

Map Modernization Plan for The State of California

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Mapping Plan for California

Executive Summary by the California Department of Water Resources

This Plan was prepared to assist FEMA in the development of regional and national plans for implementing the FEMA Map Modernization Program. This Plan summarizes the role that the State of California will play in completing the required mapping activities and how these activities will be managed and performed as well as providing some insight into existing programs in the State.

Over the next 25, years the State is expected to have a 40 percent increase in population. The demand for development will put a heavy load on the remaining floodplains that are not mapped or areas that are not mapped but where the maps are technically outdated. It is currently estimated that up to one-third of California's stream reaches are or will be experiencing some development pressures within this next 25-year period.

In support of FEMA's new mapping effort, the California Department of Water Resources (CADWR) has undertaken additional data collection and outreach activities to supplement the Mapping Needs Update Support System (MNUSS) data and other data provided by FEMA. CADWR has solicited information from several hundred communities and then based on a priority list provided by FEMA, Region IX, CADWR with the support of a State contractor, conducted telephone interviews with about 150 communities.

CADWR has also independently embarked on a statewide coordination effort reviewing the mapping status and needs for each county and six major cities in the State. This effort will be completed by the July 2003. This will provide additional MNUSS data for areas where information is limited or unavailable.

There are agreements in place with the Corps of Engineers, Natural Resources Conservation Service, and CADWR's mapping contractor to assist in flood mapping support. CADWR currently has 8 detailed studies underway in coordination with the COE and 2 studies being performed by CADWR staff. All detailed studies are in compliance with FEMA Guidelines.

CADWR has initiated a new floodplain mapping program to assist all communities in the State with initial identification of potential flood hazard areas currently not mapped by the Federal Emergency Management Agency. These are referred to as "Awareness Floodplains" which are advisory floodplains noting potential flood hazard areas. The Awareness Floodplain Mapping encompasses both riverine and alluvial fan floodplains. The purpose of the mapping program is to provide public safety through the identification of flood hazard areas. All 58 counties have Awareness Floodplain Mapping studies underway producing approximate floodplain maps.

CADWR has also initiated a consensus based Floodplain Management Task Force on behalf of Governor Gray Davis. The Task Force will publish a draft report by January 2003 with floodplain management recommendations for the Governor's consideration. There are draft recommendations being considered by the Task Force to strengthen the State's floodplain mapping program and to increase the State's floodplain mapping coordination between the State and the Federal government.

CADWR is totally committed to support FEMA's mapping programs and the benefits obtained from these programs. CADWR is prepared to provide technical support to FEMA for the production of new studies and maps. Because of the current budget issues, cost sharing would be extremely limited.

Mapping Plan for California

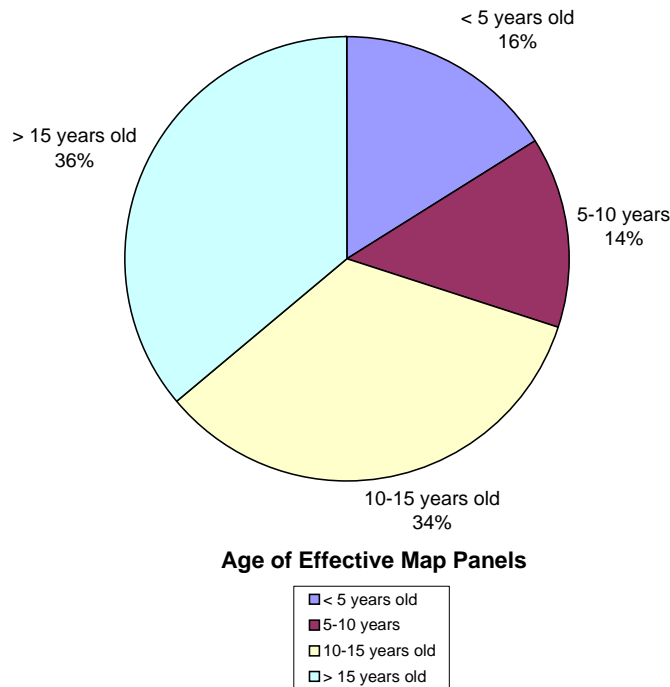
Table of Contents

Executive Summary.....	1
Background and Purpose of Plan.....	2
State Role in the Flood Hazard Mapping Program.....	4
Mapping Needs Assessment and Priority Setting Approach.....	4
Proposed Approach To Addressing Mapping Needs.....	6
Proposed Approach To Map Production.....	10
Estimated Costs To Complete Proposed Mapping Activities.....	11

Mapping Plan for California

Background and Purpose of Plan

The Federal Emergency Management Agency's (FEMA's) flood hazard maps are essential tools for flood hazard mitigation in the State of California and in the United States in general. As shown in the figure below, most of the flood hazard maps in the State have become outdated.



In many cases, the older maps reflect outdated flood hazard information that limits their utility for insurance and floodplain management purposes. Additionally, most of the maps were prepared using now outdated road network information and manual cartographic techniques, which make the maps difficult for State and local customers to use and expensive for FEMA and the State of California to maintain. In addition, FEMA has not produced flood maps for 42 communities in the State of California.

To address this problem, the President's budget for Fiscal Year (FY) 2003 (which starts on October 1, 2002) includes \$351 million for initiating FEMA's national Map Modernization Program. Similar funding levels are proposed for subsequent fiscal years.

This Plan was prepared to assist FEMA in the development of regional and national plans for implementing the FEMA Map Modernization Program. This Plan summarizes the role that the State of California will play in completing the required mapping activities and how these activities will be managed and performed. This Plan identifies mapping priorities, explains how mapping priorities were established for each county in the State, and outlines an approach for addressing these mapping priorities.

In accordance with Government Performance Results Act (GPRA) performance measures suggested for the Map Modernization Program by the Office of Management and Budget, the details of this Plan have been developed with consideration given to FEMA accomplishing the following:

Mapping Plan for California

- Reducing the average age of the flood maps nationwide from over 13.6 years to 6 years or less;
- Producing digital flood hazard maps with up-to-date flood hazard data for the 15-percent highest priority areas in the state; and
- Developing flood hazard maps for one-half of the unmapped, floodprone communities in California.

State Role in the Flood Hazard Mapping Program

Mid-Level Participation— The California Department of Water Resources (CADWR) will perform a majority of the mapping needs assessments and assist with outreach and community coordination on mapping projects. CADWR will perform and/or manage some of the mapping activities in the State. The specific activities that the State will perform or manage will depend on the State's resources and capabilities. FEMA will provide the State with appropriate funds to perform specific mapping activities. The nature and scope of the activities will be detailed in partnership agreements, and will be based on the results of the statewide mapping needs assessments. The FEMA Regional Office will manage most of the mapping activities based on input provided by the state. The State of California has funded and will continue to fund a flood mapping program. This includes the development of Awareness Floodplain maps that will generally not be placed on the NFIP Flood Insurance Rate Maps (FIRMs) and a smaller number of detailed flood studies that will be submitted to FEMA to update the FIRMs. When the current State budget issues are settled we hope to be able develop additional CTP projects as joint ventures between FEMA Region IX and CADWR.

There are agreements in place with the Corps of Engineers and the Natural Resources Conservation Service to assist in flood mapping support. CADWR currently has 8 detailed studies underway in coordination with the COE. The State has 58 counties that have Awareness Floodplain Mapping studies underway to produce approximate floodplain maps. Currently 5 counties are being evaluated by NRCS, 21 by the COE, 17 under contract with URS Corporation, and 15 by the CADWR District Offices. CADWR is currently working with the Riverside County Flood Control District to produce two detailed studies.

Mapping Needs Assessment and Priority Setting Approach

To fully evaluate the mapping needs in California, CADWR and FEMA Region IX, performed a mapping needs assessment in June and July 2002. This mapping needs assessment included the following tasks:

- Reviewing and updating the information in the FEMA MNUSS database;
- Soliciting mapping needs information from counties and communities;
- Reviewing available community-specific data;
- Assigning map upgrade methods and priorities to each county; and
- Assessing whether the proposed map update options would achieve the GPRA performance measures and revise the map update methods accordingly.

Mapping Plan for California

This mapping needs assessment was undertaken in cooperation with, and with the support of FEMA and FEMA's Flood Map Production Coordination Contractor (MCC). The following typical data were collected and assessed on a county-by-county basis:

- Age of the existing maps;
- Known mapping needs as recorded in the FEMA MNUSS database;
- Status of existing maps (digital, manual, none);
- Existing or potential local mapping partners;
- Number of unmapped, floodprone communities;
- Number of communities;
- Availability of existing base map, topographic data, and/or flood hazard data (including data from other State agencies);
- Number of Letters of Map Change processed during the last 10 years;
- Population and population growth (U.S. Census and/or State-developed figures);
- Flood insurance claims and/or repetitive losses;
- Availability of State and/or local funding;
- Format of existing maps (countywide or community-based format); and
- Ongoing map updates, including updates being undertaken by regional agencies or communities under the CTP Program.

To supplement the MNUSS data and other data provided by FEMA and data available in various State agency offices, CADWR has undertaken additional data collection and outreach activities. CADWR working under the map modernization element of the CAP agreement made telephone calls and submitted email requests to several hundred communities believed to have mapping issues to request MNUSS information to help identify these mapping needs. Based on a priority list provided by FEMA, Region XI, CADWR with the support of a State contractor, then conducted telephone interviews with about 150 communities. FEMA, Region IX, staff conducted interviews with another 58 communities. Copies of the documents used for the data collection and outreach activities (e.g., letters, questionnaires) are included in Appendix A.

A complete listing of the data collected for California is provided in Appendix B.

Upon completion of the mapping needs assessment, CADWR and FEMA Region IX jointly ranked each county to determine the order in which the counties' mapping needs should be addressed. This process will be formalized in the next few months. The results of the initial ranking and priority-setting process are summarized in Table 1.

CADWR has also independently embarked on a systematic coordination effort reviewing the mapping status and needs for each county and six major cities in the State. This effort will be completed by the July 2003. In addition to creating a more effective and permanent process for communication with each of the local governments in the State, it will provide much-needed supplemental MNUSS data for areas where information is limited or unavailable.

Mapping Plan for California

Proposed Approach To Addressing Mapping Needs

To address the prioritized mapping needs, CADWR evaluated the map production options that are available. For the purposes of this Plan, the options have been categorized as Level 1 Map Upgrades and Level 2 Map Upgrades. A brief description of each is provided below.

- **Level 1 Map Upgrades:** Level 1 Map Upgrades are improvements to existing flood maps that are not based on the development of new detailed flood hazard information. These improvements may include converting the flood maps to a GIS-based digital format, incorporating an improved base map (such as digital orthophoto quarter quadrangles), redelineating existing floodplain boundaries based on updated topographic data, refinement or addition of Zone A, and/or incorporating existing flood hazard data developed by Federal, State, or local agencies for purposes other than the FEMA Flood Hazard Mapping Program areas.
- **Level 2 Map Upgrades:** Level 2 Map Upgrades are improvements involving the development of new detailed flood hazard information. These upgrades typically require updated topographic data, structure and cross-section surveys, hydrologic and hydraulic engineering analyses, and floodway and floodplain boundary delineation.

DWR is currently a member of the Mapping and Engineering Standards Committee establishing the standards associated with Level 1 activities. The costs associated with Level 2 map upgrades typically will be significantly higher than the costs associated with Level 1 map upgrades.

CADWR and FEMA, Region IX, evaluated various scenarios to determine the best combination of the above activities to achieve the GPRA performance measures. Based on this evaluation, the highest priority recommendations were submitted to FEMA. A complete, county-by-county listing is provided in Appendix C.

CADWR Mapping Program Support and State-Specific Mapping Concerns

The State Floodplain Management Program has always encouraged local governments to develop sound land use practices and to adopt floodplain management regulations to meet at least the minimum federal criteria relative to the National Flood Insurance Program. The FPM Program is also intended to provide assistance to other State agencies and local communities in avoiding flood risk and damage.

Within the proscribed budget a limited number of detailed studies have been completed or are nearing completion. The short-term and long-term impacts by these detailed studies on floodplain damages are nominal. Only an extremely small percentage of the flood hazard areas are identified before development is in place. Areas are being developed where recognition has been given to major flooding sources but not where local drainage issues have been addressed.

DWR has initiated a new floodplain mapping program to assist all communities with initial identification of these flood hazard areas currently not mapped by the Federal Emergency Management Agency. These are referred to as "Awareness Floodplains" which are advisory floodplains noting potential flood hazard areas. The purpose of the mapping program is to provide public safety through the identification of flood hazard areas.

Mapping Plan for California

The State of California is fortunate to have a wide range of climatic, topographic, and geologic features, all of which result in varied and challenging floodplain issues. A report prepared by the Information Center for the Environment at UC Davis has identified 172,000 miles of rivers in the State with 70,000 miles of rivers downstream from dams. While not insurmountable, delineation of all of these systems would be a very formidable task. Regulatory floodplain mapping on a countrywide basis was started by the federal government in the late 1960's. In the State of California it is estimated that FEMA has now mapped approximately 15,000+ miles of stream systems by both detailed and approximate study methods. This is less than 10 percent of all streams.

Compounding current floodplain management issues, over the next 25 years the State is expected to have a 40 percent increase in population. The demand for development will put a heavy load on the remaining floodplains that are not mapped. It is currently estimated that up to one-third of California's stream reaches are or will be experiencing some development pressures within the next 25 years.

The intent of this program is to support the entire State identifying all of the pertinent flood hazard areas within the next ten years. Detailed studies for all areas are cost prohibitive to accomplish within the foreseeable future. This necessitates use of approximate assessments (Awareness Floodplains) to map these new 100-year floodplains for both riverine and alluvial fan conditions. The final mapping product delineates the approximate floodplain boundaries on USGS quadrangle maps, and provides the supporting metadata files. This data is provided to the community and is available on the Internet for reference. The floodplain boundaries are also available as shape files for GIS applications. The intent is to provide the community an additional tool in understanding potential flood hazards currently not mapped. This will enable each community to provide better protection for its citizens against loss of life and loss of property during a flood event as well as reduce community costs for emergency response needs.

All efforts are now being focused on maximizing the extent of coverage for floodplain mapping and still provide high quality floodplain mapping. To make the most efficient use of funding, areas that have little or no development but have pressure for future growth will be evaluated by using approximate methods for Awareness Floodplain assessments. Any area that is in an approximate flood hazard zone and is faced with development will then have to be evaluated by the developer (as required by FEMA regulations, CEQA, and the State General Plan Guidelines) by detailed methods before proceeding.

CADWR actively encourages the communities to participate in making use of these Awareness Floodplains via a number of processes. Copies of all floodplain mapping as it is completed will be made available to each community. Also all floodplain maps will be available on a web page for use by each community and for use by other agencies and individuals. Information on this program will be disseminated through the Community Assistance Program and Floodplain Management Conferences including direct mailings to each of the involved communities. DFM will be monitoring Notice of Preparation of EIR's and Draft EIR's through the State Clearinghouse for areas within the awareness floodplain mapped areas. Notices will be sent recommending detailed studies during preparation of the EIR's.

Detailed analyses will still be required for areas partially or fully developed. Good use of the Awareness Floodplain Mapping products will also be supportive in making good decisions for selecting study areas requiring detailed analyses to adequately support and control development issues. This will have a positive impact on short-term development.

Mapping Plan for California

Table 1 – Map Production Summary for FY 2003 Funding

County	Planned Community Upgrades		Reduction in Average Age of Maps by FY 2006	Unmapped Communities To Be Mapped by FY 2006
	Level of Upgrade	No. of Communities		
Alpine	1		0	
	2		8	
	Total	1	8	13.0
Amador	1		21	
	2		7	
	Total	6	28	5.7
Del Norte	1		9	
	2		8	
	Total	2	17	16.6
El Dorado	1		47	
	2		9	
	Total	3	56	16.0
Glenn	1		56	
	2		14	
	Total	3	70	18.8
Humboldt	1		125	
	2		14	
	Total	9	139	15.4
Lake	1		66	
	2		14	
	Total	3	80	15.8
Lassen	1		80	
	2		14	
	Total	2	94	12.4
Los Angeles	1		326	
	2		0	
	Total	90	326	14.8
Mendocino	1		101	
	2		14	
	Total	5	115	16.8
Monterey	1		128	
	2		14	
	Total	13	142	16.3
Napa	1		45	
	2		14	
	Total	6	59	16.3
Nevada	1		54	
	2		14	
	Total	4	68	13.9

Mapping Plan for California

Placer	1		86		
	2		14		
	Total	7	100	1.9	0
Plumas	1		27		
	2		7		
	Total	4	34	0	2
Riverside	1		251		
	2		100		
	Total	29	351	10.9	5
Sacramento	1		120		
	2		23		
	Total	7	143	6.4	0
San Joaquin	1		100		
	2		65		
	Total	8	165	9.5	3
San Mateo	1		114		
	2		14		
	Total	21	128	15.1	4
Santa Barbara	1		98		
	2		0		
	Total	9	98	14.2	1
Santa Clara	1		230		
	2		11		
	Total	16	241	12.1	1
Santa Cruz	1		50		
	2		14		
	Total	5	64	14.9	0
Shasta	1		68		
	2		14		
	Total	4	82	11.4	0
Siskiyou	1		123		
	2		9		
	Total	10	132	18.2	2
Sonoma	1		108		
	2		14		
	Total	10	122	9.7	0
Sutter	1		30		
	2		5		
	Total	3	35	10.4	0
Tehama	1		51		
	2		12		
	Total	4	63	14.8	0
Trinity	1		27		
	2		8		
	Total	1	35	9.7	0

Mapping Plan for California

Ventura	1		107		
	2		0		
	Total	12	107	13.2	1
Total	1		2,642		
	2		454		
	Total	547	3,096	12.6	104

Proposed Approach To Map Production

As discussed above, a primary role for the State and its partners will be the management of some mapping activities. Mapping activities would include the following (scoping, outreach & community coordination, digital base map collection/coordination, digital base map development, field surveys, hydrologic & hydraulic analyses, floodplain mapping, digital FIRM production, and post-preliminary processing):

- FEMA MCC will do the majority of Level 1 DFIRM conversions. Level 2 upgrades will be done by a variety of means including: CADWR, state contractors, local government CTP's, and FEMA IDIQ contractors.
- FEMA, Region IX, will direct and manage most mapping activities in consultation with CADWR Floodplain Management Branch staff. The Floodplain Management Branch is responsible for preparation of existing floodplain mapping supporting the prevention of loss of life and the reduction of flood caused damages for the State of California. This is part of the mission of the Division of Flood Management, CADWR, which also includes support for recovery efforts following any natural disaster, monitoring stream flow and precipitation, providing runoff forecasts, and preservation the State's natural resources.
- DWR is totally committed to support of FEMA's mapping programs and the benefits obtained from these programs. CADWR is exploring probable avenues of support with the Office of Emergency Services for the State for the Hazard Mitigation Planning and Hazard Mitigation Grant Program for pre-disaster support. Both programs have a common cause and solution.
- Each work assignment with FEMA will require a Mapping Activities Statement. Because of the State's current budget issues, no projections can be made at this time as to the scope and level of involvement that CADWR can enter into for cost-shared projects.
- The next three pages identify the current funding support provided by CADWR for floodplain mapping. CADWR is capable of providing staffing support for FEMA's NFIP either through CADWR staffing or CADWR contractors if funded by FEMA.

Mapping Plan for California

Estimated Costs To Complete Proposed Mapping Activities

The CTP activities to be performed by the State are estimated to cost approximately \$150,000. Approximately \$150,000 will be provided by FEMA to the State for this project. State and local contributions are expected to provide approximately \$3,986,440 through both in-kind and cash contributions. The State and contributions represent 50% of the \$300,000 required for State-managed CTP mapping activities.

The costs for each county are listed in Table 2. The unit costs that were used in preparing these estimates are the same unit costs used in FEMA's Blue Book.

Estimated Cost to Complete Phase 1 and Phase 2 Mapping Activities Proposed for FY03

FEMA Estimated Cost:	\$27,868,350
State Estimated Cost:	\$150,000
Local Govt. Est. Cost:	<u>\$3,836,790</u>
Total Projected Cost:	\$31,854,790

The projected State cost share just described is based on a projection of a new CTP based flood study to be done jointly with FEMA and State funding. It does not include the extensive flood mapping already being done with State funds under their flood mapping program. When the Level 2 flood studies for FY03 are finally decided on, Region IX will coordinate with CADWR to determine how much of their independent study activity will contribute to reducing the cost to FEMA of doing Level 2 studies in the Counties we select for funding. At that time we can more accurately estimate the actual State cost share contribution for Level 2 studies in FY03.

CA State Funded Flood Mapping Projects Already Underway

In addition to the dollar amounts identified above, the State of California is independently supporting the floodplain mapping needs of the State with the following mapping program studies:

Detailed Studies

System	Total Study Costs	Due Date	Available (for FEMA)
San Joaquin River (above Hwy 99)	\$279,000	Completed	On FIRM
Avarado Creek	\$25,000	Completed	On FIRM
Reeds Creek	\$48,000	Completed	Submitted
Churn Creek	\$329,000	Completed	Submitted
Wolf Creek	\$146,000	Completed	Submitted
San Joaquin River (below Hwy 99)	\$152,000	Completed	Submitted
Boron Avenue Creek	\$92,000	Completed	Submitted
Los Berros Creek	\$124,000	Completed	Submitted
Adobe and Highland Creeks	\$247,000	Completed	January 2002
Smith/Scodie Canyon Creeks	\$56,000	Completed	January 2003
Feather River – Marysville to Oroville	\$198,000	Completed	December 2002
Warm Springs Creek	\$264,000	Completed	September 2002
Salt Creek	\$140,000	Draft Completed	January 2003

Mapping Plan for California

Frazier/Strathmore Creeks	\$117,000	Draft Completed	January 2003
Merced River	\$190,000	October 2002	February 2003
Long Valley and Paloma Creeks	\$50,000	November 2002	March 2003
Aqua Hedionda Creek	\$152,000	November 2002	March 2003
Feather River – Mouth to Marysville	\$275,000	December 2002	April 2003
Atascadero Creek	\$240,000	December 2002	April 2003

Floodplain Management Mapping Support to the COE for Central Valley Hydrology and Hydraulics

Fiscal Year	Funds
1997-1998	\$425,000
1998-1999	\$225,000
1999-2000	\$555,000
2000-2001	\$90,000

CADWR is supporting other programs that result in detailed floodplains throughout the State. Two specific programs include the Sacramento and San Joaquin River Basins Comprehensive Study and the Reclamation Board's Designated Floodway program. These two programs and other studies being support result in substantial investment by the State of California in providing detailed floodplain mapping. At this point no attempt is being made to identify the funding involved in all of these efforts beyond direct funding support from the Floodplain Management Branch for the comprehensive study mapping.

Approximate Studies

Supporting Agency	No. of Counties	Total Study Costs	Initial Mileage	Due Date
CADWR Northern District	5	\$181,000 *	600 *	*
CADWR Central District	4	\$135,000 *	200 *	*
CADWR San Joaquin District	3	\$133,000 *	700 *	*
CADWR Southern District	3	\$165,000 *	600 *	*
CADWR Contractor (URS)	17	\$1,239,000	5,200	April 2003
Corps of Engineers	7	\$400,000	1,300	September 2002
Corps of Engineers	14	\$1,500,000	5,000	March 2005
Natural Resources Conservation Service	5	\$225,000	800	April 2004

*Through FY 2001-2002

Mapping Plan for California

Support for Floodplain Management Mapping Functions

Current Mapping Oversight Support for Floodplain Management Mapping activities is approximately \$700,000 a year. This includes administration and support for the branch mapping team, mapping specialists and Web page support, development and maintenance of all communication and coordination functions required with others for CADWR mapping activities, administration of contracts, quality control reviews, and investigation into new processes to satisfy evolving mapping product needs.

Fiscal Year 2002-2003

The State of California has not resolved its budget for fiscal year 2002-2003. Resultantly, CADWR cannot commit to new detailed studies. However, Floodplain Management is working with the Comprehensive Study team to facilitate preparation of a Mapping Activity Statement for the Lower San Joaquin River providing new hydraulics for that portion of the San Joaquin River.

Mapping Plan for California

Table 2 – Estimated Costs of Planned Production

County	Level 1 Upgrade Panels	Level 2 Upgrade Panels	FEMA Contribution (\$Millions)	State Contribution (\$Millions)	Total Cost
Alpine	0	8	\$183,200	\$40,000	\$223,200
Amador	21	7	\$302,050	\$50,000	\$352,050
Del Norte	9	8	\$243,950	\$40,000	\$283,950
El Dorado	47	9	\$519,975	\$40,000	\$559,975
Glenn	56	14	\$695,225	\$40,000	\$735,225
Humboldt	125	14	\$1,160,975	\$40,000	\$1,200,975
Lake	66	14	\$766,100	\$40,000	\$806,100
Lassen	80	14	\$857,225	\$40,000	\$897,225
Los Angeles	326	0	\$2,197,125	\$330,000	\$2,527,125
Mendocino	101	14	\$998,975	\$50,000	\$1,048,975
Monterey	128	14	\$1,181,225	\$110,000	\$1,291,225
Napa	45	14	\$624,350	\$110,000	\$734,350
Nevada	54	14	\$685,100	\$159,240	\$844,340
Placer	86	14	\$897,725	\$70,000	\$967,725
Plumas	27	7	\$342,550	\$70,000	\$412,550
Riverside	251	100	\$3,980,875	\$1,000,000	\$4,980,875
Sacramento	120	23	\$1,336,700	\$307,200	\$1,643,900
San Joaquin	100	65	\$2,163,500	\$500,000	\$2,663,500
San Mateo	114	14	\$1,090,100	\$170,000	\$1,260,100
Santa Barbara	98	0	\$661,500	\$80,000	\$741,500
Santa Clara	230	11	\$1,801,025	\$200,000	\$2,001,025
Santa Cruz	50	14	\$654,725	\$50,000	\$704,725
Shasta	68	14	\$776,225	\$40,000	\$816,225
Siskiyou	123	9	\$1,036,350	\$80,000	\$1,116,350

Mapping Plan for California

Sonoma	108	14	\$1,049,600	\$100,000	\$1,149,600
Sutter	30	5	\$317,000	\$40,000	\$357,000
Tehama	51	12	\$619,050	\$40,000	\$659,050
Trinity	27	8	\$365,450	\$40,000	\$405,450
Ventura	107	0	\$722,250	\$110,000	\$832,250
Total	2,642	454	\$27,868,350	\$3,986,440	\$31,854,790

Mapping Plan for California

Appendix A

In California the collection of updated MNUSS worksheets from local governments was done by a combination of State and Region IX activities. Region IX provided funds through the CAP contract that the CADWR used to contract out the distribution and collection of MNUSS worksheets and supporting information to about 150 communities that were considered to have a high priority for new flood studies based on population and growth projections. This effort was done by mail and telephone follow up. The contractor provided a paper copy and several CDROM copies of the returned worksheets to CADWR and Region IX. Copies of that information were also provided to the Region IX MCC Baker Engineers for data entry into MNUSS. Region IX customized these MNUSS worksheets with a series of supporting questions that should be helpful in more clearly identifying the areas that need new studies.

In addition to the CADWR contract effort Region IX staff held meetings on the MNUSS worksheets for County and local government staff in 7 of the most significant Counties in the State. These joint meetings allowed County and assembled local government staff to discuss their flood study needs on a more regional basis and generated a considerable amount beneficial discussion and recognition of how much mutual interest they have in watershed flood studies and planning.

Attached are copies of the MAP MOD background and MNUSS worksheet information that was provided to the communities by FEMA Staff and CADWR.

Mapping Plan for California

Federal Emergency Management Agency Region IX Flood Map Modernization Program Background

5-20-02

In the years since FEMA issued its July 30, 1997, *Modernizing FEMA's Flood Hazard Mapping Program* report, FEMA staff and their mapping partners have been laying the groundwork for implementation of the Map Modernization Plan. Despite continued funding limitations, we have made significant progress toward achieving many of the goals outlined in the report. Now, with the President's budget proposal for Fiscal Year (FY) 2003, it appears that funding will be sufficient to allow us to begin full implementation of the Plan and make substantial progress in upgrading the flood mapping inventory.

The President's budget proposal includes a \$351 million request for initiating the Map Modernization Plan; \$51 million will come from existing fees and \$300 million from new discretionary funding. In addition, the Administration has indicated a long-term commitment to map modernization by projecting budget authority for flood mapping on the order of \$360 million to \$380 million in out years.

During the rest of 2002, we will make specific preparations for the proposed enhanced funding in 2003. Then in FY 2003-2006, the initial upgrade of the inventory will be underway. In planning the flood map upgrades, FEMA will address the following Government Performance Results Act (GPRA) performance measures suggested by the Office of Management and Budget (OMB) for the proposed funding for Flood Map Modernization:

- Reducing the average age of the maps to 6 years (current average age of maps is 13.6 years)
- Producing digital mapping products with up-to-date flood hazard data for the 15% highest priority areas
- Developing flood maps for half of the unmapped, floodprone communities
- Encouraging State/local cost share on flood mapping projects

In our planning process, we are emphasizing partnerships; indeed, FEMA has already begun working with the respective State NFIP coordinating agencies to develop "rolling" 3-year statewide plans that identify needed flood mapping projects. To ensure that the benefits of this effort are as evenly distributed as possible, statewide plans will strive to independently meet the GPRA measures.

Over the next several months the FEMA Region IX Office will be working with our State Floodplain Management Coordinators to develop State map modernization plan to address the three GPRA goals stated above. The most time consuming task will be the second GPRA goal which requires us to develop a list for each State of the high priority areas that are in need of new flood studies. To assemble this list of high priority flood study areas we must have the cooperation of State and Community representatives.

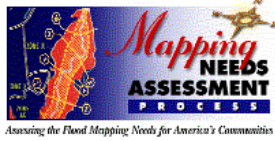
Mapping Plan for California

The California Department of Water Resources staff were asked to contact the floodplain manager of each County by telephone to ask them for their recommendations on what areas in the County and its incorporated jurisdictions are most in need of a new flood study to correctly identify the special flood hazard areas based on current conditions and with an eye to future growth (5 to 15 years) and development patterns. The new flood maps will be produced as Countywide Digital Flood Insurance Rate Maps so the studies will be done on the basis of flood sources and watershed areas not on the basis of jurisdictional boundaries. That means that many of the study areas identified may include part of the County and parts of one or more incorporated cities or towns. Some may cross over County lines. Based on the telephone contacts, State staff provided a list of communities and high priority flood study areas to FEMA Region IX for review.

The Region IX staff reviewed that list and in conjunction with the field experience of our staff and analytical data on flood losses and population projections we selected 150 communities that would receive assistance to update their MNUSS worksheets and identify their highest priority areas for new flood studies. This technical assistance will be provided by the CA Department of Water Resources through a series of letters and conference calls done by their technical assistance contractor. In addition Region IX staff and CA DWR staff will meet with County and local government staff in 7 Counties to jointly discuss their countywide mapping needs and assist those jurisdictions in updating their MNUSS worksheets. The updated worksheets will then be provided to FEMA where the new information will be entered into the national MNUSS database. FEMA will use this information to assist in their annual selections of new flood studies that will be done under the map modernization initiative.

Communities can update their information in the MNUSS database at any time. This special effort is being made now to assure that we have a reasonably updated information to use for selecting new studies to fund with the FEMA map modernization funds we anticipate receiving in the FY 2003 budget year.

Mapping Plan for California



Guide to Input of Flood Map Data Update Needs In MNUSS

FEMA Region IX April, 2002

Background

The Mapping Needs Assessment Process was established to identify and prioritize community map update needs in accordance with Section 575 of the *National Flood Insurance Reform Act* of 1994. Since May of 1997, more than 18,000 communities have been contacted for map update needs. Information regarding mapping needs are assembled by FEMA in the Mapping Needs Update Support System (MNUSS) database. In the spring and summer of 2002 FEMA will be coordinating with State and Local governments to identify the highest priority areas in each State that will require new flood insurance studies. The following guidelines will assist State Coordinators, Cooperating Technical Partners (CTPs) and community officials in the assessment of mapping needs and data entry into MNUSS.

Overview of MNUSS

MNUSS is a Web-based database that is used to assemble and compile mapping needs on a community basis. Information is entered into the database detailing map maintenance and flood data update needs for each community.

FEMA Headquarters and Regional Engineers use the information in MNUSS to help prioritize study/restudy projects for funding allocation. The data comprising MNUSS represent a great deal of coordination with communities, States, and Regional Offices to gather mapping needs information. This process is dynamic, and mapping needs can be identified and entered at any time.

Gathering Information

Before entering needs into MNUSS, the *MNUSS Data Worksheet* should be completed. This will allow for efficient and comprehensive data entry into MNUSS. The following information will guide you through completing the worksheet.

First, assemble the following materials:

- Community Flood Insurance Rate Maps (FIRMs)
- Engineer's scale (ruler)
- Map wheel (if available)
- Calculator

Second, complete the "Origin" section of the *Data Worksheet*. The origin information should include all contact information for the representative providing information regarding the National Flood Insurance Program (NFIP) mapping needs for the community, organization, or agency.

Determining Flood Data Update Needs

As development takes place and floodplain characteristics change, flood maps need to be updated to ensure communities have a useful tool for floodplain management and that flood insurance policies are

Mapping Plan for California

rated properly. When determining flood data update needs, consider each flooding source or study reach length (stream section under consideration) separately, and complete the Flood Data Update section on the MNUSS Data Worksheet for each.

Study Category refers to the type of flooding source in question. For rivers, streams, and lakes (except the Great Lakes), choose *riverine*. For oceans, the Great Lakes, or areas affected by tide or wave action, choose *coastal*. For areas with an alluvial fan, choose *alluvial* flooding.

Flooding Source

The flooding source is the name of the water body that requires a map update (e.g., Susquehanna River, Atlantic Ocean, San Francisco Bay). If the flooding source has no name, refer to it as "Unnamed tributary to...". For each Flood Data Update need, identify "Beginning" and "Ending" points using physical landmarks on the FIRM to identify the upstream and downstream most limits under consideration. For example, "Beginning point: Approximately 400 feet west of the intersection of Maple Street and Locust Lane", and "Ending point: State Route 50 bridge crossing." This aids in the identification of the reach of the flooding source under consideration. In addition, the 'Notes' field in MNUSS may be used to provide further description of the need. Remember: one flooding source per need.

Affected Flood Map Panels

List the Flood Insurance Rate Map Panel Numbers that would be covered by this proposed new flood study and the anticipated special flood hazard areas that will result from that new study. If flood map panels for more than one jurisdiction will be affected please name the County or local government and list the panels for each by jurisdiction. Use the comments section if you need additional space for this listing. If the flooding sources are new or are on flood map panels that are not printed, a simple map showing the new or unstudied Areas will help us identify the location you are addressing. See the attached example, Figure 1.

Multiple Jurisdiction Groups

Some of the proposed new flood study areas will affect more than one County or a County and one or more local jurisdictions based on the area or watershed being studied. Please list each jurisdiction affected and group them by County. When there are one or more local governments and part of the County involved this Flood Data Worksheet can be filled out completely on the County Worksheet and the Worksheet for the local governments can identify this proposed flood study as part of a "Multiple Jurisdiction Group" study request and refer the reader to the County Worksheet for the detailed information. If there is specific information about your community that was not captured on the County Worksheet you can fill out your local government worksheet to complete the information.

Need Type

Each community's FIS is based on hydrologic and hydraulic conditions. Analyses of these conditions are used to determine floodplain width and base flood elevations. Different factors may cause changes in these conditions; therefore, there are several types of flood data update needs. More than one type of flood data update need may exist for a specific flooding source/reach; therefore, please indicate all that apply. The following are brief descriptions and examples of each flood data update type:

Changes to hydrologic conditions

Hydrologic conditions determine the quantity of runoff generated by a given rainfall event. This can be affected by various factors, such as the vegetation and land cover in the watershed, the infiltration of the soils, the slope of the land, the amount of impervious land, and the size of the watershed. Some of the factors that may indicate a change in hydrologic condition include:

- Significant changes in land-use in the watershed
- New hydrologic data

Mapping Plan for California

- New flood control structures or changes to the operation of existing flood controls
 - Comparison of recent flooding event with the effective FIS and FIRM

Changes to hydraulic conditions

Some factors to consider when determining whether there have been any changes to hydraulic conditions include:

- New bridges, culverts and/or road crossings
- Changes in stream morphology (the stream's erosion and deposition which naturally changes its' course and characteristics)
- Development near Zone A areas

Changes to floodplain width

If floodplain boundaries do not seem to be accurately depicted, then the flood maps would likely warrant updating. Usually, this can be determined after a 1% annual chance (100-year) flood event.

Changes to Base Flood Elevations (BFEs)

If BFEs do not accurately reflect the 1% annual chance flood event, then an update of this type would be needed.

Changes to coastal elevations

If coastal BFEs have changed or are inaccurate, the maps should be revised.

Average Change in BFE is an estimate of how much the BFEs on the FIRMs will change if the flooding source/reach is restudied. Because of the difficulty in determining a specific value of change in BFE prior to a study, BFE ranges are used to indicate estimated change. If no data exists that could be used for the basis of this estimate, you may wish to base your estimate on personal knowledge and professional judgement. Often, community engineers or surveyors are the best source of this information.

In lieu of site-specific information, the following guidelines have been established to provide default range values based upon common criteria. Note that you must indicate whether the BFE is likely to increase (+) or decrease (-).

Criteria	Change of BFEs
Mapping from Zone A to Zone AE	decrease of > 5 feet
Addition of a culvert	increase or decrease 1 to 5 feet
Addition of a bridge	increase or decrease 0 to 1 foot
Channelization	increase 1 to 5 feet
Dams, detention ponds	increase or decrease > 5 feet
Revising detailed Zone AE	increase or decrease 0 to 1 or 1 to 5 feet
Great Lakes Open Coast Flood Levels	increase 1 to 5 feet
Unstudied stream to Zone AE	increase 1 to 5 feet

To determine the length of the study reach, identify the stream on the FIRM and measure the length of the stream segment that has a mapping need using an engineer's scale or map wheel. Record beginning (upstream) and ending (downstream) points using landmarks on the FIRM, as described previously.

For alluvial flooding, determine the area of the alluvial fan in square miles.

An average width of floodplain for each flooding source is determined using the FIRM panel(s) where the flooding source is depicted and an engineering scale. Riverine sources are measured across the 1% annual chance (100-year) floodplain on the FIRM. Take numerous measurements at various points along

Mapping Plan for California

the length of stream segment under consideration and determine an average floodplain width. For coastal sources, the average width of the floodplain is calculated by measuring the width of the Zone V area on the FIRM, from the depicted coastline to the landward extent of the Zone V area, at several locations along the study reach under consideration.

When the assessment is completed, it is then entered into MNUSS (www.mnuss.com), where community needs nationwide are stored, assessed and prioritized for future Flood Insurance Study updates.

Mapping Plan for California

Appendix A. Continued

"Mike Whitlock" <MWhitloc@co.tulare.ca.us>

08/08/2002 05:10 PM

Hi Olivia,

The attached worksheets are submitted for your consideration in requesting FEMA assistance in looking at the Mehrten Creek and Cross Creek (Goshen) flood plain areas. Thank you for your consideration of this matter.

Mike

>>> <Olivia_Magana@URSCorp.com> 08/05/02 05:10PM >>>

Mr. Whitloc,

As discussed in our phone conversation, I am forwarding you the following four attachments regarding FEMA's Mapping Needs Update Support System (MNUSS).

(See attached file: Strategy for Identifying Priority Flood Study Areas CA

5-20-02.doc)(See attached file: CA Version ATTACHMENT 2 Guides 4-19-02.doc)

(See attached file: MNUSS Data Snapshot access for CA 5-17-02.doc)(See attached file: CA MNUSS Worksheet version 5-17-02.doc)

Also attached is an excel version of the CA MNUSS Worksheet Version 5-17-02

(preferred format). Please make sure to fill out one worksheet for each

flooding source or study area that needs immediate attention. When filling

out the electronic excel spreadsheet please start with potential study number 1 (PS_1).

(See attached file: Electronic CA MNUSS Worksheet.xls)

Please review the provided information. We would like to arrange a time to

talk with you about this program. Please contact me by phone or email to

arrange a convenient time for a conference call.

Mapping Plan for California

The deadline for submitting all potential studies will be August 23, 2002.

Completed worksheets should be forward to me electronically or by mail.

If
you have any questions please feel free to reach me by phone or email.

P.S. Please feel free to contact Hank Fehlman about the Fraser Creek Project at 916.679.2050.

Olivia Magaña
Graduate Environmental Engineer
URS Corporation
2520 Venture Oaks Way, Suite 250
Sacramento, CA 95833
(916) 679 - 2339

Mapping Plan for California

LETTER OF TRANSMITTAL

TO: Mr. Jesse Soriano
Public Works Department
City of Calipatria
P.O. Box 167
Calipatria, California 92233

WE ARE TRANSMITTING: XX HEREWITH ___ UNDER SEPARATE COVER

Transmitted with this letter is information regarding the Mapping Needs Update Support System (MNUSS) which was also e-mailed to you. The MNUSS worksheet is included. As mentioned previously, if you are the correct person to contact regarding this project, please complete this worksheet and send it back to me via e-mail by **August 23rd** in order for FEMA to meet their deadline and receive funding to map your high priority areas that need map updates. If you are not the correct person, I would appreciate it if you could forward this information to the appropriate person. Thank you.

FOR YOUR: ___ APPROVAL ___ DISTRIBUTION ___ FILES
___ COMMENTS XX INFORMATION XX USE

PLEASE NOTIFY ME IF ENCLOSURES LISTED ARE NOT RECEIVED.

• Very truly yours,
URS CORPORATION

By: _____
Michele Farmer
Project Engineer

Enclosures:

- Federal Emergency Management Agency, Region IX, The Flood Map Modernization Program Background
- Guide to Collection and Input of Flood Map Data Update Needs in MNUSS
- MNUSS Data Worksheet
- E-mail from John Eldridge providing web-site information