4. Pay attention to your escape routes in the rescue area	Reduce emergency rescues and injury
	5. You are in a combine sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
B. You need flood insurance	1. Turn around don’t drown.	Increase number of flood insurance policies
	2. Know the flood warning signals	Increase number of flood insurance policies
	3. Know how to sign up for reverse-911 Everbridge (Sacramento-Alert)	Reduce damage to contents
	4. Lower cost Preferred Risk Policies (PRP) are available. Check with your insurance agent.	Increase number of PRPs.
C. Protect people from the hazard	1. Turn around don’t drown	Reduce rescues and deaths
	2. Know the flood warning signals	Reduce rescues and deaths
	3. Know how to sign up for reverse-911 Everbridge (Sacramento-Alert)	Increase in number of Everbridge (Sacramento-Alert) subscriptions
	4. Go to the City’s website or call 311 for drinking water quality updates	Increased awareness of water quality and prevents sickness
	5. You are in a combine sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
D. Protect your property from the hazard	1. Elevate HVAC exterior units	Reduce number of flood damaged HVAC units
	2. Don’t dig, plant or build at the base of a levee	Prevent seepage and other problems from human intervention on levees
	3. Know encroachment levee regulations. Visit http://www.cvfpb.ca.gov	Prevent seepage and other problems from human intervention on levees
	4. Don’t begin work without proper permits	Reduce red tag violations
	5. Don’t throw trash or debris in streams, channels or open bodies of water	Reduce pollution and overbank flow
	6. Grant monies are available to help elevate your home	Increase financial opportunities
E. Build Responsibly	1. Get a permit before you start construction	Reduce citations
	2. Know the substantial damage rules	Reduce citations
	3. Keep areas open (setbacks) between homes and property lines	Maintain proper drainage
F. Protect natural floodplain functions	1. Don’t dump in storm drains	Improve water quality
	2. Report erosion control measures not working	Contain erosion on construction sites
	3. Don’t disturb natural floodplain areas	Reduce grading, fill, and earth movement
	4. Protect, preserve, and appreciate our natural resources	Maintain open space and habitat protection

Topic	Message	Outcome(s)
G. Levee Preparedness	1. Pay attention when your evacuation route is identified	Reduce number of evacuation rescues
	2. Call 311 to report water seepage or suspicious activities along the levees	Increase community awareness and quicker response time to potential problems
H. Flood Education	1. Promote floodplain management and NAI concepts	Reduce damage to buildings and natural floodplain functions
	2. Promote flood education for children	Increase flood awareness
	3. Promote FEMA's High Water Mark Initiative	Increase flood awareness
I. General Preparedness	1. Identify and document your personal belongings	Reduce delays in receiving insurance payments
	2. Prepare emergency flood kit & plan	Save important insurance, real estate, and other important documents, pictures, etc. and know how to contact other family members
	3. Don't forget your pet!	Pet owners will be prepared with necessary pet care items during an emergency and at a shelter

Meeting #6
June 9, 2021

MEMORANDUM

TO: Mayor Darrell Steinberg and City Council Members

FROM: Bill Busath, Director of Utilities

CC: Rosa Millino, Senior Engineer
Jamie McKinley, Admin Analyst
Tony Bertrand, Engineering and Water Resources Division Manager
Neal Joyce, Supervising Engineer, Department of Utilities

DATE: 05/27/2022

SUBJECT: 2021 Annual Review of the Program for Public Information

Attached is the 2021 Annual Review (Review) of the Program for Public Information (PPI) for your information. The Review is part of the City's Community Rating System (CRS) annual recertification and is required by the Federal Emergency Management Agency (FEMA) to be distributed to the City Council.

The PPI is an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for a community's flood problems. The objective of CRS credit for a PPI is to provide additional credit for information programs that are designed to meet local needs and that are monitored, evaluated, and revised to improve their effectiveness.

The CRS program is a volunteer program administered by FEMA. It provides lower insurance premiums under the National Flood Insurance Program (NFIP). The premium reduction is in the form of a class rating. A Class 1 provides up to a 45% premium reduction. A class 10 provides no reduction. The City is currently at a Class 3, which means up to a 35% reduction on flood insurance premiums. The City has a Class 3 because it implements floodplain management activities above the minimum NFIP requirements.

If you have any questions, please contact Rosa Millino, Senior Engineer at 916-808-1451 or rmillino@cityofsacramento.org.

Enclosure: 2021 Annual Report of Program for Public Information

Program for Public Information Evaluation Report

(July 2020 – June 2021)

Community Rating System Program

The City of Sacramento (City) has been actively participating in the Community Rating System (CRS) program since 1992. CRS is a component of the National Flood Insurance Program (NFIP). It provides a reduction to flood insurance premiums to residents and businesses within participating communities. The reductions are based on a community's flood hazard mitigation programs, including risk communication activities. The City of Sacramento is currently a Class 3 providing a discount up to 35% for residents and businesses.

Even before joining the CRS program, the City, through many departments and in coordination with various stakeholders and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, in 2014, the City prepared a Program for Public Information (PPI). The City's PPI, prepared through a committee made up of City staff and stakeholders, is now an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for the community's flood problems.

The PPI is part of the City's Comprehensive Flood Management Plan, which was updated and adopted by City Council in May 2017. This PPI Evaluation Report will also be submitted as part of the City's August 2022 CRS recertification package and presented to the Sacramento City Council as an informational item.

PPI Committee Annual Evaluation Meeting

Annually, the City must monitor the implementation of the outreach projects with the PPI Committee. An assessment is made as to whether the desired outcomes are achieved and what, if anything, should be changed.

The PPI Committee met on Wednesday, June 9, 2021, 1:00-2:00pm. See Attachment 1 for agenda. The Committee members are as follows:

Committee Members	Title
Rosa Millino	Senior Engineer, City of Sacramento, Department of Utilities, Floodplain Management
Jamie McKinley	Program Analyst, City of Sacramento, Department of Utilities, Floodplain Management
Jessica McCabe	Program Analyst, City of Sacramento, Public Relations
Remi Mendoza	Senior Planner, City of Sacramento, Community Development Department
Brigid Burdock	City of Sacramento Resident
Deniece Ross-Francom	Real Estate Agent, Dunnigan, REALTORS
Ryan Maguire	Flood Insurance Agent, State Farm
Allison Benevento	Flood Insurance Agent, HUB International

Assessment of Outreach Projects

A total of 30 Outreach Projects (OP) and 7 Flood Response Preparation (FRP) projects are listed in the City’s PPI. Each of the projects were reviewed and evaluated. The OPs provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains. In addition, the City reviewed the real estate brochures for real estate agents and potential homebuyers, the Insurance Coverage Improvement Plan goals, and the “Be Flood Ready” website improvements. City staff also reviewed the FRP projects with the committee.

A more detailed assessment of each OP is included in Attachment 2.

There was a consensus in the Committee that the current PPI has been and continues to be effective in communicating the Flood Ready messages to the community.

Recommendations/Developments for Outreach Projects

There were several recommendations and development of outreach projects to improve the PPI in FY 2021/2022.

- Based on the success of the 2020 virtual flood preparedness event the recommendation was made that the City should continue to host a citywide event that educates residents on how to become Flood Ready and what the City and fellow stakeholders are willing to do during a flood event. Continued effort should be made to market this event to schools.

- Participation this year with new committee members for 2021 was successful. Consider including staff from City’s Office of Emergency Management. They may have suggestions for changes to our FRP materials.
- Suggestions for updates to add and clarify language and remove unhelpful links on the Flood Hazard Brochure.
- Recommendations to update City website to include flood ready link on homepage, more messaging about “Turn around, don’t drown” campaign, and sandbagging best practices.

Flood Response Preparations (FRP) Material Review

The committee reviewed the FRP materials (i.e., press releases, handouts) and the committee determined that the rest of the materials were still current and appropriate. These materials are the foundation of information to be distributed to the community during and after a flood event.

Insurance Coverage Improvement Plan

One of the City’s desired outcomes was increasing the number of flood insurance policies. Although the total number of policies decreased, the number of policies in the City’s Natomas Basin and X flood zone areas have increased as well as the City’s overall savings. The decrease in total policies may have been attributed to the Florin Creek Channel and Multi-use Detention Basin Creek Project. This project resulted in FEMA re-mapping of approximately 600 properties within the Florin Creek floodplain. The new floodplain designation removed the majority of the Special Flood Hazard Area and allowed residents and businesses to be eligible for lower-cost Preferred Risk Policy flood insurance. Also, the COVID pandemic may have attributed to the decrease in overall policies due to financial insecurity.

City of Sacramento Flood Insurance Policies						
Year	Total	SFHA	X/AR/A99	PRP	Average Premium	Community CRS Savings
Dec 2021	42,279	183	29,059	13,037	\$ 522	\$ 1,619,309
March 2019	43,400	285	27,762	15,353	\$ 435	\$ 1,508,853
January 2017	42,223	352	25,522	16,349	\$ 465	\$ 1,533,010
February 2016	43,937	360	22,170	21,407	\$ 472	\$ 1,401,157
April 2015	41,967	372	13,350	28,245	\$ 514	\$ 1,056,896

Repetitive Loss Area Analysis

The City staff discussed the current Repetitive Loss Area Analysis and concluded that an analysis will be conducted in 2022 once FEMA Headquarters is able to provide a 2021 list of repetitive loss properties. Repetitive loss property list requests to FEMA have been extremely delayed due to the COVID pandemic. Repetitive loss outreach letters were sent out in January 2022 to the most current repetitive loss properties from the City’s last analysis completed in 2019.

Open Space Education

The largest open space within the City is the American River Parkway. The American River Parkway foundation continues to provide an American River Parkway Map which highlights recreational areas, the Parkway's history, and many habitats located within the Parkway. The committee had no new recommendations for this outreach.

Stream Dumping Regulations

The Committee discussed the City's practice of requiring No Dumping Signs on our creeks and rivers, stenciling on our storm drain inlets, concrete stamping at new drain inlets, and providing a citywide mailer. It was recommended that Floodplain Management staff reach out to the Water Quality staff to see if they will be implementing new outreach material related to the trash-free waterways program.

Flood Protection Assistance

The Committee discussed how the City still provides flooding information or property protection assistance to the public. Staff has used FEMA's Hazard Mitigation Grant handouts to explain the different options and what may be beneficial to the resident. The Committee had no new recommendations on this item.

Levee and Dam Safety

The committee discussed the outreach projects regarding levee and dam safety. The California Department of Water Resources sent out their annual Flood Risk Notification in September 2020 to those property owners living behind levees.

Attachment 1

**Program for Public Information Committee
Annual Review
Agenda**

DATE AND TIME: June 9, 2021, 1-2PM

ZOOM MEETING: Meeting ID: 926 1118 4392 PW: 608792

INVITED ATTENDEES: *Jamie McKinley, Rosa Millino, Jessica McCabe, Remi Mendoza, Brigid Burdock, Deniece Ross-Francom, Ryan Maguire, Allison Benevento, Neal Joyce, Israel Tamiru*

MEETING MATERIALS:

- *Comprehensive Flood Management Plan (CFMP) - <http://www.cityofsacramento.org/Utilities/Education/Flood-Ready/City-Flood-Prep>*
 - *Flood Ready Website Pages - <http://www.cityofsacramento.org/floodready>*
-

1. Welcome

- a. CRS and the PPI Development

2. Review of Flood Response Preparation (CFMP Pages E.1 to E.15) Pg 293-309

- a. Review of Flood Response Preparation Projects
- b. Evaluation of Projects
- c. Future Needs

3. Insurance Coverage Improvement Plan (CFMP Pages 7.17 to 7.23 & Topic B) Pg 153-159

- a. Coverage Improvement Plan Project Review
- b. Evaluation of Projects
- c. Future Needs

4. Repetitive Loss Area Analysis (CFMP Pages D.1 to D.62) Pg 225-292

- a. Review of Repetitive Loss Area Analysis
- b. Discuss Outreach Efforts
- c. Committee Comments

5. Review of the Program of Public Information (CFMP 7.1 to 7.40) Pg 137-176

- a. Outreach Projects Implementation Review (CFMP 7.33 to 7.38) Pg 169-174
- b. Evaluation of Projects
- c. Future Needs

6. Member Recommendations

ACTION ITEMS

Attachment 2
Public Information and Flood Response Projects
(Table 7.8 from the City’s Comprehensive Flood Management Plan)

See Attachment 3 for further explanation of Messages and Outcomes

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard	A. 1, 3 & 4 B. 1, 2, 3 & 4 C. 2 & 3 D. 1,2,3,4,5, 6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	November each year	N/A
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities -FPM	Year-round	N/A
			OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities -FPM	Year-round	DRW/USACE/FEMA/USGS
			OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A
			OP 6. No Dumping Signs	City of Sacramento Dept. of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities -FPM	Year-round	DWR/ CVFPB
			OP 10. Flood Prepared-ness Week	City of Sacramento Department of Utilities – FPM & PIO	Nov. each year	Sacramento County/DWR/USACE/USGS
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	N/A
			OP 13. Flood and Levee Newsletter	SAFCA	Annually	SAFCA
1. Entire City (continued)	E. Build Responsibly F. Protect Natural Floodplain Functions	(continued)	OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
	I. General Preparedness		OP 15. Emergency Preparedness fair	Department of Parks and Recreation- Neighborhood Services and City Council	Twice+ per year	N/A
			OP 16, 17 & 18. Earth Day, Celebrate Sacramento, Natomas	City of Sacramento Department of Utilities, PIO, OES, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	Dept. Utilities	Year-round	N/A
1. Entire City (continued)	(continued)	(continued)	OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP. 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	NA
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Developed by October 1, 2016	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 5. Messages on Transit Buses	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
<u>Target Areas</u> 3.Natomas (North Natomas/ South Natomas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE/USGS/ FEMA
4.Greenhaven/ Pocket			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE
5.Riverpark Neighborhood by Sac State 6. Rescue Areas (Defined by Levee Breech Scenarios)			OP 15. Emergency Prepared-ness Fair	Office of Emergency Services	2 per year	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	F. Protect Natural Floodplain Functions G. Levee Preparedness I. General Preparedness		OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
Flood Response Projects (FRP)						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Develop by May1, 2015	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

Attachment 3
Messages and Desired Outcomes

These Topics, Messages and Outcomes are from the City's Comprehensive Flood Management Plan.

Topic	Message	Outcome(s)
A. Know your flood hazard	1. Your property is subject to flooding. Call the flood information hotline for details	Increase number of map information services inquires
	2. Your property is in a repetitively flooded area	Reduce future repetitive loss properties
	3. Don't drive through flooded streets (know where to drive and where not to drive)	Reduce damages to vehicles, emergency rescues, and deaths
	4. Pay attention to your escape routes in the rescue area	Reduce emergency rescues and injury
	5. You are in a combine sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
B. You need flood insurance	1. Turn around don't drown.	Increase number of flood insurance policies
	2. Know the flood warning signals	Increase number of flood insurance policies
	3. Know how to sign up for reverse-911 Everbridge (Sacramento-Alert)	Reduce damage to contents
	4. Lower cost Preferred Risk Policies (PRP) are available. Check with your insurance agent.	Increase number of PRPs.
C. Protect people from the hazard	1. Turn around don't drown	Reduce rescues and deaths
	2. Know the flood warning signals	Reduce rescues and deaths
	3. Know how to sign up for reverse-911 Everbridge (Sacramento-Alert)	Increase in number of Everbridge (Sacramento-Alert) subscriptions
	4. Go to the City's website or call 311 for drinking water quality updates	Increased awareness of water quality and prevents sickness
	5. You are in a combine sewer system area. Drainage water may be contaminated.	Prevent sickness related to contaminated water
D. Protect your property from the hazard	1. Elevate HVAC exterior units	Reduce number of flood damaged HVAC units
	2. Don't dig, plant or build at the base of a levee	Prevent seepage and other problems from human intervention on levees
	3. Know encroachment levee regulations. Visit http://www.cvfpb.ca.gov	Prevent seepage and other problems from human intervention on levees
	4. Don't begin work without proper permits	Reduce red tag violations
	5. Don't throw trash or debris in streams, channels or open bodies of water	Reduce pollution and overbank flow
	6. Grant monies are available to help elevate your home	Increase financial opportunities
E. Build Responsibly	1. Get a permit before you start construction	Reduce citations
	2. Know the substantial damage rules	Reduce citations
	3. Keep areas open (setbacks) between homes and property lines	Maintain proper drainage
F. Protect natural floodplain functions	1. Don't dump in storm drains	Improve water quality
	2. Report erosion control measures not working	Contain erosion on construction sites
	3. Don't disturb natural floodplain areas	Reduce grading, fill, and earth movement
	4. Protect, preserve, and appreciate our natural resources	Maintain open space and habitat protection

Topic	Message	Outcome(s)
G. Levee Preparedness	1. Pay attention when your evacuation route is identified	Reduce number of evacuation rescues
	2. Call 311 to report water seepage or suspicious activities along the levees	Increase community awareness and quicker response time to potential problems
H. Flood Education	1. Promote floodplain management and NAI concepts	Reduce damage to buildings and natural floodplain functions
	2. Promote flood education for children	Increase flood awareness
	3. Promote FEMA's High Water Mark Initiative	Increase flood awareness
I. General Preparedness	1. Identify and document your personal belongings	Reduce delays in receiving insurance payments
	2. Prepare emergency flood kit & plan	Save important insurance, real estate, and other important documents, pictures, etc. and know how to contact other family members
	3. Don't forget your pet!	Pet owners will be prepared with necessary pet care items during an emergency and at a shelter

Meeting #7
September 28, 2022

Program for Public Information Committee 2022 Annual Review - Agenda

DATE AND TIME: Sep 28, 2022, 3-4PM

ZOOM MEETING: [https://cityofsacramento-
org.zoom.us/j/92242627560?pwd=L253ck1xSIRMTWFSY1UxeWhlbTFqZz09](https://cityofsacramento.org.zoom.us/j/92242627560?pwd=L253ck1xSIRMTWFSY1UxeWhlbTFqZz09)

PW: 830448

INVITED ATTENDEES: *Jamie McKinley, Rosa Millino, Neal Joyce, Jessica McCabe, Remi Mendoza, Brigid Burdock, Deniece Ross-Francom, Allison Benevento*

MEETING MATERIALS:

- *Comprehensive Flood Management Plan (CFMP) - <http://www.cityofsacramento.org/Utilities/Education/Flood-Ready/City-Flood-Prep>*
 - *Flood Ready Website Pages - <http://www.cityofsacramento.org/floodready>*
-

1. Welcome

- a. CRS and the PPI Program

2. Review of Flood Response Preparation (CFMP Pages E.1 to E.15) Pg 293-316

- a. Review of Flood Response Preparation Projects
- b. Evaluation of Projects
- c. Future Needs

3. Insurance Coverage Improvement Plan (CFMP Pages 7.17 to 7.23 & Topic B) Pg 153-159

- a. Coverage Improvement Plan Project Review
- b. Evaluation of Projects
- c. Future Needs

4. Repetitive Loss Area Analysis (CFMP Pages D.1 to D.62) Pg 225-292

- a. Review of Repetitive Loss Area Analysis
- b. Discuss Outreach Efforts
- c. Committee Comments

5. Review of the Program of Public Information (CFMP 7.1 to 7.40) Pg 137-176

- a. Outreach Projects Implementation Review (CFMP 7.33 to 7.38) Pg 169-174
- b. Evaluation of Projects
- c. Future Needs

6. Member Recommendations

ACTION ITEMS

MEETING SUMMARY

Addendum A to the Comprehensive Flood Management Plan (CFMP), Chapter 7 Risk Management, Program for Public Information section is an update to portions of this program and is effective immediately upon council adoption. The portions not mentioned in this addendum are not changed from the original CFMP.

7.1 Introduction and Background

The Community Rating System (CRS) is part of the NFIP. It provides reductions to flood insurance premiums in participating communities. The reductions are based on community floodplain management programs, including public information activities. To keep those discounts, communities must continue to implement their programs and provide status reports to the NFIP each year. Sacramento has been an active participant of the CRS since October 1991. The City of Sacramento is currently a Class 3 providing a discount up to 35% for residents and businesses throughout the entire City

A Program for Public Information (PPI) is an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for a community's flood problems. The objective of CRS credit for a PPI is to provide additional credit for information programs that are designed to meet local needs and that are monitored, evaluated, and revised to improve their CRS effectiveness. Sacramento developed its PPI in accordance with the *2013 CRS Coordinators Manual* and this addendum to the PPI is developed in accordance with the *2017 CRS Coordinators Manual* and the *2021 CRS Coordinators Manual Addendum* activity 330.

Over the years, the City of Sacramento, through many departments and in coordination with various stakeholder groups and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, this chapter of the CFMP was prepared to bring together all the ideas from the various departments under one comprehensive document. The City has been working on stormwater issues for decades based on the unique conditions of a combined stormwater and sewer system, flat terrain and levees which could create bathtubs if pumps are not operating properly. The PPI committee is made up of City staff and stakeholders and is an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for the community's flood problems.

The participants comprising the PPI Committee for Sacramento were selected in accordance with the CRS criteria and include the following:

- 1) Rosa Millino, PE, CFM – Floodplain Manager (Department of Utilities - DOU)
- 2) Jessica McCabe – Public Relations/Outreach and Education (DOU)

-
- 3) Remi Mendoza, CFM – Sacramento Community Development Department Long Range Planning
 - 4) Brigid Burdock – City of Sacramento Resident
 - 5) Deniece Ross-Francom – Dunnigan Realty, REALTOR
 - 6) Allison Benevento – Flood Insurance Agent (HUB International)

PPI Committee Annual Evaluation Meeting

Annually, the City reviews the implementation of the outreach projects with the PPI Committee. An assessment is made as to whether the desired outcomes are achieved and what, if anything, should be changed.

The PPI Committee last met on Wednesday, September 28, 2022, 3:00-4:00pm. See Attachment 1 for agenda.

Step 2: Assess the Community's Public Information Needs

Sacramento is located in north central Sacramento County. The City comprises approximately 100 sq miles in total area. The US Consensus Bureau estimates the 2022 City of Sacramento population at 516,817. The majority of the land use within Sacramento is residential (rural, suburban, traditional, and urban) according to the City of Sacramento 2035 General Plan Land Use.

Most buildings are slab-on-grade (Diagram 1 on the FEMA Elevation Certificate) and therefore susceptible to flood damage from shallow flooding and drainage problems. Because the City is located in a unique low-lying area, it is particularly susceptible to flooding from major rain events.

Flood Hazards:

The City is located among a complex system of waterways and levees creating potentially the most flood prone community in the nation. Sacramento is located at the confluence of the Sacramento and American Rivers. The Sacramento River is fed by the Feather River and the Sutter Bypass to the north and runs along the western edge of the City. The Sacramento River splits and forms the Yolo Bypass in the Natomas Basin area. Additionally, the American River runs from the east to the Sacramento River and forms a linear transect through the City.

Much of the City, approximately 75-percent, is currently dependent on levees to prevent flooding. The USACE expired the certifications for the City's levees in 2012 and 2013 because the certifications no longer met the USACE's risk & uncertainty criteria and/or were older than 10 years. In 2012, SAFCA along with the local communities and maintaining agencies, began developing a levee accreditation program to determine whether the levees protecting the City along the lower American and Sacramento rivers and their tributaries adequately met the minimum requirements of the NFIP. This ongoing accreditation program is discussed in further

detail in Chapter 5. Currently, the areas behind the levees are still identified on the Flood Insurance Rate Maps (FIRMs) as providing 100-year flood protection.

Internal drainage creates a considerable risk in the City for shallow flooding. Internal storm drainage creates flood issues for many buildings because of the flat nature of terrain and runoff which is pumped through levees to a creek or river. If drainage inlets are clogged or pump stations fail there is a potential for damage to properties. Part of the problem can be attributed to a combined drainage and sanitary sewer system. Over 7,500 acres of the City is subject to a combined system.

The PPI Committee’s assessment of the major causes of flooding include:

- Internal drainage issues/combined sewer system
- Levee river flooding
- Dam breach
- Upstream development

Target Area #2: Repetitive Loss Properties (areas)

Properties categorized as repetitive loss properties have a greater need for flood protection. According to 2022 NFIP records, there are 23 unmitigated repetitive loss properties in Sacramento. Figure 7.4 illustrates the location of the repetitive loss properties classified as unmitigated and the location of past flood insurance claims within the City. FEMA places a high priority on mitigating repetitive losses. Since 1982, the City has mitigated 23 properties. The City has investigated the causes of repetitive flooding and some of the causes include:

- Properties in low lying area of drainage basin;
- Properties have undersized conveyance private and public systems;
- Properties have combined storm and sanitary system;
- Properties receive drainage from adjoining property at higher elevations;
- Properties have created problems with lot grading and obstructions to flow; and
- Properties need further investigation.

Information on property protection and financial assistance programs for mitigation measures is needed for each property located in the repetitive loss properties target area. Residents in this area will also have an increased need for site visit services.

Table A.1 below details the repetitive loss building count categorized by FEMA flood zone. **Error! Reference source not found.** shows the approximate locations of these properties in the City.

Table A.1. Repetitive Loss Building Count by FEMA Flood Zone

<i>Flood Zone</i>	<i>Repetitive Loss Building Count</i>
AE & A99	5
X	18
Total	23

Source: FEMA RL List 2021/2022 Data

Summary

Repetitive loss property locations and insurance claims are more heavily distributed across A flood zones. All repetitive loss areas are notified of this problem, information on property protection measures, risk factors, insurance requirements, and types of grant funding which can provide mitigation monies. Appendix D contains the Repetitive Loss Area Analysis which shows the details of the City's repetitive loss areas and outreach project.

Table A.2. NFIP Policy and Claims Data by Flood Zone

	<i>Policies in Force</i>	<i>Premium</i>	<i>Insurance in Force</i>	<i>Number of Closed Paid Losses</i>	<i>\$ of Closed Paid Losses</i>	<i>Adjustment Expense</i>
A01-30 & AE Zones	36	\$15,094	\$12,475,000	51	\$503,592.03	\$20,294.98
A Zones	0	\$0	\$0	32	\$239,984.28	\$11,212.87
AO Zones	0	\$0	\$0	16	\$75,317.77	\$4,075.00
AH Zones	79	\$54,919	\$19,106,000	31	\$183,102.47	\$13,840.00
AR Zones	1	\$1,144	\$300,000	33	\$380,263.95	\$17,667.02
A99 Zones	21,880	\$10,949,641	\$7,645,176,000	1,426	\$6,338,180.99	\$443,683.30
Standard x	11,541	\$5,928,586	\$3,950,546,000	200	\$1,743,687.32	\$77,826.79
Preferred x	0	\$0	\$0	115	\$539,935.71	\$67,035.00
Total	33,537	\$16,949,384	\$11,627,603,000	1,904	\$9,995,064.52	\$655,634.96

Source: FEMA CIS 2023

Table A.3. Percentage of Buildings Insured

<i>Flood Zone</i>	<i>Number of Policies in Force</i>	<i>Number of Buildings</i>	<i>% Insured</i>
A01-30 & AE Zones	36	368	9.78%
A Zones	0	3	0%
AO Zones	0	0	0%
AH Zones	79	264	29.92%
AR Zones	1	0	0%
A99 Zones	21,880	51,992	42.08%
Total	21,996	52,627	81.78%
B, C, & X Zones	11,541	191,006	6.04%

Source: (Buildings)_Sacramento County Parcel Data and FEMA DFIRM – October 2022
(Policies) FEMA CIS Insurance Overview May 2023

Table A.4. Flood Loss Estimates by Flood Zone

<i>Flood Zone</i>	<i>Number of Buildings</i>	<i>Number of Policies in Force</i>	<i>Total Coverage</i>	<i>Loss Estimate</i>
A01-30 & AE Zones	368	36	\$12,475,000	\$7,720,441.49
A Zones	3	0	\$0	
AO Zones	0	0	\$0	
AH Zones	264	79	\$19,106,000	
AR Zones	0	1	\$300,000	
A99 Zones	51,992	21,880	\$7,645,176,000	
B,C, & X Zones	191,006	11,541	\$3,950,546,000	\$2,274,623.03
Total	243,633	33,537	\$11,627,603,000	\$9,995,064.52

Source: (Buildings)_Sacramento County Parcel Data and FEMA DFIRM – October 2022
(Policies) FEMA CIS Insurance Overview May 2023

Insurance conclusions:

1. There are over 33,000 flood insurance policies in the City and over 80% of buildings in the SFHA are insured.
2. Drastic increase in A99 policy percentage and building count likely due to the remapping of Natomas area from AE zone to an A99 zone.
3. Increase of SFHA policies may be due to increased housing costs requiring federally backed mortgages and mandatory insurance requirements.

Repetitive Flooding

An analysis of repetitive loss was completed to examine the number of insured repetitive loss properties against FEMA flood zones. According to 2022 NFIP records, there are currently 23 unmitigated repetitive loss properties evaluated in this analysis with total payments of roughly \$691,637.

Table A.5. Repetitive Loss Summary (Unmitigated Properties)

Flood Zone	Building Count		Total Number of Losses	Total Building Payment	Total Content Payment	Total Paid
	Insured	Uninsured				
X	1	17	41	\$453,235	\$85,499	\$538,734
AE & A99	3	2	10	\$150,873	\$2,030	\$152,903
Total	4	19	51	\$604,108	\$87,529	\$691,637

Source: FEMA RL List 2021/2022

Table A.6. Public Information and Flood Response Projects

Project Number	Organization	Project	Subject Matter	Frequency
OP 1.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Be Flood Ready Brochure	Flyer in Utility Bill	Annually - November
OP 2.	City of Sacramento Department of Utilities, & Floodplain Management	Repetitive Loss Outreach	Letter with advice on property protection, site visits, and financial assistance for mitigation measures and Be Ready Flood Brochure	Annually – Late Fall
OP 3.	City of Sacramento Department of Utilities, & Floodplain Management	Map Inquiry Service	Flood, Hazard Areas, mandatory insurance purchase requirements	Year-round
OP 4.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	High Water Marks	Program to monitor and establish high water marks after flood events	Year-round
OP 5.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Outdoor Ad Placement	Flood related messaging	Annually - Fall
OP 6.	City of Sacramento Department of Utilities, Water Quality & PIO Staff	No Dumping Signs	Signs throughout floodplain	Year-round
Project Number	Organization	Project	Subject Matter	Frequency
OP 7.	City of Sacramento Department of Utilities, Floodplain Management, Drainage, & PIO Staff	Flood Protection Assistance Site Visits	Drainage problems, flood protection, historical flood damage	Year-round

OP 8.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, California Department of Water Resources & PIO Staff	Various Brochures at City Offices	How to develop in a floodplain, living next to a levee, stormwater pollution, substantial improvement rule, permit requirements	Year-round
OP 9.	California Department of Water Resources	Levee Flood Protection Zone Map (Flood Risk Notification: Living with Levees)	Indication of properties estimated to be at a depth of greater than 3 feet	Year-round
OP 10.	Federal, State, City of Sacramento and Sacramento County	Flood Preparedness Week	Promote awareness of flood damage	Annually November
OP 11.	City of Sacramento Department of Utilities, & Water Quality	No Dumping Stencils & Permanent Markers	Promote on storm drains that only rain water should go down drain	Year-round
OP 12.	Office of Emergency Services	Booklets	"Are You Prepared" Information	Year-round
OP 14.	American River Flood Control District	Newsletter	Flood Control Information	At least Annually
OP 16.	City of Sacramento – Several Departments participate	Earth Day	Information provided on flood insurance, emergency kits, pay attention during storm events	Annually - April
OP 19.	City of Sacramento Department of Utilities, Floodplain Management & PIO Staff	Dam Safety Outreach	Brochure that describes inundation area and identification of risks, evacuation procedures and routes	Annually
OP 20.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, & PIO Staff	SPLASH program	Provide messages to elementary students on flood protection, stormwater pollution	Quarterly
OP 21.	Real Estate Agents	Disclosure of the Flood Hazard Informational Guide	Explains State Requirement for Flood Disclosure to Real Estate Agents	Year-round
OP 22.	City of Sacramento Department of Utilities, OES, PIO	Translation Services Provided	City will provide translation services to help understand all flood-related information	Year-round
OP 23.	Insurance Agencies	Bi-lingual Insurance Agents	Flood Insurance information presented in native language	Year-round
Project Number	Organization	Project	Subject Matter	Frequency
OP 24.	City of Sacramento Department of Utilities, & OEM	Levee Breach Scenario Maps – 18 Rescue Areas	Website mapping which shows "Red " rescue areas where water has the potential to reach 1' in 2 hours	Year-round
OP 25.	California Nature Conservancy	Conserving Natural Resources in California	Newsletters and website information on natural & beneficial functions of floodplains	Year-round
OP 26.	Real Estate Agents and Lenders	Real Estate Agent's Brochure	Brochure for potential homebuyers to provide floodplain information	Year-round
OP 27.	City of Sacramento Department of Utilities	Flood Ready Website	Provides information on all flood related topics	Year-round

OP 28.	American River Parkway Foundation	The American River Parkway Brochure	Provides information on wildlife, habitat protection, and recreational activities	Year-round
OP 29.	National Flood Insurance Program (NFIP)	NFIP Risk Notification Mailing	Provides flood insurance holders with flood risk information for their area	Annually
OP 30.	Congresswoman Doris Matsui's Office	Flood Insurance Promotion: Web Page and Community Newsletter	Congresswoman Matsui promotes the importance of flood insurance through her website and newsletter	Year-round
OP 31.	Flood Insurance Outreach Letter	Mail Flood Insurance Promotion Brochures	Provide flood insurance information and encourage purchasing a policy	Annually
OP 32.	Federal Emergency Management Agency (FEMA)	Hazard Mitigation Grant Program Brochures	Provides information on grants that are available for structure retrofit and flood mitigation.	Year-round
Flood Response Projects				
Project Number	Organization	Project	Subject Matter	Frequency
FRP 1.	Primary: Public Information Officer and City Manager Secondary: Community Development Department and Department of Utilities	Media Release (TV and Radio and Newspapers)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event
FRP 2.	Emergency Operations Center and Public Information Officer	Everbridge/Emergency Broadcast System	Use Everbridge and EBS to notify residents of information during a flood	During a flood event
FRP 3.	Primary: Public Information Officer and Neighborhood Services Secondary: Community Development Department and Department of Utilities	Media Release and Post of Social Media (Facebook, Twitter, Next Door, and others)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event
FRP 4.	Department of Utilities, Operations & Maintenance, Water Quality Lab	Drinking Water Quality Incident Response	Prevent consumption of contaminated water after a flood. Outreach materials drafted, translated and delivered to warehouse.	During and after a flood event, if needed
FRP 5.	Department of Utilities, Operations & Maintenance	Combined Sewer System Warning Signs	Signage posted after flood to prevent people from entering potentially contaminated water	During and after a Combined Sewer System flood event (including street flooding events)
FRP 6.	Primary: Police Secondary: Code Enforcement, Building Department, and Department of Utilities	After flood event handouts when in the field	Re-entry safety, permit & reconstruction requirements, flood protection methods	Upon re-entry of flooded areas
FRP 7.	City of Sacramento Neighborhood Services and Department of Utilities	Flood Insurance and Grant Information Handouts	Information on filing flood insurance claims and grant opportunities	Provided to flood damaged properties during an inspection or upon re-entry to area

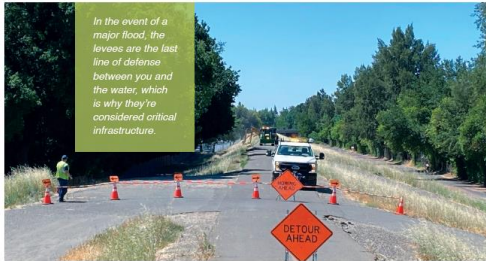
Figure 1.1. Public Information Examples





FloodWise WINTER 2022

PROTECTING LIVES AND PROPERTY IN OUR COMMUNITY SINCE 1927



In the event of a major flood, the levees are the last line of defense between you and the water, which is why they're considered critical infrastructure.

We Never Stop Working for You

As work lives changed for so many during the pandemic, our employees continued their essential work of maintaining a levee system vital to our community's health and well-being. In the event of a major flood, the levees are the last line of defense between you and the water, which is why they're considered critical infrastructure. Still, we know that levees are one of those things people seldom think about until they break. At American River Flood Control District, it's our job to keep them off your list of worries.

What We Do and Why it Matters

Maintaining a levee to the highest standards is simple, but it's also hard, never-ending work. Though levees look like elevated pathways, they're actually engineered structures that require careful upkeep. Damage from water erosion, roots, rodents, and humans affects their structural integrity, requiring us to constantly repeat a three-step process to keep them in flood-ready condition:

KEEPING THE GRASS SHORT allows us to get a clear view of the levees. That's why you often see us out mowing. We also manage invasive weeds and remove vegetation that encroaches on the levee.

WE INSPECT EVERY LEVEE to look for any problems that could lead to a levee failure. To get a clear look at all parts of the levee, we must sometimes trim back vegetation, including trees that block our view.

IF WE FIND ANY PROBLEMS, WE MAKE NECESSARY REPAIRS. Repairs can range from replacing soil removed by people digging into the levees to more intensive construction projects, such as the Arcade Creek erosion repair project covered in this newsletter.

The next time you see our essential workers, please give them a friendly wave to say thanks.



WHAT WE DO ▾ ABOUT US ▾ GET INVOLVED ▾ MEMBERSHIP & GIVING ▾



BE PREPARED. BE FLOOD READY. BUY FLOOD INSURANCE.

www.cityofsacramento.org/FloodReady

City of SACRAMENTO
Department of Utilities

Step 5: Examine Other Public Information Initiatives

The PPI committee evaluated a total of 28 Outreach Projects (OP) and 7 Flood Response Preparation (FRP) projects listed in the City's PPI. Each of the projects were reviewed and evaluated. The OPs provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains. In addition, the City reviewed the real estate brochures for real estate agents and potential homebuyers, the Insurance Coverage Improvement Plan goals, and the "Be Flood Ready" website.

There was a consensus in the Committee that the current PPI has been and continues to be effective in communicating the Flood Ready messages to the community.

The PPI committee had recommendations for various outreach projects:

- Based on the success of the 2021 virtual flood preparedness event the committee recommends that the City should continue to host a citywide event virtually or in-person if possible. The City will continue to educate residents on how to become Flood Ready and what the City and fellow stakeholders are willing to do during a flood event. Continued effort should be made to market this event to schools and children.
- Promotion of flood maps on social media to increase awareness of this City service.
- Help make the City residents more aware of the High Water Mark signs with a list on the City Website of all the High-Water mark locations and if possible, do more High-Water Marks within the City and publicize the signs.
- Spread the word on the locations, dates and times that sandbags are available for the public before or during storm events.

The City continues to implement CRS flood protection activities:

- Activity 320 – Map Information Service
- Activity 330 – Outreach Projects (other sections of the PPI)
- Activity 350 - Websites
- Activity 360 – Flood Protection Assistance
- Activity 630 – Dam Safety (outreach requirement)

Step 6: Implement, Monitor and Evaluate the Program

Adoption

This document will become effective upon adoption by the City Council.

Evaluation

The City of Sacramento Department of Utilities Floodplain Manager will monitor the projects as they are developed, as well as the results. They will record inputs from PPI Committee members and suggestions from other City employees and stakeholders participating in the activities. That input will be sent by e-mail to committee members for consideration and evaluation.

The PPI Committee will meet at once a year to review the implementation of these projects and initiatives. At that time, the status of the projects will be explained and progress toward the outcomes will be discussed. The Committee will recommend to the appropriate City offices and the stakeholders who implement projects whether the projects should be changed or discontinued.

Annually City staff will draft an update to the table and send it to the Committee members. The Committee will meet and review the outcomes of each individual activity to change, add, or approve them. Table A.8 will be revised as needed. The outcomes and revisions will be included in an evaluation report which will be provide to City Council and submitted as part of the City’s annual recertification package to the Community Rating System.

Table A.8. PPI Projects and Initiatives

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	Nov each year	N/A
	B. You need flood insurance		OP 3. Map Inquiry Service	City of Sacramento Department of Utilities -FPM	Year-round	N/A
	C. Protect people from the flood hazard		OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities -FPM	Year-round	DRW/USACE/ FEMA/USGS
	D. Protect your property from the hazard		OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (continued)	(continued)	(continued)	OP 6. No Dumping Signs	City of Sacramento Department Dept. of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities -FPM	Year-round	DWR/ CVFPB
			OP 10. Flood Preparedness Week	City of Sacramento Department of Utilities – FPM & PIO	Oct. each year	Sacramento County/DWR/ USACE/USGS
			OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	UC Davis Medical Center & Sacramento County
			OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD
			OP 16 Earth Day	City of Sacramento Department of Utilities, PIO, OEM, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (continued)	(continued)	(continued)	OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)
			OP 30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
1. Entire City (continued)	(continued)	(continued)	OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A
			OP 32. FEMA Grant Brochures	City of Sacramento Department of Utilities	Year-round	FEMA
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Developed by October 1, 2016	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Develop by October 1, 2016	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 I. 1, 2 & 3	OP 5. Outdoor Ad Placement	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
Target Areas 3.Natomas (North Natomas/ South Natomas) 4.Greenhaven/ Pocket 5.Riverpark Neighborhood by Sac State	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE/ USGS/FEMA
			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
6. Rescue Areas (Defined by Levee Breach Scenarios) Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	F. Protect Natural Floodplain Functions G. Levee Preparedness I. General Preparedness		OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
			OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A
Flood Response Projects (FRP)						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Develop by May1, 2015	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

Insurance Coverage Improvement Plan

One of the City’s desired outcomes was increasing the number of flood insurance policies. The total number of policies has decreased. The increased X/AR/A99 policies are likely due to the elimination of the PRP policies. Decrease in total policies may have been attributed to the NFIP Risk Rating 2.0 new pricing methodology and an anticipated economic recession.

City of Sacramento Flood Insurance Policies						
Year	Total	SFHA	X/AR/A99	PRP	Average Premium	Community CRS Savings
June 2023	33,569	116	33,421	N/A	\$ 536	\$ 1,919,263
Oct 2022	35,332	157	27,583	7,592	\$ 496	\$ 1,552,083
Dec 2021	42,279	183	29,059	13,037	\$ 522	\$ 1,619,309
March 2019	43,400	285	27,762	15,353	\$ 435	\$ 1,508,853
January 2017	42,223	352	25,522	16,349	\$ 465	\$ 1,533,010
February 2016	43,937	360	22,170	21,407	\$ 472	\$ 1,401,157
April 2015	41,967	372	13,350	28,245	\$ 514	\$ 1,056,896

Source: Estimated Policy Data from FEMA CIS What-If Report June 2023

Repetitive Loss Area Analysis

The City staff is currently in the process updating the Repetitive Loss Area Analysis with the 2021 and 2022 Repetitive Loss Property List. Repetitive loss outreach letters were sent out March 2022 based on the 2021 and 2022 Repetitive Loss Property Lists.

Open Space Education

The largest open space within the City is the American River Parkway. The American River Parkway foundation continues to provide an American River Parkway Map which highlights recreational areas, the Parkway's history, and many habitats located within the Parkway. The committee had no new recommendations for this outreach.

Stream Dumping Regulations

The PPI Committee discussed the City's practice of requiring No Dumping Signs on our creeks and rivers, stenciling on our storm drain inlets, concrete stamping at new drain inlets, and providing a citywide mailer. It was recommended that DOU Floodplain Management staff reach out to DOU Water Quality staff to see if they will be implementing new outreach material related to the trash-free waterways program. The Water Quality staff in conjunction with the Sacramento Stormwater Quality Partnership run a "Trash your Trash" campaign which encourages public to attend local clean-up events or organize their own. The campaign highlights that litter from sidewalks, streets, parking lots and nature areas eventually finds its way into our rivers.

Flood Protection Assistance

The Committee discussed how the City still provides flooding information or property protection assistance to the public. Staff has used FEMA's Hazard Mitigation Grant handouts to explain the different options and what may be beneficial to the resident. The Committee had no new recommendations on this item.

Levee and Dam Safety

The committee discussed the outreach projects regarding levee and dam safety. The California Department of Water Resources sent out their annual Flood Risk Notification in September 2022 to those property owners living behind levees. The City sent out an updated "Be Flood Ready, Plan Ahead, Levees are not Sacramento's only Flood Risk", Dams Brochure to city residents in September 2022 and will continue to send them annually.

Meeting #8
November 3, 2023

Program for Public Information Committee 2023 Annual Review - Agenda

Date and Time: Nov 3, 2023, 11-12PM

Teams Meeting: [Click here to join the meeting](#)

Meeting ID: 227 418 066 035

Passcode: 5cBoQY

INVITED ATTENDEES: *Jamie McKinley, Jessica McCabe, Remi Mendoza, Brigid Burdock, Deniece Ross- Francom, Brian Messer, Tong Veu, Rosa Millino (optional), Neal Joyce*

MEETING MATERIALS:

- *Comprehensive Flood Management Plan (CFMP) - <http://www.cityofsacramento.org/Utilities/Education/Flood-Ready/City-Flood-Prep>*
 - *CFMP Appendix D – Repetitive Loss Area Analysis*
 - *Flood Ready Website Pages - <http://www.cityofsacramento.org/floodready>*
-

1. Welcome

- a. CRS and the PPI Program Overview
- b. CFMP Update scheduled Completion Dec 2023

2. Review of Flood Response Preparation (CFMP Pages E.1 to E.15) Pg 293-316

- a. Review of Flood Response Preparation Projects
- b. Evaluation of Projects
- c. Future Needs

3. Insurance Coverage Improvement Plan (CFMP Pages 7.17 to 7.23 & Topic B) Pg 153-159

- a. Coverage Improvement Plan Project Review
- b. Evaluation of Projects
- c. Future Needs

4. Repetitive Loss Area Analysis (CFMP Appendix D to 2017)

- a. Review of Repetitive Loss Area Analysis (updated 2023 will be incorporated into 2023 CFMP)
- b. Discuss Outreach Efforts
- c. Committee Comments

5. Review of the Program of Public Information (CFMP 7.1 to 7.40) Pg 137-176

- a. Outreach Projects Implementation Review (CFMP 7.33 to 7.38) Pg 169-174
- b. Evaluation of Projects
- c. Future Needs

6. Member Recommendations

ACTION ITEMS

ATTACHMENT 2

PUBLIC INFORMATION AND FLOOD RESPONSE PROJECTS

Project Number	Organization	Project	Subject Matter	Frequency
OP 1.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Be Flood Ready Brochure	Flyer in Utility Bill	Annually - November
OP 2.	City of Sacramento Department of Utilities, & Floodplain Management	Repetitive Loss Outreach	Letter with advice on property protection, site visits, and financial assistance for mitigation measures and Be Ready Flood Brochure	Annually – Late Fall
OP 3.	City of Sacramento Department of Utilities, & Floodplain Management	Map Inquiry Service	Flood, Hazard Areas, mandatory insurance purchase requirements	Year-round
OP 4.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	High Water Marks	Program to monitor and establish high water marks after flood events	Year-round
OP 5.	City of Sacramento Department of Utilities, Floodplain Management, & PIO Staff	Outdoor Ad Placement	Flood related messaging	Annually - Fall
OP 6.	City of Sacramento Department of Utilities, Water Quality & PIO Staff	No Dumping Signs	Signs throughout floodplain	Year-round
OP 7.	City of Sacramento Department of Utilities, Floodplain Management, Drainage, & PIO Staff	Flood Protection Assistance Site Visits	Drainage problems, flood protection, historical flood damage	Year-round
OP 8.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, California Department of Water Resources & PIO Staff	Various Brochures at City Offices	How to develop in a floodplain, living next to a levee, stormwater pollution, substantial improvement rule, permit requirements	Year-round
OP 9.	California Department of Water Resources	Levee Flood Protection Zone Map (Flood Risk Notification: Living with Levees)	Indication of properties estimated to be at a depth of greater than 3 feet	Year-round
OP 10.	Federal, State, City of Sacramento and Sacramento County	Flood Preparedness Week	Promote awareness of flood damage	Annually November
OP 11.	City of Sacramento Department of Utilities, & Water Quality	No Dumping Stencils & Permanent Markers	Promote on storm drains that only rain water should go down drain	Year-round
OP 12.	Office of Emergency Services	Booklets	“Are You Prepared” Information	Year-round
OP 14.	American River Flood Control District	Newsletter	Flood Control Information	At least Annually
OP 16.	City of Sacramento – Several Departments participate	Earth Day	Information provided on flood insurance, emergency kits, pay attention during storm events	Annually - April
OP 19.	City of Sacramento Department of Utilities, Floodplain Management & PIO Staff	Dam Safety Outreach	Brochure that describes inundation area and identification of risks, evacuation procedures and routes	Annually

Project Number	Organization	Project	Subject Matter	Frequency
OP 20.	City of Sacramento Department of Utilities, Floodplain Management, Water Quality, & PIO Staff	SPLASH program	Provide messages to elementary students on flood protection, stormwater pollution	Quarterly
OP 21.	Real Estate Agents	Disclosure of the Flood Hazard Informational Guide	Explains State Requirement for Flood Disclosure to Real Estate Agents	Year-round
OP 22.	City of Sacramento Department of Utilities, OES, PIO	Translation Services Provided	City will provide translation services to help understand all flood-related information	Year-round
OP 23.	Insurance Agencies	Bi-lingual Insurance Agents	Flood Insurance information presented in native language	Year-round
OP 24.	City of Sacramento Department of Utilities, & OEM	Levee Breach Scenario Maps – 18 Rescue Areas	Website mapping which shows “Red “ rescue areas where water has the potential to reach 1’ in 2 hours	Year-round
OP 25.	California Nature Conservancy	Conserving Natural Resources in California	Newsletters and website information on natural & beneficial functions of floodplains	Year-round
OP 26.	Real Estate Agents and Lenders	Real Estate Agent’s Brochure	Brochure for potential homebuyers to provide floodplain information	Year-round
OP 27.	City of Sacramento Department of Utilities	Flood Ready Website	Provides information on all flood related topics	Year-round
OP 28.	American River Parkway Foundation	The American River Parkway Brochure	Provides information on wildlife, habitat protection, and recreational activities	Year-round
OP 29.	National Flood Insurance Program (NFIP)	NFIP Risk Notification Mailing	Provides flood insurance holders with flood risk information for their area	Annually
OP 30.	Congresswoman Doris Matsui’s Office	Flood Insurance Promotion: Web Page and Community Newsletter	Congresswoman Matsui promotes the importance of flood insurance through her website and newsletter	Year-round
OP 31.	Flood Insurance Outreach Letter	Mail Flood Insurance Promotion Brochures	Provide flood insurance information and encourage purchasing a policy	Annually
OP 32.	Federal Emergency Management Agency (FEMA)	Hazard Mitigation Grant Program Brochures	Provides information on grants that are available for structure retrofit and flood mitigation.	Year-round
Flood Response Projects				
Project Number	Organization	Project	Subject Matter	Frequency
FRP 1.	Primary: Public Information Officer and City Manager Secondary: Community Development Department and Department of Utilities	Media Release (TV and Radio and Newspapers)	Various flood-related topics (Turn around don’t drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event
FRP 2.	Emergency Operations Center and Public Information Officer	Everbridge/Emergency Broadcast System	Use Everbridge and EBS to notify residents of information during a flood	During a flood event

FRP 3.	Primary: Public Information Officer and Neighborhood Services Secondary: Community Development Department and Department of Utilities	Media Release and Post of Social Media (Facebook, Twitter, Next Door, and others)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event
FRP 4.	Department of Utilities, Operations & Maintenance, Water Quality Lab	Drinking Water Quality Incident Response	Prevent consumption of contaminated water after a flood. Outreach materials drafted, translated and delivered to warehouse.	During and after a flood event, if needed
FRP 5.	Department of Utilities, Operations & Maintenance	Combined Sewer System Warning Signs	Signage posted after flood to prevent people from entering potentially contaminated water	During and after a Combined Sewer System flood event (including street flooding events)
FRP 6.	Primary: Police Secondary: Code Enforcement, Building Department, and Department of Utilities	After flood event handouts when in the field	Re-entry safety, permit & reconstruction requirements, flood protection methods	Upon re-entry of flooded areas
FRP 7.	City of Sacramento Neighborhood Services and Department of Utilities	Flood Insurance and Grant Information Handouts	Information on filing flood insurance claims and grant opportunities	Provided to flood damaged properties during an inspection or upon re-entry to area

ATTACHMENT 3
Revised Table 7.8 PPI Projects and Initiatives

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
1. Entire City (homeowners, businesses and renters)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,&3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities, & PIO	Nov each year	N/A
			OP 3. Map Inquiry Service	City of Sacramento Department of Utilities -FPM	Year-round	N/A
			OP 4. High Water Mark Initiative	City of Sacramento Department of Utilities -FPM	Year-round	DRW/USACE/FEMA/USGS
			OP 5. Outdoor ad placement	City of Sacramento Department of Utilities & PIO	Oct. each year	N/A
			OP 6. No Dumping Signs	City of Sacramento Department Dept. of Utilities, Water Quality, & Solid Waste	Year-round	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
			OP 8. Various Brochures at City offices	City of Sacramento Department of Utilities -FPM	Year-round	DWR/CVFPB
			OP 10. Flood Prepared-ness Week	City of Sacramento Department of Utilities – FPM & PIO	Oct. each year	Sacramento County/DWR/USACE/USGS
			OP 11. No dumping stencils & permanent markers	City of Sacramento Department of Utilities & Water Quality	Year-round	N/A
			OP 12. "Are You Prepared" Booklets	Office of Emergency Services	Year-round	UC Davis Medical Center & Sacramento County

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 14. Flood Wise Newsletter	ARFCD	Annually	ARFCD
			OP 16 Earth Day	City of Sacramento Department of Utilities, PIO, OEM, Police, Fire	April, May, September	N/A
			OP 19. Dam Safety Outreach	City of Sacramento Department of Utilities	Annually late fall	N/A
1. Entire City (continued)	(continued)	(continued)	OP 25. Website & Newsletter on NBF of Floodplain	California Nature Conservancy	Year-round	California Nature Conservancy
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Year-round	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 28. The American River Parkway Brochure	American River Parkway Foundation	Year-round	American River Parkway Foundation
			OP 29 Flood Zone Risk Notification	NFIP Risk Notification Mailing	Annually	National Flood Insurance Program (NFIP)
			OP 30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
1. Entire City (continued)	(continued)	(continued)	OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
			OP 32. FEMA Grant Brochures	City of Sacramento Department of Utilities	Year-round	FEMA
2.School Children	A. Know your flood hazard C. Protect people from the flood hazard D. Protect your property from the hazard F. Protect Natural Floodplain Functions H. Flood Education	A. 1,3 & 4 C. 1,2 & 3 D. 2,4 & 5 F. 1, 2, 3 H. 1 & 2	OP 20. SPLASH Program	City of Sacramento Department of Utilities & Water Quality	Quarterly	N/A
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A
			OP 1. Be Flood Ready Brochure	City of Sacramento Department of Utilities	Year-round	N/A
3.Real Estate, Lending, and Insurance Companies	A. Know your flood hazard B. You need flood insurance E. Build Responsibly	A. 1 & 2 B. 1,2,3&4 E. 1,2&3	OP 3. Map Inquiry Service	City of Sacramento Department of Utilities	Year-round	NA
			OP 21. Real Estate Disclosure – State Requirement	Real Estate Agents	Year-round	Real Estate Agents
			OP 23. Flood Insurance Information	Insurance Agents	Year-round	Insurance Agents
			OP 26. Real Estate Agent's Brochure	City of Sacramento Department of Utilities & Real Estate Agents	Year-round	Real Estate Agents and Lenders
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
Target Area 2.Repetitive Loss Properties (Areas)	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 1. Be Ready Flood Brochure	City of Sacramento Department of Utilities & PIO	Nov. each year	N/A
			OP 2. Repetitive Loss Outreach Mailing	City of Sacramento Department of Utilities	Annually late fall	N/A
			OP 7. Flood Protection Assistance	City of Sacramento Department of Utilities	Year-round	N/A
4.Vulnerable Populations	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly I. General Preparedness	A. 1,2, 3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 I. 1, 2 & 3	OP 5. Outdoor Ad Placement	City of Sacramento Department of Utilities & PIO	Annually - October	N/A
			OP 9. Levee Zone Protection Map	California Department of Water Resources	Annually September	DWR
5. Political Leaders (See Entire list of City Wide Projects in 1. Above)	See 1 above	See 1 above	Adopt and Fund the PPI	Mayor and City Council	N/A	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
6. Language Barriers	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions I. General Preparedness	A. 1, 2,3 & 4 B. 1,2, 3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 I. 1, 2 & 3	OP 22. Translation services available on flood-related information	City of Sacramento Department of Utilities PIO, OES	Year-round	N/A
			OP 23. Bi-Lingual Insurance Agents (Spanish and Asian Languages)	Bi-Lingual Insurance Agents (Spanish and Asian Languages) As Needed	Year-round	Insurance Agents
<u>Target Areas</u> 3.Natomas (North Natomas/ South Natomas) 4.Greenhaven/ Pocket 5.Riverpark Neighborhood by Sac State 6. Rescue Areas (Defined by Levee Breach Scenarios) Note: All projects in Target Audience #1 (Entire City) also apply to these target areas	A. Know your flood hazard B. You need flood insurance C. Protect people from the flood hazard D. Protect your property from the hazard E. Build Responsibly F. Protect Natural Floodplain Functions G. Levee Preparedness	A. 1, 2,3 & 4 B. 1,2,3 & 4 C. 2 & 3 D.1,2,3,4,5, 6 E. 1 & 2 F. 1,2,& 3 G. 1,2 I. 1, 2 & 3	OP 4. FEMA's High Water Mark Initiative	City of Sacramento Department of Utilities & PIO	Year-round	DWR/USACE/USGS/ FEMA
			OP 9. Levee Flood Protection Zone Map (DWR Flood Risk Notification)	DWR	Annually - September	DWR/FEMA/ Cal EMA/ CVFPB/ USACE
			OP 24. Levee Breach Scenario Mapping for 18 Rescue Areas	City of Sacramento Department of Utilities	Year-round	Sacramento County
			OP 27. Flood Ready Website	City of Sacramento Department of Utilities	Year-round	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
	I. General Preparedness		OP.30. Flood Insurance Promotion of Website & Newsletter	Congresswoman Doris Matsui's Office	Year-round	Congresswoman Doris Matsui's Office
			OP 31. Flood Insurance Outreach Letter	City of Sacramento Department of Utilities	Annually	N/A
Flood Response Projects (FRP)						
1. Entire City	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 1. Press Release (TV, Radio, Newspaper)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 3. Press Release (Website, Social Media)	City of Sacramento Department of Utilities & PIO	Release at first flood notice	N/A
			FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Upon re-entry of flooded areas	N/A
			FRP 2. Everbridge	OES & PIOs	Release at first flood notice	N/A
			FRP 4. Drinking Water Quality Communication (Website)	City of Sacramento Department of Utilities	Release once water is determined to be compromised	N/A
2. Combined Sewer System/Internal Drainage	A. Know your flood hazard Risks C. Protect people from the flood hazard	A. 1, 2, 3, 4 & 5 C. 1, 2, 3, 4 & 5	FRP 5. CSS Signage	City of Sacramento Department of Utilities Operations	Release at first flood notice	N/A

Outreach Projects (OP)						
Target Audience	Message(s)	Outcome	Project(s)	Assignment	Schedule	Stakeholder
3. Flood Damaged Property	D. Protect your property from the hazard E. Build Responsibly	D. 1,2,4,6 E. 1,2,3	FRP 6. After flood event handouts	Community Development & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A
			FRP 7. Flood insurance and grant information handouts	Neighborhood Services & City of Sacramento Department of Utilities	Leave at damaged structure during inspection and/or provide to owners upon re-entry of area	N/A

Program for Public Information Evaluation Report

(October 2022 – October 2023)

Community Rating System Program

The City of Sacramento (City) has been actively participating in the Community Rating System (CRS) program since 1992. CRS is a component of the National Flood Insurance Program (NFIP). It provides a reduction to flood insurance premiums to residents and businesses within participating communities. The reductions are based on a community's flood hazard mitigation programs, including risk communication activities. The City of Sacramento is currently a Class 3 providing a discount of up to 35% for residents and businesses.

Even before joining the CRS program, the City, through many departments and in coordination with various stakeholders and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Because of the independent approaches to outreach, in 2014, the City prepared a Program for Public Information (PPI). The City's PPI, prepared through a committee made up of City staff and stakeholders, is now an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for the community's flood problems.

The PPI is part of the City's Comprehensive Flood Management Plan, which is currently being updated and planned to be completed December 2023 and will then be presented to City Council for adoption. This PPI Evaluation Report will also be submitted to the Sacramento City Council as an informational item.

PPI Committee Annual Evaluation Meeting

Annually, the City reviews the implementation of the outreach projects with the PPI Committee. An assessment is made as to whether the desired outcomes are achieved and what, if anything, should be changed.

The PPI Committee met on Friday, November 3, 2023, 11:00-12:00pm. See Attachment 1 for agenda. The Committee members are as follows:

Committee Members	Title
Jamie McKinley	Admin Analyst, City of Sacramento, Department of Utilities, Floodplain Management
Jessica McCabe	Admin Analyst, City of Sacramento, Department of Utilities, Public Relations
Remi Mendoza	Senior Planner, City of Sacramento, Community Development Department

Brigid Burdock	City of Sacramento Resident
Deniece Ross-Francom	City of Sacramento Resident
Brian Messer	Flood Insurance Agent, HUB International
Tong Veu	Real Estate Agent, Lyon

Assessment of Outreach Projects

A total of 27 Outreach Projects (OP) and 7 Flood Response Preparation (FRP) projects are listed in the City’s PPI. Each of the projects was reviewed and evaluated. The OPs provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains. In addition, the City reviewed the real estate brochures for real estate agents and potential homebuyers, the Insurance Coverage Improvement Plan goals, and the “Be Flood Ready” website.

A more detailed assessment of each OP is included in Attachment 2 and Attachment 3 is the revised Table 7.8.

There was a consensus in the Committee that the current PPI has been and continues to be effective in communicating the Flood Ready messages to the community.

Recommendations/Developments for Outreach Projects

These are the recommendations and feedback the outreach and flood response projects received.

- Recommendations made for the City to continue hosting the Highwater Jamboree, a citywide public in- person event. The City should continue to educate residents on how to become Flood Ready and what the City and fellow stakeholders do during a flood event. Continued effort should be made to market this event to schools and children. There has been positive feedback regarding collaboration with Local, State and Federal agencies to promote flood preparedness to City residents.
- Continue highlighting at public outreach events that flood maps are available on the City’s website.
- Continue encouraging all Sacramento residents to purchase flood insurance and make the public aware that flood zones X and Shaded X are moderate risk flood zones and should still have flood insurance.
- Committee suggested to continue to make residents aware of NFIP coverage and encourage them to contact insurance agents for more specific information on rates and insurance options.
- Positive feedback from the committee about Flood Response Project 5, the Combined Sewer System signage that is placed in the area of flooding to notify folks to use caution and avoid because the area may contain sewage which can be a health hazard.

Flood Response Preparations (FRP) Material Review

The committee reviewed the FRP materials (i.e., press releases, handouts) and the committee determined that the rest of the materials were still current and appropriate. These materials are the foundation of information to be distributed to the community prior to, during and after a flood event.

Insurance Coverage Improvement Plan

One of the City's desired outcomes was increasing the number of flood insurance policies. Although the total number of policies has decreased, the decrease is most likely due to the removal of PRP policies. Decrease in total policies may also be attributed to the NFIP Risk Rating 2.0 new pricing methodology, the potential economic downturn, or the COVID pandemic due to financial insecurity.

City of Sacramento Flood Insurance Policies						
Year	Total	SFHA	X/AR/A99	PRP	Average Premium	Community CRS Savings
Oct 2023	32,701	144	32,557		\$ 521	\$ 1,926,384
Oct 2022	35,332	157	27,583	7,592	\$ 496	\$ 1,552,083
Dec 2021	42,279	183	29,059	13,037	\$ 522	\$ 1,619,309
March 2019	43,400	285	27,762	15,353	\$ 435	\$ 1,508,853
January 2017	42,223	352	25,522	16,349	\$ 465	\$ 1,533,010
February 2016	43,937	360	22,170	21,407	\$ 472	\$ 1,401,157
April 2015	41,967	372	13,350	28,245	\$ 514	\$ 1,056,896

City of Sacramento Flood Insurance Policies Occupancy						
Occupancy Type	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
Single Family	28,929	\$ 15,134,778	\$ 9,881,435,000	1,654	\$ 7,611,743.57	\$ 566,830
2-4 Family	823	\$ 386,306	\$ 255,952,000	120	\$ 520,101	\$ 35,230
All Other Residential	2,204	\$ 781,175	\$ 797,955,000	49	\$ 381,645	\$ 19,080
Non-Residential	745	\$ 739,637	\$ 392,244,000	104	\$ 1,848,270	\$ 84,141
Total	32,701	\$ 17,041,896	\$ 11,327,586,000	1,927	\$ 10,361,760	\$ 705,282

Repetitive Loss Area Analysis

The City updated the Repetitive Loss Area Analysis in July 2023. A Repetitive Loss Property List for this analysis was received in 2022. Repetitive loss outreach letters were sent out Jan 2023 based on the 2022 Repetitive Loss Property List. One of the Repetitive Loss properties has been flagged as a potential property to be mitigated.

Open Space Education

The largest open space within the City is the American River Parkway. The American River Parkway foundation continues to provide an American River Parkway Map which highlights recreational areas,

the Parkway's history, and many habitats located within the Parkway. The committee had no new recommendations for this outreach other than to continue highlight the Parkway as an important area to remain open space.

Stream Dumping Regulations

The Committee discussed the City's practice of requiring No Dumping Signs on our creeks and rivers, stenciling on our storm drain inlets, concrete stamping at new drain inlets, and providing a citywide mailer. It was recommended that Floodplain Management staff reach out to the Water Quality staff to see if they will be implementing new outreach material related to the trash-free waterways program and to replace any damaged or missing signs.

Flood Protection Assistance

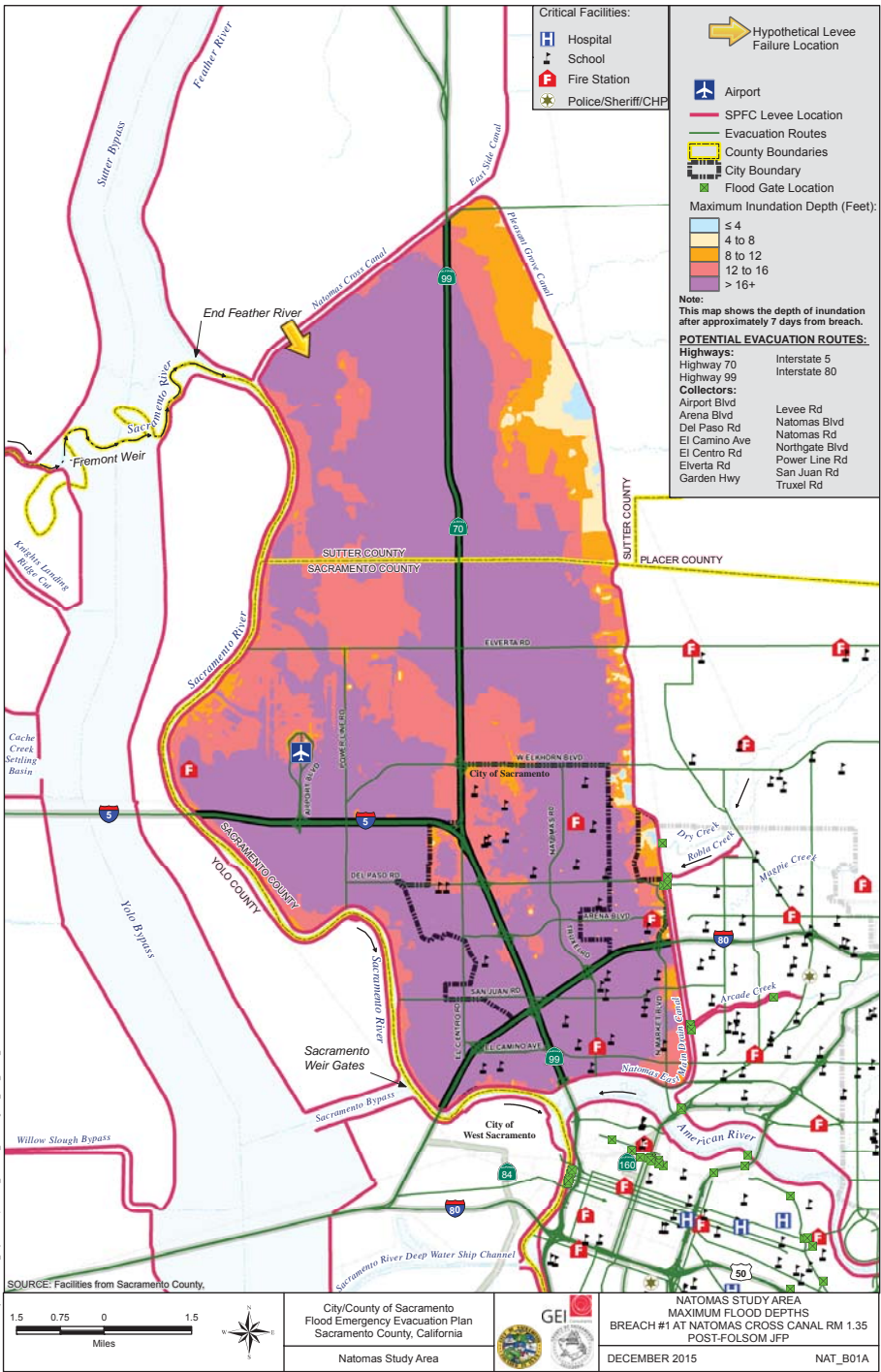
The Committee discussed how the City still provides flooding information or property protection assistance to the public. Staff has used FEMA's Hazard Mitigation Grant handouts to explain the different options and what may be beneficial to the resident. The Committee had no new recommendations on this item.

Levee and Dam Safety

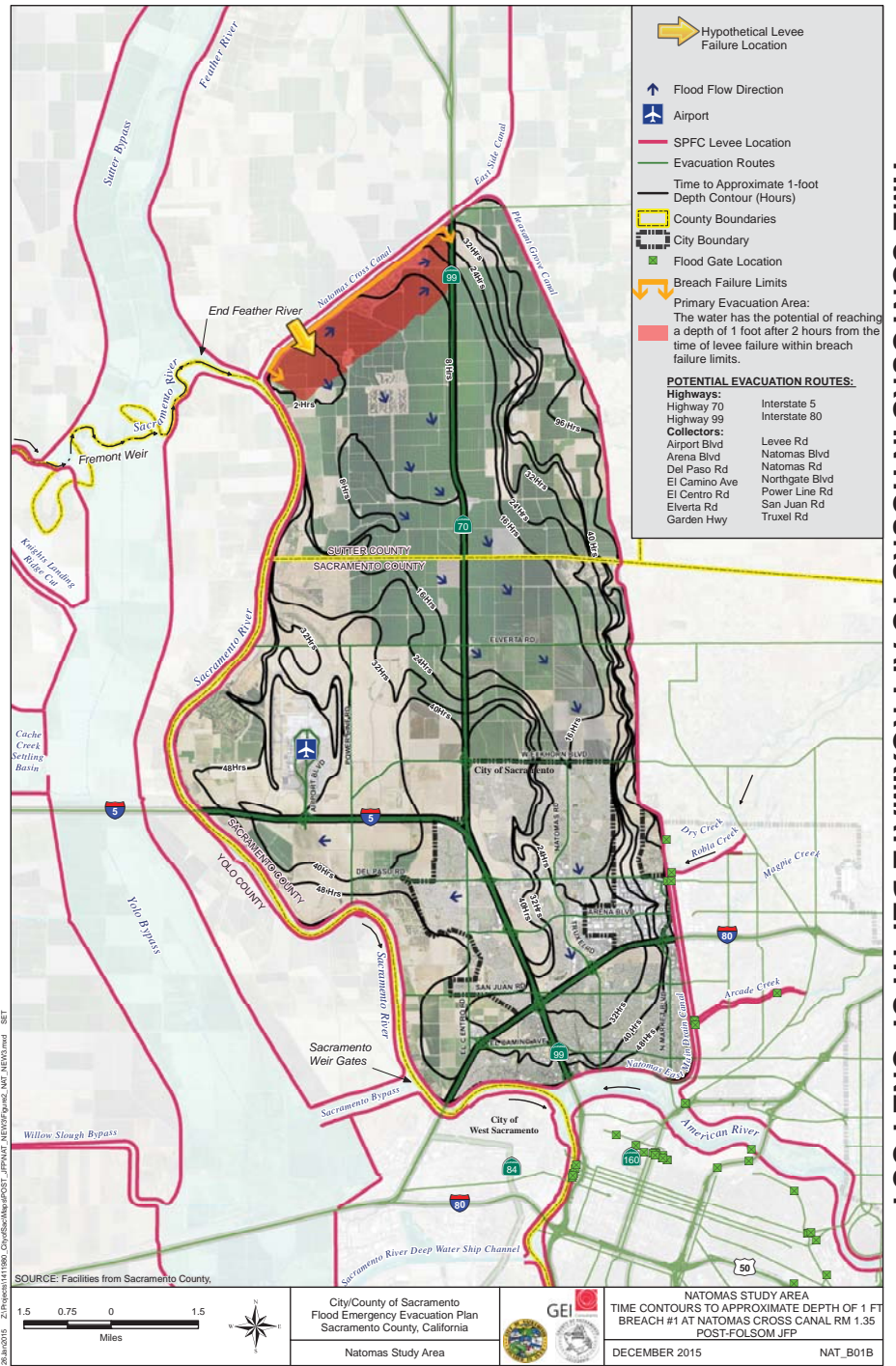
The committee discussed the outreach projects regarding levee and dam safety. The California Department of Water Resources sent out their annual Flood Risk Notification in Fall of 2023 to those property owners living behind levees. The City sent out an updated Be Flood Ready, Plan Ahead, Levees are not Sacramento's only flood risk, Dams Brochure to city residents in September 2022 and 2023.

APPENDIX C

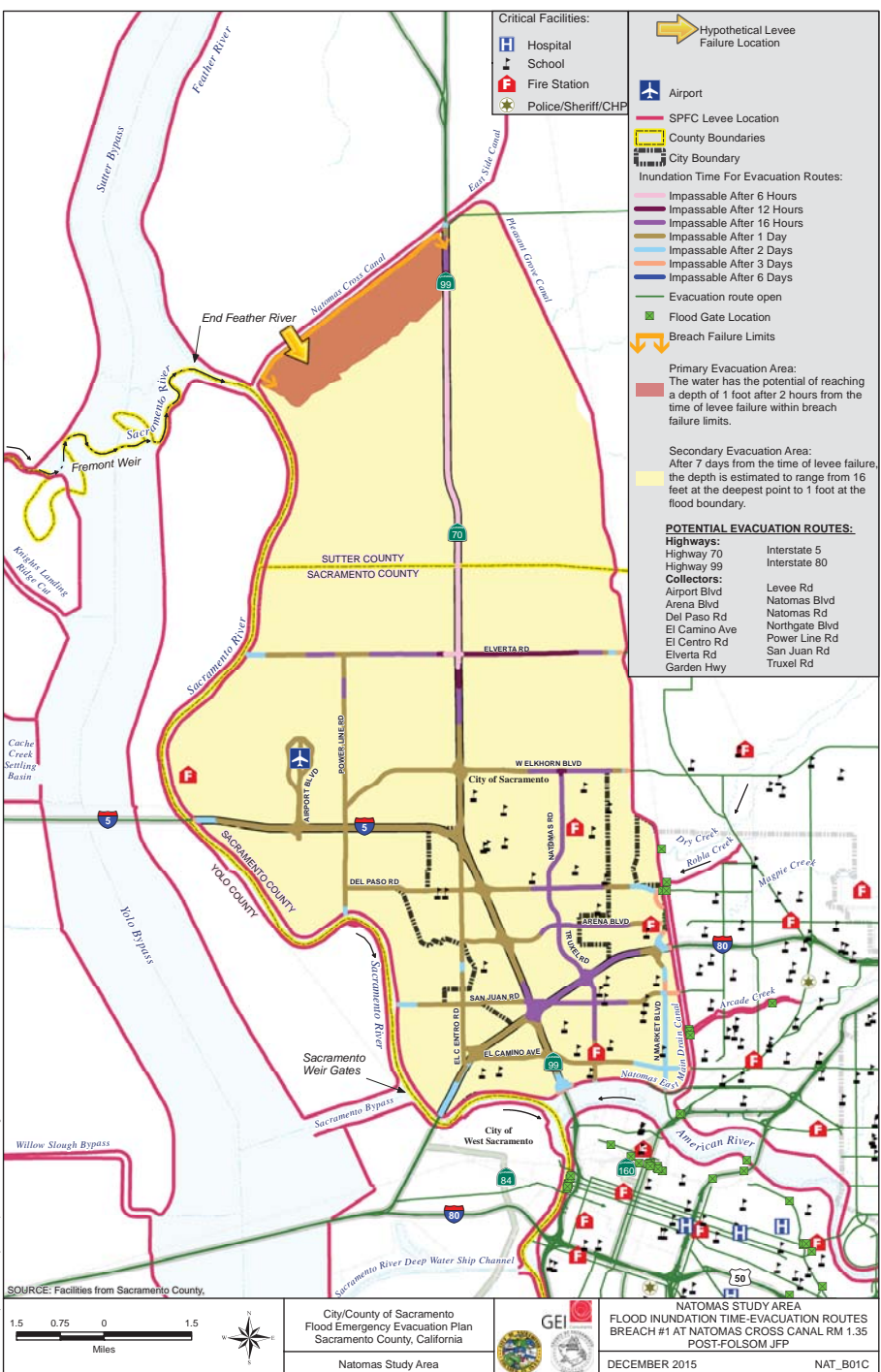
RESCUE & EVACUATION AREA MAPS



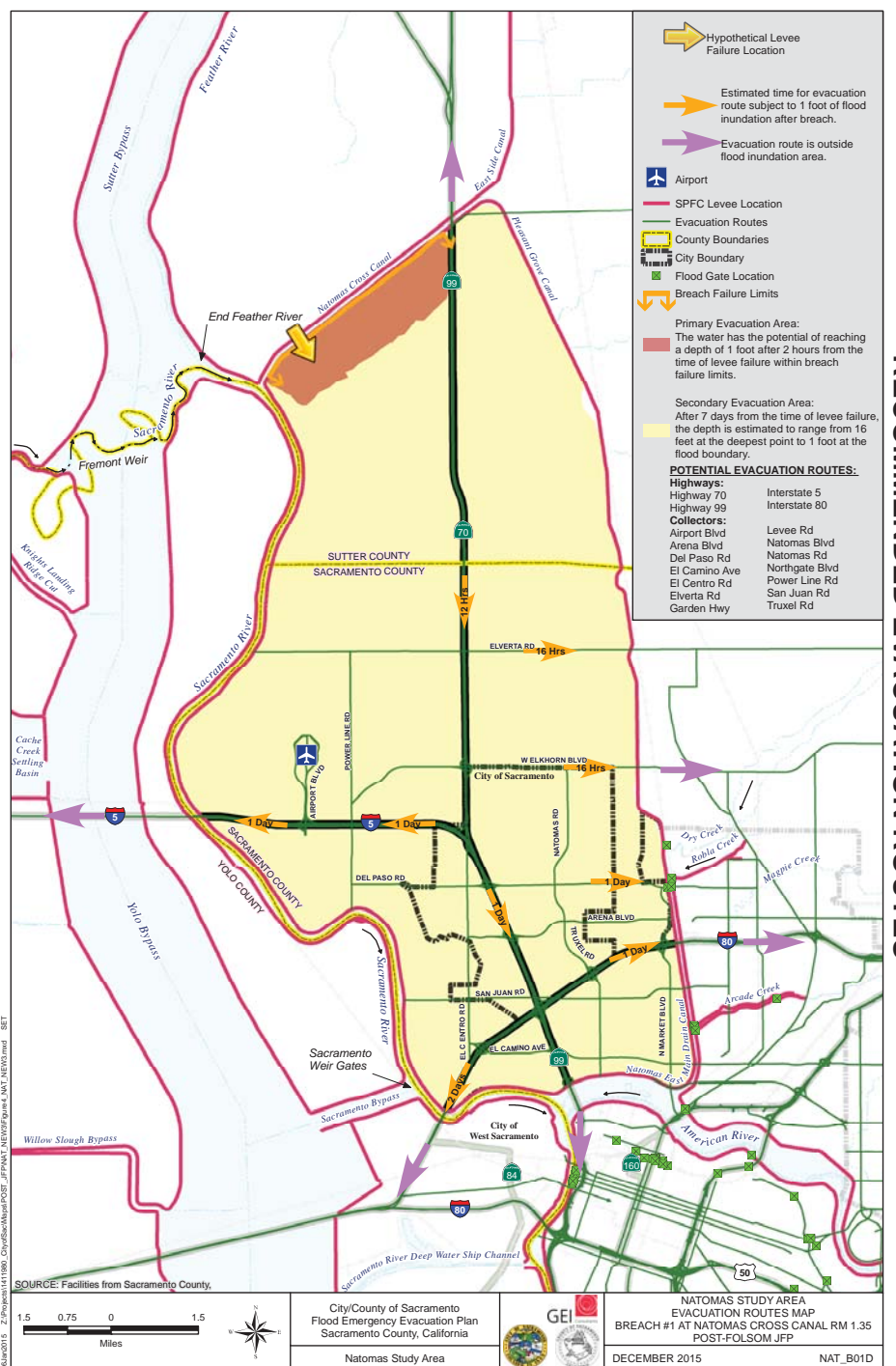
MAXIMUM FLOOD DEPTH MAP



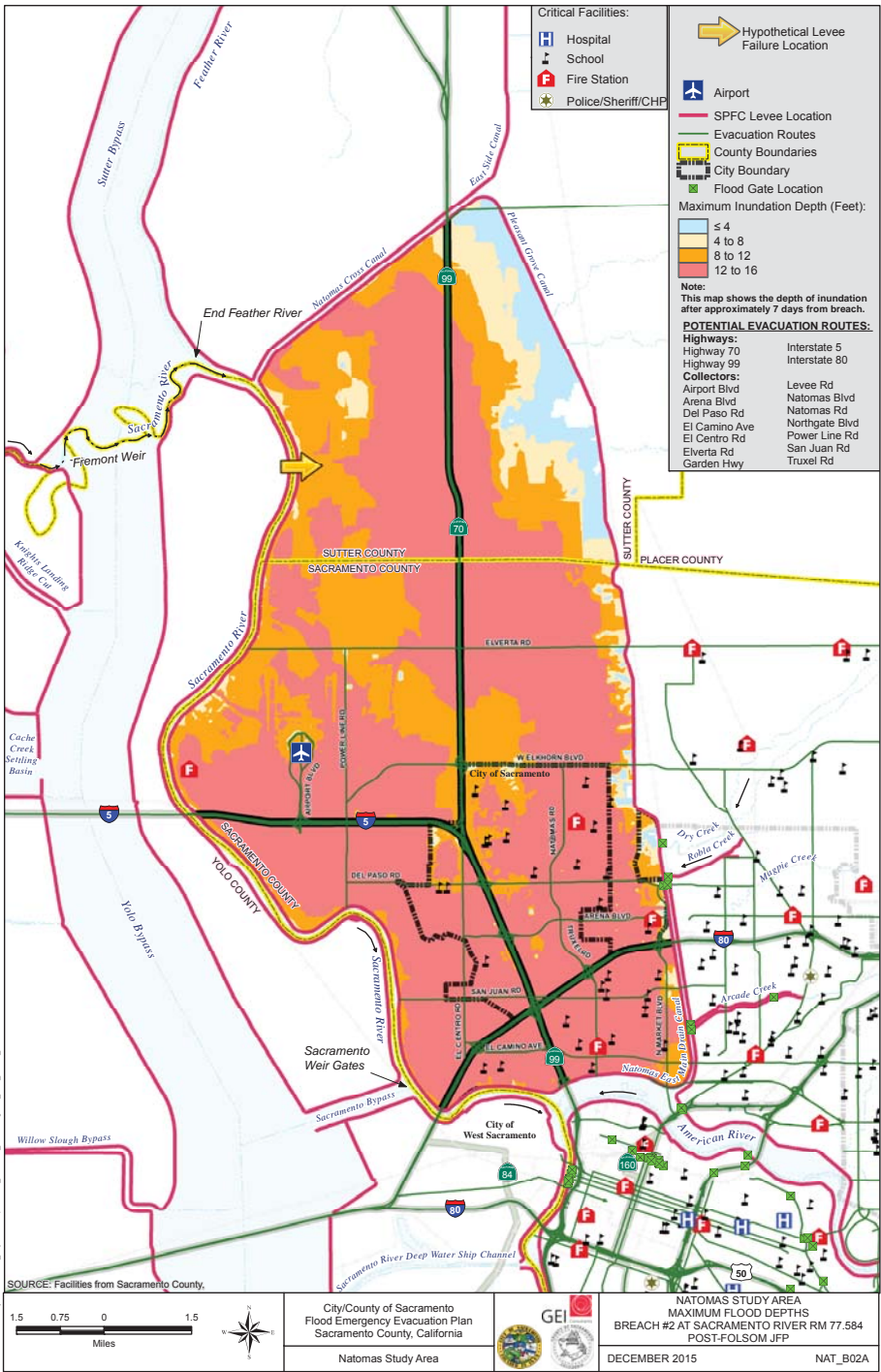
TIME CONTOURS IN HOURS TO APPROXIMATE DEPTH OF ONE FOOT



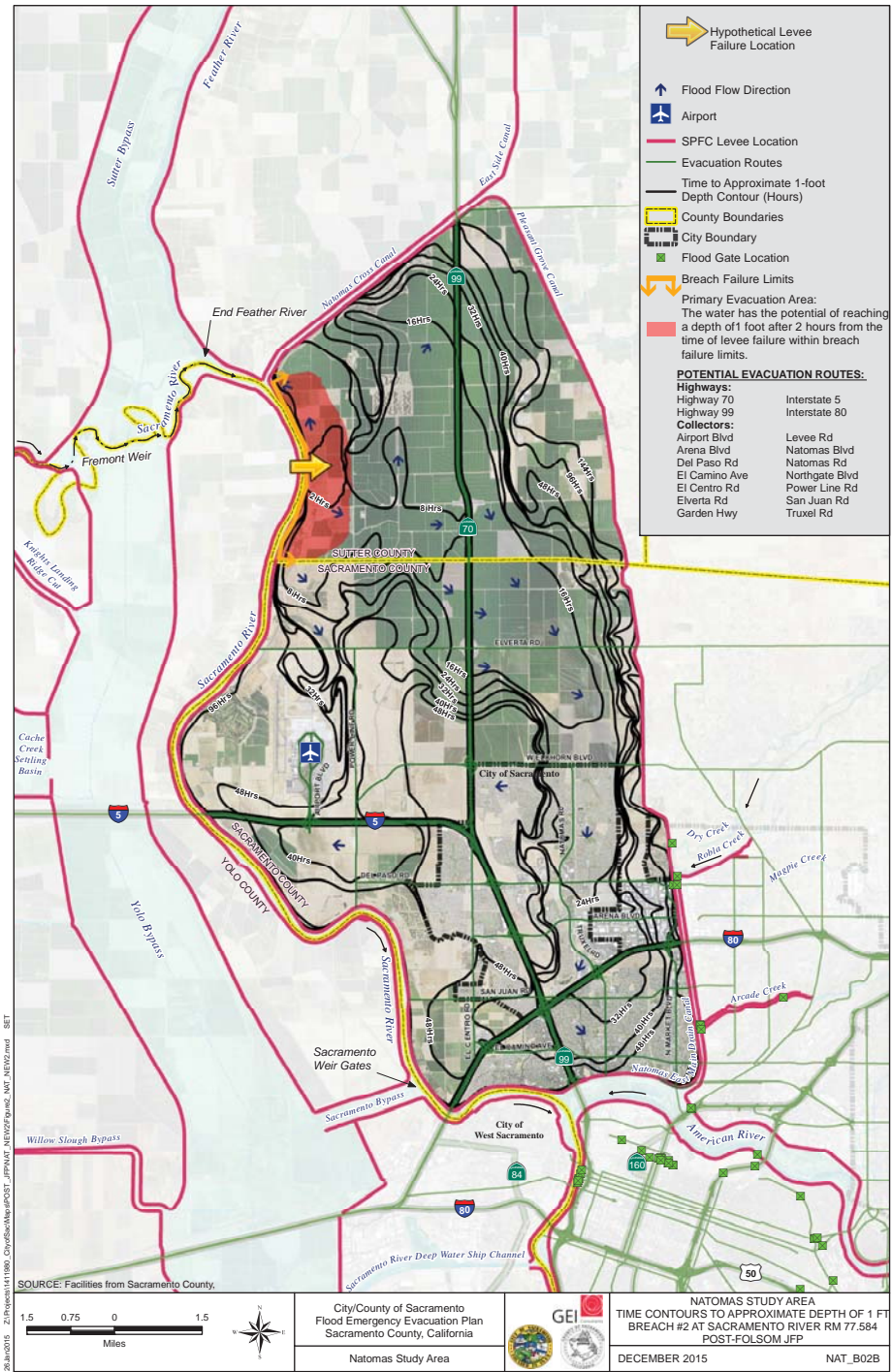
FLOOD INUNDATION TIME IN HOURS FOR EVACUATION ROUTES



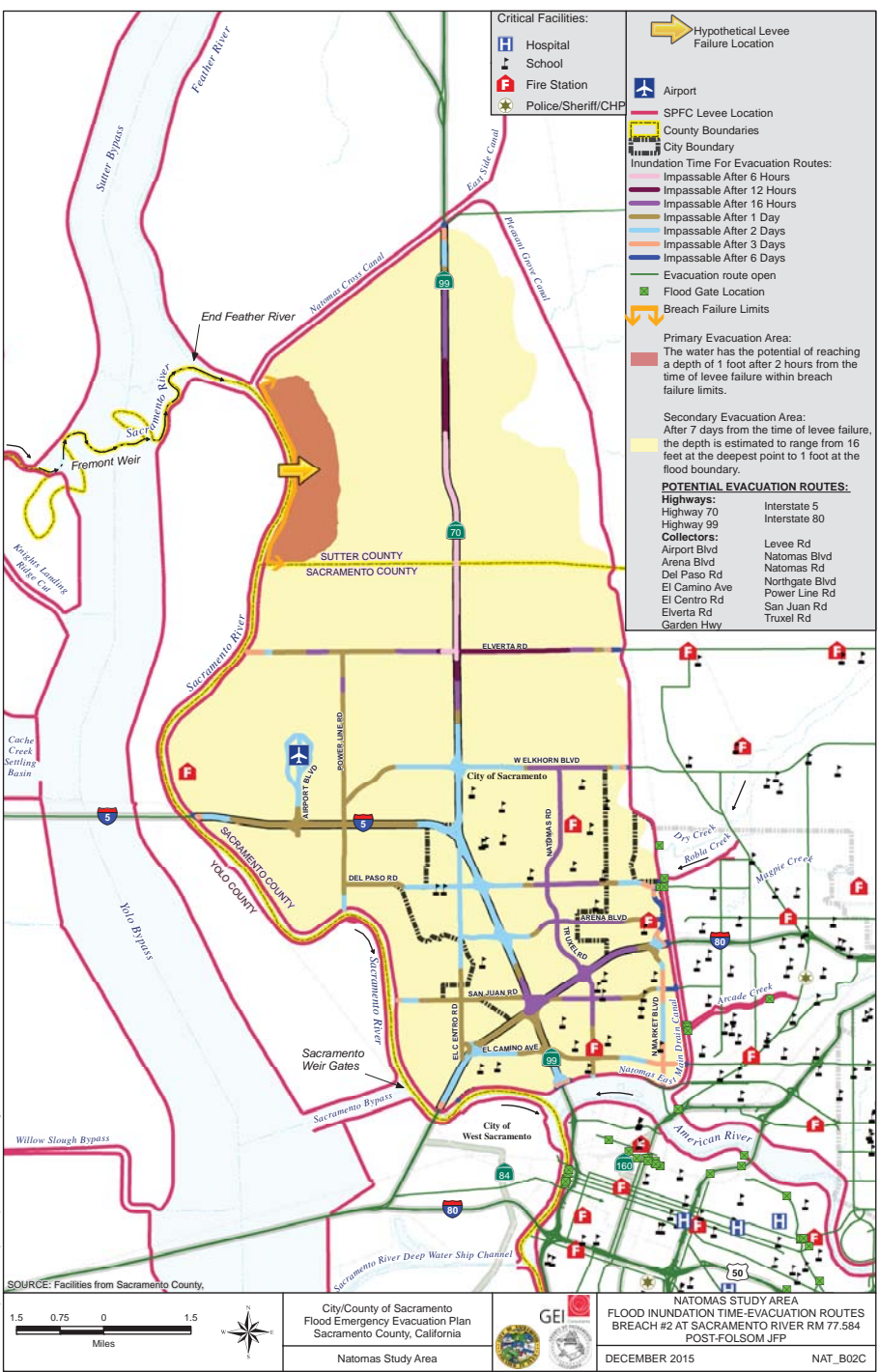
RECOMMENDED EVACUATION ROUTES



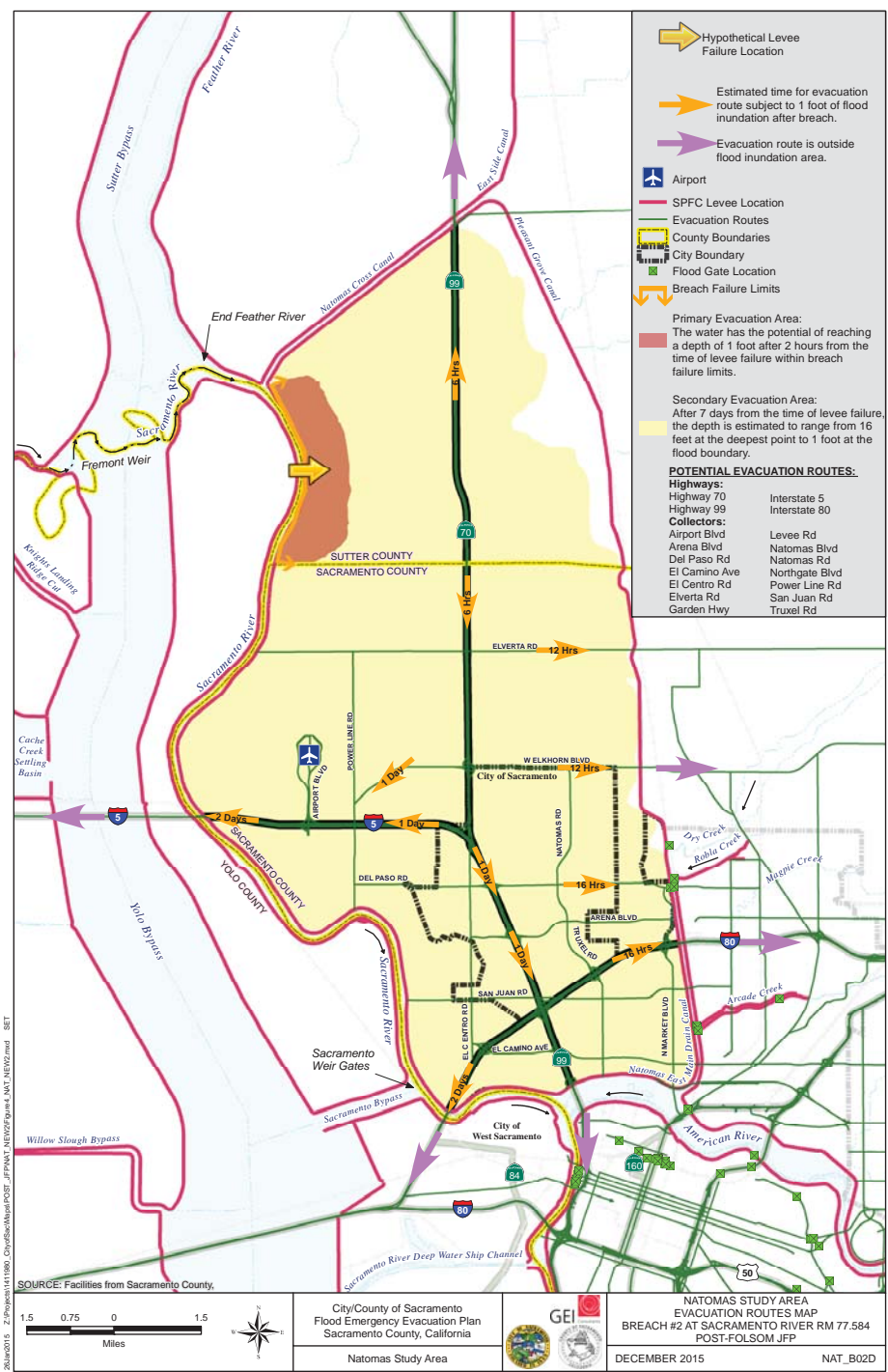
MAXIMUM FLOOD DEPTH MAP



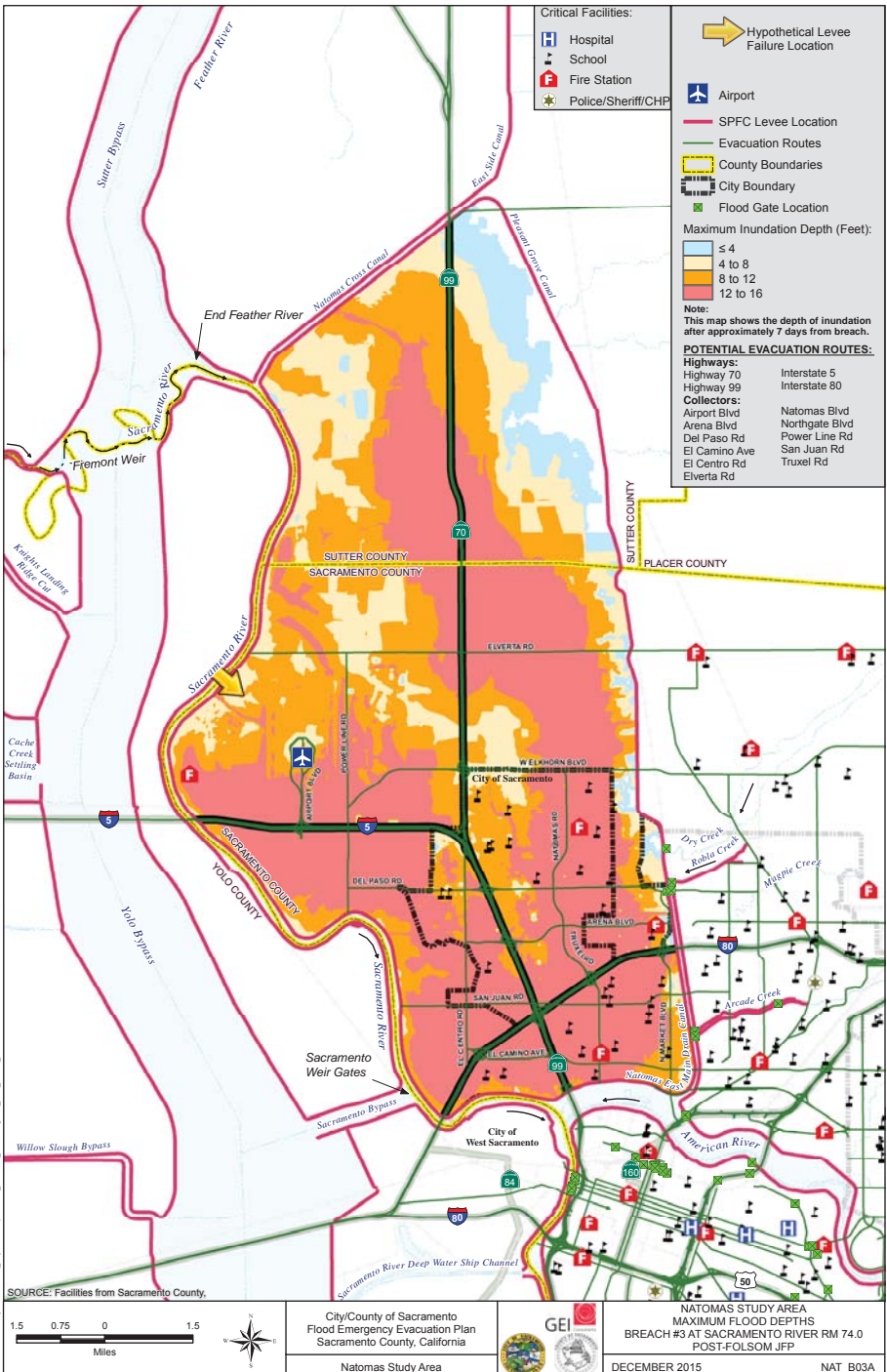
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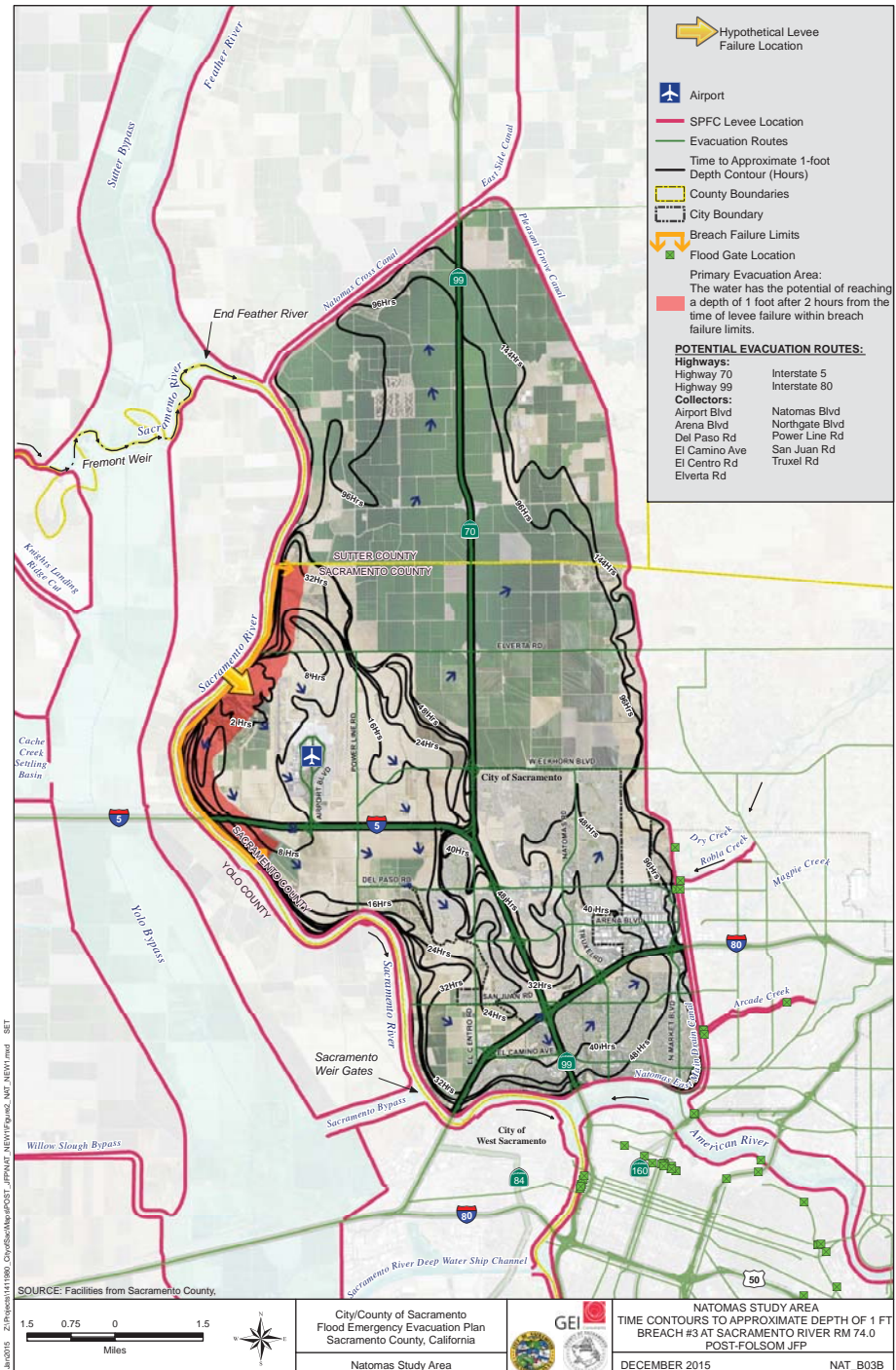
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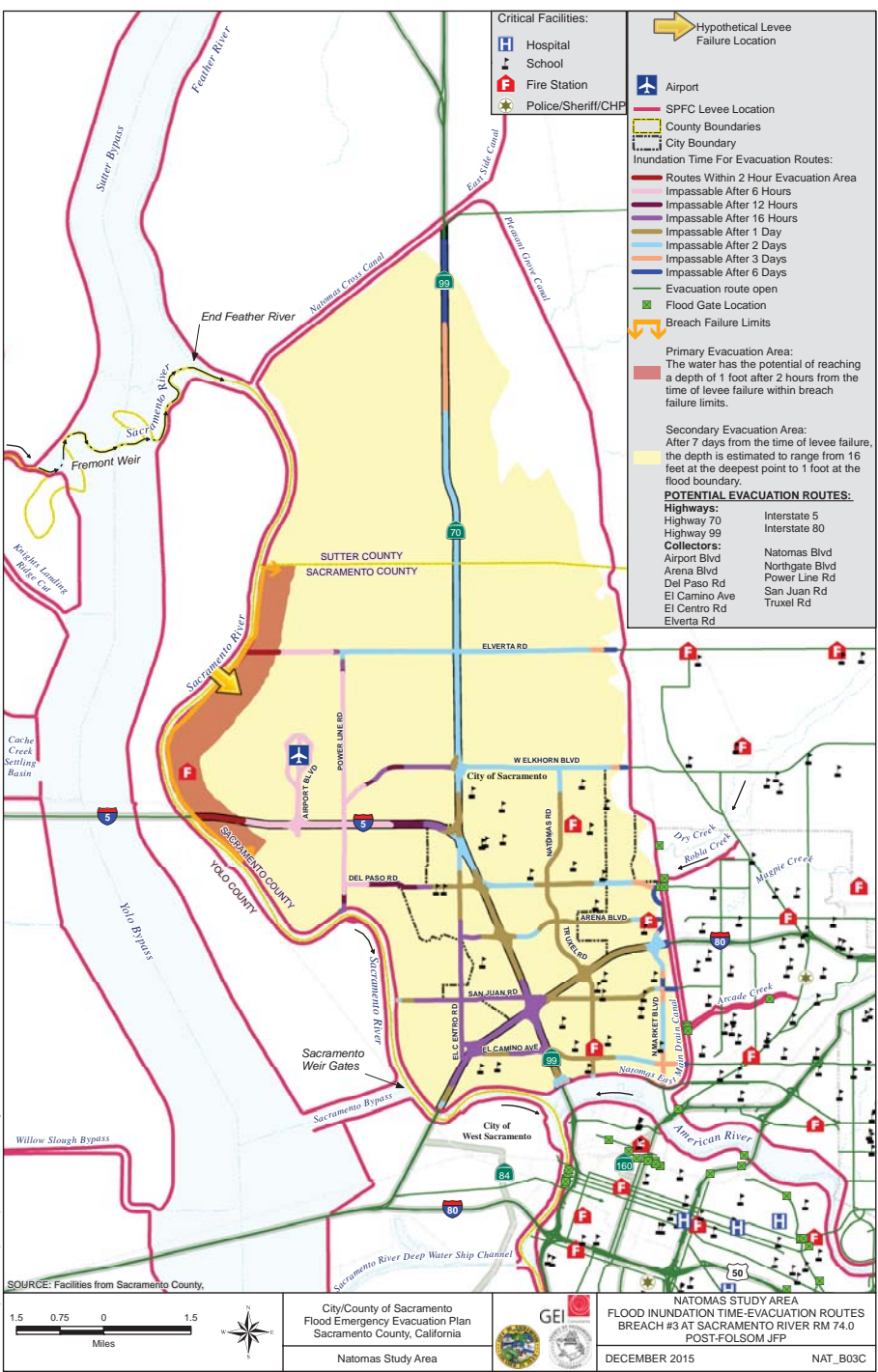
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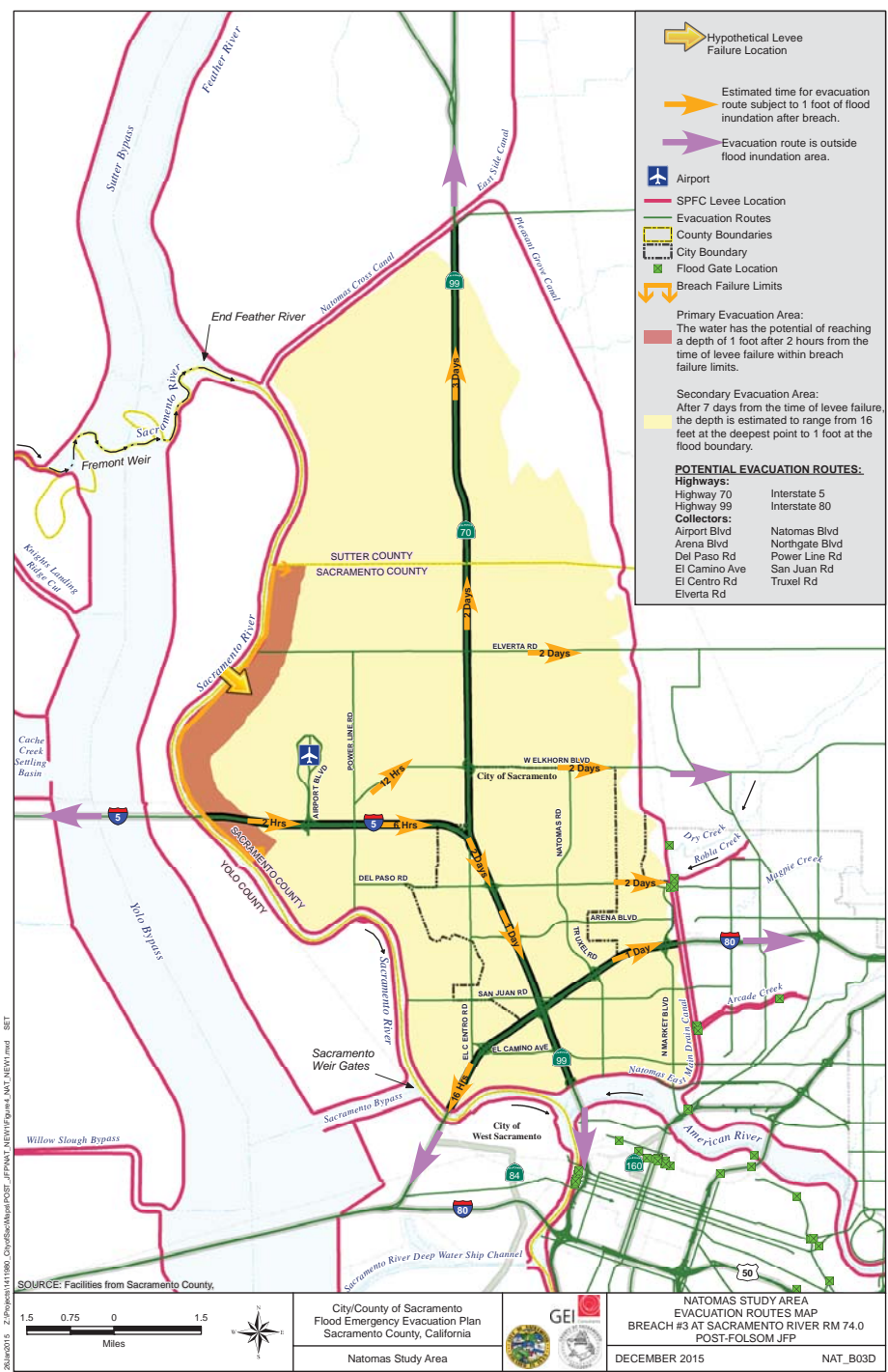
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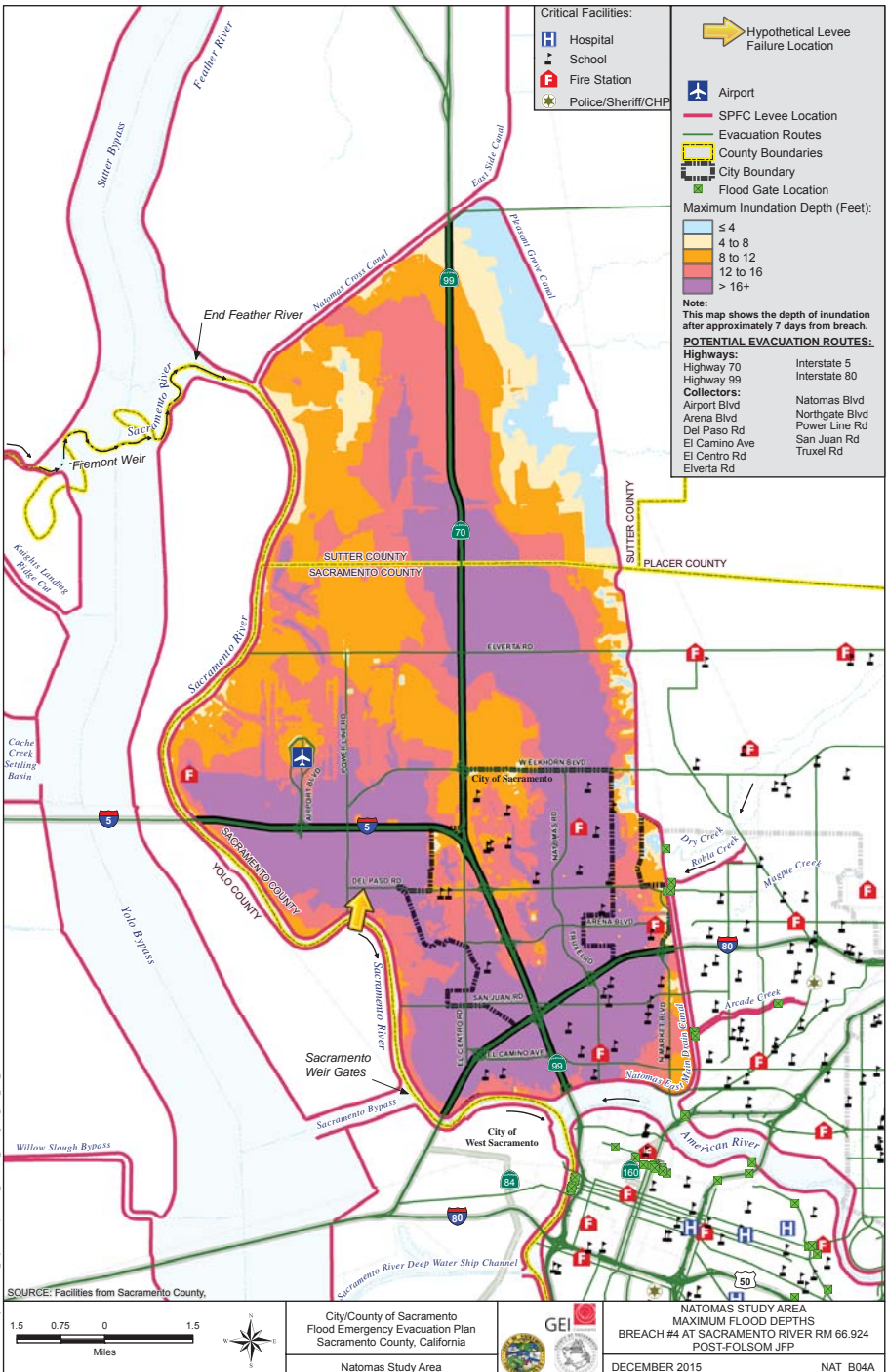
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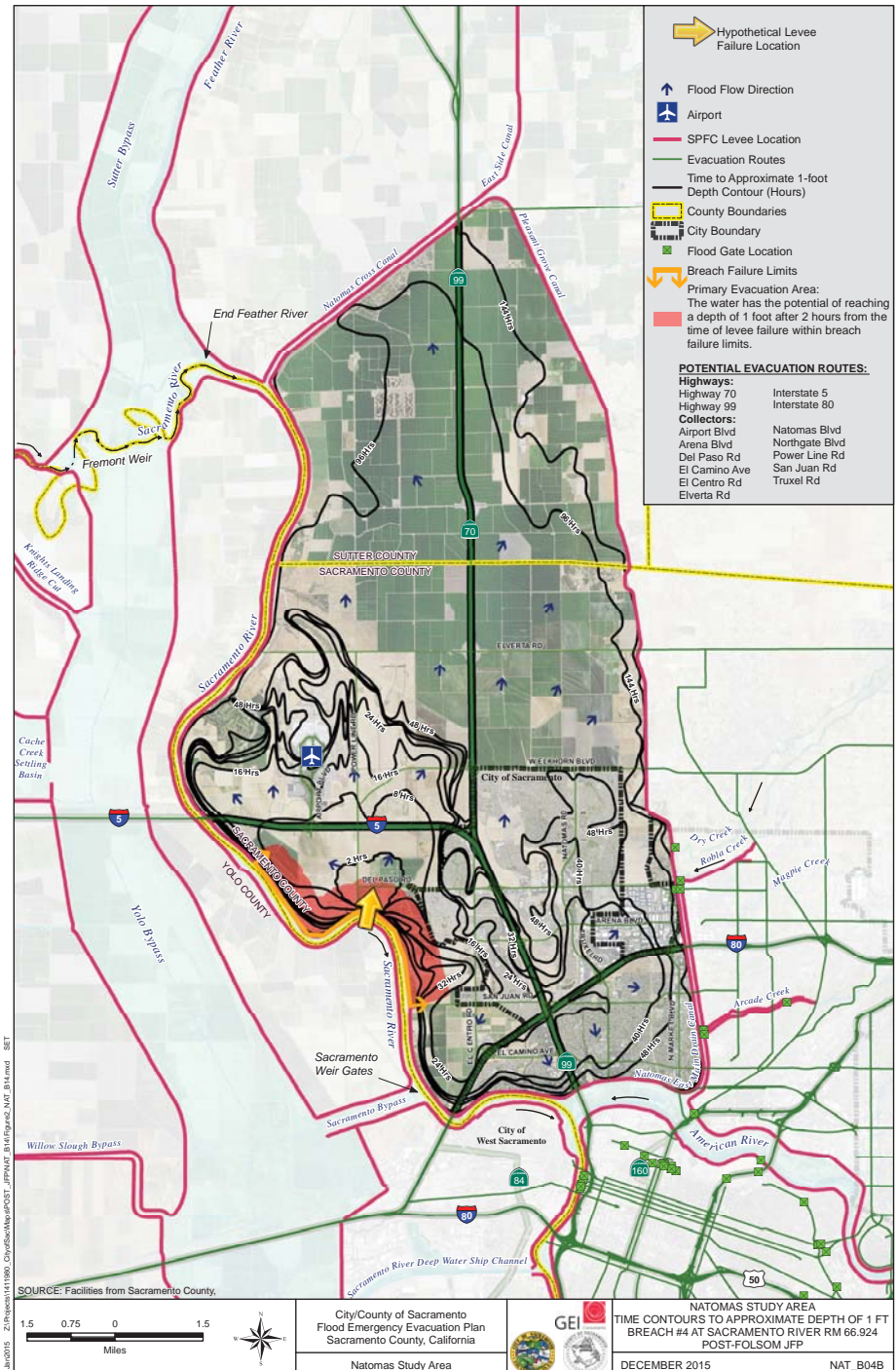
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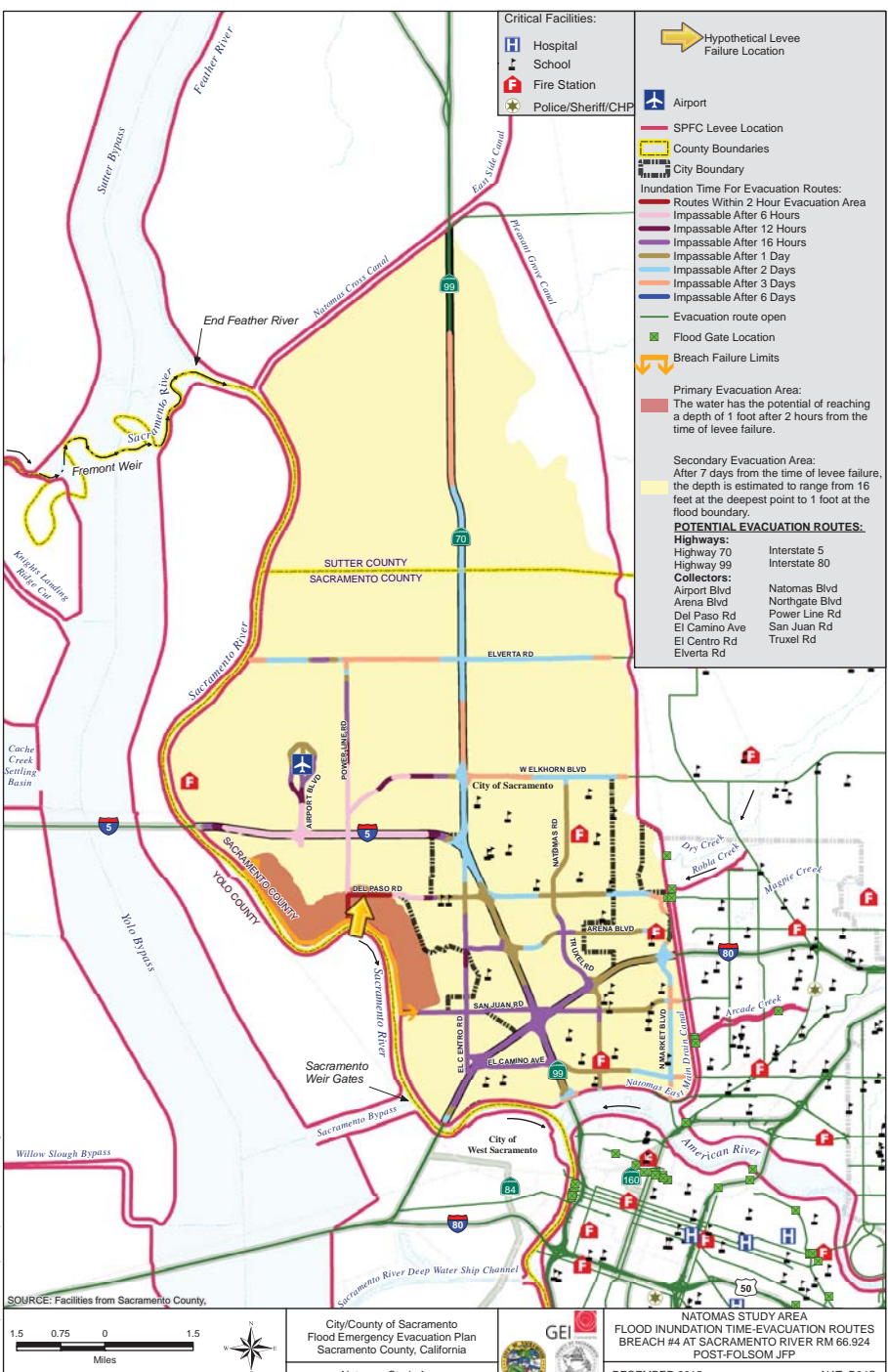
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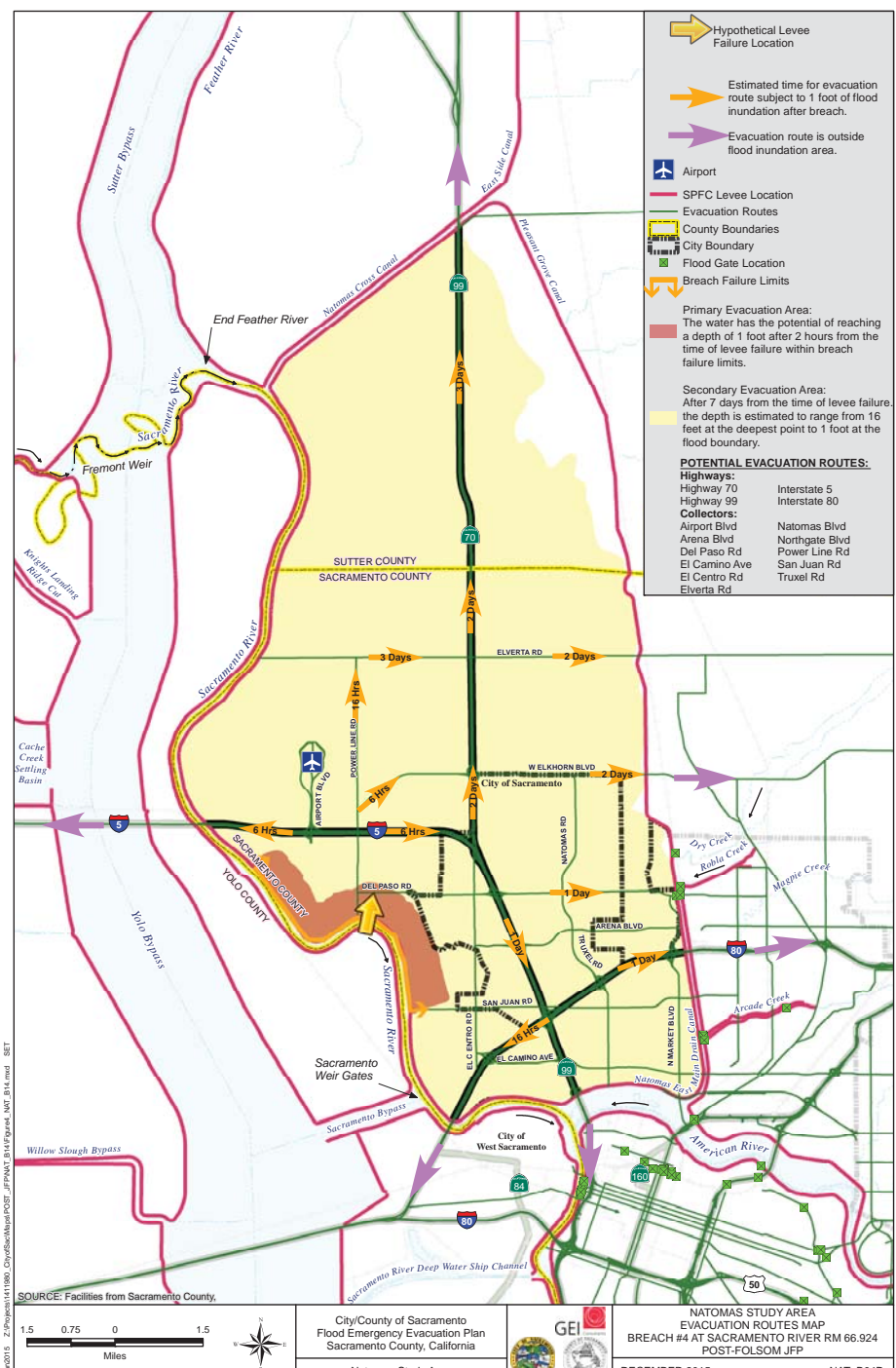
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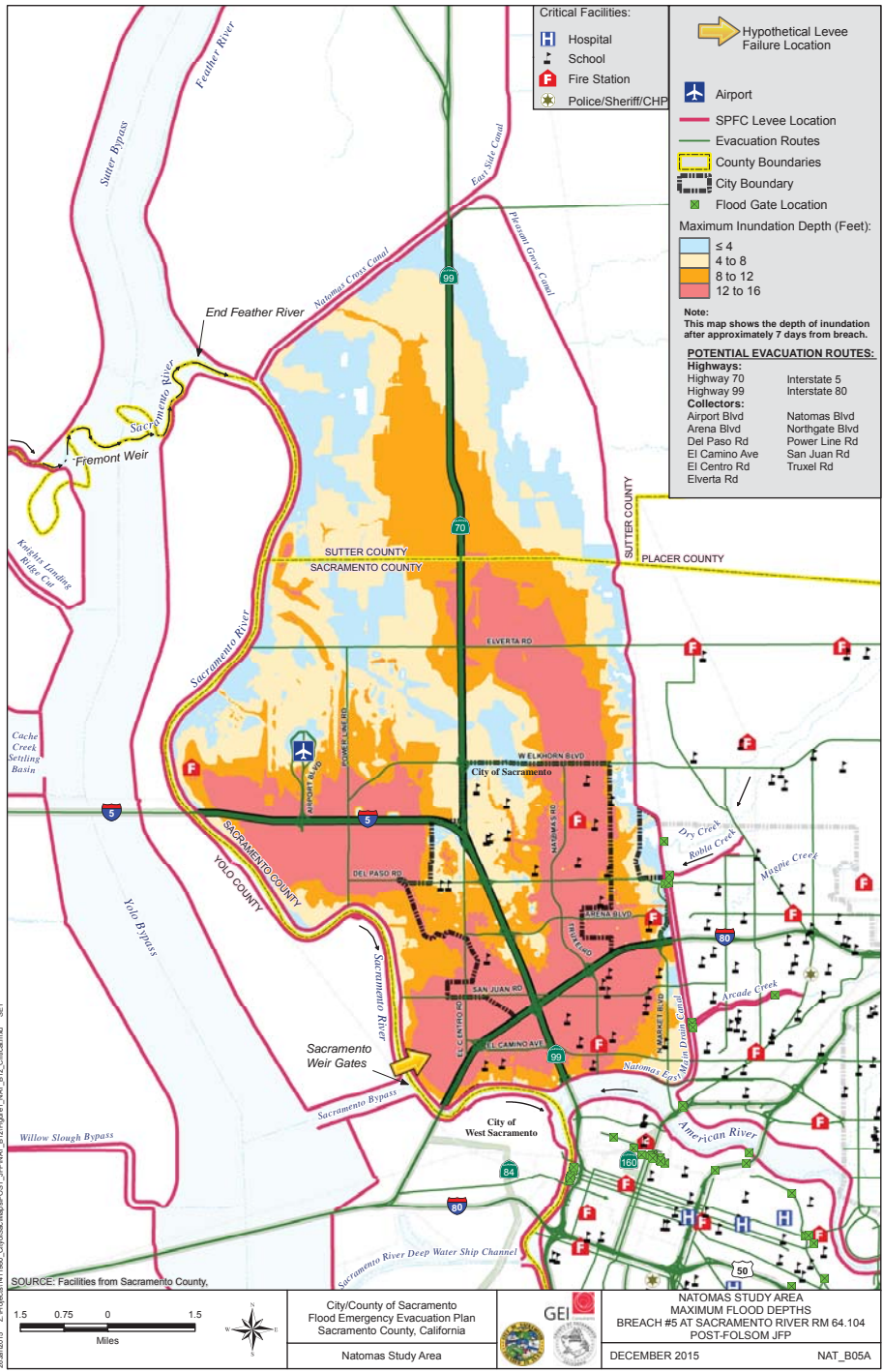
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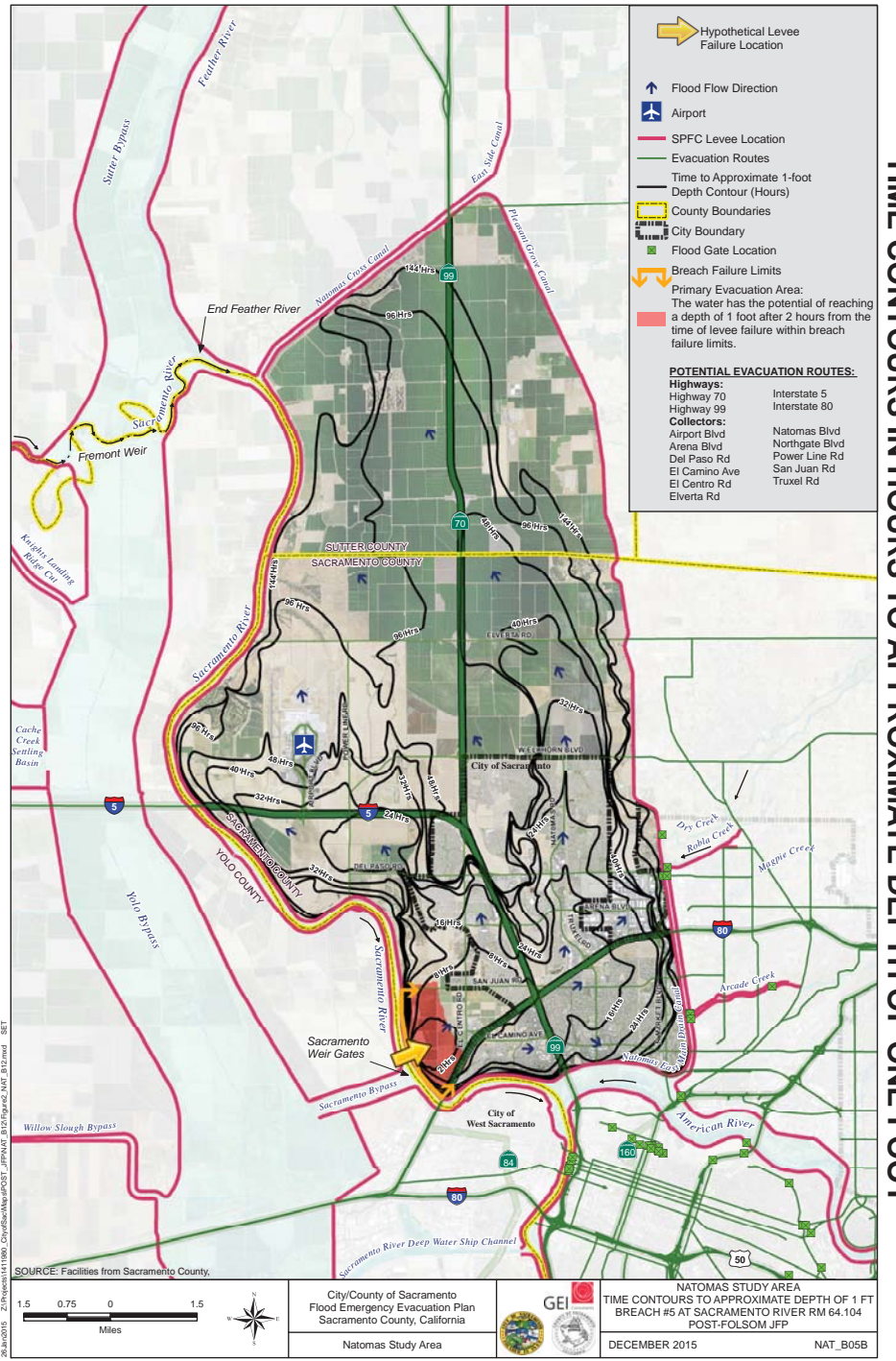
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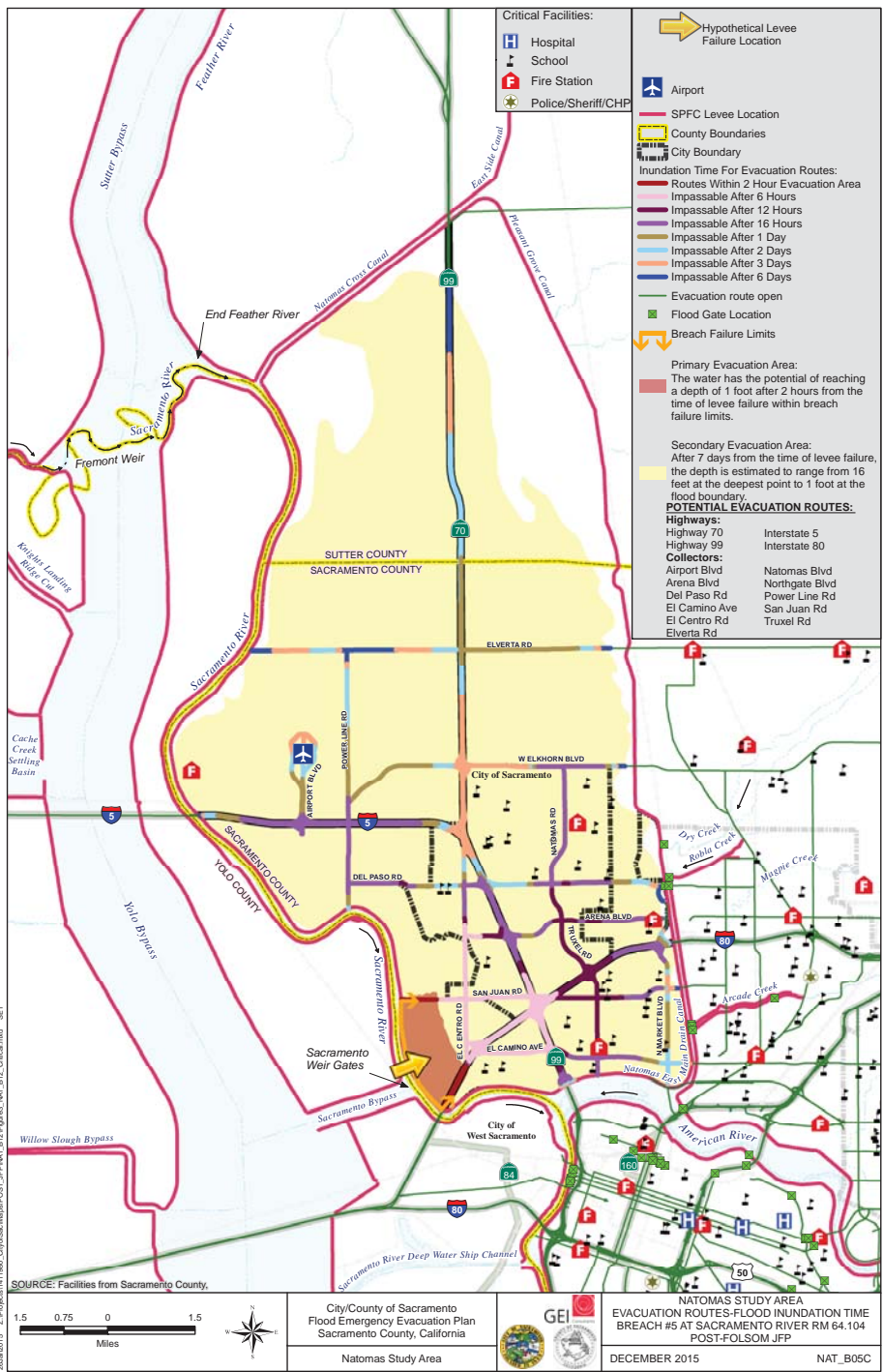
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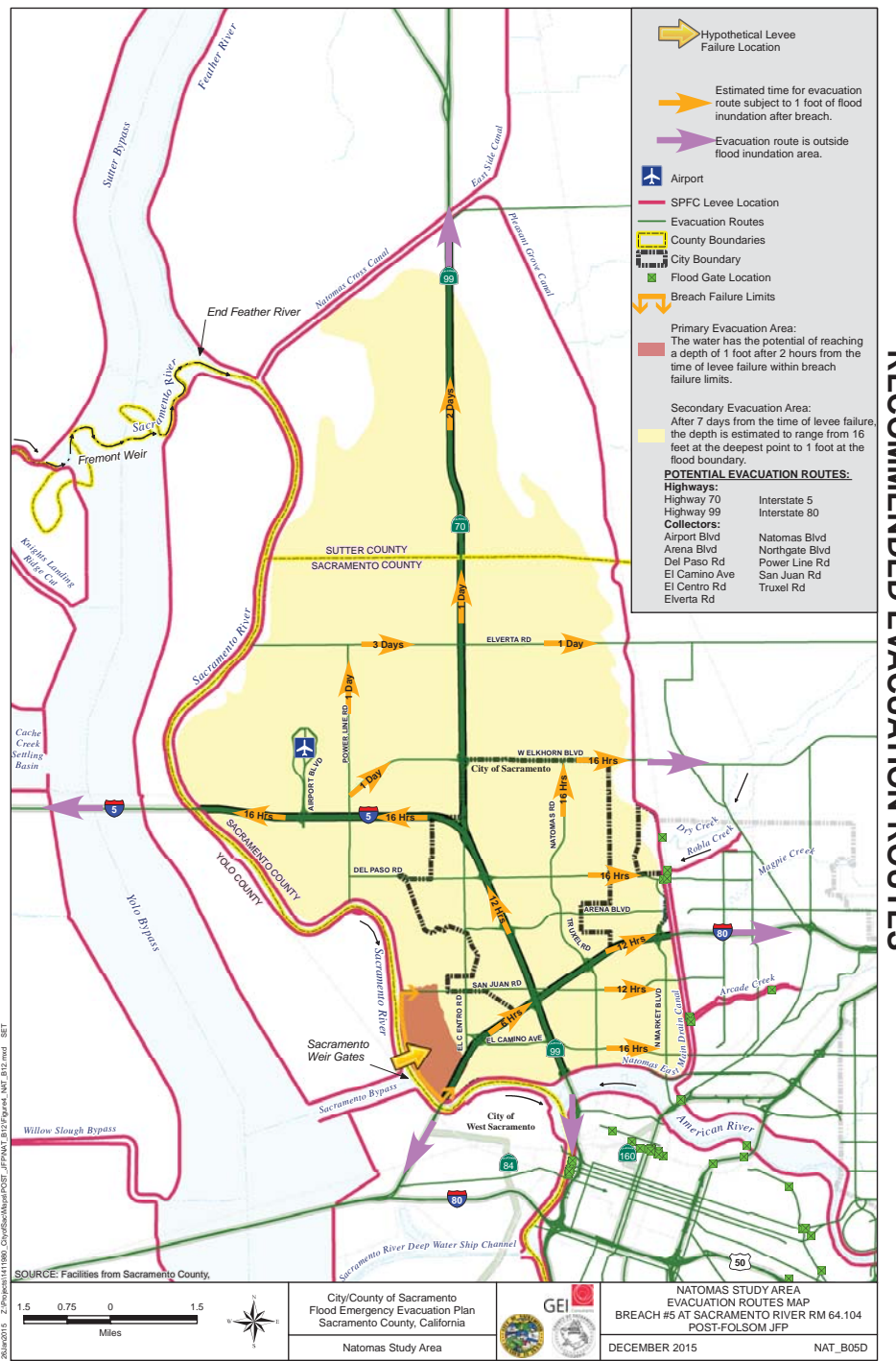
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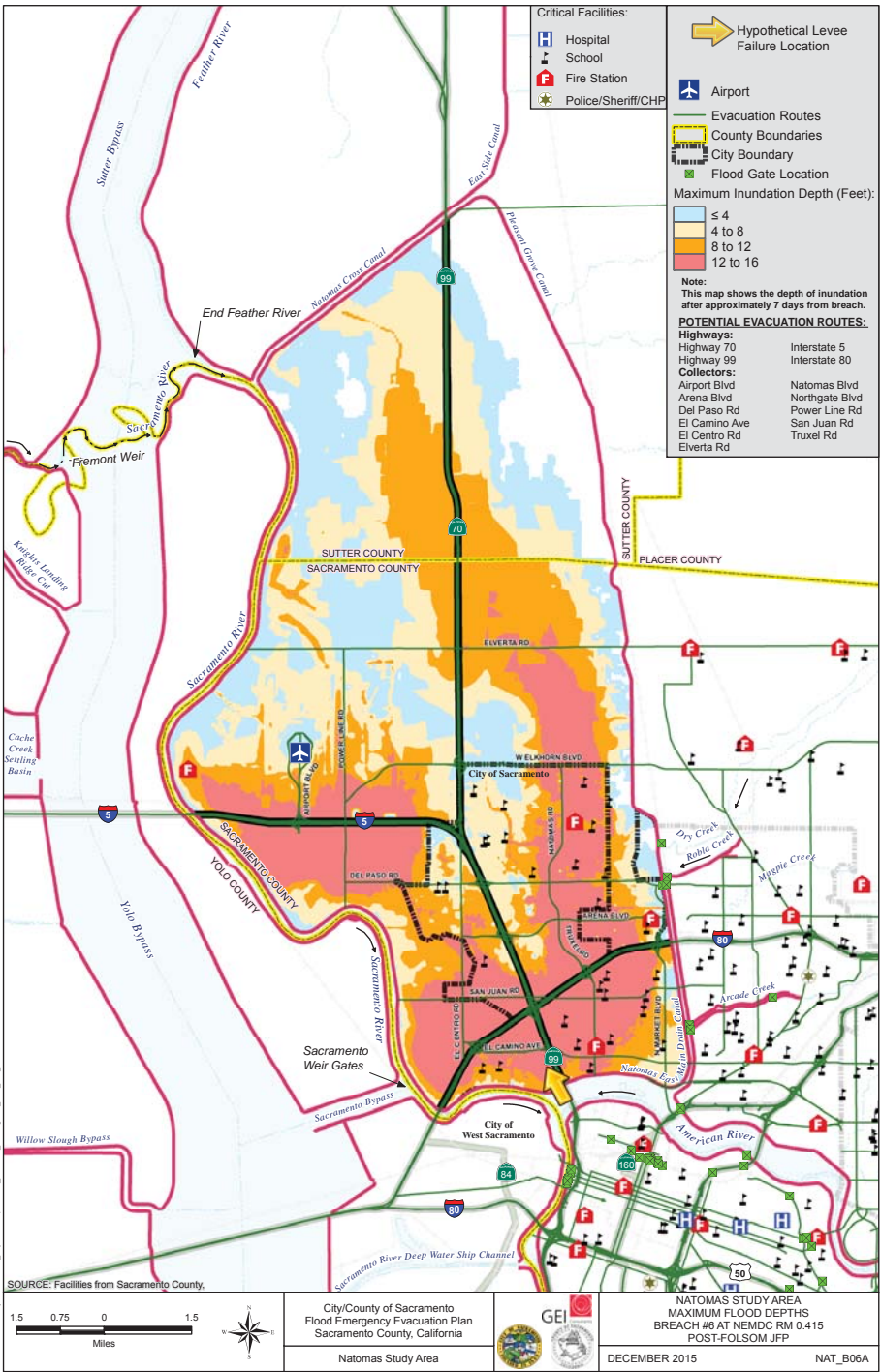
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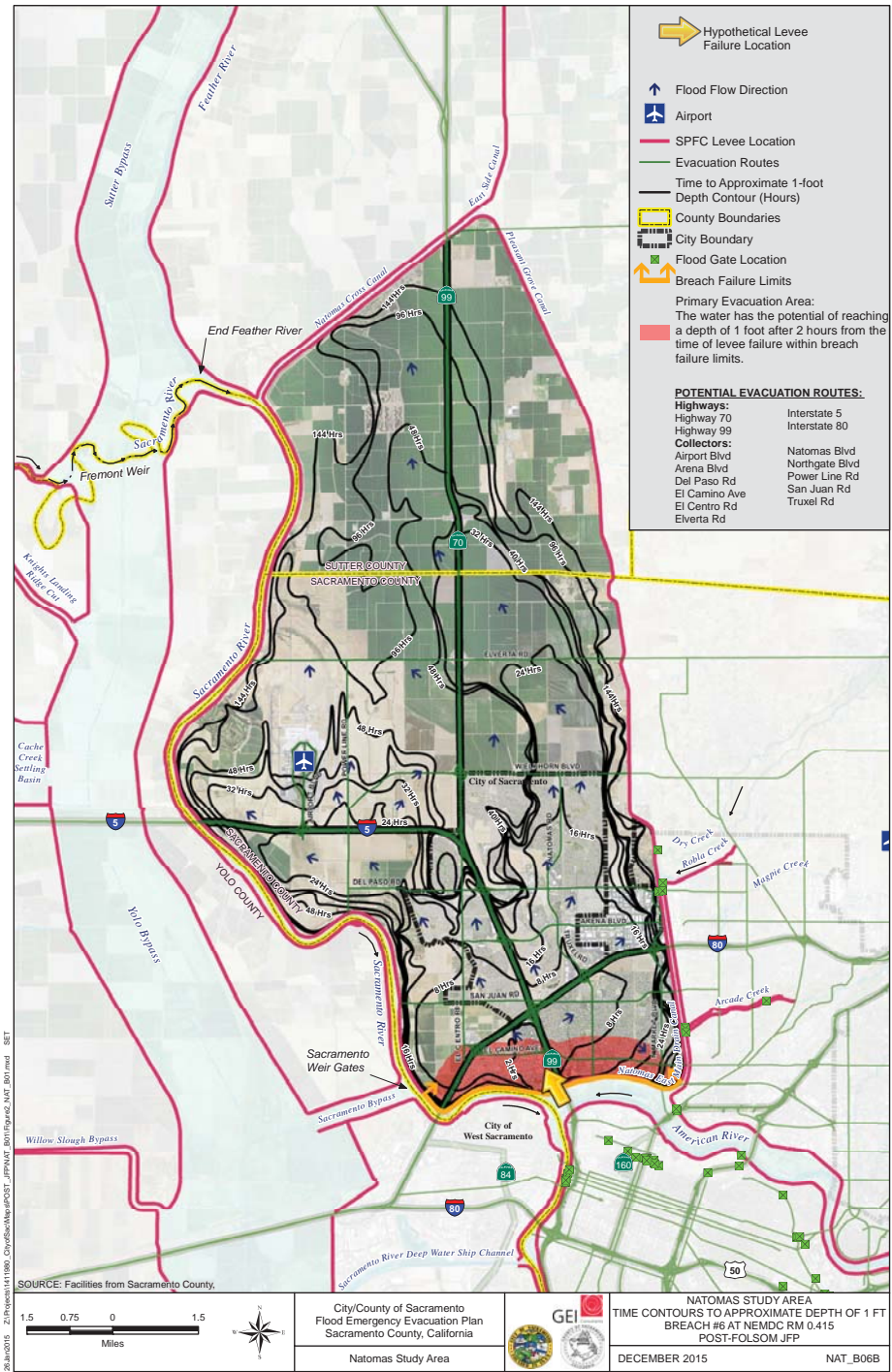
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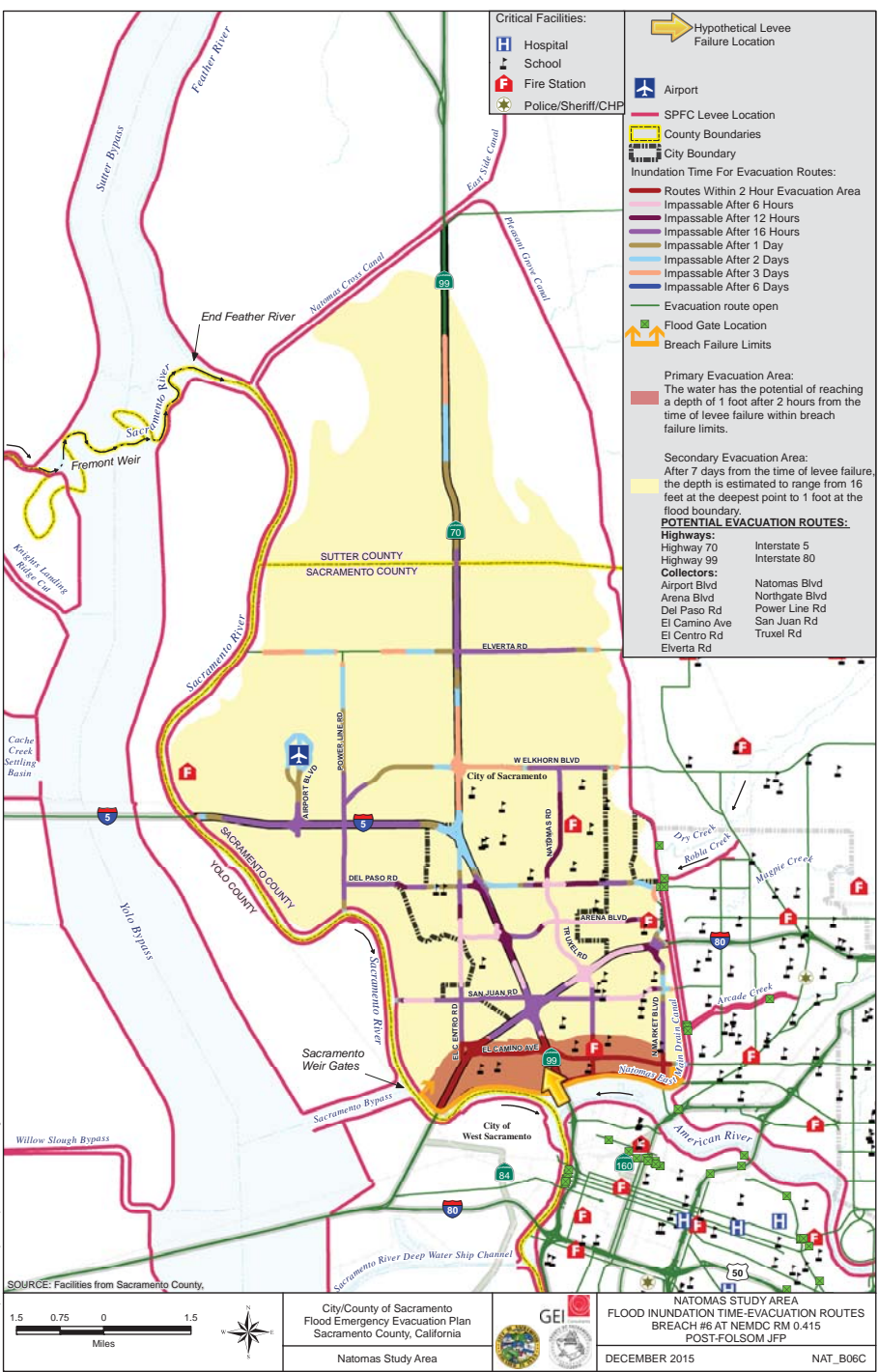
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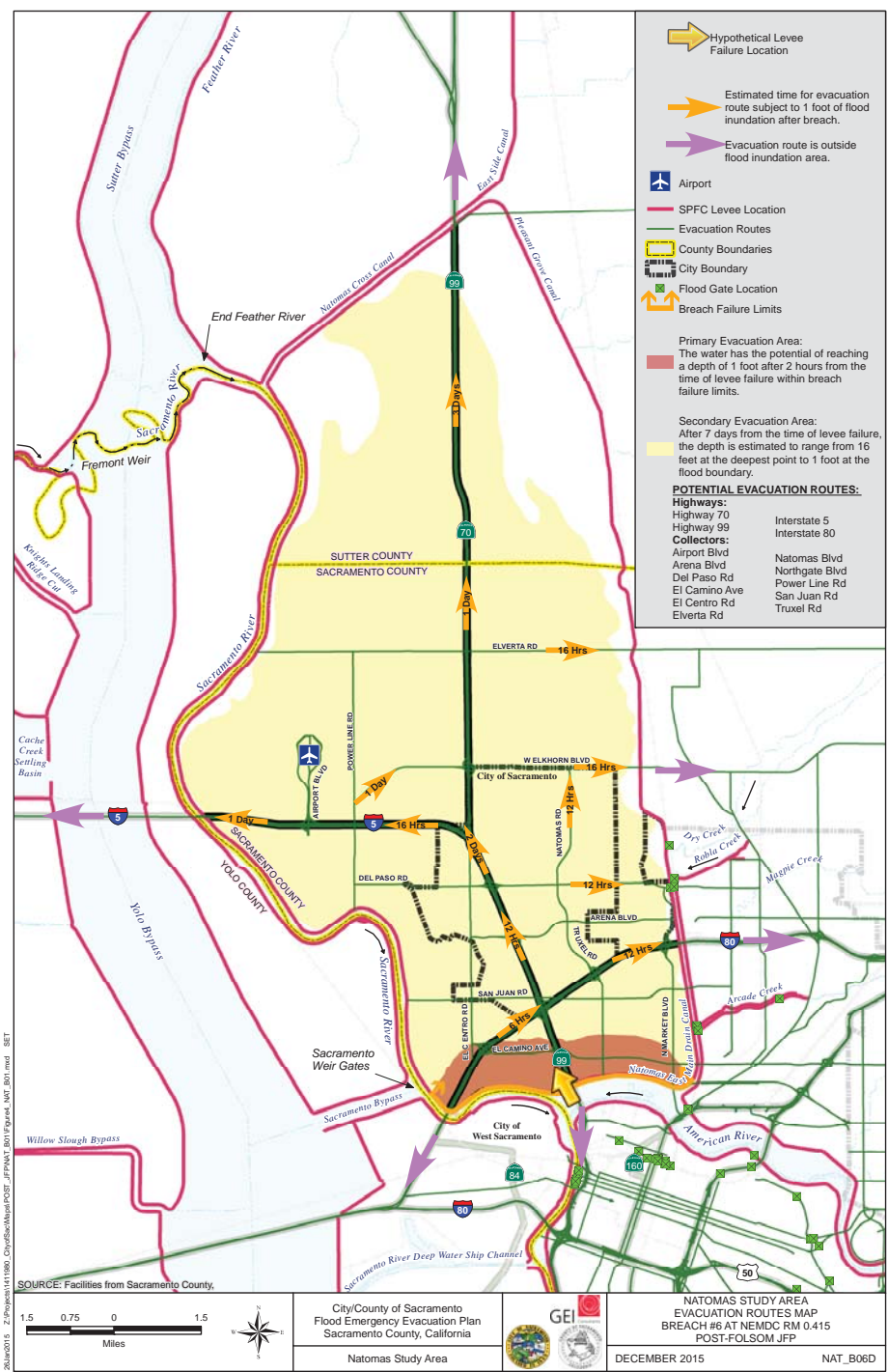
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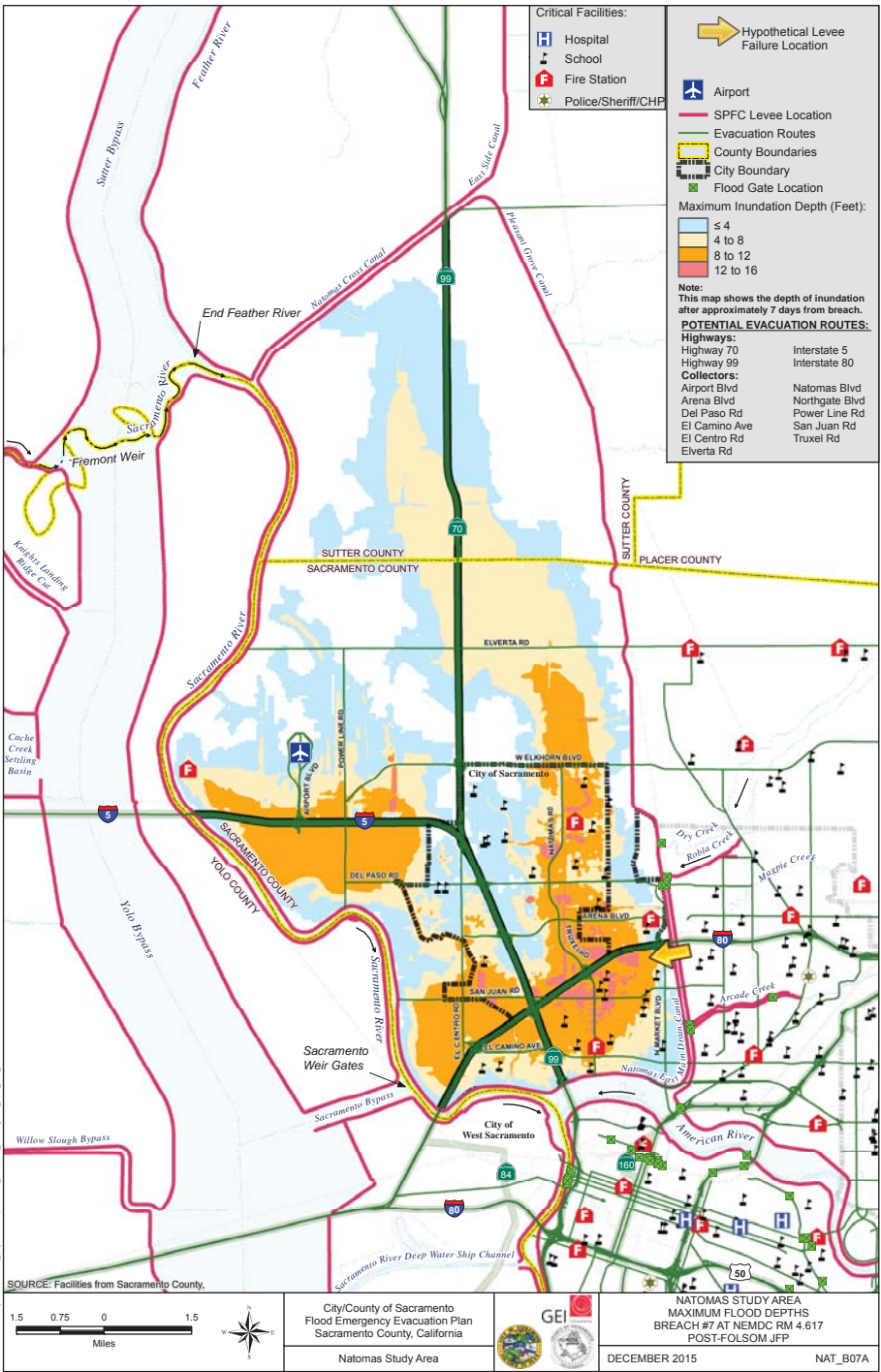
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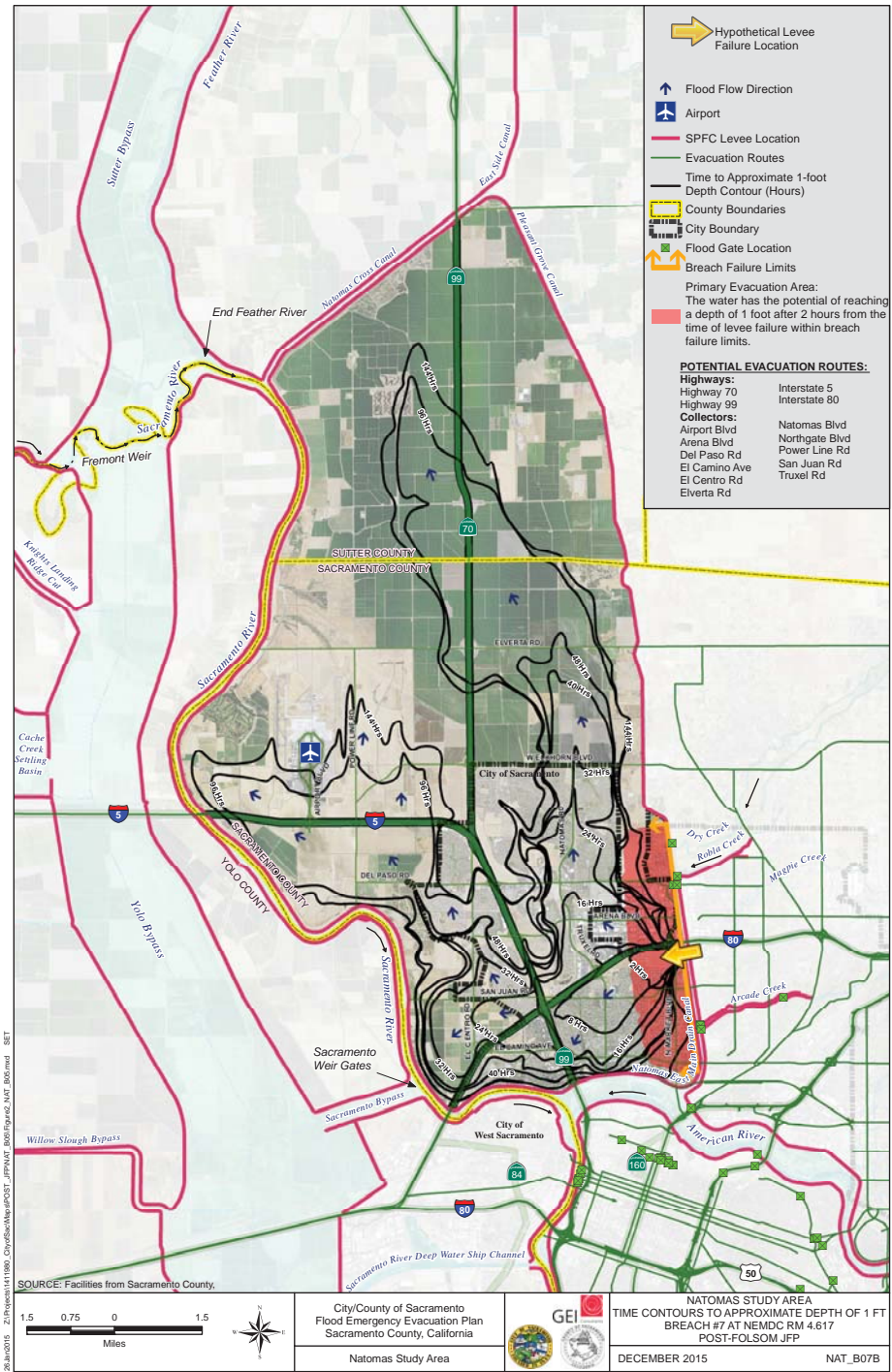
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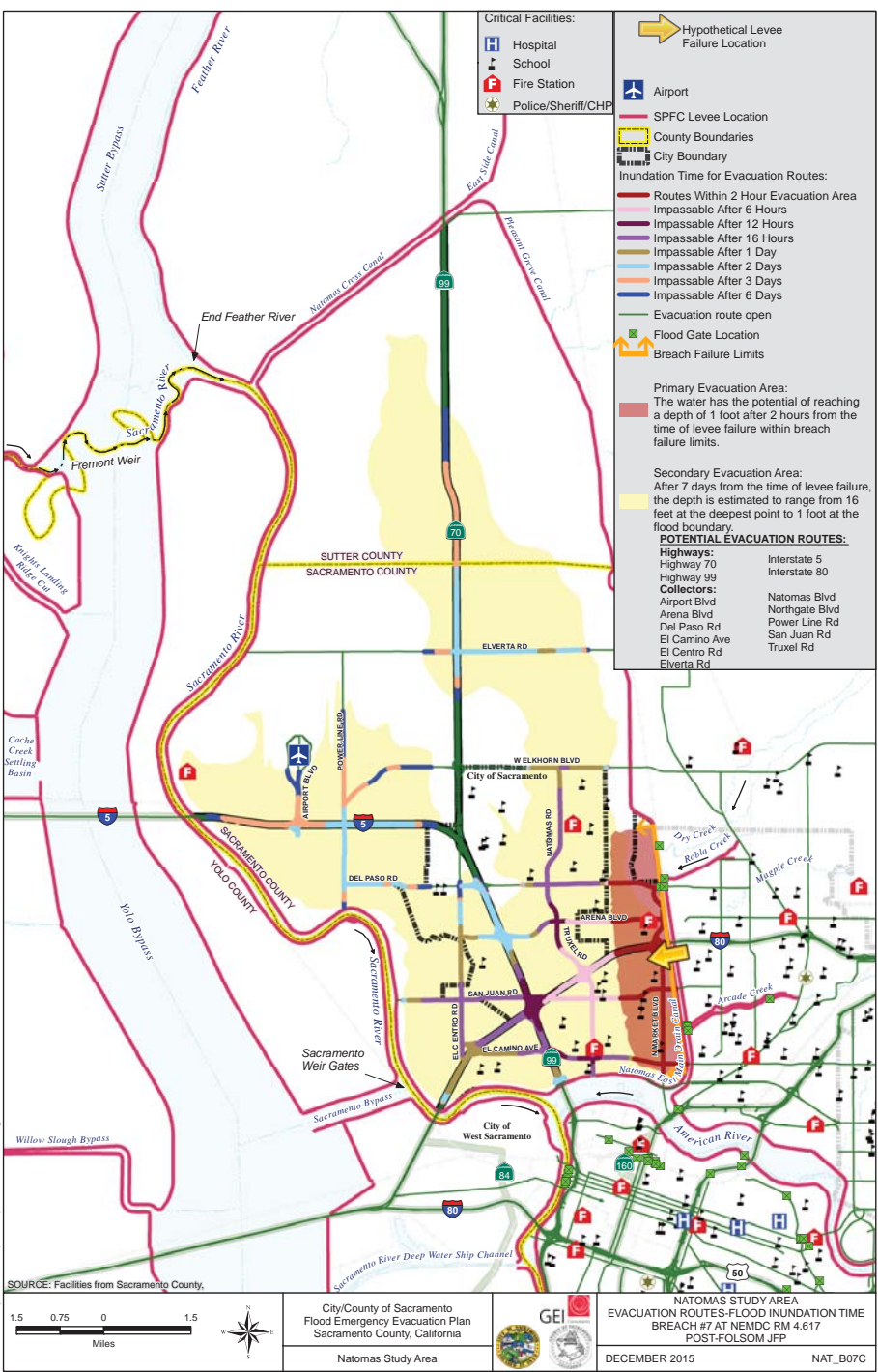
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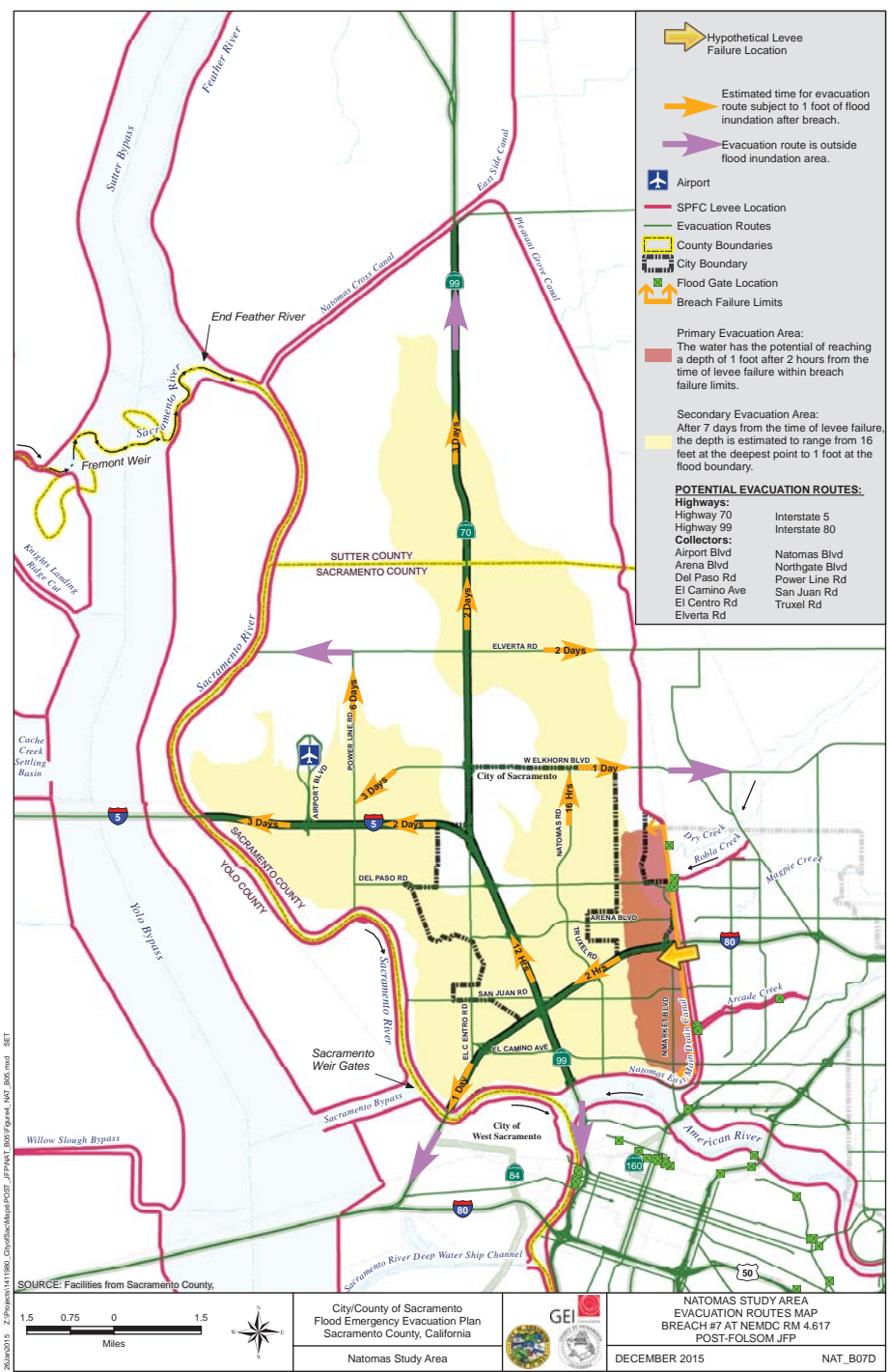
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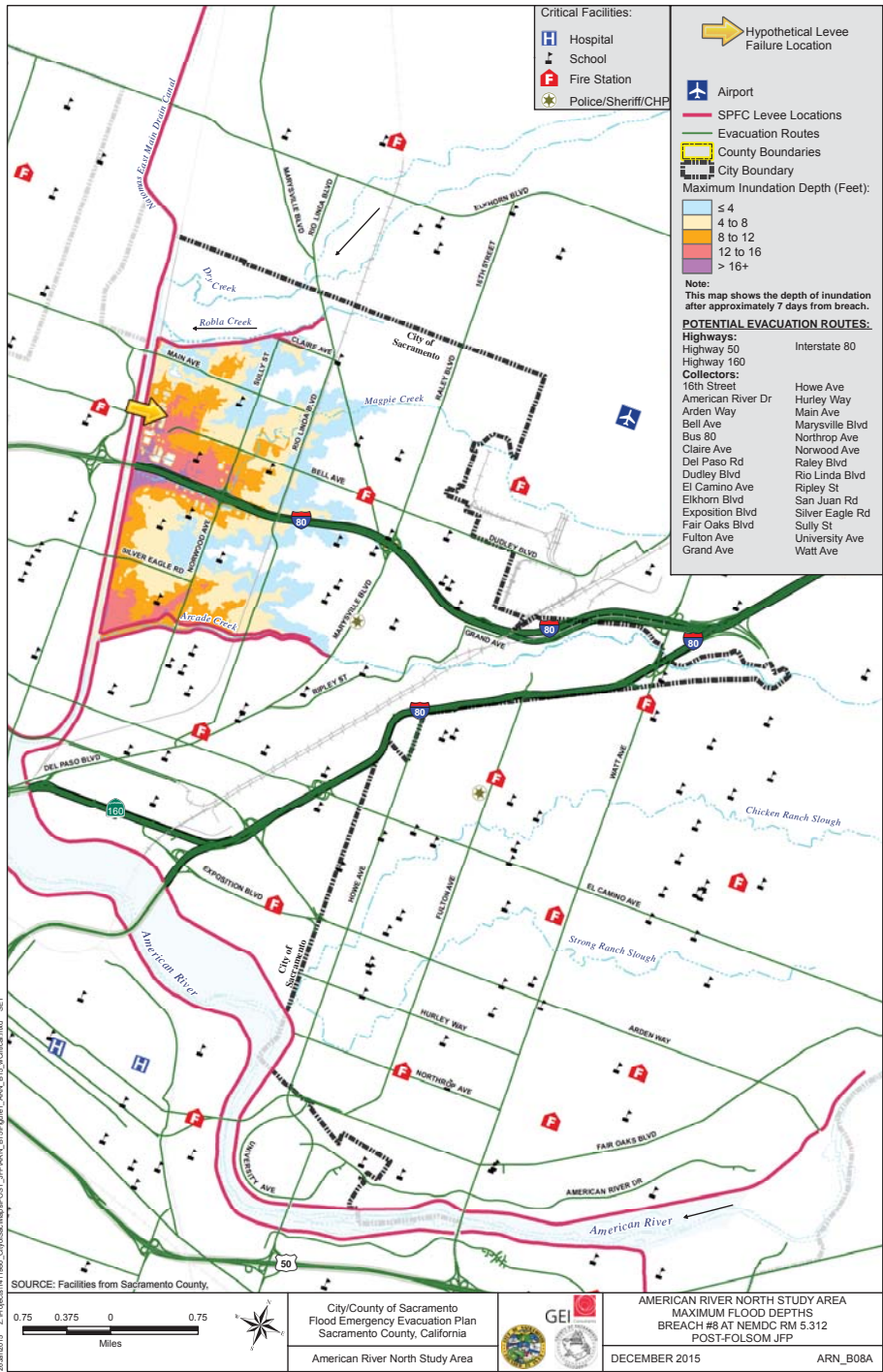
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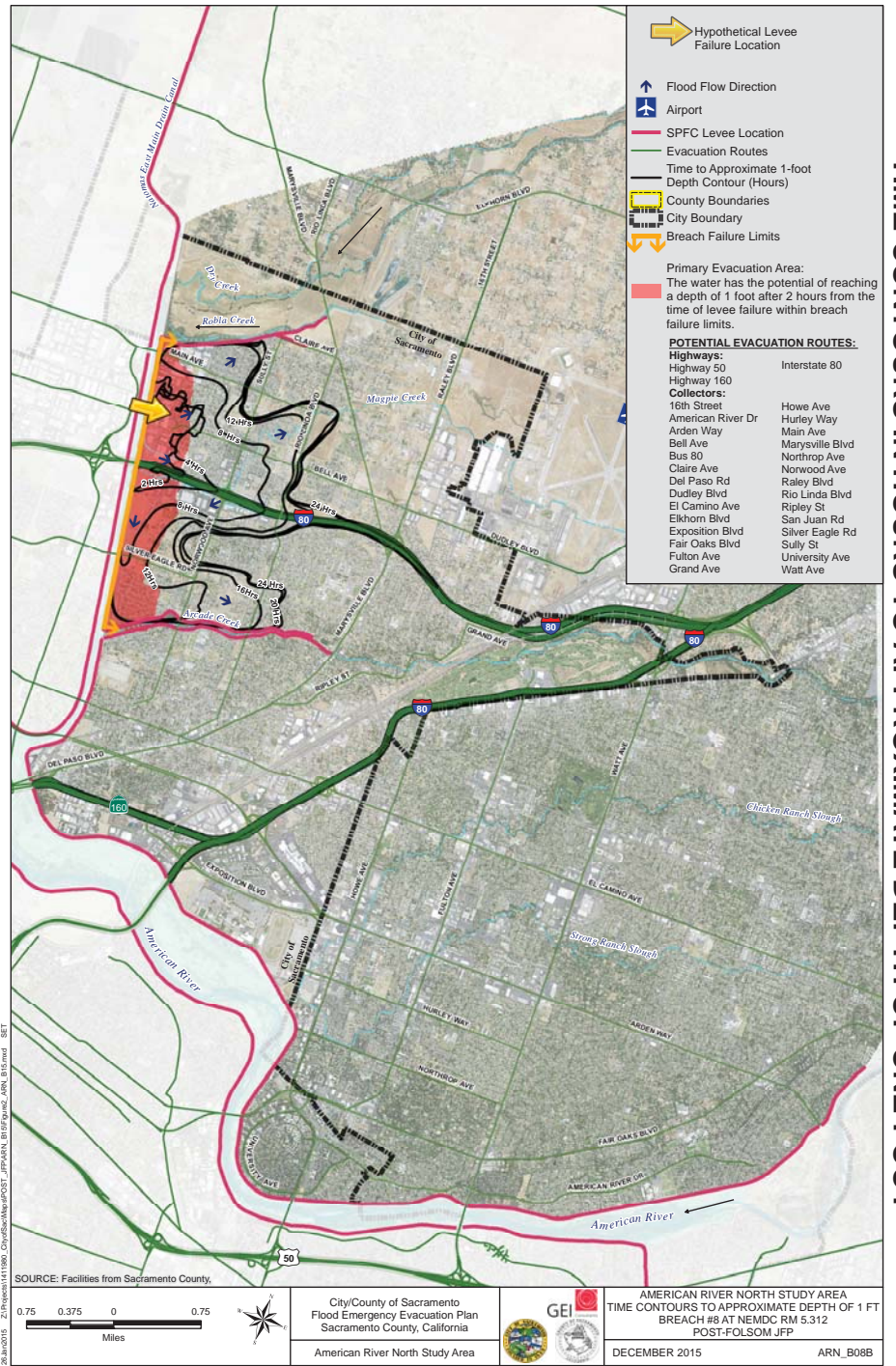
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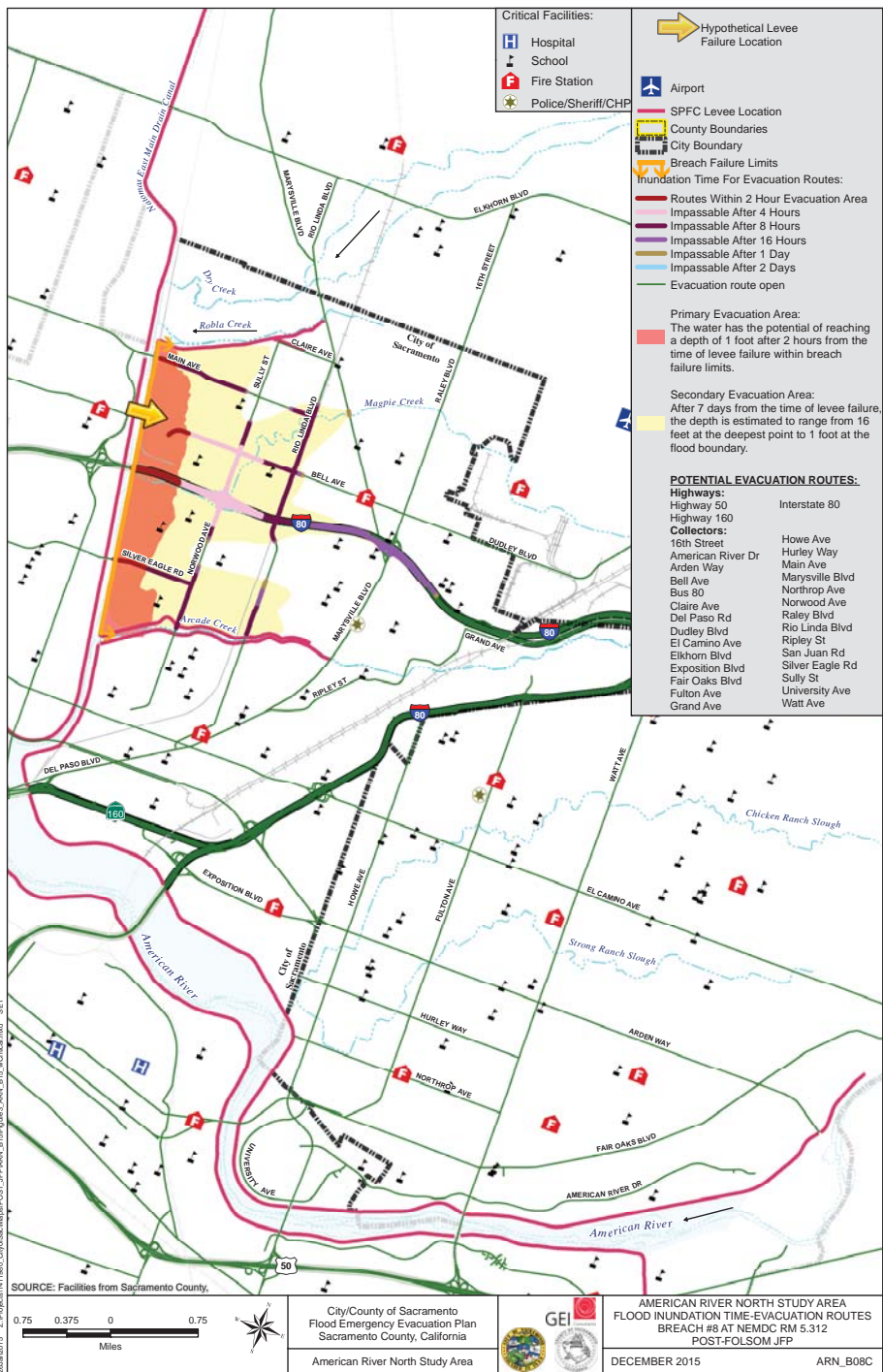
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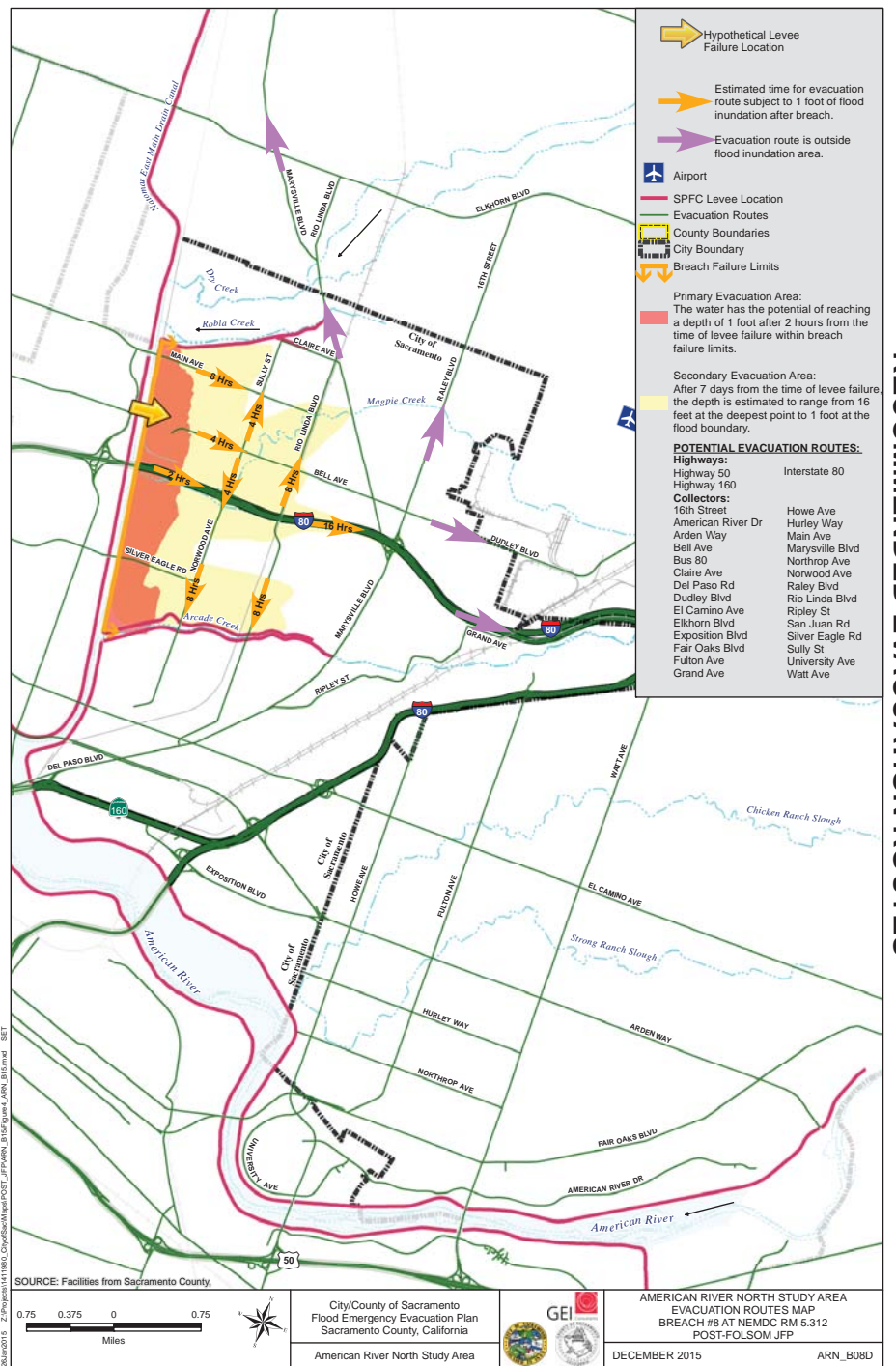
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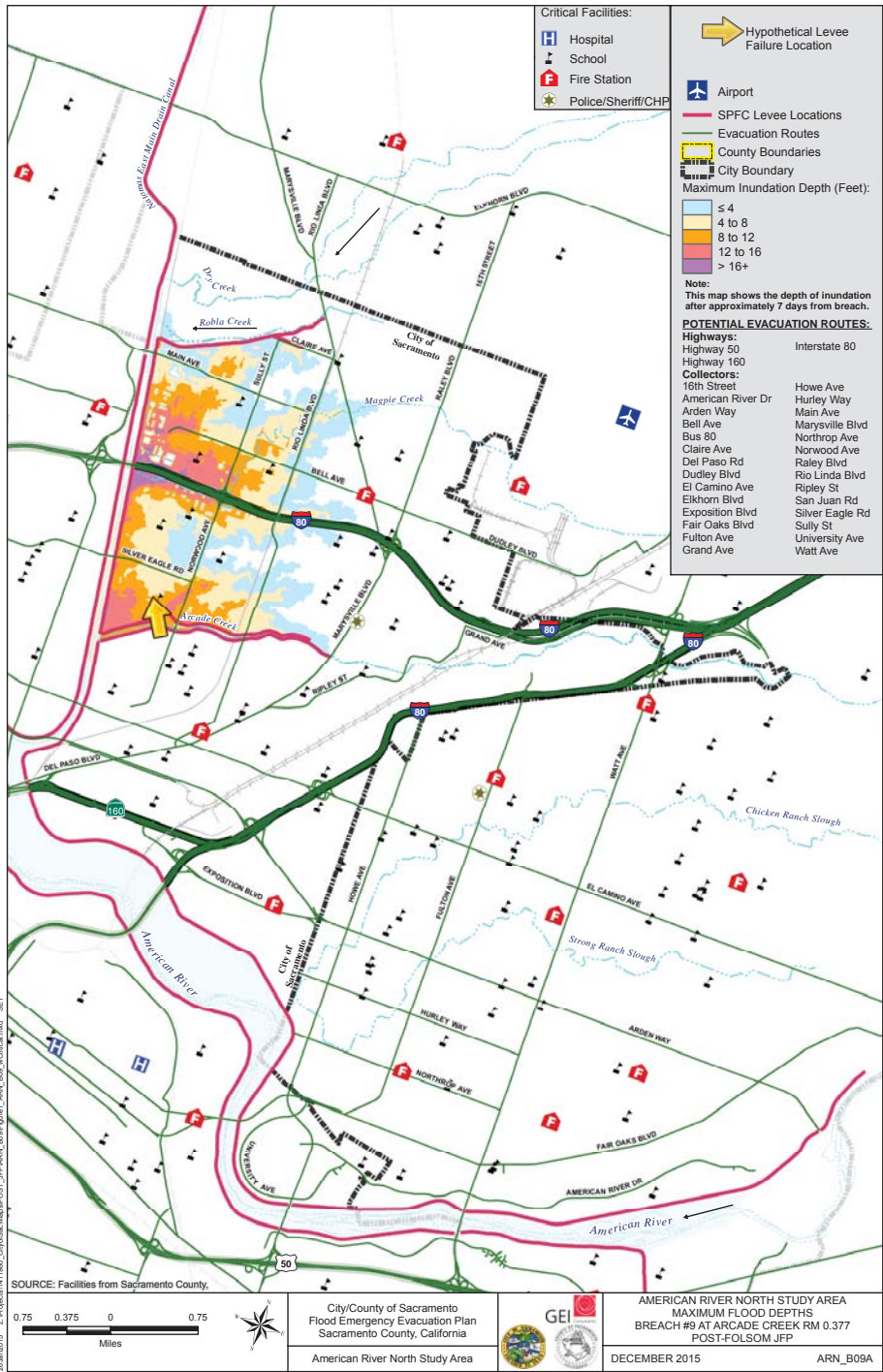
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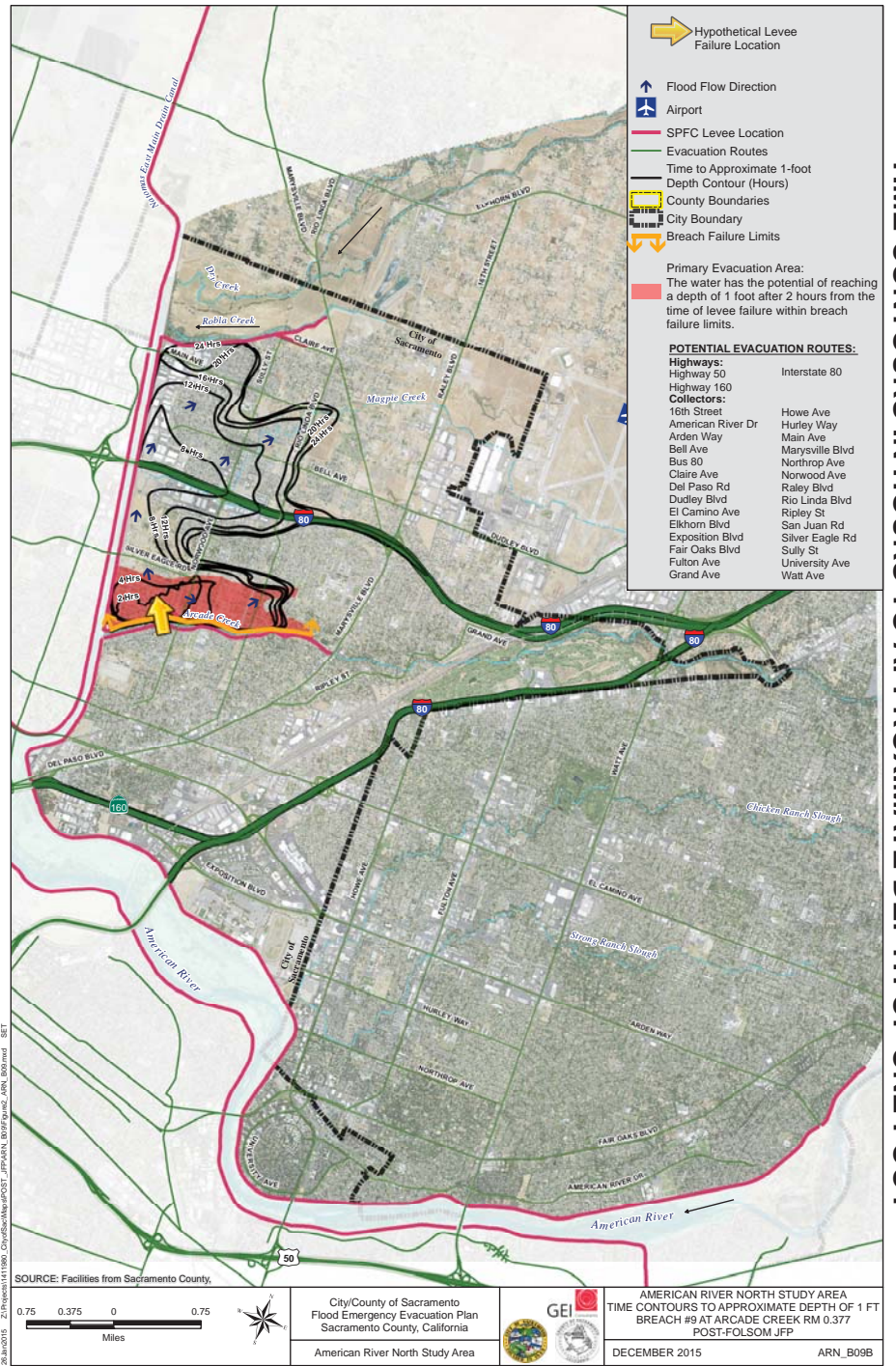
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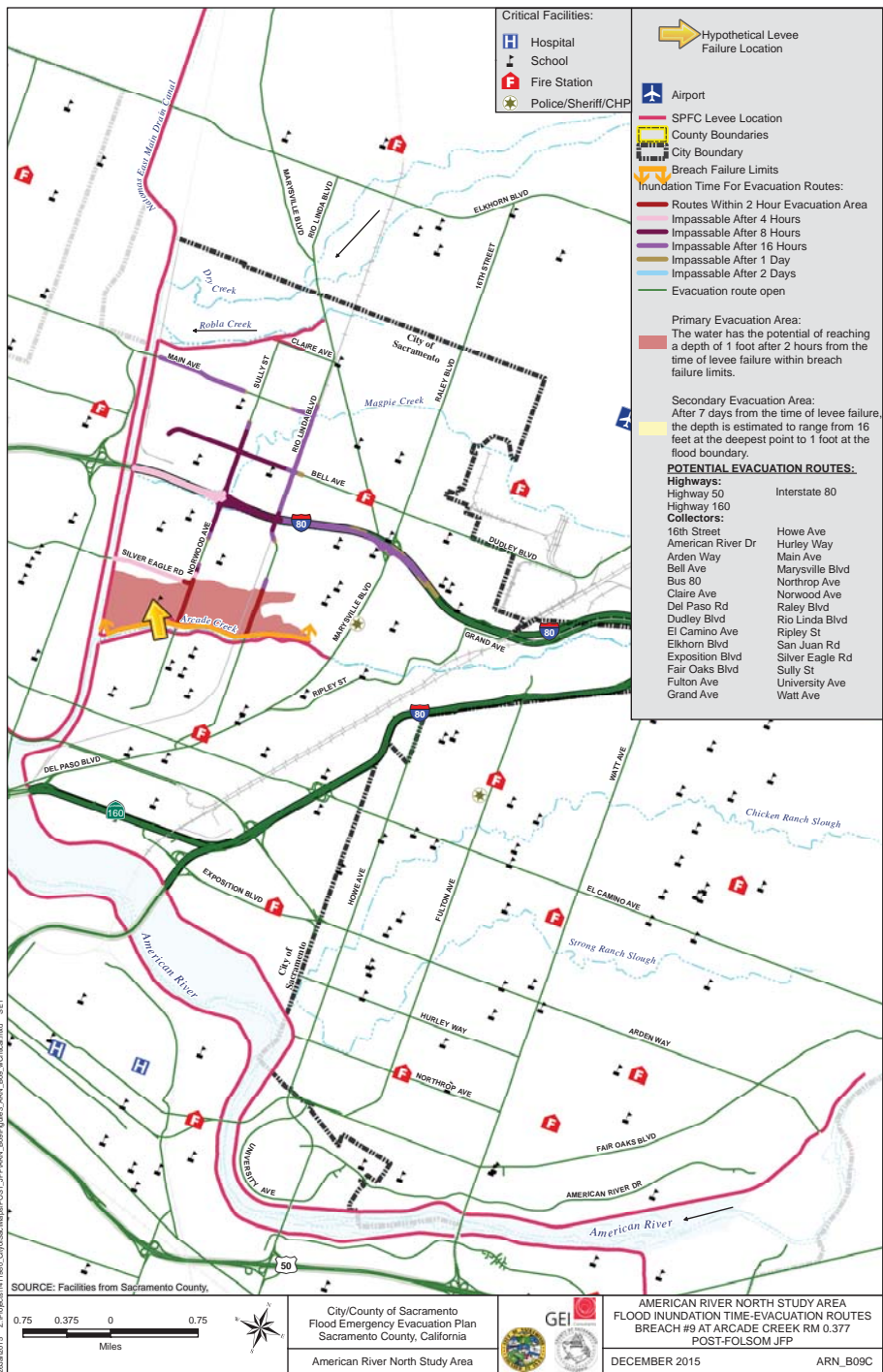
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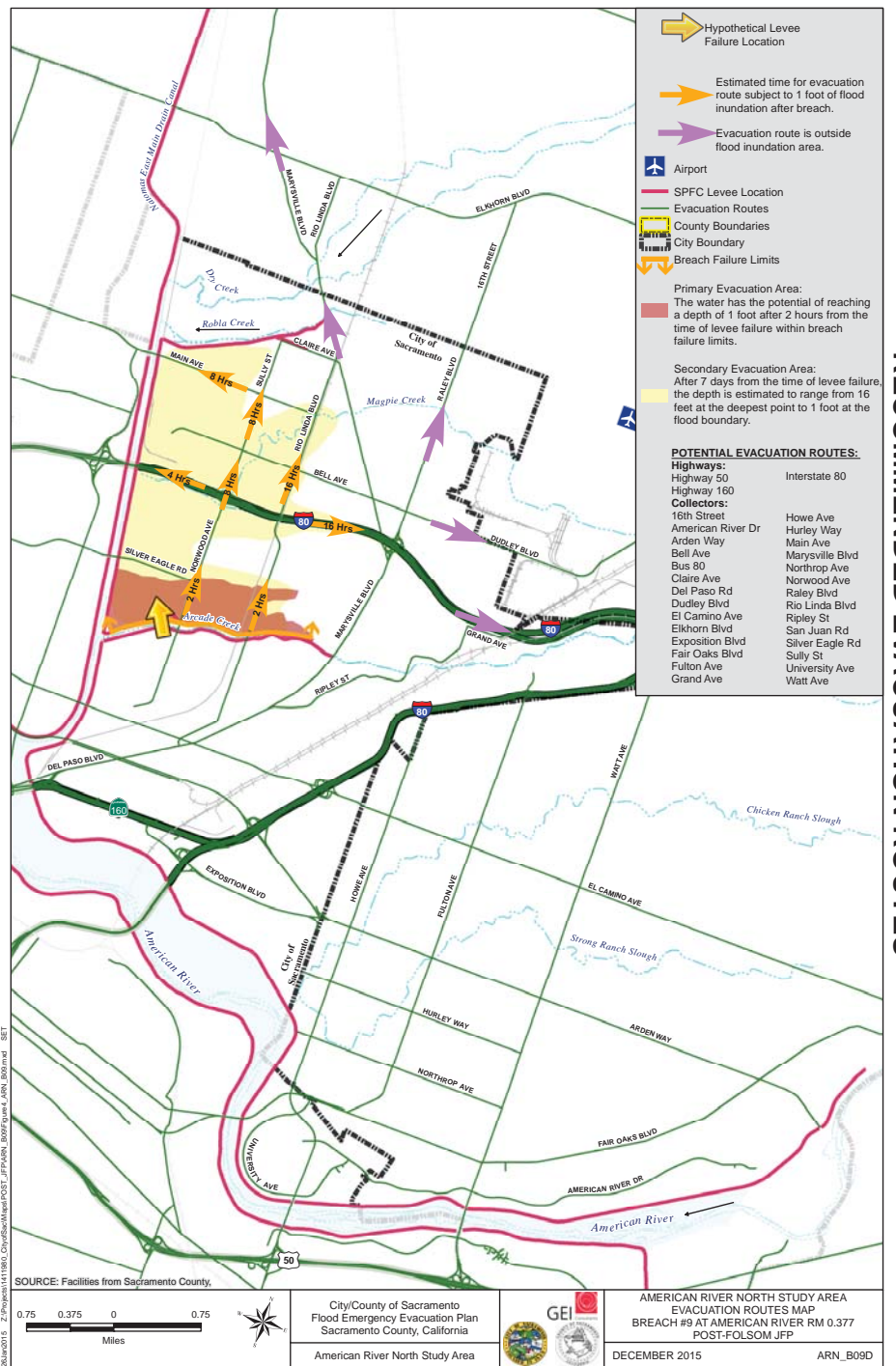
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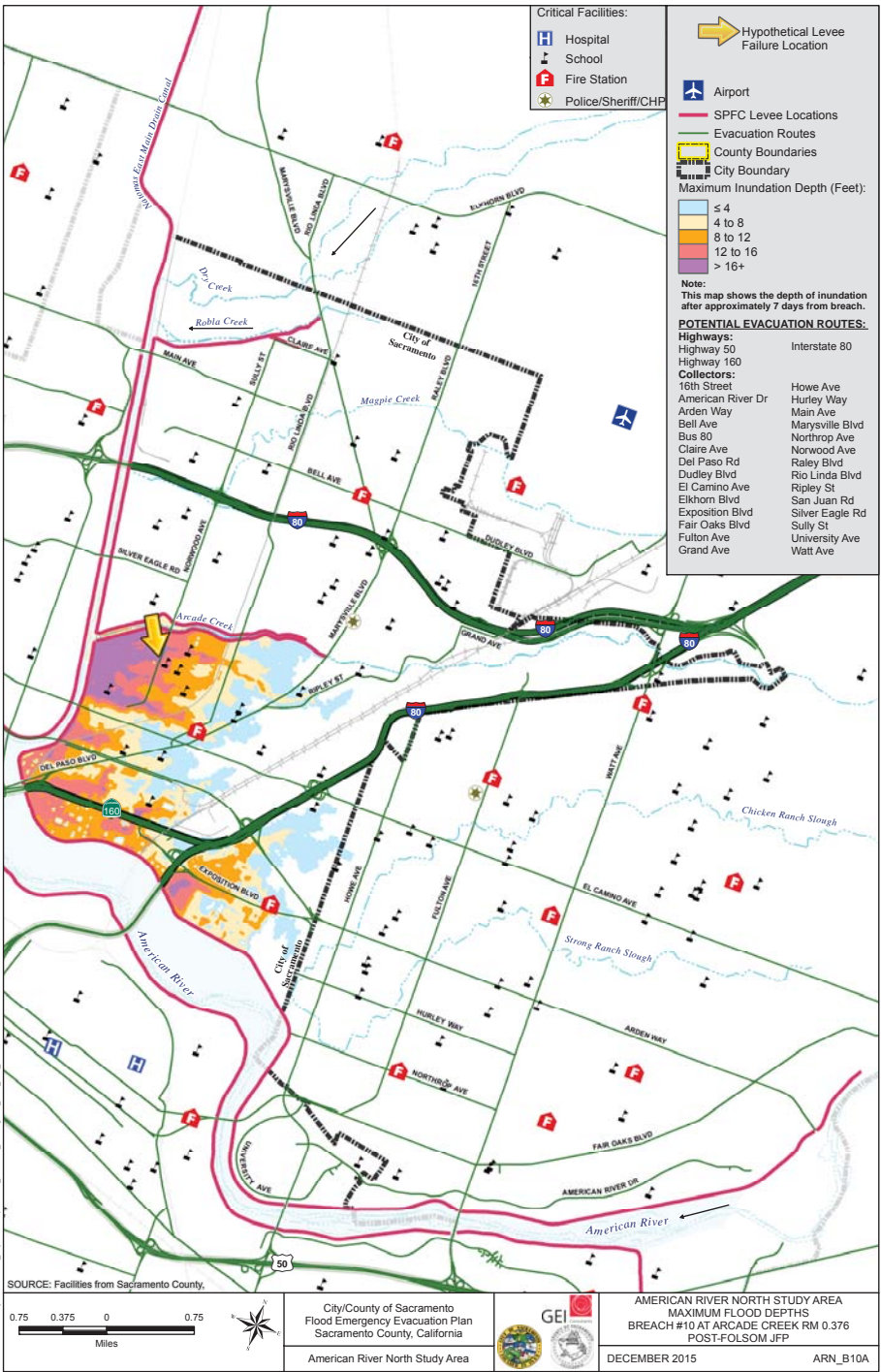
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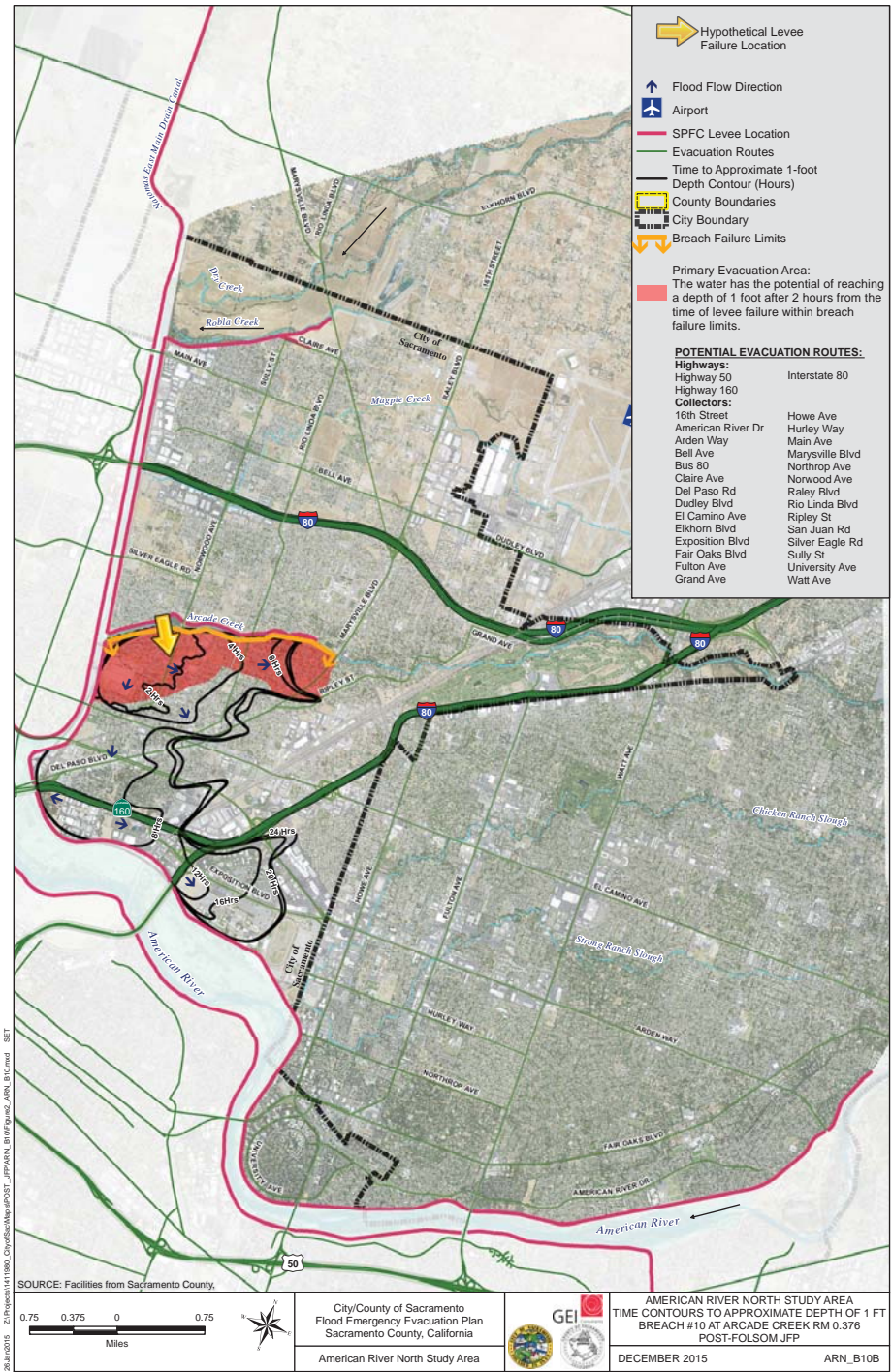
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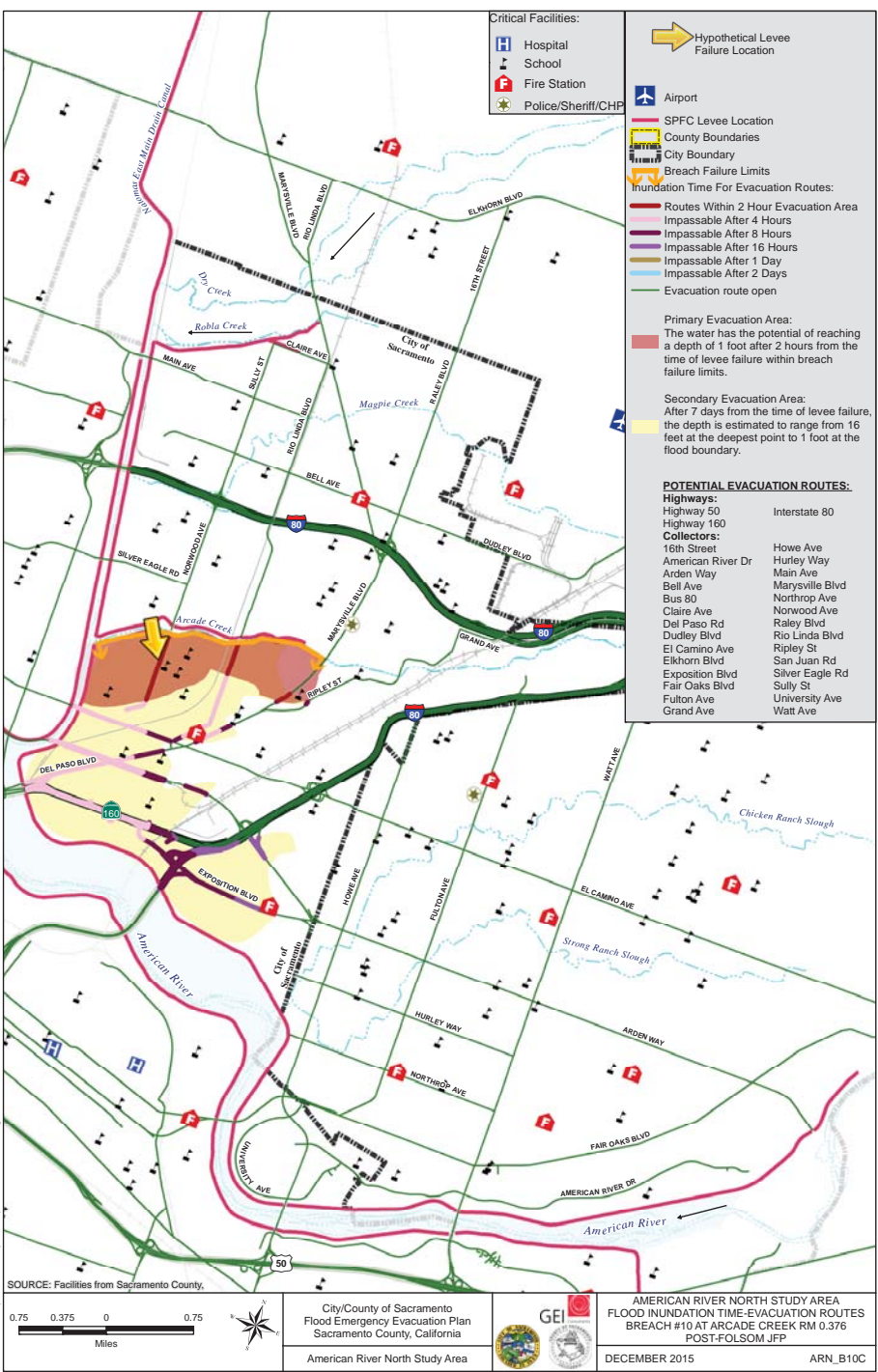
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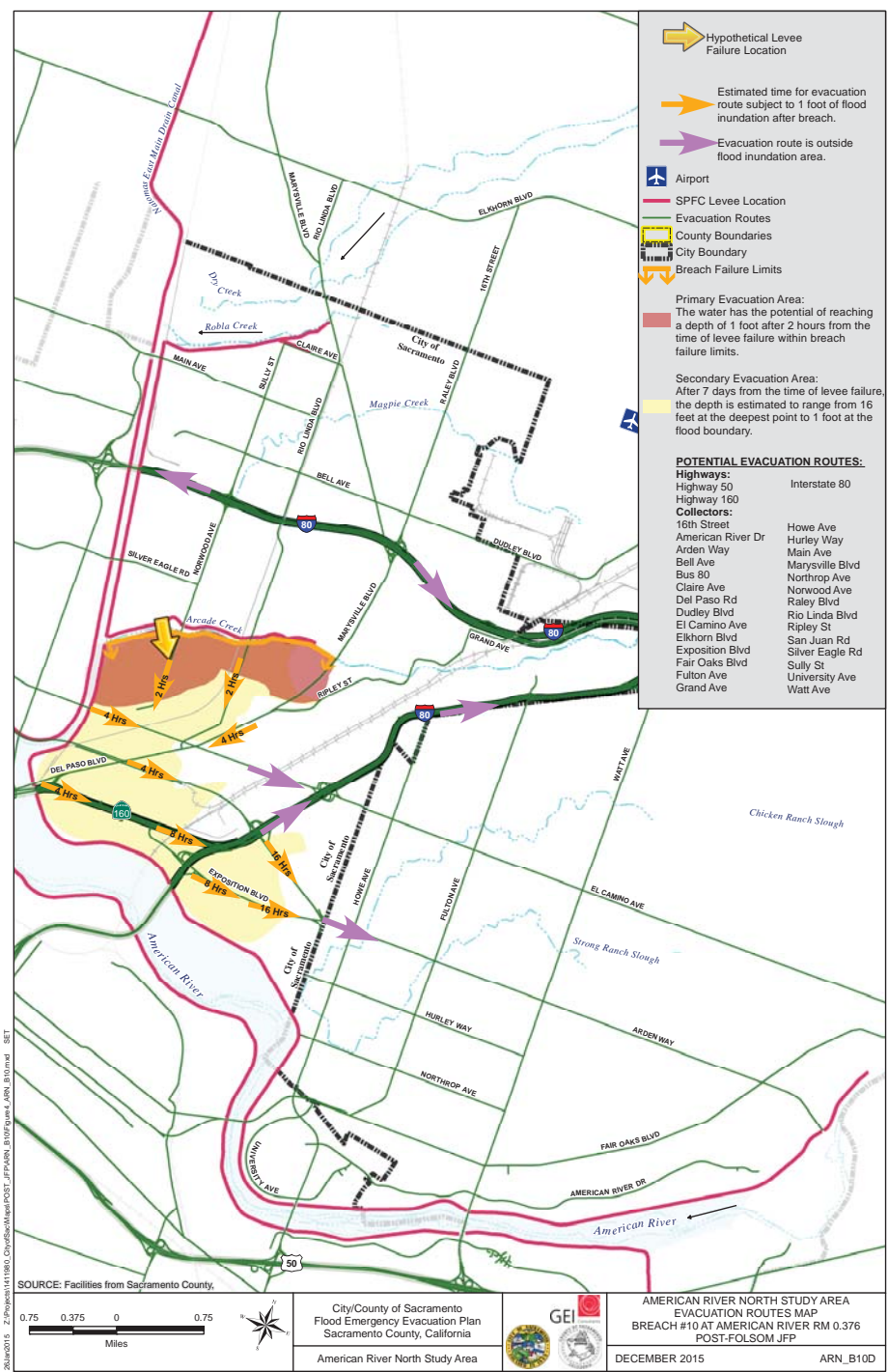
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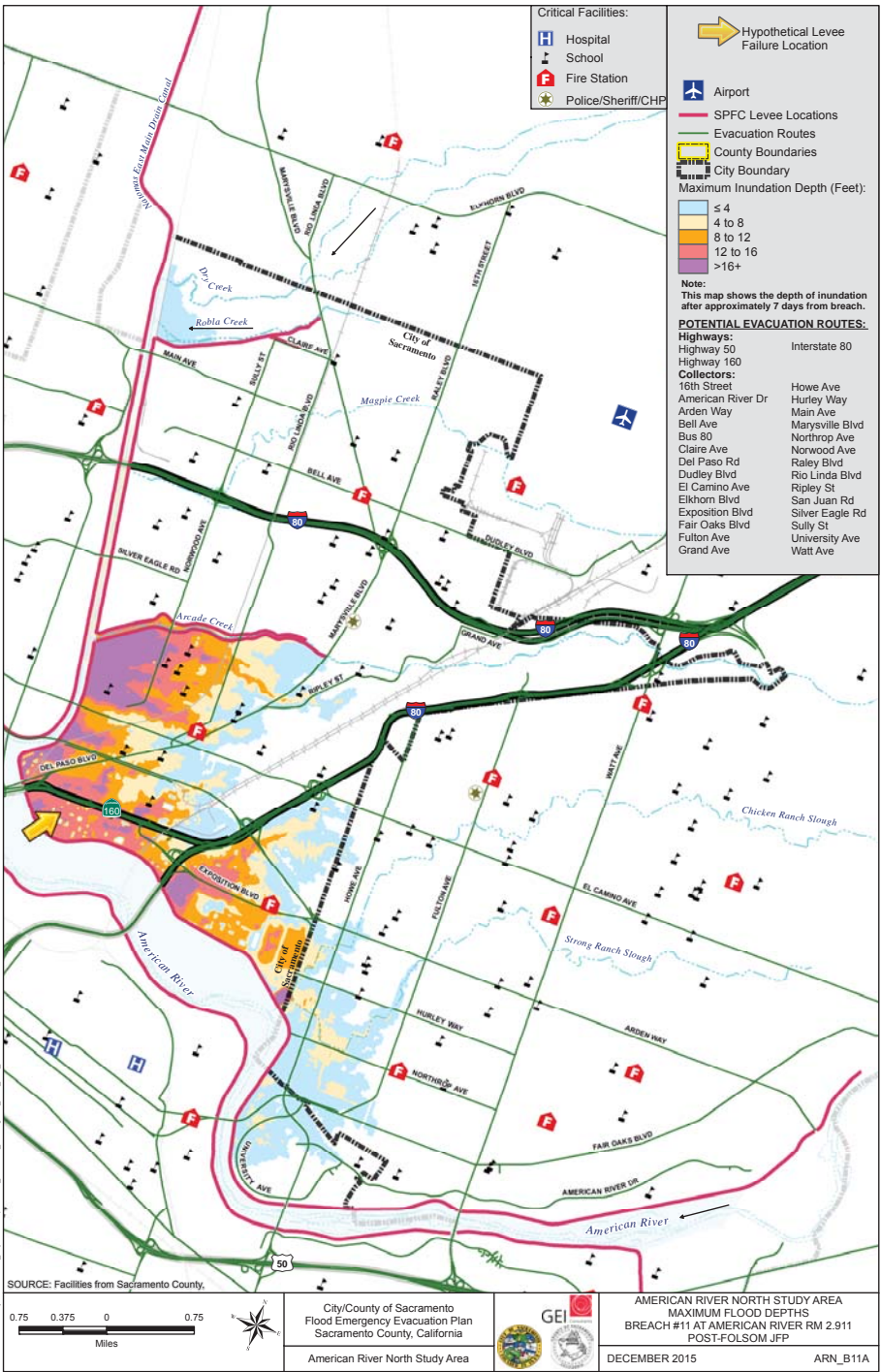
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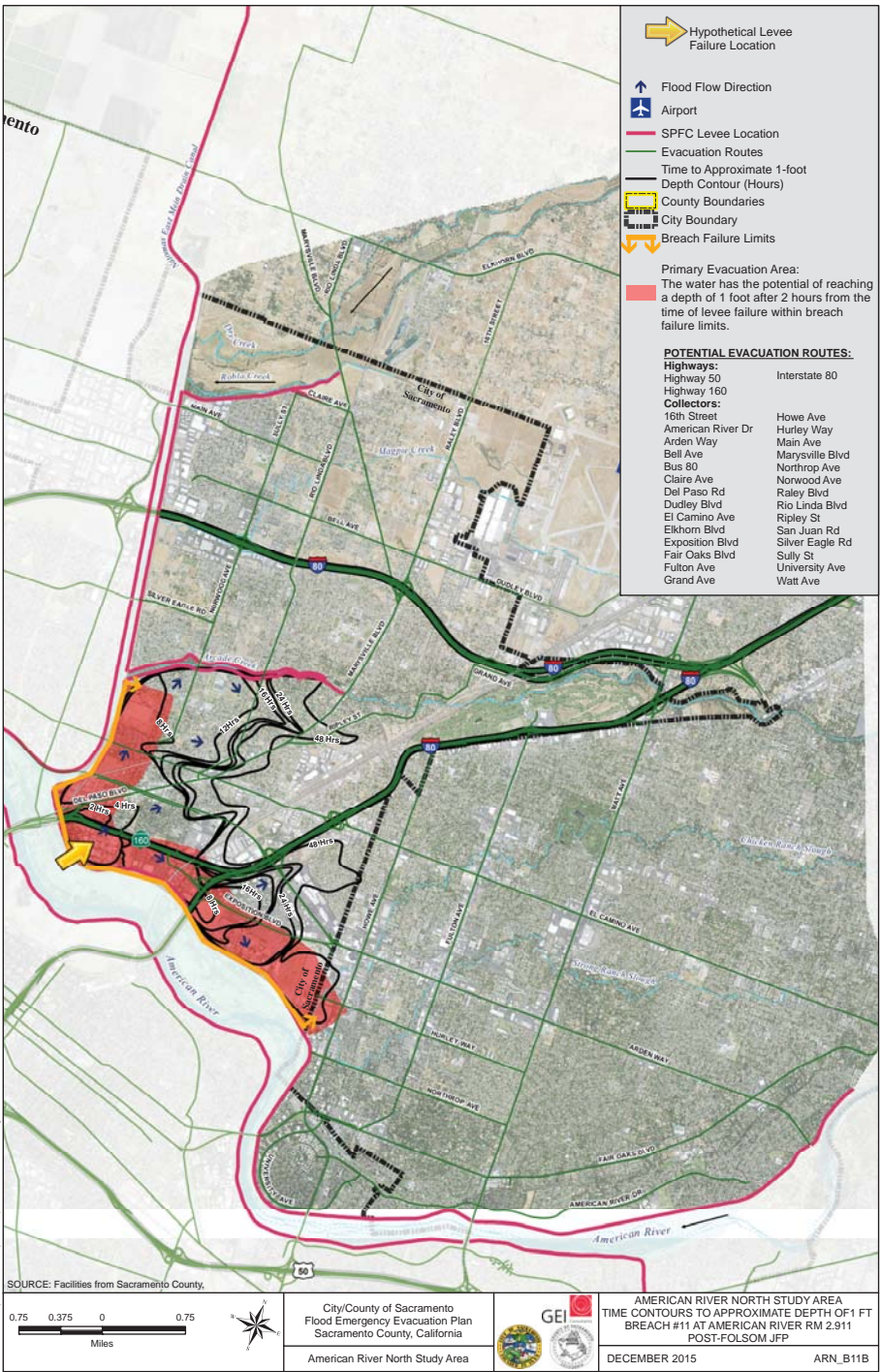
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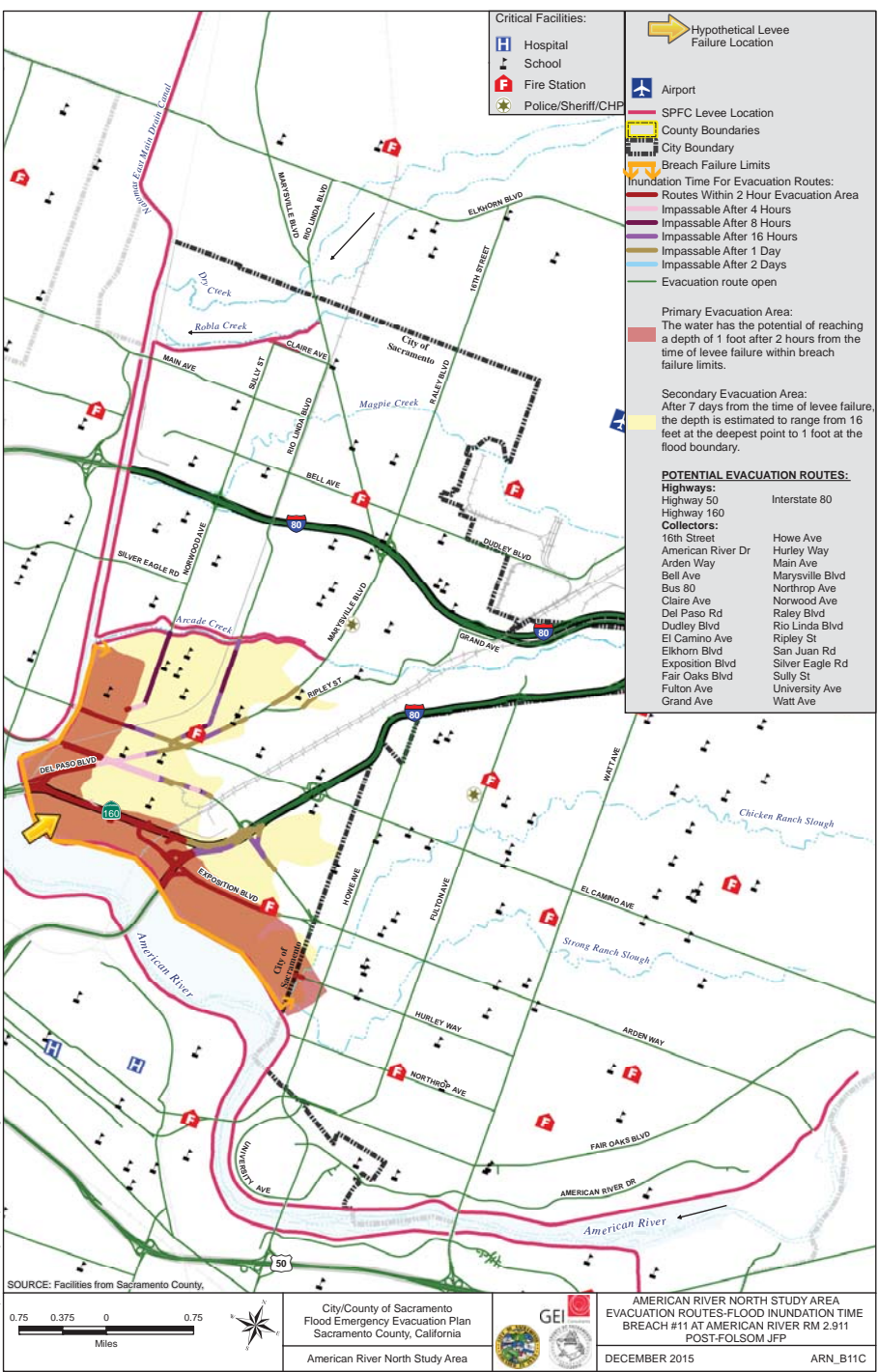
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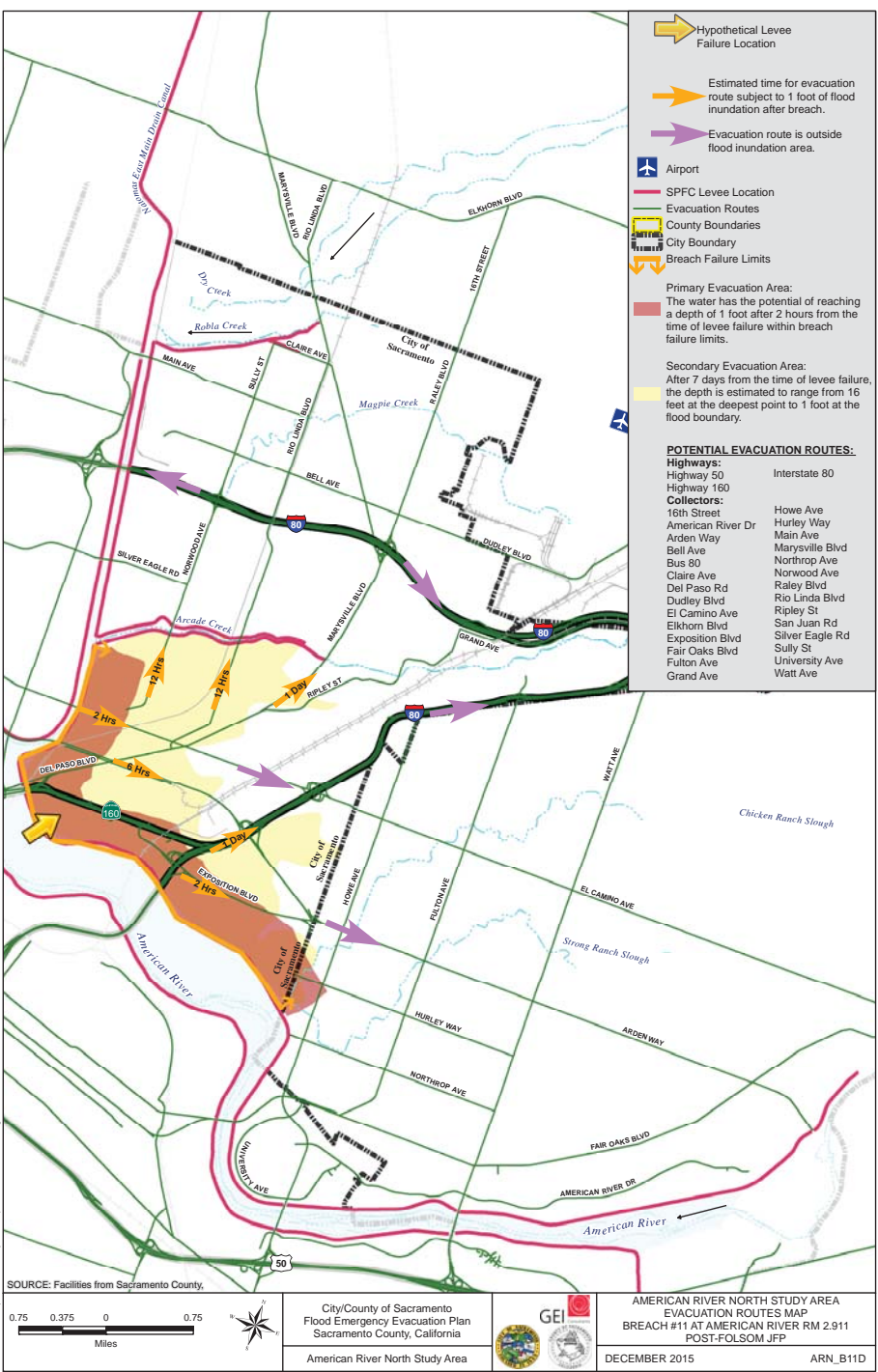
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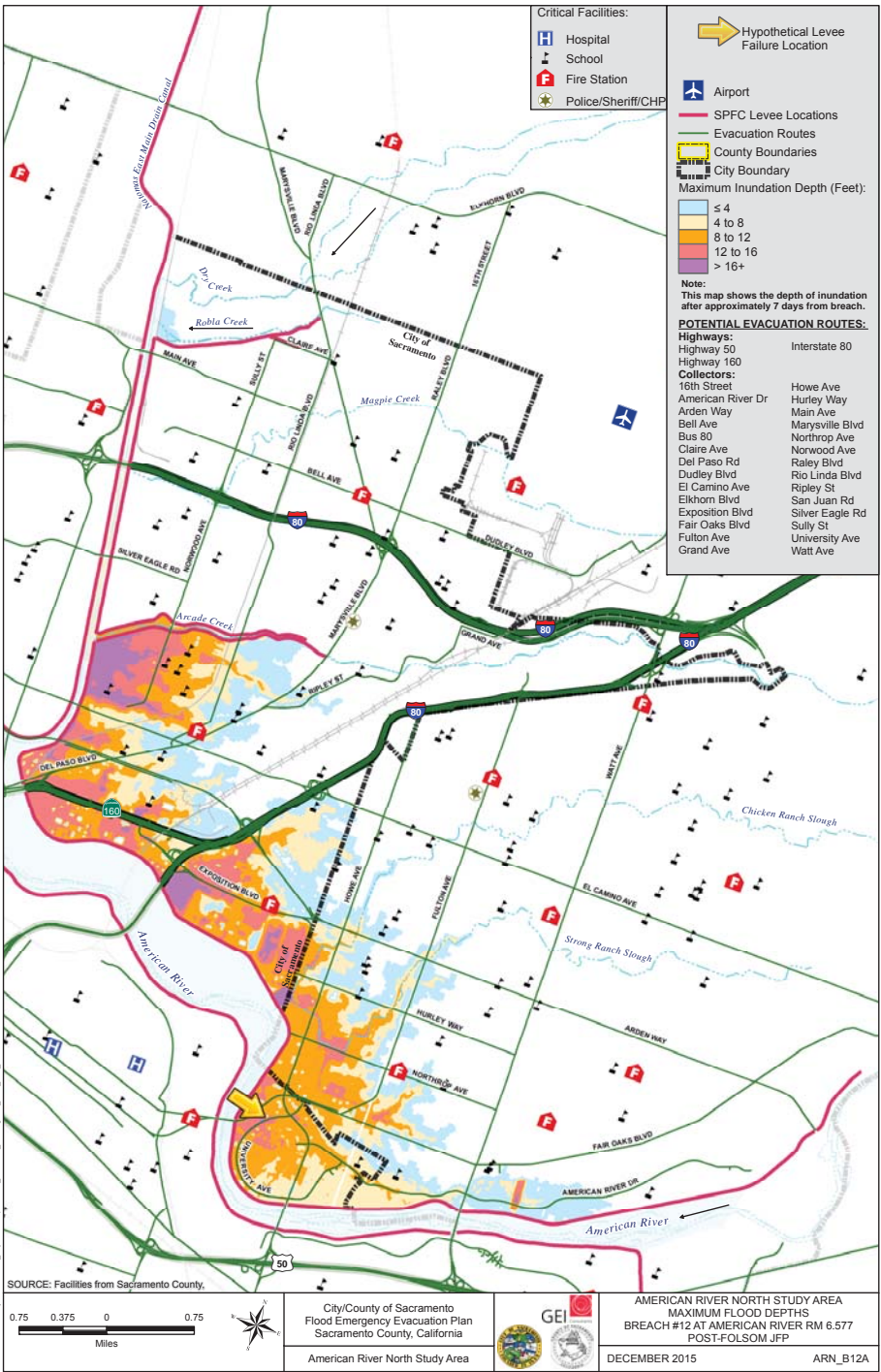
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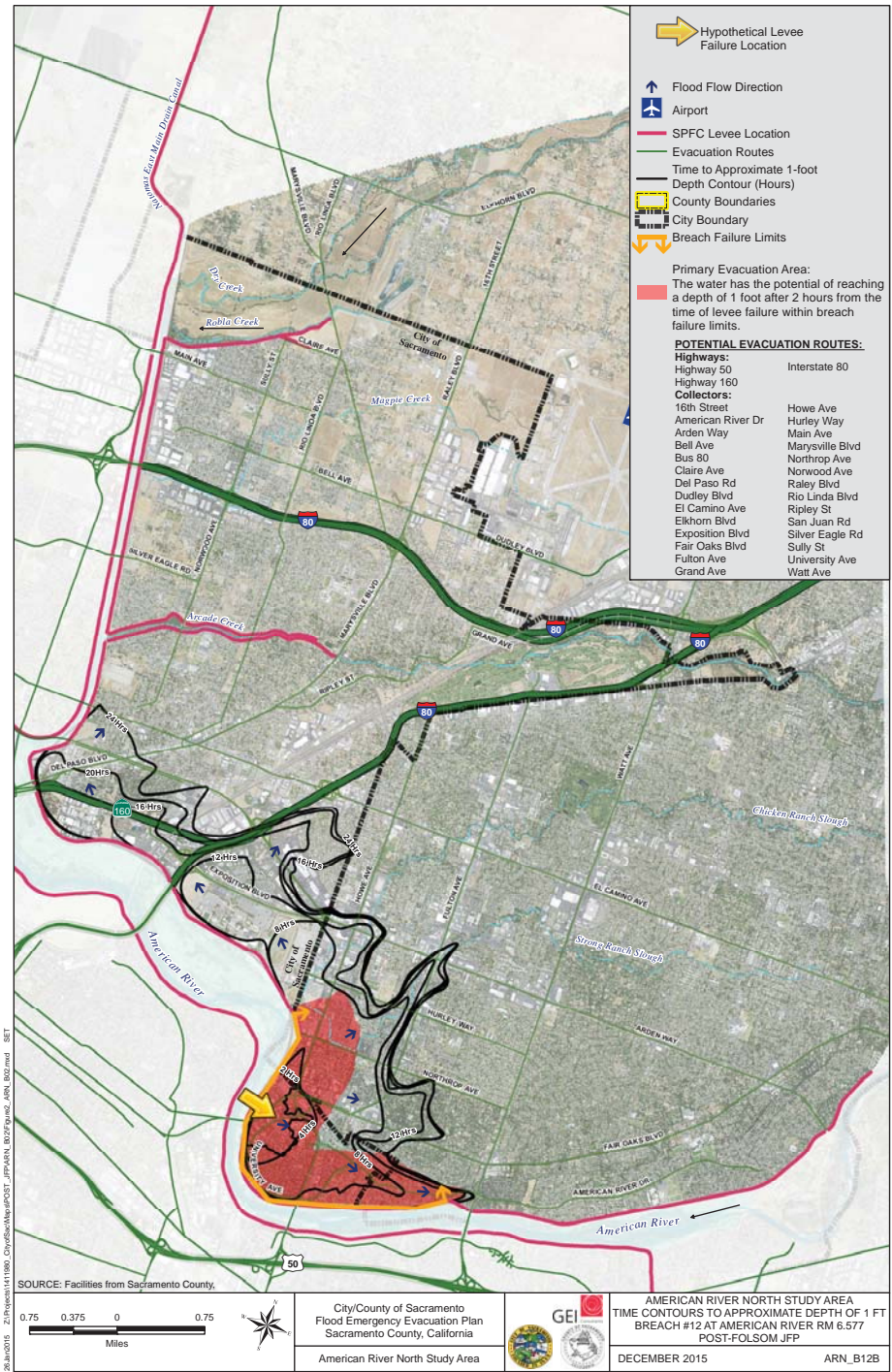
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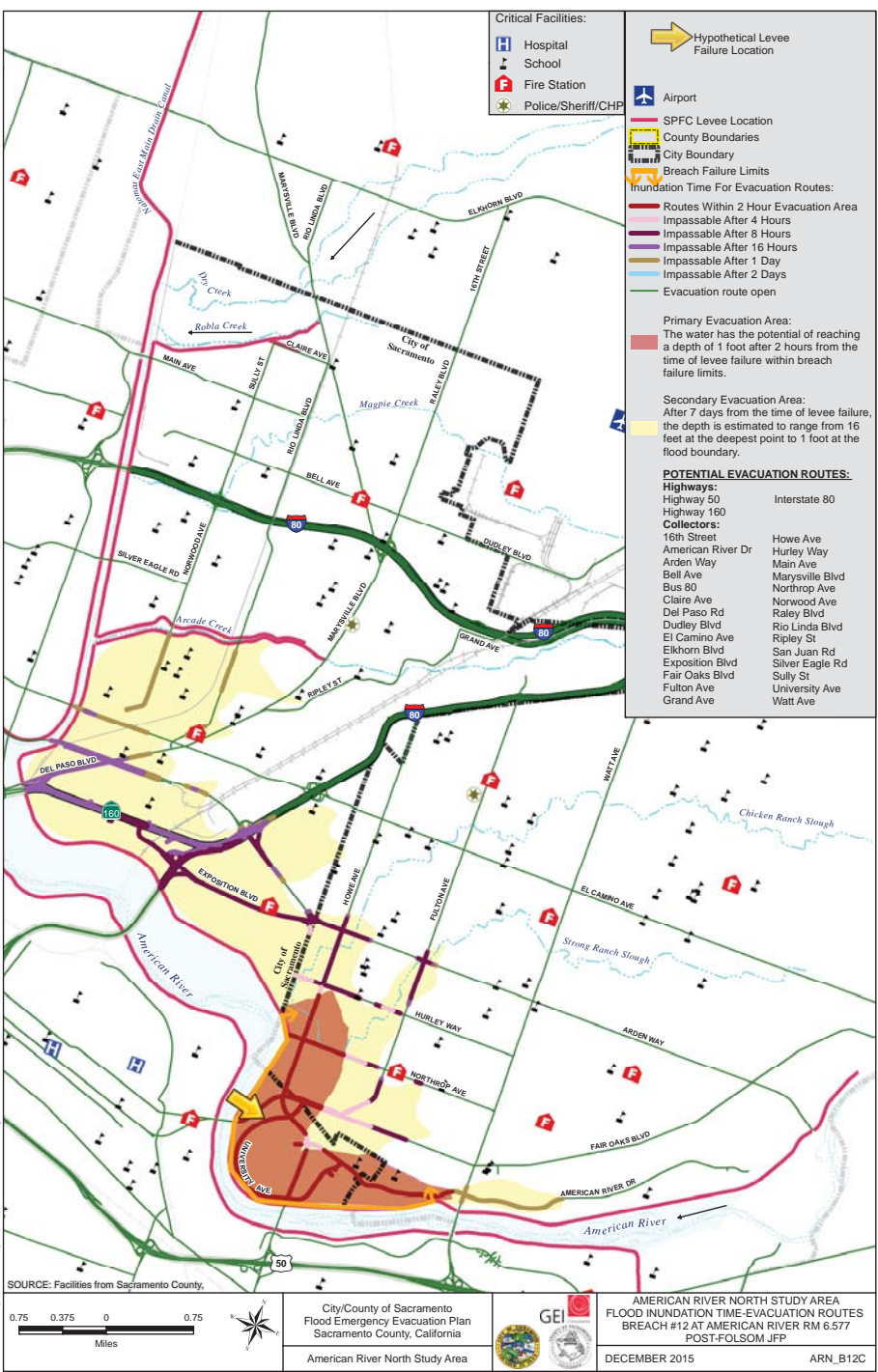
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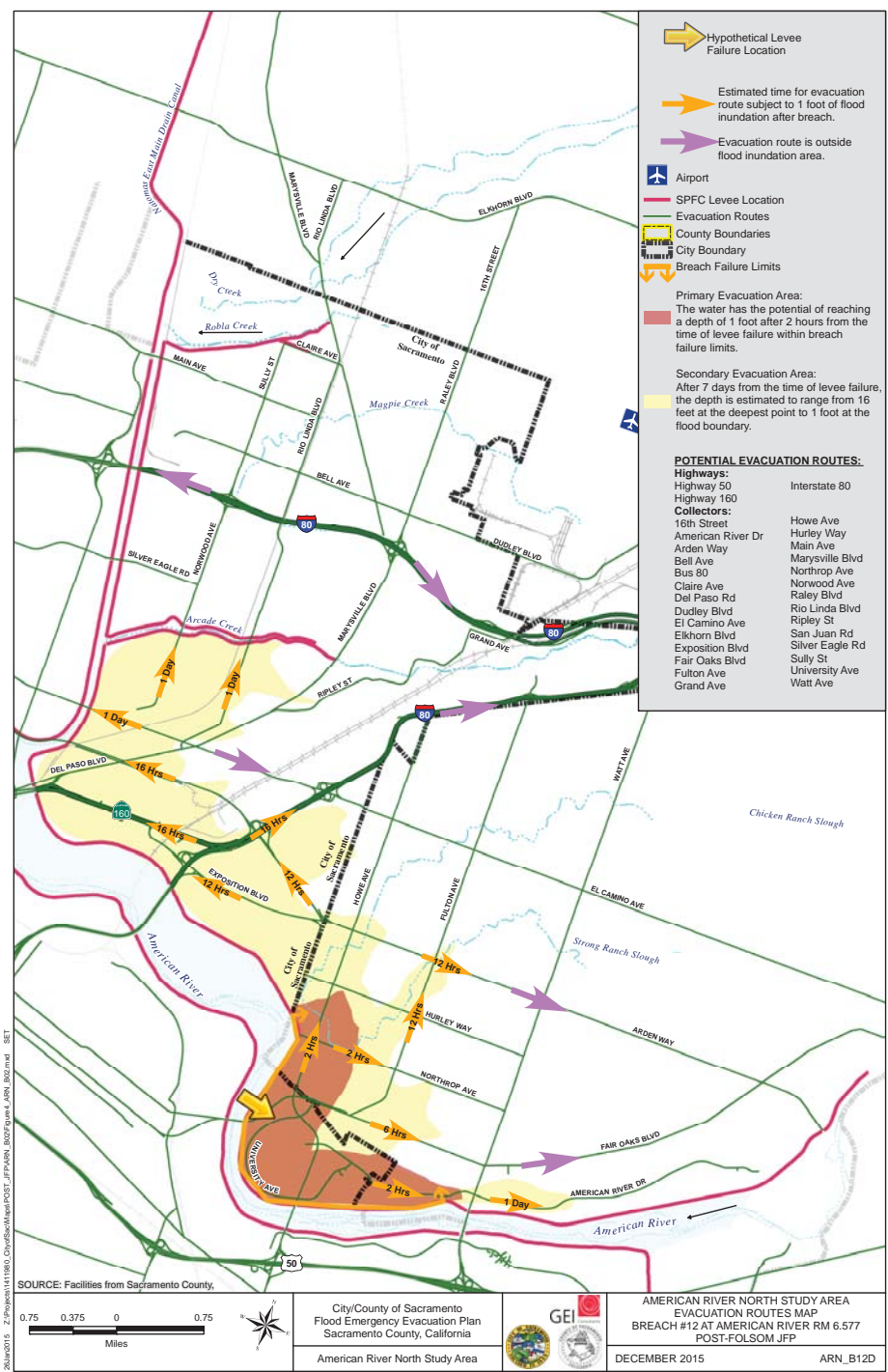
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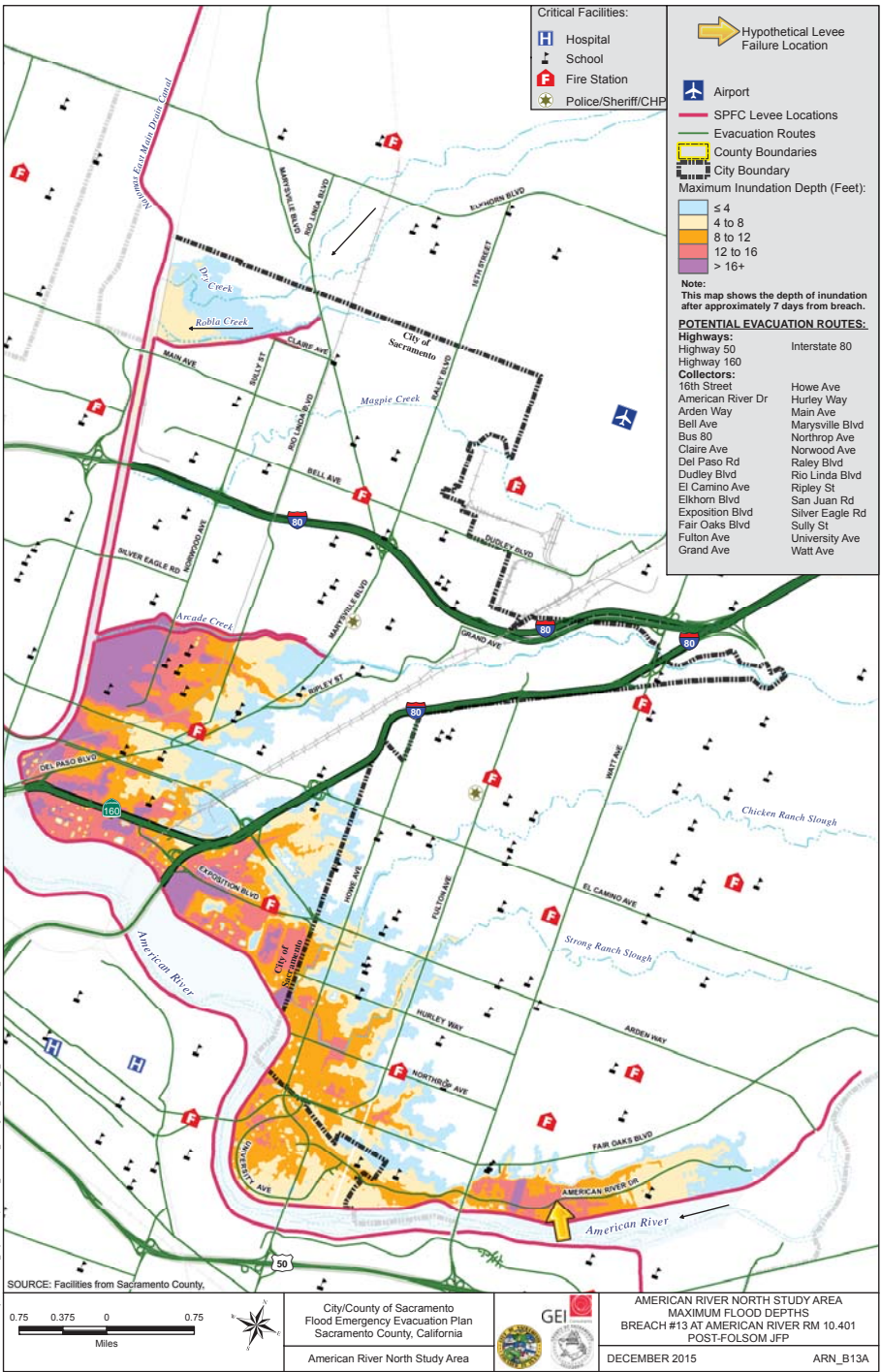
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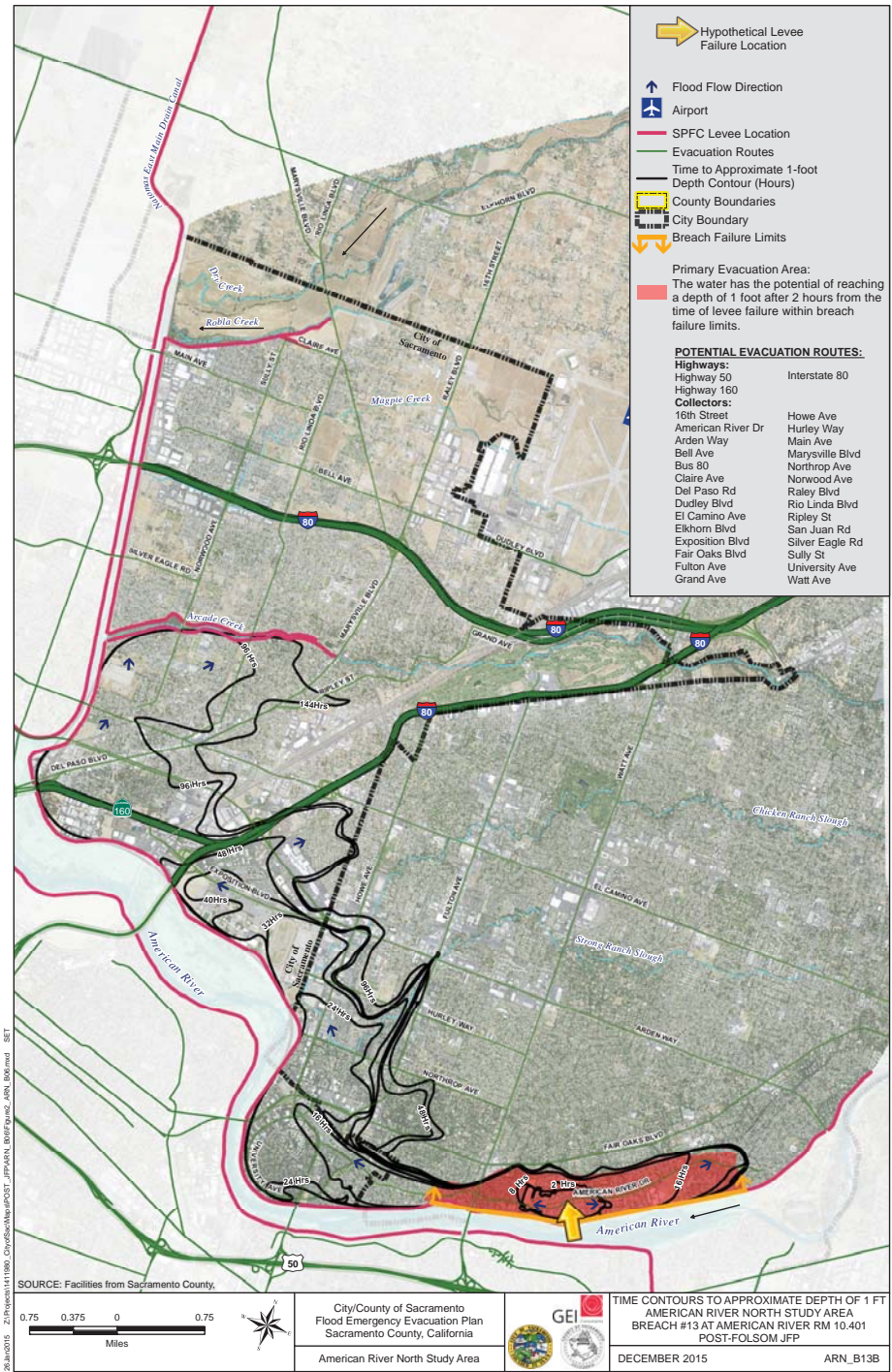
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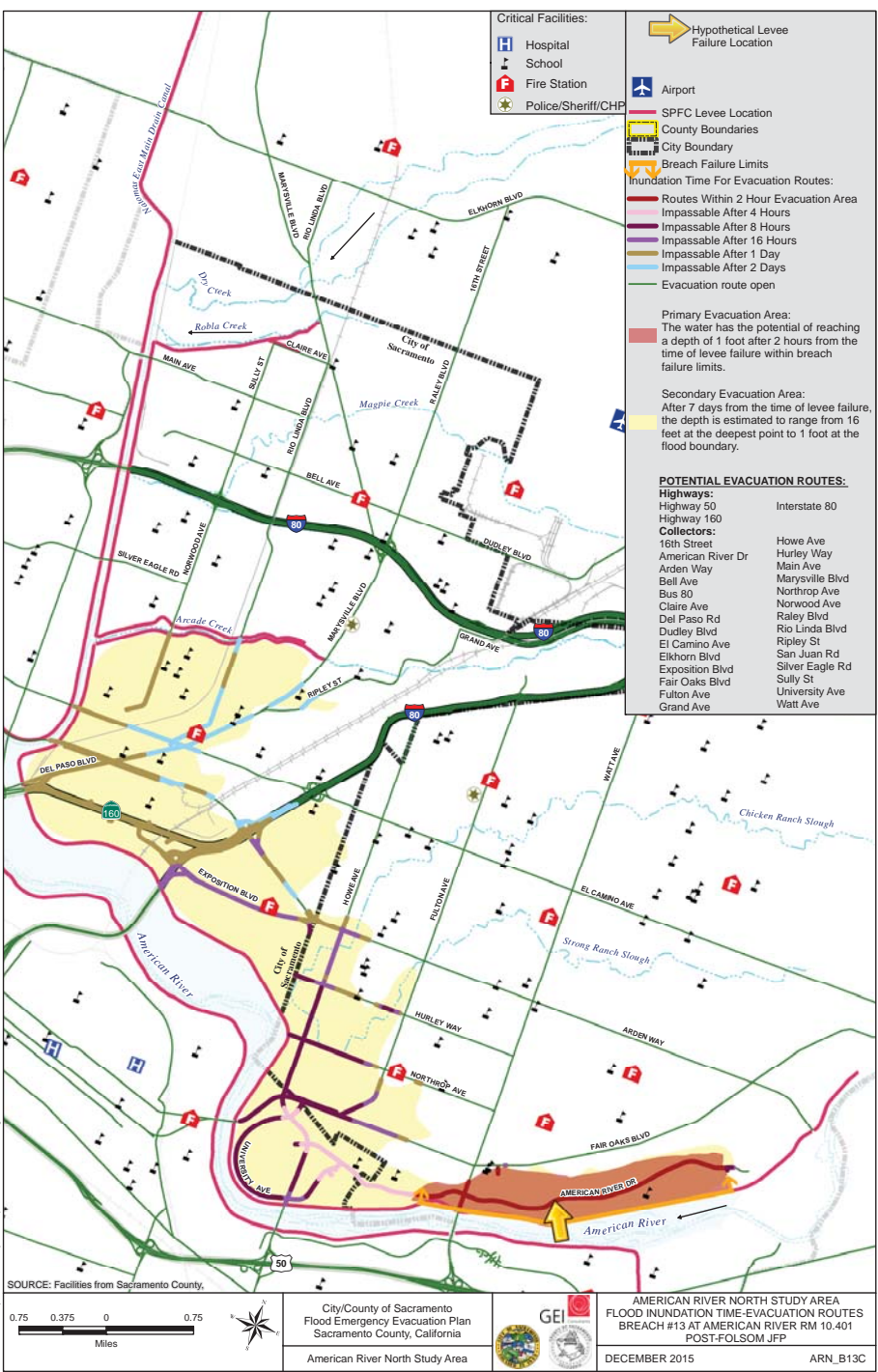
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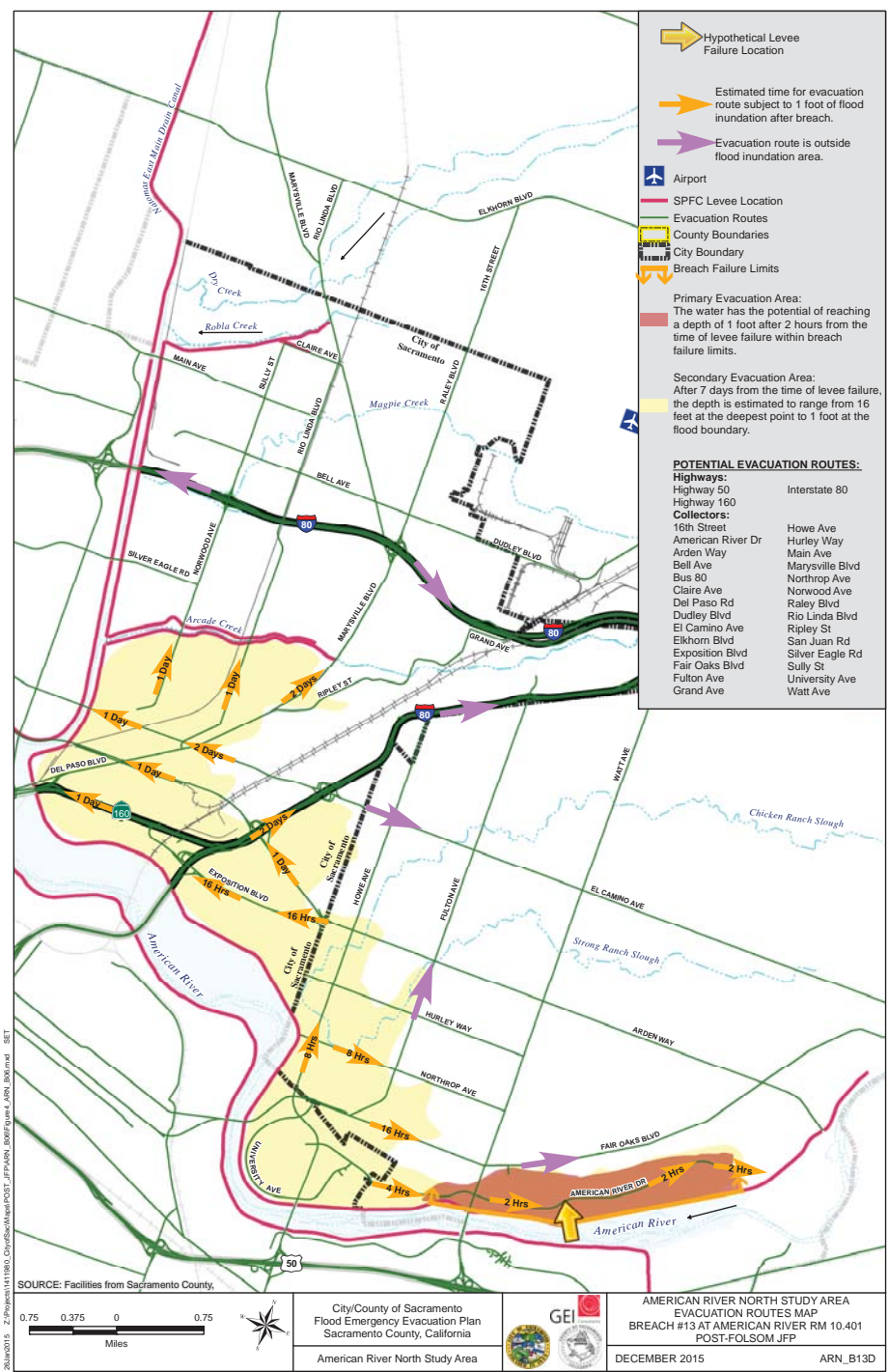
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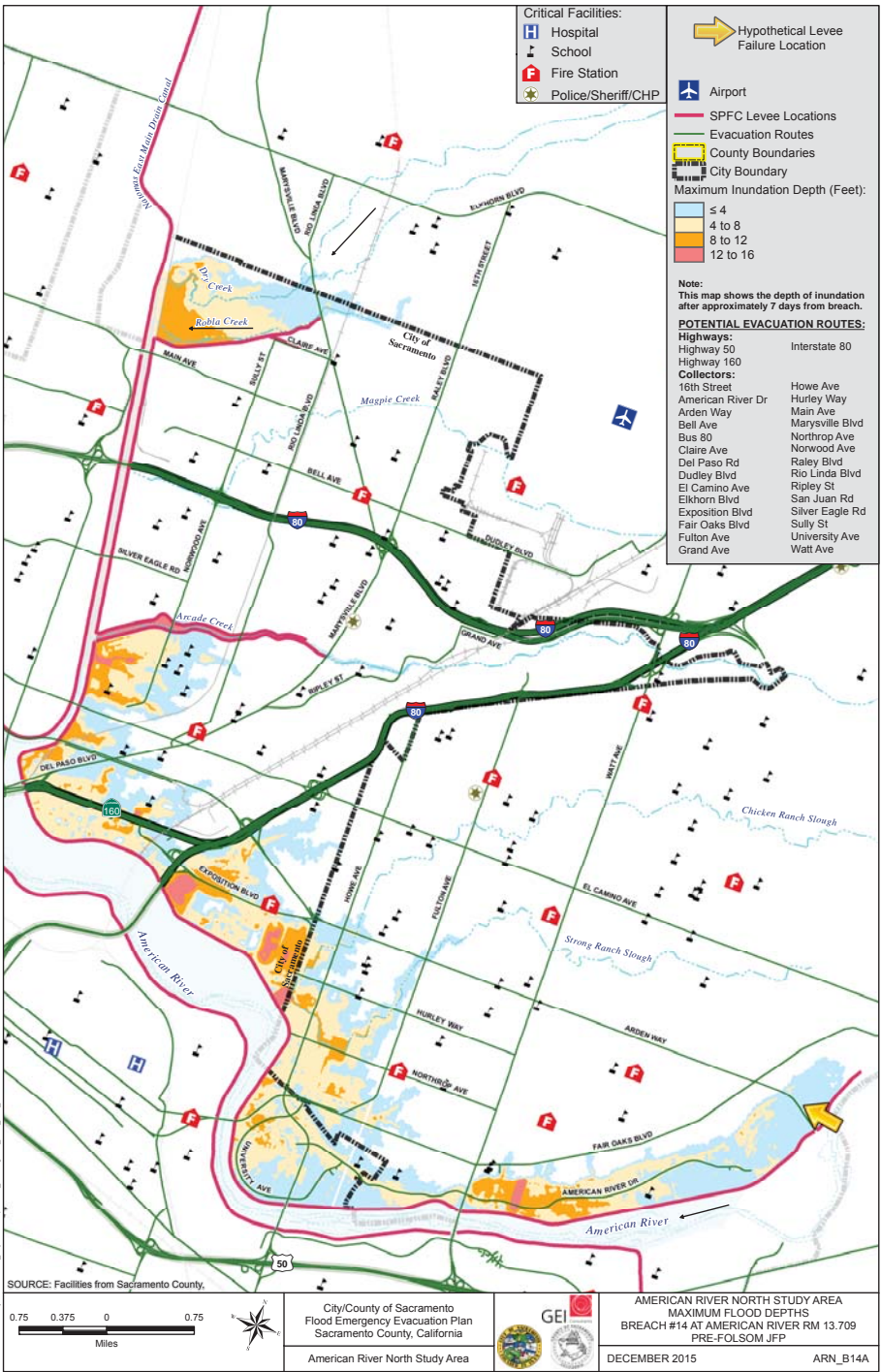
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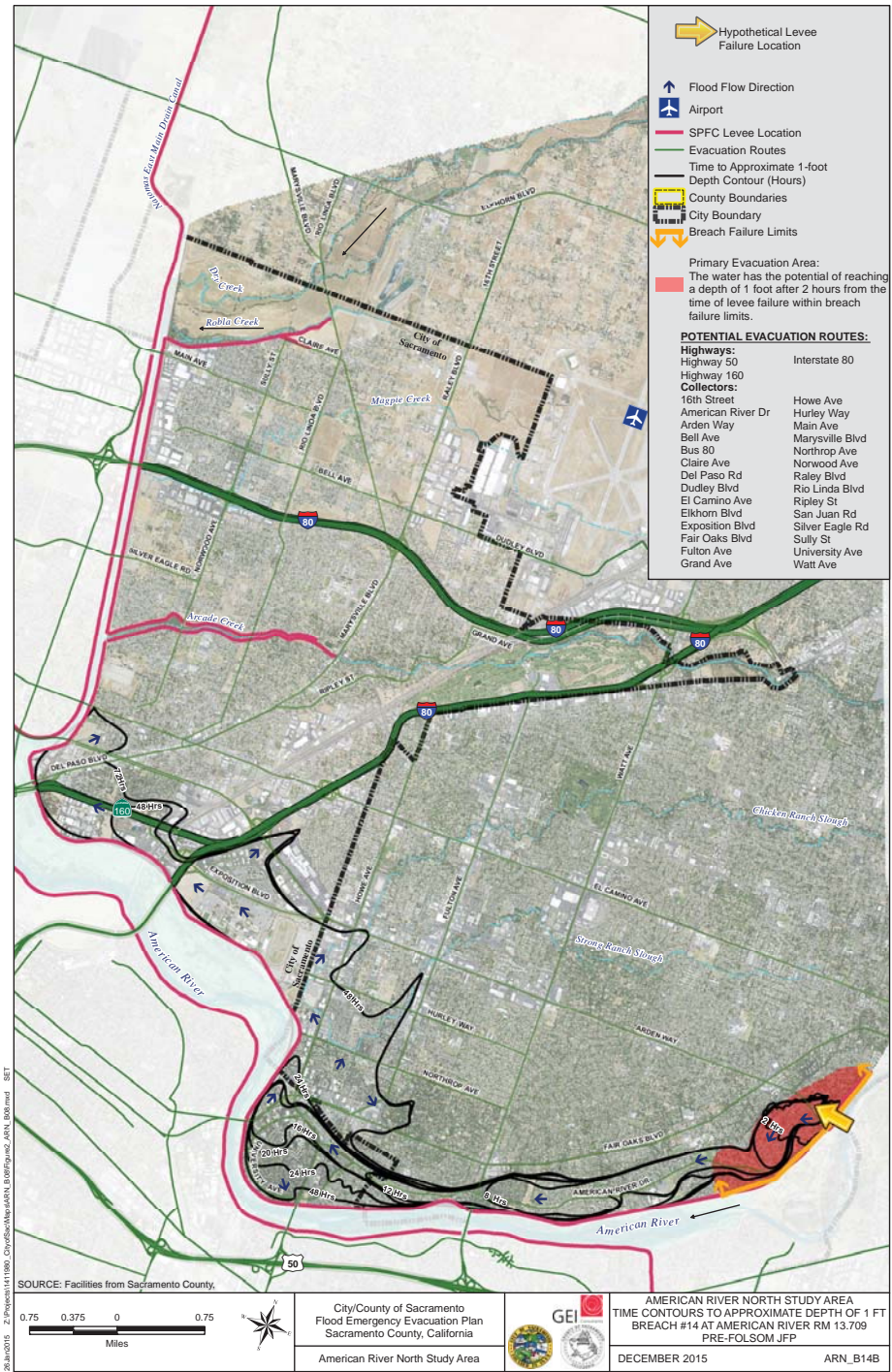
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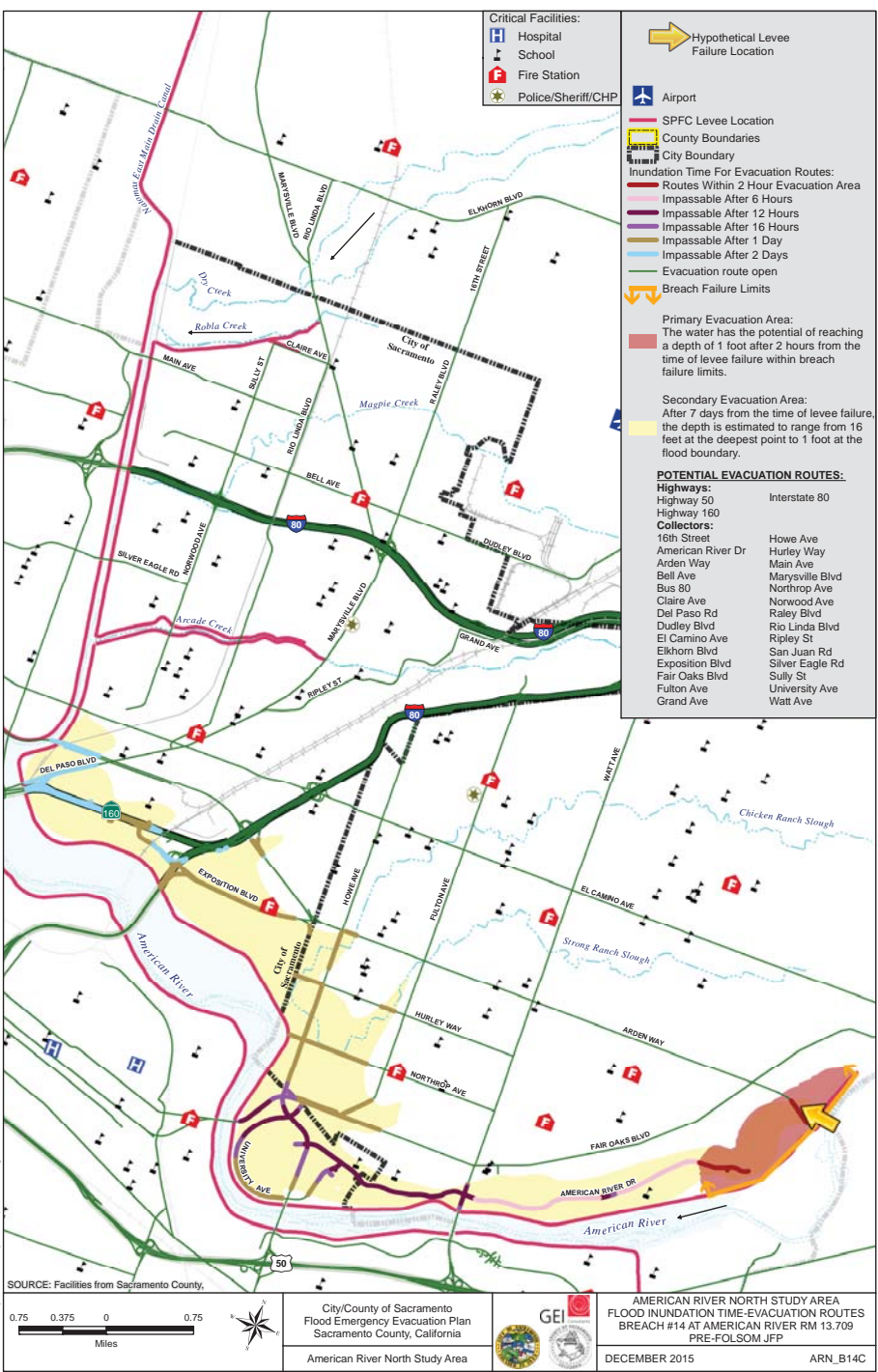
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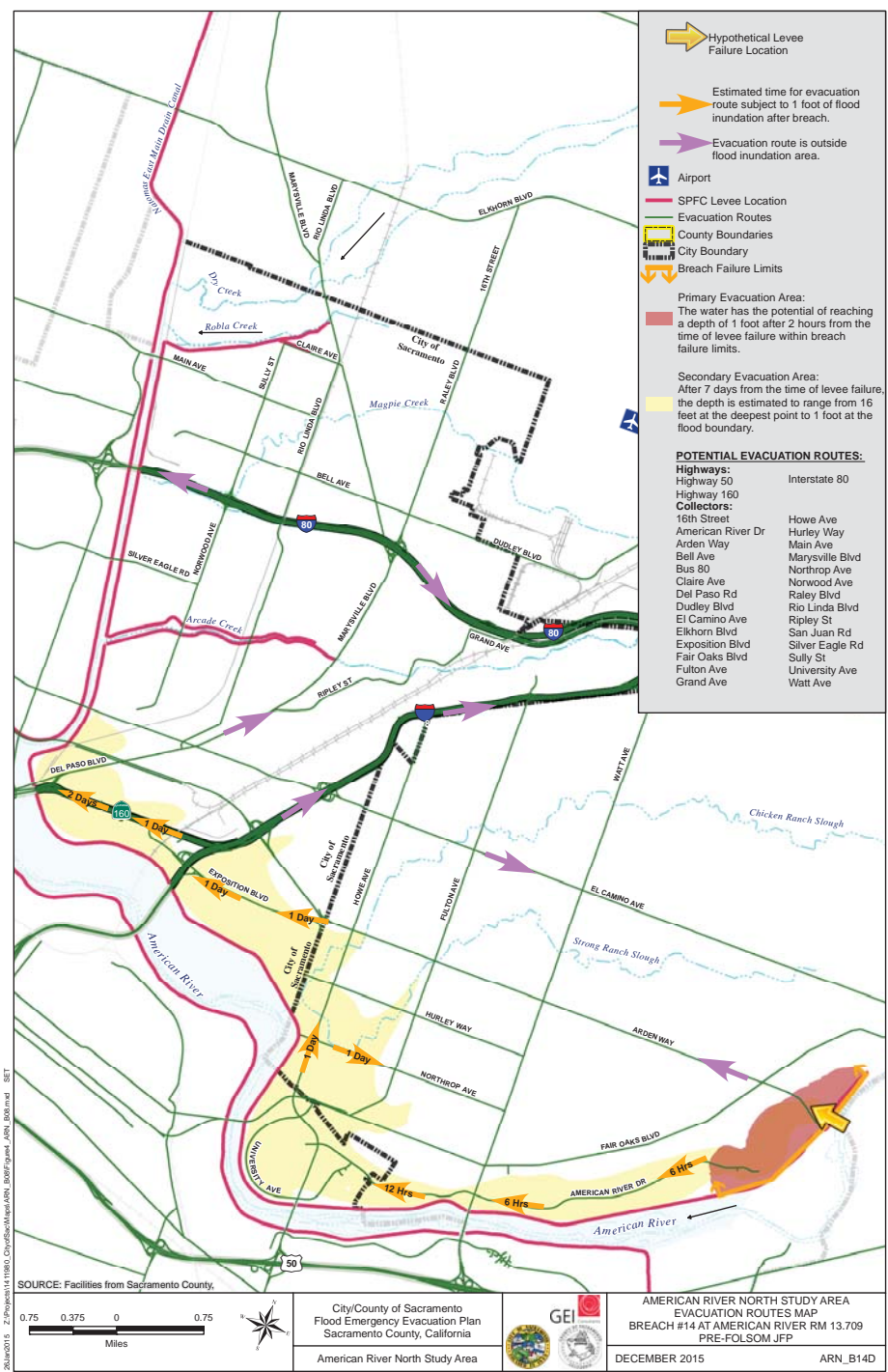
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TIME CONTOURS IN HOURS TO APPROXIMATE DEPTH OF ONE FOOT

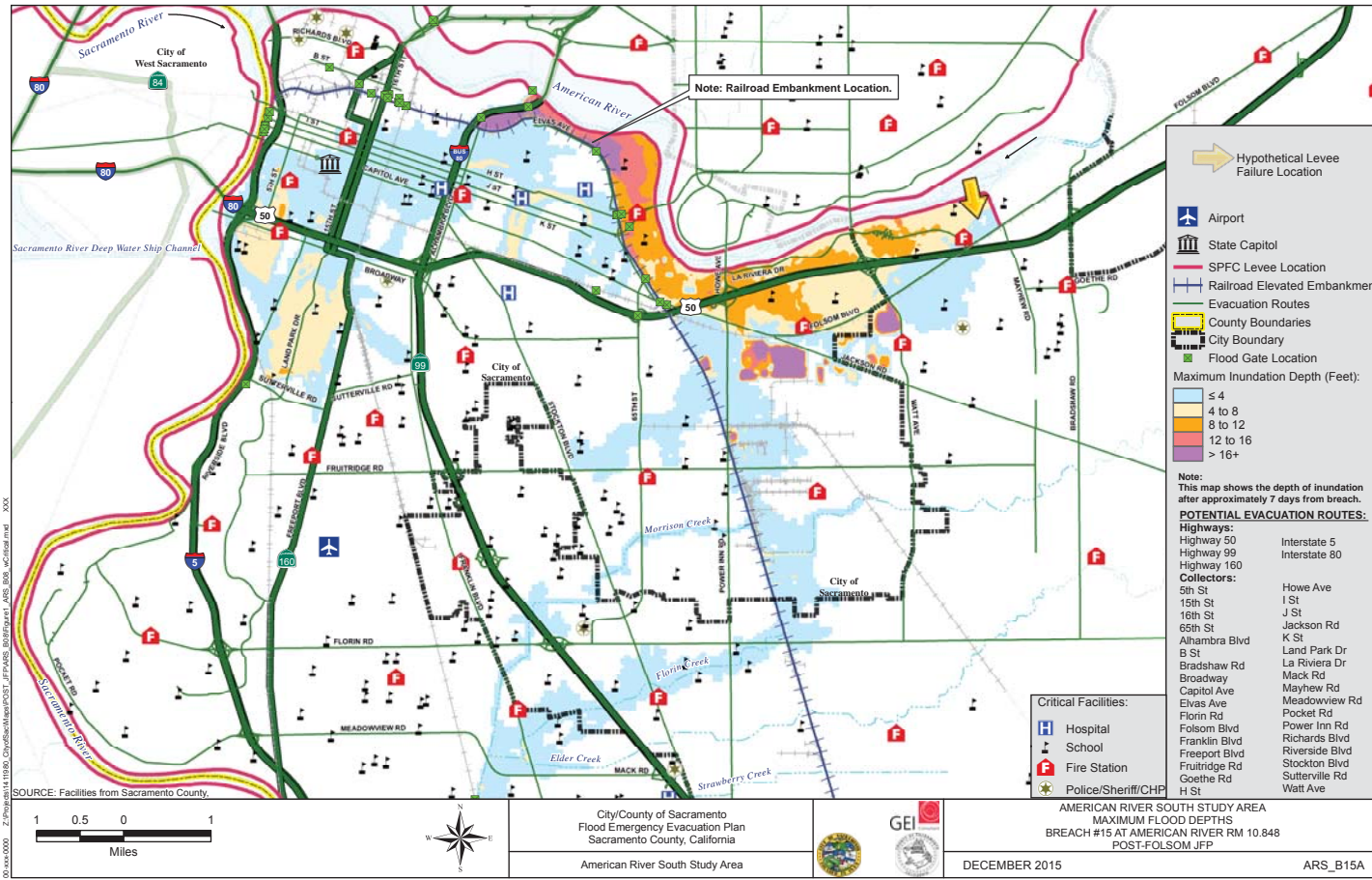


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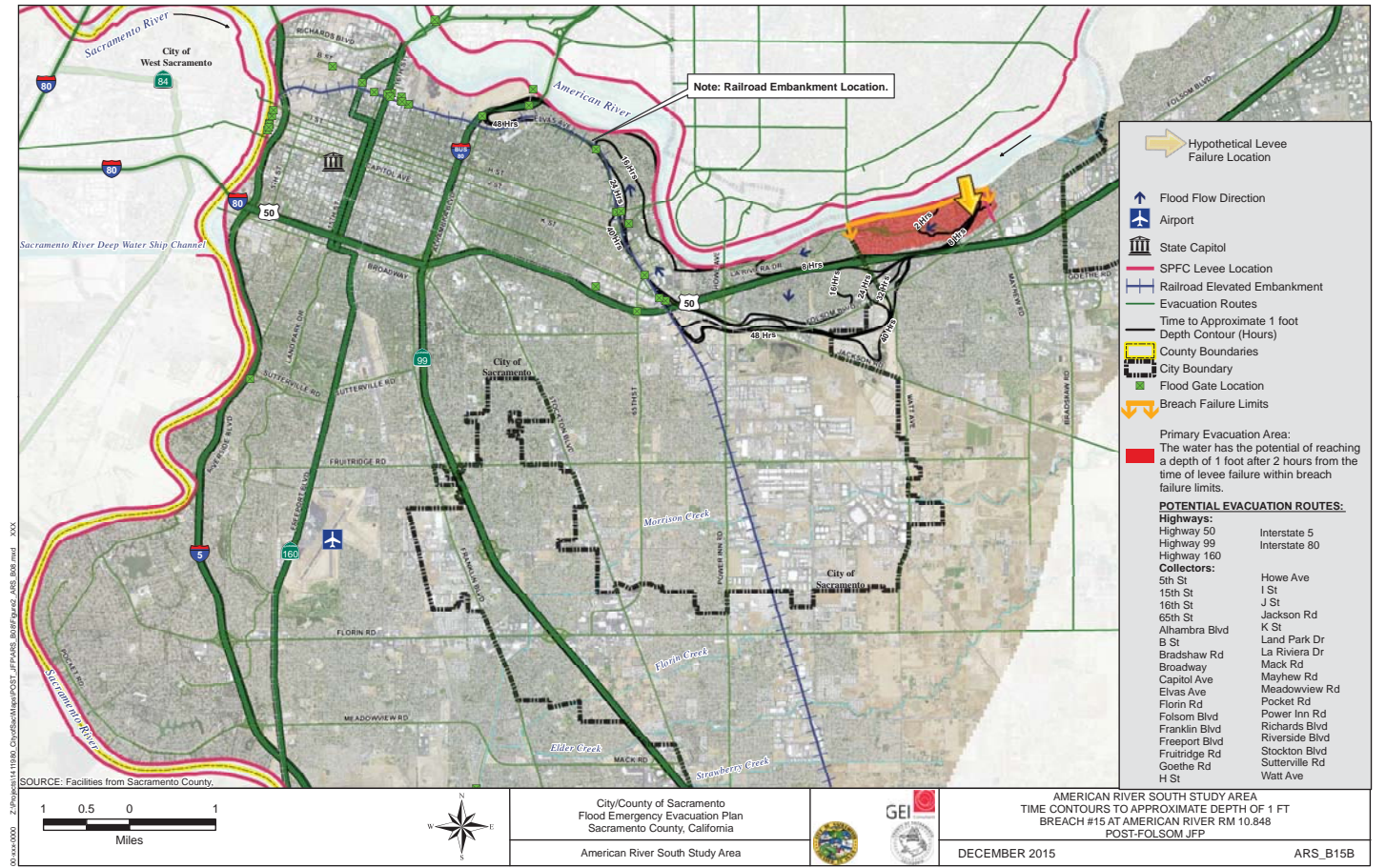


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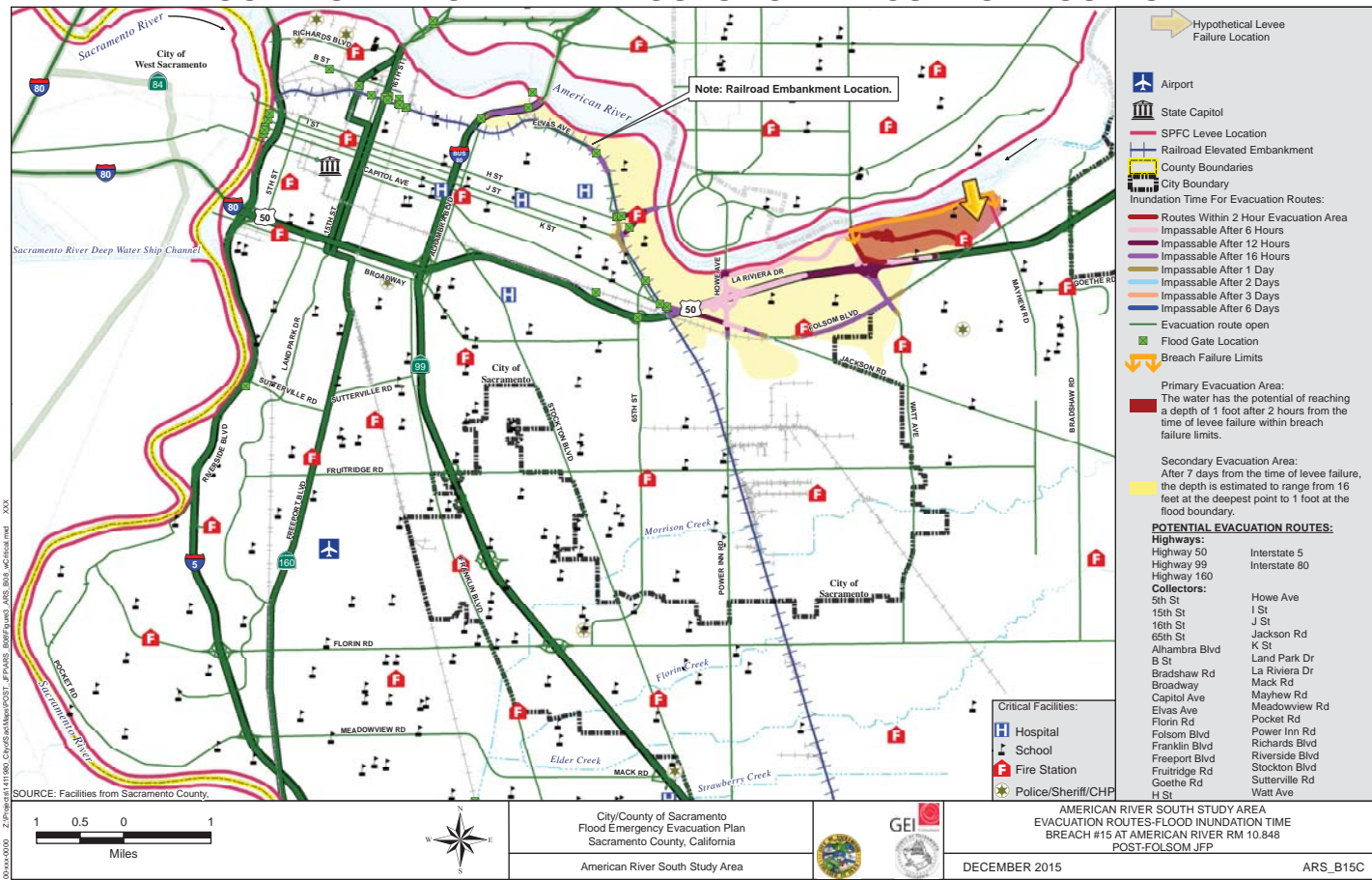
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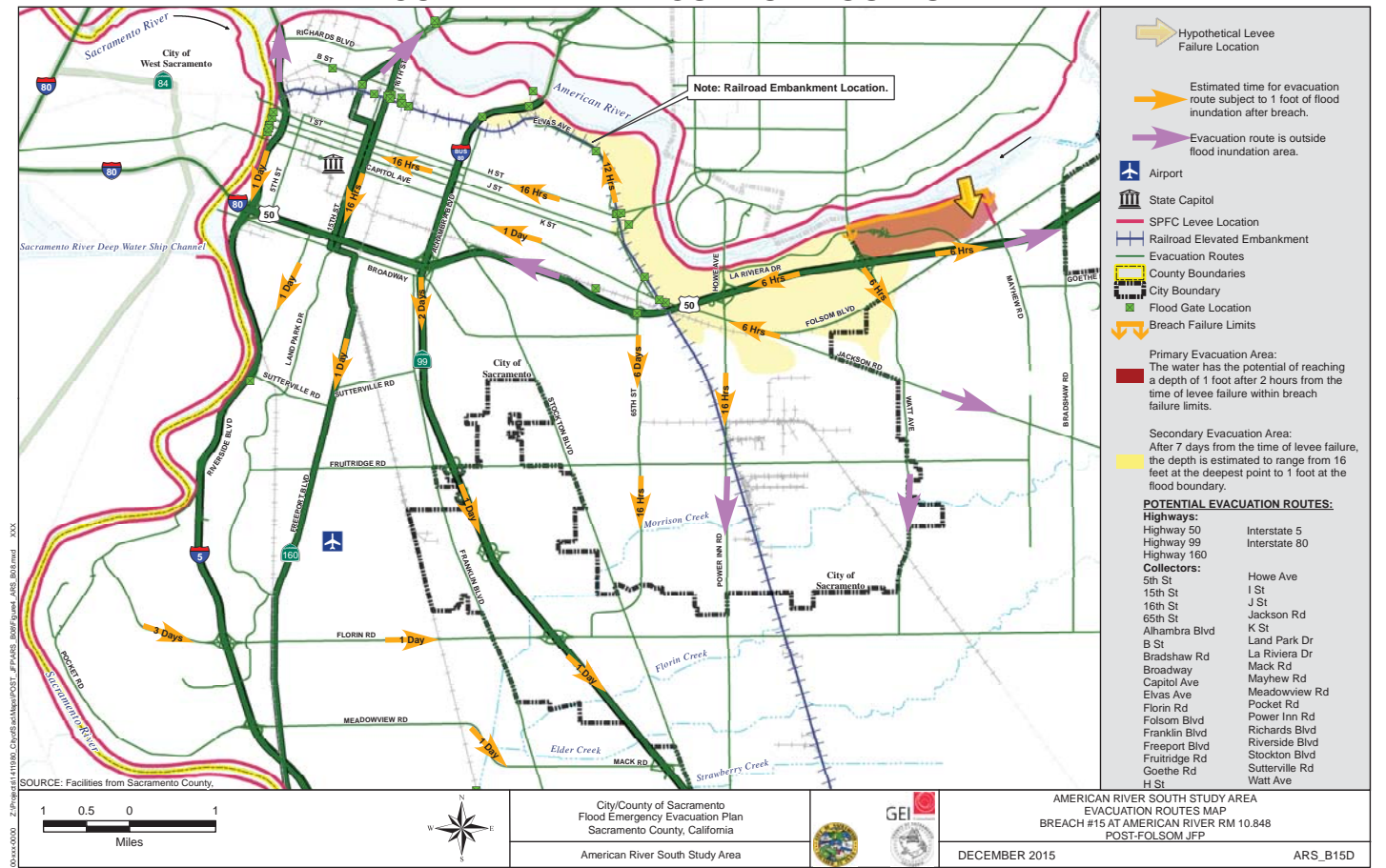
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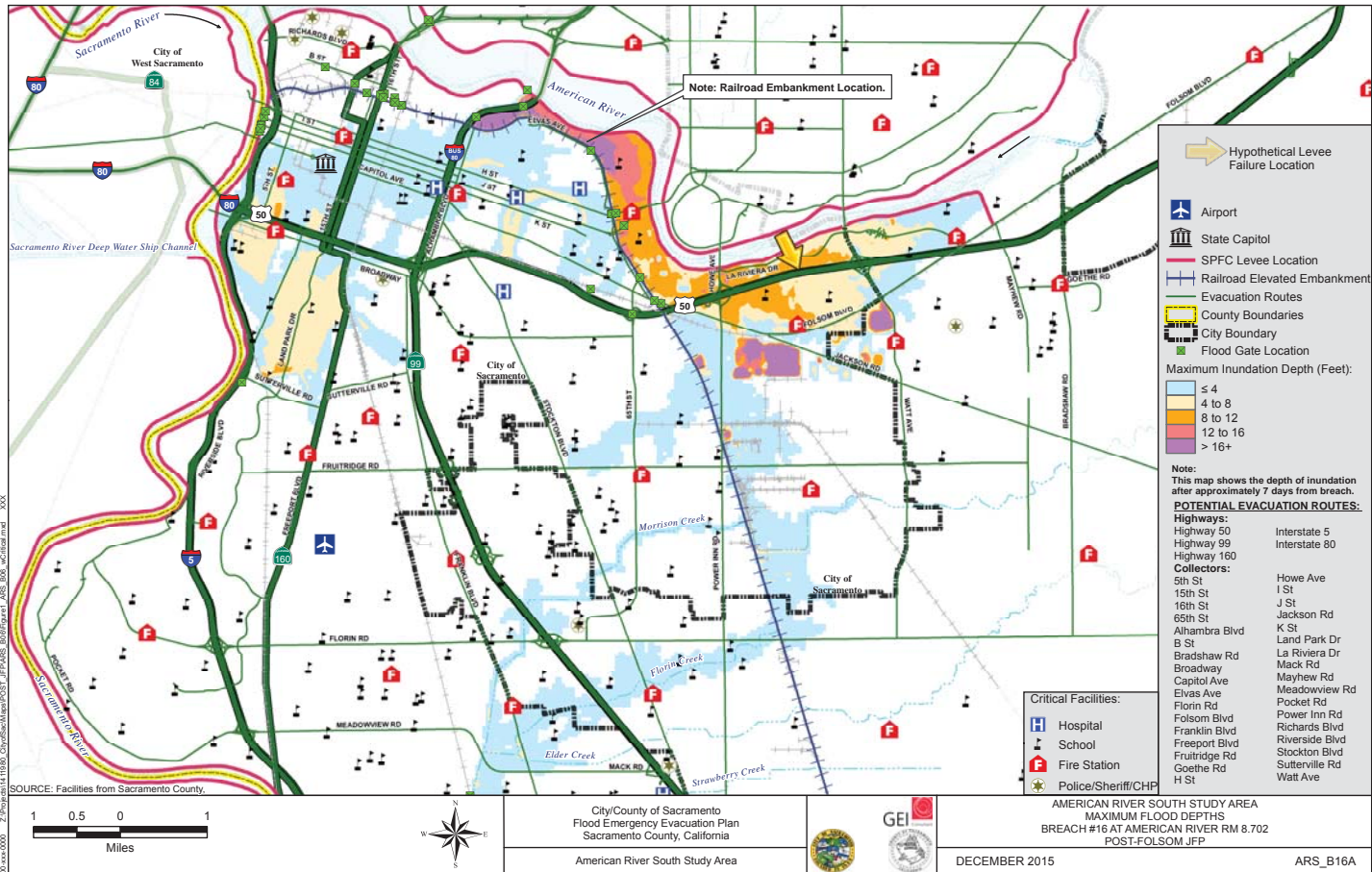
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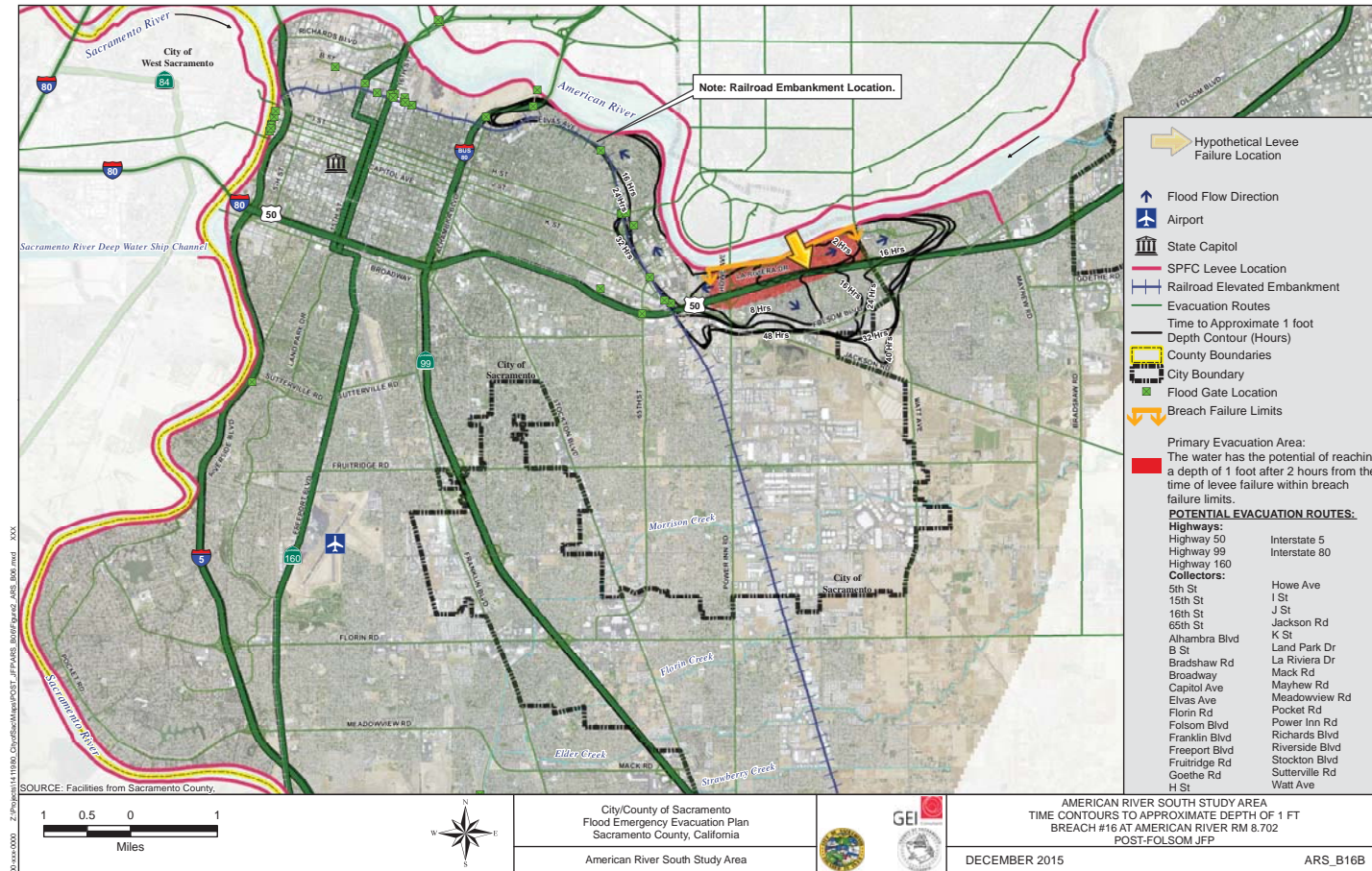
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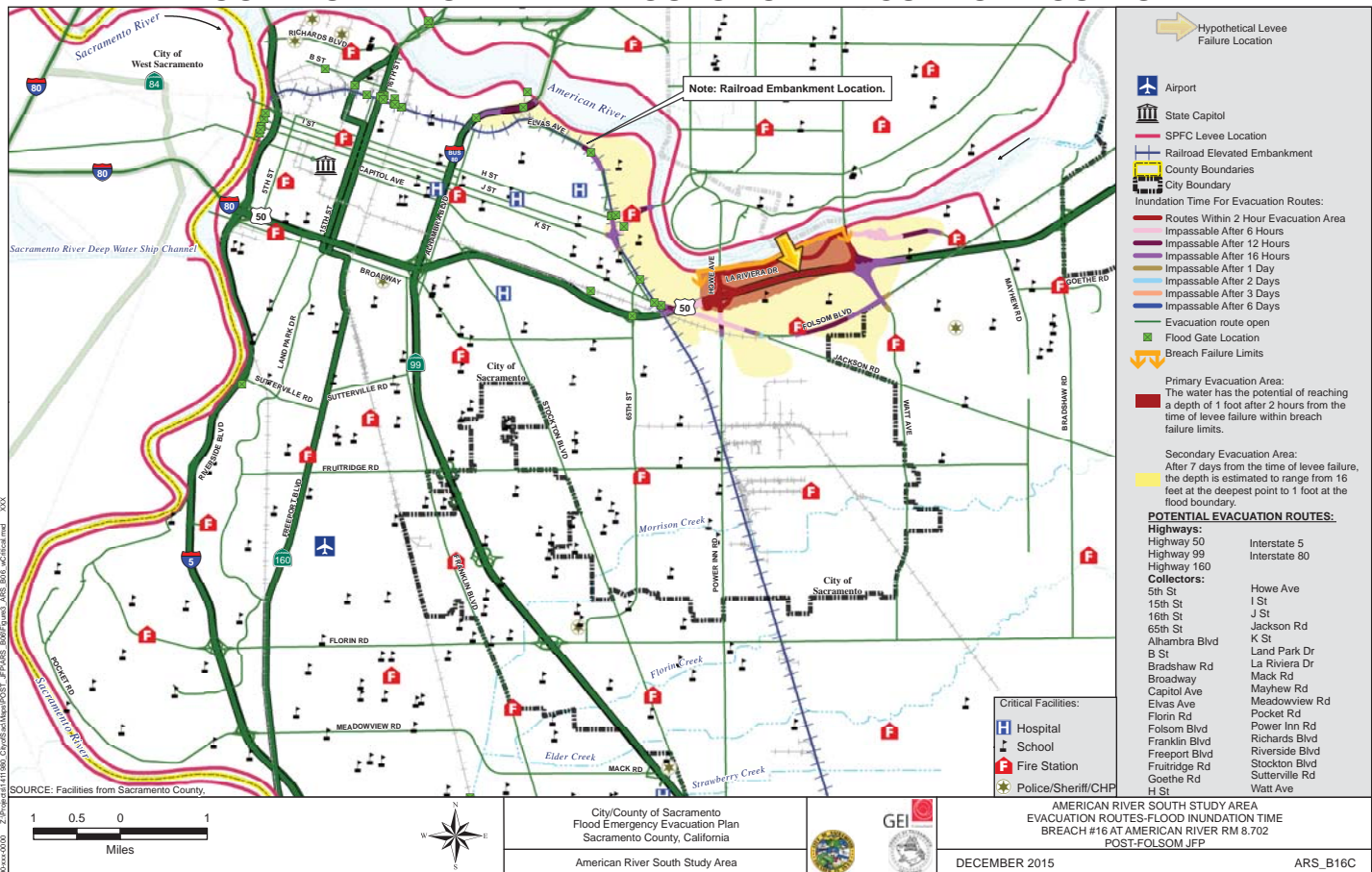
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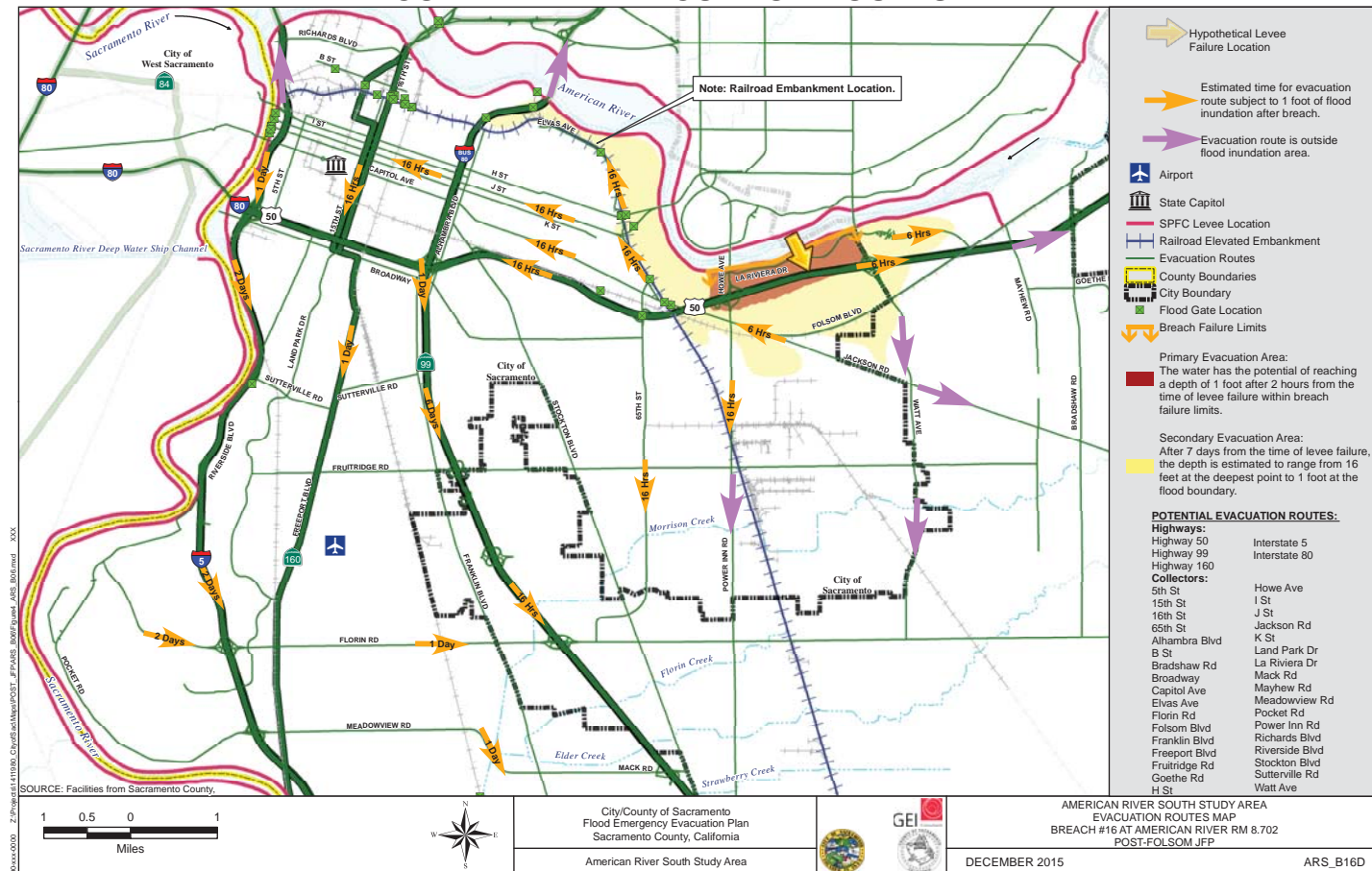
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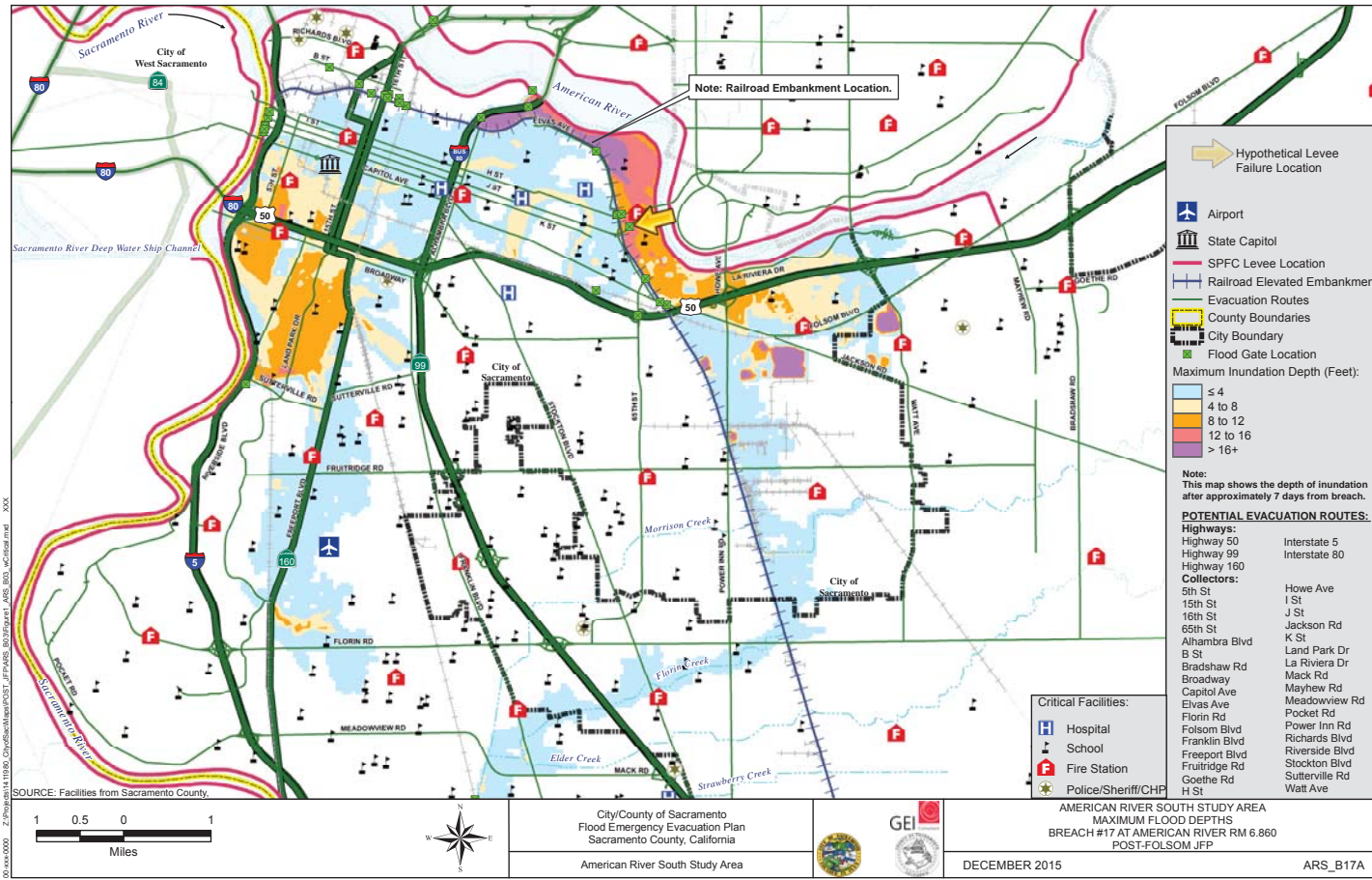
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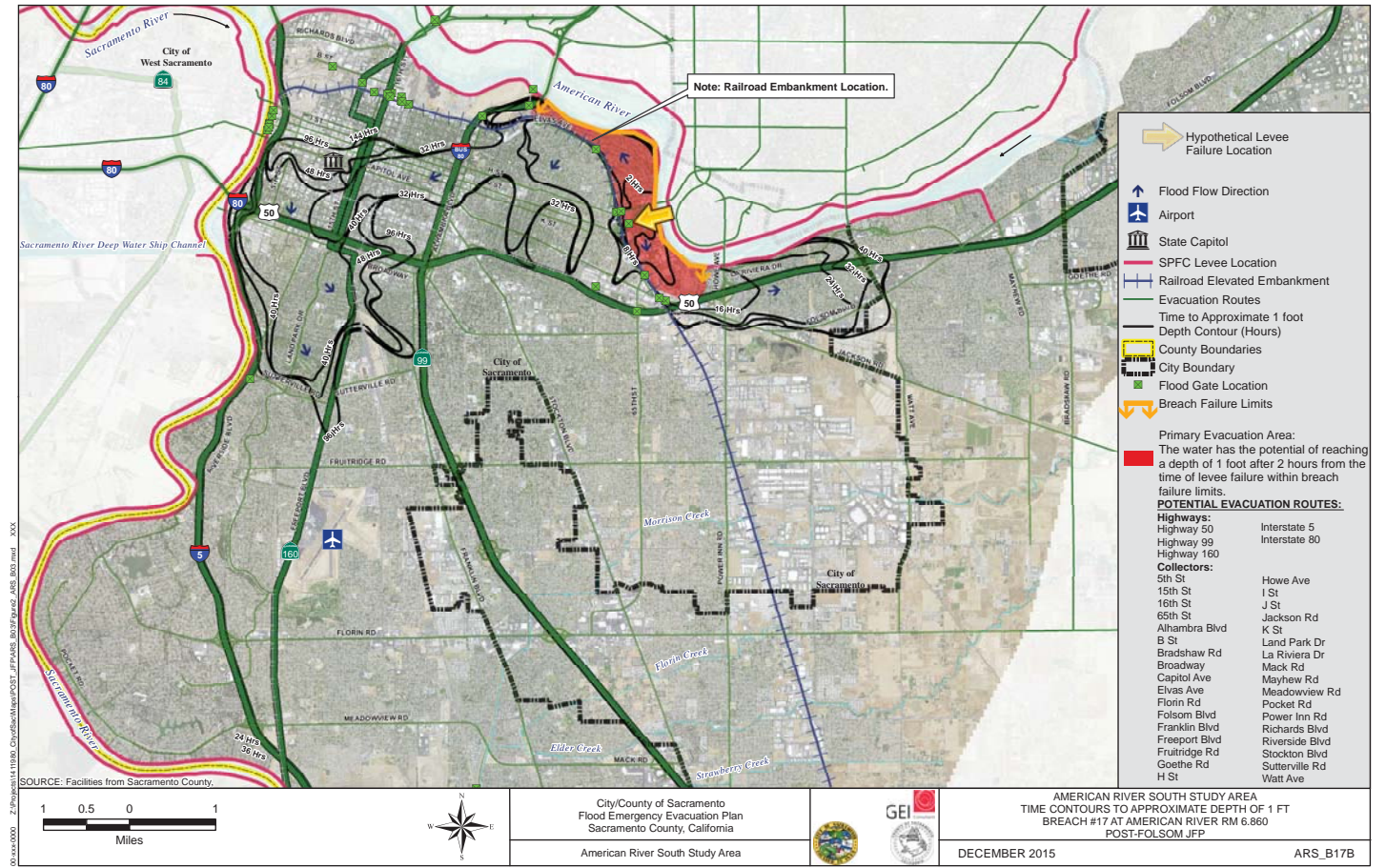
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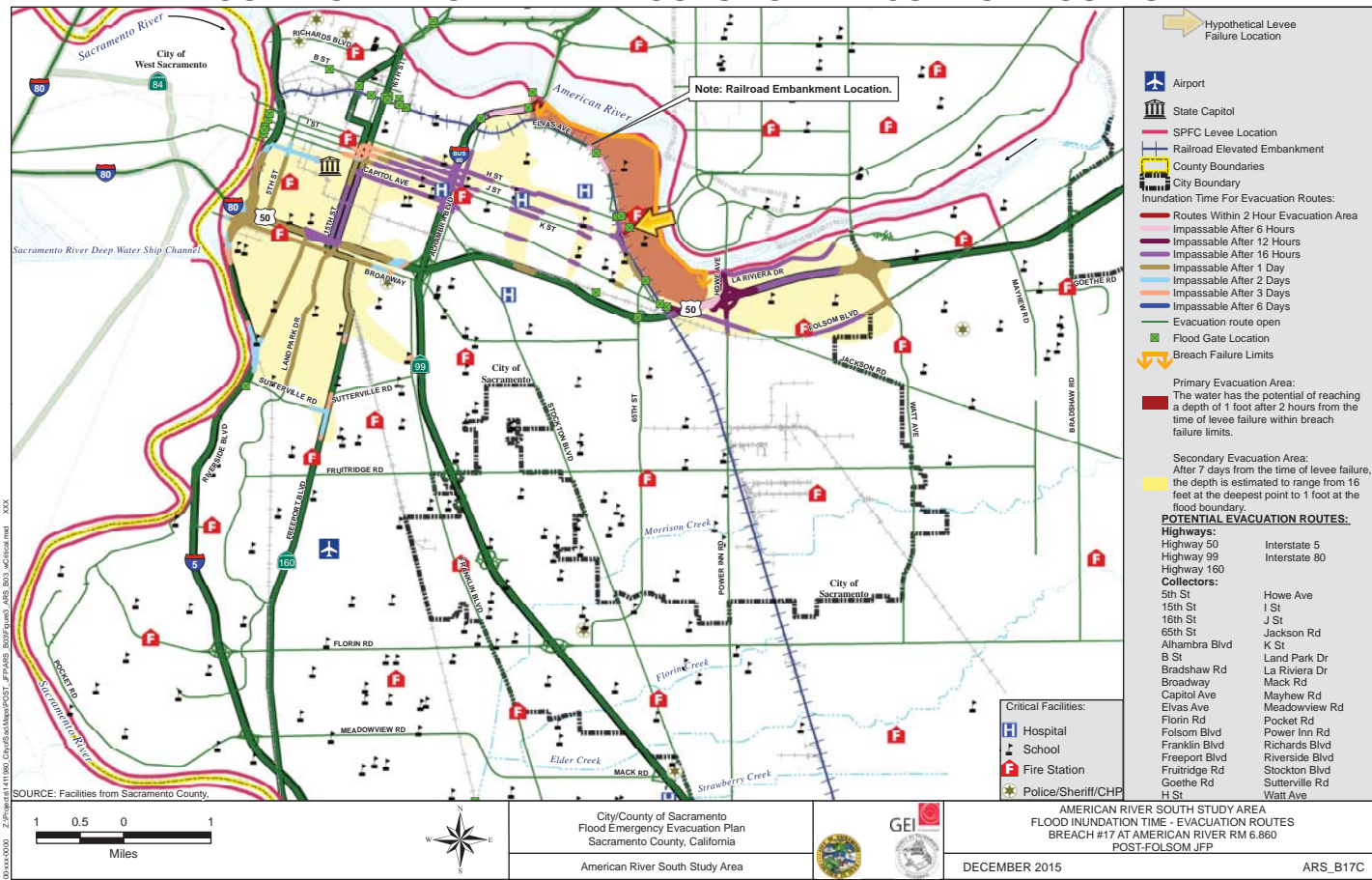
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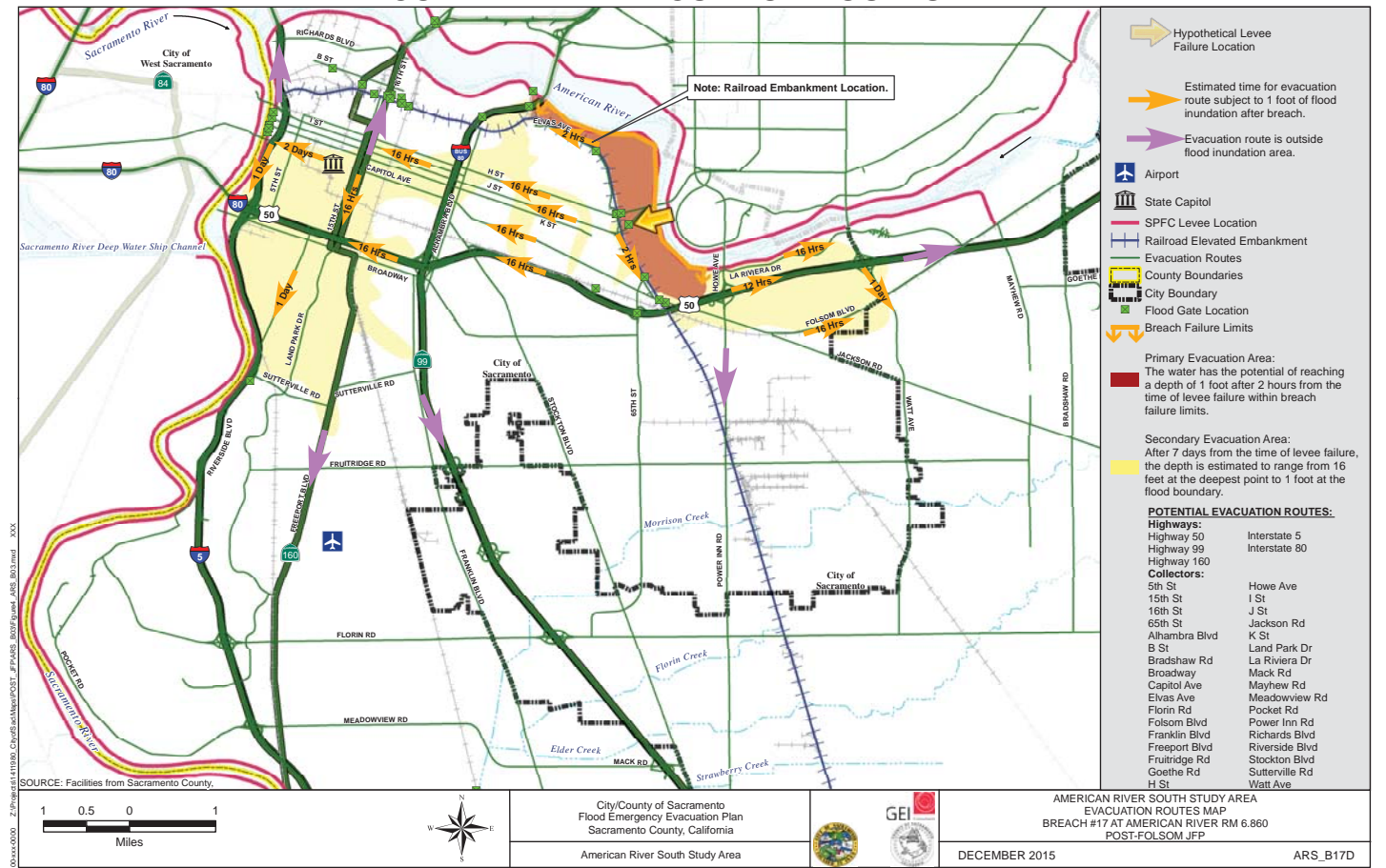
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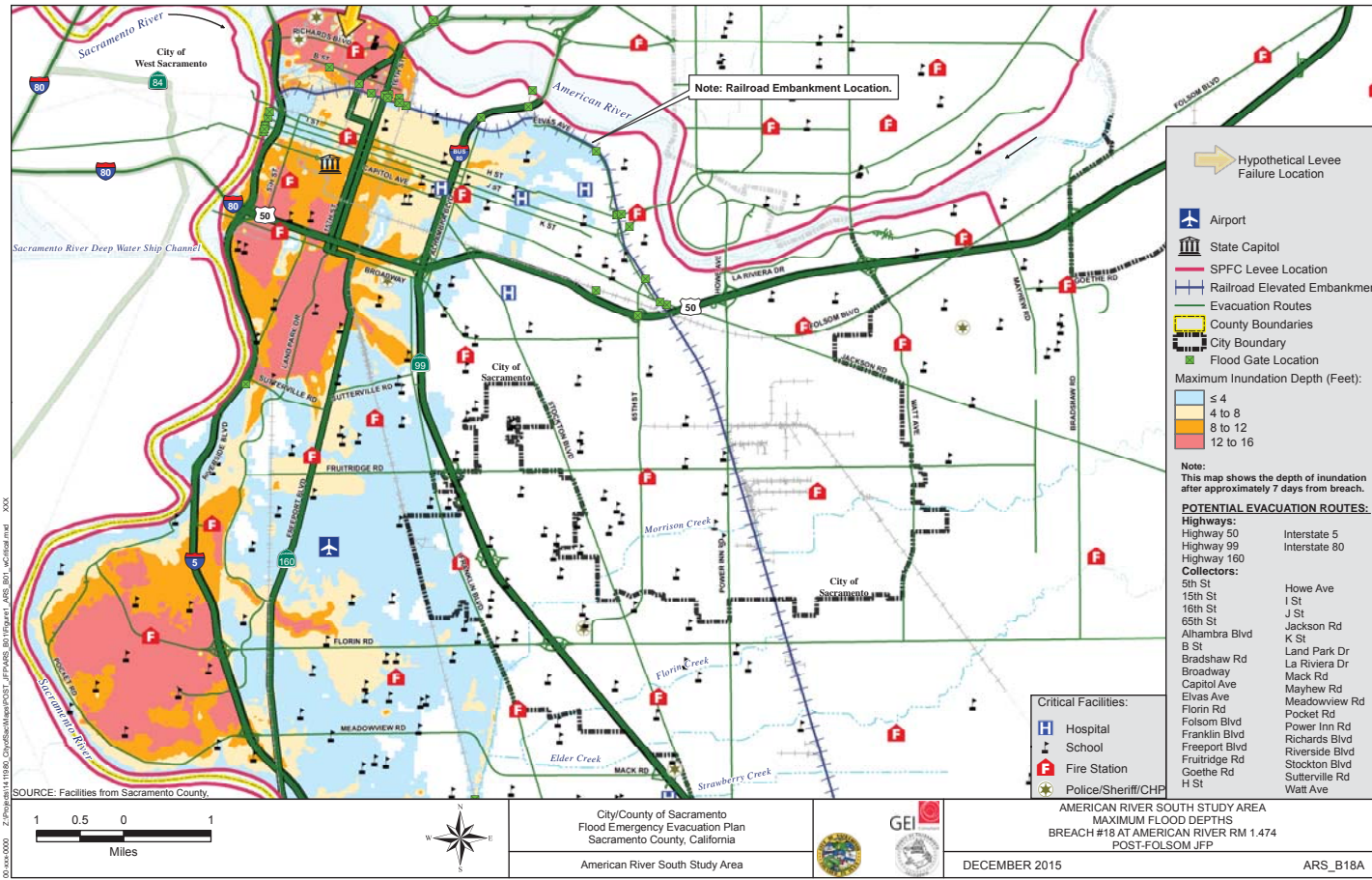
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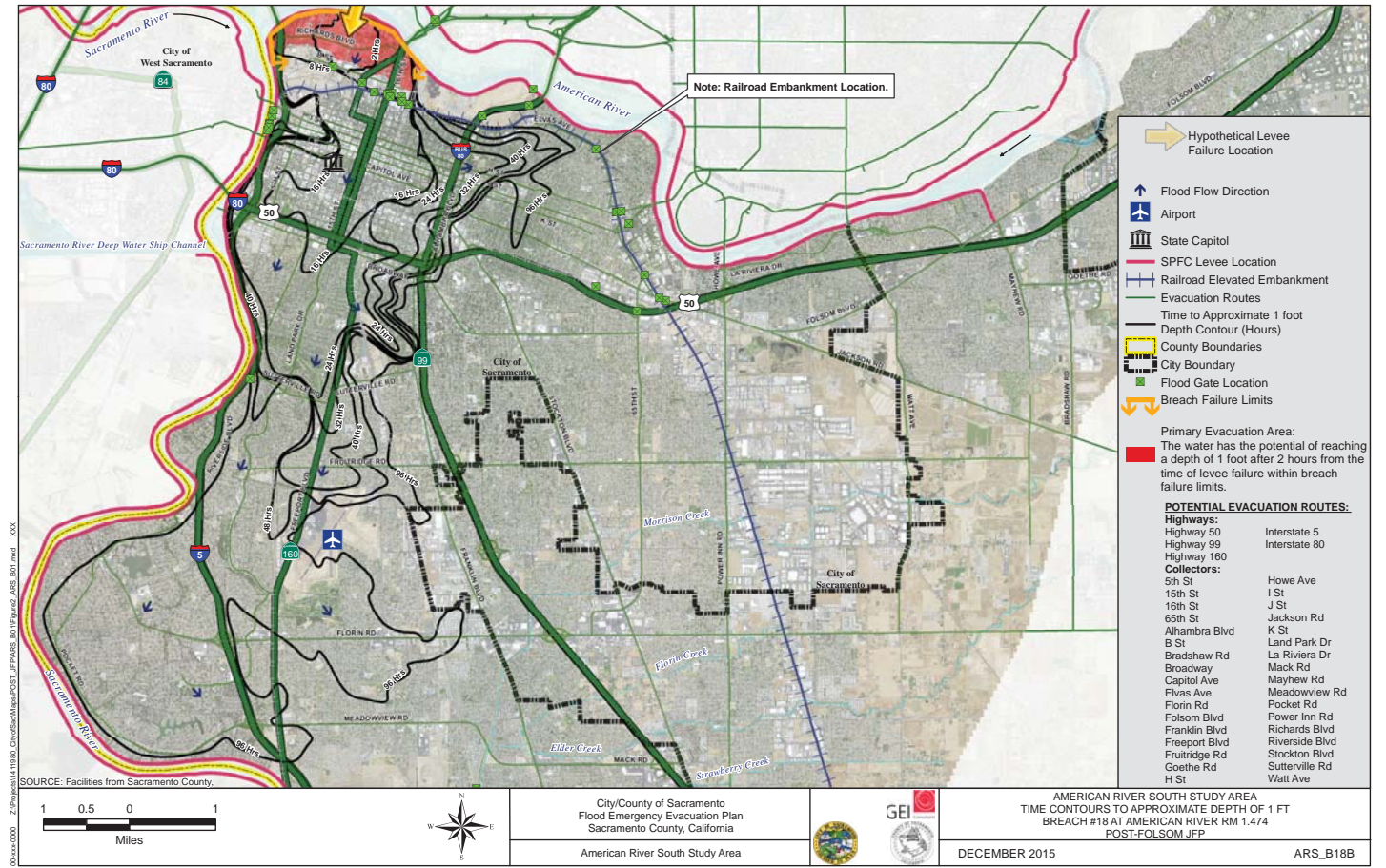
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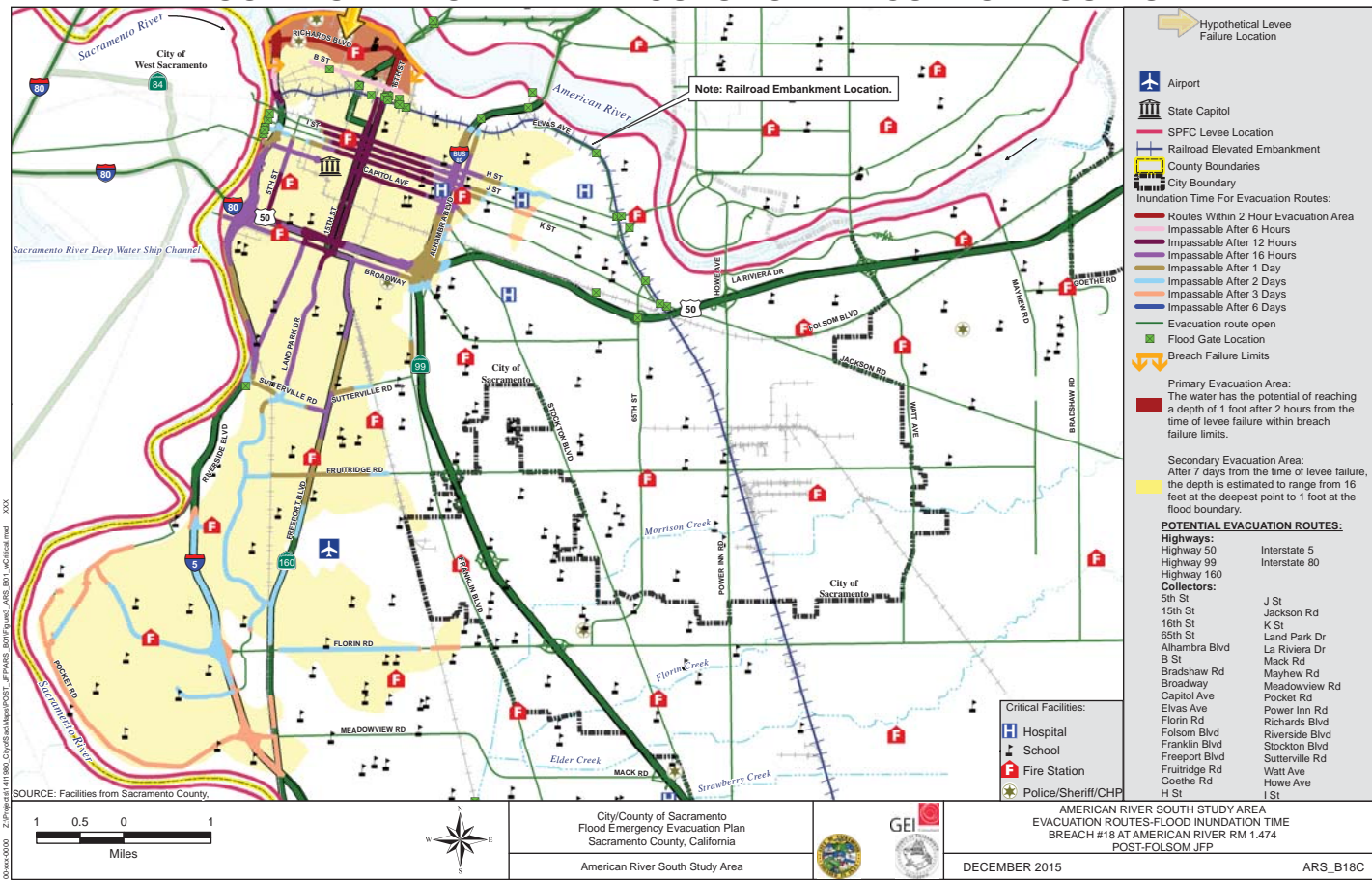
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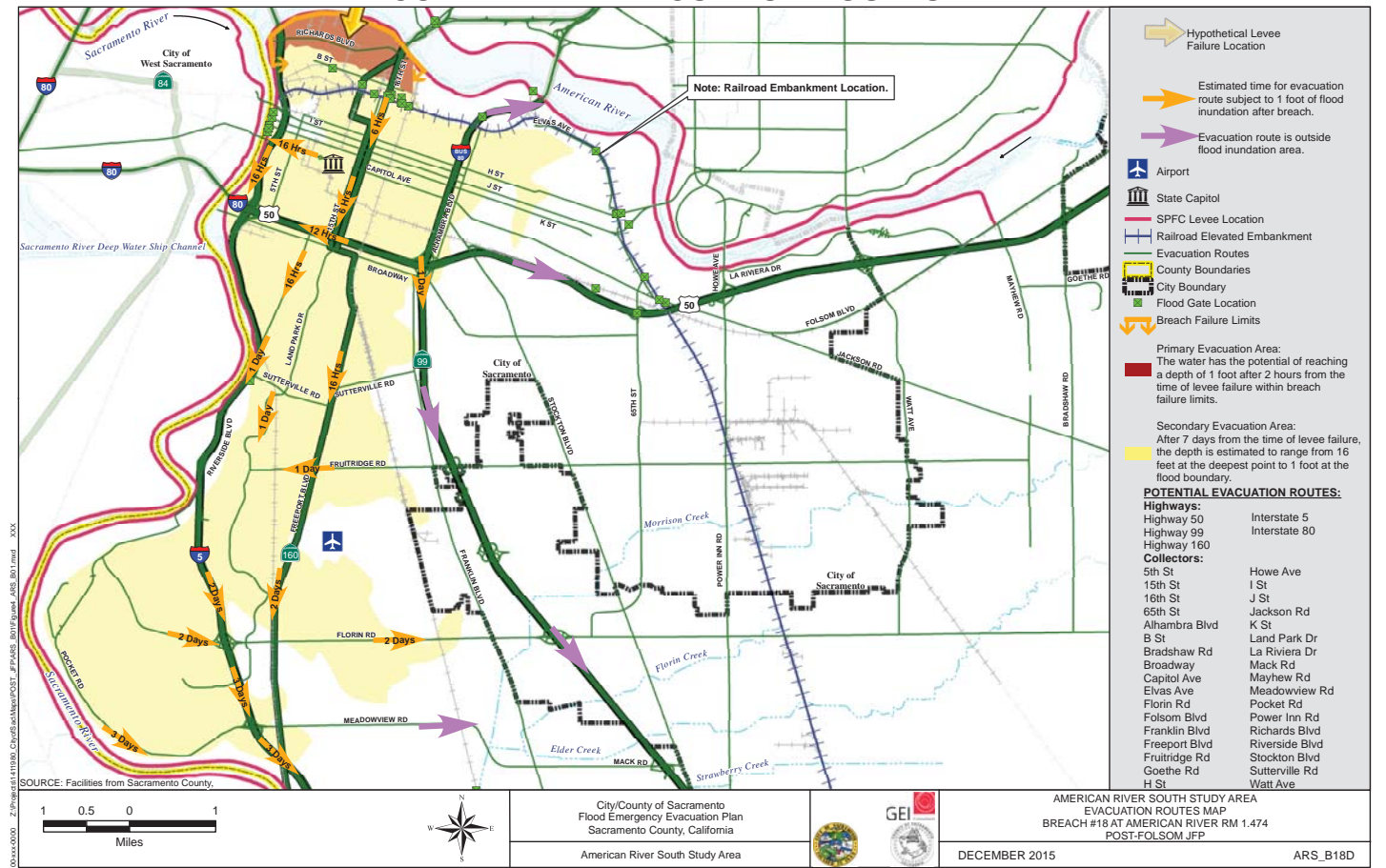
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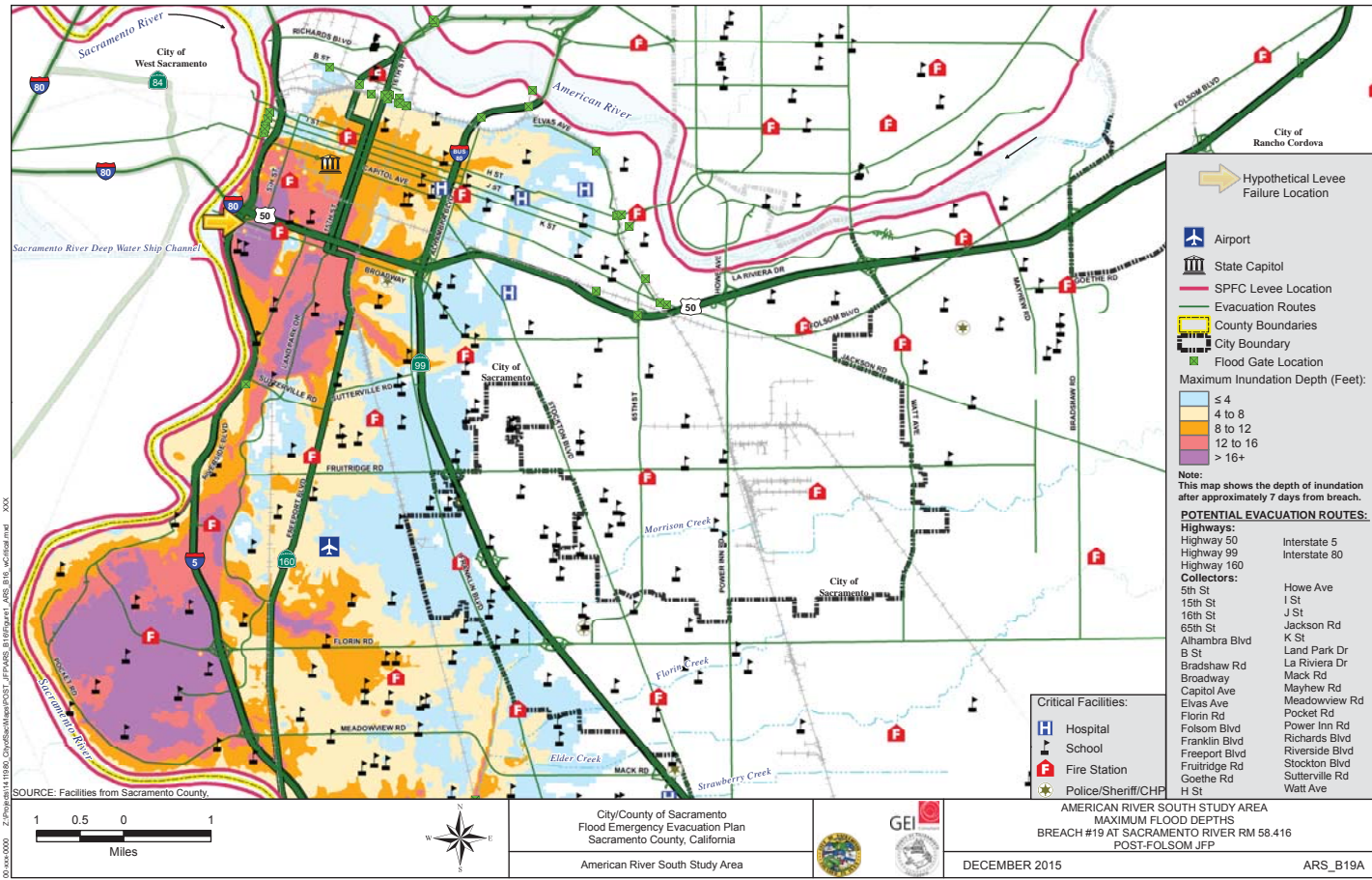
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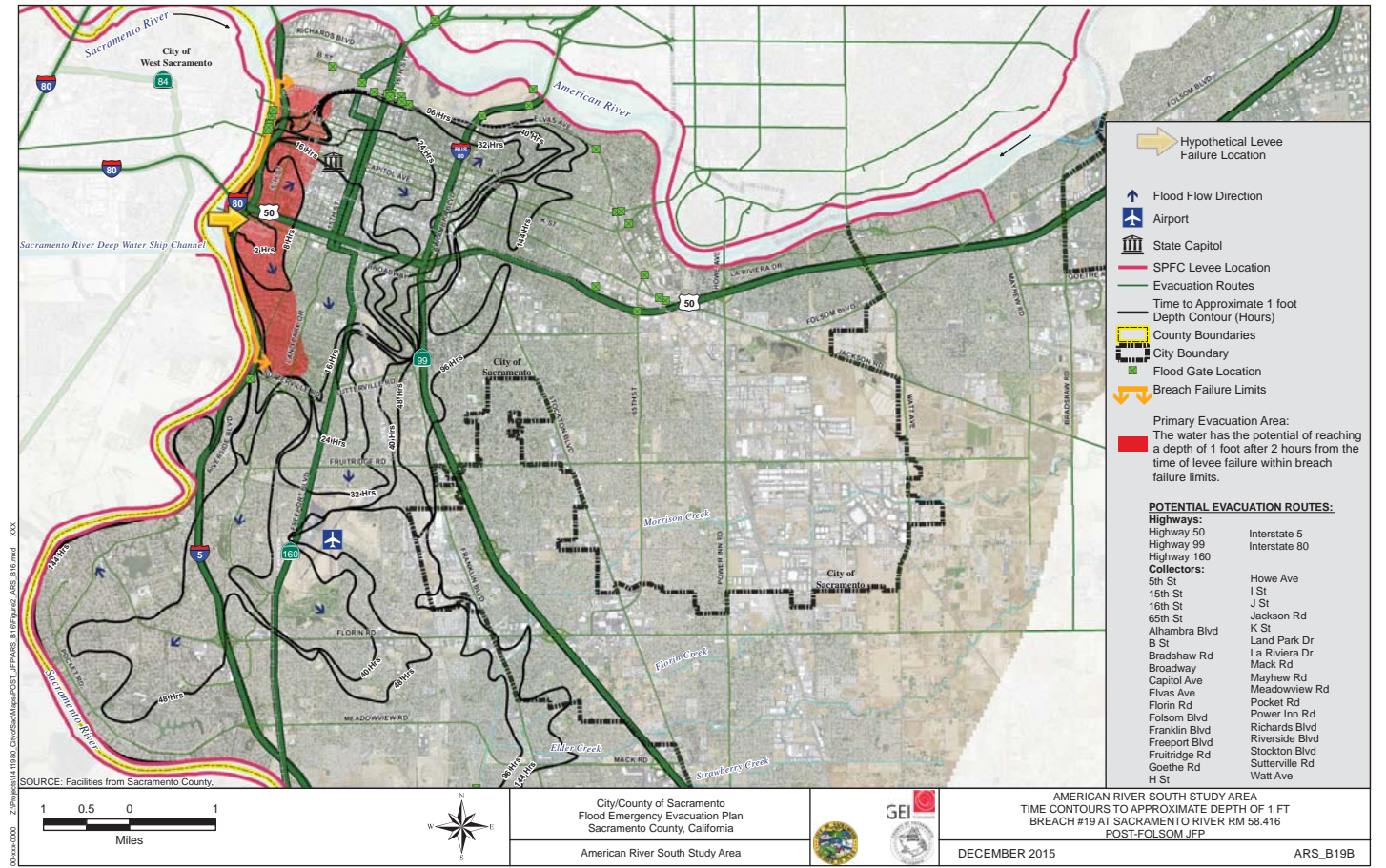
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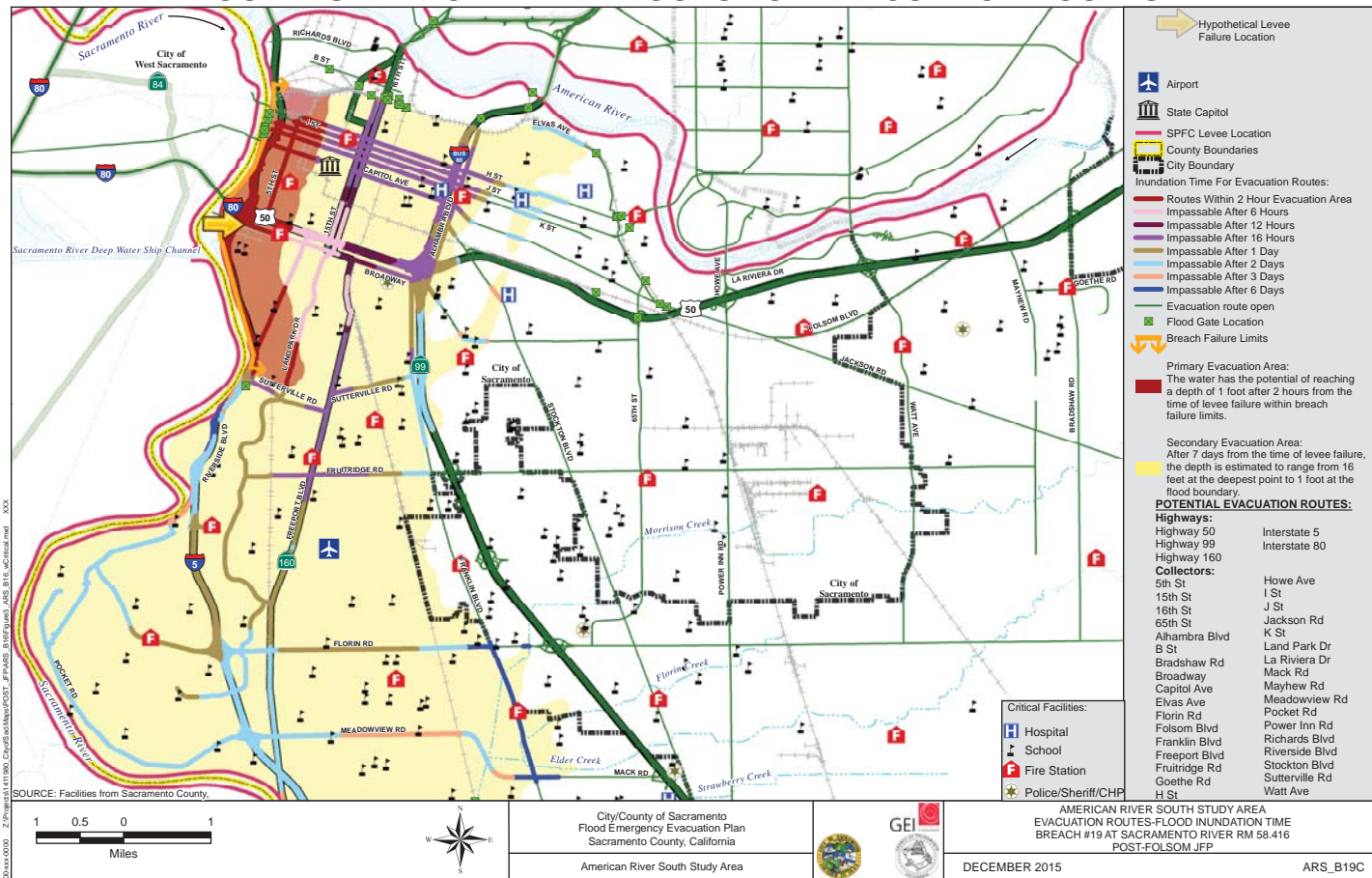
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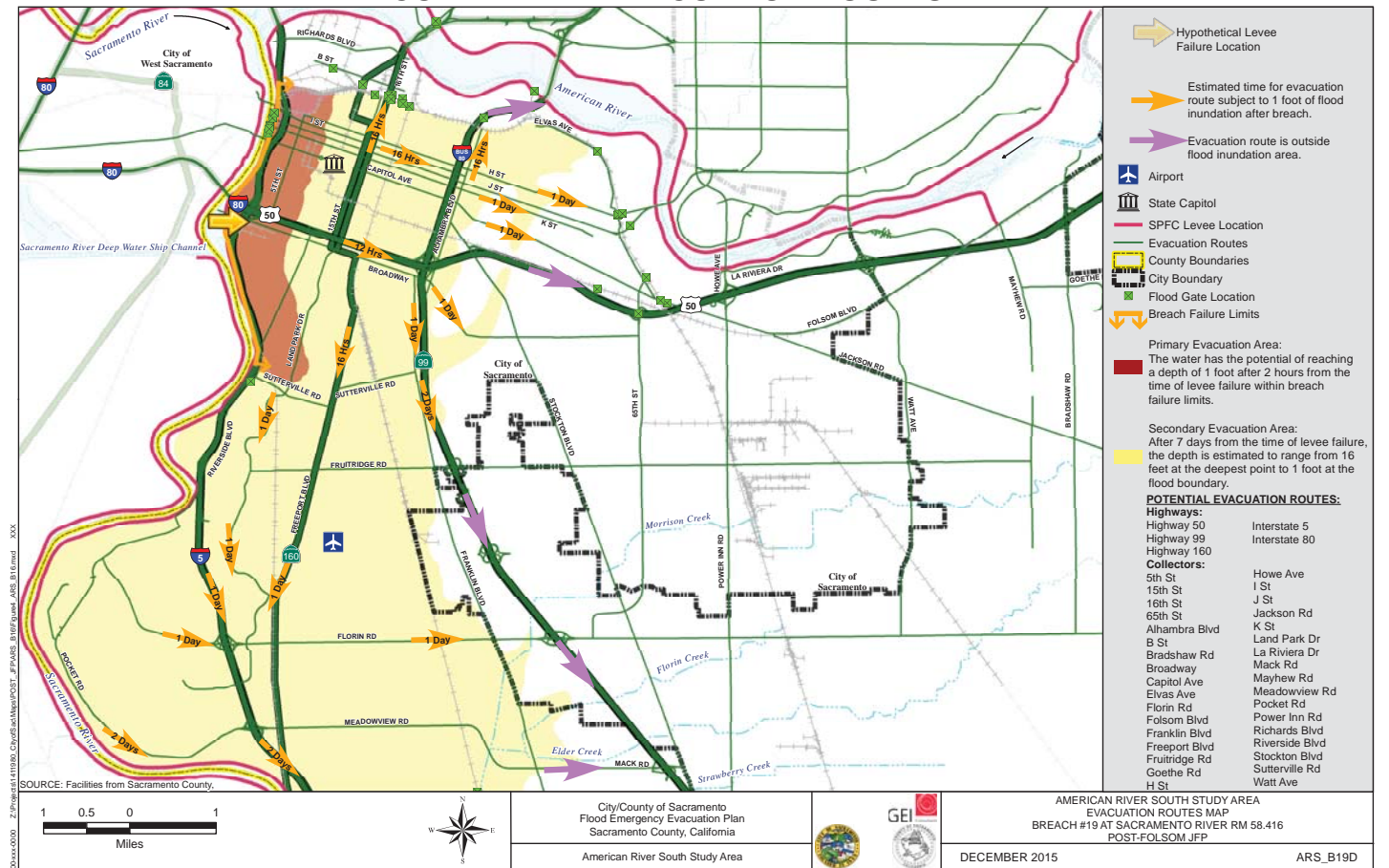
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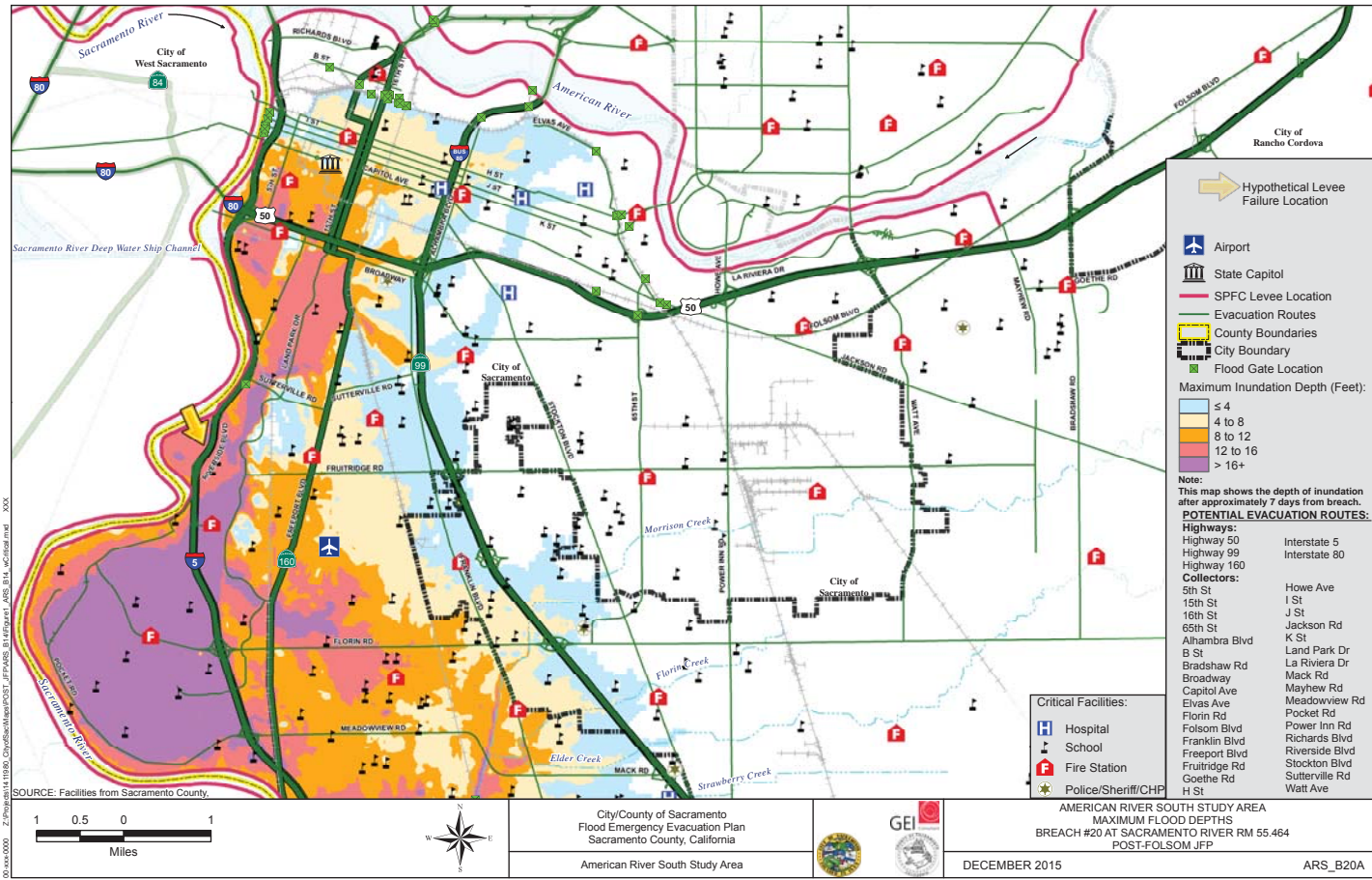
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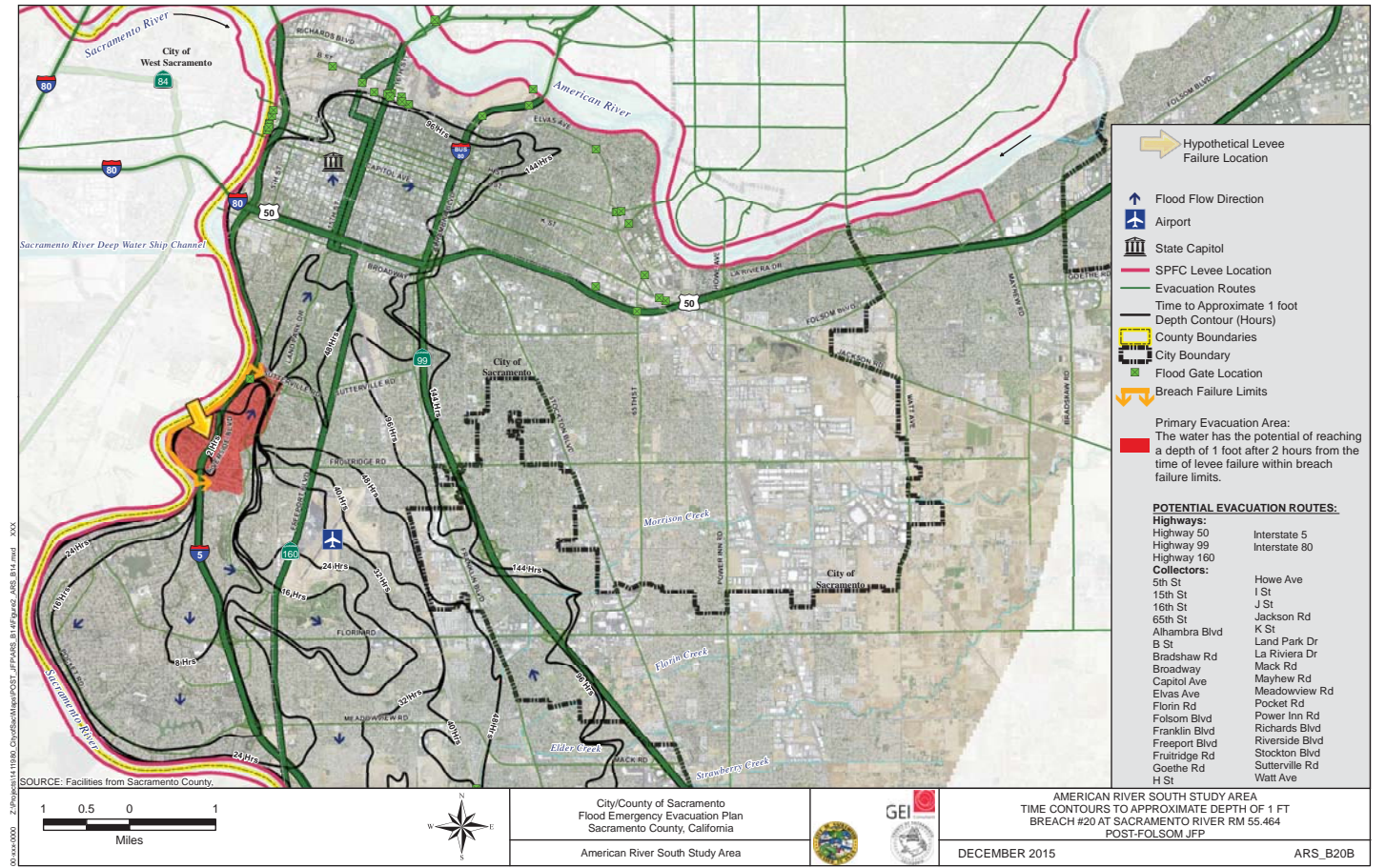
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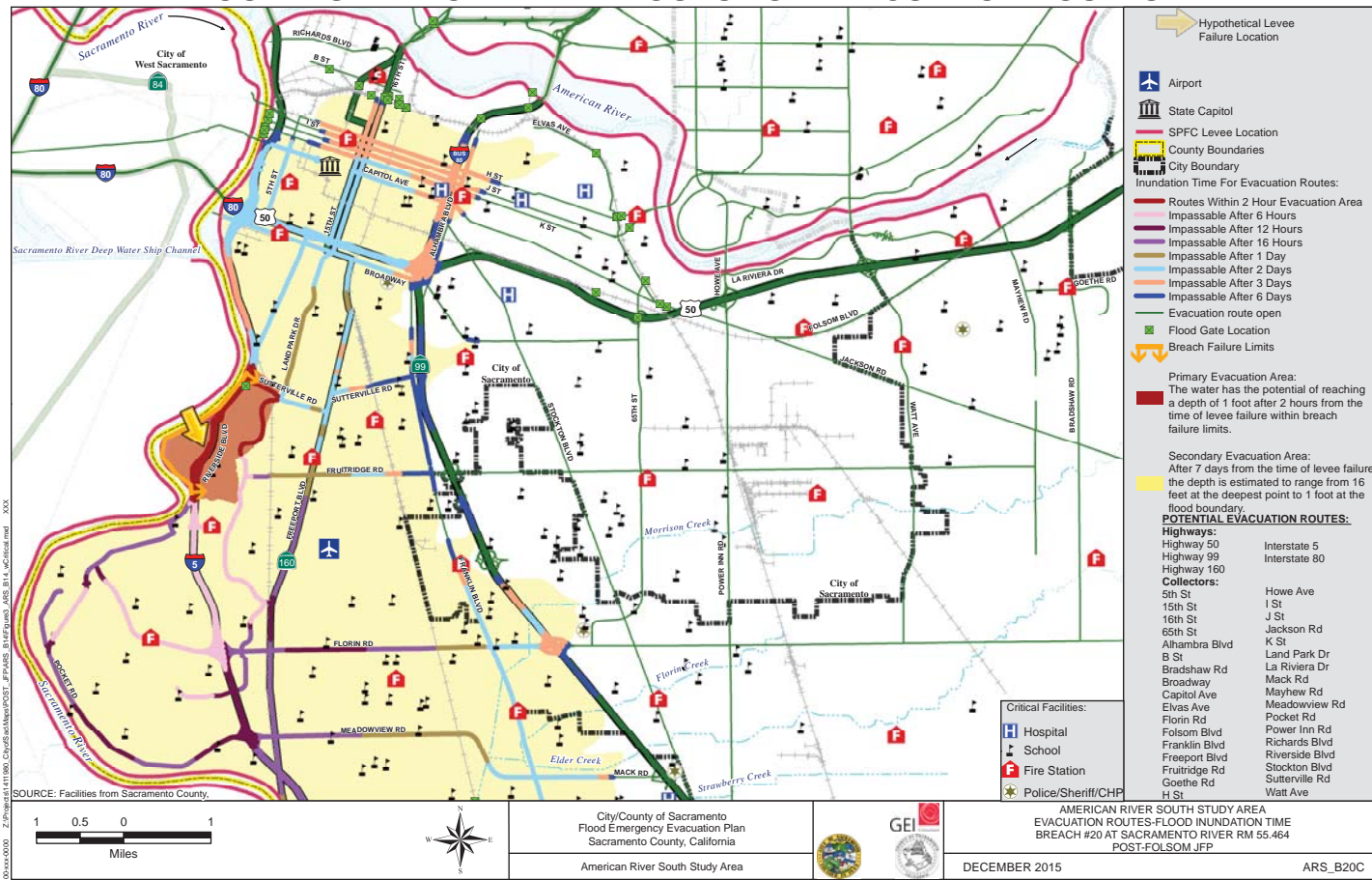
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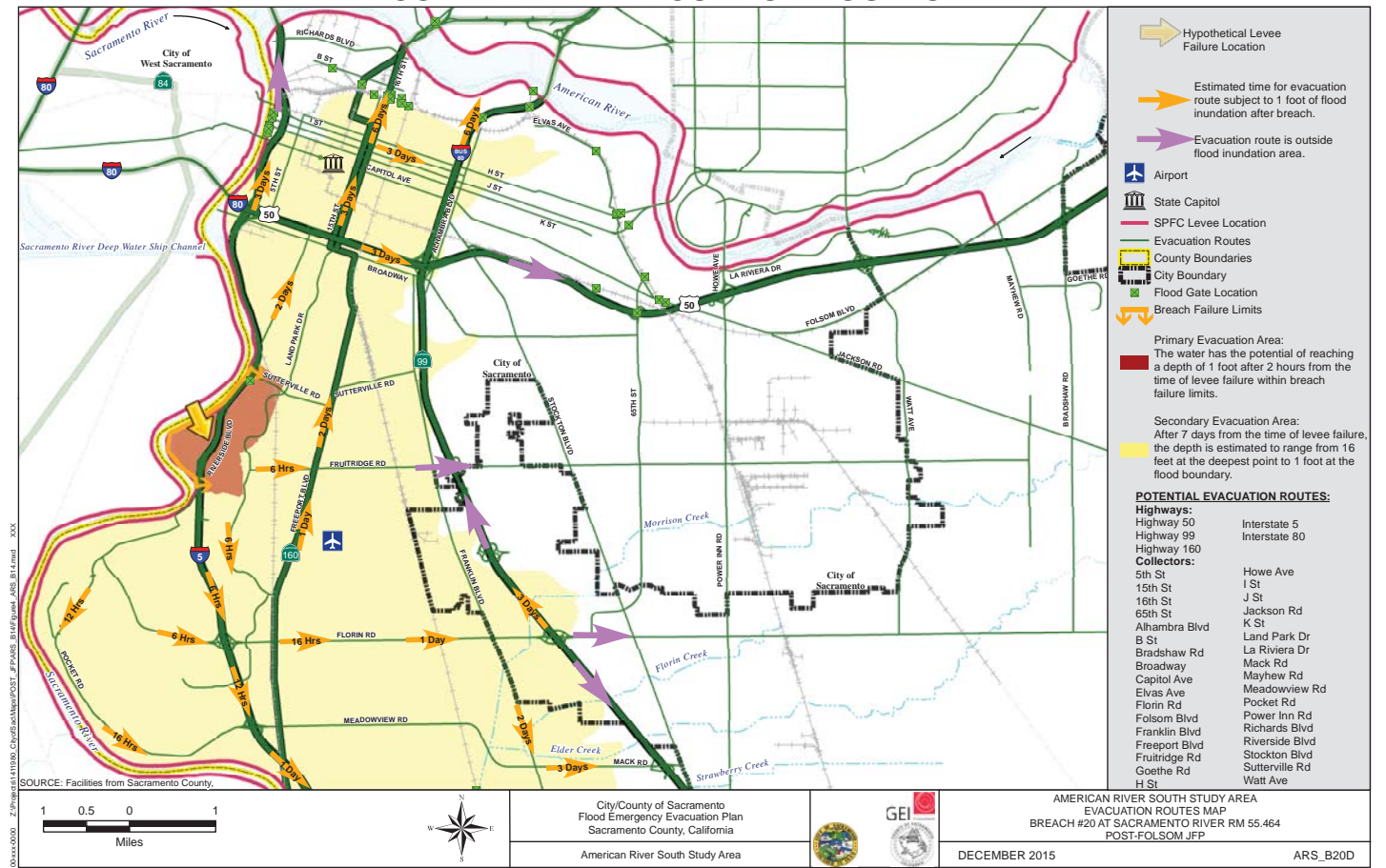
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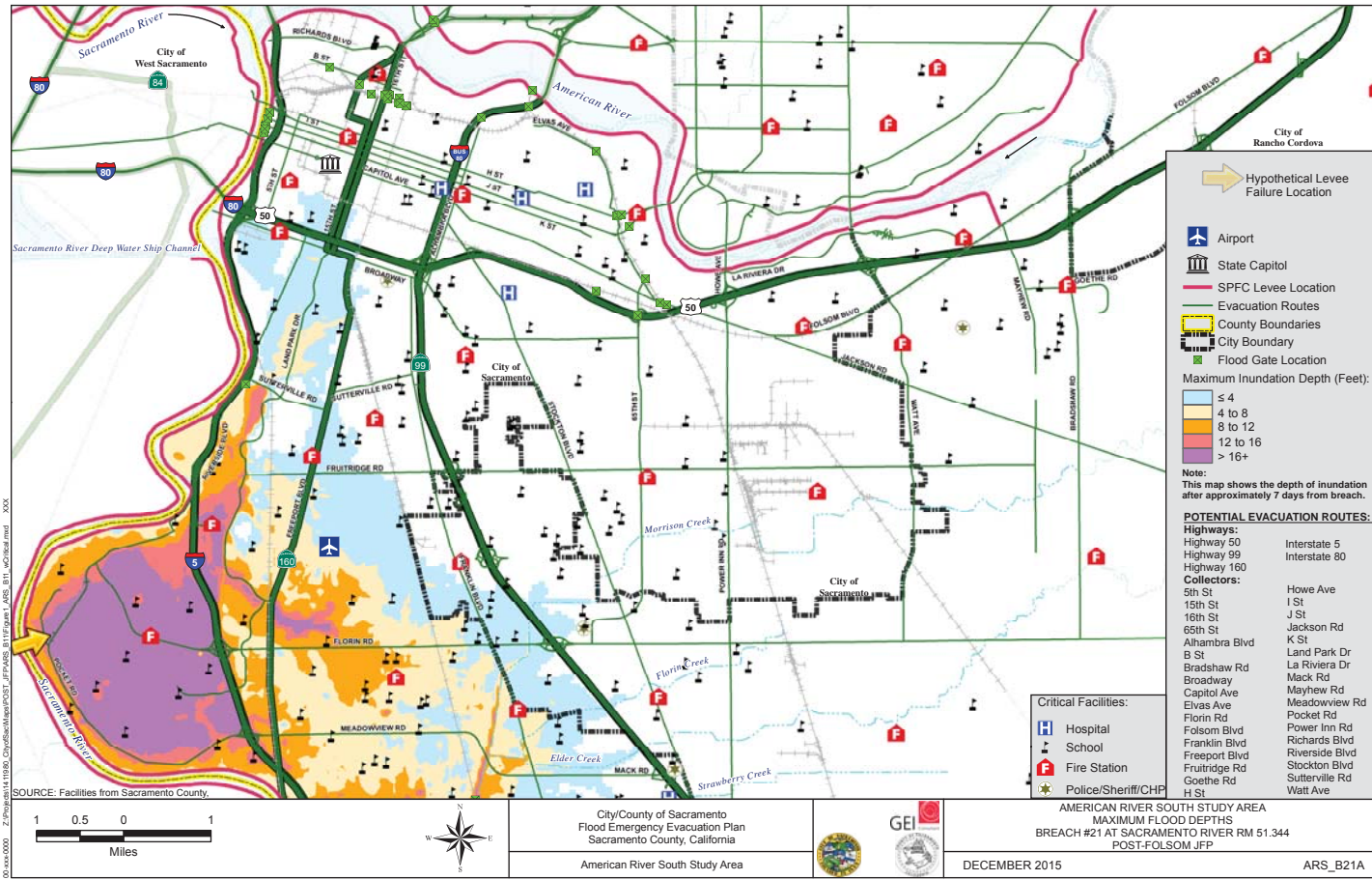
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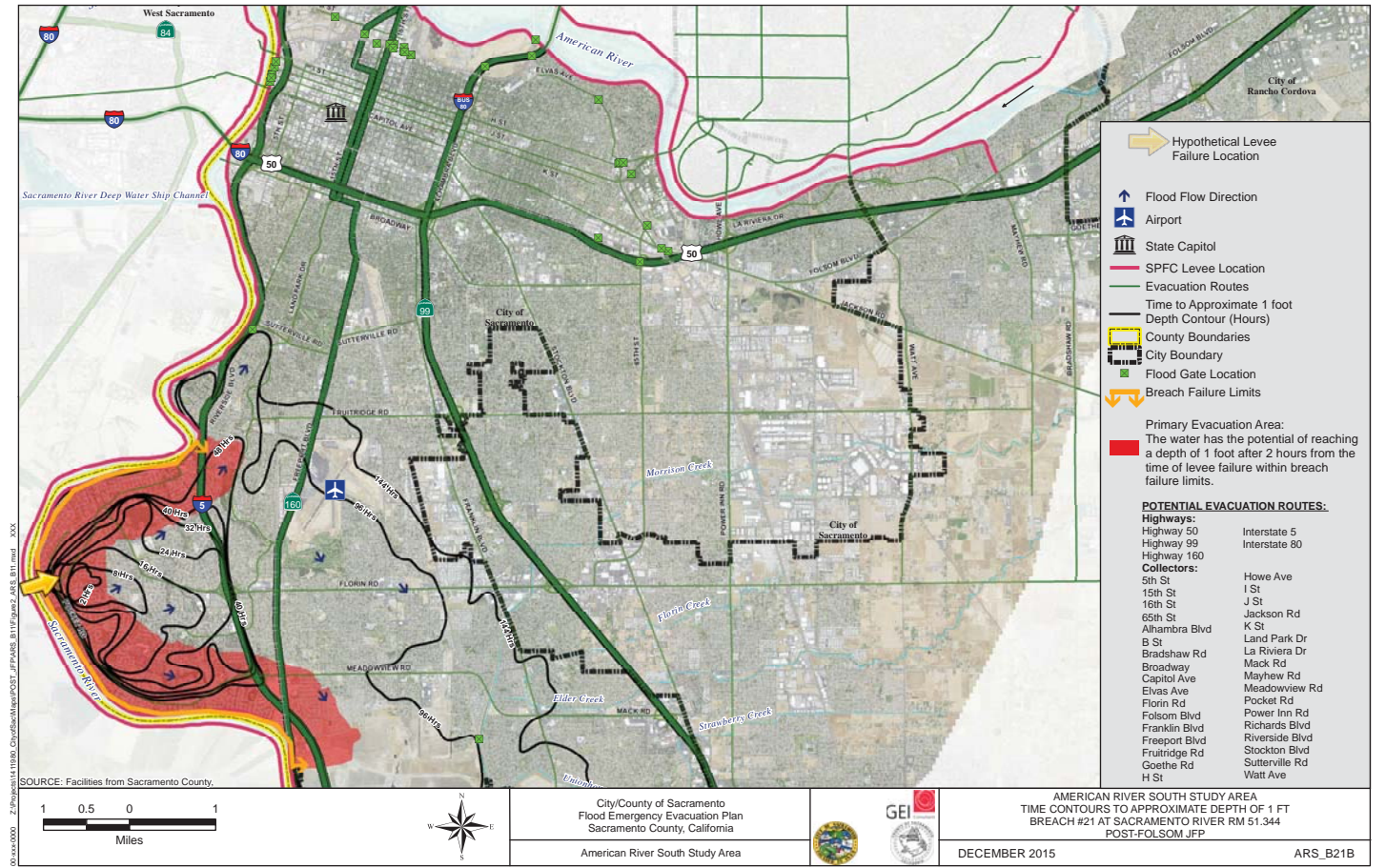
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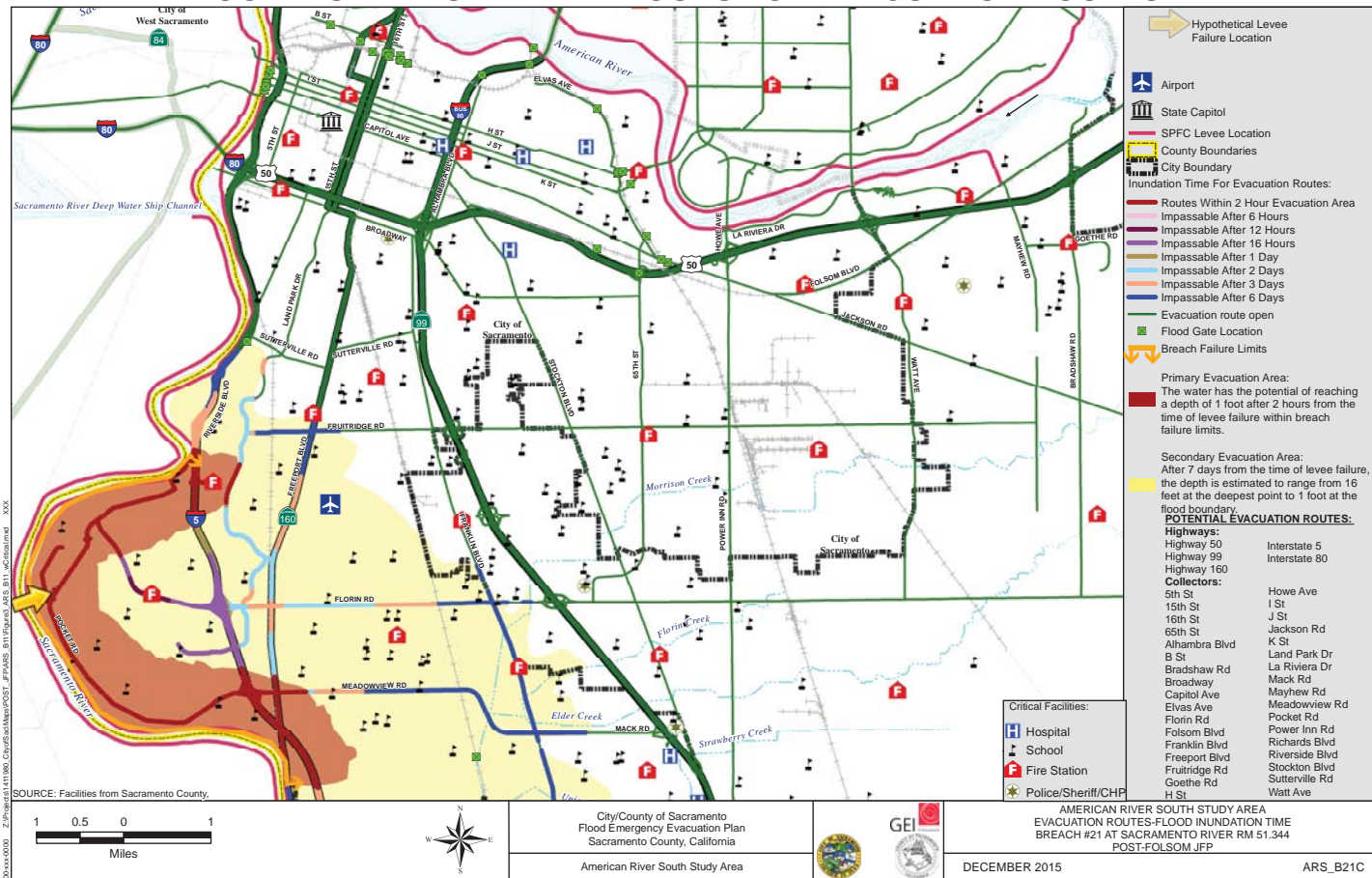
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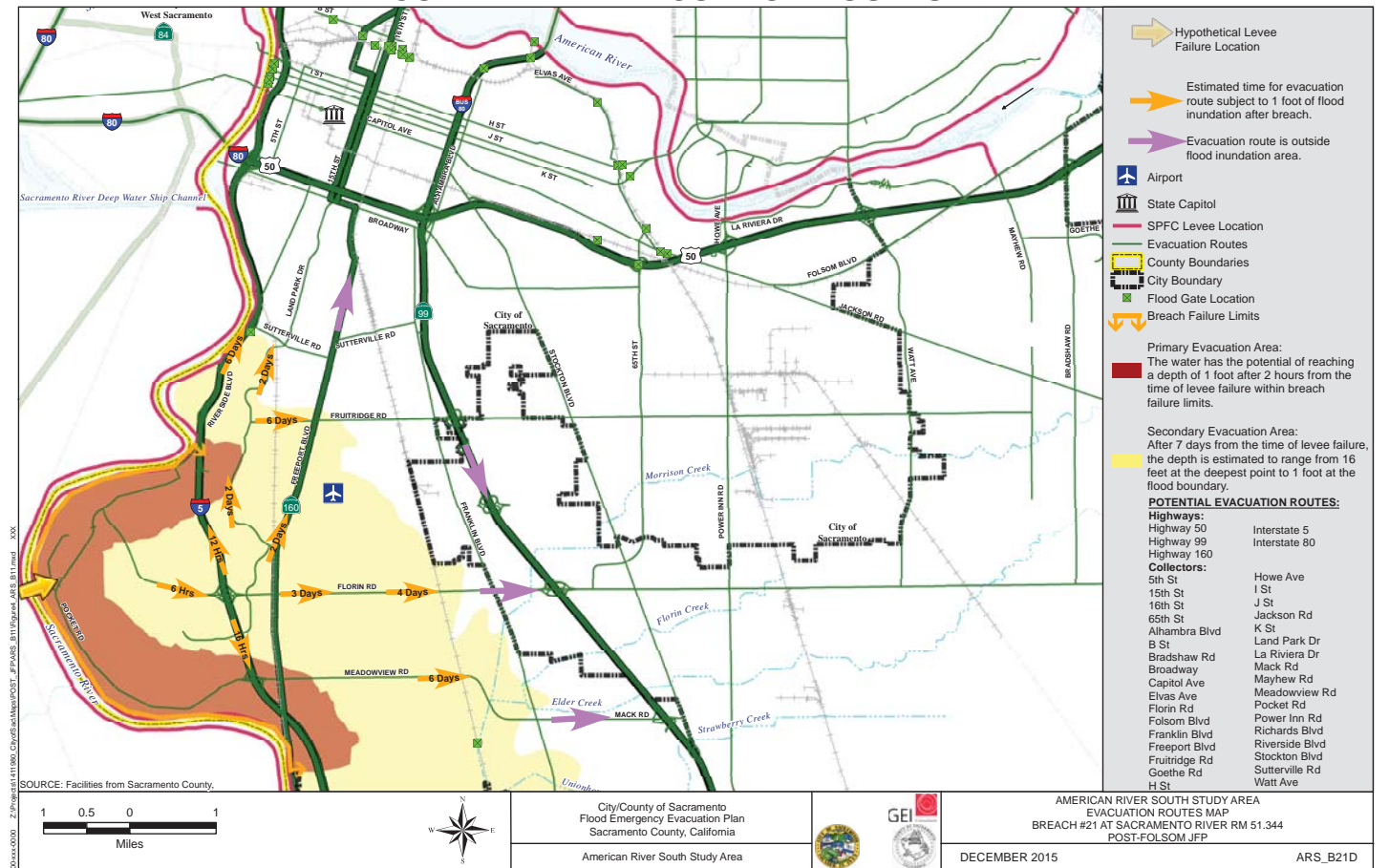
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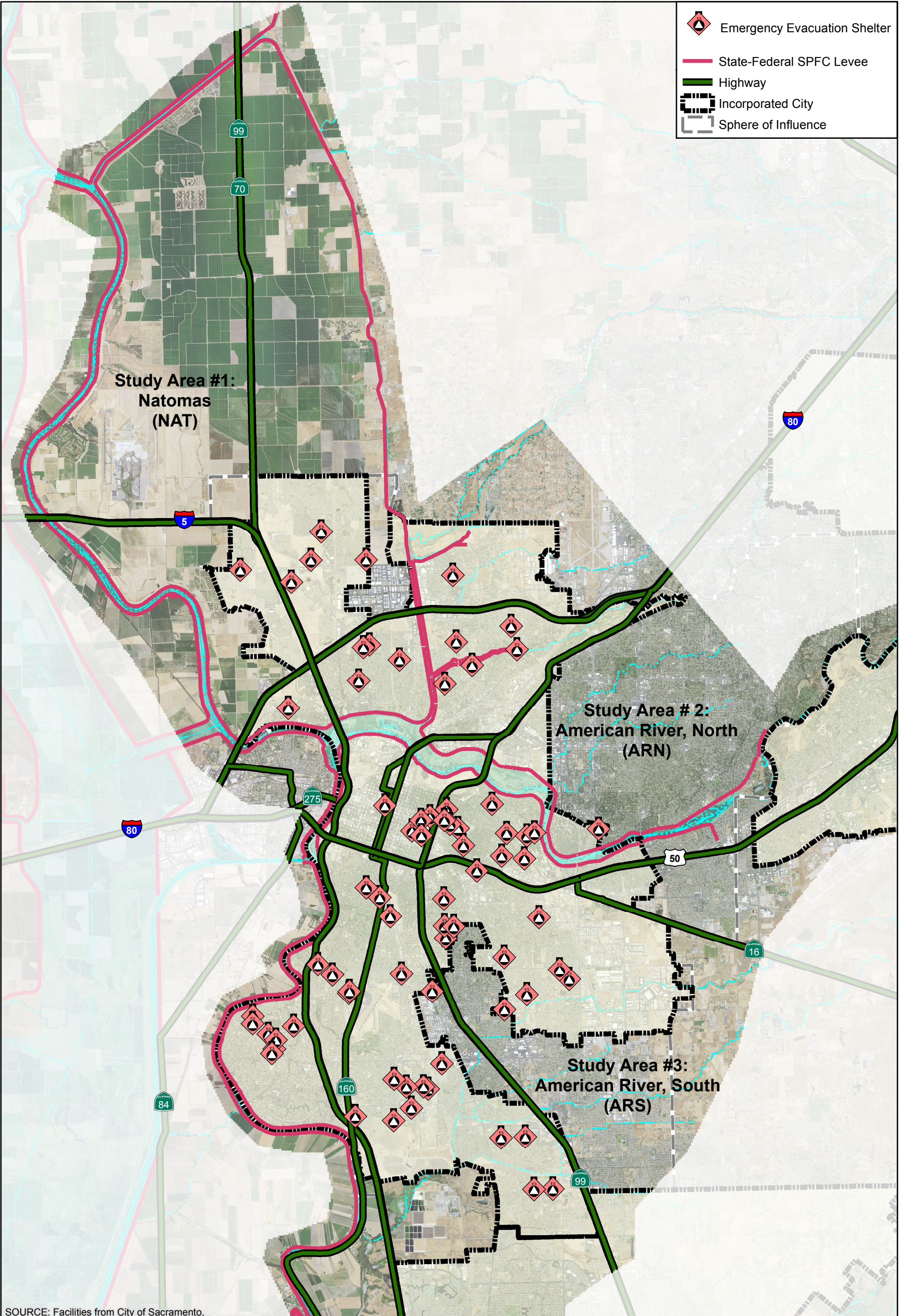
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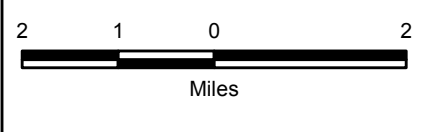
RECOMMENDED EVACUATION ROUTES



EMERGENCY EVACUATION SHELTERS



SOURCE: Facilities from City of Sacramento.



City/County of Sacramento
Flood Emergency Evacuation Plan
Sacramento County, California

City of Sacramento



**EMERGENCY EVACUATION SHELTERS
OVERALL STUDY AREA**

FEBRUARY 2016

FIGURE 7A

APPENDIX D

Repetitive Loss Area Analysis (RLAA)

REPETITIVE LOSS AREA ANALYSIS

Comprehensive Floodplain Management Plan

Prepared for:



July 2023

Table of Contents

Repetitive Loss Analysis.....	1
1. Step 1. Advise all Property Owners.....	2
1.1. Mailed Questionnaire and Online Survey.....	2
2. Step 2. Contact Agencies and Organizations	8
2.1. Summary of Studies and Reports	8
3. Step 3. Building Data Collection.....	13
4. Step 4. Review Alternative Approaches.....	14
4.1. Preventive.....	15
4.2. Property Protection	16
4.2.1. Flood Insurance	17
4.2.2. Dry Flood-Proofing	17
4.2.3. Wet Flood-Proofing	18
4.2.4. Direct Drainage Away from the Building.....	18
4.2.5. Drainage Maintenance	18
4.2.6. Sewer Improvements	19
4.2.7. Barriers	19
4.3. Natural Resource Protection	20
4.4. Emergency Services.....	20
4.5. Structural Projects.....	21
4.6. Public Information and Outreach.....	21
5. Step 5. Analysis of Individual Repetitive Loss Areas	23
5.1. Region 1 – South Natomas.....	23
5.2. Region 2 – Downtown East	30
5.3. Region 3 – Downtown West.....	36
5.4. Region 4 – Southeast Sacramento	47
5.5. Region 5 – Sutterville/Meadowview	52
5.6. Region 6 – Arcade Creek.....	61
6. Repetitive Loss Area Analysis Summary	68
6.1. Current Mitigation Projects.....	68
6.1.1. Capital Improvements Plan Drainage Improvements	68
6.1.2. Acquisition and Demolition	68
6.1.3. Advantages and Disadvantages of Mitigation Measures	68
7. Conclusion and Recommendations.....	69

Repetitive Loss Analysis

On May 3, 2016, the City of Sacramento’s Repetitive Loss Area Analysis (RLAA) was adopted by City Council as part of the City of Sacramento’s Comprehensive Flood Management Plan (CFMP). Since its initial adoption, additional investigations have been performed in the City’s repetitive loss areas. This report reflects all current and past findings.

The City of Sacramento is using the ISO repetitive loss list and AW-501s dated December 2021, and a follow-up list dated December 2022 as the basis for this RLAA. This is the last officially sanctioned Community Rating System (CRS) repetitive loss data set issued to the City. According to the list, the City of Sacramento has 59 repetitive loss properties; 23 are mitigated, 23 are unmitigated, and 13 are misidentified and are pending removal. See Attachment 1 for details of the Repetitive Loss List. Area analyses are not required to be completed for mitigated properties. Four properties have been added to the list since the 2016 analysis that are analyzed herein. These are Region 3-Area 12 and Region 6-Areas 19 and 20.

The City is seeking mitigated status approval for one property; this property is included in the area analyses provided in this RLAA.

Repetitive Loss Area Analysis Process

The RLAA planning process incorporated requirements from Section 510 of the 2017 CRS Coordinator’s Manual. The planning process also incorporated requirements from the following guidance documents:

- Federal Emergency Management Agency (FEMA) publication *Reducing Damage from Localized Flooding: A Guide for Communities*, Part III Chapter 7;
- CRS publication *Mapping Repetitive Loss Areas* dated August 15, 2008; and
- Center for Hazards Assessment Response and Technology, University of New Orleans draft publication *The Guidebook to Conducting Repetitive Loss Area Analyses*.

Most specifically, this RLAA included all five planning steps included in the 2017 CRS Coordinator’s Manual:

- Step 1. Advise all properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommendation actions.
- Step 2. Contact agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.
- Step 3. Visit each building and collect basic data.
- Step 4. Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.
- Step 5. Document the findings. A separate analysis report must be prepared for each area.

Beyond the five planning steps, additional credit criteria must be met:

- The community must have at least one repetitive loss area delineated in accordance with the criteria in Section 503.

- The repetitive loss area must be mapped as described in Section 503.a. A Category “C” community must prepare analyses for all of its repetitive loss areas if it wants to use the RLAA to meet its repetitive loss planning prerequisite.
- The RLAA report(s) must be submitted to the community’s governing body and made available to the media and the public. The complete RLAA report(s) must be adopted by the community’s governing body or by an office that has been delegated approval authority by the community’s governing body.
- The community must prepare an annual progress report for its area analysis.
- The community must update its RLAA in time for each CRS cycle verification visit.

The majority of the repetitive loss areas experience the same cause of flooding, that of local drainage problems; however, each region has unique characteristics that impact the property protection measures that are most effective in promoting flood protection. Therefore, data collected and analyzed in steps three, four, and five have been organized by region.

1. Step 1. Advise all Property Owners

RLAA Step 1 (2017 CRS Coordinator’s Manual Section 512.b) requires notification that an analysis is being conducted to all properties in the repetitive loss areas, with a request for input on the hazard and recommended actions. The City of Sacramento sends an annual notice to all repetitive loss area properties with information on the potential flood hazard and recommended mitigation activities.

Before fieldwork began on the current RLAA, individual letters were mailed to property owners within all six repetitive loss areas (Figure 1). Letters were mailed to all properties within each area, including repetitive loss properties, and additional properties with similar flooding conditions but which have no known claims paid against the NFIP. In total, 438 notification letters were mailed to property owners. The letters were sent out on January 17, 2023. Copies of the addresses are maintained on file with the City of Sacramento, Department of Utilities. In accordance with the privacy act of 1974, the letters will not be shared with the general public.

For this process, the City also developed a questionnaire (Figure 2), which allowed homeowners to share important information about flooding in their neighborhoods. The questionnaire included an explanation of what a repetitive loss area was, and requested historical information on the properties’ flood history.

Prior to the field visit, a second targeted outreach letter and questionnaire were mailed in March 2023. This mailing included properties recently added to the City’s repetitive loss list. A copy of this targeted letter is included as Figure 3.

1.1. Mailed Questionnaire and Online Survey

The questionnaire was included with each letter mailed to building owners, and was also available online, through an online link as well as a QR code. The questionnaire asks about the type of foundation and if the building has a basement, if the building has experienced any type of flooding, the cause of the flooding, flood protection measures and whether the owner has flood

insurance. A copy of the entire mailing, including the property notification letter, survey, and “Protect Your Home from Flooding” FEMA brochure, is included in Attachment 2.

Of the 438 mailed notification letters and questionnaires, the City of Sacramento received 14 responses. A compilation of the responses can be found in Attachment 4.

FIGURE I. EXAMPLE RLAA PROPERTY NOTIFICATION LETTER (JANUARY MAILING)

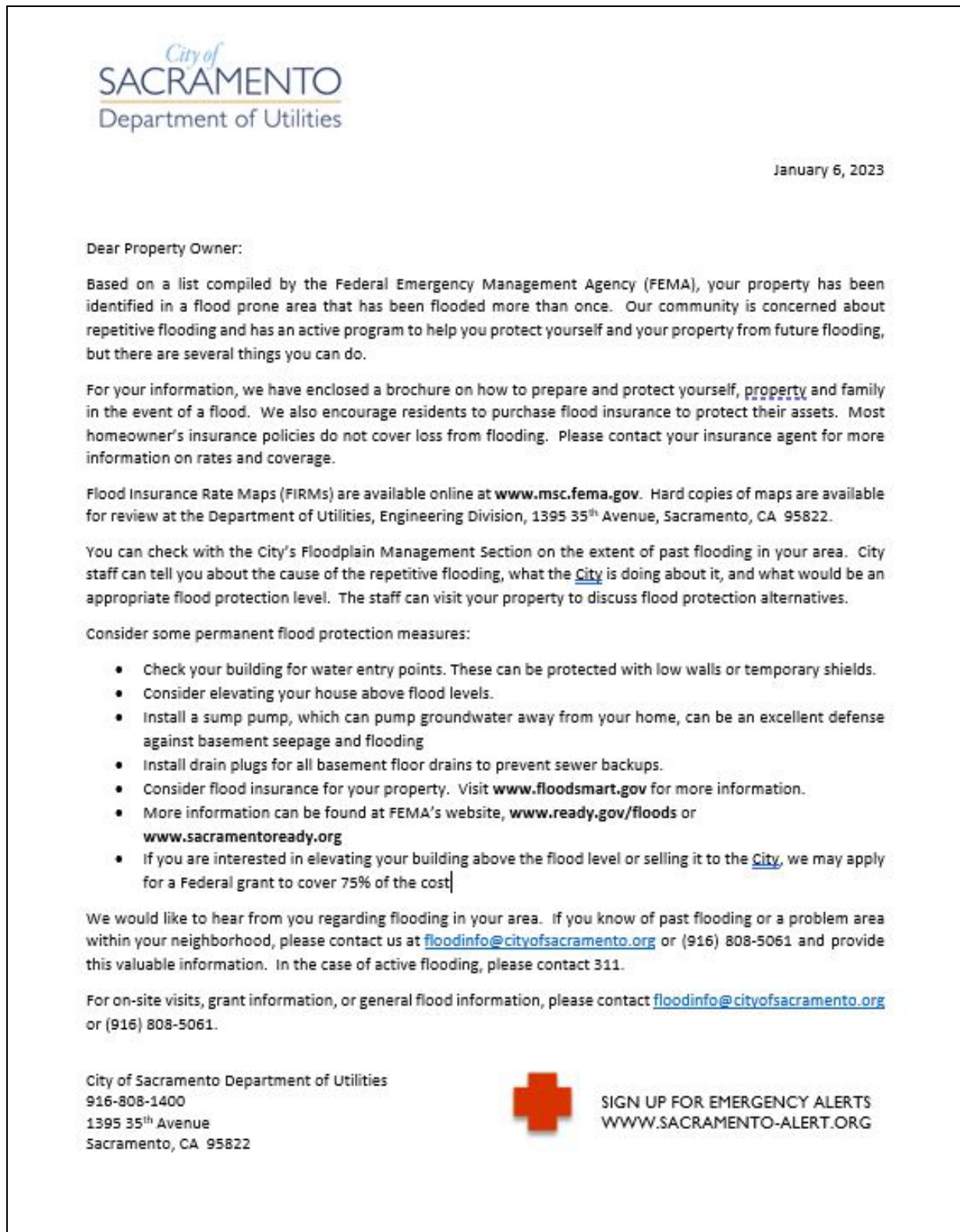



FIGURE 2. QUESTIONNAIRE SENT WITH MAILING, AND AVAILABLE ONLINE

**WAS THERE FLOODING IN YOUR AREA?
FLOOD PROTECTION QUESTIONNAIRE**


Please help us by completing this survey by February 15th, 2023.
Return this survey in the enclosed envelope - or complete our online survey at <https://www.surveymonkey.com/r/VMB6M9F> or scan on your phone by using this QR code:



Name: _____ Email: _____
Address: _____

1. How many years have you occupied the home/building at this address? _____
2. Do you rent or own this home/building? Rent Own
3. What type of foundation does the home/building have?
 Slab Crawl Space Basement Other _____
4. Has this home/building or property ever been flooded or has a water problem?
 Yes No (if "no" please complete only 10-14)
5. In what year(s) did it flood? _____
6. What do you feel was the cause of the flooding? Check all that affect your home/building.
 Storm drain backup Standing water next to house/building
 Drainage from nearby property Saturated ground/leaks in basement walls
 Overbank flooding from: _____ Other: _____
7. How did the water enter your home/building?

8. How deep did the water get?
 Yard: _____ feet Crawl Space: _____ feet Garage: _____ feet
 Over First Floor: _____ feet Basement: _____ feet
 Water kept out of house by sandbagging, sewer valve, or other protective measures
9. What was the longest timeframe that water stayed in the house/building?
____ hours or ____ days
10. Have you installed any flood protection measures on the property?
 Sump pump Waterproofed the outside walls Re-graded yard to reduce water
 Moved things out of basement Backup power system/generator Sandbagged
 Elevated utilities (water heater, etc.) Onsite Drainage Other _____
11. Did any of the measures checked in item 10 work? If so, which ones? If not, do you know why they failed?

 SIGN UP FOR EMERGENCY ALERTS | WWW.SACRAMENTO-ALERT.ORG

12. Do you have flood insurance? Yes No

13. Interested in mitigating your flooding issues through floodproofing actions? Yes No

14. Include any additional information and comments you may have about flooding in your area:

Why You Received This Questionnaire

The City of Sacramento is conducting an analysis of specific areas in the City that have experienced repetitive flooding throughout the years. These areas are called **Repetitive Loss Areas**. You have received this survey because you are located in or near a Repetitive Loss Area.

Any information you can provide us will help the City determine the source of flooding in your neighborhood and what measures can be taken to prevent future flooding. There may be opportunities to receive grant funding to mitigate flooding issues. **If you are interested in information on grant programs and property protection, please check “yes” on question 13 of the survey.**

If you would like to receive an email notification when the Repetitive Loss Area Analysis is ready for review, please provide your email address on the returned survey.

General Flood Preparedness

- We have enclosed a brochure on how to prepare and protect yourself, property, and family in the event of a flood. We also encourage residents to purchase flood insurance to protect their assets. Most homeowner’s insurance policies do not cover loss from flooding.
- Sign up for emergency alerts at www.sacramento-alert.org. Sacramento Alert is the new “reverse 911” system for the Sacramento region. In the event of an emergency, this system will be used to provide real-time information such as levee updates, evacuation routes, and other important information.
- For onsite visits, grant information, or general flood information, please contact the Flood Information hotline at (916) 808-5061 or floodinfo@cityofsacramento.org. **In the case of active flooding, please contact 311.**

Mail Survey: Jamie McKinley, Department of Utilities, 1395 35th Avenue, Sacramento, California 95822

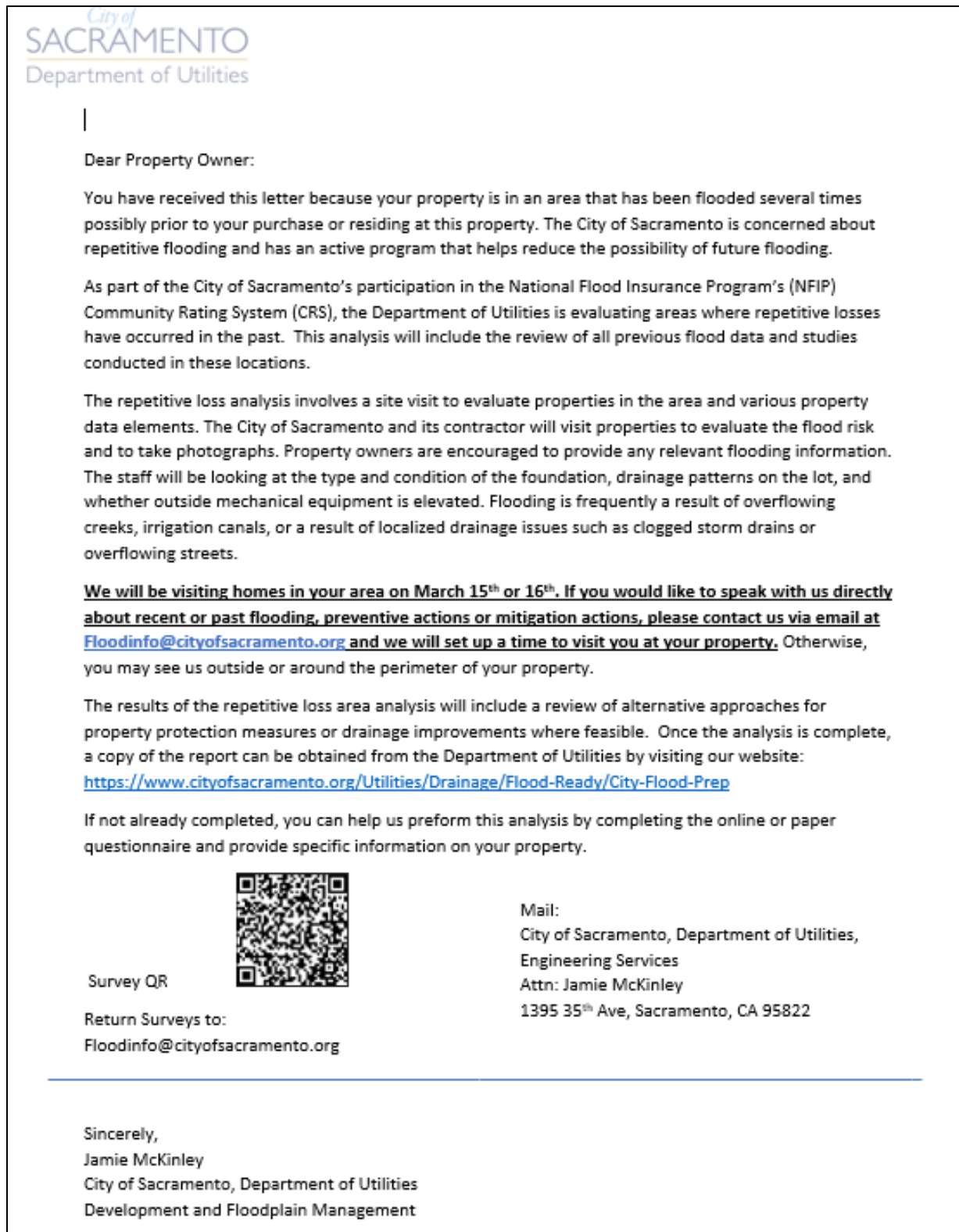
Has your neighborhood experienced flooding?

Please take a moment to fill out this survey or call us at 916-808-5061.

We may be able to help.



FIGURE 3. TARGETED PROPERTY NOTIFICATION LETTER MAILED IN ADVANCE OF FIELD VISIT (MARCH MAILING)



2. Step 2. Contact Agencies and Organizations

The City reached out to external agencies and internal departments to access plans and studies that could affect or help determine the causes or impacts of flooding within the repetitive loss area. The following reports could help determine future problems and potentially assist in mitigation measures for the property owners.

- City of Sacramento
 - Comprehensive Flood Management Plan
 - Sacramento Rescue and Flood Evacuation Maps: Levee & Folsom Dam Breach
 - Capital Improvement Plan and Utilities Drainage Master Plans
 - Urban Design Guidelines
 - Historical flood data
- County of Sacramento
 - Sacramento County Local Hazard Mitigation Plan
- California Department of Water Resources (DWR)
 - FloodSAFE
 - Levee Flood Protection Zone Map (LFPZ)
 - Best Available Maps
 - California Data Exchange Center (CDEC)
- Sacramento Area Flood Control Agency (SAFCA)
- US Army Corps of Engineers
 - Sacramento District Levee Systems Inspection Status
- FEMA
 - Repetitive Loss & Flood Insurance Claims Data
 - FEMA Flood Insurance Studies/Flood Insurance Rate Maps
 - NFIP Coordinators Manual
- National Oceanic and Atmospheric Administration California Nevada River Forecast Center
- GEI Consultants, Inc.
 - Technical Memorandum: Repetitive Flood Loss Investigation

2.1. Summary of Studies and Reports

City of Sacramento Comprehensive Flood Management Plan

The purpose of this plan is to identify, assess, and mitigate flood hazards and flood risk in the City using nonstructural and structural measures. This plan analyzes improving floodplain management through land use planning and development, levee security, outreach, internal drainage, structural measures, and emergency management. The plan also develops strategies and action items on how the City will mitigate flood hazards and vulnerabilities.

Sacramento Rescue and Evacuation Maps

The maps show the results of hypothetical levee and dam failures at different locations within the City and County of Sacramento for the 100-year and 200-year flood events. The maps show evacuation routes and water depths over time.

City of Sacramento Proposed Capital Improvement Program, 2023-2028

The 2023-2028 Capital Improvement Plan is a five-year plan for the funding and construction or repair of City buildings and facilities such as streets, roads, storm drains, traffic signals, parks, and community centers. The total planned Capital Improvement Plan budget for fiscal years 2023-2028 is \$465 million. The FY2023/24 budget for the City Utilities Program totals \$47.3 million for 37 projects or programs. The five-year plan totals \$235.7 million for 42 projects or programs. A total of \$9 million is designated for storm drainage projects.

Sacramento County Local Hazard Mitigation Plan

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. The communities within Sacramento County developed this Local Hazard Mitigation Plan (LHMP) update to make its residents less vulnerable to future hazard events. This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Sacramento County would be eligible for FEMA’s Pre-Disaster Mitigation and Hazard Mitigation Grant programs.

The communities followed a planning process prescribed by FEMA, which began with the formation of a hazard mitigation planning committee comprising key representatives and other regional stakeholders. The committee conducted a risk assessment that identified and profiled hazards that pose a risk within the County, assessed the County’s vulnerability to these hazards, and examined the capabilities in place to mitigate them. The County is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Floods, levee failures, wildfires, and severe weather are among the hazards that can have a significant impact on the County.

The 2021 LHMP update serves to update the 2016 FEMA approved Sacramento County LHMP. Annex F details the hazard mitigation planning elements specific to the City of Sacramento. The Comprehensive Flood Management Plan and RLAA from 2016 are those most recently used for reference.

FloodSAFE, Levee Flood Protection Zone Map, and Best Available Maps

The FloodSAFE program is a sustainable integrated flood management and emergency response system throughout California where steps are taken to manage flood risk. Multiple types of maps have been prepared as part of this program. LFPZ maps were prepared for the Lower Sacramento Valley Region as part of the FloodSAFE initiative. The LFPZ maps identify the areas that are protected by a project levee. The LFPZ maps are also used as part of the DWR’s levee risk notification program. The DWR has the Best Available Maps to display the latest floodplains in a web viewer located at <http://gis.bam.water.ca.gov/bam>. With this viewer, the DWR has expanded the floodplains to cover all counties in the State and to include 500-year floodplains. The 100-, 200-, and 500-year floodplains can be selected for display using this viewer. The web viewer allows users to view a particular area, identify their potential flood hazards, and print a floodplain map.

Sacramento District Levee Systems Inspection Status

The levee inspections show any unacceptable items within the levees that may have affected the repetitive loss area properties in the past and future projects. These unacceptable items include items

such as encroachments, slope stability issues, animal burrowing, and erosion. The State of California also provides levee inspection reports.

California Data Exchange Center

The CDEC installs, maintains, and operates an extensive hydrologic data collection network, including automatic precipitation and river stage sensors for the flood forecasting program through a centralized location online. The CDEC stores and processed real-time hydrologic information gathered by various cooperators throughout the State; it then disseminates this information to support forecasting and flood operations activities and to meet the data reporting needs of various cooperators, public and private agencies, the news media, and the public.

The CDEC includes the ALERT gauges maintained by the City and County of Sacramento. ALERT is an acronym which stands for Automated Local Evaluation in Real Time. The Sacramento City and County's ALERT system consists of two base stations and approximately 50 gauging stations.

FEMA Flood Insurance Studies (FIS)

FEMA's FIS for the City of Sacramento are dated August 16, 2012, and June 16, 2015. The FIS revises and updates information on the existence and severity of flood hazards within the City. The FIS also includes part of the revised digital Flood Insurance Rate Maps (FIRMs), which delineate updated Special Flood Hazard Areas and flood zones for the City.

In 2022, FIS Number 06067CV001E was developed that affected Sacramento County (CID 060262) and Citrus Heights (CID 060765). FEMA is revising the FIRMs and FIS for Arcade Creek in Sacramento County. The revision will enlarge the floodplain and increase the 100-year flood elevations by up to more than 2 feet. A number of properties in the County of Sacramento are being added to the floodplain for the first time and property owners may be required to obtain flood insurance by their mortgage companies. The 100-year flood elevations will also increase for properties already in the floodplain and these properties may see the cost of flood insurance increase. It is expected that the revised FIRM will become effective sometime in mid-2023.

Repetitive Loss and Flood Insurance Claims Data

The data received on the repetitive loss file such as the date(s), amount(s), and frequency of past flood insurance claims was used to analyze the cause of flooding. The Privacy Act of 1974 (5 U.S Code 522a) restricts the release of flood insurance policy and claims data to the public. This information can only be released to state and local governments for the use in floodplain management related activities. Therefore, all claims data in this report are only discussed in general terms, but the data was used internally.

California Nevada River Forecast Center

The California Nevada River Forecast Center provides weather, water, and climate data. The City of Sacramento utilized this source to help in the analysis and explanation of claims that occurred during heavy precipitation events.

Technical Memorandum: Repetitive Flood Loss Investigation

GEI Consultants and Michael Baker International provided assistance to the City of Sacramento, Department of Utilities in determining why seven repetitive loss areas flooded. Site visits, investigations and review of the local drainage system and the topographic/field survey contributed in determining the proposed mitigation efforts for each property. These analyses are included herein in Step 5. Analysis of Individual Repetitive Loss Areas.

Regional Reports

Many methods were utilized to collect data for the RLAA. During field investigation work for the 2016 RLAA, while delivering flood protection questionnaires, staff conducted field surveys for all structures in the 18 repetitive loss areas. Elevation data was collected from the Sacramento County Assessor's Office, as well as through some on-site surveying. Staff reviewed all available Drainage Master Plans for the affected areas. These studies provided drainage capacity information and potential mitigation strategies. Flood management plans were analyzed to help determine the community's current mitigation activities and provided hazard information. Lastly, past insurance claim information was analyzed for each repetitive loss area to identify patterns in flooding issues.

The repetitive loss properties are vastly spread throughout the City of Sacramento. The majority of the structures flooded during the winter storms of 1995 and 1997 due to undersized drainage conveyance systems, power outages at the pump stations, and low-lying properties within their respective neighborhood. For reporting purposes, the 23 repetitive loss properties have been categorized into six regions which are then broken down into individually selected areas/neighborhoods where the properties are located. At no point is the repetitive loss property specifically identified in this report. All structures within a repetitive loss area are susceptible to the same flooding conditions; however, they may not have experienced flood losses.

Table 1 details the percentage of each repetitive loss area that falls within the 100-year, 500-year or Unshaded Zone-X flood zone, while Table 2 details the number of properties in each flood zone.

TABLE 1. PERCENTAGE OF REPETITIVE LOSS PROPERTIES IN EACH FLOOD ZONE

RL Area	Zone AE 100-yr	Zone X Unshaded	Zone X (Levee)	Zone A99	Shaded X
1	33%			67%	
2			100%		
3		17%	83%		
4			100%		
5			100%		
6	33%		33%		33%

TABLE 2. NUMBER OF RL PROPERTIES BY FLOOD ZONE (TOTAL 23)

RL Area	Zone AE 100-yr	Zone X Unshaded	Zone X (Levee)	Zone A99	Shaded X
1	1			2	
2			2		
3		1	5		
4			1		
5			8		
6	1		1		1

3. Step 3. Building Data Collection

The on-site field survey for the current analysis was conducted March 16 and 17, 2023. In addition to building-specific data collection, multiple photographs were taken of each structure on the properties, to the extent the structures were visible from the street.¹ Photos were taken of current drainage features and mitigation and flood-proofing measures if evident from street or parking lot views. The following information was recorded for each property:

- Existing mitigation observed
- Type and condition of the structure and foundation
- Number of stories
- Height above street grade and height above site grade
- Presence and type of appurtenant structures
- Likely areas and severity of damage on property
- Presence of any HVAC units that would be vulnerable

Data was also gathered, when possible, through conversations with property owners/and or residents. These conversations provided detail on the extent of flooding, potential cause of flooding, and recollections from past flood events, which help to understand flooding issues for these areas. Data was also incorporated from off-site research, including a review of FEMA FIRMs and the location of the repetitive loss areas in relation to FEMA flood zones.

TABLE 3. TYPE OF FLOODING AFFECTING RLAA PROPERTIES ADDED IN 2022

Region	Area	No. Properties	Type of Flooding
3	12	1	Localized/Stormwater Flooding
6	19	2	Overbank Flooding
6	20	1	Localized/Stormwater Flooding

Many of the properties are located outside of a Special Flood Hazard Area. This is consistent with the majority of the City of Sacramento classified as an X Zone whether it is due to minimal flood hazard or reduced risk due to levees. Exceptions include Region 1 where the area is classified mostly as an A99 Zone, with only a small fraction listed as an AE Zone. The AE Zone is found on the Garden Highway, which runs along the Sacramento River where a small amount of development was built on the waterside of the levee. Another localized AE Zone is along Arcade Creek. Based on this information, traditional flood zones are not a contributing factor in determining repetitive loss areas within the City. It also reinforces the findings that many of the repetitive loss areas are affected by on-site grading and draining issues during heavy, long duration storms.

¹ Some structures were not visible due to fences around the entire structure or trees.

4. Step 4. Review Alternative Approaches

Although this report presents separate analyses for each identified repetitive loss area in the City of Sacramento, the list of potential measures to address repetitive flooding problems is similar for each area. This chapter summarizes the alternatives that were identified for consideration. These alternatives can be implemented by the City, the homeowner, or other entities. The selection of suitable alternatives for each at-risk property in the repetitive loss areas is described in the chapters presenting individual RLAAs.

Many types of flood hazard mitigation exist, and there is no single mitigation measure that fits every case or even most cases. Successful mitigation often requires multiple strategies. The 2017 CRS Coordinator’s Manual breaks the primary types of mitigation down as follows:

Preventive activities keep flood problems from getting worse. The use and development of flood-prone areas are limited through planning, land acquisition, or regulation. These activities are usually administered by building, zoning, planning, and/or code enforcement offices.

Property protection activities are usually undertaken by property owners on a building-by-building or parcel basis.

Natural resource protection activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. These activities are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations.

Emergency services are measures taken during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities.

Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff.

Public information and outreach activities advise property owners, potential property owners, and visitors about hazards and ways to protect people and property from them, as well as the natural and beneficial functions of local floodplains. They are usually implemented by a public information office.

TABLE 4. STRUCTURAL AND NONSTRUCTURAL POTENTIAL MITIGATION MEASURES

Structural Alternatives	Nonstructural Alternatives
Dry flood-proofing. Commercial structures and even residential structures are eligible for dry flood-proofing; however, in many instances this requires human intervention to complete the measure and ensure success. For example, installing watertight shields over doors or windows requires timely action by the homeowner, especially in a heavy rainfall event.	Provide public education through posting information about local flood hazards on City websites, posting signs at various locations in neighborhoods or discussing flood protection measures at local neighborhood association meetings.
Wet flood-proofing. Wet flood-proofing a structure involves making the uninhabited portions of the structure resistant to flood damage and allowing water to enter during flooding. For example, in a basement or crawl space, mechanical equipment and ductwork would not be damaged.	Implement volume control and runoff reduction measures in the City's Stormwater Management Ordinance.

Structural Alternatives	Nonstructural Alternatives
For basements, especially with combined storm sewer and sewer systems, backflow preventer valves can prevent storm water and sewer from entering crawl spaces and basements.	Relocate internal supplies, products/goods above the flooding depth.
Acquire and/or relocate properties/target abandoned properties.	Promote the purchase of flood insurance.
Elevate structures and damage-prone components, such as the furnace or air conditioning unit, above the base flood elevation.	Continue to enforce the City's floodplain and zoning ordinances.
Construct engineered structural barriers, berms, and floodwalls (Note: Assuming lot has required space for a structural addition).	
Increase road elevations above the base flood elevation of the 100-year floodplain.	
Implement drainage improvements such as increasing capacity in the system (up-sizing pipes), providing additional inlets or larger inlets to receive more stormwater, or constructing detention basins where space allows.	
Promote stormwater system maintenance program to ensure inlets and channels are free of clogging debris.	

4.1. Preventive

The City of Sacramento regulates residential and commercial development through its building code, planning and zoning requirements, stormwater management regulations and floodplain management ordinances. The City of Sacramento has adopted building codes and procedures designed to protect lives and property in the event of a 100-year flood. Specific floodplain management regulations and building codes are enforced to regulate construction in at-risk areas throughout the city. Construction certificate and hold harmless agreement requirements for each flood zone are shown in Table 5.

TABLE 5. CITY OF SACRAMENTO CONSTRUCTION REQUIREMENTS FOR FLOOD ZONES

FLOOD ZONE REQUIREMENTS			
ZONE	DEFINITION	RESIDENTIAL CONSTRUCTION (Includes all single / multi. family dwelling units)	COMMERCIAL CONSTRUCTION (Excludes all residential dwelling units)
A	No base flood elevations determined (base flood elevation to be determined by Department of Utilities).	NEW CONSTRUCTION AND SUBSTANTIAL IMPROVEMENT:	NEW CONSTRUCTION AND SUBSTANTIAL IMPROVEMENT:
AE	Base flood elevations determined [Example ZONE AE (EL 33)].	<input type="checkbox"/> Elevate lowest floor, including basement, a minimum of one foot (1') above the base flood elevation or depth number. If no depth is specified for the zone AO, elevate two feet (2') above the highest adjacent grade.	<input type="checkbox"/> Elevate lowest floor, including basement or floodproof the building to a minimum of one foot (1') above the base flood elevation or depth number. If no depth is specified for the zone AO, elevate two feet (2') above the highest adjacent grade.
AH	Flood depths of 1 to 3 feet (Usually areas of ponding); base flood elevations determined [Example ZONE AH (EL 17)].	<input type="checkbox"/> Hold Harmless Agreement regarding Risk of Flooding <input type="checkbox"/> Elevation Certificate	<input type="checkbox"/> Hold Harmless Agreement regarding Risk of Flooding <input type="checkbox"/> Elevation Certificate
AO	Flood depths of 1 to 3 feet (Usually sheet flow on sloping terrain; average depths determined. For areas of alluvial fan flooding; velocities determined [Example ZONE AO (DEPTH 2)].	<input type="checkbox"/> Hold Harmless Agreement regarding Risk of Flooding <input type="checkbox"/> Elevation Certificate	<input type="checkbox"/> Floodproofing Certificate (when floodproofing provided)
Magpie Creek 100yr	See Magpie Creek Floodplain Map (Local Floodplain not FEMA)		
A99	To be protected from 100-year flood by Federal protection system under construction; no base flood elevations determined.	NEW CONSTRUCTION AND SUBSTANTIAL IMPROVEMENT: <input type="checkbox"/> Hold Harmless Agreement Regarding Risk of Flooding on Property	
AR	Area of special flood hazard which results from the decertification of a previously accredited flood protection system which is determined to be in the process of being restored to provide 100-year or greater level of flood protection [Examples ZONE AR, ZONE AR (EL 18), ZONE AR (DEPTH 2)].	NEW CONSTRUCTION: <input type="checkbox"/> Elevate lowest floor, including basement, to the lower of the following: a. Three feet(3') above the highest adjacent grade b. Base flood elevation or depth number <input type="checkbox"/> Hold Harmless Agreement regarding the Risk of Flooding <input type="checkbox"/> Elevation Certificate SUBSTANTIAL IMPROVEMENT: <input type="checkbox"/> Hold Harmless Agreement regarding the Risk of Flooding on Property	NEW CONSTRUCTION: <input type="checkbox"/> Elevate lowest floor, including basement, or floodproof the building to the lower of the following: a. Three feet(3') above the highest adjacent grade b. Base flood elevation or depth number <input type="checkbox"/> Hold Harmless Agreement regarding the Risk of Flooding <input type="checkbox"/> Elevation Certificate SUBSTANTIAL IMPROVEMENT: <input type="checkbox"/> Hold Harmless Agreement regarding the Risk of Flooding on Property
X (SHADED)	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.	None	
X	Areas determined to be outside the 500-year floodplain.	None	

4.2. Property Protection

Property protection is essential to mitigating repetitive loss properties and reducing future flood losses. There are many ways to protect a property from flood damage. Property protection measures recognized in the 2017 CRS Coordinator’s Manual include relocation, acquisition, building elevation, retrofitting, sewer backup protection, and insurance. Different measures are appropriate for different flood hazards, building types and building conditions. Table 6 lists typical property protection measures.

TABLE 6. TYPICAL PRIVATE PROPERTY PROTECTION MEASURES

Demolish the building or relocate it out of harm’s way.
Elevate the building above the flood level.
Elevate damage-prone components, such as the furnace or air conditioning unit.
Dry flood-proof the building so water cannot get into it.
Wet flood-proof portions of the building so water won’t cause damage.
Construct a berm or redirect drainage away from the building.
Maintain nearby streams, ditches, and storm drains so debris does not obstruct them.
Correct sewer backup problems.

Source: 2017 CRS Coordinators Manual.

These measures are generally performed by property owners or their agents. FEMA has published numerous manuals that help a property owner determine which property protection measures are appropriate for particular situations.

4.2.1. Flood Insurance

Insurance is included as a property protection activity although it does not mitigate or prevent damage caused by a flood. However, flood insurance does help the owner repair and rebuild their property after a flood, and it can enable the owner to afford incorporating other property protection measures in that process. Flood insurance provides funding to repair flood-damaged property without the need to draw down savings and/or take on debt. As long as a policy is in force, insurance offers the advantage of protecting the property without requiring human intervention for the measure to work.

TABLE 7. ADVANTAGES AND DISADVANTAGES OF FLOOD INSURANCE

Advantages	Disadvantages
Provides protection outside of what is covered by a homeowners’ insurance policy	Cost may be prohibitive
Can help to fund other property protection measures after a flood through increased cost of compliance coverage	Policyholders may have trouble understanding policy and filing claims
Provides protection for both structure and contents	Does not prevent or mitigate damage
Can be purchased anywhere in a community, including outside of a flood zone	

4.2.2. Dry Flood-Proofing

Dry flood-proofing consists of completely sealing around the exterior of the building so that water cannot enter the building. Making the structure watertight involves sealing the walls with waterproof coatings, impermeable membranes, or a supplemental layer of masonry or concrete; installing watertight shields over windows and doors; and installing measures to prevent sewer backup. Due to the potential damage to a building as a result of hydrostatic pressure and/or hydrodynamic forces, dry flood-proofing is not a good option for areas where floodwater is deep or flows quickly. Dry flood-proofing can be a good option in areas that have minimal velocity and low depth.

TABLE 8. ADVANTAGES AND DISADVANTAGES OF DRY FLOOD-PROOFING

Advantages	Disadvantages
Often less costly than other retrofitting methods	Requires human intervention and adequate warning to install protective measures
Does not require additional land	Does not minimize the potential damage from high-velocity flood flow and wave action
May be funded by a FEMA mitigation grant program	May not be aesthetically pleasing

4.2.3. Wet Flood-Proofing

Wet flood-proofing consists of modifying uninhabited portions of a home (crawl space, garage, or unfinished basement) to allow floodwaters to enter or exit the structure without causing damage. Openings must be large enough for the water to flow through the structure such that the elevation of the water in the structure is equal to the elevation of the water outside of the structure in order to prevent damage to structural walls as a result of hydrostatic pressure.

TABLE 9. ADVANTAGES AND DISADVANTAGES OF WET FLOOD-PROOFING

Advantages	Disadvantages
Often less costly than other mitigation measures	Extensive cleanup may be necessary if the structure becomes wet inside and possibly contaminated by sewage, chemicals and other materials borne by floodwaters
Allows internal and external hydrostatic pressures to equalize, lessening the loads on walls and floors	Pumping floodwaters out of a basement too soon after a flood may lead to structural damage
	Does not minimize the potential damage from a high-velocity flood flow and wave action

4.2.4. Direct Drainage Away from the Building

Structures are sometimes built at the bottom of a hill or in a natural drainage way or storage area, such that water naturally flows toward them. Within zones AH, AO, and AR/AH, adequate drainage paths on slopes shall be required to guide floodwaters around and away from proposed structures. It may be necessary to regrade a yard if water flows toward the building; a new swale or wall can direct the flow to the street or a drainage way. Simple improvements can be made on a property to keep floodwaters away from a structure.

4.2.5. Drainage Maintenance

Internal drainage creates a considerable risk in the City for shallow flooding. Internal storm drainage creates flood issues for many buildings because of the flat nature of terrain and runoff which is pumped through levees to a creek or river. If drainage inlets are clogged or pump stations fail, there is a potential for damage to properties. Part of the problem can be attributed to a combined drainage and sanitary

sewer system. Over 7,500 acres of the City is subject to a combined system. City Code states that no person shall dump any materials in any water or waterway, or upon the levees or banks adjacent thereto. Residents are encouraged to report drainage discharges at 916-808-5454.

TABLE 10. ADVANTAGES AND DISADVANTAGES OF DRAINAGE IMPROVEMENTS

Advantages	Disadvantages
Could increase channel carrying capacity through overflow channels, channel straightening, crossing replacements, or runoff volume storage	May help one area but create new problems upstream or downstream
Minor projects may be fundable under FEMA mitigation grant programs	Channel straightening increases the capacity to accumulate and carry sediment
	May require property owner cooperation and right-of-way acquisition

4.2.6. Sewer Improvements

Heavy rains can saturate the soil and infiltrate the sanitary sewer system through leaky joints or cracks in the pipes. The inflow of stormwater floods the sanitary sewer system causing water to back up into the home through lower-level plumbing fixtures. This occurrence can be prevented by installing a sewer backflow preventer, which would allow the sanitary sewer water to flow freely from the home to the sewer, but restrict the reverse flow. Backflow preventers do require maintenance and can fail if debris in the sewer prevents the valve seating properly.

4.2.7. Barriers

Several types of temporary barriers are available to address typical flooding problems. They work to direct drainage away from structures with the same principles as permanent barriers such as floodwalls or levees, but can be removed, stored, and reused in subsequent flood events. Lower-cost solutions include sandbags, inflatable barriers, and barriers that self-activate with the pressure of the floodwaters. A flood protection barrier is usually an earthen levee/berm or a concrete retaining wall. While levees and retaining walls can be large, spanning miles along a river, they can also be constructed on a much smaller scale to protect a single home or group of homes.

TABLE II. ADVANTAGES AND DISADVANTAGES OF BARRIERS

Advantages	Disadvantages
Relative cost of mitigation is less expensive than other alternatives	Property is still located within the floodplain and has potential to be damaged by flood if barrier fails or waters overtop it
No alterations to the actual structure or foundation are required	Solution is only practical for flooding depths less than 3 feet
Homeowners can typically construct their own barriers that will complement the style and functionality of their house and yard	Barriers cannot be used in areas with soils that have high infiltration rates

The cost of constructing a barrier will depend on the type of barrier and the size required to provide adequate protection. An earthen berm will generally be less expensive compared to an equivalent concrete barrier primarily due to the cost of the materials. Another consideration is space; an earthen barrier requires a lot of additional width per height of structure compared to a concrete barrier to ensure proper stability. Key items to consider for barriers:

- There needs to be adequate room on the lot.
- A pump is required to remove water that either falls or seeps onto the protected side of the barrier.
- Human intervention will be required to sandbag or otherwise close any openings in the barrier during the entire flood event.

4.3. Natural Resource Protection

Care should be taken to maintain the streams, wetlands and other natural resources within a floodplain or repetitive loss area. Removing debris from streams and channels prevents obstructions. Preserving and restoring natural areas provides flood protection and natural habit, and preserves water quality.

4.4. Emergency Services

Emergency management is a critical risk reduction tool in the arsenal of any municipality. The role of city government in a disaster is to take all possible actions in order to protect life and property. To accomplish this task, the City has an aggressive emergency management system in place that includes comprehensive hazards planning. Utilities staff, City of Sacramento Office of Emergency Management, and the Sacramento Fire and Police departments work closely together to actively engage in the four phases of emergency management: preparedness/planning, response, recovery, and mitigation (or risk reduction). These efforts are comprehensive in nature and cover an all-hazard approach, including emergencies involving flooding.

The City also works closely with the Sacramento County’s Office of Emergency Services and the Sacramento Area Flood Control Agency during major flood events which impact both jurisdictions, demanding an integrated response prior to, during and following an emergency. This coordination provides consistent emergency management service to the Sacramento community.

4.5. Structural Projects

Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. The majority of Sacramento is protected by dams and levees. While these dams and levees provide residents with excellent protection, they are still subject to failure and the City remains at risk of flooding.

The City of Sacramento is highly vulnerable to localized flooding. The City’s local drainage system services approximately 100 square miles and is handled by a combination of gravity and lift stations for a total of approximately 140 storm drainage basins. Since the City is typically lower than the elevated rivers by as much as 5-25 feet, most of the local drainage must be pumped into the rivers. The City operates 105 sumps and pumps to keep the drainage pumped down. Detention basins have been planned and, in many areas, constructed to help mitigate flooding in the region.

Improving the stormwater drainage system and storage capacity throughout the City can eliminate some building damage and road closures in these areas. Similarly, improving drainage outfalls can reduce stormwater flooding from heavy rains. These structural methods require large capital expenditures and cooperation from private property owners. The City’s websites, social media, email distribution lists, press releases and variable message boards can help get these messages out to business owners and residents.

4.6. Public Information and Outreach

Over the years, the City of Sacramento, through many departments and in coordination with various stakeholder groups and outside agencies, has prepared multiple independent outreach messages to educate the public on the hazards associated with flooding. Sacramento developed a Program for Public Information (PPI) in an ongoing effort to prepare, implement, and monitor a range of public information activities best suited for a community’s flood problems. The objective of the PPI is to provide additional credit for information programs that are designed to meet local needs and that are monitored, evaluated, and revised to improve their effectiveness.

With advances in technology and a greater familiarity with web-based services, Sacramento has realized that mailing information directly to property owners may not be the most effective method. The PPI process now grants communities the ability to decide how to best deliver messages to various groups throughout the City.

Social and economic factors were considered by the PPI Committee in ensuring that the right messages, tools and resources were used to reach all target audiences. The PPI Committee identified six target audiences who need special messages on flood protection:

Target Audience #1: Businesses, Homeowners, and Renters (entire City)

Target Audience #2: School Children

Target Audience #3: Real Estate, Lending and Insurance Companies

Target Audience #4: Vulnerable Populations (Special Needs, Elderly, etc.)

Target Audience #5: Political Leaders

Target Audience #6: Language Barriers

In order to develop an effective local outreach program that raises public awareness about flood-related issues, the PPI identified the entire City of Sacramento as flood-prone, and for the entire City to be the target area for outreach within the community. The PPI Committee concluded that outreach projects should be directed to all properties (residential, commercial, and public). The entire City and all flood zones, including the X zone, are subject to flooding, and the PPI should strive to reach all residents and businesses within the City with a variety of messages for flood protection and flood safety.

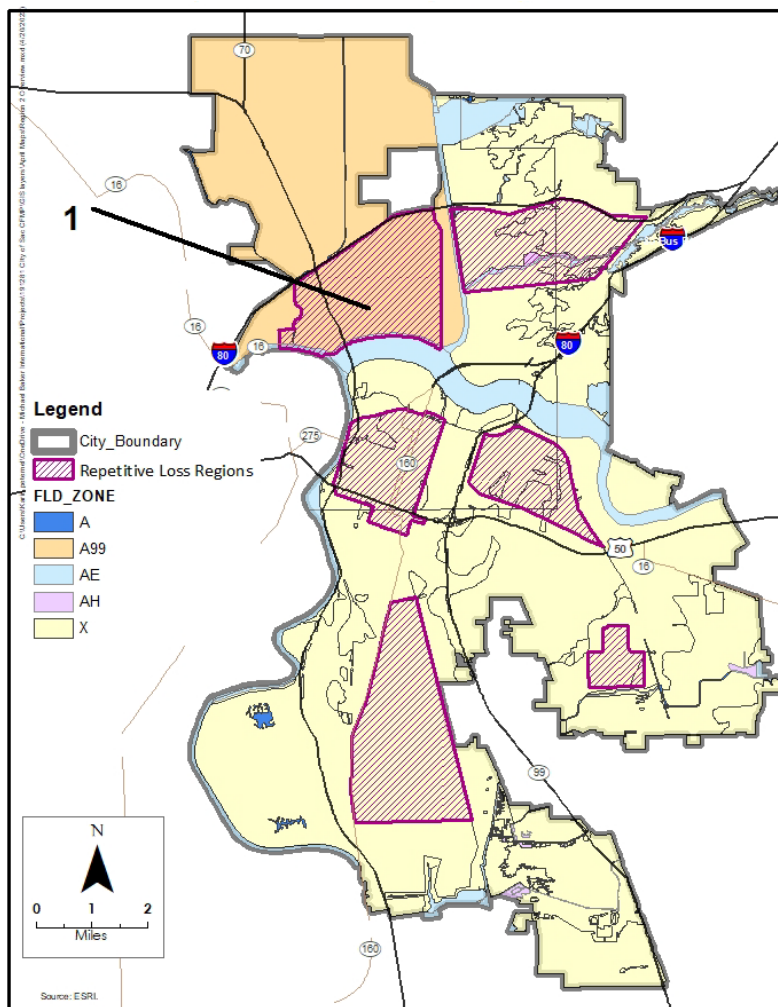
5. Step 5. Analysis of Individual Repetitive Loss Areas

This section includes a review of the repetitive loss properties, and alternative approaches to determine whether any property protection measures or drainage improvements are feasible. It is organized by Repetitive Loss Regions 1 through 6.

5.1. Region 1 – South Natomas

The greater Natomas Basin is 55,000 acres in size and extends into the northwest portion of Sacramento County running south. The Basin is north of downtown at the American River Parkway (3 miles from downtown). Within the City, the area of the Natomas Basin is approximately 12,500 acres and is surrounded by levees. Natomas is in a FEMA A99 zone, meaning that levee construction is more than 50 percent complete to reach 100-year flood protection among other requirements. In addition to riverine flooding and potential levee breach, the Natomas Basin has interior levees and canals, so it is also at risk to internal drainage issues. The Natomas area is divided into North Natomas and South Natomas. The focus of the RLAA is in South Natomas where three repetitive loss areas were analyzed.

FIGURE 4. REPETITIVE LOSS AREA REGIONS MAP – REGION 1



RLAA Region 1 – Area 1

Location: West of Northgate Blvd, Binghampton Dr and Larchwood Dr

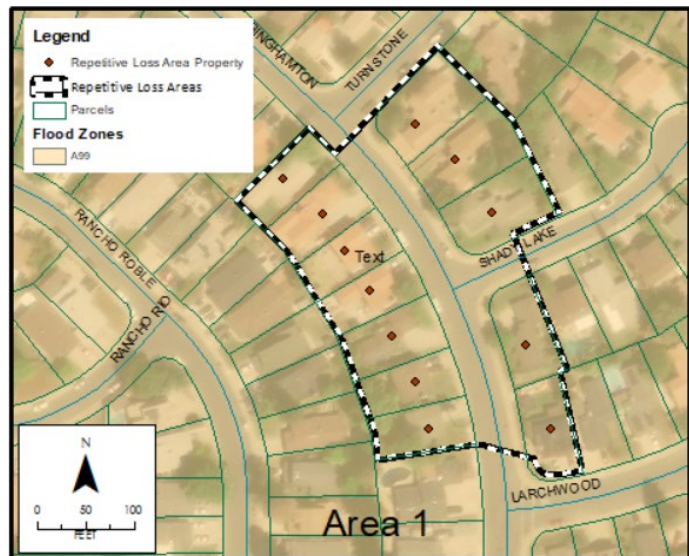
Number of Properties in Defined Area: 12

Number of RL Properties in Area: 1

Flood Zone: A99

Dates of RL Flooding: 1/10/1995, 1/24/2000

Source of RL Flooding: This area is in Drainage Basin 141, which is prone to street flooding due to increased development in the area. Also, some properties are more prone to structural damage due to the addition of fill to their property. The changes in grading causes water to pool and seep into a portion of the structure that is built below or at grade.



Mitigation Recommendations: For the area, flooding can be reduced by the addition of a detention basin, increase in pumping capacity, and pipe improvements. These projects are identified in the Drainage Master Plan for Basin 141. As new development is constructed, drainage improvements will be funded and built. For individual property protection, residents are encouraged to ensure proper grading on the property to allow runoff to reach street drains. Other options, including installation of a drain or diversion, elevating the portion of the structure that is built below or at grade, and sandbagging, can provide additional protection from localized flooding.

FIGURE 5. EXAMPLE OF DIFFERENT FRONT YARD GRADING FOUND WITHIN THE NEIGHBORHOOD



RLAA Region 1 – Area 2

Location: East of Truxel Road, Oak Nob Way, Woodside Glen Way and Stonecreek Dr

Number of Properties in Defined Area: 28

Number of RL Properties in Area: 1

Flood Zone: A99

Dates of RL Flooding: 1/05/1997, 2/04/1998

Source of RL Flooding: Flooding occurred during heavy winter storms. The source of the flooding is runoff from adjacent properties graded to a higher elevation.



Mitigation Recommendations: On-site grading on property to redirect the flow of water, installation of drains to divert pooling water, construction of a floodwall, or sandbags.

FIGURE 6. EXAMPLE OF THE CHANGE IN GROUND ELEVATION BETWEEN ADJACENT PROPERTIES

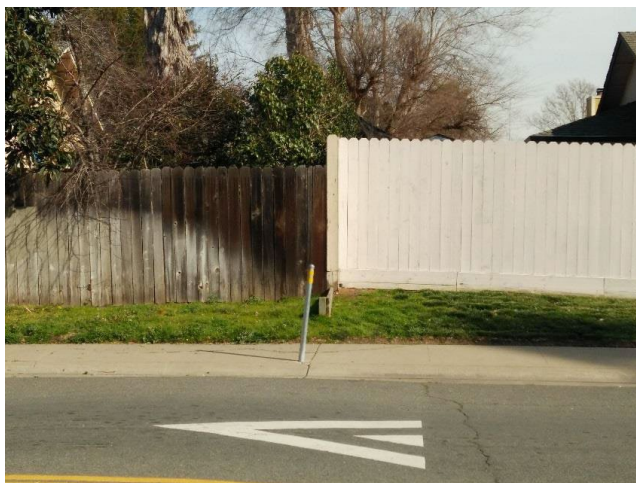


FIGURE 7. DIVERSION WAS CREATED TO DIRECT WATER AWAY FROM STRUCTURES



RLAA Region 1 – Area 3

Location: Garden Highway, North of Sacramento River

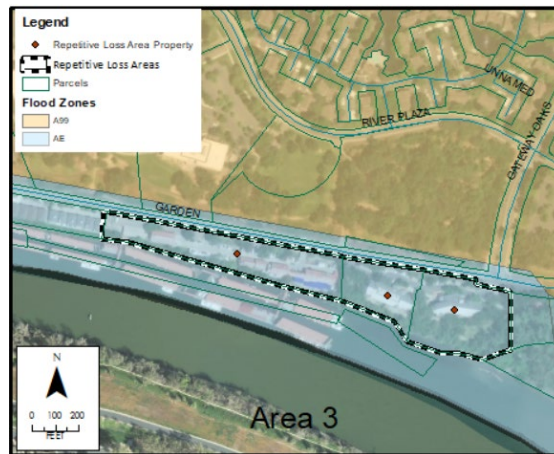
Number of Properties in Defined Area: 3

Number of RL Properties in Area: 1

Flood Zone: AE

Dates of RL Flooding: 1/09/1995, 1/01/1997

Source of RL Flooding: During winter storms, this strip of commercial development will experience a large amount of water draining down into the parking structures and overflow from the Sacramento River. Flooding has occurred when the pump system located in the parking structures fail.



Mitigation Recommendations: Improvement or replacement of sump system. Based on information provided by occupants of this area, improvements have been made to the pump systems and no additional failures have occurred. Also, the repetitive loss area is located adjacent to natural functions and open space areas. Care should be given to preserve the natural quality of its surrounding to promote natural flood control qualities found near the river.

FIGURE 8. PARKING GARAGE LOCATED NEAR THE EDGE OF THE SACRAMENTO RIVER



FIGURE 9. ENTRANCE TO PARKING GARAGES BELOW MAIN STRUCTURES



Region 1 – Field Visits

Attachment C – Property Visit Documentation provides field visit information collected for all structures in Region 1’s repetitive loss areas. Questionnaires were left at each building and City staff talked with residents and tenants in the area after a large storm in January and February of 2017 to help further understand flooding patterns in the area.

Region 1 – Mitigation and Action Items

Various mitigation activities were considered when analyzing Region 1’s hazard assessment. Table 12 lists all considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 12. REGION 1 REVIEW OF ALTERNATIVE APPROACHES

Mitigation Activity	Region 1		
	Area 1	Area 2	Area 3
Prevention			
Continue Enforcement of Stormwater Regulations	X	X	X
Continue Drainage System Maintenance	X	X	X
Continue Enforcement of Floodplain Management Regulations			X
Property Protection			
Building Elevation	X		
Relocation			
Improvement or Installation of Private Sumps			X
Sewer Backup Protection			
Flood-proofing			
Flood Insurance	X	X	X
Grading	X	X	
Sandbags	X	X	
Elevate Utilities			
Natural Resource Protection			
Natural Area Preservation			X
Natural Area Restoration			
Structural Projects			
Floodwalls		X	
Diversions	X	X	
Conveyance System Improvements (Structural)			
Detention Basin	X		
Increased Pumping Capacity	X		
Pipe Improvements	X		
Public Information			
Outreach Projects	X	X	X

Mitigation Activity	Region 1		
	Area 1	Area 2	Area 3
Map Information	X	X	X
Technical Assistance	X	X	X
Emergency Services			
Hazard Threat Recognition	X	X	X
Hazard Warnings	X	X	X
Health and Safety Maintenance			X

Based on the complete analysis of this region, the following action items were identified. These action items were selected based on community feedback, funding, current City activities, and data reports.

TABLE 13. REGION 1 ACTION ITEMS

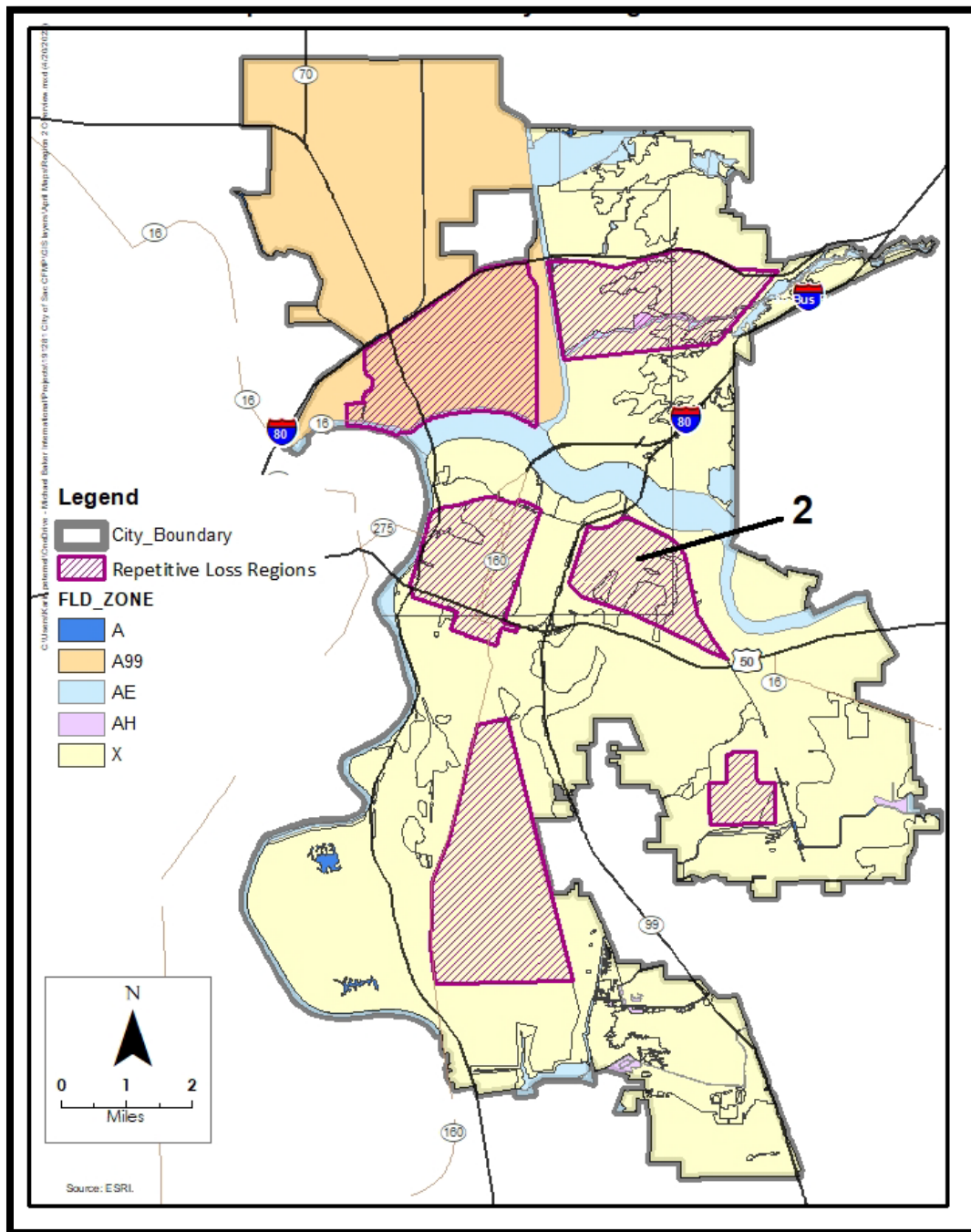
Action Item	Responsible Office	Schedule	Potential Funding
Elevate structures that are built at or below grade	Department of Utilities, Floodplain Management	Dependent on property owner interest and grant opportunities	Grants and private funding
Flood/map information hotline		Ongoing	Department funding
Technical assistance visits			
Enforcement of floodplain management regulations			
Promotion of flood insurance			
Inform residents of location of sandbag supplies in their area	Department of Utilities, Operations & Maintenance (supplies only); Property Owner	During flood event	Department funding (supplies only)
Improvement and maintenance of private sumps	Property Owner	Ongoing	Private funding
On-site grading to divert water to city conveyance system		Dependent on property owner interest	Private funding or grants
Diversions to direct stormwater to City conveyance system			
Hazard threat recognition system	Department of Utilities	Ongoing	Department funding
Develop sandbag locations closer to repetitive loss area		Ongoing	Department funding
Hazard warnings	Department of Utilities; Emergency Services; Public Information Office	During flood event	Department funding

Action Item	Responsible Office	Schedule	Potential Funding
Conveyance system improvements identified in Drainage Master Plan for Basin 141	Department of Utilities, Wastewater & Stormwater Engineering Program	Long-Term	Capital Improvement Program
Enforcement of stormwater regulations	Department of Utilities, Environmental & Regulatory Compliance	Ongoing	Department funding
Drainage system maintenance	Department of Utilities, Operations & Maintenance	Ongoing	Department funding

5.2. Region 2 – Downtown East

The three repetitive loss areas in Region 2 are located in the neighborhoods of River Park, McKinley Park, and Coloma Terrace. These are older areas of the City that are vulnerable to overbanking, erosion, and seepage from the American River levees nearby and have other risks such as interior drainage issues (i.e., undersized and aged pipes).

FIGURE 10. REPETITIVE LOSS AREA REGIONS MAP – REGION 2



RLAA Region 2 – Area 5

Location: 45th St and C St, East of Elvas Avenue in Coloma Terrace Neighborhood

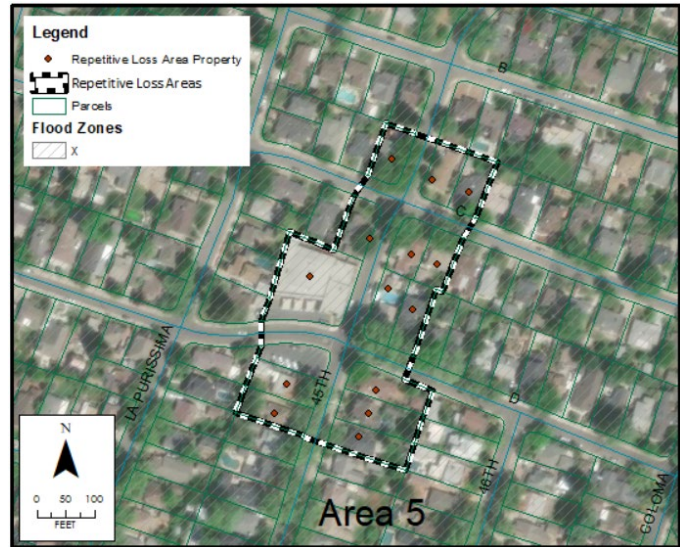
Number of Properties in Defined Area: 15

Number of RL Properties in Area: 1

Flood Zone: Shaded-X Zone

Dates of RL Flooding: 4/08/1995, 2/04/1998

Source of RL Flooding: Flooding occurs during heavy storms that overwhelmed the undersized drainage system in the area. The structures included in the repetitive loss are located in a low-lying area of the neighborhood, so they are more dramatically affected by street flooding.



Mitigation Recommendations: Based on the Basin 10 Drainage Master Plan, improvements have been identified. Recommends critical pipes in the system be enlarged and a detention basin be constructed to provide adequate flood protection for the basin. These improvements would mitigate the repetitive loss properties in Area 5. Individual property owners can mitigate flood losses by using sandbags, keeping street drains clear of debris, constructing floodwalls on their property, installing sump pumps, and elevating utilities.

FIGURE 11. RESIDENTS USE SANDBAGS TO PROTECT GARAGES FROM STREET FLOODING DURING JANUARY 2017 STORMS

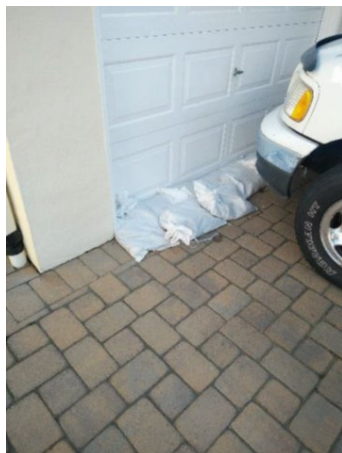


FIGURE 12. DEBRIS COLLECTING ON A STORM DRAIN AT THE CORNER OF 45TH AND C STREETS



RLAA Region 2 – Area 6

Location: McKinley Park, Park Way and Santa Ynez Way

Number of Properties in Defined Area: 12

Number of RL Properties in Area: 1

Flood Zone: Shaded-X Zone

Dates of RL Flooding: 1/29/1995, 1/25/1997

Source of RL Flooding: This area is located in a basin with an undersized drainage conveyance system. This area is also impacted by overflows from the Combined Sewer System. During large storms, water pools in the streets and yards of the surrounding properties. Most flood loss is due to water seeping into garages, basements and entryways located at grade level.



Mitigation Recommendations: The McKinley Water Vault project was completed in 2021. An AW-501, the NFIP Repetitive Loss Update Worksheet is in process to change the property status to “Mitigated” on the Repetitive Loss list.

FIGURE 13. STREET FLOODING FROM FEBRUARY 20 17 STORM. OVERWHELMED CONVEYANCE SYSTEM



FIGURE 14. EXAMPLE OF THE CITY’S WARNING THAT THE AREA MAY CONTAIN SEWAGE



FIGURE 15. SOME HOMES IN THIS AREA HAVE BASEMENTS AND DOORWAYS LOCATED AT GRADE LEVEL



Region 2 – Field Visits

Attachment C – Property Visit Documentation provides field visit information collected for all structures located in Region 2’s repetitive loss areas. Questionnaires were left at each building and City staff talked with residents and tenants in the area after a large storm in January and February of 2017 to help further understand flooding patterns in the area.

Region 2 – Mitigation and Action Items

The following mitigation activities were considered to address the hazards found in Region 2. Table 14 lists all considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 14. REGION 2 REVIEW OF ALTERNATIVE APPROACHES

Mitigation Activity	Region 2	
	Area 5	Area 6
Prevention		
Continue Enforcement of Stormwater Regulations	X	X
Continue Drainage System Maintenance	X	X
Continue Enforcement of Floodplain Management Regulations	X	X
Property Protection		
Building Elevation		X
Relocation		
Improvement or Installation of Private Sumps		X
Sewer Backup Protection		X

Mitigation Activity	Region 2	
	Flood-proofing	
Flood Insurance	X	X
Grading		
Sandbags	X	X
Elevate Utilities	X	X
Natural Resource Protection		
Natural Area Preservation		
Natural Area Restoration		
Structural Projects		
Floodwalls	X	
Diversions		
Conveyance System Improvements (Structural)		
Detention Basin/Vault	X	X
Increased Pumping Capacity		X
Pipe Improvements	X	X
Public Information		
Outreach Projects	X	X
Map Information	X	X
Technical Assistance	X	X
Emergency Services		
Hazard Threat Recognition	X	X
Hazard Warnings	X	X
Health and Safety Maintenance		X

Mitigation Activity

Based on the complete analysis of this region the following action items were identified. These action items were selected based on community feedback, funding, current City activities, and data reports.

TABLE 15. REGION 2 ACTION ITEMS

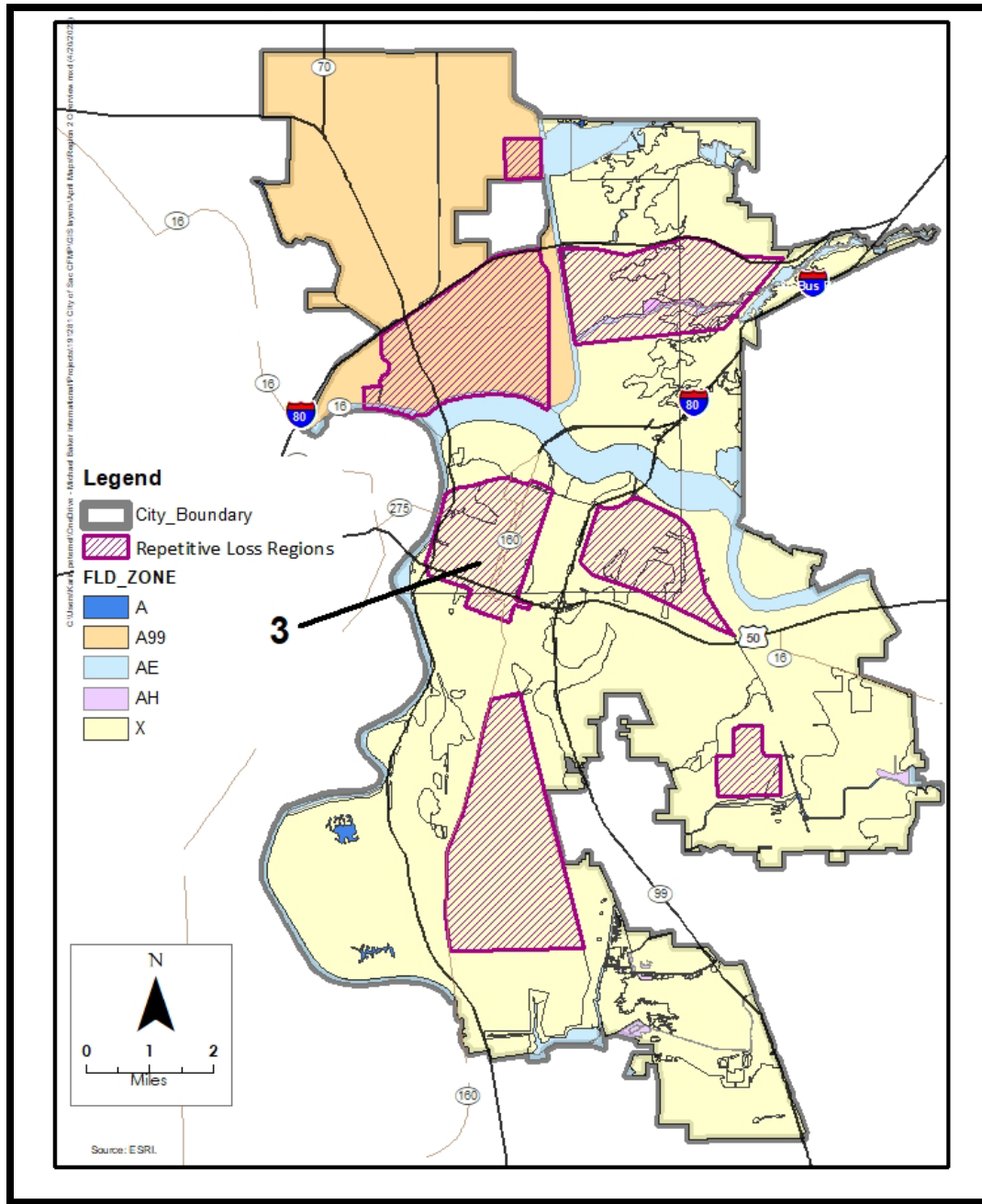
Action Item	Responsible Office	Schedule	Potential Funding
Elevate structures that are built at or below grade	Department of Utilities, Floodplain Management	Dependent of property owner interest and grant opportunities	Grants and private funding
Develop grant proposal for		Summer 2018	Department

Action Item	Responsible Office	Schedule	Potential Funding
installation of sumps to protect garages and basements		Ongoing	funding
Enforcement of floodplain management regulations			
Promotion of flood insurance			
Flood/map information hotline			
Technical assistance visits			
Provide neighborhood with storm/flood ready information - include emergency alert information		Annual	
Improvement and maintenance of private sumps	Property Owner	Ongoing	Private funding
Sewer backup protection system		Dependent on property owner interest	Private funding or grants
Construction of a floodwall			
Conveyance system improvements identified in Drainage Master Plan for Basin 31	Department of Utilities	Complete	Capital Improvement Program
McKinley Water Vault Protect		2021 Complete	
Enlarge critical pipes and construct detention basin in Drainage Basin 10		Dependent on funding	
Hazard threat recognition system		Ongoing	Department funding
Inform residents of location of sandbag supplies in their area	Department of Utilities, Operations & Maintenance (supply only); Property Owner	During flood event	Department funding (supply only)
Health and safety warnings and inspection of Combined Sewer System area	Department of Utilities, Operations & Maintenance	During/after flood event	Department funding
Drainage system maintenance		Ongoing	Department funding
Enforcement of stormwater regulations	Department of Utilities, Environmental & Regulatory Compliance	Ongoing	Department funding
Hazard warnings	Department of Utilities; Emergency Services; Public Information Office	During flood event	Department funding

5.3. Region 3 – Downtown West

Region 3 of the City of Sacramento’s RLAA is the western portion of Downtown Sacramento located just east of the Sacramento River. This area consists of several commercial buildings and high-rises as well as housing. The repetitive loss properties in this region are residential and the primary source of flooding in this area occurs due to an undersized Combined Sewer System that gets overwhelmed during large storms.

FIGURE 16. REPETITIVE LOSS AREA REGIONS MAP – REGION 3



RLAA Region 3 – Area 7

Location: 23rd St and X St

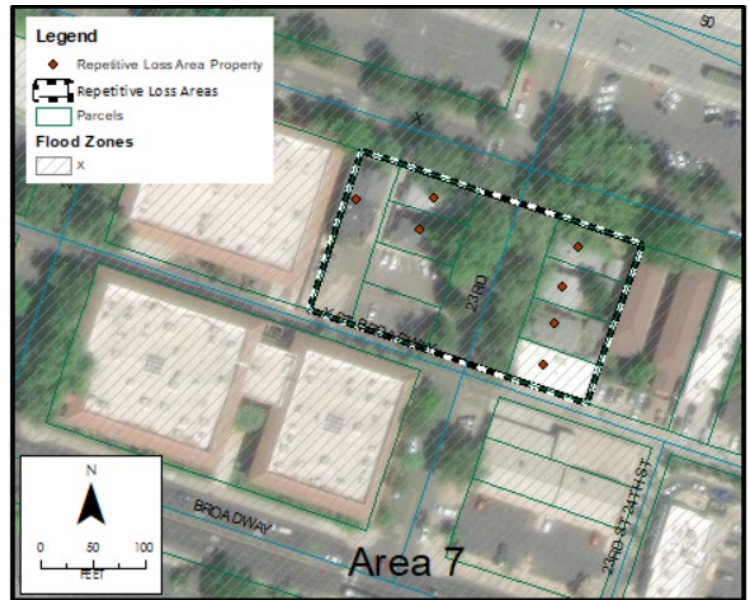
Number of Properties in Defined Area: 8

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 12/12/1995, 1/22/1997,
9/19/2004

Source of RL Flooding: During moderately intense storms, flooding occurs in Area 7 due to the undersized conveyance system. Also, during times of high-level ground saturation ponding, uneven grading, and seepage cause additional flooding in resident’s yards, garages, and basements.



Mitigation Recommendations: Improvement of Combined Sewer System, flood-proof basements, installation of sump pumps, sewer system backup protection, basement fill-in, property grading, on-site drainage to flow into main system, sandbags, utilities elevation, outreach on storm/flood preparedness, and flood insurance.

FIGURE 17. ON-SITE DRAINAGE ADDED TO AID IN STORMWATER DRAINAGE



FIGURE 18. A FRACTURED BASEMENT WALL CAUSED BY HYDROSTATIC PRESSURE; CRACKS HAVE LED TO WATER SEEPING INTO THE BASEMENT



RLAA Region 3 – Area 8

Location: 14th St. & Broadway

Number of Properties in Defined Area: 33

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 1/10/1995, 9/19/2004

Source of RL Flooding: During long duration storms, flooding occurs due to an undersized conveyance system. Many residents experience flooding in their yards, garages, and basements. Because of hills in the areas, there are garages located below grade that can be inundated by water during large storms.

Mitigation Recommendations: Improvement of Combined Sewer System, flood-proof basements, installation of sumps, sewer system backup protection, sandbags, elevate utilities, outreach on storm/flood preparedness, and flood insurance.

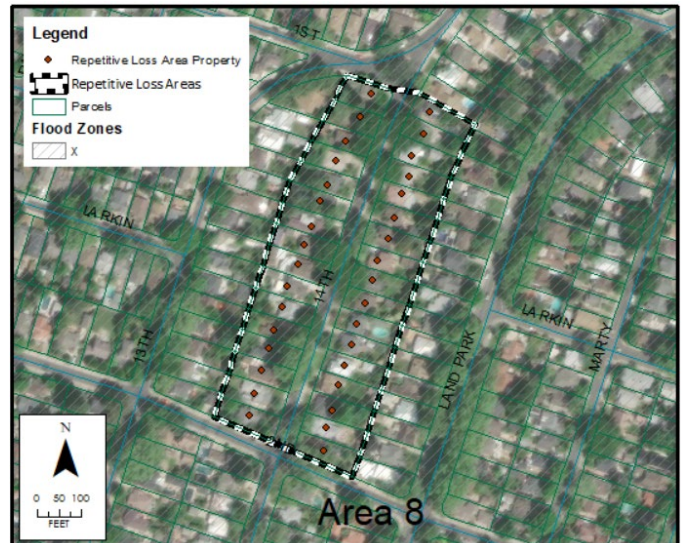


FIGURE 19. EXAMPLE OF DEBRIS IN THE STORM DRAIN. LEAF PILES ARE ALLOWED TO BE LEFT ON STREETS FOR CITY PICKUP AFTER CURBSIDE BINS ARE FULL; MANY TIMES, THESE LEAVES CAN CLOG THE STORM DRAIN



FIGURE 20. EXAMPLE OF A TYPICAL HOME IN THIS AREA THAT WOULDN'T FLOOD; ELEVATED ON A CRAWL SPACE AND THE GARAGE LOCATED IN THE BACK OF THE PROPERTY. SOME HOMES HAVE BASEMENTS



RLAA Region 3 – Area 9

Location: 28th St and N St

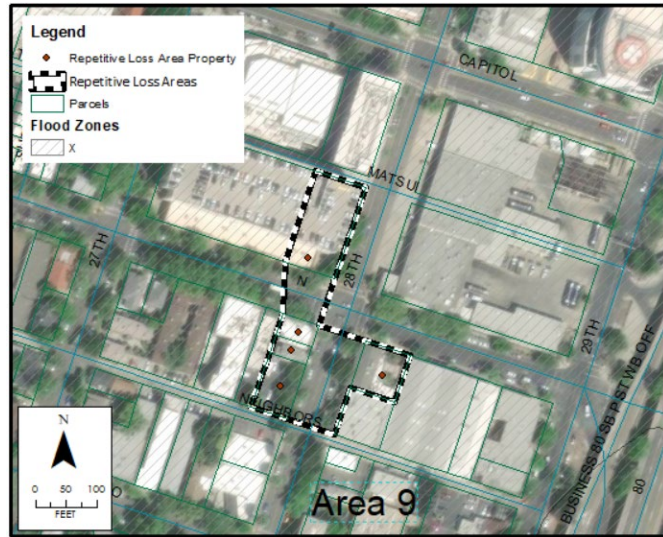
Number of Properties in Defined Area: 5

Number of RL Properties in Area: 1

Flood Zone: X - Zone

Dates of RL Flooding: 1/10/1995, 1/25/1997,
9/19/2004

Source of RL Flooding: During long duration storms, flooding occurs due to an undersized conveyance system. This is a commercial area and many of the business entryways are not elevated. If street flooding overtops the curbs, water can flow into the structure causing structural damage.



Mitigation Recommendations: Improvement of Combined Sewer System, sewer system backup protection, sandbags, elevate utilities, elevate buildings, outreach on storm/flood preparedness, and flood insurance.

FIGURE 21. THE MAJORITY OF THE BUILDINGS IN AREA 9 DO NOT HAVE ELEVATED ENTRYWAYS



RLAA Region 3 – Area 10

Location: 6th St and Q St

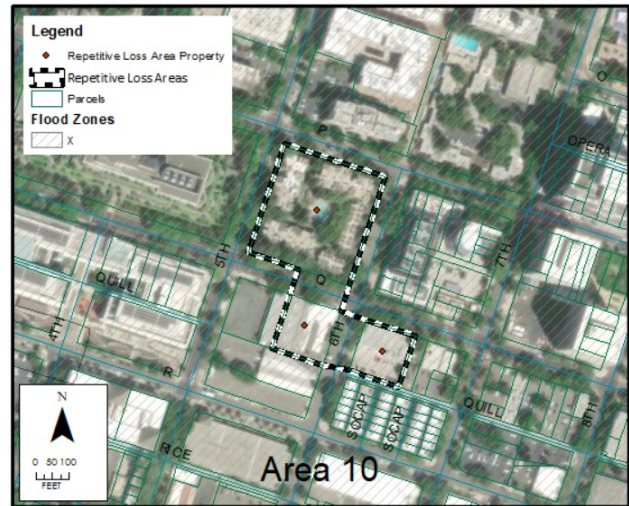
Number of Properties in Defined Area: 3

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 3/02/1995, 1/25/1997,
9/19/2004

Source of RL Flooding: During long duration storms, flooding occurs due to an undersized conveyance system. This is an area that is commercial and residential. Only some of the structures are elevated. If street flooding overtops the curb, water can flow into the structure. There are also garages that are located below grade that can be inundated by water during large storms.



Mitigation Recommendations: The Drainage Master Plan for Basin 52 recommends an alternative analysis be done. A 2D model is recommended to determine problem areas. For individual property mitigation, using sandbags, installation of a temporary floodwall, elevate buildings are recommended. Outreach on storm/flood preparedness, and flood insurance should continue.

FIGURE 22. BASEMENT WINDOWS AND ENTRY DOOR ARE NOT ELEVATED.

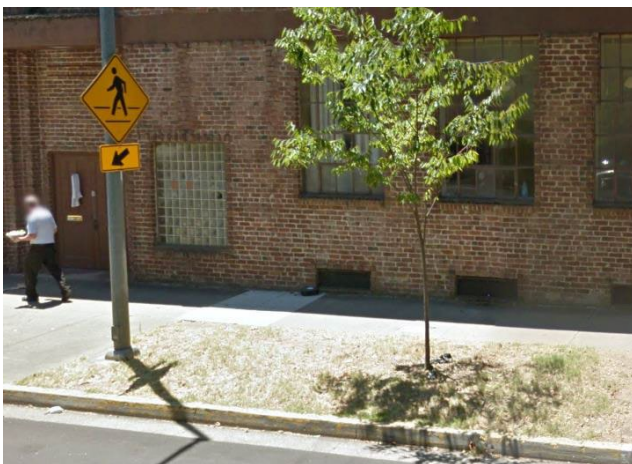


FIGURE 23. GARAGES ARE LOCATED BELOW GRADE.



RLAA Region 3 – Area 11

Location: 12th St and L St

Number of Properties in Defined Area: 3

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 1/09/1995, 1/01/1997

Source of RL Flooding: During moderately intense storms, flooding occurs when stormwater flows into the underground parking structures. Some of structures are now equipped with temporary floodwalls and sumps.

Mitigation Recommendations: Installation of temporary floodwalls, sumps, and sandbags.

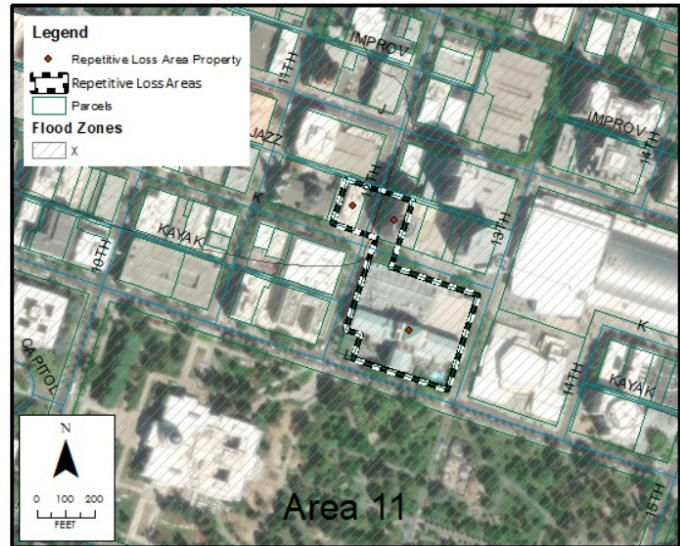
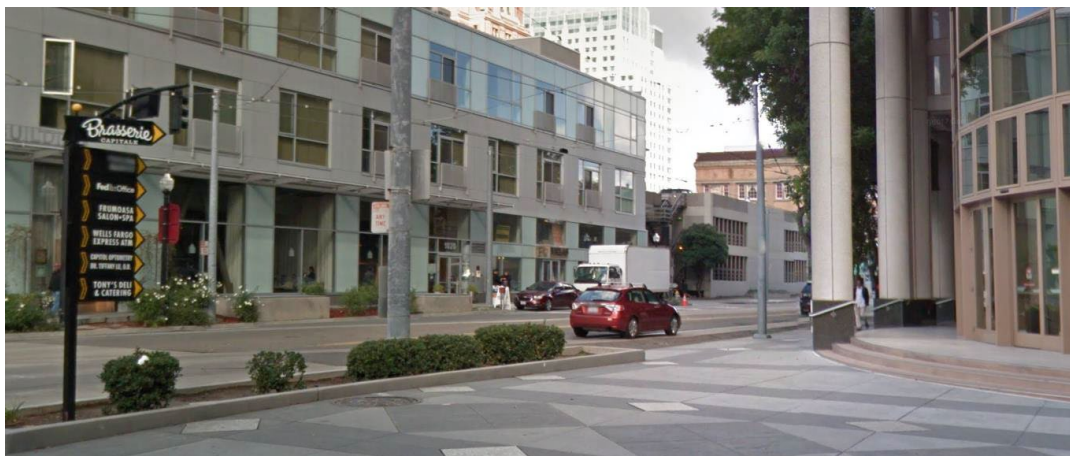


FIGURE 24. AREA 11 IS LOCATED IN THE MIDDLE OF DOWNTOWN SACRAMENTO. MANY OF THE ENTRYWAYS ARE ELEVATED, BUT THE PARKING STRUCTURES ARE BELOW GROUND



RLAA Region 3 – Area 12

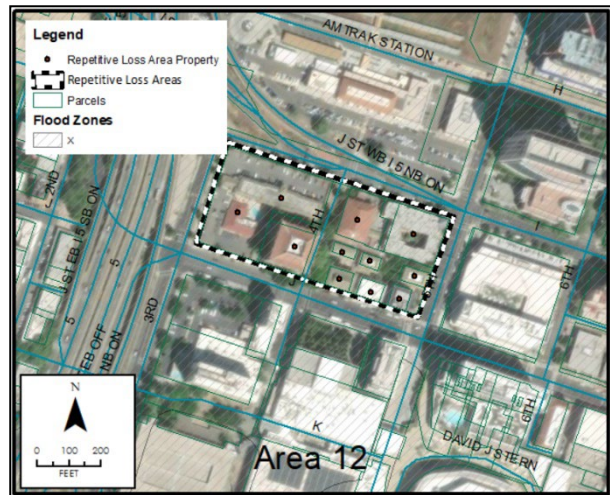
Location: J St and 3rd St

Number of Properties in Defined Area: 10

Number of RL Properties in Area: 1

Flood Zone: X

Dates of RL Flooding: 1/26/1997, 9/19/2004



Source of RL Flooding: During storm events, the street will continue draining runoff to the gutter until the capacity of the gutter is exceeded, and as a result water could potentially flow from the street downhill to the property. However, rainfall directly on the entire block (5 acres) can accumulate at the lowest point of the block, near the bottom floor of this building. Little availability for infiltration of rainfall. Directly beneath the RL property there are banks of large (6-foot dia) culverts that may be a component of a large-scale, regional sump or drainage system but that information is currently unknown. The building’s mechanical equipment is elevated about 18 inches above the bottom floor (ground) level.

Mitigation Recommendations: 2D model analysis to determine if future development at the nearby Railyards could help this area. Other recommendations include improvement of Combined Sewer System, sewer system backup protection, sandbags, elevate utilities, elevate buildings, outreach on storm/flood preparedness, and flood insurance.

FIGURE 25. CURB AND GUTTER AT BASE OF RAMP TO STREET ABOVE



FIGURE 26. BANKS OF 6-FOOT DIA CULVERTS UNDER BUILDING

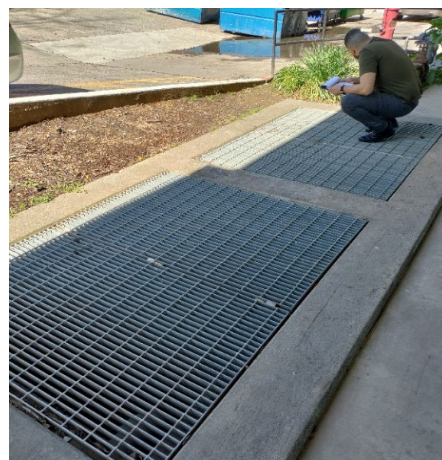


FIGURE 27. TRENCH DRAINS ALONG SOUTH SIDE
OF LOWEST FLOOR



FIGURE 28. UTILITIES ELEVATED



Region 3 – Field Visits

Attachment C – Property Visit Documentation provides field visit information collected for all structures located in Region 3’s repetitive loss areas. Questionnaires were left at each building and City staff talked with residents and tenants in the area after a large storm in January and February of 2017 to help further understand flooding patterns in the area. Staff visited Area 12 in March 2023 to understand flooding patterns in this area.

Region 3 – Mitigation and Action Items

The following mitigation activities were considered to address the hazards found in Region 3. Table 16 lists the considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 16. REGION 3 RECOMMENDED MITIGATION ACTIONS

Mitigation Activity	Region 3					
	Area 7	Area 8	Area 9	Area 10	Area 11	Area 12
Prevention						
Continue Enforcement of Stormwater Regulations	X	X	X	X	X	X
Continue Drainage System Maintenance	X	X	X	X	X	X
Continue Enforcement of Floodplain Management Regulations	X	X	X	X	X	X
Property Protection						
Building Elevation			X	X		
Relocation						
Improvement or Installation of Private Sumps	X	X				X
Sewer Backup Protection	X	X	X			X
Flood-proofing	X	X				X
Flood Insurance	X	X	X	X	X	X
Grading						
Sandbags	X	X	X	X	X	X
Elevate Utilities	X	X	X	X		X
Natural Resource Protection						
Natural Area Preservation						
Natural Area Restoration						
Emergency Services						
Hazard Threat Recognition	X	X	X	X	X	X
Hazard Warnings	X	X	X	X	X	X
Health and Safety Maintenance	X					
Structural Projects						
Floodwalls				X	X	X
Diversions						

Mitigation Activity	Region 3					
	Area 7	Area 8	Area 9	Area 10	Area 11	Area 12
Conveyance System Improvements (Structural)						
Detention Basin/Vault				X		
Increased Pumping Capacity	X	X	X	X		X
Pipe Improvements	X	X	X	X		
Public Information						
Outreach Projects	X	X		X		X
Map Information	X	X	X	X	X	
Technical Assistance	X	X	X	X	X	

Based on the complete analysis of this region the following action items were identified. These action items were selected based on community feedback, funding, current City activities, and data reports.

TABLE 17. REGION 3 ACTION ITEMS

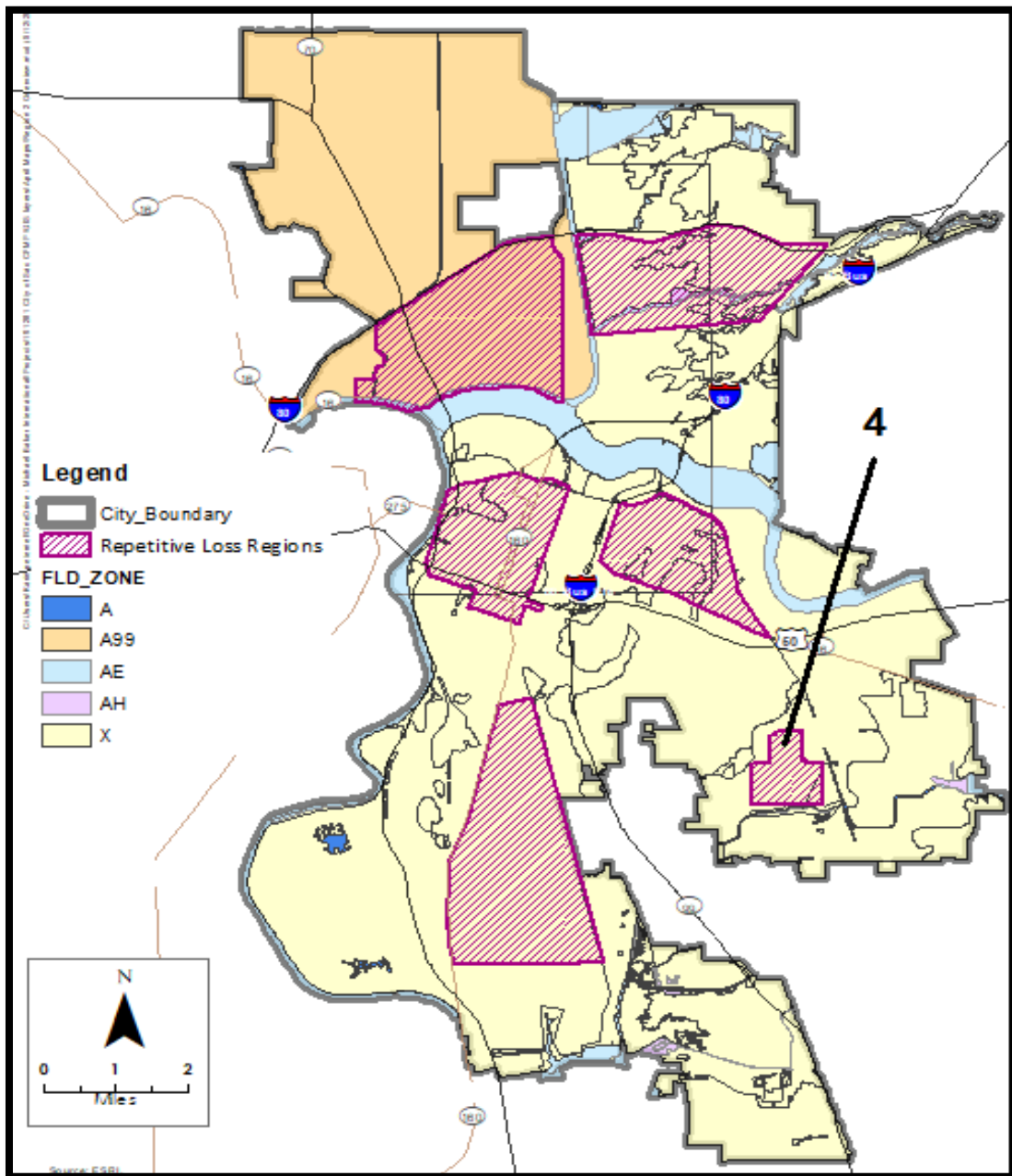
Action Item	Responsible Office	Schedule	Potential Funding	
Elevate structures and utilities that are built at or below grade	Department of Utilities, Floodplain Management	Dependent on property owner interest and grant opportunities	Grants and private funding	
Floodproofing				
Provide neighborhoods with storm/flood ready information - include emergency alert information				Annual
Enforcement of floodplain management regulations				Ongoing
Promotion of flood insurance				
Flood/map information hotline				
Technical assistance visits				
Improvement and maintenance of private sumps	Property Owner	Ongoing	Private funding	
Prohibit occupancy of lowest level		Short-term; Dependent on property owner interest	Private	
Sewer backup protection system		Dependent on property owner interest	Private funding or grants	
Hazard threat recognition system	Department of Utilities	Ongoing	Department funding	

Action Item	Responsible Office	Schedule	Potential Funding
Acquisition by City		Long-term	Grant/department funding
Inform residents of location of sandbag supplies in their area	Department of Utilities, Operations & Maintenance (supply only); Property Owner	During flood event	Department funding (supply only)
Health and safety warnings and inspection of combined sewer system area	Department of Utilities, Operations & Maintenance	During flood event	Department funding
Drainage system maintenance		Ongoing	
Improvements identified in the Combined Sewer System Improvement Plan Update	Department of Utilities, Wastewater & Stormwater Engineering Program	Long-Term	Capital Improvement Program
Conveyance system improvements identified in Drainage Master Plan for Basin			
Enforcement of stormwater regulations	Department of Utilities, Environmental & Regulatory Compliance	Ongoing	Department funding
Hazard warnings	Department of Utilities; Emergency Services; Public Information Office	During flood event	Department funding

5.4. Region 4 – Southeast Sacramento

Region 4 of the RLAA is located in the southeast portion of Sacramento’s city limits. This entire region is composed of residential properties located between 65th Avenue and Power Inn Road. There are two repetitive loss properties located in this region that have flooded mainly due to poor grading. Water from higher adjacent properties flows into low-lying areas causing some homes to flood. A drainage study of Basin 96 concluded that limitations were discovered during observed flooding such as overland flow from one property to another and constraints such as fences and landscape features.

FIGURE 29. REPETITIVE LOSS AREA REGIONS MAP – REGION 4



RLAA Region 4 –Area 13

Location: 37th Ave and 66th St

Number of Properties in Defined Area: 12

Number of RL Properties in area: 1

Flood Zone: X-Zone

Dates of RL Flooding:

1/10/1995, 1/22/1997, 12/31/2005

Source of RL Flooding: Flooding occurs during heavy, long duration storms. The source of the flooding is from open land adjacent to the properties.

Mitigation Recommendations: Grading on the property to redirect the flow of water, installation of drains to divert water, construct floodwall, sandbags, flood insurance, and outreach on storm/flood preparedness.



FIGURE 30. STRUCTURE BUILT ON A CRAWL SPACE AND HVAC UNIT IS ELEVATED AS A FLOOD-PROOFING MEASURE



FIGURE 31. PONDING CAUSED BY LANDSCAPING OBSTRUCTIONS



Region 4 – Field Visits

Attachment C – Property Visit Documentation provides field visit information collected for all structures located in Region 4’s repetitive loss areas. Questionnaires were left at each building and City staff talked with residents and tenants in the area after a large storm in January and February of 2017 to help further understand flooding patterns in the area.

Region 4 – Mitigation and Action Items

The following mitigation activities were considered to address the hazards found in Region 4. Table 18 lists the considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 18. REGION 4 REVIEW OF ALTERNATIVE APPROACHES

Mitigation Activity	Region 4
	Area 13
Prevention	
Continued Enforcement of Stormwater Regulations	X
Continue Drainage System Maintenance	X
Continued Enforcement of Floodplain Management Regulations	X
Property Protection	
Building Elevation	X
Relocation	
Improvement or Installation of Private Sumps	
Sewer Backup Protection	
Flood proofing	
Flood Insurance	X
Grading	
Sandbags	X
Elevate Utilities	X
Natural Resource Protection	
Natural Area Preservation	
Natural Area Restoration	
Emergency Services	
Hazard Threat Recognition	X
Hazard Warnings	X
Health and Safety Maintenance	
Structural Projects	

Mitigation Activity	Region 4
	Area 13
Floodwalls	
Diversions	
Conveyance System Improvements (Structural)	
Detention Basin/Vault	X
Increased Pumping Capacity	
<u>Pipe Improvements</u>	
Public Information	
Outreach Projects	X
Map Information	X
Technical Assistance	X

Based on the complete analysis of this region the following action items were identified. These action items were selected based on community feedback, funding, current City activities, and data reports.

TABLE 19. REGION 4 ACTION ITEMS

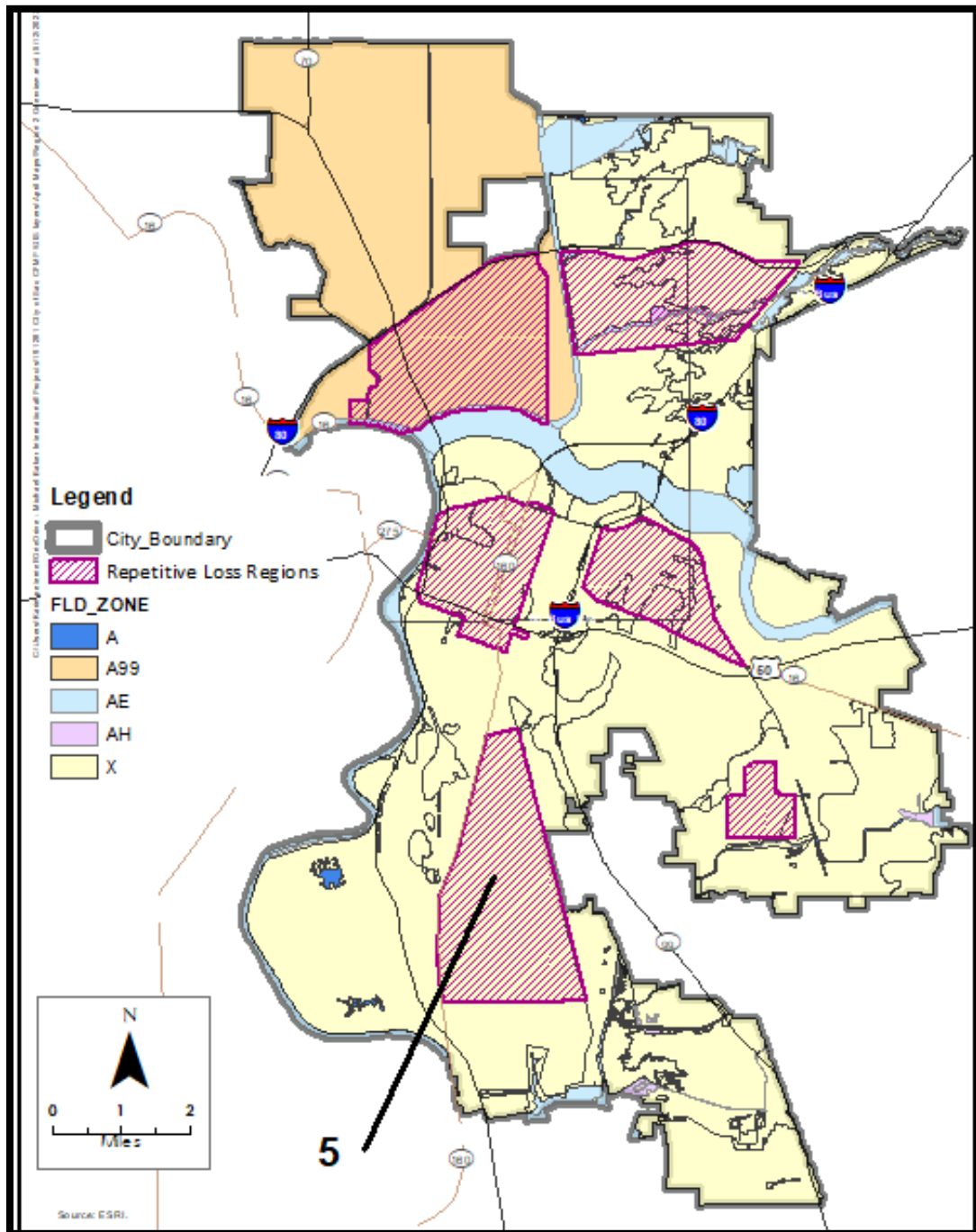
Action Item	Responsible Office	Schedule	Potential Funding
Elevate structures that are built at or below grade	Department of Utilities, Floodplain Management	Dependent on property owner interest and grant opportunities	Grants and private funding
Flood/map information hotline		Ongoing	Department funding
Technical assistance visits			
Enforcement of floodplain management regulations			
Promotion of flood insurance			
Elevate utilities that are at or below grade	Property Owner	Dependent on property owner interest	Private funding
Grading or diversion to redirect the flow of stormwater to drainage system			
Inform residents of location of sandbag supplies in their area	Department of Utilities, Operations & Maintenance; Property Owner	During flood event	Department funding
Hazard threat recognition system	Department of Utilities	Ongoing	Department funding
Drainage system maintenance	Department of Utilities, Operations & Maintenance	Ongoing	Department funding
Enforcement of stormwater	Department of Utilities,	Ongoing	Department

Action Item	Responsible Office	Schedule	Potential Funding
regulations	Environmental & Regulatory Compliance		funding
Conveyance system improvements identified in Drainage Master Plan for Basin 96	Department of Utilities, Wastewater & Stormwater Engineering Program	Long-Term	Capital Improvement Program
Hazard warnings	Department of Utilities; Emergency Services; Public Information Office	During flood event	Department funding

5.5. Region 5 – Sutterville/Meadowview

Region 5 of the RLAA stretches from Sutterville Road down south to Meadowview Road. The majority of this area is residential; however, it does consist of a few shopping/corporate centers, Bing Maloney Gold Course, and the Sacramento Executive Airport. This entire region is classified by FEMA as Zone X with a low risk of flooding due to surrounding levees.

FIGURE 32. REPETITIVE LOSS AREA REGIONS MAP – REGION 5



RLAA Region 5 – Area 14

Location: 24th St and 69th Ave

Number of Properties in Defined Area: 10

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 2/23/20002, 12/31/2005

Source of RL Flooding:

Based on the investigation performed by GEI Consultants, it was discovered that flooding likely occurred due to undersized drainage system during long duration storm events. Discussions with the property owners confirmed this conclusion.

Mitigation Recommendations: Based on Drainage

Master Plan of Basin 33 and the technical analysis performed by GEI, on-site private property protection should be implemented. This area is a localized low spot. Private property actions including drainage and grading of the property, sandbags, or elevation of the finished floor would be effective mitigation actions.

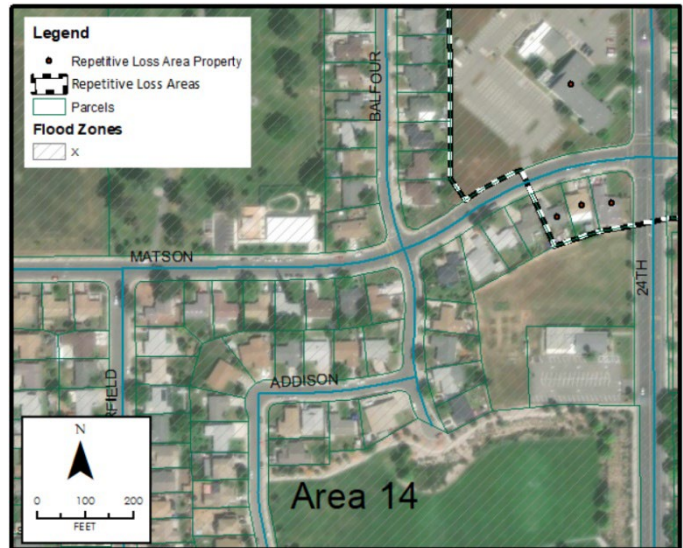


FIGURE 33. DRAINS INSTALLED AFTER FLOODING TO DIVERT WATER BACK TO THE MAIN DRAINAGE SYSTEM

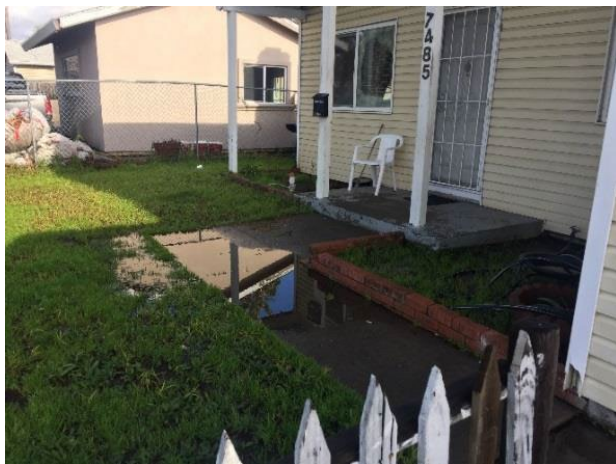
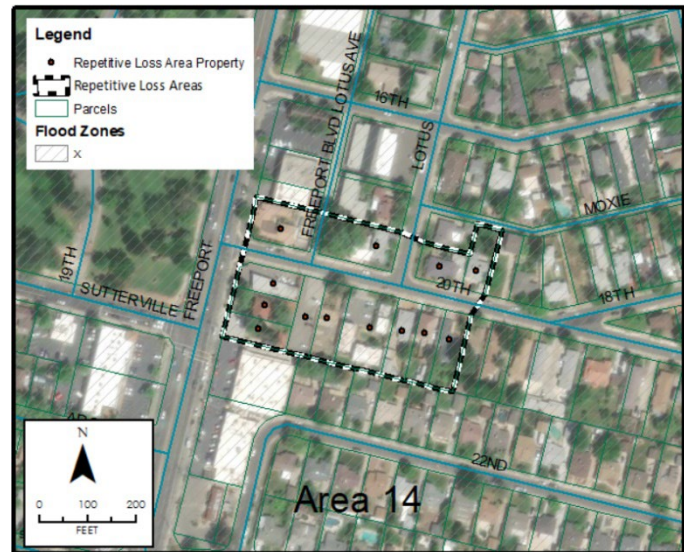


FIGURE 34. FRONT YARDS INUNDATED BY STREET FLOODING; PICTURES TAKEN TWO DAYS AFTER A LARGE STORM



RLAA Region 5 – Area 15

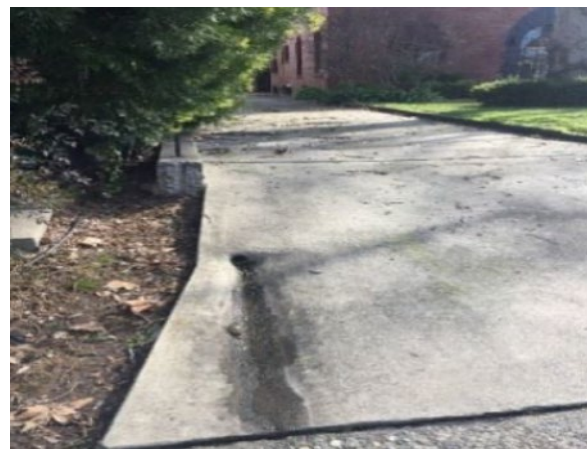
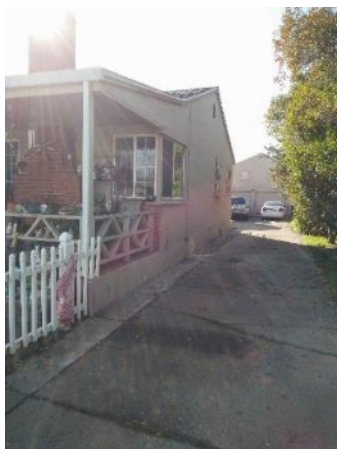
Location: 20th Ave and Freeport Blvd
Number of Properties in Defined Area: 13
Number of RL Properties in Area: 4
Flood Zone: X-Zone
Dates of RL Flooding:
Property 1: 1/10/1995, 2/07/1996
1/22/1997
Property 2: 1/10/1995, 1/22/1997
Property 3: 1/10/1995 1/22/1997
Property 4: 3/25/1989 1/12/1990 1/13/1993
1/09/1995 1/20/1996 1/22/1997



Source of RL Flooding: This area is located in a low-lying area with an undersized drainage conveyance system. Flooding occurs during moderate and long duration storms.

Mitigation Recommendations: A master plan will need to be prepared for this area to look for alternatives to mitigate this area. Pipeline replacement and upsizing should be performed at the end of the pipe’s useful life. For individual property protection, flood insurance, sandbags, diversions, and elevation of utilities will provide additional flood protection.

FIGURE 35. EXAMPLES OF FLOODPROOFING MEASURE SUCH AS A CRAWL SPACE (LEFT) AND ADDITIONAL ON-SITE DRAINAGE PIPE (RIGHT)



RLAA Region 5 – Area 16

Location: Alcedo Dr and Winnett Way,
West of Franklin Blvd

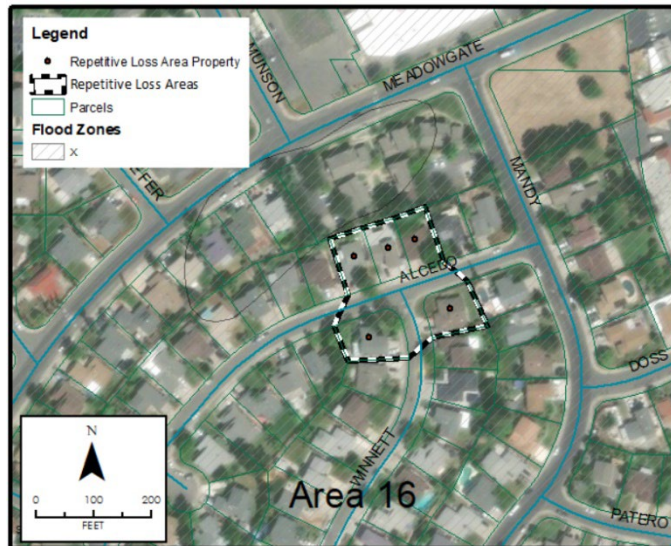
Number of Properties in Defined Area: 5

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 1/10/1995,
1/27/1997

Source of RL Flooding: This area is in a low-lying area with an undersized drainage conveyance system. Flooding occurs during moderately intense and long duration storms.



Mitigation Recommendations: Elevate garages, ensure proper on-site drainage to allow water to flow to storm drains, elevate utilities, sandbags, storm readiness outreach, and flood insurance.

FIGURE 36. CRAWL SPACE UTILIZED AS A FLOODPROOFING MEASURE TO PREVENT FLOODING IN THE STRUCTURE



FIGURE 37. STANDING WATER AFTER A LARGE JANUARY STORM UNABLE TO CONVEY FLOWS



RLAA Region 5 – Area 17

Location: 68th Ave and 21st St

Number of Properties in Defined Area: 13

Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 1/10/1995, 2/26/2000

Source of RL Flooding: Based on GEI Consultants’ investigation, the most logical reason for flooding is unique to specific property drainage within the area. It is believed that an addition of a patio structure in the back of the property reduced the ability of the property to drain properly.



Mitigation Recommendations: For area flood protection, Drainage Master Plan for Basin 108 does not show property damage in this area. Some pipe upsizing recommendations to mitigate street flooding. Also suggest updating the model for alternative recommendations. Residents can add diversion(s) to promote the flow of water to the main drainage system, purchase flood insurance, and use sandbags to mitigate flooding.

FIGURE 38. ELEVATED HOME WITH LANDSCAPING ASSISTING IN ON-SITE DRAINAGE



FIGURE 39. ELEVATED STRUCTURE WITH A CRAWL SPACE BELOW AS A FLOOD PROTECTION METHOD



RLAA Region 5 – Area 18

Location: Golf View Dr and 48th Ave

Number of Properties in Defined Area: 14

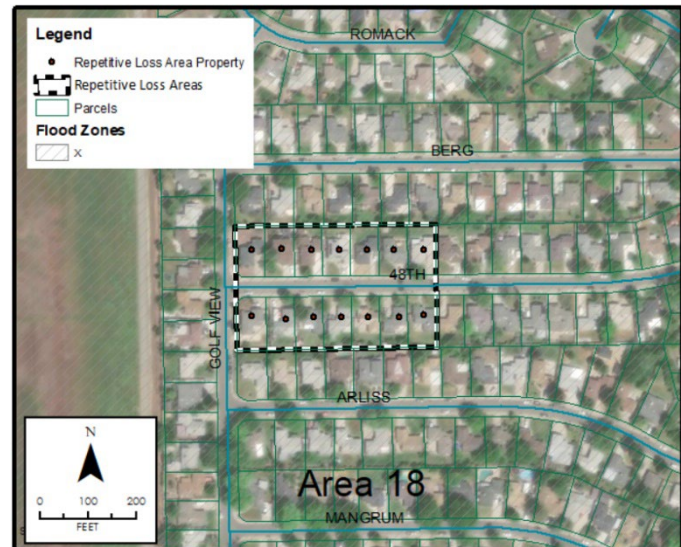
Number of RL Properties in Area: 1

Flood Zone: X-Zone

Dates of RL Flooding: 1/25/1997, 12/23/2004

Source of RL Flooding:

Based on GEI Consultants’ investigation, the flooding in this area is caused by undersized drain pipes that are overwhelmed during long duration storms. Street flooding can overtop the curbs and begin to flood yards and garages.



Mitigation Recommendations: The Drainage Master Plan for Basin 22 to be completed. Old master plan did not show property damage in this area. Some pipe upsizing improvements to mitigate street flooding. Also suggest updating the model. Other mitigation options are flood preparedness education, elevate utilities, flood insurance, and sandbags.

FIGURE 40. EXAMPLE OF FLOODED YARD FROM JANUARY 2017 STORMS



FIGURE 41. EXAMPLE OF UTILITIES LOCATED ON THE ROOF; MANY OF THE HOMES IN THIS AREA HAVE HVAC UNIT LOCATED ON THE ROOF



Region 5 – Field Visit

Attachment C – Property Visit Documentation provides field visit information collected for all structures in Region 5’s repetitive loss areas. Questionnaires were left at each building and City staff talked with residents and tenants in the area after a large storm in January and February of 2017 to help further understand flooding patterns in the area.

Region 5 – Mitigation and Action Items

The following mitigation activities were considered to address the hazards found in Region 5. Table 21 lists the considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 20. REGION 5 MITIGATION ALTERNATIVE APPROACHES

Mitigation Activity	Region 5				
	Area 14	Area 15	Area 16	Area 17	Area 18
Prevention					
Continue Enforcement of Stormwater Regulations	X	X	X	X	X
Continue Drainage System Maintenance	X	X	X	X	X
Continue Enforcement of Floodplain Management Regulations	X	X	X	X	X
Property Protection					
Building Elevation	X		X		
Relocation					
Improvement or Installation of Private Sumps					
Sewer Backup Protection					
Flood-proofing					
Flood Insurance	X	X	X	X	X
Grading	X			X	X
Sandbags	X	X	X	X	X
Elevate Utilities		X	X	X	X
Natural Resource Protection					
Natural Area Preservation					
Natural Area Restoration					
Emergency Services					
Hazard Threat Recognition	X	X	X	X	X
Hazard Warnings	X	X	X	X	X
Health and Safety Maintenance					
Structural Projects					
Floodwalls	X				
Diversions	X	X		X	X
Conveyance System Improvements (Structural)					
Detention Basin/Vault				X	X

Mitigation Activity	Region 5				
	Area 14	Area 15	Area 16	Area 17	Area 18
Increased Pumping Capacity					
Pipe Improvements	X	X		X	X
Public Information					
Outreach Projects	X	X	X	X	X
Map Information	X	X	X	X	X
Technical Assistance	X	X	X	X	X

Based on the complete analysis of this region the following action items were identified. These action items were selected based on community feedback, funding, current City activities, and data reports.

TABLE 21. REGION 5 MITIGATION ALTERNATIVES

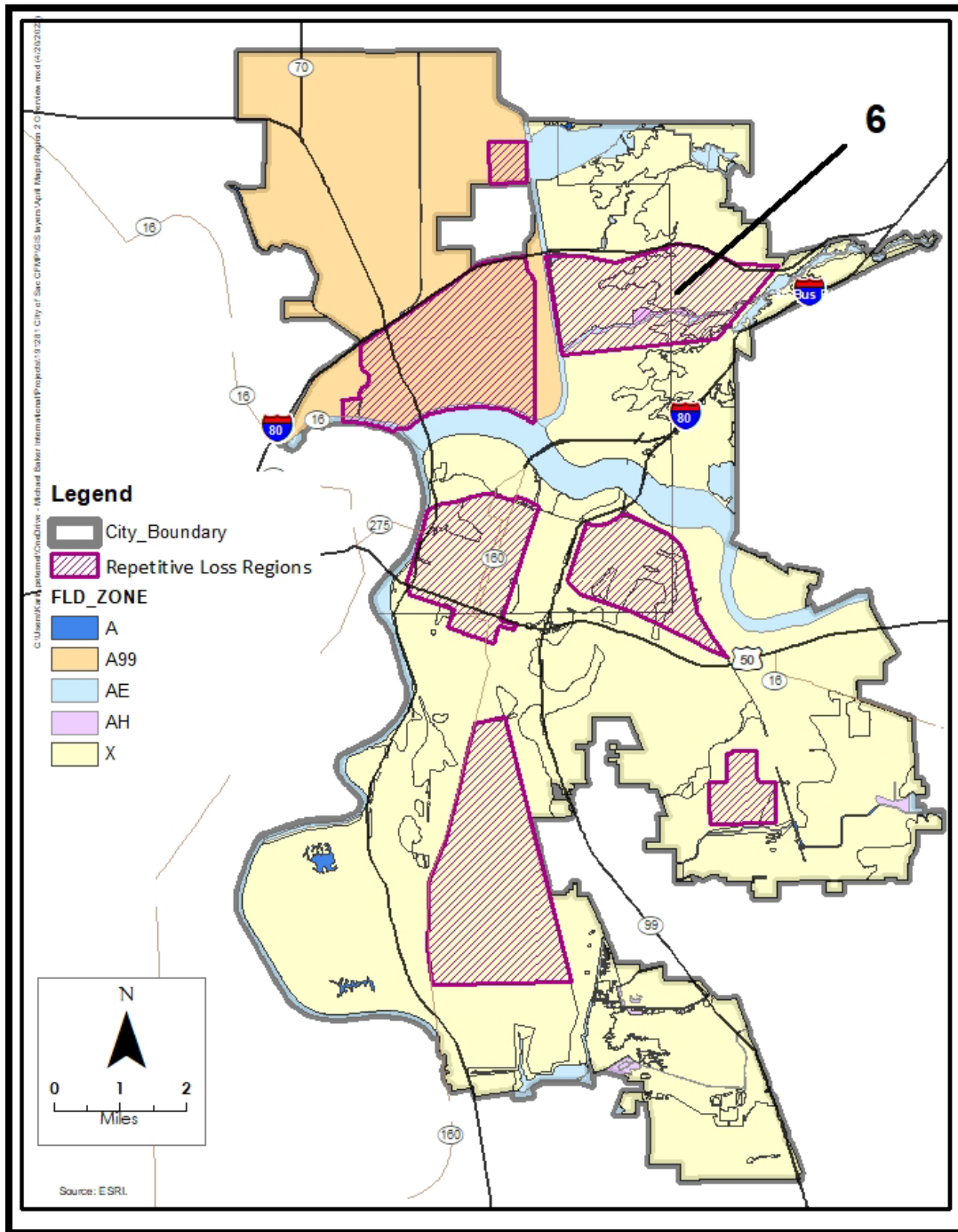
Action Item	Responsible Office	Schedule	Potential Funding
Provide neighborhoods with storm/flood ready information - include emergency alert information	Department of Utilities, Floodplain Management	Annual	Department funding
Elevate structures that are built at or below grade		Dependent on property owner interest and grant opportunities	Grants and private funding
Drainage system maintenance		Ongoing	Department funding
Enforcement of floodplain management regulations			
Promotion of flood insurance			
Flood/map information hotline			
Technical assistance visits			
Grading or diversion to redirect the flow of stormwater to drainage system	Property Owner	Dependent on property owner interest	Private funding
Elevate utilities that are at or below grade			
Construction of a floodwall		Dependent on property owner interest	Private funding or grants
Hazard threat recognition system	Department of Utilities	Ongoing	Department funding
Conveyance system improvements identified in Drainage Master Plan for Basin 33	Department of Utilities, Wastewater & Stormwater Engineering Program	Long-Term	Capital Improvement Program
Diversion identified in Drainage Master Plan for Basin 108			

Action Item	Responsible Office	Schedule	Potential Funding
Conveyance system improvements identified in Drainage Master Plan for Basin 22			
Conveyance system improvements identified in- Drainage Master Plan for Basin 108			
Inform residents of location of sandbag supplies in their area	Department of Utilities, Operations & Maintenance; Property Owner	During flood event	Department funding
Enforcement of stormwater regulations	Department of Utilities, Environmental & Regulatory Compliance	Ongoing	Department funding
Hazard warnings	Department of Utilities; Emergency Services; Public Information Office	During flood event	Department funding

5.6. Region 6 – Arcade Creek

Region 6 of the RLAA stretches from Watt Avenue, through Haggin Oaks Golf Course, and west to Steelhead Creek. The majority of this area is residential. The flooding in this region is due to overbank flooding due to severe storm events. The region includes Zone AE.

FIGURE 42. REPETITIVE LOSS AREA REGIONS MAP – REGION 6



RLAA Region 6 – Area 19

Location: Arcade Creek Blvd and Marysville Blvd to Verano St

Number of Properties in Defined Area: 71

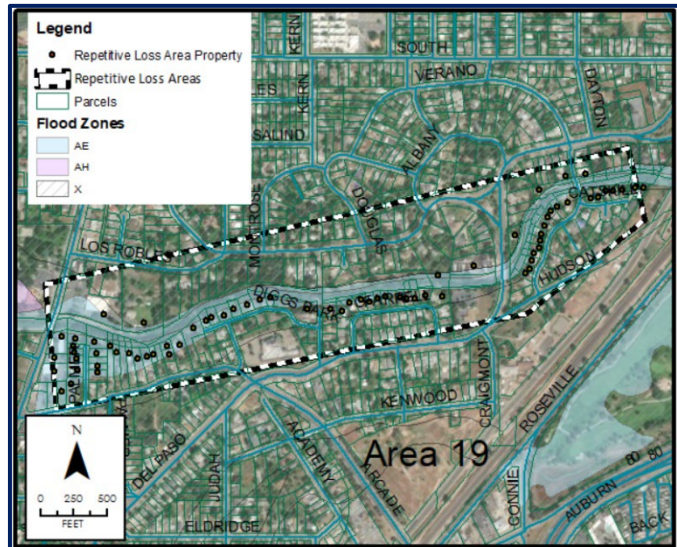
Number of RL Properties in Area: 2

Flood Zone: AE

Dates of RL Flooding 1: 1/4/1982, 1/10/1995

Dates of RL Flooding 2: 2/17/1986, 1/10/1995

Source of RL Flooding: This area is located along Arcade Creek, directly west of the publicly owned Haggin Oaks Golf Course. A record high stage reading of 80.9 feet was recorded at Arcade Creek on January 10, 1995. This suggests that the overtopping of the creek was probably the cause of the damage at the properties along Arcade Creek on that date. Properties along Palmer Street are additionally at a lower grade than Palmer itself; therefore at this location there is the potential for runoff from Arcade Blvd. as well as adjacent streets. Many properties have out-buildings at the back of the property that are even more directly adjacent to Arcade Creek that may have received the damage.



East side: A visit was made to the area during regional flooding on January 5, 2023. Properties that flooded are directly adjacent to the large, partially concrete-lined channel that is the bed of Arcade Creek through this area. These homes sit at a lower finished floor elevation than the adjacent road. Water also pools on Verano Bridge and along the streets during high storm events and due to poor drainage in the area.

West side: During the January site visit, water had accumulated at the intersection of Palmer St and Arcade Blvd to a depth of about 8 inches. Farther down the street on Palmer, accumulation of tree leaves, debris, and branches had clogged up the only two drainage inlets on the north and the south ends of the street. Properties on the north end of Palmer are at the lowest point of the street, which leads runoff to travel down north alongside the two gutter pans to the undersized drainage inlet at the end of the street. Without proper maintenance or drainage inlet upsizing, water will keep accumulating in this location and could cause flooding to the adjacent properties.

Mitigation Recommendations: Properties’ finished floor elevations are low. Regional improvements could include detention storage in the golf course to provide adequate flood protection to the area, regional stormwater improvements to street drainage, and maintenance of the partially concrete-lined channel that is Arcade Creek. Ensure all upstream stormwater collection and conveyance infrastructure is cleaned and maintained before and during large events. On-property mitigation efforts should include raising mechanical equipment, raising of the structures themselves, relocating the structures, and sandbags or a floodwall to divert or direct water away from the structures.

FIGURE 43. VIEW NORTH ON PALMER TOWARD END OF THE STREET AND RL PROPERTY



FIGURE 44. CLOGGED DRAINAGE INLET ON PALMER ST AND ARCADE BLVD



FIGURE 45. ARCADE CREEK LOOKING WEST FROM VERANO BRIDGE (CULVERT OUTLET AT RED ARROW) (STAGE 35 FT AT MARYSVILLE BLVD (CITY) (47403); MARCH 16



FIGURE 46. ARCADE CREEK LOOKING WEST FROM VERANO BRIDGE (STAGE 40-42 FT AT MARYSVILLE BLVD (CITY) (47403); JANUARY 5



FIGURE 47. ARCADE CREEK LOOKING WEST FROM VERANO BRIDGE



FIGURE 48. VERANO BRIDGE WATER PONDING



RLAA Region 6 – Area 20

Location: Gillespie St and Fairbanks Ave

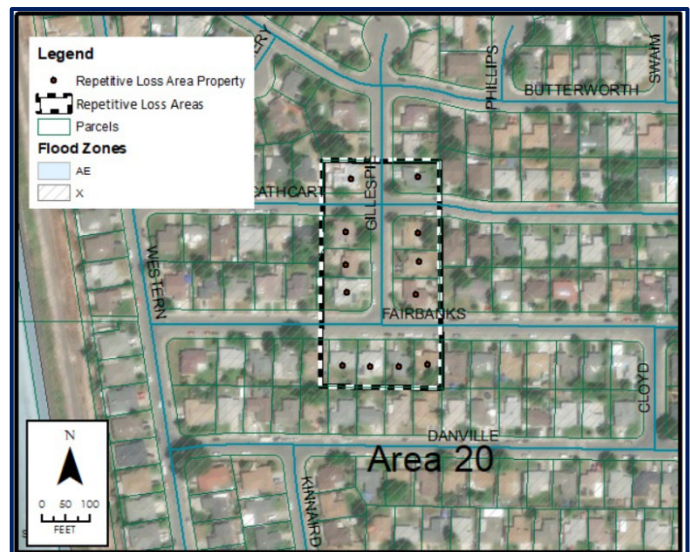
Number of Properties in Defined Area: 12

Number of RL Properties in Area: 1

Flood Zone: X

Dates of RL Flooding: 12/23/2012, 1/7/2017, 3/1/2018

Source of RL Flooding: Previous communications with homeowner indicated that the foundation is weak from the 1986 flood, resulting in water entering the home through the foundation. The main area of flooding was in a lower level room and patio. Resident uses sandbags and boards to keep water out; however, the cracks in the foundation continue to let it seep through the floor.



Mitigation Recommendations: Structural improvements to house/foundation, use sandbags to prevent damage to the house, grading on the property to redirect the flow of water, installation of drains to divert water, construct floodwall, sandbags, flood insurance, and outreach on storm/flood preparedness.

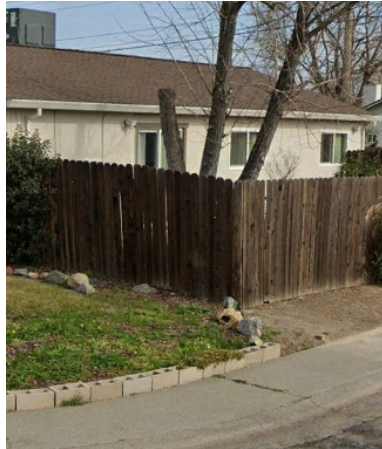
FIGURE 49. SUMP 158 NEAR GILLESPIE STREET



FIGURE 50. SUMP 158 POND



FIGURE 51. TYPICAL NEIGHBORHOOD HOME BUILT UP FROM STREET



Region 6 – Field Visits

Attachment C – Property Visit Documentation provides field visit information collected for all structures located in Region 6’s repetitive loss areas. Targeted outreach letters and questionnaires were mailed to residents prior to the visit. Local residents responded to the outreach and provided anecdotal information on the local flooding.

Region 6 – Mitigation and Action Items

The following mitigation activities were considered to address the hazards found in Region 6. Table 22 lists all considered mitigation activities and identifies appropriate mitigation activities for each repetitive loss area.

TABLE 22. REGION 6 REVIEW OF ALTERNATIVE APPROACHES

Mitigation Activity	Area 19	Area 20
Prevention		
Continue Enforcement of Stormwater Regulations	X	X
Continue Drainage System Maintenance	X	X
Continue Enforcement of Floodplain Management Regulations	X	X
Property Protection		
Building elevation	X	X
Relocation	X	
Improvement or Installation of Private Sump		
Sewer Backup Protection		
Flood-proofing	X	
Flood insurance	X	
Grading		
Sandbags	X	X

Mitigation Activity	Area 19	Area 20
Elevate Utilities	X	X
Structural Improvements		X
Natural Resource Protection		
Natural Area Preservation		
Natural Area Restoration	X	
Emergency Services		
Hazard Threat Recognition		
Hazard Warnings		
Health and Safety Maintenance		
Structural Projects		
Floodwalls	X	
Diversions		
Conveyance System Improvements (Structural)		
Detention Basin	X	
Increased Pumping Capacity		
Pipe Improvements		
Public Information		
Outreach Projects	X	x
Map Information		
Technical Assistance		

TABLE 23. REGION 6 ACTION ITEMS

Action Item	Responsible Office	Schedule	Potential Funding
Promote flood insurance Brochures, specific outreach	Department of Utilities, Floodplain Management	Ongoing	Department funding
Continue to enforce local floodplain development ordinance		Prior to flood event	
Inform residents of location of sandbag supplies in their area		Long-term	Department funding, HMGP funding
Investigate grant funding			
Elevate the structure	Property owner	Depends on interest of owner	
Rebuild foundation/structural improvements		Long-term	
Investigate Capital Improvement Plan for regional stormwater infrastructure	Department of Utilities	Long-term	Department funding, HMGP funding
Acquisition by City			Grant/department funding

6. Repetitive Loss Area Analysis Summary

The City of Sacramento is highly vulnerable to localized flooding. The City’s local drainage system services approximately 100 square miles and is handled by a combination of gravity and lift stations for a total of approximately 140 storm drainage basins. Since the City is typically lower than the elevated rivers by as much as 5-25 feet, the majority of the local drainage must be pumped into the rivers. The City operates 105 sumps and pumps to keep the drainage pumped down.

It is conceivable that extremely heavy local rainstorms can result in badly flooded streets and flooding of homes in some areas. It is estimated that such situations would be brought about by a slow-moving high-intensity rainstorm over several hours reaching a peak intensity of one-half inch per hour later in the storm event. Any higher intensity storm event will cause localized flooding problems. The majority of the structures in the City’s repetitive loss areas are impacted by local drainage flooding. The identified structural projects related to drainage improvements will result in long-term flood protection for affected areas. However, most of these projects must wait for funding to proceed.

It is recommended that property owners prepare themselves at the beginning of each rainy season, typically October. The City suggests having sandbag materials on hand, clear debris of storm drains on a regular basis, and have backup generators for sumps. The City’s mitigation activities recommended in this report include increased outreach on hazard awareness and warning, with additional efforts in repetitive loss area to ensure flood preparedness. Finally, the development of an ongoing program to match residents who would like to move forward with a structural or property protection mitigation activities with possible grant funding.

Through the collaborative efforts of the City and residents, the repetitive loss areas within Sacramento can become better prepared, more protected, and resilient to localized flooding.

6.1. Current Mitigation Projects

6.1.1. Capital Improvements Plan Drainage Improvements

The FY2023/24 budget for the City Utilities Program totals \$47.3 million. At the current time, drainage improvements identified by the Utilities Department for implementation are under review and will be prioritized upon funding approval.

6.1.2. Acquisition and Demolition

The City of Sacramento has not identified any properties on its repetitive loss list that would be candidates for acquisition or demolition of the structures.

6.1.3. Advantages and Disadvantages of Mitigation Measures

Seven primary mitigation measures are discussed here: acquisition, relocation, barriers, floodproofing, drainage, elevation, and insurance. In general, the cost of acquisition and relocation will be higher than other mitigation measures but can completely mitigate the risk of any future flood damage. Building small barriers to protect single structures is a lower cost solution, but it may not be able to offer complete protection from large flood events and may impact flood risk on other properties. Where

drainage issues are the source of repetitive flooding, drainage improvements can provide flood mitigation benefits to multiple properties. Each of these solutions is discussed in greater detail below.

Insurance differs from other property protection activities in that it does not mitigate or prevent damage caused by a flood. However, flood insurance does help the owner repair and rebuild their property after a flood, and it can enable the owner to afford incorporating other property protection measures in that process. Insurance offers the advantage of protecting the property, as long as the policy is in force, without requiring human intervention for the measure to work.

7. Conclusion and Recommendations

Conclusion and Recommendations

Based on the field survey and collection of data, the analysis of existing studies and reports, and the evaluation of various structural and nonstructural mitigation measures, the City of Sacramento has identified various mitigation measures that can be implemented by homeowners or identified for possible regional stormwater or drainage improvements that will be evaluated by City staff.

The City will encourage property owners to use flood-proofing measures to help protect lower levels of their property. Outreach and education will continue to be a priority, not only citywide but to individually affected residents, in order to minimize future flood risk through increased public education efforts to increase awareness of flood preparedness and flood protection measures such as moving valuable items to above the flood elevation and permanently elevating vulnerable HVAC units. At the same time, the City will work with property owners, citizens, the State and other regional and federal agencies to implement capital improvement projects, which will help to eliminate flooding in the repetitive loss areas.

Attachment 1 - Repetitive Loss List

Status	Total Count	Item Count	RL#	Mitigated?	Flood Zone	NFIP Insured
Approved AW-501	1	1	302953	NO	A99	NO
	2	2	83750	NO	A07	NO
	3	3	76416	NO	A99	YES
	4	4	14959	NO	X	NO
	5	5	304401	NO	X	NO
	6	6	80810	NO	X	NO
Pending AW-501	7	7	74636	YES	A99	NO
	8	8	49291	YES	AE	YES
	9	9	28436	NO	AE	NO
	10	10	54735	NO	AE	NO
	11	11	162939	NO	AE	NO
	12	12	81320	NO	A99	YES
Unmitigated	13	13	48021	NO	A	NO
	14	1	158498	NO	X	YES
	15	2	89651	NO	AE	YES
	16	3	91177	NO	A99	YES
	17	4	108339	NO	X	NO
	18	5	138956	NO	X	NO
	19	6	83634	NO	X	NO
	20	7	83635	NO	X	NO
	21	8	83636	NO	X	NO
	22	9	69776	NO	X	NO
	23	10	78107	NO	X	NO
	24	11	84233	NO	X	NO
	25	12	136519	NO	X	YES
	26	13	134126	NO	X	NO
	27	14	302890	NO	AE	NO
	28	15	257133	NO	X	NO
	29	16	90285	NO	X	NO
	30	17	300958	NO	X	NO
	31	18	107964	NO	A99	YES
	32	19	91108	NO	X	NO
33	20	84247	NO	X	NO	
34	21	80791	NO	X	NO	
35	22	90378	NO	X	NO	
36	23	158876	NO	X	NO	
Mitigated	37	1	89648	YES	A99	NO
	38	2	49650	YES	A	NO
	39	3	86119	YES	A99	NO
	40	4	76417	YES	A99	NO
	41	5	72548	YES	A99	NO
	42	6	86111	YES	A99	NO
	43	7	82068	YES	X	NO
	44	8	89658	YES	C	NO
	45	9	57940	YES	A99	NO
	46	10	80886	YES	A99	YES
	47	11	88303	YES	A99	YES
	48	12	85945	YES	A99	NO
	49	13	70855	YES	A99	NO
	50	14	94362	YES	A99	NO
	51	15	86120	YES	A99	NO
	52	16	1144	YES	X	NO

Status	Total Count	Item Count	RL#	Mitigated?	Flood Zone	NFIP Insured
	53	17	57936	YES	X	NO
	54	18	82390	YES	A99	NO
	55	19	81318	YES	A99	NO
	56	20	71120	YES	A99	NO
	57	21	84257	YES	C	NO
	58	22	88789	YES	A99	NO
	59	23	88811	YES		NO

Attachment 2 – Outreach Mailing Materials

Flood Insurance – Are You Covered?

For many of us, our home and its contents are our greatest investment, so it is important to realize that standard homeowners and renters insurance policies do not cover losses due to flooding. You are encouraged to buy flood insurance – whether or not your home is located within the Special Flood Hazard Area (SFHA). Effective October 1, 2021, FEMA's National Flood Insurance Program (NFIP) has implemented Risk Rating 2.0 policy rating methodology. Premiums are determined based on an individual property's flood risk. Individuals will pay based on multiple factors including flood risk variables, rebuilding costs and valuation of homes.

Also, Communities will continue to earn National Flood Insurance Program rate discounts of 5% - 45% based on the Community Rating System classification. The discount will be uniformly applied to all policies throughout the participating community, regardless of whether the structure is in the Special Flood Hazard Area (SFHA).

Remember, you don't need to live in the SFHA to be affected by flooding. In fact, 30% of all claims occur outside the SFHA. Recent levee improvements have reduced but not eliminated the flood risk to our community. Be sure to insure your property and its contents. There is a 30-day waiting period for most flood insurance policies to take effect. If you are buying a home and need flood insurance, purchase the insurance before the close of escrow, so the policy will go into effect at the close of escrow.

Whether it is required or not, property owners in flood-prone areas should always consider flood insurance as their first and last line of defense in protecting their family and property. Call your insurance agent or the National Flood Insurance Program at (800) 427-4661 to get your policy before the winter rains! Residents can also contact the City's Floodplain Information Line, (916) 808-5061, for general flood insurance information.

How Does the City Know a Flood is Coming?

The California Data Exchange Center (CDEC) provides a centralized location to store and process real-time water level information gathered by various cooperators throughout the State including the City's Automated Local Evaluation in Real Time (ALERT) gauges located on City creeks. The CDEC can be used to signal us about possible flooding. CDEC provides continuous reports from river, creek, and rainfall gauges online at www.cdec.water.ca.gov. With it, we can receive advanced warning of impending high water levels.

What You Need To Know

Because of levee and dam improvements, most of the City is outside the Special Flood Hazard Area (SFHA). While these dams and levees provide us excellent protection, they are still subject to failure and any property in the City remains at risk of flooding.

Sacramento's vast floodplain and flood risk are due to our proximity to the Sacramento and American Rivers, as well as our local creeks and streams, and drainage systems which rely on pumps to drain properly. In the past 36 years, areas of the City have been subject to significant flooding — most notably in 1986, 1987 and 1997. This risk of flooding means that it is important that you and your family protect yourself and your property against flooding.

The SFHA, as designated by the Federal Emergency Management Agency, represents the 100-year regulatory floodplain. This means that in any given year, your property has greater than a 1-in-100 chance of flooding. But all homes, in and out of the SFHA, are subject to floods.

Know the Warnings

In case of a flooding emergency, the City may use different means to alert you to the situation and possible evacuation routes.

• EMERGENCY ALERTS

Sacramento Emergency Communications Personnel will use the Everbridge system to alert residents via phone or email if there is a need to evacuate. Listen carefully to the information and instructions provided to get help if you need assistance evacuating. To sign up for Everbridge alerts, please visit: www.Sacramento-Alert.org.

- Listen for Sirens. In the case of an emergency, police and first officials will use their sirens and loudspeakers to alert you to necessary information about the emergency.
- Turn On TV or Radio. During large storm events, turn on a television set or radio and tune to a local station to find out information about emergency and evacuation routes. The emergency broadcast station for Sacramento is KFBK Radio 1530-AM.

Planning Ahead

Follow these tips to help your family be prepared in case of flooding.

1. Buy flood insurance. Know your insurance policies – what is covered and what isn't.
2. Create a family emergency plan. Check out www.ready.gov/plan for tips on what to plan for and a plan template.
3. Be familiar with the routes in and out of your neighborhood in case you need to evacuate. Remember to check TV or radio to find the preferred route out of your area before you leave your home.
4. Keep all of your important paperwork, including insurance policies and birth certificates in a safe place such as a deposit box, or get "tech ready" by having documents saved to a password-protected flash drive or cloud storage. If you keep them at home, be sure to take them with you when you leave your house.
5. Find the high points in and around your home. If you are caught in a flood, stay out of the water if at all possible. Do not drive through flooded streets. Even shallow water can have a deadly current and may be contaminated. When moving to upper floors, roof or higher ground, be sure to take your emergency supplies with you.
6. Teach children to dial 9-1-1 in case of emergency.
7. If you live in an area that is frequently flooded, keep sandbags, plywood, plastic sheeting and lumber on hand. DO NOT stack sandbags against your building's foundation.

Contact Numbers

Floodplain Information Line (916) 808-5061 or floodinfo@cityofsacramento.org

To obtain general floodplain information, flood insurance information, structural retrofit and permit information, or if you need a site visit to discuss solutions to flooding and/or drainage problems, please email or call the Floodplain Information Line. Please be prepared to leave your name, telephone number, property address, tax assessor's parcel number and the type of information you need. A representative will return your call within two business days.

National Flood Insurance Program Referral Center (888) 379-9531 or www.floodsmart.gov.

To report issues with your local levee, storm drain backups or illegal dumping in ditches, gutters, streams or rivers, call 311 within City limits or (916) 264-5011 from outside the City.

Floodplain Protection

While flooding is a natural hazard in the Sacramento area, it is important to protect our waterways and the environment. Floodplains can provide valuable wildlife habitat and are a natural part of Sacramento. Understanding and protecting the natural functions of floodplains helps reduce flooding damage and protect our environment. The City of Sacramento is part of the Sacramento Stormwater Quality Partnership. The Partnership educates the public about illegal dumping into our waterways and stormwater pollution prevention. For more information, please call (916) 808-4H2O (808-4426) or visit www.beriverfriendly.net.

In addition to the American and Sacramento Rivers, several waterways traverse the City. These include Steelhead Creek (Natomas East Main Drainage Canal), Arcade Creek, Magpie Creek, Robla Creek, Morrison Creek, Florin Creek, Elder Creek, Strawberry Creek, Unionhouse Creek, Laguna Creek, Sacramento Canals, Pocket Area Canals, and Hagginwood Creek.



Printed on recycled paper

This brochure is provided as a public service to keep you informed and ready in the event of flooding.

CALL (916) 264-5011

我們講中文 • Hablamos español

Мы говорим по-русски • ขอมរເຮົາເວົ້າພາສາລາວ

Pe̍h hâis lus Hmoob • Chúng tôi nói tiếng Việt

8. Consider improvements to your property, such as

grading or correcting drainage problems that will help keep water away from your ~~Street~~ areas open between homes, property lines, and levees.

10. For individuals with disabilities or medical conditions, review FEMA's additional preparedness steps at

<https://www.ready.gov/individuals-access-functional-needs>.

Help Us Help You

There are several things that you can do to help the City. Make sure to properly dispose of yard waste in containers provided by the City. Remember illegal dumping is against the law. Keep drain inlets, drainage ditches and canals clear of junk and debris, and report any illegally dumped materials to the City by calling 311 or (916) 264-5011. Also, during a storm event, if you see a storm drain backing up, please call 311.

To find out if your home is located within the SFHA, floodway, in or around historic flooding, or additional hazards, please contact the City's Floodplain Information line at floodinfo@cityofsacramento.org or (916) 808-5061. A City representative will respond to your request within two business days. Floodplain maps and filed list of elevation certificates can be found at our City DOU website and can be requested through our information line or email: floodinfo@cityofsacramento.org.

Get a permit before you start construction. Remember, all floodplain development and redevelopment, including grading, building and retrofitting, requires a permit. If you know of a non-permitted development project, please contact the City at (916) 264-5011 or 311.

Note: In SFHA zones A, AE, AH, and AO, if the cost of reconstruction, rehabilitation, addition or other improvements to a structure is more than 50% of the building's market value, then the structure must meet the same structural requirements as a new structure. This standard also applies to our local Magpie Creek floodplain. Technical assistance for retrofitting homes and additional information can be obtained from the Floodplain Information Line at floodinfo@cityofsacramento.org or (916) 808-5061.

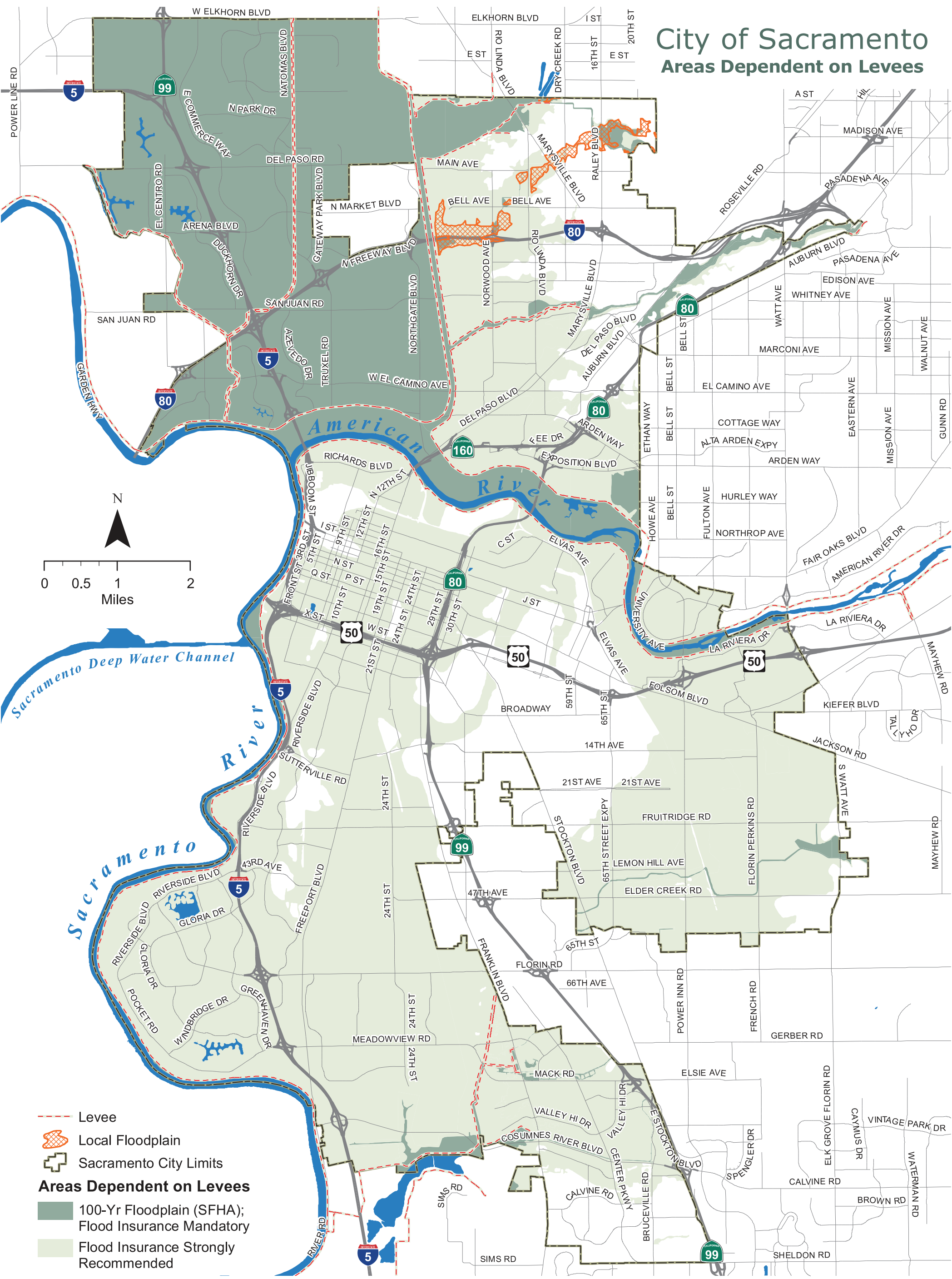
BE FLOOD READY

protect yourself today and tomorrow

A GUIDE FOR SACRAMENTO RESIDENTS

City of
SACRAMENTO
Department of Utilities

City of Sacramento Areas Dependent on Levees



**Be prepared.
Be flood ready.
Buy flood insurance.**

City of
SACRAMENTO
Department of Utilities

Attachment 3 – Property Visit Documentation

Attachment 4 – Summary of Questionnaire Responses

Q2: How many years have you occupied the home/building at this address?		
Answer Choices	Percentage	Number Responding
less than 1 year	7	1
1 to 5 years	21	3
5 to 10 years	7	1
10 to 15 years	7	1
15 to 20 years	7	1
more than 20 years	50	7

Q3: Do you rent or own this home/building?		
Answer Choices	Percentage	Number Responding
Rent	7	1
Own	93	13

Q4: What type of foundation does the home/building have?		
Answer Choices	Percentage	Number Responding
Slab	42	5
Crawl Space	33	4
Basement	17	2
I'm not sure	0	0
Other (please specify)	8	1

Q5: Has your home/building experienced flooding?		
Answer Choices	Percentage	Number Responding
Yes	63	12
No	37	7

Q6: How concerned are you that your home/building will experience a flood event or an additional flood event?		
Answer Choices	Percentage	Number Responding
Very concerned	67	2
Somewhat concerned	33	1
A little concerned	0	0
Not at all concerned	0	0

Q7: How prepared are you if your home/building experiences a major flood? Visit the Department of Utilities webpage for ideas on how you can prepare for a flood emergency before it happens: How you can prepare for flooding - City of Sacramento		
Answer Choices	Percentage	Number Responding
Very prepared	0	0
Somewhat prepared	33	1
A little prepared	33	1
Not at all prepared	33	1

Q8: If you do have flood insurance, was it required for you to obtain this insurance? For example, flood insurance is required for a federally-backed mortgage if you are in a flood zone.

Answer Choices	Percentage	Number Responding
Yes	67	2
No	33	1
I don't have flood insurance	0	0
I don't know	0	0

Q9: Has your household taken any precautions to prepare for a future flood? Please select all that apply.(If you would like more information on any of these measures or additional ideas, please see the links on the final page of this survey)

Answer Choices	Percentage	Number Responding
Purchased flood insurance	21	4
Created evacuation plan	5	1
Cleared gutters	11	2
Elevated/raised the building	0	0
Re-graded yard to reduce runoff to the building	16	3
Installed flood vents	11	2
Installed sump pump	16	3
Moved utilities off ground level (e.g. electrical panels, propane tanks, A/C units, water heaters)	0	0
Purchased a backup power system or generator	5	1
Have access to sandbags	5	1
Waterproofed the outside walls	0	0
Moved things out of basement	0	0
We have not taken any precautions	0	0
Other (please specify)	11	2

Q10: Did any of these precautions work?

Answer Choices	Percentage	Number Responding
Yes	33	2
No	17	1
Please explain what worked or didn't work.		3

Q11: In what year(s) did it flood?

Answers	Number Responding
2023	2
2017 (sump pump broke)	1
1993 and 1996 (street and basement only; before the French drain was installed in 2000)	1

Q12: What do you feel was the cause of the flooding? Check all that affect your home/building.

Answer Choices	Percentage	Number Responding
Storm drain backup	46	6
Standing water next to house/building	15	2
Saturated ground/leaks in basement walls	8	1
Overbank flooding	0	0
Heavy rain event	15	2
Other (please specify) (Q13) (Arcade Creek)	15	2

Q14: How did the water enter your home/building? For example, through the garage, basement, or first floor of the home.	
Answers	
It did not	1
From the street	1
Basement	4
Through the garage doors	

Q15: How deep did the water get:							
	< 6"	6" to 12"	1' to 2'	2' to 3'	3' to 5'	5' or more	Did not flood
Yard	1		2	1		1	1
Crawl space	1						1
Garage	2						2
Over first floor							2
Basement	1	1					1

Q16: What was the length of time the water stayed in your house/building (how many hours or days)?	
5-6 hours	3
We drained it ourselves with a hose and buckets	2
2 days	1
2 weeks water inside the garage	1

Q17: If your home/building was damaged, did you continue to stay or go elsewhere?		
Answer Choices	Percentage	Number Responding
Stayed in home	50	1
Left permanently	0	0
Left temporarily (specify how long you had to stay away)	50	1

Q18: If you left temporarily please choose your lodging accommodation.		
Answer Choices	Percentage	Number Responding
Stayed with friends or family	0	0
Shelter	0	0
Hotel/motel/Air BNB	0	0
Rented a place	0	0
Other (please specify)	100	1

Q19: Prior to the flood(s), how vulnerable did you think your residence was to flooding?		
Answer Choices	Percentage	Number Responding
Very vulnerable	25	1
Somewhat vulnerable	50	2
Not vulnerable	25	1
I did not know there was a risk of flood on this property	0	0
Please provide any comments on the flood risk for your property		1

APPENDIX E

PROCEDURES FOR FLOOD RESPONSE PROJECTS

APPENDIX E

PROCEDURES FOR FLOOD RESPONSE PROJECTS

Public notification during an emergency is critical and plays a significant role in public safety. The following materials have been developed in advance to allow for quick implementation during and after a flood event. This document outlines the procedures for the duplication and dissemination of this information.

References to the City of Sacramento’s Emergency Operations Plan (EOP) have been added to allow the user to find context and details related to the broader emergency response plan.

Flood Response Projects

PPI Project Number*	Lead Organization	Project	Subject Matter	Frequency
FRP 1.	Primary: Public Information Officer and City Manager Secondary: Community Development Department and Depart of Utilities	Media Release (TV and Radio and Newspapers)	Various flood-related topics (Turn around don't drown, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event – Media Releases will be distributed when critical information develops, street closures, disruption in utilities, flood warning stage, flood stage, evacuation notice, and danger stage, all clear notice
FRP 2.	Emergency Operations Center and Public Information Officer	Everbridge/Emergency Broadcast System	Use Everbridge and EBS to notify residents of information during a flood	During a flood event – alerts will be sent if there is a threat to public safety, flood warning stage, flood stage, and danger stage, and evacuation notice
FRP 3.	Primary: Public Information Officer and Neighborhood Services Secondary: Community Development Department and Depart of Utilities	Media Release and Posts for social media (Facebook, Twitter, Next Door, and others)	Various flood-related topics (Turn around, evacuation, sandbags, Substantial Damage, etc.)	During and after a flood event – Same frequency and traditional media release, plus correction of misinformation, and flood recovery information
FRP 4.	Department of Utilities, Operations & Maintenance, Water Quality Lab	Drinking Water Quality Incident Response	Prevent consumption of contaminated water after a flood. Outreach materials drafted, translated and delivered to warehouse.	During and after a flood event, if needed – if water has been compromised – voluntary boil or mandatory boil alerts
FRP 5.	Department of Utilities, Operations & Maintenance, Wastewater Management	Combined Sewer System Warning Signs	Signage posted after flood to prevent people from entering potentially contaminated water	During and after a Combined Sewer System flood event (including street flooding events)
FRP 6.	Primary: Police Secondary: Code Enforcement, Building Department, and Department of Utilities	After flood event handouts when in the field	Re-entry safety, permit & reconstruction requirements, flood protection methods	Upon re-entry of flooded areas
FRP 7.	City of Sacramento Neighborhood Services and Department of Utilities	Flood Insurance and Grant Information Handouts	Information on filing flood insurance claims and grant opportunities	Provided to flood damaged properties during an inspection or upon re-entry to area

*The PPI Project Number corresponds with the Program of Public Information located in the current Comprehensive Flood Management Plan.

Dissemination Procedures and Draft Documents

FRP 1. Media Release

The City's media releases will be coordinated through the Emergency Operations Center or Joint Information Center. The primary individual responsible for this activity is the Public Information Officer. The City Manager reviews all media releases.

Media Releases

The Public Information Officer will draft each media release with critical incident information. The City Manager will approve all media releases. Media releases are distributed by the Public Information Officer to the media through the AP wire and local news agencies. Media releases are also posted on the city's website and social media networks.

 EOP, Annex A, Attachment 4-A, Page A-47

Media Hot Line

The Media Hot Line is used by the Fire and Police Departments to make the media aware of an incident. The Fire, Police or Utilities Department PIO, or the lead PIO at the Joint Information Center, is responsible for supplying messages to the Media Hot Line. The PIOs have access to place messages on the hotline.

Media Release

FOR IMMEDIATE RELEASE:

City of Sacramento

Street Address

City, CA Zip

Date & Time _____

Contact: 916.264.5011

SACRAMENTO -- Mayor *NAME* has issued an Executive Order to declare a City emergency in response to rising flood waters. The declaration activates the City's Emergency Operations Center to coordinate response among City departments and services, along with outside partner agencies, such as the Sacramento Area Flood Control Agency, Reclamation District 1000, the Red Cross, Salvation Army, and the United Way. It also allows the City to request state resources and reimbursement, as necessary.

The *NAME* River levels are expected to quickly crest by *DATE* to *##* feet. City crews have closed *##* flood gates along the *NAME* River and have begun a 24-hour watch along both the *NAME* River and the *NAME* to monitor and quickly act upon signs of distress, such as boils.

The City's Department of Utilities will begin a sandbagging operation to fortify parts of the *NAME* River levees between *STREET LOCATION*.

City drivers also should be aware that while flooding can occur on any street, *STREET NAME* will remain closed until flood waters recede.

The Sacramento City Fire Department's Swift Water Rescue Team, which operates *##* boats, has been deployed for rescue missions. Emergency responders remind drivers to both slow down and "turn around, don't drown."

Residents should always call 911 for emergencies but are encouraged to use 311 for non-emergencies. Report City service needs, such as streetlight and signal outages, downed trees, or flooded roads, to the 311 Call Center at [311](tel:311).

###

FRP 2. Everbridge & Emergency Broadcast System Alerts

The City of Sacramento's EOP provides detailed steps to activate emergency broadcast systems during an emergency.

Emergency Alert System

The City Manager, Fire Chief or Police Chief have authority to activate the Emergency Alert System (EAS), and must supply the message through the PIO. The details of EAS activation are in the City EOP, and also reside with the EOC or Joint Information Center PIO.

 EOP, Annex A, Attachment 4-B, Page A-55

The Emergency Alert System should only be activated in extreme emergencies by the authorized individuals. In the Sacramento Regions, the following broadcast companies are part of the EAS.

Primary Radio Station: KFBK, 1530 AM

Secondary Radio Station: KEDR, 88.1 FM

Primary Television Station: KCRA, Channel 3

Cable Television System

The emergency override shall be used only as often as is necessary to communicate emergency instructions and information by the duly authorized individuals of the constituent jurisdictions of the Sacramento Metropolitan Cable Television Commission. The purpose of the cable television emergency override shall be to provide lifesaving instructions and information.

Using either the specially designated tough-tone telephone at the City Communication Center, or at the County Emergency Operations Center, the emergency override will be activated by dialing Sacramento Cable's Television (SCT) head end override line.

 EOP, Annex A, Attachment 4-B, Page A-57

Emergency Use of Local Government Channel 28

The individuals authorized to activate the systemwide emergency override are also authorized, in their sole discretion to assume programming control of Channel 28 before, during, and after an emergency for the purposes of providing information to cable viewers.

Access via Metrocable 28 Staff: The authorized individual shall contact the Commission staff at 440-6661 to access Channel 28.

Direct Access via SCT: To access Channel 28 in the event that Commission staff are unavailable, the respective authorized persons must contact the SCT Director of Engineering or Headend Engineer at 927-2225, identify themselves, and arrange physical access to the Headend at 13th and N Street (13th Floor of Park Place).

 EOP, Annex A, Attachment 4-B, Page A-58

Everbridge/Emergency Broadcast Alerts – General Template

FOR IMMEDIATE RELEASE:

City of Sacramento

Street Address

City, CA Zip

Date & Time _____

Contact: _____

FROM WHO: _____

WHAT: _____ has occurred at

WHERE: _____ (specific location) at

WHEN: _____ am / pm today.

EVACUATIONS in the _____ (be specific) area are underway.

RED CROSS SHELTERS are located at _____

WHAT SHOULD PEOPLE DO?

Residents are asked to _____

Include information about:

Avoid the areas/intersections of _____. Remain vigilant, prepared to leave _____

Be prepared to move animals to _____. Animal shelters are located at: _____

FOR MORE INFORMATION:

o Listen to Emergency Radio

o Monitor Local TV stations

o Call the Emergency Public Information Number 916.264.5011 or 311

o Go online to City of Sacramento Web site, www.cityofsacramento.org


OTHER IMPORTANT INFORMATION:

ASSISTING FIRE AGENCIES include:

- City of Sacramento Fire
- California Dept. of Forestry
- Sacramento County Fire
- Other

ASSISTING AGENCIES include:

- City Police
- Sacramento County Sheriff
- CA Highway Patrol
- Other

 Additional Samples: EOP, Annex A, Attachment 4-D, Page A-62

Everbridge/Emergency Broadcast Alert – Winter Storm

HAZARD SPECIFIC EMERGENCY BROADCAST FORMAT WINTER STORM - NWS WINTER STORM WARNING

The U.S. Weather Service has issued a winter storm warning for _____ City of Sacramento during the hours of _____ to _____. The City of Sacramento Emergency Operations Center urges you to be cautious and avoid unnecessary driving.

Be aware that the grounds are saturated, which means a heavy rainstorm could cause localized street flooding. Do not drive through flood waters. Turn around, don't drown.

You are advised to watch the water level of creeks and other drainages in your neighborhood if you live in an area, which has a history of winter flooding.

Windy conditions can cause downed trees and broken power lines.

Please stay tuned to this station or other local stations for emergency information updates. Do not call 9-1-1 except to report an emergency situation.

You can receive more information by monitoring this local radio or television station, by visiting the City of Sacramento website at www.cityofsacramento.org, or by call 311.

 EOP, Annex A, Attachment 4-D, Page A-71

FRP 3. Media Releases and Posts for Social Media

Social media is an effective way to communicate quickly with many residents and business owners. The main social media networks that are utilized by the City are Facebook, Twitter, and Next Door. The messages developed for these selected networks can also be used for other social media mediums. The City's Public Information Officer and the Department of Utilities' Public Information Officer will coordinate the release of information.

Typically, media releases are distributed through the City's social media networks. This document provides supplemental informational posts that provide pertinent life safety and flood protection information.

Posts for Flood Stage

Facebook and Next Door

Do you know the difference between a Flood Stage and Danger Stage? A Danger Stage means "Take Action Now!" because flooding is imminent or already occurring. If advised to evacuate, do so immediately. Flood Stage means "Be Prepared" because flooding is possible within your area.

[<Link to DWR Stages>](#) #FloodSafety

Twitter

Learn the difference between a Flood Stage and Danger Stage.

[<Link to DWR Stages>](#) #FloodSafety



**Flood Stage means
be prepared:
Flooding is possible**

- ✓ Check for forecast updates
- ✓ Prepare to move to higher ground
- ✓ Stay weather ready

[weather.gov/flood](https://www.weather.gov/flood) 

Posts for Danger Stage

Facebook and Next Door

Do you know the difference between a Danger Stage and Flood Stage? Danger Stage means “Take Action Now!” because flooding is imminent or already occurring. If advised to evacuate, do so immediately. Flood Stage means “Be Prepared” because flooding is possible within your area.

<[Link to DWR](#)> #FloodSafety

Twitter

Learn the difference between a Danger Stage and Flood Stage.

<[Link to DWR](#)> #FloodSafety



**Danger Stage means
take action!**
Flooding is expected

-  Move to higher ground immediately
-  Use extra caution if driving
-  Check forecast updates
-  Stay weather ready

Photo credit: USGS [weather.gov/flood](https://www.weather.gov/flood) 

Post for Evacuation Notice

Mandatory evacuations have been ordered for _____. Evacuations recommended for _____, but are not mandatory. Tune to local news station and radio. <Add link to city website with details and evac locations.>

Posts for Street Flooding

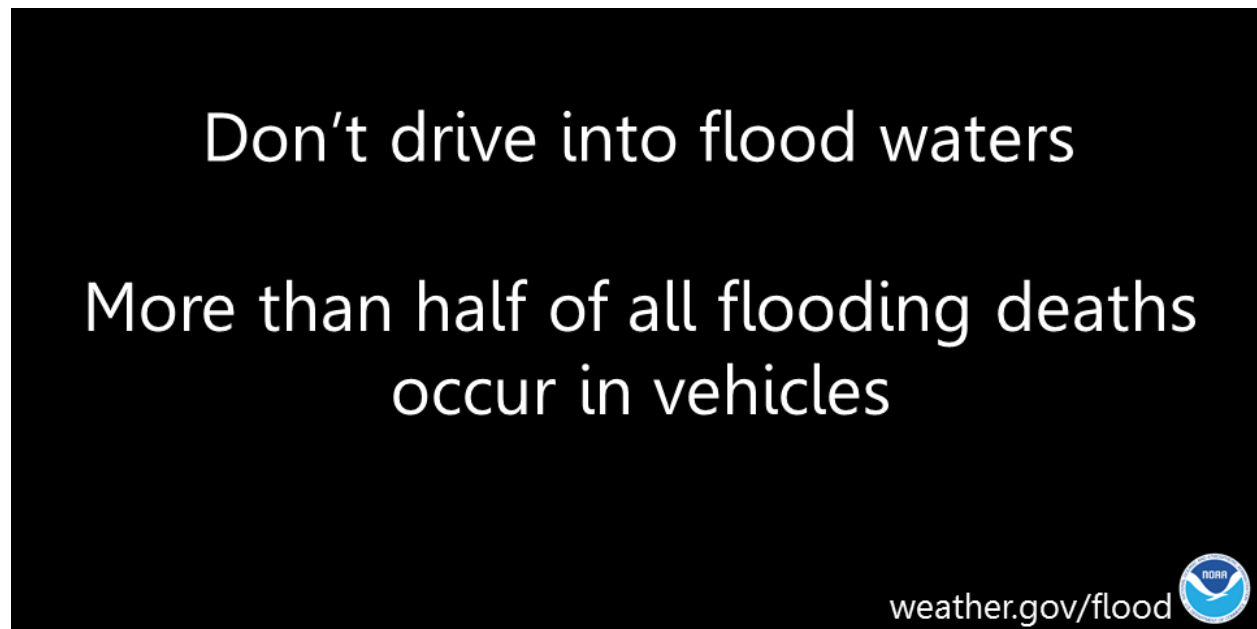
Facebook and Next Door

Road closures at _____. Driving into floodwaters could be the last decision you ever make. Turn Around Don't Drown! <http://youtu.be/el6mllHKrVY> #FloodSafety

Twitter

Driving into floodwaters could be the last decision you ever make. Turn Around Don't Drown! <http://youtu.be/el6mllHKrVY> #FloodSafety

Link to video: <https://www.weather.gov/wrn/spring2017-flood-sm>



Posts for After a Flood Event

- Watch your step! #Flood waters often hide sharp and dangerous debris like broken glass and metal! #FloodSafety
- Wear the appropriate protective clothing and gear like boots, gloves and safety glasses when it comes to moving debris! #FloodSafety
- Hands off! Stay away from electrical utility equipment after a storm or if it is wet to prevent being electrocuted! #FloodSafety
- Flooded homes are hazards! Get a professional to check for loose wires, mold and hidden damage before re-entering! #FloodSafety
- Avoid walking in floodwater. It can be contaminated with oil, gasoline, or sewage. #FloodSafety
- Use generators or other gas powered machinery only outdoors and away from windows. #FloodSafety

FRP 4. Drinking Water Quality Incident Response

Once the determination has been made that the City's drinking water has been compromised, the City's PIO or the Department of Utilities' PIO will issue a media release informing the community of a voluntary or mandatory water boil advisory. Alerts will also be sent to the impacted area via the Everbridge system. The city's website will provide more information and a map of the impacted areas.

Media Release – Water Boil Advisory

CITY ISSUES VOLUNTARY WATER BOIL ADVISORY FOR _____
THE CITY WILL NOTIFY THE COMMUNITY WHEN THE ADVISORY IS LIFTED
DATE

A voluntary water boil advisory has been issued for _____, in the City water system.

The advisory was issued due to presence of _____ during a routine weekly water sampling in _____. We are not aware of any health issues. The City is advising customers to use boiled tap water for drinking and cooking purposes as a safety precaution.

Bring all water to a boil, let it boil for one (1) minute, and let it cool before using. Boiled water should be used for drinking and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

The advisory is a precautionary measure and recommends that residents in the affected area voluntarily boil their water for at least one minute before consuming it until the advisory is lifted. The advisory pertains only to water used for consumption. Again, the advisory is only a precautionary measure. This is a boil advisory, not a boil order.

The city will notify the community when the advisory is lifted.

For more information call 3-1-1 or [916-264-5011](tel:916-264-5011).

Contact (Media inquiries only): NAME, Public Information Officer, [PHONE](tel:PHONE)

###

Water Boil Advisory Information Website Page

VOLUNTARY BOIL WATER ADVISORY FAQ

WHY WAS A VOLUNTARY BOIL WATER ADVISORY ISSUED FOR MY WATER?

A voluntary boil water advisory has been issued by the City of Sacramento Department of Utilities for the _____ area (see map on web site) as a precaution to protect consumers from drinking water that may have potentially harmful bacteria present.

To ensure a safe water supply the City has been monitoring bacteria levels across the City. Repeated samples at a location in the _____ area indicated the presence of _____. A voluntary boil water advisory is being issued for this area until the cause can be investigated and remediated.

WHAT IS BEING DONE TO ADDRESS THE POTENTIAL CONTAMINATION?

Additional water samples are being taken to find and eliminate potential sources. If any sources are identified, actions such as system repairs, flushing, and adding chlorine for a short period of time will be used to fix the issue.

WHAT ARE COLIFORM BACTERIA? <EXAMPLE: CHANGE TO THREAT>

Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present.

HOW LONG WILL THE BOIL WATER ADVISORY CONTINUE?

Public notification will be given when the voluntary boil water advisory is rescinded.

WHAT IF I HAVE ALREADY CONSUMED THE WATER?

The likelihood of becoming ill is _____. However, illness is certainly possible, especially for people that have a chronic illness or may be immunocompromised. Seek medical advice as necessary.

FRP 5. Combined Sewer System Warning Signs

The Combined Sewer System (CSS) warning signs are placed in neighborhoods that are affected by localized flooding in the CSS area. The CSS drainage system can be overwhelmed during a long duration storm which results in flooding. The Department of Utilities' wastewater maintenance crew places these signs when flooding is reported or observed during routine storm patrol. The City has 25 signs in stock.

Example of Combined Sewer System Warning Sign



Sign Text: Caution: Area may contain sewage, which can be a health hazard. Please avoid contact.

FRP 6. After Flood Handouts

The City print shop (Central Services) will prepare and print written material. Arrangements for printing will be made by the General Services Department representative in the EOC. Written notices may also be duplicated on copy machines located in the EOC.

If Central Services is damaged or unavailable, the City has a list of on-call printers available to print written materials.

 EOP, Annex A, Attachment 4-D, Page A-59

The After Flood handouts will be provide to residents and business owners re-entering an impacted area. The handouts will be printed and provided to individuals staffing the re-entry check points, most likely City Police.

These flyers will also be placed on the City website, social media feeds, and can be placed at shelters if desired.

After Flood Handouts

FRP 7. Flood Insurance Claim and Grant Information

The City print shop (Central Services) will prepare and print written material. Arrangements for printing will be made by the General Services Department representative in the EOC. Written notices may also be duplicated on copy machines located in the EOC.

If Central Services is damaged or unavailable, the City has a list of on-call printers available to print needed materials.

 EOP, Annex A, Attachment 4-D, Page A-59

The handouts will be provide to residents and business owners re-entering an impacted area. The handouts will be printed and provided to individuals staffing the re-entry check points, most likely City Police.

These flyers will also be placed on the City website, social media feeds, and can be placed at shelters if desired.

Flood Insurance Claim and Grant Information Handouts

Translator Services

Emergency Translation Services - An emergency translation service is available through the Public Safety Communications Center. Contact the Communications Center through the Police EOC representative, by radio, or telephone: 916-264-5721.

Other Translation Services:

- Language Line: 1-800-874-9426
- Contact Red Cross: 916-368-3111
- Info Line Sacramento: 916-498-1000
- Sacramento County Human Assistance Department: 916-978-2170

 EOP, Annex A, Attachment 4-D, Page A-59