Flood Mitigation Plan for Ventura County, California

Prepared for
Ventura County Watershed Protection District
800 S. Victoria Avenue
Ventura, CA 93009-1600

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URS Corporation

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On Behalf of
County of Ventura

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AIR	Airport facilities
ALERT	Automated Local Evaluation in Real Time
BRDG	Bridges
BMP	Best management practice
BUS	Bus facilities
cfs	cubic feet per second
CIP	Capital Improvement Plan
COM	Communication facilities and utilities
CTP	Cooperating Technical Partner
CURB	City Urban Restriction Boundaries
cy	cubic yards
DAM	Dams
DFIRM	Digital Flood Insurance Rate Map
District	Ventura County Watershed Protection District
DSOD	California Division of Safety of Dams
DWR	California Department of Water Resources
ELEC	Electric power facilities
EMER	Emergency centers, fire stations, and police stations
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
GOVT	Government office / civic center
GP	Gas pipelines
HOSP	Hospitals / care facilities
HWY	Highway
IACG	Inter-Agency Coordination Group
INFR	Miles of infrastructure
IWPP	Integrated Watershed Protection Plan
LAFCO	Local Agency Formation Commission
LOMA	Letter of Map Amendment
LOMR	Letter of Map Revision
mg/l	milligrams per liter

NAVD	North American Vertical Datum of 1988
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum of 1929
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Services
OES	Office of Emergency Services
POR	Port services
POT	Potable and wastewater facilities
QPF	Quantitative Precipitation Forecasts
RR	Railroad tracks
RAIL	Rail facilities
RMA	Resource Management Agency
SCAG	South Coast Association of Governments
SCH	Schools
SOAR	Save Our Agricultural Resources
USACE	United States Army Corps of Engineers

Ventura County Watershed Protection District Planning Staff

Sergio Vargas .....Deputy Director of Planning and Regulatory Division
Sherri Dugdale ..... Watershed Management Grants Specialist
Matt Ehret ..... Engineer II
Kevin Keivanfar.....Floodplain Permits Manager
David Laak .....Hydrologist II
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1.1 PURPOSE OF PLAN

Ventura County is highly vulnerable to damage from floods due to the geographic location and orographic conditions. Since 1992, there have been five Presidential disaster declarations for flooding in Ventura County. In addition, at least every five years, a flood or flood-related hazard causes damage that is not significant enough for a disaster declaration but, nonetheless, costs county residents, businesses, and taxpayers millions of dollars. This risks posed by these hazards increase as the county's population continues to grow.

In 1994, Congress authorized the Flood Mitigation Assistance (FMA) Program to provide funding to assist states and localities in implementing measures to reduce or eliminate the risks due to flood hazards. In particular, the FMA Program was designed to reduce the long-term damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). The FMA Program is implemented by the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) through its state partners.

The goals of the FMA Program are to:

- Reduce the number of repetitively damaged structures and the associated claims on the National Flood Insurance Program.
- Encourage long-term, comprehensive mitigation planning.
- Respond to the need of the communities participating in the NFIP to expand their mitigation activities beyond floodplain development review and permitting.
- Complement other Federal and state mitigation programs with similar, long-term mitigation goals.

The FMA Program is a pre-disaster mitigation program made available to states on an annual basis. Although individuals are not eligible for FMA grants directly, their local government may submit an application on their behalf. However, all local jurisdictions that apply for FMA grants must be an active participant in the NFIP.

Two types of FMA grants are available to local communities: planning grants and project grants. Planning grants are awarded to local governments to develop or update a flood mitigation plan that includes: public involvement, coordination with other agencies or organizations, flood hazard area inventory, problem identification, and review of possible mitigation actions. Project grants are awarded to communities that already have a FEMA-approved mitigation plan and want to implement the strategies set forth in the plan to reduce the risk of flood damage to structures insurable under the NFIP. The mitigation of repetitively damaged structures is a high priority.

In California, the Governor's Office of Emergency Services (OES) administers the FMA Program and is responsible for selecting projects for funding throughout the state. The OES then forwards selected applications to FEMA to determine final eligibility.

In 2003, the OES awarded a FMA planning grant to Ventura County to develop a flood mitigation plan. The county, in turn, entered into a Cooperative Agreement with the Ventura County Watershed Protection District (referred to hereafter as the District) to develop the flood

mitigation plan because the District has the technical expertise to develop a flood mitigation plan and currently administers the floodplain management program on behalf of the county. The District is preparing the flood mitigation plan in parallel with the multi-jurisdictional hazard mitigation plan for Ventura County, and elements of the flood mitigation plan will be incorporated into the hazard mitigation plan. The completed flood mitigation plan will address planning for risks associated with flooding, post-fire debris flow, and dam failure. It will also address how to mitigate and reduce the number of repetitive loss structures in the county. The flood mitigation plan for the District was prepared with input from Ventura County residents and stakeholders, responsible officials, and URS Corporation (consultants); and with the support of the OES and FEMA.

1.2 COMMUNITY DESCRIPTION

1.2.1 Ventura County

Ventura County, one of 58 counties in the State of California, is located on southern California's Pacific coast, just northwest of Los Angeles. Ventura County is bordered by Los Angeles County to the south and east, Kern County to the north, and Santa Barbara County to the northwest. The county has a population of over 750,000 and consists of 10 incorporated cities which include: Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura (Ventura), Santa Paula, Simi Valley, and Thousand Oaks. The county's unincorporated communities, which make up almost 10 percent of the county's population, include Bell Canyon, Casitas Springs, Del Norte, El Rio, Hollywood Beach, La Concha, Lake Sherwood, Lockwood Valley, Meiners Oaks, Mira Monte, Montalvo, Newbury Park, Nyeland Acres, Oak Park, Oakview, Piru, Saticoy, and Silver Strand. Anacapa Island of the Channel Islands National Park and San Nicholas Island are located within the jurisdiction of Ventura County. The City of Ventura is the county seat.

1.2.2 Ventura County Watershed Protection District

The Ventura County Flood Control District was formed on September 12, 1944, by an act of the California State Legislature. The District was formed, in part, to provide for the control and conservation of flood and storm waters and for the protection of watercourses, watersheds, public highways, life, and property from damage or destruction from these waters. The legislation was amended in 1972 to provide for the recreational use and beautification of lands and properties in connection with flood control activities. The legislation was once again amended in 2002 to reflect a change in name from the Ventura County Flood Control District to the Ventura County Watershed Protection District.

The District is funded through property taxes, benefit assessments, and land development fees paid by property owners within the county. The District is a separate legal entity from the Ventura County, but shares the same board members with the county.

To facilitate management of its revenues and projects, the District was divided into four zones, roughly corresponding to the major watersheds within the county. Monies raised within a zone support District studies and projects in that zone. Zone 1 essentially follows the boundaries of the Ventura River Watershed and coastal drainages in the western part of the county. Zone 2 essentially follows the boundaries of the Santa Clara River Watershed and local coastal

drainages in the cities of Ventura and Oxnard. Zone 3 essentially follows the boundaries of the Calleguas Creek Watershed and its tributaries. Zone 4 is a mixture of Malibu coastal drainages in the southern part of the county and the relatively undeveloped Cuyama River Watershed in the northern part of the county.

The District possesses jurisdictional authority over any channel containing runoff with a peak flow rate of more than 500 cubic feet per second (cfs) during a 100-year storm. Laterals and side drains contributing runoff to the jurisdictional channels (referred to as "redline" channels) are under the jurisdiction of the state or appropriate local agency. However, lateral and side drain connections to jurisdictional channels must obtain an encroachment permit from the District and provide sufficient information and engineering studies to show that the connection does not negatively impact the conveyance capacity of the jurisdictional channel.

The District's authority over its jurisdictional channels is established through a number of ordinances and policies passed by its Board of Supervisors. The primary ordinance establishing District authority and the requirement to obtain permits for any encroachment into District jurisdictional channels, including its rights-of-way, is Ordinance FC-18 ("An Ordinance Relating to the Protection and Regulation of Flood Control Facilities and Watercourses"), as amended by Ordinances FC-20, FC-21, FC-22, FC-23, and FC-27.

The District also implements the Flood Plain Management Ordinance (Ventura County Ordinance No. 3841, as amended) on behalf of Ventura County, to ensure compliance with the NFIP. This includes permit review for structures built in the floodplain and evaluation of site plans for developments that include identified floodplains. For incorporated jurisdictions, each city serves as the floodplain manager within its incorporated boundaries.

To solve existing flooding problems, the District is currently engaged in the development of comprehensive watershed plans for all three of its major watersheds. The Ventura River Watershed has been extensively studied as part of the Matilija Dam Ecosystem Restoration Project, a joint effort between the District, the State, and the U.S. Army Corps of Engineers. This project examined the water resource and environmental effects of the removal of Matilija Dam, given that accumulated sediment has compromised the dam's original functions as a flood control and water supply reservoir. For the Santa Clara River Watershed, a partnership between the Los Angeles County Department of Public Works, the District, and the U.S. Army Corps of Engineers has been recently launched to develop a comprehensive watershed protection plan. The planning team will investigate the hydrology and hydraulic characteristics of the Santa Clara River watershed, including the sediment transport, wetland restoration, and water quality issues arising from water reclamation plant inflow and agricultural activities. For the Calleguas Creek Watershed, the District and the U.S. Army Corps of Engineers partnered to conduct the Mugu Lagoon Feasibility Study, which began as a limited study and was expanded to include the entire watershed. In addition, the District and FEMA partner to conduct a FIS for the Calleguas Creek and other tributaries. These efforts, interface with the Calleguas Creek Watershed Management Plan. The Calleguas Creek Watershed Management Plan, the result of a multi-stakeholder effort, is currently in draft form, and addresses water resources, land use, economic development, and open space preservation issues on a long-range, comprehensive scale.

2.1 OVERVIEW OF THE PLANNING PROCESS

Each step in the planning process was built upon the previous, providing a high level of assurance that the mitigation actions proposed by the District and the priorities of implementation are valid. Specific milestones in the planning process included the following.

- **Initial Flood Mitigation Assistance (FMA) Program Coordination (November 2003):** Ventura County and District personnel met with the Federal Emergency Management Agency (FEMA) and the Governor's Office of Emergency Services (OES) to discuss the FMA planning grant.
- **Meetings (December 2003 – November 2004):** Discussions at the Inter-Agency Coordination Group (IACG) and Disaster Council meetings included the probability of a hazard occurring in an area and its impact on public health and safety, property, the economy, and the environment; and the development of goals, objectives, and actions that would be necessary to minimize impacts from the identified hazards.
- **Risk Assessment (July 2004 – September 2004):** The District and the consultants identified three flood hazards (flood, dam failure, and post-fire debris flow) to be profiled in the flood mitigation plan. Utilizing FEMA's risk assessment software HAZUS and a Geographic Information System (GIS), the consultants completed a vulnerability assessment for each of the profiled hazards.
- **Capability Assessment (August 2004):** A review of the District and county's administrative and technical, legal and regulatory, and fiscal capabilities helped to determine whether existing provisions and requirements adequately address the hazards.
- **Goals, Objectives, and Alternative Mitigation Actions (August 2004 – September 2004):** Based on the hazard identification and risk assessment analysis, the District staff and consultants identified a series of goals, objectives, and actions to guide subsequent planning activities.
- **Mitigation Plan and Implementation Strategy (September 2004 – October 2004):** The District's staff determined the priorities for action from among the alternatives and developed a specific implementation strategy including details about the organizations responsible for carrying out the actions, their estimated cost, possible funding sources, economic justifications, and timelines for implementation.
- **Public Involvement (August 2004 – January 2005):** The District sent out flood information to repetitive loss homeowners and posted the plan on the District's website for public comment.

2.2 PLANNING COMMITTEES

In order to develop the flood mitigation plan, the planning process utilized two existing emergency management committees (the IACG and Disaster Council) that meet monthly and quarterly. The District participated in both committees to address flood hazards issues at greater depth.

2.2.1 Inter-Agency Coordination Group

In 1996, the Inter-Agency Coordination Group (IACG) was formed with the implementation of the Standardized Emergency Management System. The IACG meets monthly to voice their interests, opinions, and concerns regarding emergency management and other items of significant importance to the county. IACG members include Ventura County, incorporated communities, and special districts. Other interested parties that were invited to attend and participate at monthly meetings included: American Red Cross; OES; California State University Channel Islands Police Department; Conejo Recreation and Parks District; Radio Amateur Civil Emergency Services; Naval Base Ventura County, EMO Rafael Nieves; Zone Mutual Water Company; and the 146th Airlift Wing.

2.2.2 Disaster Council

Ventura County created the Disaster Council in 1972 to develop and recommend for adoption emergency and mutual aid plans and agreements, ordinances, resolutions, and rules and regulations necessary to implements such plans and agreements. The Council is directed by the Sheriff's Department and meets quarterly to review and approve county plans and other items of significance and importance to the county. The Public Works Agency represents the District at the Disaster Council meetings.

2.2.3 Ventura County Watershed Protection District Planning Staff

In addition to participating in the IACG and Disaster Council, the District met concurrently with its own staff to discuss the risk assessment, capabilities assessment, and goals, objectives, and actions of the flood mitigation plan. Staff members are listed in Table 2-1.

Table 2-1
2004 Ventura County Watershed Protection District Planning Staff

Name	Department / Position
Sergio Vargas	Deputy Director of Planning and Regulatory Division
Sherri Dugdale	Watershed Management Grants Specialist
Kevin Keivanfar	Floodplain Permits Manager
David Laak	Hydrologist II, Hydrology Section
Denny Tuan	Engineer Manager II, Advanced Planning Section
Matt Ehret	Engineer II, Advanced Planning Section
Yunsheng Su	Engineer III, Advanced Planning Section

2.3 PUBLIC INVOLVEMENT

2.3.1 Meetings

During the planning process, members of the public were invited to attend and comment on the flood elements in the hazard mitigation plan at monthly IACG meetings and quarterly Disaster

Council meetings. The county announced the meetings times and locations on its website. See Appendix A for meeting information, including agendas, minutes, and attendees.

2.3.2 Correspondence/Publications

As the planning process got under way, local, state, and Federal agencies and organizations were notified of the flood mitigation plan and its planning process and were solicited for their input. In particular, the District contacted the following government agencies and individuals.

- **Local:** Neighboring counties of Kern, Los Angeles, San Luis Obispo, and Santa Barbara; and repetitive loss homeowners.
- **State:** California Department of Water Resources, California Division of Safety of Dams (DSOD); and the OES.
- **Federal:** U.S. Army Corps of Engineers (USACE), U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), and FEMA.

2.3.3 Website

In addition to contacting different agencies and organizations, the District launched a website to provide information about the flood mitigation plan. The District's website also provided an opportunity to comment either by mail or via an email address.

2.4 EXISTING PLANS OR STUDIES REVIEWED

Consultants and District staff reviewed and incorporated, when appropriate, the following existing plans, studies, reports, and technical information.

Ventura County:

- General Plan: Goals, Policies and Programs
- General Plan: Hazard Appendix
- Detention Dams & Debris Basins Manual
- District Ordinances, including FC-18
- County of Ventura Flood Plain Management Ordinance
- District Integrated Watershed Protection Plan
- Integrated Emergency Procedure Manual
- Ventura Countywide Stormwater Quality Management Program

State and Federal:

- Coastal Conservancy Santa Clara River Parkway Restoration Feasibility Study
- DWR Awareness Maps

- FEMA FIRM/FIS for the unincorporated areas of Ventura County, effectives dates of 10/03/1985, 9/28/1990, 9/03/1997
- FEMA Q3 Digital Flood Data 1999
- FEMA 2004 FIS for Calleguas Creek
- USACE Matilija Dam Ecosystem Feasibility Study

3.1 OVERVIEW OF THE RISK ASSESSMENT PROCESS

Risk assessment requires the collection and analysis of hazard-related data to enable an entity to identify and prioritize appropriate mitigation actions that reduce losses from potential hazards. The five steps involved in a risk assessment are outlined in the following sections.

3.1.1 Identify Hazards

Hazard identification is the process of identifying the specific hazards (both natural and human-made) that threaten an area. A natural event causes a hazard when it harms people or property. Natural hazards that have harmed the county in the past are likely to happen in the future; consequently, the process of identifying hazards includes determining whether or not a hazard has occurred previously. Approaches to collecting historical hazard data include researching newspapers and other records, conducting a review of planning documents and the report literature with regard to all relevant hazards, gathering hazard-related Geographic Information System (GIS) or HAZUS data, and engaging in conversation with relevant experts from the community.

3.1.2 Profile Hazards

Hazard profiling entails describing the characteristics of past hazards in terms of their magnitude, duration, frequency, location, and probability. This stage of the hazard mitigation planning process involves creating base maps of the study area and then collecting and mapping hazard event profile information. The hazard data was mapped to determine the geographic extent of the hazards throughout the county.

3.1.3 Identify Assets

The identification of assets defines the population, buildings, and critical facilities and infrastructure that may be affected by hazard events. This information came from a variety of sources, including the U.S. Census Bureau, HAZUS, the county, and the District.

3.1.4 Assess Vulnerability

A vulnerability analysis predicts the exposure of assets to a hazard event of a given intensity in a given area. The assessment helps set mitigation priorities by allowing communities to focus attention on areas most likely to be exposed or most likely to require early emergency response during a hazard event.

3.1.5 Analyze Development Trends

The final stage of the risk assessment process provides a general overview of development and population growth that is forecasted to occur within the county. This information provides the groundwork for decisions about mitigation strategies in developing areas and locations in which these strategies should be applied.

3.2 HAZARD IDENTIFICATION

Hazard identification was accomplished by obtaining information from the Ventura County General Plan, researching existing plans and reports, contacting relevant state and Federal agencies, gathering hazard-related GIS and HAZUS data, and engaging in conversation with relevant experts from the community. Using this information, the District and consultants developed a list of flood and flood-related hazards to be profiled that included coastal and riverine floods, dam failures, and post-fire debris flows.

3.3 HAZARD PROFILES

The hazards selected for profiling area described in this section using the following three factors:

- **Nature of Hazard:** This provides basic information about the hazard that is sufficient to enable a user of the plan to comprehend its nature and distinguish it from other hazards. It also provides a basis for interpretation of the subsequent vulnerability assessment and loss estimates.
- **History:** Background information about previous occurrences of the hazard in Ventura County is provided here.
- **Location, Probability of Occurrence, and Magnitude:** To determine the risk of damage from a hazard, the likelihood of its occurrence, and the size or extent of the hazard when it occurs, must be evaluated. These factors are evaluated at locations with assets potentially at risk.

3.4 COASTAL AND RIVERINE FLOODING

3.4.1 Nature of Hazard

A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow on to adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that normally lie above the high-tide line.

A "floodplain" is the area adjacent to a watercourse or other body of water that is subject to recurring floods. Floodplains may change over time due to natural processes, changes in the characteristics of a watershed, or human activity such as construction of bridges or channels. In areas where flow contains a high sediment load, such as along the Santa Clara River in Ventura County, the course of a river or stream may shift dramatically during a single flood event. Coastal floodplains may also change over time as waves and currents alter the coastline.

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Inundation of structures, causing water damage to structural elements and contents.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.

- Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects.
- Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
- Release of sewage and hazardous or toxic materials as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.

Floods also cause economic losses through closure of businesses and government facilities; disrupt communications; disrupt the provision of utilities such as water and sewer; result in excessive expenditures for emergency response; and generally disrupt the normal function of a community.

In regions such as Ventura County that do not have extended periods of below-freezing temperatures or significant snowfall, floods usually occur during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. Ventura County is dry during the late spring, summer, and early fall and receives most of its rain during the winter months. The average annual precipitation in Ventura County ranges from 15.1 inches at the coast to 28.8 inches in the mountains near Ojai, but most of this precipitation occurs in the winter months. Further, the prevailing weather patterns during the winter and the orientation of the mountain ranges in the northern half of the county combine to produce extremely high-intensity rainfall. The peak historic rainfall intensity recorded by Ventura County rain gauge, occurred on February 12, 1992. Approximately 4.04 inches per hour during a 15-minute period at the Wheeler Gorge gauge approximately three miles northeast of Matilija Dam. Such intensities can produce severe flooding conditions, particularly in small watersheds where flash floods are likely.

Flash floods are particularly dangerous. The National Weather Service defines a flash flood as one in which the peak flow travels the length of a watershed within a six-hour period. These floods arise when storms produce a high volume of rainfall in a short period of time over a watershed where runoff collects quickly. They are likely to occur in areas with steep slopes and sparse vegetation. They often strike with little warning and are accompanied by high-velocity flow.

3.4.2 Disaster History

Damaging floods in Ventura County were reported as early as 1862. On average, floods causing damage have occurred every five years since then. A 1945 report by the Ventura County Flood Control District reported that floods of sufficient magnitude to cause extensive damage occurred in 1862, 1867, 1884, 1911, 1914, 1938, 1941, 1943, and 1944 (Warren 1945). The peak flows of the Santa Clara River from 1932 to 1998 that have led to flooding are listed in Table 4-4.

A 1943 Flood Control District report compared the flow rates occurring in March 1938 to those occurring in January 1943. Piru and Sespe Creeks had flow rates of 35,600 and 56,000 cubic feet per second (cfs), respectively, in 1938 and 20,000 and 44,000 cfs, respectively, in 1943. The Ventura River had a flow rate of 39,200 cfs in 1938 and 43,000 cfs in 1943. Warren (1945) estimated that the damage from the 1938 storm totaled about $1,010,000. The 1943 report showed numerous pictures of landslides, debris flows, flooded roads, and sediment-choked channels.

The largest and most damaging recorded natural floods in the Santa Clara and Ventura watersheds occurred in 1969. During these floods, the 50- and 100-year peak discharge levels were reached in many channels. The combined effects of the 1969 flood were disastrous: 13 people lost their lives, and property damage estimated at $60 million (1969 dollars) occurred. Homes in Casitas Springs, Live Oak Acres, and Fillmore were flooded and 3,000 residents in Santa Paula and several families in Fillmore were evacuated twice. A break in the Santa Clara River levee threatened the City of Oxnard. Much agricultural land, primarily citrus groves, was seriously damaged or destroyed. All over the county, transportation facilities, including roads, bridges, and railroad tracks, were damaged. The Fillmore, Oak View, and Ventura sewage treatment plants were severely damaged and dumped raw sewage into the Santa Clara and Ventura Rivers. The untreated sewage polluted the rivers and the beaches at their outlets into the ocean. In addition, sewer trunk lines were broken along the Ventura River and its tributary, San Antonio Creek. Suspended sediment concentrations and discharge in many streams greatly exceeded any previously measured levels in the flood-affected areas. Suspended sediment concentrations reached a maximum of about 160,000 milligrams per liter (mg/l) in the Santa Clara River at Saticoy, and the maximum daily sediment discharge was 20,000,000 tons during the storm peak.

After 1969, significant development in the Calleguas Creek watershed increased peak flows in that channel. Historically, flood flows in the Calleguas Creek portion of the Oxnard Plain were able to spread across the floodplain and deposit their sediment, creating the rich agricultural lands of the Oxnard Plain. Currently, the Oxnard floodplain is primarily used for year-round agricultural activities and the Calleguas Creek has been channelized through the construction of levees. However, the channel has insufficient capacity for the 50- and 100-year flows, leading to levee breaks and extensive storm damage of the year-round agricultural crops. The creek channelization has also caused increased sediment to be delivered to its outlet in Mugu Lagoon, a sensitive wetlands area.

In 1980, Calleguas Creek breached its levee in the Oxnard Plain and caused approximately $9,000,000 in damage to the Point Mugu Naval Base due to flooding and sediment deposition. In 1983, a Federal disaster was declared because of storm damage. Repairs to flood control facilities were estimated to cost $15,000,000. Improved channels in Moorpark and Simi Valley suffered severe damage from erosion during this event, and Calleguas Creek experienced record flooding. Damage to other public and privates facilities was estimated to be approximately $39,000,000, with little more than half that total due to damage to agricultural lands.

Table 3-1
Summary of Santa Clara River Peak Flows Leading to Flooding in Ventura County

Date	Peak Flow (cubic feet per second)
February 1932	22,200
March 1938	120,000
January 1943	80,000
January 1952	45,000
April 1958	52,200
February 1962	47,700
December 1965	51,900
December 1966	35,000
January 1969	165,000
February 1973	58,200
March 1978	102,200
March 1980	81,400
March 1983	109,700
February 1992	104,000
February 1998	84,000

3.4.3 Location, Probability of Occurrence, and Magnitude

Ventura County has three major river systems, which are shown in Figure 3-1. From west to east, they are the Ventura River (watershed area of 226 square miles); the Santa Clara River (watershed area of 1,600 square miles); and Calleguas Creek (watershed area of 312 square miles). These three systems flow into the coastal plain and pose a flooding threat to the most populous areas of the county. Numerous tributaries, most of which are small annual streams draining steep watersheds in the hills and mountains, flow into the main stem streams. The county's Pacific Ocean coastline is 43 miles long and consists of stretches of sandy beaches and rocky bluffs. Small inlets exist at the Ventura and Channel Island harbors and at Point Mugu Lagoon.

The coastal and riverine flood hazards in Ventura County can be broadly classified as follows:

Upland flooding: The mountainous terrain of northern Ventura County and the hills in the central and eastern parts of the county give rise to numerous annual streams, many draining into steep canyons. These streams are subject to floods of relatively short duration, often following high-intensity rainfall. Such floods may occur with little warning and carry large quantities of sediment and debris. Communities located adjacent to the upland areas, such as Fillmore, Ojai, Piru, and Santa Paula, are subject to this hazard. Many of the watersheds in question contain dams or basins designed to attenuate flow and trap debris, reducing the effects on downstream communities.

Broad floodplains: The Santa Clara River, Ventura River and Calleguas Creek watersheds drain to the broad coastal plain in the southern part of Ventura County. This plain is subject to inundation during longer intervals of rain, typically as the result of a series of winter storms. These floods typically have longer duration and may be forecast with more warning time. The

Calleguas Creek, which crosses the majority of the county's urban areas, is also subject to extensive flooding. Numerous levees have been built to protect the agricultural lands along the river, which due to its sediment load has historically migrated across the valley floor during flooding intervals. These levees are typically not sufficient to withstand severe flood events.

Coastal flooding: The county's 43-mile coastline is subject to tidal flooding, storm surge and wave action, which usually occurs during winter storms. The effects of coastal flooding are generally confined to a narrow area immediately adjacent to the tidal zone. However, the effects of coastal flooding can be severe – in addition to wave action, beach and bluff erosion can cause significant damage to coast-side homes and infrastructure. Coastal flooding may also occur as the result of tsunamis, which are extreme tidal surges caused by distant earthquakes or massive undersea landslides.

For purposes of conducting a risk assessment at a given location, it is necessary to determine the likelihood of flooding at that location. Factors contributing to the frequency and severity of riverine flooding include the following:

- Rainfall intensity and duration.
- Antecedent moisture conditions.
- Watershed conditions, including steepness of terrain, soil types, amount and type of vegetation, and density of development.
- The existence of attenuating features in the watershed, including natural features such as swamps and lakes and human-built features such as dams.
- The existence of flood control features such as levees and flood control channels.
- Velocity of flow.
- Availability of sediment for transport, and the erodibility of the bed and banks of the watercourse.

These factors are evaluated using a hydrologic analysis to determine the probability that a discharge of a certain size will occur and a hydraulic analysis to determine the characteristics and depth of the flood that results from that discharge.

Similar analyses are conducted for coastal flood hazards. The extent of flooding depends on the probability that a storm of a certain magnitude will occur and the topography of the coastline. In addition to flooding due to storm surge, coastal storms may be accompanied by the additional hazards associated with wave action.

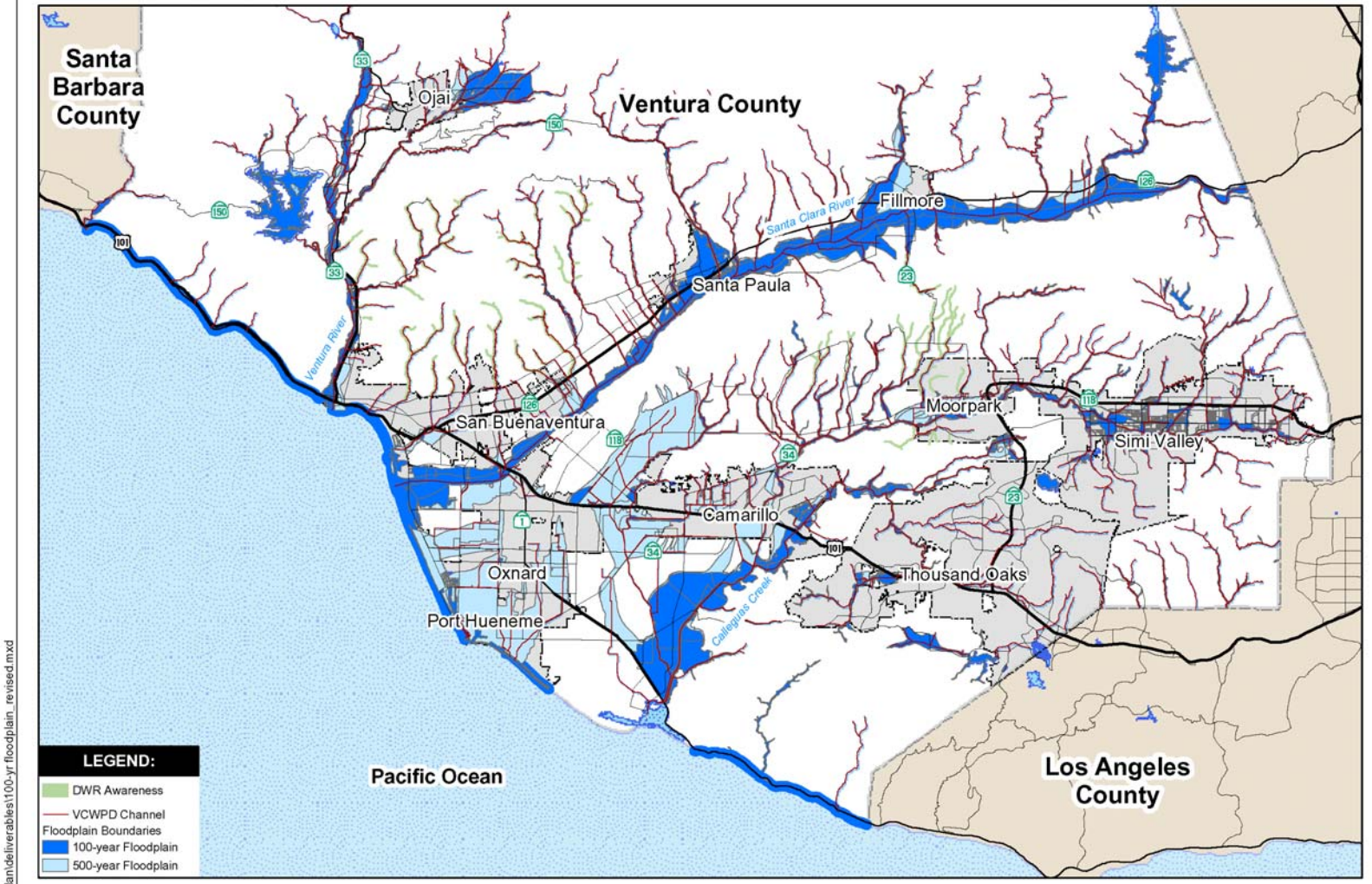
The magnitude of flood used as the standard for floodplain management in the United States is a flood having a probability of occurrence of 1 percent in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the National Flood Insurance Program (NFIP), which is described in Section 4.3.1.1. FEMA has prepared FIRMs for the unincorporated areas of Ventura County and for each of the incorporated cities in the county. (FEMA has not prepared flood hazard data for Federal lands, which include the Los Padres National Forest.) The FIRMs show 100-year floodplain boundaries for most flooding sources in the county, as well as for coastal areas. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood

having a 0.2 percent chance of occurrence in any given year. Rivers and streams where FEMA has prepared detailed engineering studies may also have designated floodways. A designated floodway is the channel of a watercourse and portion of the adjacent floodplain that is needed to convey the base or 100-year flood event without increasing flood levels by more than 1 foot and without increasing velocities of flood water.

The FIRMs do not provide data for all flood hazards in the county, however. The California Department of Water Resources (DWR) recently prepared "awareness maps" to delineate floodplain boundaries in areas (excluding Federal lands) where no information is shown on the FIRMs. These areas are generally located in less densely populated areas of the county.

Figure 3-1 shows 100- and 500-year floodplains for flooding sources throughout Ventura County. This map is based on flood hazard data obtained from the FIRMs, awareness maps, and 100-year flood data prepared by the District.

The extent of floodplains in Ventura County is greatly affected by structures built to control flooding. These structures have been built throughout the populated southern half of the county and are operated and maintained by a number of agencies. Major flood control structures include the dams, which are described in detail in Section 3.5 and listed in Tables 3-3 and 3-4, and detention basins and debris basins, which are listed in Table 3-5, levee systems and flood control channels. A number of levees have been built along the Santa Clara River to protect agricultural lands. However, these levees are generally not sufficient to withstand larger floods, such as the 100-year flood. Other major levee systems include the Sespe Creek in Fillmore; Calleguas Creek, Pacific Coast Highway to Hueneme Road; and the Arroyo Simi in Moorpark. Major flood control channels include the Live Oak Diversion, the Robles Diversion, the Arroyo Simi in Simi Valley, and Revolon Slough/Beardsley Wash.


Santa Barbara County
Ojai
Ventura County
Fillmore
Santa Clara River
Santa Paula
Ventura River
San Buenaventura
Moorpark
Simi Valley
Camarillo
Oxnard
Thousand Oaks
Port Hueneme
Calleguas Creek
Pacific Ocean
Los Angeles County
LEGEND:
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County of Ventura
Prepared by URS for the County of Ventura - Information Systems Department - GIS Division
State Plane Coordinate System California Zone V - NAD 27
This map was compiled from records and computations
Printed on : October 28, 2004
Fig. 3-1 Hazard Profile: Flood
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3.5 DAM FAILURE INUNDATION

3.5.1 Nature of Disaster

Dam failure can result in severe flood events. A dam failure is usually the result of the age of the structure, inadequate spillway capacity, design standards used in construction, or structural damage caused by an earthquake or flood. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning and evacuation time for the people living downstream. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs as a result of the momentum of the flood caused by the sediment-laden water, flooding over the channel banks, and impact debris carried by the flow.

A dam subject to state regulations concerning construction and operation is called a “state-size” dam. Such dams are more than 25 feet in height and hold back more than 15 acre-feet of water or hold more than 50 acre-feet of water with a dam more than 6 feet in height. Table 3-2 lists state-size dams that are operated by the District. Table 3-3 lists state-size dams in Ventura County that are not operated by the District. Table 3-4 lists dams and basins that are not state-size.

Table 3-2
Ventura County Watershed Protection District State-Size Dams

Dam	Year Completed	Capacity (acre-feet)
Zone 1		
Matilija Dam	1949	Design: 7,018 acre-feet After notching: 3800 acre feet (excluding sedimentation losses) Original Spillway capacity: 60,000 cubic feet per second at water elevation 1137 feet
Stewart Canyon	1963	Level Capacity: 64.6 acre-feet Max Debris Capacity: 203.5 acre-feet
Zone 2		
Arundell Barranca	1970 (Modified 1995)	Flood storage: 138 acre-feet Max Debris Volume: 17.5 acre-feet
Ferro Debris Basin	1933 (1992 Embankment Repair)	Level Capacity (top of spillway): 21.4 acre-feet Max Debris Capacity: 23.4 acre-feet
Zone 3		
Lang Creek Detention Basin	2004	Flood Storage (Top of Spillway): 263 acre-feet
Las Llajas	1981	Flood Storage: 1,250 acre-feet Max Debris Capacity: 280 acre-feet
Lang Creek Debris Basin	2004	Flood Storage (Top of Spillway): 16.7 acre-feet
Runkle Debris Basin (Runkle Canyon Dam)	1949	Level Capacity: 99.8 acre-feet Max Debris Capacity: N/A
Sycamore Canyon	1981	Flood storage: 660 acre-feet Max Debris Capacity: 107 acre-feet

Table 3-3
State-Size Dams Not Operated by the Ventura County Watershed Protection District

Dam or Reservoir Name	Owner	Capacity (acre-feet)
Zone 1		
Casitas Dam	U.S. Bureau of Reclamation	245,000
Senior Canyon Dam	Senior Canyon Mutual Water Company	78
Zone 3		
Bard Reservoir Dam (Wood Ranch)	Calleguas Municipal Water District	11,000
Lake Eleanor Dam	Conejo Open Space Conservation Agency	128
Santa Felicia Dam (Lake Piru)	United Water Conservation District	100,000
Zone 4		
Lake Sherwood Dam	Sherwood Valley Homeowners Association	2,694
Las Virgenes Reservoir Dam (Westlake)	Las Virgenes Municipal Water District	10,000
Los Angeles County		
Bouquet Canyon	Los Angeles Department of Water and Power	36,500
Castaic Dam	California Department of Water Resources	325,000
Pyramid Dam	California Department of Water Resources	179,000

Table 3-4
Non-State-Size Dams and Basins Located in Ventura County

Basin/Dam Name	Year Completed	Watershed Area (acres)	Capacity (acre-feet)
Zone 1			
Dent Debris Basin	1981	27	2.5
Live Oak Detention Basin	2002	794	17.8
McDonald Detention Basin	1998	565	14.5
Zone 2			
Adams Barranca Debris Basin	1994	5,408	44.6
Cavin Road Debris Basin	1933	90	2.5
Fagan Canyon Debris Basin	1994	1,856	44.6
Franklin Barranca Debris Basin	1934	330	3.1
Jepson Wash Debris Basin	1961	858	21.0
Real Wash Debris Basin	1964	160	13.6
Warring Canyon Debris Basin	1952	695	20.5
Zone 3			
Castro Williams Debris Basin	1955	637	50.0
Coyote Canyon Debris Basin	1955	4,550	15.2
Crestview Debris Basin	1934	80	1.5
Edgemore Debris Basin	1955	105	1.8
Erringer Road Debris Basin-Upper	1957	105	20.5
Fox Barranca Debris Basin	1956	3,100	9.1
Gabbert Canyon Debris Basin	1963	2,350	10.1
Honda West Debris Basin	1955	740	6.4
Las Posas Estates Dam	1992	168	15.3
North Simi Drain Dam	2002	1,200	50.0
Peach Hill Wash Detention Dam	1988	1,589	25.5
Ramona Detention Dam	1992	254	25.5
Santa Rosa Road Debris Basin No. 2	1957	1,101	4.5
South Branch Arroyo Conejo Debris Basin	1995	2,542	18.4
Tapo Hills No. 1 Debris Basin	1971	104	25.5
Tapo Hills No. 2 Debris Basin	1977	133	15.6
West Camarillo Hills East Branch Debris Basin	1955	92	1.1
West Camarillo Hills West Branch Debris Basin	1955	74	3.2

3.5.2 Historic Dam Failure

Only one dam failure has had catastrophic effects in Ventura County. The St. Francis Dam in the San Francisquitos Canyon in Los Angeles County (tributary to the Santa Clara River watershed) was constructed to provide 38,000 acre-feet of storage for water from the Los Angeles–Owens River Aqueduct in close proximity to Los Angeles. The midnight collapse in March 1928 occurred after the newly constructed concrete-arch dam was completely filled for the first time. The resulting flood swept through the Santa Clara Valley in Ventura County toward the Pacific Ocean, about 54 miles away. At its peak the wall of water was said to be 78 feet high; by the time it hit Santa Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Almost everything in its path was destroyed including structures, railways, bridges, livestock, and orchards. By the time the flood had subsided, parts of Ventura County lay under 70 feet of mud and debris. Nearly 500 people were killed, and damage estimates topped $20 million. The communities of Piru, Fillmore, Santa Paula, Bardsdale, Saticoy, Montalvo, and El Rio sustained extensive life and property loss from the flood. There is no record of any dam located in Ventura County failing.

3.5.3 Location, Probability of Occurrence, and Magnitude

FEMA characterizes a dam as high hazard if it stores more than 1,000 acre-feet of water, is higher than 150 feet tall, and has the potential to cause downstream property damage. The hazard ratings for dams are set by FEMA and confirmed with site visits by engineers. Most dams in the county are characterized by increased hazard potential due to downstream development and increased risk as a result of structural deterioration, current inadequate spillway capacity due to early-year design standards and new hydrologic information.

The California Division of Safety of Dams (DSOD) regulates state-size dams and inspects these dams annually to ensure that the dams are in good operating condition. Also, studies are performed for each state-size dam to establish the flood inundation limits resulting from a dam breach that occurs during the design storm, as determined by DSOD regulations. The resultant maps contain flood-wave arrival time estimates and flood inundation limits. These maps are generated by the District and provided to DSOD and local communities.

Figure 3-3 shows the locations and extent of the dam failure hazard areas for Ventura County. This map provides an approximate assessment of risk and does not indicate specific areas that may be affected by failure of specific dams. Detailed information of the latter type may be obtained from the agency that owns the dam. The map shows that dam failures may occur outside of Ventura County but still pose a threat. In particular, if dams within the Santa Clara River watershed in Los Angeles County were to fail, the resulting flood would affect the Santa Clara River corridor, including the cities of Santa Paula and Oxnard as demonstrated by the 1928 event.

The largest of the state-size water storage reservoirs (Pyramid, Castaic, and Piru) are located on the Santa Clara River system and are intended to be used as flood and/or debris control during storm events. To cause a catastrophic flood, dam failure would have to occur during extreme storm events that cause inflow to the basin above the emergency spillway freeboard capacity. Many of the basins are intended to capture debris and do not provide significant detention benefits for downstream flow. A few of the older District basins have earthen spillways that are

subject to erosion and scour during overtopping. Sycamore Dam was originally designed to be a retention basin but does not have the design capacity available at this time and thus could overtop during an extreme storm event and cause flooding in downstream areas.

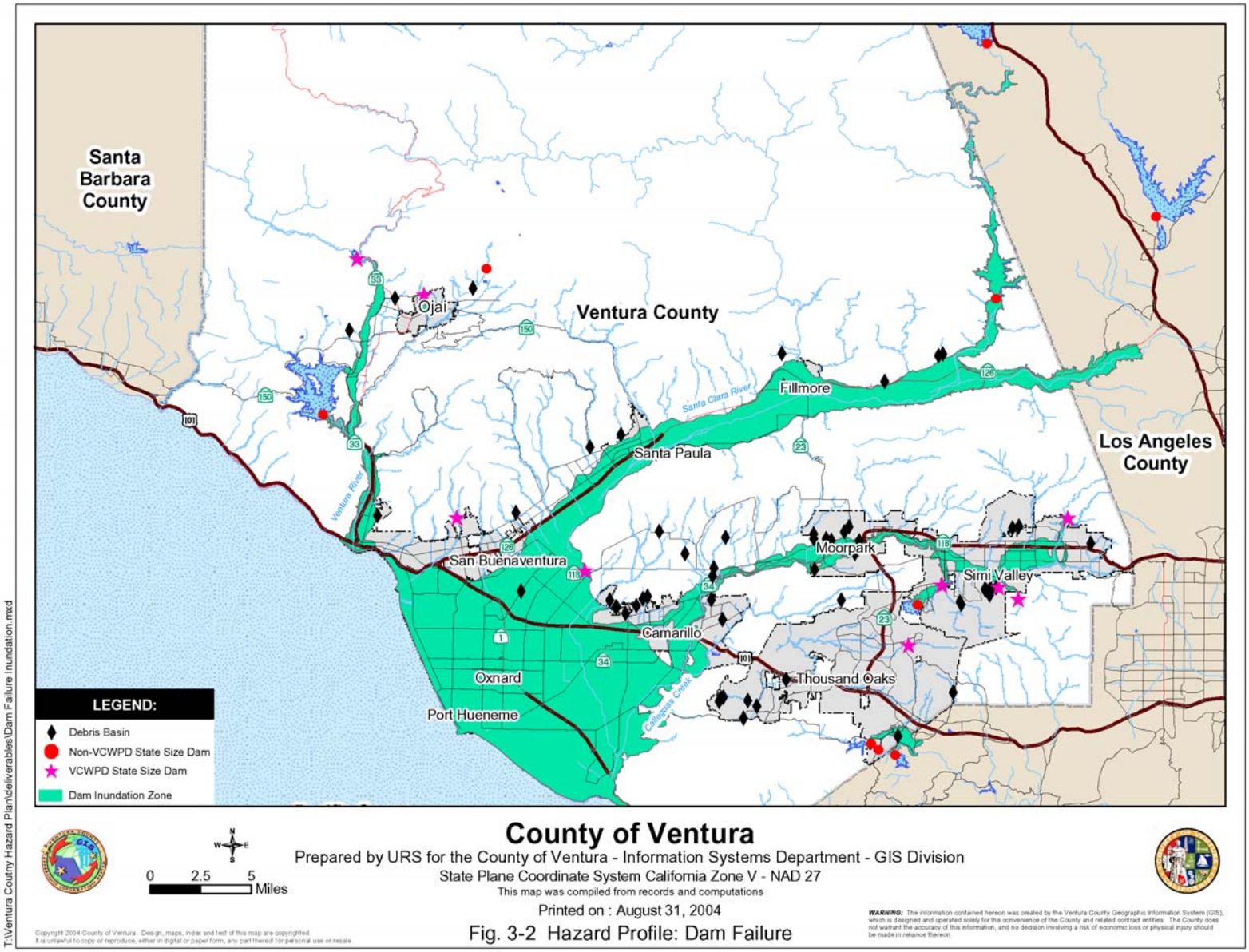
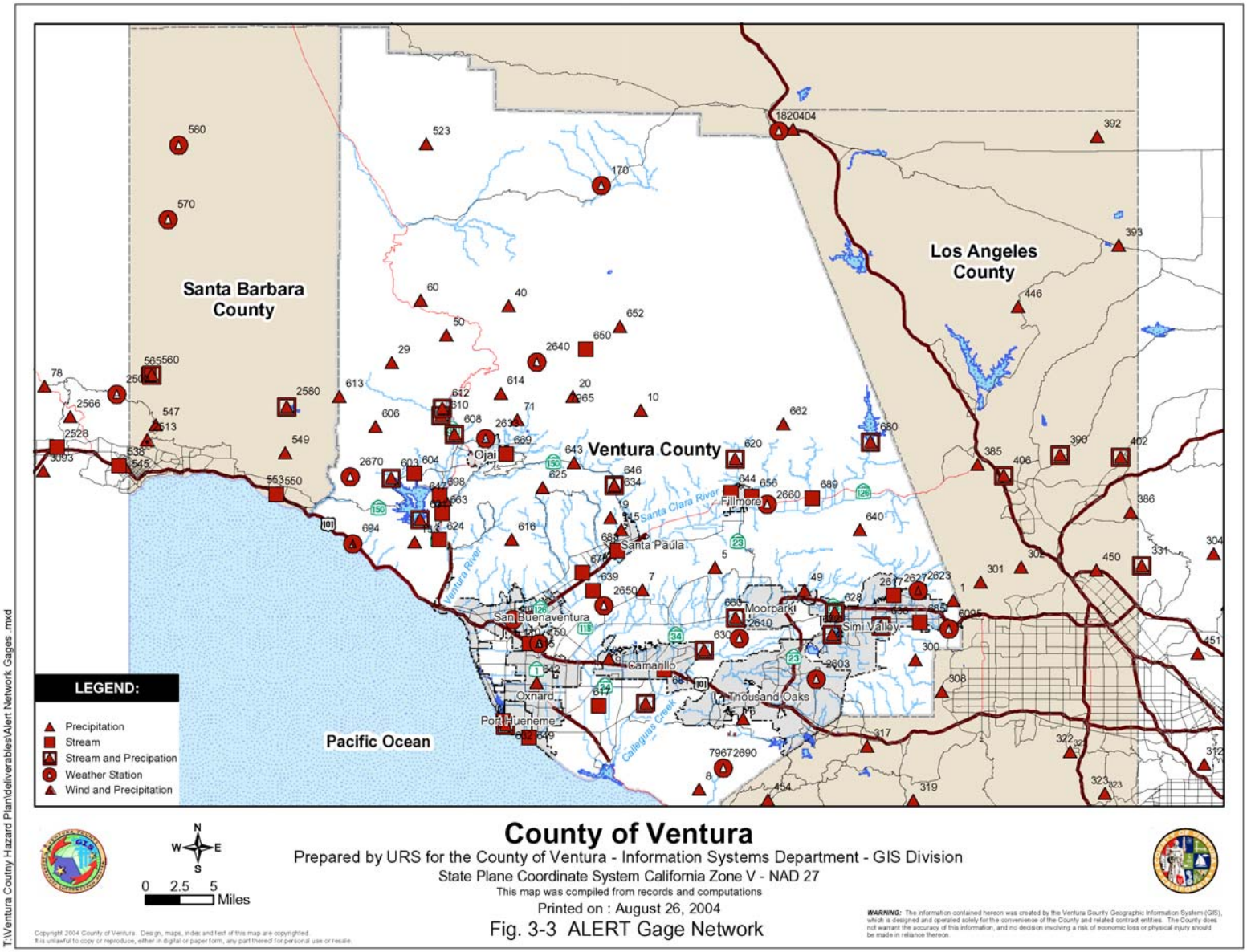


Fig. 3-2 Hazard Profile: Dam Failure


Santa Barbara County
Los Angeles County
Ventura County
Pacific Ocean
Ojai
Santa Paula
Fillmore
San Buenaventura
Moorpark
Simi Valley
Camarillo
Oxnard
Port Hueneme
La Thousand Oaks
Santa Clara River
Ventura River
Calleguas Creek
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County of Ventura
Prepared by URS for the County of Ventura - Information Systems Department - GIS Division
State Plane Coordinate System California Zone V - NAD 27
This map was compiled from records and computations
Printed on : August 26, 2004
Fig. 3-3 ALERT Gage Network
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3.6 POST-FIRE DEBRIS FLOW

3.6.1 Nature of Event

Wildfires are a common occurrence in the hills and mountainous regions of Ventura County. They generally occur in the late summer and fall, when vegetation is dry and weather conditions are favorable for the occurrence and spread of fires. By reducing or destroying vegetative cover and altering soil characteristics, fires may result in conditions that can significantly increase runoff and erosion when winter rains begin to fall. These conditions may result in a debris flow (also referred to as mud flow) – a slurry of water, sediment, and rock that converges in a stream channel.

Wildfires significantly increase the threat of erosion, flooding, and debris flows through the following processes:

- **Reduced infiltration and increased runoff:** The fire's consumption of vegetative cover increases exposure of the soil surface to raindrop impact. Soil heating destroys organic matter that binds the soil together. Extreme heating may also cause the development of water-repellant, or "hydrophobic," soil conditions that further reduce infiltration.
- **Changes in hillslope conditions:** Fires remove obstructions to overland flow, such as trees, downed timber, and plants, increasing flow velocity and therefore erosive power. Increased sediment movement also fills depressions, reducing storage capacity and further contributing to increased velocity and volume of flow. These factors combine to allow more of the watershed to contribute flow to the flood at the same time, increasing the volume of the flood.
- **Changes in channel conditions:** Increased overland flow and sediment transport result in increased velocity and volume of flow in defined channels. Channel erosion increases, as do peak discharges.

The occurrence of erosion, floods, and debris flows in burned areas also depends on precipitation intensity; storms with high intensity are more likely to initiate the processes described above and result in flood events. Additionally, easily eroded soils facilitate changes in hillslope conditions and increase the volume of runoff. Both of these conditions are likely to occur in Ventura County.

In extreme situations, the conditions described above combine to form a debris flow. These flows are often the most destructive events resulting from heavy rainfall in fire-affected areas. They occur with little warning, carry vast quantities of rock and other material, and strike objects with extreme force. Due to their viscosity and density, debris flows can move or carry away objects as large as vehicles and bridges, and they may travel great distances down canyons and stream valleys. Debris flow fronts may also travel at high speeds, exceeding 50 miles per hour. In most cases, only large basins designed specifically to trap these flows are capable of resisting the forces that accompany them.

Table 3-5
Summary of Ventura County Watershed Protection District Debris and Detention Basin Data

Basin/Dam Name	Watershed Area (Acres)	Maximum Debris Storage Capacity (cubic yards)	Annual Sediment Production (cubic yards)	Expected Debris Production for 100-Year Storm (cubic yards)
Zone 1				
Dent Debris Basin	27	4,100	263	1,624
Live Oak Basin	794	28,700	N/A	N/A
McDonald	565	23,400	N/A	N/A
San Antonio Creek Debris Basin	6,280	30,000	4,586	455,700
Stewart Canyon Creek Debris Basin	1,266	328,300	2,781	209,000
Zone 2				
Adams Barranca Debris Basin	5,408	84,200	3,792	149,000
Arundell Barranca Dam	1,754	28,266	5,308	22,576
Cavin Road Debris Basin	90	8,700	362	13,413
Fagan Canyon Debris Basin	1,856	88,400	4,800	106,845
Franklin Barranca Debris Basin	330	24,500	890	11,507
Jepson Wash Debris Basin	858	54,750	3,953	55,800
Real Wash Debris Basin	160	31,600	5,225	11,500
Warring Canyon Debris Basin	695	59,500	5,962	52,400
Zone 3				
Castro Williams Debris Basin	330	141,800	N/A	12,428
Coyote Canyon Debris Basin	4,550	25,300	2,938	152,459
Crestview Debris Basin	80	11,100	100	1,005
Edgemore Debris Basin	105	4,000	276	1,188
Erringer Road Debris Basin - Upper	105	39,400	900	11,633
Ferro Debris Basin	395	37,700	451	7,758
Fox Barranca Debris Basin	3,100	19,300	3,060	99,181
Gabbert Canyon Debris Basin	2,350	49,050	4,742	56,900
Honda West Debris Basin	740	14,300	129	55,662
Las Llajas Canyon Detention Dam	4,384	451,733	15,200	362,000
Las Posas Estates Dam	168	2,726	655	1,018
Peach Hill Wash Detention Dam	1,589	5,676	350	4,541
Ramona Detention Dam	254	4,665	284	1,018
Runkle Canyon Detention Basin	958	161,000	3,200	41,613
Santa Rosa Road Debris Basin No. 2	1,101	15,000	612	12,505
South Branch Arroyo Conejo Debris Basin	2,542	29,750	10,000	100,850
Sycamore Canyon Dam	4,380	172,500	1,000	59,260
Tapo Hills No. 1 Debris Basin	104	51,820	440	5,730
Tapo Hills No. 2 Debris Basin	133	56,000		4,000
West Camarillo Hills East Branch Debris Basin	92	4,800	183	1,432
West Camarillo Hills West Branch Debris Basin	74	21,500	1,103	1,268

3.6.2 Historical Post-fire Debris Flows

Evidence of debris-flow movement was widespread following the 1969 storms throughout the mountain ranges of Ventura County. Debris flows occurred in numerous watersheds, including Cozy Dell Canyon, Stewart Canyon, Senior Canyon, Orcutt Canyon, Jepson Wash, and others. Mudflows also occurred in 1969 and 1971 in watersheds that were underlain by fine-grained sedimentary rocks and had been recently burned by wildfires near Ojai. Witnesses to the mudflows described surges of what appeared to be mud covered with water behind a moving boulder.

Post-fire debris flows have occurred more recently in neighboring counties, including San Bernardino County. On Christmas 2003, after several inches of rain fell down on the hillsides burned by the October 2003 wildfires, a 10-15 foot high wall of rapidly moving debris swept down Waterman Canyon killing 16 people. Additionally, 52 homes were damaged and losses of residential structures, commercial buildings, and infrastructure were estimated to be $38 million.

Table 3-6
Ventura County Fires over 1,000 Acres, 1953–2003

Name	Start Date	Acres Affected	Name	Start Date	Acres Affected
Ventu Park	11/55	13,840	Squaw Flat	10/84	6,010
Hoffman (Red Mtn.)	08/55	1,200	Wheeler	7/85	118,000
Sexton Canyon	12/56	2,500	Black Mountain	7/85	1,025
Little Sycamore	12/56	1,617	Peach Hill	10/85	1,861
Lake Sherwood	12/56	7,747	Pioneer	10/85	1,238
Conejo Grade	06/57	1,000	South Tapo	10/85	16,995
Santa Susana Pass	07/57	1,482	Ferndale	10/85	47,064
Boulder Creek	08/57	3,987	Rock Peak	10/85	1,983
Calumet Canyon	10/58	17,000	Fish	10/87	4,341
Broome Ranch	11/59	1,350	Peppertree (Control)	11/87	1,088
Doncon & Fletcher	1/61	2,700	Hall-Barlow (Control)	05/88	2,227
Culbert Lease	12/62	5,525	Piru	09/88	12,068
Warring Canyon	08/67	3,808	Kuehner	09/88	3,761
Sence Ranch	10/67	17,431	Pacific	10/89	3,153
Ditch Road	10/67	11,20	Los Padres	1991	2,849
Parker Ranch	10/67	25,000	Broome Ranch (Control)	07/92	1,310
Timber Canyon	10/67	11,448	Green Meadow	10/93	38,477
Torrey Canyon	11/69	1,800	Steckel	10/93	27,088
Ventura City Foothill	09/70	5,241	Dragnet	10/93	1,962
Mayo Brush	09/70	4,390	Wheel	10/93	1,475
Goodenough Road	10/71	2,100	Boundary 1	07/95	1,010
Potrero	09/73	12,214	Aliso II	11/96	1,200
Sence Ranch	09/73	1,008	Sexton II - Control	09/96	1,273
South Mountain	11/75	6,500	Grand	07/96	10,949
Potrero	12/75	2,773	Hopper - Control	08/97	1,500
Los Robles	06/76	2,000	Hopper	08/97	24,793
Santa Susana	09/79	1,003	Piru	10/98	12,613
Creek Road	09/79	32,000	Ranch	12/99	4,371
Hill Canyon	10/80	8,700	Leslie (Control)	06/99	1,087
South Mountain	10/80	3,600	Bradley	12/99	3,332
Loma	06/81	1,331	Holser	07/99	2,525
Oat Mountain	10/81	6,005	Piru	10/03	29,034
Matilija	7/83	4,600	Simi Valley	10/03	35,620
Grimes	5/84	11,164			

Control = controlled burn

3.6.3 Location, Probability of Occurrence, and Magnitude

A comprehensive, watershed-by-watershed analysis of debris flow hazards is not available. However, an exposure analysis was conducted with consideration of existing analyses performed by the District and the locations of existing basins designed to reduce the threat from debris flow hazards.

The District uses a computer program called SCOTSED to determine debris quantities and bulked flow estimates for design storms. SCOTSED relies on an equation generated through multiple linear regressions of channel cleanout data with rain gauge data and parameters representing watershed characteristics to estimate the expected debris load from a watershed. The SCOTSED parameters include the following:

- **Fire factor** represents the condition of a watershed after a burn; District design standards assume that a debris basin is designed to receive debris 4.5 years after a burn occurs. After a burn, it is assumed that six months will elapse before a major storm will occur.
- **Slope failure** represents the area of identified unstable slopes and soils in a watershed expected to yield significant quantities of sediment.
- **Elongation ratio** is a geometric factor that accounts for the shape of the watershed (long and narrow with relatively short overland flow paths versus short and broad with relatively long overland flow paths).
- **Rainfall factor** is generated using the 24-hour precipitation for a design storm to represent the peak rainfall that occurs and the 10-day total rainfall that occurs to represent the antecedent moisture conditions.

SCOTSED also calculates the increase in peak runoff rates due to bulking of the flow based on data the District obtained from Los Angeles County. Because the SCOTSED algorithm was developed using volumes of deposited suspended and bedload material, it does not include an estimate of the wash load quantity. The increase in peak runoff rates due to bulking based on these data range from an average of 40 to 60 percent.

The District used SCOTSED to evaluate potential debris production following the 2003 Piru and Simi wildfires, which burned over 75,000 acres. The predicted bulking factors for the analyzed watershed ranged from an average increase of 42 percent at the lower storm recurrence intervals to an average increase of 54 percent for the 100-year storm. The average increase in sediment yield from the watersheds at all design storm levels from the SCOTSED program was 160 percent. For example, the Pole Creek watershed tributary to the Santa Clara River was estimated to have a 100-year peak flow increase from 5,740 cfs to 9,930 cfs due to bulking, and the 100-year sediment yield from the watershed was estimated to increase from 173,600 cubic yards (cy) to 485,400 cy due to the burn. The Tapo Canyon watershed tributary to Arroyo Simi was estimated to have a 100-year peak flow increase from 3,469 to 5,342 cfs due to bulking, and the 100-year sediment yield from the watershed was estimated to increase from 149,100 cy to 436,30 cy. Because the winter of 2003–2004 was drier than normal, significant debris flows did not occur. However, these analyses demonstrate the significant increase in the risk of a damaging event following an extensive wildfire (see Table 3-6).

To reduce the threat posed by debris flows in the hills and mountainous areas, the District (formerly known as the Ventura County Flood Control District), Federal agencies, and private landowners have constructed a network of debris basins in the canyons and stream valleys above populated areas. Basins operated by the District are shown in Table 3-5. These basins are designed to trap sediment and rock before it reaches populated areas or clogs downstream channels, bridges, and culverts. The District periodically removes accumulated debris from its basins, cleaning the basins when the debris storage reaches 25 percent of the estimated 100-year debris inflow. Aerial topography of the basins is obtained each year and the current debris contours are compared to the design basin elevations to generate an estimate of the debris storage and compare it to the 100-year estimate. Current District design standards require a basin to have enough storage to hold 125 percent of the estimated 100-year debris inflow so that it can reach the 25 percent storage level and still have sufficient space for the expected 100-year debris flow.

To develop debris flow hazard information that could be used for the risk assessment in this plan, the following information was considered:

- The level of wildfire risk.
- The potential for slope failure.
- The existence of development in downstream areas.
- The existence of District-operated debris basins, and whether those basins are adequate to provide protection during the occurrence of a 100-year event. As shown in Table 3-5, 10 District basins may not have adequate capacity to contain debris produced during a 100-year event.

Figures 3-4 A, B, C, and D show locations where debris flow hazards may pose a threat to downstream development, based on the factors noted above. Flood boundaries shown on these maps are not based on calculations of probability, volume and depth; rather, they represent a qualitative assessment of whether a debris flow may occur. For purposes of risk assessment, it is estimated that a debris flow would affect up to 200 feet on either side of the stream channel in question. It should be noted that this exposure analysis is not intended to be comprehensive. Debris flows may occur in canyons in which adequately sized debris basins have been constructed, as well as in canyons in more remote areas or other areas not considered in this analysis.

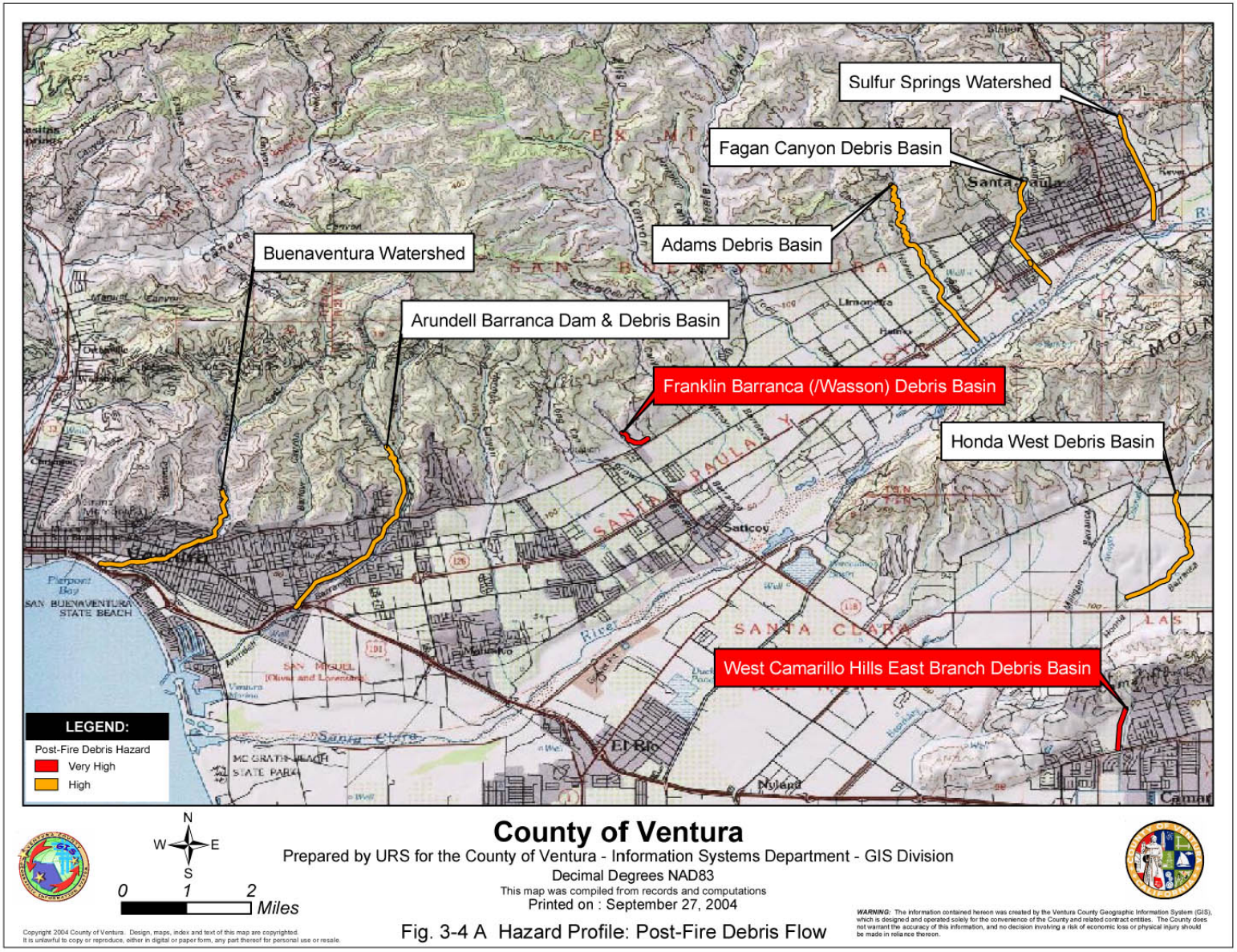


Fig. 3-4 A Hazard Profile: Post-Fire Debris Flow

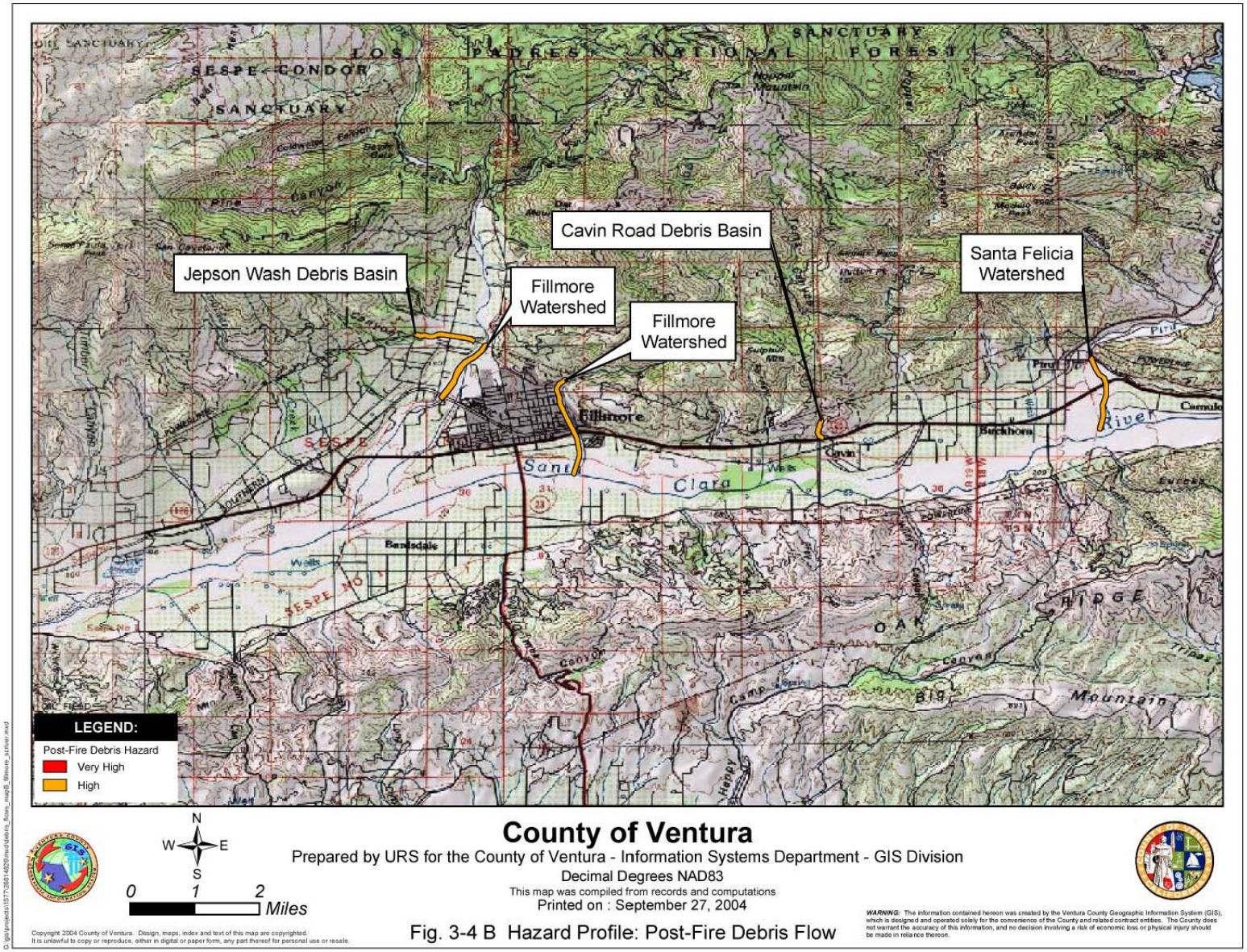


Fig. 3-4 B Hazard Profile: Post-Fire Debris Flow

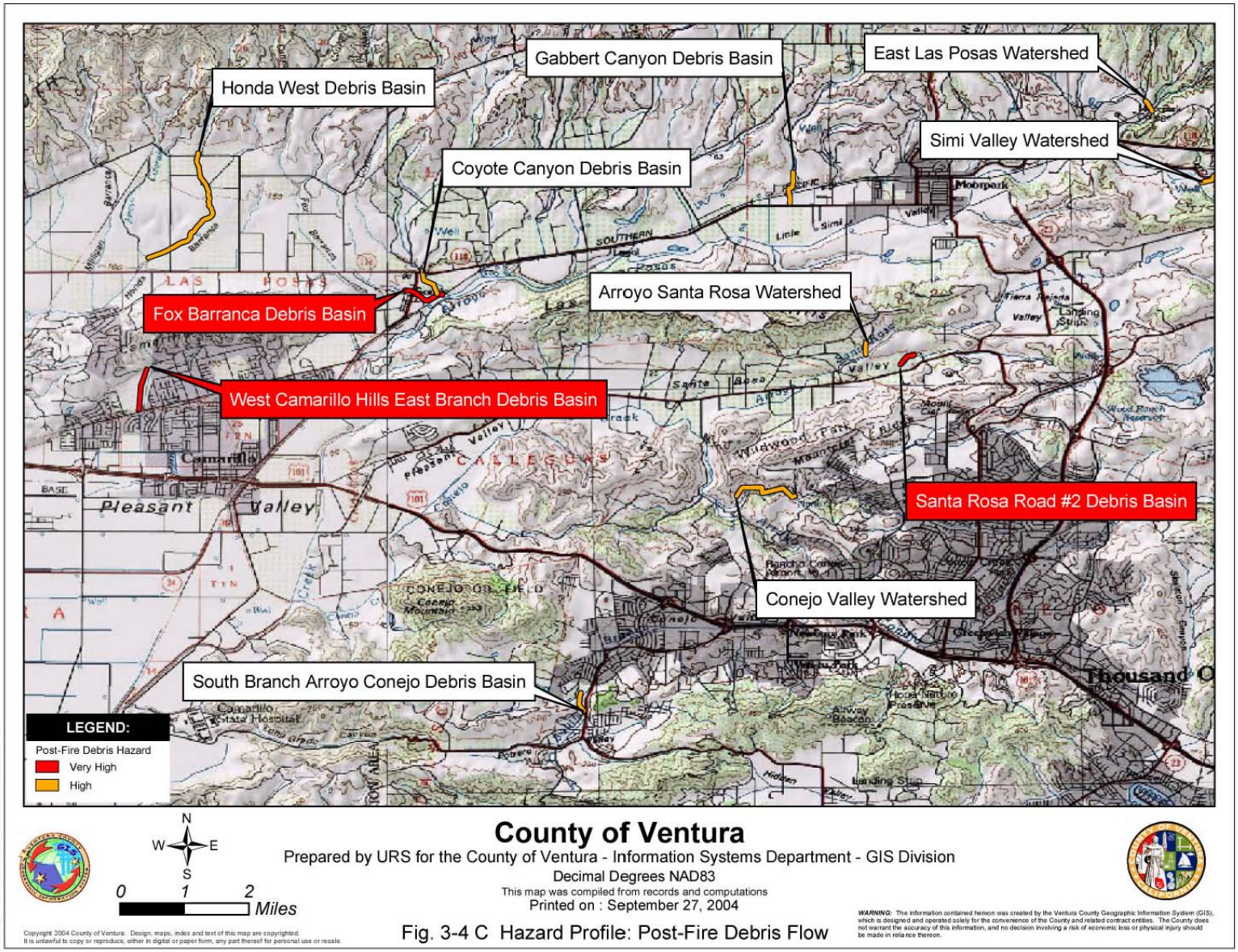


Fig. 3-4 C Hazard Profile: Post-Fire Debris Flow

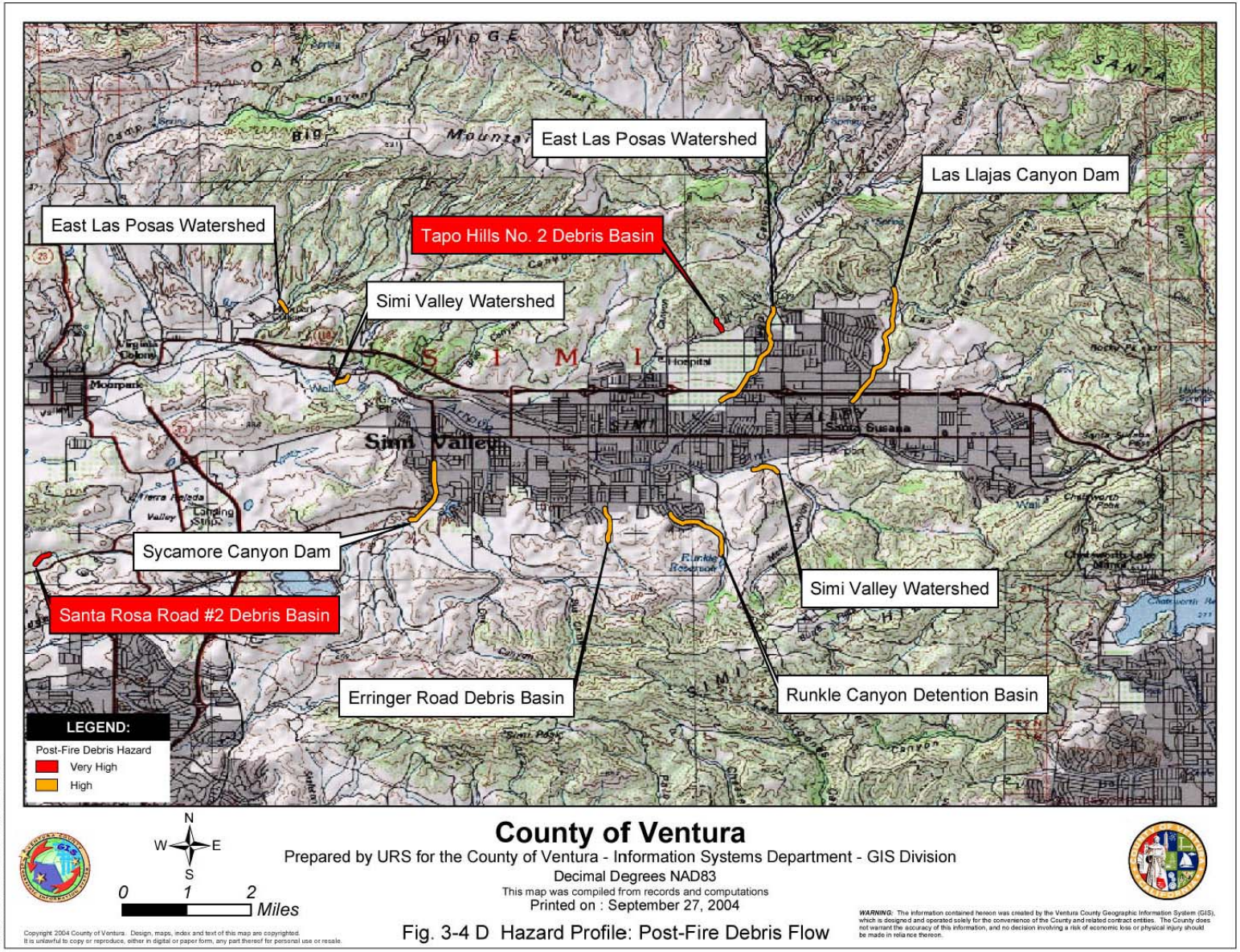


Fig. 3-4 D Hazard Profile: Post-Fire Debris Flow

3.7 ASSET INVENTORY

Assets identified for the risk assessment include population, buildings, and critical facilities and infrastructure that may be affected by hazard events. Table 3-8 provides abbreviations and average replacement costs used for critical facilities and infrastructure listed in all subsequent exposure/loss tables. Table 3-9 provides the total inventory and exposure estimates for the critical facilities by jurisdiction. Table 3-10 shows the estimated total inventory for infrastructure by jurisdiction.

3.7.1 Population

Population data were obtained from the 2000 U.S. Census. Data was collected at the census block level for the county. The county's population for 2000 was 758,063.

3.7.2 Commercial and Residential Structures

Estimated numbers of residential and commercial buildings and replacement values for those structures were obtained from HAZUS by census block. A total of 227,323 residential buildings were considered in this analysis. They included: single-family dwellings, mobile homes, multi-family dwellings, temporary lodgings, institutional dormitory facilities, and nursing homes. A total of 3,228 commercial buildings were analyzed as well. They included: retail trade, wholesale trade, personal and repair services, professional and technical services, banks, medical offices, entertainment and recreational facilities, theaters, and parking facilities.

3.7.2.1 Repetitive Loss Structures

As described in Section 1.1, the elimination of "repetitive loss" properties is a primary goal of the Flood Mitigation Assistance (FMA) Program. Repetitive loss structures are buildings identified by FEMA that, since 1978 and regardless of any change(s) of ownership during that period, have experienced one of the following:

- Four or more paid flood losses of more than $1,000 each
- Two paid flood losses within a 10-year period that, in the aggregate, equal or exceed the current value of the insured property
- Three or more paid losses that, in the aggregate, equal or exceed the current value of the insured property

In recent years, the high incidence of claims to repetitively damaged structures, known as repetitive loss properties, has become a major problem under the NFIP. While less than one-percent of the nation's 4.4 million properties currently insured by the program are repetitive loss properties, they account for 38 percent of all program claim costs. Since 1978, the total cost these repetitive loss properties to the program have been about $4.6 billion. As such, FEMA has been working at the Federal level and with State and local governments to reduce the losses experienced by repetitively flooded properties. In particular, in 2001, FEMA created a strategy to target the most frequent and costly repetitive loss properties by phasing out coverage or begin charging full and actuarially based rates for repetitive loss property owners who refuse to accept FEMA's offer to purchase or mitigate the affected buildings. In 2003, FEMA has established a

national priority to fund mitigation projects that address NFIP repetitive flood loss properties. Eligible projects include the mitigation of NFIP repetitive loss properties through: acquisition, relocation, elevation, floodproofing, and minor structural projects.

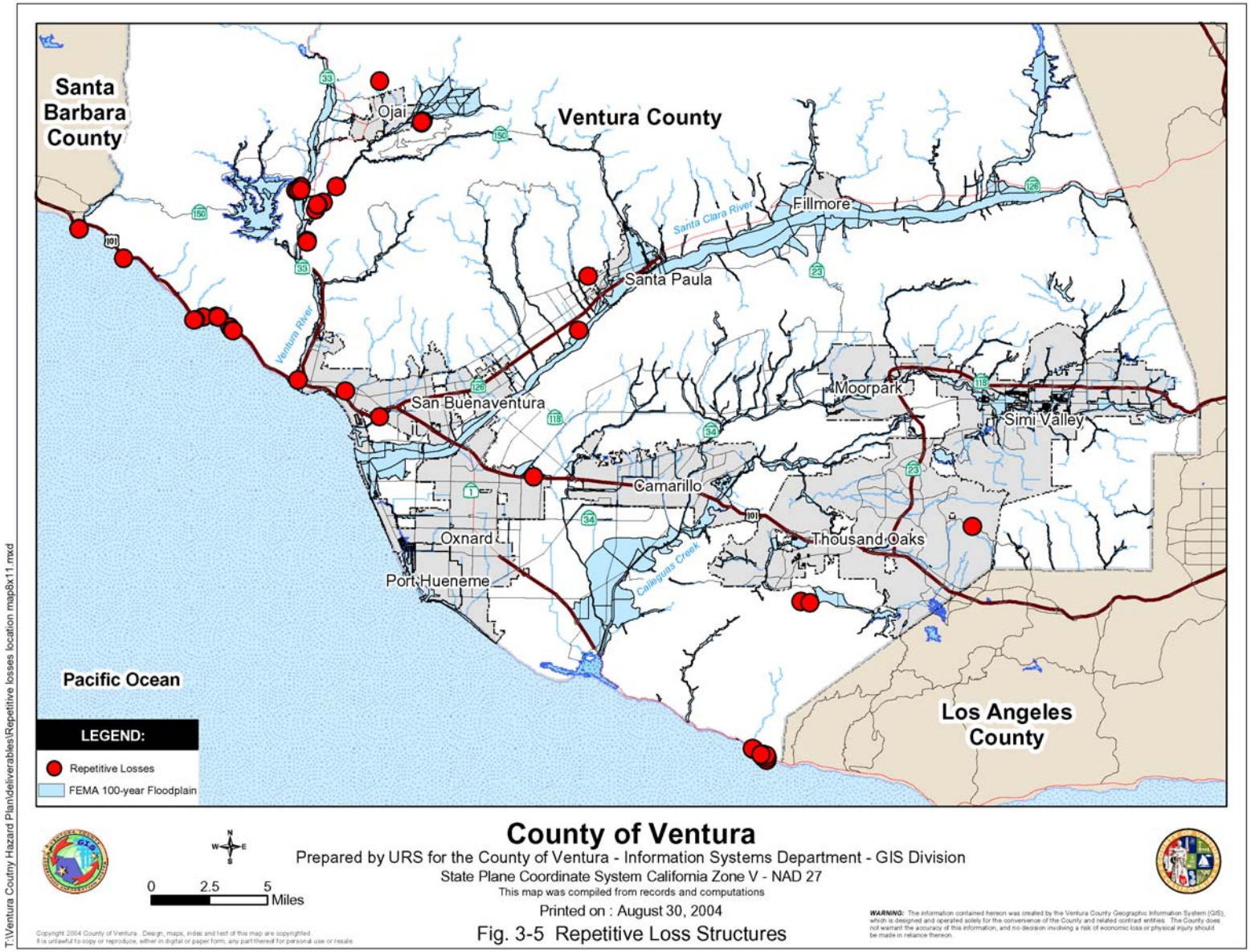
FEMA has identified 49 repetitive loss structures located in the unincorporated and incorporated areas of Ventura County. Twenty-two of the 49 repetitive loss structures are located along the coast in Flood Zone VE and have repetitive losses due to wave action and local flooding during storms. Of these structures, 13 are located along the coastline from the City of Ventura north to the Santa Barbara County line, and the other nine are clustered together near the Los Angeles County line in Malibu.

Nineteen repetitive loss structures are located in the Ventura River watershed within the 100-year floodplain. Of these, three are adjacent to Thacher Creek upstream of the City of Ojai, and one is adjacent to Stewart Canyon upstream of the City of Ojai. Four structures are located adjacent to San Antonio Creek near Oak View, and seven structures are located adjacent to the San Antonio Creek in the City of Ojai. Two additional structures are located adjacent to the Ventura River in Casitas Springs downstream of Oak View, and one, a mobile home park and campground, is located near the Ventura River close to the coast.

The remaining eight structures are scattered throughout Ventura County. One is located in the Santa Clara River 100-year floodplain just downstream of the City of Santa Paula, and another structure is located in the Revolon Slough 100-year floodplain in the City of Oxnard. The last structure is located in the Potrero Creek 100-year floodplain in Hidden Valley upstream of Lake Sherwood. An overall summary of the repetitive loss structure locations is shown in Table 3-7 and Figure 3-5.

Table 3-7
Repetitive Loss Structures in Ventura County

Location	Inside 100-Year Floodplain	Outside 100-Year Floodplain	Total
Coastal Area	21	1	**22**
Broad Floodplain	13	1	**14**
Upland Area	9	4	**13**
Total	**43**	**6**	**49**



County of Ventura

Prepared by URS for the County of Ventura - Information Systems Department - GIS Division

State Plane Coordinate System California Zone V - NAD 27

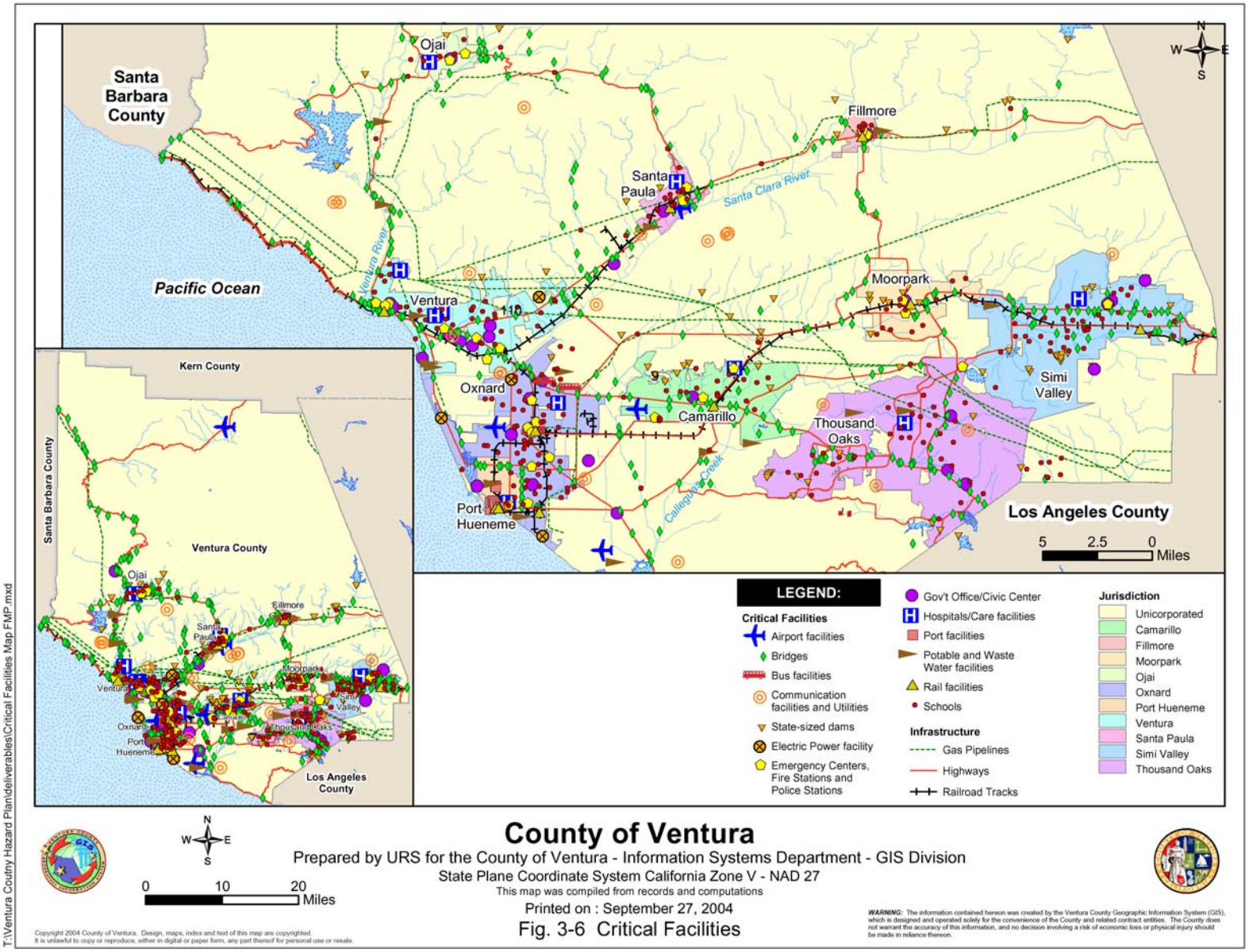
This map was compiled from records and computations

Printed on : August 30, 2004

Fig. 3-5 Repetitive Loss Structures

3.7.3 Critical Facilities and Infrastructure

A critical facility is defined as a facility in either the public or private sector that provides the essential products and services to the general public, such as preserving the quality of life in the county and fulfilling important public safety, emergency response, and disaster recovery functions. The critical facilities identified in the unincorporated county and its 10 incorporated cities include: 10 hospitals; 33 emergency centers, fire stations, and police stations; 34 government buildings; 261 schools; transportation systems that include 6 airport facilities, 421 bridges, 5 bus and rail facilities, and 14 marina and port facilities; utility systems that include 4 electrical power facilities, 19 potable and wastewater facilities, and 33 communications facilities; and 73 dams. Critical infrastructure located within the county includes: 343 miles of highway, 261 miles of gas pipelines, and 79 miles of railroad tracks. See Figure 3-6 and Tables 3-9 and 3-10 for the locations and numbers of critical facilities and infrastructure within the county.



3.8 VULNERABILITY ASSESSMENT

3.8.1 Methodology

An exposure-level analysis was conducted to assess the risks of floods, dam failures, and post-fire debris flows to assets in Ventura County. For physical assets, this analysis presents a simplified assessment of the cost to replace facilities destroyed by the hazard. For the analysis, replacement values were developed for physical assets – residential and commercial structures, critical facilities, and infrastructure. These values were obtained from HAZUS or from facility owners, including school districts and other special districts within the county.

Using GIS, the physical locations of critical facilities were compared to locations where hazards are likely to occur. Using census block level information, a spatial proportion was used to determine the percentage of the population and residential and commercial structures located where hazards are likely to occur. Census blocks that fell completely within the boundary of the hazard area were determined to be vulnerable and were totaled by count. A spatial proportion was also used to determine the amount of linear assets, such as highways and pipelines, within a hazard area. The exposure analysis for linear assets was measured in miles.

For each physical asset located within a hazard area, exposure was calculated by assuming the worst-case scenario, in which the asset would be completely destroyed and would have to be replaced. Finally, the aggregate exposure, in terms of replacement value, for each category of structure or facility was calculated. A similar analysis was used to evaluate the proportion of the population at risk. However, the analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared.

The results of the exposure analysis are summarized in Tables 3-12 through 3-17. These tables provide data for the unincorporated county and for the 10 incorporated cities. Table 3-18 provides exposure data for the District's facilities.

3.8.2 Data Limitations

The vulnerability estimates provided herein use the best data currently available and the methodologies applied result in an approximation of risk. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as approximations and simplifications that are necessary for a comprehensive analysis. It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and critical facilities and infrastructure to hazard. It was beyond the scope of this Plan to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed as possible with future updates of the flood mitigation plan. Additionally, due to the difference in units (number count versus kilometers), the jurisdictional totals and total numbers of the potential exposure to critical facilities and infrastructure tables (Tables 3-12 through 3-17) do not include the overall infrastructure totals.

Table 3-8
Abbreviations and Costs Used for Critical Facilities and Infrastructure

Abbreviation	Name	Building Type (where applicable)	Average Replacement Cost (x$1000)
AIR	Airport facilities	s1l	43,105
BRDG	Bridges	NA	1,869
BUS	Bus facilities	c1l	1,286
COM	Communication facilities and utilities	c1l	118
DAM	Dams		5,000
ELEC	Electric power facilities	c1l	129,800
EMER	Emergency centers, fire stations and police stations	c1l	2,438
GOVT	Government office/ civic center	c1l	1,180
HOSP	Hospitals/care facilities	s1m	16,520
INFR	Miles of infrastructure. Includes:		
GP	Gas pipelines	NA	300
RR	Railroad tracks	NA	860
HWY	Highway	NA	3,209
POR	Port facilities	c1l	2,572
POT	Potable and wastewater facilities	c1l	39,294 (Potable facilities) 78,588 (Wastewater facilities)
RAIL	Rail facilities	c1l	2,572
SCH	Schools	rm1l	590

Table 3-9
Total Inventory of Critical Facilities and Infrastructure and Exposure Value by Jurisdiction

Jurisdiction	Data	AIR	BRDG	BUS	COM	DAM	ELEC	EMER	GOVT	HOSP	INFR	PORT	POT	RAIL	SCH	TOTAL
Ventura County, unincorporated	Number	3	200	1	21	33	0	3	6	0	533	0	7	0	45	**319**
	Exposure(x$1000)	129,315	328,045	1,286	42,000	165,000	0	7,316	7,080	0	1,505,940	0	432,234	0	26,550	**1,138,826**
City of Camarillo	Number	1	19	0	0	4	0	3	1	1	23.8	0	3	1	23	**56**
	Exposure(x$1000)	43,105	63,016	0	0	20,000	0	7,316	1,180	16,520	103,256		235,764	2,572	13,570	**403,043**
City of Fillmore	Number	0	3	1	0	0	0	2	1	0	4.8	0	0	1	6	**14**
	Exposure(x$1000)	0	4,542	1,286	0	0	0	4,877	1,180	0	17,137	0	0	2,572	3,540	**17,997**
City of Moorpark	Number	0	10	0	0	9	0	2	1	0	18.8	0	0	1	12	**35**
	Exposure(x$1000)	0	38,692	0	0	45,000	0	4,877	1,180	0	47,506	0	0	1,180	7,080	**98,009**
City of Ojai	Number	0	2	0	1	1	0	2	1	1	3.8	0	0	0	6	**14**
	Exposure(x$1000)	0	665	0	2,000	5,000		4,877	1,180	8,620	19,632	0	0	0	3,540	**25,883**
City of Oxnard	Number	1	23	3	7	1	3	8	6	1	53.4	2	1	2	48	**106**
	Exposure(x$1000)	43,105	34,060	3,858	14,000	5,000	389,400	19,509	7,080	16,520	170,379	5,145	78,588	5,144	28,320	**649,729**
City of Port Hueneme	Number	0	6	0	0	0	0	1	3	1	7.7	12	1	3	4	**31**
	Exposure(x$1000)	0	1,395	0	0	0	0	1,652	3,540	4,130	24,368	30,869	39,294	7,717	2,360	**90,957**
City of Santa Paula	Number	1	11	0	0	0	0	4	2	1	11.9	0	1	1	14	**35**
	Exposure(x$1000)	43,105	11,196	0	0	0	0	9,755	2,360	16,520	36,018	0	78,588	2,572	8,260	**172,356**
City of Simi Valley	Number	0	54	0	0	12	0	1	2	1	34.5	0	1	1	36	**108**
	Exposure(x$1000)	0	74,233	0	0	60,000	0	2,439	2,360	16,520	23,554	0	78,588	2,572	21,240	**257,952**
City of Thousand Oaks	Number	0	50	0	3	12	0	1	3	1	66.2	0	2	0	32	**104**
	Exposure(x$1000)	0	101,617	0	354	60,000	0	2,439	3,540	16,520	126,351	0	157,176	0	18,880	**360,526**
City of Ventura	Number	0	43	0	1	1	1	6	8	3	44.1	0	3	1	35	**102**
	Exposure(x$1000)	0	124,043	0	2,000	5,000	129,800	14,632	9,440	41,300	128,741	0	196,470	2,572	20,650	**545,907**
Total Number		**6**	**421**	**5**	**33**	**73**	**4**	**33**	**34**	**10**	**802**	**14**	**19**	**11**	**261**	**924**
Total Exposure ($1000)		**258,630**	**781,504**	**6,430**	**60,354**	**365,000**	**519,200**	**79,689**	**40,120**	**136,650**	**2,202,882**	**36,014**	**1,296,702**	**26,902**	**153,990**	**3,761,185**

Jurisdictional totals, total numbers, and total exposures do not include infrastructure totals.

Table 3-10
Inventory of Exposure for Infrastructure

Jurisdiction	Data	HWY	GP	RR	Total
Ventura County, unincorporated	Number	260	238.1	34.9	**553**
	Exposure(x$1000)	1,342,682	114,966	48,292	**1,505,940**
City of Camarillo	Number	18.8	0.7	4.1	**23.6**
	Exposure(x$1000)	96,877	344	6,035	**103,256**
City of Fillmore	Number	3.2	1.6	0	**4.8**
	Exposure(x$1000)	16,346	791	0	**17,137**
City of Moorpark	Number	14.1	0	4.8	**18.9**
	Exposure(x$1000)	72,710	0	6,595	**79305.000**
City of Ojai	Number	3.8	0	0	**3.8**
	Exposure(x$1000)	19,632	0	0	**19,632**
City of Oxnard	Number	26.8	5.6	21	**53.4**
	Exposure(x$1000)	138,563	2,715	29,101	**170,379**
City of Port Hueneme	Number	3.6	0	4.1	**7.7**
	Exposure(x$1000)	18,712	0	5,656	**24,368**
City of Santa Paula	Number	5.8	2.6	3.6	**12**
	Exposure(x$1000)	29,818	1,236	4,964	**36,018**
City of Simi Valley	Number	24.2	0	10.3	**34.5**
	Exposure(x$1000)	124,913	0	14,249	**139162.000**
City of Thousand Oaks	Number	47.8	18.4	0	**66.2**
	Exposure(x$1000)	246,913	8,878	0	**255791.000**
City of Ventura	Number	20.8	12.4	10.9	**44.1**
	Exposure(x$1000)	107,671	5,991	15,079	**128,741**
Total Number		**342.8**	**261**	**78.6**	**802**
Total Exposure ($1000)		**1,770,301**	**126,043**	**109,127**	**2,479,729**

Table 3-11
Inventory of the Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	Exposed Population	Residential Buildings at Risk		Commercial Buildings at Risk	
		Building Count	Potential Exposure (x$1000)	Building Count	Potential Exposure (x$1000)
Ventura County, unincorporated	93,111	32,800	5,217,082	220	611,724
City of Camarillo	57,478	21,049	3,443,743	360	798,635
City of Fillmore	13,701	3,506	526,837	24	50,430
City of Moorpark	31,528	9,668	1,632,732	95	235,603
City of Ojai	7,868	2,659	424,583	45	95,739
City of Oxnard	173,308	35,668	5,888,292	526	1,162,626
City of Port Hueneme	21,853	4,949	1,005,823	43	91,361
City of Santa Paula	28,606	6,840	1,036,374	64	135,462
City of Simi Valley	112,190	36,789	6,352,651	474	948,866
City of Thousand Oaks	117,418	41,676	7,567,262	791	1,929,864
City of Ventura	101,002	31,719	5,368,599	586	1,294,218
Total	**758,063**	**227,323**	**38,463,978**	**3,228**	**7,354,528**

3.8.3 Coastal and Riverine Floods

Exposure to 100-year floodplain area was analyzed using FIRMs, DWR awareness maps, and data from the District. The District's data was originally digitized on-screen from scanned FIRMs that were georeferenced using the county parcel and street centerline data layers for positional accuracy.

This analysis shows over 50,000 (7 percent) county residents are affected by the 100-year flood event. The 100-year flood hazard affects all 10 incorporated communities and the unincorporated county. Per capita, the City of Moorpark and the unincorporated county are most affected by floods, with approximately 8 percent of their population at risk. Approximately 6 percent of the population in the cities of Camarillo and Santa Paula are exposed to this hazard. Less than 2 percent of the population within the cities of Ojai, Oxnard, Simi Valley, Thousand Oaks, and Ventura are susceptible to the 100-year flood.

In terms of building count, 14,760 residential buildings and 278 commercial buildings are located within the 100-year flood zone. Simi Valley has the largest total number of buildings located within this hazard area, with 5,017 residential structures and 160 commercial structures at risk for floods.

Approximately 151 critical facilities are exposed to floods; however, 66 percent of those facilities are bridges. The remaining 52 facilities include: one airport, two communication facilities; 21 electric facilities; five emergency centers; three government centers; one port facility; two railroad stations; and 24 schools.

Table 3-12
Potential Exposure from 100-Year Flood Hazard by Jurisdiction

Jurisdiction	Exposed Population	Residential Buildings at Risk		Commercial Buildings at Risk	
		Building Count	Potential Exposure (x$1000)	Building Count	Potential Exposure (x$1000)
Ventura County, unincorporated	7,048	2,355	361,290	7	34,257
City of Camarillo	3,359	1,687	252,477	21	53,333
City of Fillmore	472	147	16,513	0	541
City of Moorpark	2,588	725	130,545	8	17,831
City of Ojai	141	53	8,482	1	2,438
City of Oxnard	733	275	44,832	4	11,375
City of Port Hueneme	578	145	34,189	3	4,969
City of Santa Paula	16,408	3,425	522,896	44	89,059
City of Simi Valley	16,821	5,017	847,639	160	322,193
City of Thousand Oaks	2,093	714	130,911	21	40,534
City of Ventura	567	217	36,094	10	20,874
Total	**50,808**	**14,760**	**2,385,868**	**279**	**597,404**

Table 3-13
Potential Exposure to Critical Facilities and Infrastructure from 100-Year Flood Hazard by Jurisdiction

Jurisdiction	Data	AIR	BRDG	BUS	COM	DAM	ELEC	EMER	GOVT	HOSP	INFR	PORT	POT	RAIL	SCH	TOTAL
Ventura County, unincorporated	Number	0	64	0	2	13	0	0	0	0	40.4	0	0	0	4	**83**
	Exposure(x$1000)	0	194,977	0	236	65,000	0	0	0	0	134,448	0	0	0	2,360	**262,573**
City of Camarillo	Number	0	1	0	0	0	0	0	0	0	1.3	0	0	0	0	**1**
	Exposure(x$1000)	0	3,105	0	0	0	0	0	0	0	6,478	0	0	0	0	**3,105**
City of Fillmore	Number	0	1	0	0	0	0	0	0	0	.8	0	0	0	0	**1**
	Exposure(x$1000)	0	241	0	0	0	0	0	0	0	3,883	0	0	0	0	**241**
City of Moorpark	Number	0	3	0	0	2	0	1	0	0	1.4	0	0	0	1	**7**
	Exposure(x$1000)	0	27,922	0	0	10,000	0	2,439	0	0	5,437	0	0	0	590	**40,951**
City of Ojai	Number	0	1	0	0	1	0	0	0	0	.1	0	0	0	0	**2**
	Exposure(x$1000)	0	573	0	0	5,000	0	0	0	0	616	0	0	0	0	**5,573**
City of Oxnard	Number	0	0	0	0	0	0	0	0	0	.8	0	0	0	0	**0**
	Exposure(x$1000)	0	0	0	0	0	0	0	0	0	3,444	0	0	0	0	**0**
City of Port Hueneme	Number	0	0	0	0	0	0	0	0	0	.1	1	0	0	0	**1**
	Exposure(x$1000)	0	0	0	0	0	0	0	0	0	178	2,572	0	0	0	**2,572**
City of Santa Paula	Number	1	7	0	0	0	0	4	1	0	5.6	0	0	1	10	**24**
	Exposure(x$1000)	43,105	6,917	0	0	0	0	9,755	1,180	0	14,772	0	0	2,572	5,900	**69,429**
City of Simi Valley	Number	0	13	0	0	0	0	0	0	0	9.9	0	0	1	8	**22**
	Exposure(x$1000)	0	18,470	0	0	0	0	0	0	0	34,264	0	0	2,572	4,720	**25,762**
City of Thousand Oaks	Number	0	4	0	0	5	0	0	0	0	1.8	0	0	0	1	**10**
	Exposure(x$1000)	0	7,166	0	0	0	0	0	0	0	9,136	0	0	0	590	**7,756**
City of Ventura	Number	0	5	0	0	0	0	0	2	0	2.2	0	0	0	0	**7**
	Exposure(x$1000)	0	30,425	0	0	0	0	0	2,360	0	4,319	0	0	0	0	**32,785**
Total Number		**1**	**99**	**0**	**2**	**21**	**0**	**5**	**3**	**0**	**64**	**1**	**0**	**2**	**24**	**151**
Total Exposure ($1000)		**43,105**	**289,796**	**0**	**236**	**80,000**	**0**	**12,194**	**3,540**	**0**	**216,975**	**2,572**	**0**	**5,144**	**14,160**	**376,278**

Jurisdictional totals, total numbers, and total exposures do not include infrastructure totals.

3.8.4 Dam Failure Inundation

The dam failure boundaries are defined with an analysis that makes some assumptions about the initial condition of the reservoir, type of storm inflow, type of breach, and time of breach development. DAMBRK or HEC-1 models provided dynamic flood wave routing to route the flood wave downstream through the cross-sections defined to estimate the water surface elevation.

According to dam inundation zone data provided by the Resource Management Agency (RMA) and the District, approximately one-half of the county's residents are potentially exposed to a dam failure. Specifically, 11,516 of 13,701 residents (84 percent) in the City of Fillmore, 24,401 of 28,606 residents (85 percent) in the City of Santa Paula, 170,540 of 173,308 residents (98 percent) in the City of Oxnard, and all 21,853 residents in the City of Port Hueneme are vulnerable to this hazard. The areas least likely to be affected by a dam failure include the cities of Ojai and Thousand Oaks and the northern and southeastern portions of the unincorporated county.

In terms of building count, over 85,000 residential buildings and 1,621 commercial buildings are located within this hazard area. Oxnard has the largest number of buildings susceptible to dam failure, with approximately 35,653 residential buildings and 526 commercial buildings located within this hazard area. The City of Ojai has the fewest buildings within a dam failure hazard area, with only 108 residential buildings and three commercial buildings at risk.

Almost half of the county's total critical facilities are at risk of a dam failure hazard. This number includes: 100 percent of all bus and rail facilities; 85 percent of all port facilities; 75 percent of all electrical power facilities and emergency centers; 62 percent of all government centers; 60 percent of all potable water and wastewater facilities; 49 percent of all schools; and 30 percent of all hospitals and communication facilities.

Table 3-14
Potential Exposure from Dam Failure Hazard by Jurisdiction

Jurisdiction	Exposed Population	Residential Buildings at Risk		Commercial Buildings at Risk	
		Building Count	Potential Exposure (x$1000)	Building Count	Potential Exposure (x$1000)
Ventura County, unincorporated	27,150	7,213	1,086,606	130	307,945
City of Camarillo	17,806	5,781	1,003,157	212	483,472
City of Fillmore	11,516	2,879	436,866	24	49,514
City of Moorpark	12,449	3,068	535,886	78	184,119
City of Ojai	279	108	17,910	3	4,701
City of Oxnard	170,540	35,653	5,885,933	526	1,162,512
City of Port Hueneme	21,853	4,949	1,005,769	42	90,652
City of Santa Paula	24,401	5,306	803,442	61	128,420
City of Simi Valley	34,750	10,886	1,806,640	195	428,467
City of Thousand Oaks	3,896	1,832	313,490	17	25,961
City of Ventura	28,245	8,040	1,335,538	333	794,202
Total	**352,885**	**85,715**	**14,231,237**	**1,621**	**3,659,965**

Table 3-15
Potential Exposure to Critical Facilities and Infrastructure from Dam Failure Hazard By Jurisdiction

Jurisdiction	Data	AIR	BRDG	BUS	COM	DAM	ELEC	EMER	GOVT	HOSP	INFR	PORT	POT	RAIL	SCH	TOTAL
Ventura County, unincorporated	Number	1	85	1	5	3	0	3	3	0	122.9	0	5	0	15	**121**
	Exposure(x$1000)	43,105	243,955	1,286	590	15,000	0	7,316	3,540	0	415,095	0	314,352	0	8,850	**637,994**
City of Camarillo	Number	1	10	0	0	0	0	2	1	1	13.4	0	0	1	12	**28**
	Exposure(x$1000)	43,105	30,731	0	0	0	0	4,877	1,180	16,520	55,689	0	0	2,572	7,080	**106,065**
City of Fillmore	Number	0	3	1	0	0	0	2	1	0	4.8	0	0	1	5	**13**
	Exposure(x$1000)	0	4,542	1,286	0	0	0	4,877	1,180	0	17,137	0	0	2,572	2,950	**17,407**
City of Moorpark	Number	0	4	0	0	5	0	2	1	0	10.2	0	0	1	7	**18**
	Exposure(x$1000)	0	31,105	0	0	15,000	0	4,877	1,180	0	36,659	0	0	2,572	4,130	**92,684**
City of Ojai	Number	0	0	0	0	0	0	0	0	0	.03	0	0	0	0	**0**
	Exposure(x$1000)	0	0	0	0	0	0	0	0	0	173	0	0	0	0	**0**
City of Oxnard	Number	1	23	3	2	1	3	8	6	1	53.48	0	1	2	48	**99**
	Exposure(x$1000)	43,105	34,060	3,859	236	5,000	389,400	19,509	7,080	16,520	170,379	0	78,588	5,144	28,320	**630,821**
City of Port Hueneme	Number	0	6	0	1	0	0	1	3	1	7.7	12	1	3	4	**32**
	Exposure(x$1000)	0	1,395		118		0	2,439	3,540	4,130	24,367	30,869	39,294	7,717	2,360	**91,862**
City of Santa Paula	Number	1	11	0	1	0	0	4	1	0	10.5	0	1	1	13	**33**
	Exposure(x$1000)	43,105	11,196	0	118	0	0	9,755	1,180	0	28,526	0	78,588	2,572	7,670	**154,184**
City of Simi Valley	Number	0	20	0	0	1	0	1	1	0	10.4	0	1	1	14	**39**
	Exposure(x$1000)	0	26,317			5,000		2,439	1,180		39,253	0	78,588	2,572	8,260	**124,356**
City of Thousand Oaks	Number	0	3	0	0	1	0	0	0	0	2.1	0	0	0	1	**5**
	Exposure(x$1000)	0	3,489	0	0	5,000	0	0	0	0	10,939	0	0	0	590	**9,079**
City of Ventura	Number	0	35	0	1	0	0	2	4	0	28	0	2	1	8	**53**
	Exposure(x$1000)	0	103,687	0	118	0	0	4,877	4,720	0	92,765	0	157,176	2,572	4,720	**277,870**
Total Number		**4**	**200**	**5**	**10**	**11**	**3**	**25**	**21**	**3**	**263.5**	**12**	**11**	**11**	**127**	**443**
Total Exposure ($1000)		**172,420**	**490,477**	**6,431**	**1,180**	**80,000**	**389,400**	**60,966**	**24,780**	**37,170**	**890,982**	**30,869**	**746,586**	**28,293**	**74,930**	**2,143,502**

Jurisdictional totals, total numbers, and total exposures do not include infrastructure totals.

3.8.5 Post-Fire Debris Flow

For each debris basin or watershed location identified in the post-fire debris hazard data evaluation, GIS was used to characterize the potential flood or debris flow that could result from a 100-year storm event. A 200-foot buffer was placed on each side of the associated stream or channel to approximately one mile downstream or to a confluence with another stream reach.

The vulnerability analysis shows that all of the county, with the exception of the cities of Oxnard and Port Hueneme, would be affected by a post-fire debris flow. However, the exposure would be limited geographically to urbanized areas located downstream of undeveloped watersheds with high burn severity potential. Therefore, only 6 percent (42,032 people) of the entire county's population may be exposed to this hazard. However, 29 percent of Santa Paula's population resides within a post-fire debris flow hazard area.

In terms of building count, almost 15,000 residential buildings and 175 commercial buildings are located within this hazard area. Simi Valley has the largest number of buildings located within a post-fire debris flow area. Approximately 4,301 residential buildings and 65 commercial buildings are susceptible to post-fire debris flows.

Only 19 critical facilities are susceptible to a post-fire debris flow. Seventeen of the 19 structures are bridges and dams. Only one communication facility and one school are located within a post-fire debris flow area.

Table 3-16
Potential Exposure from Post-Fire Debris Flow Hazard by Jurisdiction

Jurisdiction	Exposed Population	Residential Buildings at Risk		Commercial Buildings at Risk	
		Building Count	Potential Exposure (x$1000)	Building Count	Potential Exposure (x$1000)
Ventura County, unincorporated	4,507	1,648	275,931	19	39,35
City of Camarillo	1,520	658	120,872	1	2,976
City of Fillmore	1,837	572	68,468	1	111
City of Moorpark	2,162	723	108,730	4	11,09
City of Ojai	264	123	20,097	5	11,49
City of Oxnard	0	0	0	0	0
City of Port Hueneme	0	0	0	0	0
City of Santa Paula	8,176	2,175	303,064	24	40,19
City of Simi Valley	12,286	4,301	734,922	65	131,54
City of Thousand Oaks	4,325	1,827	330,622	21	33,48
City of Ventura	6,955	2,767	460,518	36	70,10
Total	**42,032**	**14,794**	**2,423,224**	**174**	**342,11**

Table 3-17
Potential Exposure to Critical Facilities and Infrastructure from Post-Fire Debris Flow Hazard by Jurisdiction

Jurisdiction	Data	AIR	BRDG	BUS	COM	DAM	ELEC	EMER	GOVT	HOSP	INFR	PORT	POT	RAIL	SCH	TOTAL
Ventura County, unincorporated	Number	0	5	0	0	6	0	0	0	0	0	0	0	0	0	**11**
	Exposure (x$1000)	0	6,925	0	0	30,000	0	0	0	0	0	0	0	0	0	**36,925**
City of Camarillo	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Fillmore	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Moorpark	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Ojai	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Oxnard	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Port Hueneme	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Santa Paula	Number	0	0	0	1	0	0	0	0	0	0	0	0	0	1	**2**
	Exposure (x$1000)	0	0	0	118	0	0	0	0	0	0	0	0	0	590	**708**
City of Simi Valley	Number	0	6	0	0	0	0	0	0	0	0	0	0	0	0	**6**
	Exposure (x$1000)	0	3,653	0	0	0	0	0	0	0	0	0	0	0	0	**3,653**
City of Thousand Oaks	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Ventura	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Exposure (x$1000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Number		**0**	**11**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**19**
Total Exposure ($1000)		**0**	**10,578**	**0**	**118**	**30,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**590**	**41,286**

Jurisdictional totals, total numbers, and total exposures do not include infrastructure totals.

3.8.6 District Facilities Exposure Analysis

In addition to estimating hazard exposure to population, critical facilities, infrastructure, and residential/commercial properties, exposure estimates were provided for the District's facilities. District facilities included Automated Local Evaluation in Real Time (ALERT) rain, stream, and weather gauge stations, operational facilities, and dams (District-owned state-size, debris, and detention dams). The exposure values were determined using the average replacement costs provided by the District. The average replacement costs were used for the following: $42,000 for ALERT gauges; $2.5 million for state-size, debris, and detention dams; and $3.5 million for operational and maintenance facilities. A summary of the potential exposure of District facilities to flood, dam failure, and post-fire debris flow is provided in Table 3-18.

Table 3-18
Summary of Potential Hazard-Related Exposure in the Ventura County Watershed Protection District

Hazard Type	Number of Critical Facilities			Potential Exposure for Critical Facilities (x $1,000)
	O&M	ALERT	DAMS	
Coastal & Riverine	0	21	10	29,232
Dam Failure	1	25	4	11,170
Post-Fire Debris Flow	0	2	5	12,734
Total	**1**	**48**	**19**	**53,136**

3.9 FUTURE DEVELOPMENT TRENDS

Over the past three years, Ventura County has grown at a rate of 5 percent. The region's population is expected to increase to approximately 865,149 in 2010 and to 989,765 in 2030. The greatest amount of growth (+20,000 people from 2000–2010) in the near term is expected to occur in and around the cities of Oxnard and Port Hueneme, from the coast inland to Highway 101. This area is subject to 100-year flood hazards from the Santa Clara River and Calleguas Creek and is also at risk in the event of dam failure in the Santa Clara watershed.

The second largest area where growth is expected to occur includes the cities of Camarillo, Moorpark, Simi Valley, Thousand Oaks, and Ventura. These five cities are susceptible to flood, dam failure, and post-fire debris flow hazards.

The unincorporated county is expected to add approximately 5,000–10,000 people over the next six years. Much of the unincorporated county is currently designated as agricultural land use (see Figure 3-7). All of the hazards profiled potentially affect the unincorporated county; however, the areas of greatest potential growth are also flood prone. The lowest amount of growth is expected to occur in the canyon and hillside communities of Fillmore, Ojai, and Santa Paula.

While Ventura County is expected to experience considerable population growth over the next 25 years (see Figure 3-8), existing planning policies and flood mitigation planning are expected to direct growth away from hazards. As required by state law, Ventura County and the 10 incorporated cities each have a general plan with a safety element that identifies hazards, including maps of the hazard areas. Ventura County has planning policies such as floodplain ordinances and building codes that restrict new development in hazard areas and increase construction requirements.

In addition, Ventura County and its communities have a history of aggressive growth management that seeks to limit growth overall and to direct it to urban areas. Major milestones in growth management in the Ventura region include the following:

- **1965:** Ventura Local Agency Formation Commission (LAFCO) proposes the greenbelt concept, a system of community separators or buffers intended to protect the integrity and distinctiveness of individual cities. Greenbelts are established through nonbinding agreements among two or more government entities. Greenbelts are areas where cities agree not to annex land or extend urban services, and the county agrees to prohibit urban land uses.
- **1969:** Guidelines for Orderly Development were adopted by LAFCO, Ventura County, and each of the cities in the county, establishing a formal policy that urban development should occur, whenever and wherever practical, within incorporated cities. Urban development is defined as the need for a new community sewer system or the expansion of an existing community sewer system, the creation of residential lots less than 2 acres in area, or the establishment of commercial or industrial uses that are not related to agriculture or the production of mineral resources.
- **1979:** Ojai adopts an ordinance restricting residential construction to limit the city's annual population increase to no more than 6 percent, or about 36 people a year. Ventura City Council adopts a growth plan in response to the county's new air pollution control program. The city plan sets a population limit of 89,000 residents by 1985 and establishes a housing

allocation program to limit residential construction over the next five years to a level that will accommodate about 2,000 people a year.

- **1980:** Voters in Thousand Oaks approve a ballot measure limiting residential development to 650 units a year through 1994, 500 units a year through 2002 and 250 units a year after that. The same year, Fillmore adopts an ordinance limiting residential development to allow a population increase of no more than 198 people a year.
- **1986:** Simi Valley voters approve ballot Measure Q, limiting residential construction to an average of 420 units a year. Moorpark voters approve Measure F, limiting housing construction to 250 units a year.
- **1989:** The Board of Supervisors establishes the Agricultural Land Trust Advisory Committee, an outgrowth of the Beyond the Year 2000 Advisory Committee, to study ways of protecting agricultural land. The committee recommends creating a nonprofit agricultural land trust, a program to purchase or transfer development rights from farmland owners, and allocation of a percentage of local sales tax receipts to fund such acquisitions.
- **1995:** Voters in Ventura approve Save Our Agricultural Resources (SOAR) initiative by a margin of 52 percent to 48 percent. It requires a public vote before any land designated for agricultural use in the city's general plan can be redesignated for urban use.
- **1998:** Voters approve SOAR measures countywide (63 percent) and in Thousand Oaks (71 percent), Simi Valley (70 percent), Oxnard (70 percent) and Camarillo (66 percent). Unlike the original Ventura measure, these SOAR measures draw City Urban Restriction Boundaries (CURB), prohibiting extension of city services outside the CURB line without voter approval and requiring a public vote for development of any farmland or open space outside the line. Santa Paula voters reject a SOAR measure (66 percent) and a city-sponsored alternative that was even stricter (61 percent).
- **1999:** Moorpark voters pass a SOAR measure (67 percent) and approve a companion referendum halting the Hidden Creek development (65 percent).
- **2000:** Santa Paula voters approve a SOAR initiative (55 percent), and Fillmore voters reject a SOAR initiative (57 percent) and city-sponsored alternative (62 percent).
- **2002:** Fillmore voters approved a SOAR initiative.
- **2003:** The Open Space District Advisory Committee issues a report recommending that measures be placed on the November 2004 ballot to establish a special district to acquire land and/or easements for agricultural property and open spaces and to raise revenue through a sales tax increase or other assessment to fund the district's activities. Ojai City Council adopts a new growth management plan that restricts housing and population growth to less than 1 percent annually through 2010.

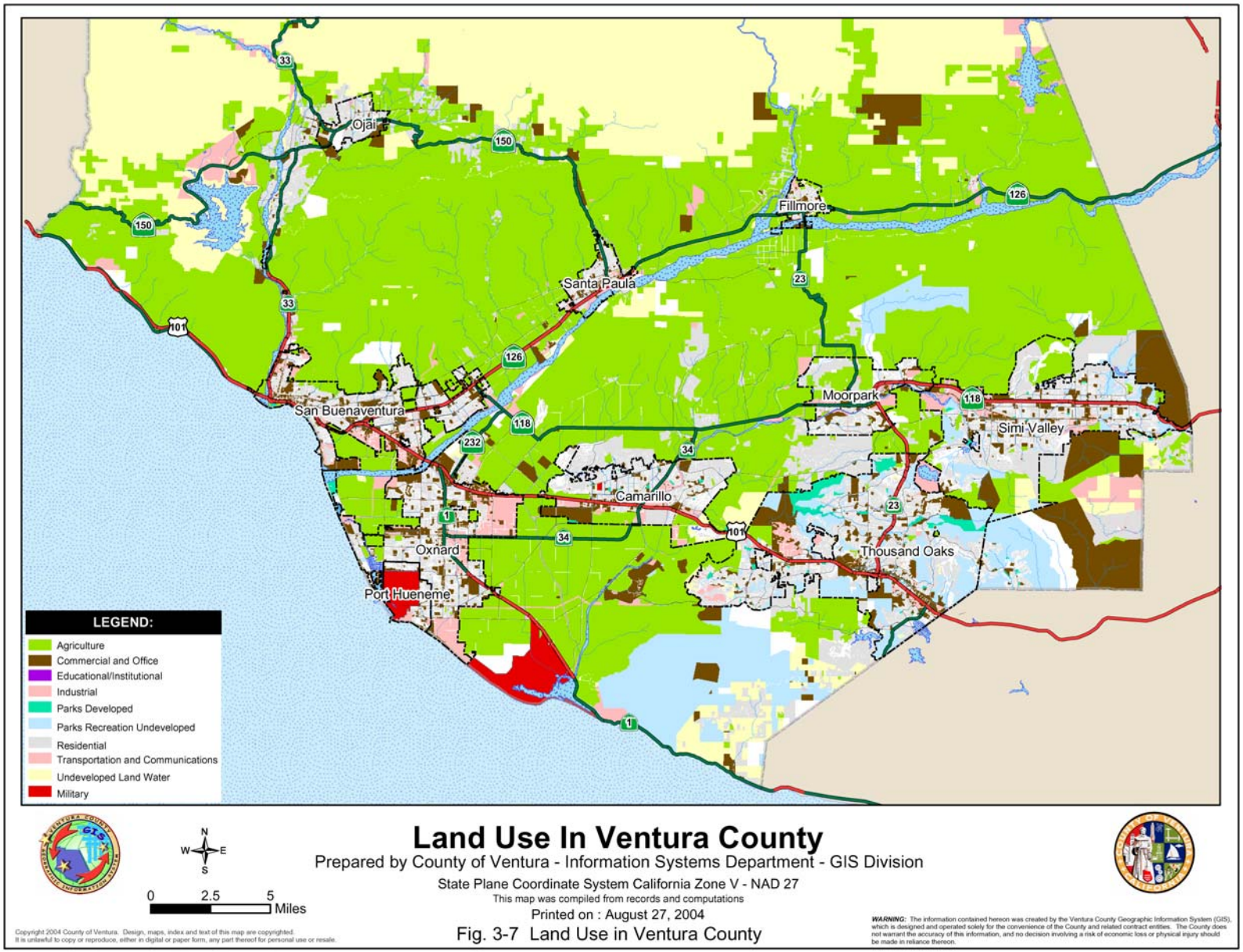
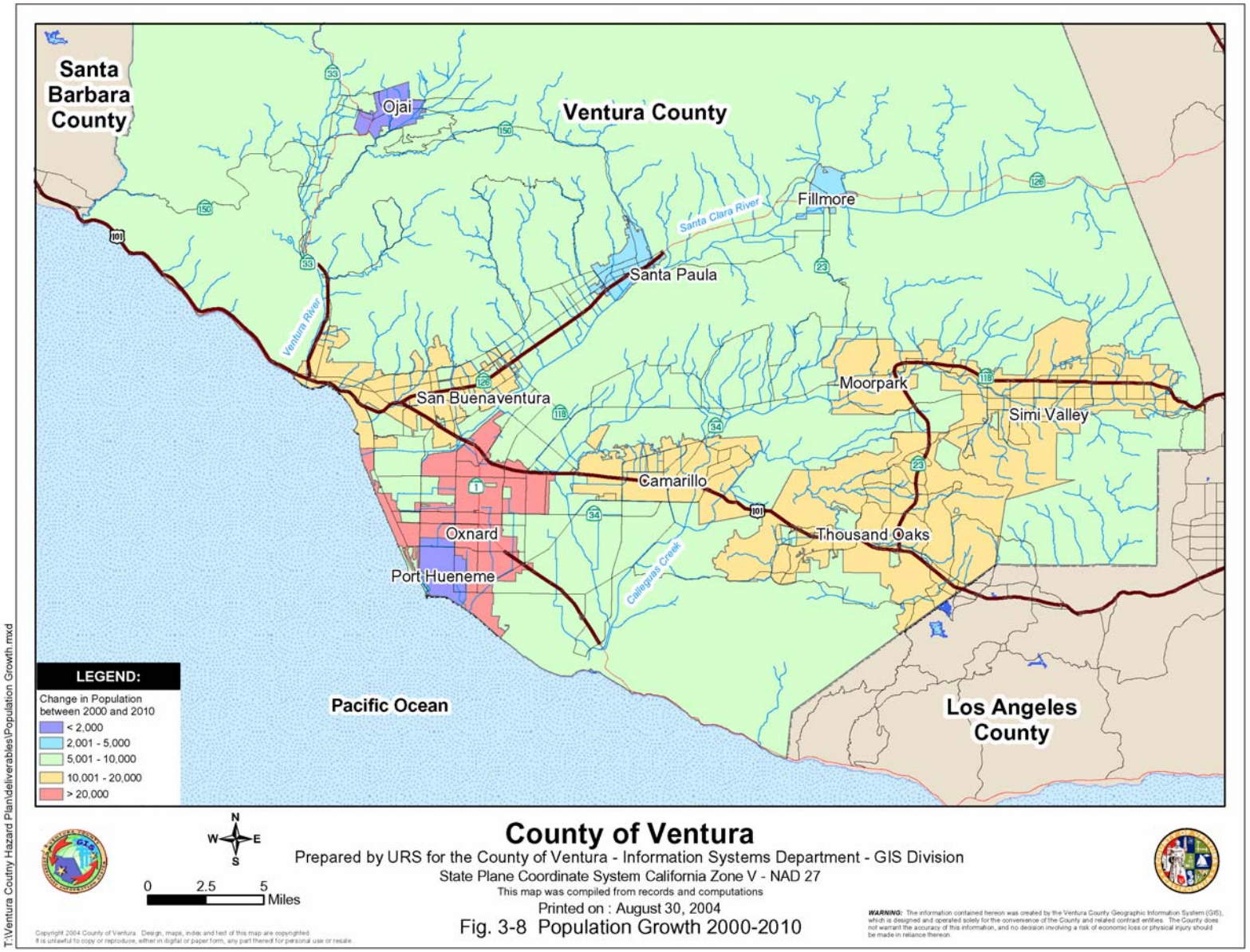


Fig. 3-7 Land Use in Ventura County


Santa Barbara County
Ojai
Ventura County
Fillmore
Santa Clara River
Santa Paula
Ventura River
San Buenaventura
Moorpark
Simi Valley
Camarillo
Oxnard
Thousand Oaks
Port Hueneme
Calleguas Creek
Pacific Ocean
Los Angeles County
LEGEND:
Change in Population between 2000 and 2010
< 2,000
2,001 - 5,000
5,001 - 10,000
10,001 - 20,000
> 20,000
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S
0 2.5 5 Miles
T:\Ventura Coutny Hazard Plan\deliverables\Population Growth.mxd
County of Ventura
Prepared by URS for the County of Ventura - Information Systems Department - GIS Division
State Plane Coordinate System California Zone V - NAD 27
This map was compiled from records and computations
Printed on : August 30, 2004
Fig. 3-8 Population Growth 2000-2010
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WARNING: The information contained hereon was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

4.1 OVERVIEW OF A CAPABILITY ASSESSMENT

This section identifies administrative, technical, legal, and fiscal capabilities that may allow the District and Ventura County to achieve the goals identified through the flood hazard mitigation planning process. Sections 4.2 and 4.3 include a summary description of pertinent institutions and their responsibilities with regard to flood hazard mitigation planning as well as ordinances, plans, and the programs already in place. Section 4.4 also discusses the fiscal capabilities that may be applicable to providing the financial resources needed for identified mitigation activities.

4.2 ADMINISTRATIVE AND TECHNICAL RESOURCES

The administrative and technical capabilities of the District and the county, as shown in Table 4-1, provide staff and personnel resources to implement the actions identified in the mitigation section of the flood mitigation plan. The specific resources available include technical personnel such as planners/engineers with knowledge of flood hazards in the community. A complete organization chart of the District is located in Appendix B.

Table 4-1
Administrative and Technical Capacity for Flood Mitigation Planning

Staff/Personnel Resources	District Position	County Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Planning & Regulatory Division	Resource Management Agency
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planning & Regulatory and Design and Construction Divisions	Public Works Agency
Planners or Engineer(s) with an understanding of flood hazards	Planning & Regulatory Division	Public Work Agency
Floodplain manager		Public Works Agency
Surveyors		Public Works Agency
Staff with education or expertise to assess the community's vulnerability to hazards	Planning & Regulatory Division	Public Works Agency
Personnel skilled in GIS and/or HAZUS	Planning and Regulatory Division	Geographic Information System Department
Scientists familiar with the hazards of the community-provide description		Public Works Agency
Emergency manager		Public Works Agency, Office of Emergency Services
Grant writers	Planning & Regulatory Division	Public Works Agency
Public Information Officers		County Executive Office

4.2.1 Ventura County

4.2.1.1 Public Works Agency

The Ventura County Public Works Agency strives to "deliver efficient, responsive, and cost-effective" services to the citizens of Ventura County. These services include the planning, construction, and maintenance of roads, water and sanitation systems, and flood control structures. The agency also provides public transit, solid waste management, recycling, and water resource protection. Laterals and side-drains contributing runoff to the county channels (redline channels) are the responsibility of the Transportation Department of the Public Works Agency. However, for lateral and side-drain connections to jurisdictional channels, the Transportation Department must obtain an encroachment permit from the District and provide sufficient information and engineering studies to show that the connection does not negatively impact the conveyance capacity of a county channel.

The District currently has a program in place in conjunction with the Ventura County Public Works Agency Real Estate Services Division to identify foreclosed lands in the county within the District's jurisdictional channels. The District has not yet purchased any lands through this program due to the liability issues associated with owning property that is subject to flooding. However, if funding becomes available in the future, the District would work with the county Public Works Agency to expand this program and to identify foreclosed lands and floodplain land owned by willing sellers. Once purchased, the land would then be turned over to one of the conservancy organizations in the area that would accept the responsibility for performing necessary maintenance on the property and initiating restoration activities if warranted.

4.2.1.2 Resource Management Agency

The Resource Management Agency (RMA) function is to protect the health, safety, and welfare of the general public through administration and enforcement of county ordinances; Board policy; and state and Federal laws regarding land use and commercial and environmental regulation. The RMA Planning Division maintains and implements the Ventura County General Plan and Zoning Ordinance and prepares other specialized planning documents, including a Local Coastal Program. It reviews development requests for conformance with the county's planning policies and standards and conducts environmental review under the provisions of the California Environmental Quality Act. The division provides staff support to the Board of Supervisors and Planning Commission through the processing of rezonings, subdivisions, use permits, variances, and other land use entitlements.

The RMA requires proponents of land development submittals (including storm drain systems) that will connect to the District's jurisdictional channels to obtain an encroachment permit from the District prior to project approval. Therefore, the RMA Planning Division works closely with the District to ensure that new developments do not adversely affect the redline channel system and cause additional flooding in the channels and their downstream neighbors.

4.2.2 Federal Agencies

4.2.2.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE), created in the mid-1800s, has provided flood protection throughout the country since Congress enacted the Flood Control Act of 1936. The USACE, which is divided into 38 districts, established the Los Angeles District in 1898. The USACE Los Angeles District, which includes Ventura County, is one of the largest in the United States, covering some 226,000 square miles across southern California, southern Nevada, a slice of Utah, and all of Arizona.

The flood control efforts of the USACE range from small levee and non-structural flood control measures to major dams. In addition to building projects, the USACE, through its Flood Plain Management Services, advises communities, industries, and property owners on locally sponsored protection measures, such as zoning regulations, warning systems, and flood proofing.

The USACE Los Angeles District and the District are currently undertaking the Matilija Dam Ecosystem Restoration Feasibility Study in Matilija Canyon near Ojai, California. The dam is no longer functional as a water supply structure and has been identified as a major impediment to the natural flow of the creek, contributing to the deterioration of aquatic and terrestrial habitat as well as the hydrologic and sediment transport regime downstream. This is the first USACE dam removal study of this scope and scale for the nation and sets a precedent for future large-scale dam removal studies. The study is expected to be completed by the end of 2004, and the USACE is expected to initiate construction in April 2008.

In addition, the USACE Los Angeles District, in partnership with the District and the Los Angeles County Department of Public Works, is initiating a joint study of the Santa Clara River watershed that will result in the Santa Clara River Watershed Protection Plan. The plan will incorporate hydraulic and hydrologic modeling of the watershed. Additional models will be used to evaluate sediment transport and water quality issues arising from water reclamation plant inflow and agricultural activities. One of the goals of the plan is to provide a comprehensive analysis of the river system and develop a list of projects that address flooding and environmental needs along the river.

In the Calleguas Creek watershed, the USACE has partnered with the District to complete the Mugu Lagoon Feasibility Study. Mugu Lagoon serves as the outlet for Calleguas Creek at the Pacific Ocean and provides habitat for hundred of wildlife species. This study evaluated plans for sediment control to restore and preserve the Lagoon. The Mugu Lagoon Feasibility Study was expanded to coordinate its efforts with the ongoing Calleguas Creek Watershed Management Plan. Now in draft form, the Calleguas Creek Watershed Management Plan addresses water resources, land use, economic development, and open space preservation issues on a long-range comprehensive scale. Hydrologic, hydraulic, and sediment transport models have also been developed for this watershed and have yielded a number of recommendations for restoring the flood conveyance capacity of the creek.

4.2.2.2 Natural Resources Conservation Service

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) addresses natural resource conservation on private lands. NRCS works closely with local resource

conservation districts and resource conversation and development councils. In California, the NRCS provides outreach, management support, engineering, resource technology, technical soil services, and watershed planning services.

The Small Watershed Program, authorized under Federal law in 1944 and 1954, is administered by NRCS. This funding program serves three general purposes: (1) to prevent damage from erosion, floodwater, and sediment; (2) to further the conservation development and disposal of water; and (3) to promote the conservation and proper utilization of land. The Small Watershed Program achieves these goals through watershed surveys and planning and watershed and flood prevention operations and construction.

The Small Watershed Program, which is limited to watersheds of 250,000 acres or smaller, has been used primarily for flood control, agricultural water management, and watershed protection work in California. Over the past 25 years, over $100 million was spent in the state under the program.

NRCS also implements the Emergency Watershed Protection Program in response to emergencies caused by natural disasters. The program offers emergency assistance to jurisdictions and special districts after a disaster impairs a watershed. The program works on a 75 percent Federal and 25 percent local match cost-sharing basis. Eligible activities include bank reinforcement; levee and structural repair; reseeding of damaged areas; and debris removal from stream channels, road culverts, and ridge abutments.

After the Simi and Piru fires in October 2003, the NRCS responded to the threat of increased flooding and debris flow through the Emergency Watershed Protection Program. The NRCS obligated nearly $4.2 million for measures to reduce immediate threats to life and property in Ventura County including: k-rails, sandbags, trash racks, and debris fences; four sediment basins; and reseeding to stabilize areas void of vegetation. In addition, the NRCS is providing $4.2 million for flood and erosion control in the City of Fillmore.

4.2.2.3 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA), now part of the U.S. Department of Homeland Security's Emergency Preparedness and Response Directorate, is tasked with responding to, planning for, recovering from, and mitigating against disasters. FEMA was created under an Executive Order in 1979 to streamline disaster-related responsibilities at the Federal level. The Mitigation Division of FEMA administers nationwide risk-reduction programs and congressionally authorized efforts, including the National Flood Insurance Program (NFIP), the Flood Mitigation Assistance (FMA) Program, the Hazard Mitigation Grant Program, and the Pre-Disaster Mitigation Grant Program. FEMA has 10 regional offices and two area offices. Each region serves several states, and regional staffs work directly with state emergency management agencies to help plan for disasters, develop mitigation programs, administer grant programs, and meet needs when major disasters occur. California is part of FEMA Region IX.

4.3 LEGAL AND REGULATORY RESOURCES

This section discusses the legal and regulatory resources of the county government with regard to management of the physical and built environment in Ventura County. These capabilities include local ordinances, plans, and programs already in place that apply to flood hazard mitigation planning. Table 4-2 lists the legal and regulatory capabilities of the county and the District.

Table 4-2
Legal and Regulatory Capability for Flood Mitigation Planning

Regulatory Tools (ordinances, codes, plans)	District Position	County Position
Building code		Resource Management Agency
Zoning ordinance		Resource Management Agency
Subdivision ordinance or regulations		Resource Management Agency
Floodplain management ordinance		Resource Management Agency/Public Works Agency
Grading ordinance		Resource Management Agency/Public Works Agency
Other ordinances: FC-18	Planning & Regulatory Division	
Hazard setback requirements		Resource management Agency/Public Works Agency
Stormwater management ordinance		Public Works Agency
Growth management ordinances		Resource Management Agency
Site plan review requirements		Resource Management Agency (outside floodplain)/Public Works Agency(inside floodplain)
General or comprehensive plan		Resource Management Agency
A capital improvements plan		Public Works Agency
An economic development plan		Redevelopment Agency
An emergency response plan		Office of Emergency Management/ Public Works Agency
A post-disaster recovery plan	Planning & Regulatory Division	Office of Emergency Management/ Public Works Agency
A post-disaster recovery ordinance		Office of Emergency Management/ Public Works Agency
Real estate disclosure requirements		Resource Management Agency
Habitat Management Plan		Resource Management Agency
Master Drainage, Sewer, Water, & Reclaimed Water	Planning & Regulatory Dvision	Public Works Agency
Redevelopment Master Plan		Resource Management Agency

4.3.1 Ordinances and Policies

4.3.1.1 FC-18 Ordinance

The authority of the District over its jurisdictional channels is established through a number of ordinances and policies passed by the Board of Supervisors, including assessment fee ordinances, channel maintenance and public road crossing construction policies, and policies concerning the adoption of hydrology and hydraulic design manuals. These ordinances grant District authority over channels that have a peak flow rate of more than 500 cubic feet per second (cfs) during the 100-year storm and are included in the "Comprehensive Plan For Channel Jurisdictional Limits". Laterals and side-drains contributing runoff to the jurisdictional channels (redline channels) are under the jurisdiction of the appropriate city or county departments or state agency (typically the California Department of Transportation). However, the agency having jurisdiction over the affected lateral or side-drain connections to jurisdictional channels must obtain an encroachment permit from the District and provide sufficient information and engineering studies to show that the connection does not negatively impact the conveyance capacity of the jurisdictional channel.

The primary ordinance establishing District authority and the requirement to obtain permits for any encroachment into its jurisdictional channels, including its right-of-way, is FC-18, entitled "An Ordinance Relating to the Protection and Regulation of Flood Control Facilities and Watercourses," as amended by subsequent ordinances FC-20, FC-21, FC-22, FC-23, and FC-27.

4.3.1.2 Zoning Ordinances

The first Ventura County Zoning Ordinance was adopted in 1947 as an initial regulatory tool for structures and land use. Amendments to the ordinance were made throughout the next several decades. In 1983, the cumulative additions were addressed, and the ordinance was restructured into a Coastal Ordinance and a Non-Coastal Ordinance. Today, the Ventura County Resource Management Agency (RMA) Planning Division maintains and implements two zoning ordinances that affect floodplain management. Although these ordinances have gone through amendments separately, both address setbacks for oil development, mining, and reclamation practices and prohibit hazardous waste collection, treatment, and storage facilities in the 100-year floodplain. These tools also establish permit conditions in determining the appropriate intensity of development near flood hazard areas. The Subdivision Ordinance provides setbacks from redline channels, outlines residential development standards, and dedicates all rights-of-way for the county's channels to the District.

4.3.1.3 Flood Plain Management Ordinance for the Unincorporated Area

When a community chooses to join the NFIP, it must require permits for all development in the Special Flood Hazard Area and ensure that the construction materials and methods used will minimize future flood damage. A community must implement the floodplain management ordinance to ensure compliance with the NFIP, review permits for structures built in the floodplain, and evaluate site plans for developments within identified floodplains. In return, the Federal government makes flood insurance available for almost every building and its contents within the community. Communities must ensure that their adopted floodplain management

ordinance and enforcement procedures meet program requirements. Local regulations must be updated when additional data are provided by FEMA or when Federal or state standards are revised. The California Department of Water Resources provides and encourages the adoption of the California Model Floodplain Management Ordinance. The Ventura County Board of Supervisors adopted the Ventura County Flood Plain Management Ordinance (Ordinance 3741) on September 3, 1985. That ordinance was amended, then repealed and replaced with the current Floodplain Management Ordinance (Ordinance 3841) on February 2, 1988. Ordinance 3481 was subsequently amended on March 21, 1989 (Ordinance 3890), June 27, 1989 (Ordinance 3902), and October 9, 1990 (Ordinance 3954).

The following outlines some of the requirements laid out in the ordinance.

- **Establishment of development permit:** Requires developers to obtain a development permit before any construction or other development begins within a Special Flood Hazard Area.
- **Designation of the floodplain administrator:** Requires the floodplain administrator to implement and enforce the ordinance, review permits and other base flood data, notify other agencies of the alteration/relocation of a watercourse, document floodplain development, and interpret Flood Insurance Rate Maps (FIRMs).
- **Standards of construction:** Requires standards for anchoring new or substantially improved structures and manufactured homes, construction materials, floodproofing, and a freeboard requirement of 1 foot above base flood elevation.
- **Standards for utilities:** Requires utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.
- **Standards for subdivisions:** Requires all subdivision proposals to identify the Special Flood Hazard Area, elevation of the base flood, and elevation of structures and pads.
- **Standards for manufactured homes:** Requires manufactured homes placed outside of a home park or subdivision to be on a permanent foundation such that the lowest floor of is 1 foot above the base flood elevation.
- **Standards for recreational vehicles:** Requires that recreational vehicles located within the Special Flood Hazard Area be on the site for fewer than 180 consecutive days, and be fully licensed and ready for highway use.
- **Floodways:** Prohibits encroachments, including fill, new construction, substantial improvements, and other new development in the FEMA-designated floodway unless certification by a registered professional engineer is provided to demonstrate that encroachments shall not result in any increase in base flood elevation during the occurrence of the base flood discharge.
- **Coastal high hazard areas:** All new construction and substantial improvement shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the lowest floor is elevated to or above the base flood level and that no enclosed structures below the base flood elevation be inhabited.

4.3.2 Plans

4.3.2.1 General Plan

The Ventura County General Plan was first developed in 1988, fulfilling Section 65300 of the California Government Code. The plan, last amended in January 2004, has a planning horizon of 2010. It consists of a countywide Goals, Policies, and Programs document containing four chapters (Resources, Hazards, Land Use, and Public Facilities and Services) and four corresponding appendices that contain background information and data in support of the first document. Floods and inundation from dam failures are two of the 17 hazards identified in the plan.

As part of the flood hazard section, the plan addresses three goals: (1) reducing the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from flood hazards; (2) constructing appropriate surface drainage and flood control facilities; and (3) preventing incompatible land uses and development within floodplains. Flood policies limit use in the floodway and require development in the 100-year floodplain to be built in accordance with the Ventura County Flood Plain Management Ordinance.

The section covering inundation from dam failure only addresses one goal: to minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from inundation by dam failure. Policies include designing dams to withstand catastrophic events. Dam break studies, new dam inundation studies, and an annual review of the Dam Failure Contingency section of the Multihazard Functional Plan are laid out as effective programs.

Post-fire debris flow is not addressed as a separate hazard in the General Plan.

4.3.2.2 Integrated Emergency Procedures Manual

The county Public Works Agency, a lead agency in responding to major emergencies, developed a manual to guide agency operations during an emergency and as a planning document to develop preparedness training. The Watershed Protection Emergency Procedure Manual, outlined in Appendix F of the manual, provides general instructions for a mobilization plan and information systems to be used during flood emergencies, the Automated Local Evaluation in Real Time (ALERT) flood warning system, and special instructions for the Public Works Agency. Additionally, it details the Flood Control Emergency Procedures. The Public Works Agency last updated this manual in October 2003.

4.3.2.3 Integrated Watershed Protection Plan

The District identifies spending for projects to reduce flood risks in the Capital Improvement Plan (CIP). Through the CIP process, the District identifies and evaluates potential capital projects for funding over a five-year period and allocates funding from available sources of revenue according to identified priorities. The current CIP funding period ends in 2009. To identify projected priorities and spending beyond the end of the CIP funding period, the District is preparing the Integrated Watershed Protection Plan (IWPP). Through the IWPP, potential District-wide needs will be identified and prioritized for funding over the 20-year period beyond 2009. The District plans to complete the draft IWPP by late 2004.

The goal of the IWPP is to identify the level of service that can be maintained, given projected revenues available to the District for capital improvements. To develop a list of potential projects for the IWPP, the District is conducting a systematic evaluation of drainage problems, flooding risks, and other needs that fall within its purview. As each need is identified, a preliminary solution involving improvement, retrofit, or upgrade is developed, along with a cost estimate. These solutions are prioritized using factors such as hazard level, environmental impact, cost-benefit ratio, and socioeconomic impact. Preliminary designs are developed for high-priority projects to ensure that the cost-benefit analysis is accurate. Additionally, a preliminary environmental assessment is performed for each high-priority project to ensure that mitigation costs or other environmental factors do not make the project economically or environmentally unfeasible.

Based on revenue projections, the District determines the number of projects that can be funded during the 20-year planning period. This process will allow the District to identify projects for which funding will not be available and to identify potential alternative sources for funding to implement projects necessary to achieve the desired level of service.

The District plans to update the IWPP on an annual basis. During the life of the IWPP, the highest-priority projects will be incorporated into the CIP on the basis of available funding. Unfunded projects, or additional projects that the District identifies, will be re-prioritized and projected revenues will be re-allocated accordingly.

4.3.3 Programs

4.3.3.1 National Flood Insurance Program

The NFIP is a congressionally authorized program to reduce the costs and impact of flooding across the United States. Under this program, the Federal government makes affordable flood insurance available to homeowners, business owners, and renters in participating communities. In exchange, those communities must adopt and enforce minimum floodplain management regulations to reduce the risk of damage from future floods. Nearly 20,000 communities nationwide participate in the NFIP, including Ventura County and the 10 incorporated communities within the county.

Flood insurance reduces the cost of Federal disaster assistance. According to FEMA, every $3 paid in flood insurance reduces disaster assistance payments by $1. However, the NFIP achieves its greatest fiscal impact by encouraging communities to reduce flood risks. FEMA estimates that sound floodplain management practices reduce flood damage by $1 billion annually, and that buildings constructed in compliance with NFIP requirements are likely to suffer 80 percent less damage annually than noncompliant buildings.

Ventura County entered the Regular Program of the NFIP on October 31, 1985. As of September 2000, 1,333 flood insurance policies were in force within the unincorporated county, with a total coverage of $253 million. As described in Table 3-12, this represents approximately 8.8 percent of flood-prone structures in the county. The Director of Public Works for Ventura County is the designated floodplain manager. The Ventura County Flood Plain Management Ordinance 3954, which meets the minimum requirements of the NFIP, is dated October 9, 1990. As described in Table 4-2, the District provides services necessary to implement this ordinance. The ordinance is described in more detail in Section 4.3.1.3.

To encourage communities to increase the effectiveness of floodplain management programs, FEMA has implemented the Community Rating System. Under the Community Rating System, communities receive credit for implementing floodplain management measures that go beyond the minimum criteria of the NFIP. For example, under the NFIP a community is required to ensure that a new structure built in a flood hazard is elevated so that its lowest floor is at or above the base flood elevation. The community would receive credit under the Community Rating System for requiring that such a structure be elevated so that its lowest floor is at least 1 foot above the base flood elevation. As the community increases its rating under the Community Rating System, flood insurance policy holders in the community receive discounts on flood insurance premiums. Currently, Ventura County is not participating in the Community Rating System.

To support the sale of insurance and to provide communities with tools for floodplain management, FEMA has developed a nationwide system for identifying and mapping flood hazards. As described in Section 3.4 above, flood hazard information is shown on FIRMs. These maps show identified 100- and 500-year floodplains. For flooding sources studied by detailed methods, the FIRMs also show base flood elevation. The current FIRM for the unincorporated areas of Ventura County is dated October 31, 1985. Several of the county's FIRMs were revised on September 28, 1990, and September 3, 1997. FEMA is currently conducting a restudy of the Calleguas Creek Watershed; this restudy will be used to update the flood hazard data shown on the FIRMs.

FEMA is currently implementing a nationwide plan to modernize the system of FIRMs. As part of the map modernization effort, FEMA plans to convert the FIRMs for Ventura County and the incorporated communities into a single, countywide digital FIRM (DFIRM). To prepare the DFIRM, FEMA will transfer the flood hazard data shown on the existing FIRMs to a digital base map. Additionally, FEMA will incorporate the above-referenced restudy of Calleguas Creek as well as additional changes to the FIRMs that have been identified through Letters of Map Correction but never incorporated into the FIRMs. FEMA expects to release a preliminary version of the countywide DFIRM for review in mid-2005.

As part of the nationwide map modernization effort, FEMA is enlisting the support of state and local governments through the Cooperating Technical Partners (CTP) Program. Through the CTP Program, FEMA establishes partnerships with these entities to leverage resources, increase productivity, and engage partners in the mapping process, thereby increasing local "ownership" of the products. For purposes of creating the DFIRM described above, FEMA is working with the District and the incorporated cities to establish CTP agreements.

4.3.3.2 Ventura County Stormwater Quality Management Program

The Ventura Countywide Stormwater Quality Management Program was established in 1994 to meet the requirements of Section 402(p) of the Clean Water Act. The Clean Water Act requires that all point source discharges of pollutants into waters be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. The District serves as the Principal Co-Permittee for the permit and coordinates countywide permit activities; the development of materials; and the planning and implementation of plans, including conducting water quality sampling, analysis, and data evaluation on behalf of all of the Co-Permittees. The District also serves as a Co-Permittee, along with Ventura County and the other 10 incorporated cities within

the county. Together, these 12 agencies develop, administer, implement, and enforce the cooperative Stormwater Quality Management Program within their respective jurisdictions.

The NPDES permit carries a term of five years. Its legal and regulatory tools include a comprehensive Stormwater Quality Monitoring Plan, Pesticide Protocols, and a Stormwater Ordinance. The Stormwater Management Plan outlines permit requirements and the goals and objectives of each program element, including the performance criteria that assure permit compliance. The programs are as follows:

- **Program Management:** The Principal Co-Permittee carries out overall management of Stormwater Quality Program, and Co-Permittees administer the program within their jurisdictions.
- **Program for Residents:** Combines education outreach tools and activities to increase the knowledge of target audiences about the impacts of stormwater pollution and potential solutions to reduce problems.
- **Program for Industrial/Commercial Businesses:** Incorporates an outreach program as well as a site visit/inspection program that regulates stormwater discharges from municipal and industrial facilities under the NPDES permit.
- **Program for Planning and Land Development:** Applies to projects during the planning and permitting review/process; designed to ensure that appropriate post-construction best management practices (BMPs) are included in plans and designs.
- **Program for Construction Sites:** Addresses the implementation of BMPs, including erosion control, sediment control, site management, and materials and waste management, to control pollution runoff from construction activities.
- **Program for Public Agency Activities:** Addresses the implementation of BMPs to control pollutant discharges to the storm drain system to the maximum extent practicable from co-permittee activities, including the operation and maintenance of municipal infrastructure.
- **Program for Illicit Discharges/Illegal Connections:** Identifies and eliminates illicit discharges and illegal connections to the municipal stormwater sewer system.
- **Stormwater Monitoring Program:** Characterizes surface water quality and aids in the identification of pollutant sources as well as the evaluation of stormwater program effectiveness.

4.3.3.3 Santa Clara River Parkway Project

In 2000, the Coastal Conservancy initiated a project to create a 20-mile-long natural corridor from the mouth of the Santa Clara River to the Sespe Creek confluence. The project was established with two purposes: the acquisition and public management of the river corridor to allow for habitat restoration, public enjoyment and environmental education; and the restoration of the natural processes of the river to prevent continued flooding and damage to habitat, farmland, and public facilities.

In 2001, the Coastal Conservancy received $9.2 million in funding from the legislature for this project. During this time, the Coastal Conservancy, working with its project partners, including National Park Service, California Department of Parks and Recreation, Santa Monica Mountains

Conservancy, Coastal Conservancy, U.S. Fish and Wildlife Service, California Department of Fish and Game, Friends of Santa Clara River, approved the Santa Clara River Conceptual Enhancement Plan.

During that same year, the Coastal Conservancy authorized the first land acquisition of 225 acres along approximately one and a half miles of the river. Since that time, the Coastal Conservancy has authorized the Nature Conservancy to acquire nine other properties for a total of 1,400 acres and seven miles of river. Additionally, the Friends of the Santa Clara River has acquired one property. Once the acquisition goal of continuous ownership has been achieved, the Coastal Conservancy will implement a comprehensive levee removal and habitat restoration effort. The Coastal Conservancy and its project partners hope to acquire an additional 4,500 acres to complete the project.

4.3.3.4 ALERT Storm Watch System

The Ventura County Watershed Protection District operates the countywide Automated Local Evaluation in Real Time (ALERT) Storm Watch System. The ALERT system monitors rain and stream gauges in real-time and uses two hydrology models with rainfall forecasts to identify potential flooding locations throughout Ventura County. Information on flooding predicted by the models or actual flooding measured by the stream gauges is then transmitted to the county Office of Emergency Services to decide if emergency response plans or evacuations need to be initiated.

The services of a private weather consultant and forecasts from the National Weather Service provide quantitative precipitation forecasts (QPF) on a daily basis for nearly 20 locations throughout the county. Predictive peak flow models are run with the QPF forecasts to predict peak flows and provide advance warning of any impending flood problems. Two different models are used to increase the confidence in the modeling results.

The ALERT gauge system consists of a network of self-reporting rain gauges and streamflow gauges located throughout Ventura County on the major river and creek systems. The ALERT system rain gauge, stream gauge, and weather station names and locations are listed in Appendix C.

The gauges report real-time information to an operations room via radio transmission. The real-time rain gauge data are also entered in one of the predictive models as the data become available to improve the stream peak flow estimates. The real-time data allow the model to predict any flooding due to intense storm cell rainfall above the QPF predictions. The stream gauge information provides real-time flow data that allows the District to provide current flooding information to the relevant agencies.

The ALERT system was implemented on the Santa Clara and Sespe Creek watersheds beginning in 1980 in response to several floods in 1978 that caused damage in the City of Fillmore. During the storms of February 1980, the ALERT system provided advance notice for emergency personnel to carry out defensive work, and an orderly evacuation was implemented, preventing what might have been another major disaster. The value of the system was also proven when two major storms hit Ventura County on January 10, 1995, and March 10, 1995, causing considerable public and private property damage. Advance notice provided by the ALERT system allowed the

evacuation of campgrounds and trailer parks in low-lying areas and road closures, preventing additional damage and loss of life from occurring.

4.4 FISCAL RESOURCES

Sources of District revenues include property taxes, benefit assessments, and land development fees paid by property owners within the county fund. Table 4-3 shows specific financial and budgetary tools available to the District.

Table 4-3
Revenue Sources for Flood Mitigation

Financial Resources	Available to District for Flood Mitigation	Available to the County for Flood Mitigation
Capital improvements project funding	Y	N
Authority to levy taxes for specific purposes	Y	Only with assent of the property owners/voters
Impact fees for homebuyers or developers for new developments/homes	Land Development fees and mitigation projects	Nexus required
Stormwater impact fees	Land development fees	Nexus required
Incur debt through general obligation bonds	Last used in 1970s	Only with assent of the property owners/voters
Incur debt through special tax and revenue bonds	Last used in 1970s	Only with assent of the property owners/voters
Incur debt through private activity bonds	N	Only with assent of the property owners/voters
Withhold spending in hazard-prone areas	N	N
Hazard Mitigation Grant Program		Y
Pre-Disaster Mitigation Grant Program		Y
Flood Mitigation Assistance Grant Program		Y
Facilities maintenance and stormwater – benefit assessment on property tax	Y	

5.1 OVERVIEW OF A MITIGATION STRATEGY

A mitigation strategy describes a community's blueprint for reducing potential hazards. It is based upon an assessment of the community's vulnerabilities and capabilities to implement appropriate mitigation actions and is designed to represent a long-term vision for hazard reduction and enhancement of mitigation capabilities.

The mitigation strategy is composed of goals, objectives, and actions. Goals are defined as general guidelines that explain what the community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing jurisdiction-wide visions. Objectives are statements that detail how the community goals will be achieved. Typically, objectives define strategies or implementation steps to attain identified goals. Actions are specific measures that help a community achieve its goals and objectives.

5.1.1 Goals, Objectives, and Actions

Goal 1: Build and support local capacity, commitment, and resources to become less vulnerable to flood hazards.	
Objective 1.A: Increase awareness and knowledge of flood hazards and flood mitigation practices among Ventura County staff and other communities participating in the National Flood Insurance Program (NFIP).	
Action 1.A.1	Host a local California Department of Water Resources (DWR) workshop. Workshops include: Floodplain Management and Duties of the Local Administrator; Federal Emergency Management Agency (FEMA) Elevation Certificate; Substantial Improvement and Substantial Damage; and Approximate A Zone.
Action 1.A.2	Host or attend a FEMA Benefit-Cost Analysis Workshop.
Action 1.A.3	Encourage sending county staff to flood-related courses at FEMA's Emergency Management Institute.
Objective 1.B: Encourage consistent enforcement of floodplain management regulations.	
Action 1.B.1	Review Ventura County General Plan, Zoning Ordinance, Subdivision Ordinance, and Flood Plain Management Ordinance for consistency.
Action 1.B.2	Review the Flood Plain Ordinance to ensure that issues raised in FEMA's 2000 Community Assistance Visit (CAV) are addressed.
Objective 1.C: Establish and maintain closer working relationships with state, county, and local governments.	
Action 1.C.1	Coordinate resources and expertise between Ventura County and District to further flood hazard mitigation efforts.
Action 1.C.2	Continue to participate in the county's Inter-Agency Coordination Group and Disaster Council.
Action 1.C.3	Coordinate more closely with the State Coastal Conservancy, the Nature Conservancy, and the Friends of the Santa Clara River in their efforts to acquire and manage the lower Santa Clara River corridor to allow for the restoration of the natural processes of the river to prevent continued flooding and damage.
Objective 1.D: Actively pursue grant funding for flood hazard mitigation.	

Action 1.D.1	Review the Capital Improvement Plan (CIP) and the Integrated Watershed Protection Plan (IWPP) to identify candidate projects for hazard mitigation funding.
Action 1.D.2	Review Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM) application processes and establish internal procedures to streamline the development of applications for these programs.
Objective 1.E: Identify and address flood hazard data needs.	
Action 1.E.1	Continue to participate in FEMA's Map Modernization Program as a Cooperating Technical Partner (CTP) and encourage incorporated communities within Ventura County to become CTPs.
Action 1.E.2	Support FEMA's production of the countywide DFIRM by providing data, coordinating with incorporated communities, and effectively managing public involvement.
Action 1.E.3	Upon completion, incorporate the DFIRM database into the District's GIS.
Action 1.E.4	As a CTP, assume responsibility for updates to the DFIRM, including incorporation of FEMA LOMR/LOMAs into flood layers as they occur.
Action 1.E.5	Identify floodprone areas where conditions have changed or where flood data does not exist and work with FEMA and the Department of Water Resources (DWR) to add these areas to restudy priority lists.
Action 1.E.6	Enhance Automated Local Evaluation in Real Time (ALERT) system by adding gauges, calibrating models, and establishing system capacities and peak flow levels that signal flood threats.
Objective 1.F: Consider joining the Community Rating System (CRS).	
Action 1.F.1	Review program requirements and application process on CRS Resource Center's webpage: http://training.fema.gov/EMIWeb/CRS/.
Action 1.F.2	Implement pre-requisite actions as appropriate (e.g. implementation of an system for preparing Elevation Certificates).
Action 1.F.3	Request that FEMA Region IX perform a new CAV, and respond to CAV comments as necessary.
Action 1.F.4	Complete the Community Rating System application and submit to FEMA Region IX.
Objective 1.G: Review existing Ventura County policies, regulations, mandates, programs, and procedures related to floodplain management, protection and restoration, and stormwater runoff, and pursue strategies to improve these policies and programs and/or their effectiveness.	
Action 1.G.1	Work with the Planning Division to develop recommendations for river and stream setbacks for new development.
Action 1.G.2	Work with the Planning Division to evaluate the effectiveness and potential of a Flood Overlay Zone to reduce development impacts within the floodplain.
Action 1.G.3	Develop a method to analyze the cumulative effects of development within the floodplain.
Action 1.G.4	Develop recommendations for Ventura County policies that offer better protection and maintenance of riparian corridors and natural vegetation.

Goal 2: Promote public understanding, support, and demand for flood hazard mitigation.	
Objective 2.A: Educate the public to increase awareness of flood hazards and opportunities for flood mitigation actions.	
Action 2.A.1	Utilize Emergency Preparedness Month (April) to issue a proclamation and press releases to local media regarding flood hazard mitigation methods.
Action 2.A.2	Offer flood hazard awareness and mitigation displays at street fairs, at fire station open houses, in library display cases, at health fairs, and other venues.
Action 2.A.3	Use county resources (e.g. such as the District, Office of Emergency Services, and Fire Department websites) to present flood hazard mapping, highlight county warning system, and other flood-related information.
Action 2.A.4	Issue media releases regarding new or updated hazard information, such as the DFIRM or updates to dam inundation mapping.
Action 2.A.5	Issue media releases regarding successful flood hazard mitigation efforts.

Goal 3: Reduce the possibility of damage and losses to assets, particularly people, critical facilities, and District-owned facilities, due to floods.	
Objective 3.A: Reduce the existing potential for flood damage to public health, safety, life, and property.	
Action 3.A.1	Develop a list of floodprone structures that are candidates for mitigation (elevation, buyout, or floodproofing). Determine property owner interest in mitigation. For likely candidates, develop packages that can be used to request FMA and PDM grants.
Action 3.A.2	Ensure that substantial improvement/damage ordinance is applied to identified floodprone structures.
Action 3.A.3	Maintain flood control channels and storm drains, in accordance with habitat preservation policies, through periodic dredging, repair, de-silting, and clearing to prevent any loss in their effective use.
Action 3.A.4	Identify minor flood and stormwater management projects that would reduce damage to infrastructure and damage due to local flooding/inadequate drainage. These include modification of existing culverts and bridges, upgrading capacity of storm drains, stabilization of streambanks, and creation of debris or flood/stormwater retention basins in small watersheds.
Objective 3.B: Ensure new development is properly located and conditioned to avoid flooding.	
Action 3.B.1	Continue to enforce Flood Plain Management Ordinance for new construction and substantial improvement/damage in floodprone areas.
Action 3.B.2	Limit the uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.
Action 3.B.3	Continue to work with Public Works Agency Real Estate Services Division to identify and purchase foreclosed lands in the county within floodways.
Objective 3.C: Evaluate possible programs aimed at reducing impervious surfaces and associated stormwater runoff.	
Action 3.C.1	Work with the Ventura Countywide SQMP, Ventura County Public Works Road Department, Public Works Development Services Department, Fire Protection District, and the Planning Division to develop recommendations to reduce the amount of impervious cover that results from the development projects, including roads.
Action 3.C.2	Work with the Ventura Countywide SQMP and Ventura County Planning Division to evaluate the effectiveness and potential of a Low Impact Development program.

Goal 4: Reduce the possibility of damage and losses to assets, particularly people, critical facilities, and District-owned facilities, due to dam failure.	
Objective 4.A: Increase risk awareness and level of preparedness for dam failure inundation.	
Action 4.A.1	Review current dam failure information/data for clarity and accuracy.
Action 4.A.2	Review current evacuation plans for accuracy and practicality.
Action 4.A.3	Review and update District inundation maps every five years and participate in California Division of Safety of Dams (DSOD) mapping updates.
Action 4.A.4	Ensure that awareness of dam inundation risk is incorporated into the planning process for development and siting of critical facilities.
Objective 4.B: Reduce the potential for dam failure.	
Action 4.B.1	Evaluate structural integrity of District dams that were not constructed according to current dam construction standards.
Action 4.B.2	Retrofit dams with inadequate emergency spillway capacity to minimize the possibility of dam failure during storm events.
Action 4.B.3	Evaluate removal of debris/detention basins that do not function for flood control or debris capture.
Action 4.B.4	Identify actions to achieve sediment equilibrium of watersheds and debris/detention basins.

Goal 5: Reduce the possibility of damage and losses to assets, particularly people, critical facilities, and District-owned facilities, due to post-fire debris flows.	
Objective 5.A: Reduce the existing potential for post-fire debris flows to public health, safety, life and property.	
Action 5.A.1	Identify and map potential hazard areas.
Action 5.A.2	Continue post-fire preparedness program by installing additional rain gauges if necessary, distributing information on stream flows and sediment transport, and documenting hazards created by changes in the carrying capacity of streams or changes in slope characteristics.
Action 5.A.3	Develop evacuation plans for local residents so that if the forecast calls for heavy rains in areas at risk, homes within an identified range of hazards can be evacuated.
Action 5.A.4	Review warning systems and risk identification levels to evaluate the need for enhancements, such as to the ALERT system, or the need for updated protocols and thresholds for triggering emergency activities.
Action 5.A.5	Enhance warning capabilities by adding gauges to the ALERT system and using cameras to monitor remote areas.
Objective 5.B: Educate the public to increase awareness of post-fire debris flows and opportunities for mitigation actions.	
Action 5.B.1	Develop a post-fire debris flow public education program.
Action 5.B.2	Make post-fire debris flow maps available to the public as soon as they become available after a fire through the District's website.

Goal 6: Reduce the number of repetitively damaged structures and the associated claims to the National Flood Insurance Program.	
Objective 6.A: Address data limitations regarding Repetitive Loss properties.	
Action 6.A.1	Collect more detailed information regarding causes of flooding for Repetitive Loss properties.
Action 6.A.2	Develop, maintain and update a Repetitive Loss database that identifies structures by number of losses, dollar amount of losses, location of structure, and location of structure relative to the flood hazard.
Objective 6.B: Reduce or eliminate the potential for flood damage to Repetitive Loss properties.	
Action 6.B.1	Develop a priority list of Repetitive Loss properties that are candidates for elevation or buyout. Determine property owner interest in participating in these efforts.
Action 6.B.2	For likely candidates, develop packages that can be used to request FMA and PDM grants.

5.1.2 Implementation Strategy

Once the comprehensive list of District goals, objectives, and actions discussed above was developed, the proposed mitigation actions were prioritized. Using considerations such as ease of implementation, multi-objective actions, time, and post-disaster mitigation feasibility, the District ranked the possible action items on a scale of high, medium, and low. Additionally, the implementation strategy for each action is as follows. Implementation consists of identifying the responsible agency or individual, potential funding mechanisms, implementation timeline, economic justification, and priority level.

Action Item #1	Convert digital flood themes to DFIRM when available and incorporate FEMA Letter of Map Revision (LOMR) / Letter of Map Amendment (LOMA) into flood layers as they occur.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	County of Ventura
Implementation Timeline	2 years
Economic Justification	Accurate, up-to-date information reduces future flood damage.
Priority Level	High

Action Item #2	Work with the Watershed Protection District to enhance ALERT system by adding gauges, calibrating models, and establishing system capacities and peak flow levels that would lead to flooding.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Grant funding and Watershed Protection District
Implementation Timeline	3 years
Economic Justification	ALERT system is a critical life and safety tool.
Priority Level	High

Action Item #3	Retrofit dams with inadequate emergency spillway capacity to minimize the possibility of dam failure during storm events.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Watershed Protection District, with possible grant funding
Implementation Timeline	1 year
Economic Justification	May be used for planning purposes to reduce repetitive losses due to flooding.
Priority Level	High

Action Item #4	Develop, maintain and update a Repetitive Loss Database that identifies structures by number of losses, dollar amount of losses, location of structure, and location of structure relative to the 100-year floodplain.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Grant funding, county and local funding
Implementation Timeline	5 years
Economic Justification	Protects public health, safety, life and property and reduces claims to NFIP.
Priority Level	Protects public health, safety, life and property and reduces claims to NFIP.

Action Item #5	Host a local California Department of Water Resources workshop. Workshops include: Floodplain Management and Duties of the Local Administrator; FEMA Elevation Certificate; Substantial Improvement and Substantial Damage; and Approximate A Zone.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Watershed Protection District
Implementation Timeline	2 years
Economic Justification	Part of Ongoing education and coordination with other state and local agencies.
Priority Level	Medium

Action Item #6	Complete and submit the Community Rating System application to FEMA Region IX.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	County of Ventura
Implementation Timeline	3 years
Economic Justification	Helps to evaluate and enhance the implementation of the floodplain management program.
Priority Level	Medium

Action Item #7	Remove, elevate, or flood-proof Repetitive Loss structures. Survey property owners regarding their participation in this voluntary program.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Grant funding
Implementation Timeline	5 years
Economic Justification	Protects public health, safety, life and property and reduces claims to NFIP.
Priority Level	Medium

Action Item #8	Implement minor physical flood mitigation projects that do not duplicate the flood-prevention activities. These include modification of existing culverts and bridges, installation or modification of floodgates, stabilization of streambanks, and creation of small debris or flood/stormwater retention basins in small watersheds.
Individual / Organization	County of Ventura and Ventura County Watershed Protection District
Potential Funding Source	Grant funding, county and local funding
Implementation Timeline	5 years
Economic Justification	Protects public health, safety, life, and property and reduces claims to NFIP.
Priority Level	Low

6.1 PLAN MAINTENANCE OVERVIEW

This section includes an explanation of how the District intends to organize its efforts to ensure that improvements and revisions to the flood mitigation plan occur in a well-managed, efficient, and coordinated manner.

6.1.1 Monitoring, Evaluating, and Updating the Plan

The District staff will meet annually to discuss the hazard identification and risk assessment portion of the flood mitigation plan to determine if this information should be updated or modified, given any new available data. Additionally, it will conduct an annual review of progress implementing the flood mitigation plan, particularly the implementation strategy. The annual review will provide the basis for possible changes in the flood mitigation plan's implementation through refocusing on new or more threatening flood hazards, changes to or increases in resources allocations and engaging additional support for the flood mitigation plan's implementation. The review will include an evaluation of the following:

- Notable changes in the county's risk from flood hazards.
- Impacts of land development activities and related programs on flood hazard mitigation.
- Progress on implementation of the flood mitigation plan. If necessary, this will include identification of problems and suggested improvements.
- Actual progress implementing the flood mitigation plan versus expectations.
- The adequacy of resources for implementation of the flood mitigation plan.

In addition to an annual review, the District will ensure that any changes made to the flood mitigation plan be reflected in the hazard mitigation plan.

6.1.2 Implementation Through Existing Programs

The District staff will work to incorporate the mitigation strategy of the flood mitigation plan into other existing plans and programs by undertaking the following activities.

- Conduct annual reviews of the regulatory tools (identified in the capability assessment) to assess the integration of mitigation requirements.
- Work with pertinent divisions and departments of both the District and county to identify potential flood hazards that may result from planning and development decisions.
- Provide technical assistance to any division or department in implementing these requirements.
- Analyze plan amendments that affect the physical or built environment.

6.1.3 Continued Public Involvement

Copies of the flood mitigation plan will be catalogued and kept with the District. In addition, a downloadable copy of the flood mitigation plan and any proposed changes will be posted on the District's website, with specific direction made to flood hazard mitigation materials. This site will also contain an email address and phone number to which people can direct their comments or concerns. In addition, the District will continue to participate in the quarterly Disaster Council Meetings.

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Appendix A
Public Meetings And Notices

AGENDA

Ventura County Inter-Agency Coordination Group Meeting

"*Emergency Planning for Members of the Ventura County Operational Area*"

1:30 p.m. to 3:30 p.m.
Thursday, April 15, 2004
Sheriff's Training Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

I. Emergency Management Round Table

II. State Homeland Security Grant Update

III. Regional Hazard Mitigation Plan

IV. CERT Training Program

V. AWI-04 Exercise

VI. EMA Funding for 2004

VII. Other Items

VIII. Meeting adjourned

IX. Next meeting Thursday, May 20, 2004

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
April 15, 2004

Attendees:

Royce Davis, Fillmore Fire
Bill Gallaher, Oxnard Fire
Brian Gordon, Ventura City Fire
Graham Watts, City of Thousand Oaks
Ken Maffei, County Fire
Laura D. Hernandez, Sheriff's OES
Pamela Nishimoto, Sheriff's OES
John Correa, Ojai Sanitation Dist
M. Linda Case, TO DART
Scott Leese, Bell Canyon DART
Diane Starzak, Oak Park CERT
Matt Rosenberg, Red Cross
Jerry Beck, Pt. Hueneme PD
John Fraser, City of Camarillo
Sgt. Stan Hibdon, Sheriff's Dept. T.O.
Dale Carnathan, Sheriff's OES
Jackie Hull, Sheriff's OES
Carl Inglis, United Water Con. Dist
Monica Buckhout, Red Cross/TODART
Lana Tickner, Bell Canyon DART
Hugh Bosma, RACES
Jerry B. Goldman, RACES

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. Round Table

Matt Rosenberg, Red Cross
Thank you for announcing Long Term Recovery Casework Class sponsored by the Red Cross. The 6-hour class will be held on April 27th at the Ventura Chapter, 2355 Portola Road at 9:00 AM. Call Monica Buckhout at 339-2234 for reservations. This class is also sponsored by the Lutheran Social Services for the benefit of anyone affected by the 2003 Southern California fires.

II. State Homeland Security Grant Update – Laura D. Hernandez, Sheriff's OES
Currently, OES is sending the request for permission to apply for the 2004 Homeland Security Grant before the Board of Supervisors. The spending plan for the 2004 grant has received Approving Body approval. The 2004 Grant Application is due to the State by May 8, and will be electronically filed by OES.

There are three sections to the 2004 Homeland Security Grant:

A. Fire/Law Enforcement/EMS/Other
The other will be used by OES to upgrade EOCs, fund an additional OES position, an exercise, and communications equipment for interoperability.

B. Law Enforcement Prevention Program

C. Citizen Corp/CERT Grant funding
This money from the 2004 Homeland Security Grant will be used to expand the CERT Program as well as help fund the existing DART and CERT programs.

Regional Hazard Mitigation Plan Grant (Pre-Disaster Mitigation Program)
The announcement that Ventura County had received this grant appeared in the paper before OES was aware that it had been awarded. This grant had been applied for in November of 2003.

This grant has a deadline of November 2004. In order to qualify for any new Hazard Mitigation grants after 2004, there must be an approved Hazard Mitigation Plan in place for cities, Special Districts, and the County Operational Area. However, post-disaster, the hazard mitigation money can still be applied for, but a valid, approved Hazard Mitigation Plan must be in place within one year following the disaster.

A portion of the $81,000 that was awarded will be used to bring someone on board who will be able to compile all the safety elements from participating cities as well as Special Districts and the Operational Area into a Regional Plan. The cities and Special Districts are asked to let Laura Hernandez know if they would like to participate and be included. Each city and/or Special District will have to perform their own hazard vulnerability survey analysis, and identify vulnerable facilities within their jurisdictions. They will also have to identify what hazard mitigation measures they would take.

Laura is looking for individuals to join in the planning process for the Hazard Mitigation Plan. The plan will need to be adopted not only by the Board of Supervisors, but also by each of the participating jurisdictions' Boards or Approving Bodies.

IV. CERT Training Program

A. Thousand Oaks would like clarification of the differences between D.A.R.T. and C.E.R.T.

V. AWI-04 Exercise
Plans for the 2004 exercise are in place. An Exercise Design Team has been assembled and is working on the scenario, which will be a mass casualty incident between Moorpark and Simi. Currently, they are looking at a venue in the area of Oak Park. The dates of the exercise will be August 4 and 5, 2004. Volunteers will be needed for moulage, traffic control, feeding, and EO staffing.

VI. EMA Funding for 2004 – Laura D. Hernandez
(Discussion tabled until next meeting)
The amount of money allotted to Ventura County will be $130,000 this year (2004). There will be some changes in how the money will be spent and the way that the funds are distributed.

VII. Other Items
There were some questions concerning the Disaster Service Worker sticker on the back of the Special District workers' identification cards.

AGENDA

Ventura County Inter-Agency Coordination Group (IACG) Meeting

"Emergency Planning for Members of the Ventura County Operational Area"

1:30 p.m. to 3:30 p.m.
Thursday, May 20, 2004
Sheriff's Third FloorTraining Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

I. Emergency Management Round Table

II. State Homeland Security Grant Update

III. Regional Hazard Mitigation Plan
Presentation of County Hazard Maps, Bruce Smith Ventura County Resource Management Agency

IV. CERT Training Program

V. DP-04 Exercise

VI. EMPG Application for 2004

VII. Critical Incident Stress Management Program

VIII. Other items

IX. Adjournment

X. Next meeting 1:30 p.m. Thursday, June 17, 2004

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
May 20, 2004

Attendees:

Norma Camacho, Public Health
Matt Winegan, City of Oxnard
Tony Stafford, Camrosa Water
Kim Chudoba, Moorpark
Mark Sanchez, Ventura Co. Fire
Royce Davis, Fillmore Fire
Bill Gallaher, Oxnard Fire
Bruce Smith, Vta. Co. RMA
Dale Carnathan, Sheriff's OES
Laura D. Hernandez, Sheriff's OES
Pamela Nishimoto, Sheriff's OES
John Correa, Ojai Sanitation Dist
Dan Jordan, Public Health
Robert Foster, Vta. Co. Schools (Oxnard)
G. Scott Miller, Vta. Port District
Steve Lazenby, Santa Paula Fire
Wendy Milligan, Terra Firma Enterprises
Matt Rosenberg, Red Cross
Brian Gordon, Ventura City Fire
David Laak, Vta. Co WPD
Rafael F. Nieves, NBVC
Jackie Hull, Sheriff's OES
Susan Dueñas, Sheriff's OES
Eugene Kostiuchenko, Sheriff's OES

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. Skipped the Round Table

II. State Homeland Security Grant Update – Susan Dueñas, Sheriff's OES
Issues with the grants:

1. Cities need to use reimbursement forms and include documentation when submitting items for reimbursement. Include both current reimbursement form and documentation when items are submitted.

2. Track costs and notify OES of cost savings. Follow up on cost savings and request new items with leftover money. Or let Susan know in a timely manner that the money won't be used so that she may allocate the money to other jurisdictions that may need it.

3. Watch due dates and deadlines. Be sure to get paperwork in on time to avoid delays and possible penalties.

The '04 grant application has been approved by the Board of Supervisors and submitted to the State. Currently, OES is now waiting for the award letter for $81,000. OES will send a letter to the subgrantees and outline the conditions of the grant in the letter.

III. Regional Hazard Mitigation Plan – Bruce Smith, RMA

Bruce Smith gave a presentation on the Hazards Appendix of the Ventura County Plan. He demonstrated how to access the Appendix through the Internet and reviewed some of the hazards the Appendix contains. Bruce indicated that people could obtain either 2x3' copies of the hazards maps by contacting Kay Clark at RMA Graphics at 654-3463. There is a charge for the maps and/or files.

After the Northridge Earthquake in 1994, the seismic aspects of the Hazards Appendix were updated. The Fire Mitigation Plan is updated and/or revised every year. With the Regional Hazard Mitigation Plan that is being developed, the State may do a preliminary review of the plan. Therefore, everything must be documented.

The Regional Hazard Mitigation Plan will involve public input. Possibly, we may use the Disaster Council Meeting as the public venue. Also, the Plan will be posted on the Internet for viewing.

For the risk assessment portion of the Regional Hazard Mitigation Plan, OES will go with the County policy on not publishing certain vulnerable facilities.

Possibly, the cities of Oxnard, Moorpark, and Simi Valley will not be participating in the Regional Hazard Mitigation Plan. Each jurisdiction must develop its own mitigation strategy depending upon the type of hazard within its locale.

VII. Critical Incident Stress Management – Dan Jordan, Public Health Agency

This will be paid for by a grant and will involve two types of counseling:

1. Licensed professionals
2. Peer Counseling

Develop a plan for major events; indicate how everyone will work together, including their roles and responsibilities.

Develop a call list. Find out what resources are available. Possibly update and expand the old CISM plan.

This group could become part of the County's Response Plan. However, there should be a comprehensive needs assessment and identification of gaps in resources and training.

V. DP-04 Exercise

Wendy Haddock Milligan, Terra Firma Enterprises, is the lead exercise designer. The plan is to open the County's Emergency Operations Center and test the communications capabilities at the EOC as well as testing at the Field level.

The site of the exercise has been selected. It will be held at Oak Park in Thousand Oaks. Red Cross will need to be involved in the exercise. Bruce Wilson, Simi Valley Emergency Coordinator, will handle Logistics.

For those agencies and jurisdictions wanting to participate, OES needs the field component confirmation for the exercise now. What degree of participation from each jurisdiction will there be? The Field portion of the exercise will be just one day. However, there will be pre-positioning of the equipment the evening before. Currently Oxnard Fire will participate in the Hazardous Materials portion as well as Ventura City Fire and Santa Paula Fire.

IV. CERT Training Program – Pamela S. Nishimoto, Sheriff's OES

Several new CERT programs are starting up. Both Santa Paula and Moorpark will have their first classes in July. Fillmore is starting their second CERT class. Also, Macerich Corporation is arranging for CERT training for all their mall personnel and Baxter Bioscience is working on getting CERT training for their employees.

July 21-23, Ventura County Sheriff's OES will host a Train-The-Trainer course at the East County Sheriff's Station. Please contact Pamela Nishimoto if you are interested.

The Commission on Human Concerns has allocated $13,500 for CERT/DART Team development in Ventura County.

The Simi Unified School District is putting on 3 CERT training programs utilizing their students in conjunction with the Department of Education. This is a pilot program and may be used to train students in the future.

IX. Adjournment – Meeting was adjourned at 3:20 PM.

X. Next Meeting – Thursday, June 17, 2004 at 1:30 PM. Meeting will be devoted to the Hazard Mitigation process.

AGENDA

Ventura County Inter-Agency Coordination Group (IACG) Meeting

"Emergency Planning for Members of the Ventura County Operational Area"

1:30 p.m. to 3:30 p.m.
Thursday, June 17, 2004
Sheriff's Third Floor Training Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

1. Hazard Mitigation Plan
   - Review of Planning Template
   - Confirmation of Participation
   - Identification of Hazards
   - Planning Timeline

2. DP-04 Exercise
   - Review of Venues
   - City Participation

3. 2004 Homeland Security Grant

4. Palm Pilot Assignments

5. Adjournment

6. Next Meeting 1:30 p.m. July 22, 2004
   Sheriff's Third Floor Training Room

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
June 17, 2004

Attendees:

John Correa, Ojai Sanitation Dist
Steve Wickstrum, Casitas Munic. Water
Monica Buckhout, Red Cross
Jerry Beck, City of Pt. Hueneme PD
Kim Chudoba, Moorpark
Mark Sanchez, Ventura Co. Fire
Bill Gallaher, Oxnard Fire
Dawn Robbins, Vta. Co. GIS
Laura D. Hernandez, Sheriff's OES
Jackie Hull, Sheriff's OES
Carl Inglis, United Water
Tony Stafford, Camrosa Water
Russ Olsen, Vta Co. Supt. Of Schools
John Fraser, City of Camarillo
Steve Lazenby, Santa Paula Fire
Wendy Milligan, Terra Firma Enterprises
Brian Gordon, Ventura City Fire
Dave Hutchison, Vta. Co GIS
Cathie Currie, State OES

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. Hazard Mitigation Plan

Review of Planning Template

Hiring a consultant to put the plan together
Hiring consultant after Board of Supervisors' approval
Four hazards to be included in plan: Fire (wildland fire), Flood, Earthquake, Dam Failure, and Coastal Storm (as possible fifth hazard)
Turn in information on Worksheet at next IACG Meeting (July 15, 2004). Shaded areas are not required to meet the 2004 deadline. However, if information is available, fill in.

Confirmation of Participation

Deadline for Letter of Interest is 06/18/04

Scope of Work

Disaster Council Meetings will be Public Forum
Also establish website for public for input
Handout – use Exercise Worksheets to help cities and Special Districts with assessing hazards
Identify City and Special District vulnerable facilities

Planning Timeline

Timeline for the Hazard Mitigation Plan process made by Wendy Milligan
First draft is very rough
Need approximately 30-45 days to pull everything together once all information is collected
Possibly hand-carry Plan to Disaster Council Members if not ready for review and approval at Disaster Council Meeting on September 2, 2004
Get Board of Supervisors' approval and send to State by November 2004

II. DP-04 Exercise

Revue of Venues

Met at Oak Park and did walk-through of area. Actual Park will not be used. The incident will occur east near Simi Valley.

Did walk-through on resources. Fire could occur during exercise. First call (initial response) to train derailment is 2 engines and truck. They will come from Headquarters station. Other equipment will be pre-positioned at or near park. Oak Park will be used as support area.

City/Agency Participation

County Fire will provide two engines, a Battalion Chief, and rescue truck.
Fillmore, Santa Paula, possibly Ventura, or Naval Base could be called for additional engines.
HazMat team will be part of beginning of exercise. The primary goal is a mass casualty incident (MCI).
Boy Scouts will be victims
Moulage through Fire and EMS
Santa Paula Fire will provide 1 engine and will activate EOC
Law Enforcement will be expected to suit up and surround armaments
Still need to know which additional cities/agencies will be participating; possibly the cities of Simi Valley, Moorpark, Santa Paula, and Camarillo

TWG Teams:

Will possibly call for a No-Notice exercise in the next year aimed at First Responders (Field Level).

III. 2004 Homeland Security Grant

Sent in to State on Monday, June 14, 2004.
V-Risk computers, all EOC equipment have been conditionally approved.

Round Table:

Critical Facilities:

Cities/Special Districts e-mail Dawn Robbins, GIS, descriptions and addresses of vulnerable facilities if not on OES' Critical Facilities list.

IV. Palm Pilots Issued to Cities and Red Cross

V. Adjourned – 3:30 PM

VI. Next Meeting: July 15, 2004 at 1:30 PM

AGENDA

Ventura County Inter-Agency Coordination Group (IACG) Meeting

"Emergency Planning for Members of the Ventura County Operational Area"

1:30 p.m. to 3:30 p.m.
Thursday, July 15, 2004
Sheriff's Third Floor Training Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

I. Emergency Management Round Table

II. State Homeland Security Grant Update

III. EMPG Application for 2004

IV. CERT Training Program

V. DP-04 Exercise

   a. EOC Staffing

   b. County/City Interface

VI. Regional Hazard Mitigation Plan

VII. Other items

VIII. Adjournment

IX. Next meeting 1:30 p.m. Thursday, August 19, 2004

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
July 15, 2004

Attendees:

John Correa, Ojai Sanitation Dist
Tony Stafford, Camrosa Water
Kim Chudoba, Moorpark
Steve Caplan, Red Cross
Fiona Kilner, TO DART
Dave Hutchison, Vta. Co GIS
Sergio Vargas, Watershed Prot. Agency
Laura D. Hernandez, Sheriff's OES
Jackie Hull, Sheriff's OES
Ivan Rodriguez, Sheriff's OES
Carl Inglis, United Water
Bill Gallaher, Oxnard Fire
Steve Lazenby, Santa Paula Fire
Wendy Milligan, Terra Firma Enterprises
Mark Horwitz, TO DART
Sherri Dugdale, Watershed Prot. Agency
Cathie Currie, State OES
Dale Carnathan, Sheriff's OES
Eugene Kostiuchenko, Sheriff's OES

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. Emergency Management Roundtable
John Correa, Ojai Sanitation District, mentioned having some problems with the Hazard Mitigation template because of being a Special District and not a City. Laura asked John to discuss this with her after the meeting.

II. State Homeland Security Grant
The 2204 Homeland Security Grant was approved August 3, 2004 by the Board of Supervisors to accept the funds. Some possible purchases with the funds include:

a. 2 Trailers
b. Fire Vehicle
c. EOC equipment – which is currently under "conditional approval" by the State. This equipment includes large-screen televisions and video conferencing equipment for City and County EOCs.

III. EMPG Application for 2004
The Emergency Management Performance Grant application will go before the Board of Supervisors on August 3rd. OES has requested Board approval to apply for the funds.

IV. CERT Training Program
There was a CERT/DART Coordinators' Meeting held last Monday afternoon. This was the third meeting of the group. CERT is expanding significantly in Ventura County. There has been an increase in the requests for CERT instruction during the past year due to strategic planning, collaboration, and communications. Ventura County Fire put on a Train-The-Trainer program in May 2004, to help generate more CERT instructors to meet the needs countywide and Pamela Nishimoto, Sheriff's OES, is coordinating a

statewide Train-The-Trainer class for GOSERV, being held at the East County Sheriff's station on July 21-23, 2004. Nearly twenty Ventura County emergency responders will be taking the course.

New CERT Programs and leadership include:

- Camarillo Springs – First class graduated May 2004 – new CERT team formed (HOA)
- City of Fillmore – Three classes since February 2004 (Fillmore Fire Dept.)
- City of Moorpark – First class starts August 12 (City)
- City of Santa Paula – First class began July 8 (Santa Paula Fire Dept.)

Additionally, the City of Ojai has a list of people interested in the CERT class including a number of volunteers in Policing (VIPS).

V. DP-04 Exercise

EOC Staffing and County/City Interface
Both County and city EOCs will be using RIMS forms. The cities will make up their Incident Action Plans and identify resource needs. There will be EOC directors, a PIO, Plans people, and possibly people from Public Works for barriers and traffic control. Also, some agencies will staff Operations. Some of the Thousand Oaks DART Team may be used for staffing in the Red Cross shelter.

Laura requested that the cities please bring their Palm Pilots to the next IACG meeting for updating.

VI. Regional Hazard Mitigation Plan

Dave Hutchison, PWA-GIS, has created individual agency maps of facilities from the Critical Facilities List. However, some of the agencies' facilities are not listed on the maps. The agencies will check their maps and indicate where a facility may be that isn't currently represented on the map. The agency will then return the map to Dave for updating. Some of the agencies, especially the Water Districts, have problems with exact locations. Often there is no exact street address for the facility. Laura suggested using GPS locators; however, the agencies did not have access to them. Dave suggested that the addresses, cities, and zip codes be included because they are necessary for accurate location on the maps. All corrections should be in to Dave Hutchison by the close of business on Thursday, July 22, 2004. The Hazard Mitigation Plan will include the individual city maps in the Annex.

The Hazard Mitigation templates were developed by the URS Corporation, which wrote the Federal guidelines for the Hazard Mitigation Plan, as well as the Plan itself. Laura would like to contract with them to work on the Ventura County Hazard Mitigation Plan.

The Hazard Mitigation template will have to be adapted for the Special Districts. For example, the customer base would stand in place of the population, and the number of critical facilities would represent buildings. There will be no residential figures; it would be strictly business/district facilities involved. Also, the number of customers (population) will tell how many people are vulnerable to that particular hazard. Laura

asked the Water Districts, and any other participating Special Districts having difficulty, to talk with her concerning the templates and how to adapt them.

Laura would like each city to summarize their resource inventories for the Hazard Mitigation Plan, and include that information with the template.

Timeline:
Laura would like the cities/Special Districts to update the maps, and finish the Hazard Mitigation worksheets, as well as create summary sheets for the August 19th IACG Meeting. URS will give the first draft of the Hazard Mitigation Plan to the Disaster Council on September 9th, at the quarterly meeting.

Laura reminded everyone that as long as the Ventura County Hazard Mitigation Plan is in FEMA's hands for review by November 1st, everything would be fine.

VII. **Other Items** – No other items at this time.

VIII. **Adjournment** – Adjourned at 2:50 PM.

IX. **Next Meeting:** 1:30 PM Thursday, August 19, 2004, in Sheriff's Third Floor Training Room

AGENDA

Ventura County Inter-Agency Coordination Group (IACG) Meeting

"Emergency Planning for Members of the Ventura County Operational Area"

1:30 p.m. to 3:30 p.m.
Thursday, August 19, 2004
Sheriff's Third Floor Training Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

Chairperson: Laura D. Hernandez, Ventura Operational Area Coordinator representing Sheriff Bob Brooks

I. State Homeland Security Grant Update

   a. 2004 SHSG Timeline

II. EMPG Application for 2004

III. DP-04 Exercise

IV. Regional Hazard Mitigation Plan Discussion with URS

V. Emergency Management Round Table

VI. Adjournment

VII. Disaster Council Meeting – 0930 Thursday, September 9, 2004 Third Floor Multi-Purpose Room, Hall of Administration

Next IACG Meeting: 1:30 Thursday, September 16, 2004 in Sheriff's Third Floor Training Room.

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
August 19, 2004

Attendees:

Laura D. Hernandez, Sheriff's OES
Mark Ball, Sheriff's
Dawn Robbins, ISD/GIS
Sergio Vargas, VC Watershed Prot. Agency
Sherri Dugdale, VC Watershed Prot. Agency
Steve Carroll, VC EMS
Alan Langville, VC Library
Dale Carnathan, Sheriff's OES
Kim Chudoba, City of Moorpark
Brian Sands, URS
Anna Davis, URS
David Hutchinson, ISD/GIS
Mitch Evans, ISD
Mark Sanchez, VC Fire Prot. Dist.
Arpana Gupta, VC Public Health
Eugene Kostiuchenko, Sheriff's OES
Rebecca Arnold, GSA
John Fraser, City of Camarillo

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. State Homeland Security Grant Update
Going to the Board on September 14, 2004. Quarterly reports forwarded to City Managers. Have as much detail possible and submit the letters in timely manner. Approved for the one plasma television for the EOC. Start building strategies for the SHSG 2005 has been approved.

II. EMPG Application for 2004
Also going to Board on September 14, 2004. Should be spent by September 30th. Some money used to cover OES travel expenses. $10K allocated to remodel EOC.

III. DP-04 Exercise
Wendy Milligan completing the follow up report on the DP-04 Exercise. DP-04 Was outstanding due to the new technology available to have live video shooting. Still photos were shot from the air and send to us via email.

IV. Regional Hazard Mitigation Plan Discussion with URS
Have a plan done by the November 1st deadline in order for FEMA to approve money. Completing as much information available to help complete the county's GIS plans for the September 9th deadline. If there's no information received by September 9th the general plan will be used for revision. FEMA will do a courtesy review and the send it back to Sheriff's OES. Ventura County website is http://www.countyofventura.org

V. Emergency Management Round Table
On September 17th, 18th, and 19th Air Show may impact freeways and delay traffic. Thousand Oaks will also be having Open House, Art Festival and other

special events that will take place the weekend of September 17th. Dale Carnathan said 3 of the sirens had been vandalized, but are still working through out daylight. According to Laura there has been eight tires slashed and until now they haven't arrested anyone. The vehicle pattern of slashed tires seems to be silver and white vehicles.

VI. **Adjournment –** Adjourned at 2:40PM.

VII. **Next IACG Meeting:** 1:30 Thursday, September 16, 2004 in Sheriff's Third Floor Training Room

AGENDA

Ventura County Inter-Agency Coordination Group (IACG) Meeting

"Emergency Planning for Members of the Ventura County Operational Area"

1:30 p.m. to 3:30 p.m.
Thursday, September 16, 2004
Sheriff's Third Floor Training Room
Ventura County Government Center
800 S. Victoria Avenue
Ventura

This meeting is open to emergency services coordinators representing Cities, Special Districts and the Military.

Chairperson: Laura D. Hernandez, Ventura Operational Area Coordinator
Representing Sheriff Bob Brooks

I. Operational Area Round Table

II. State Homeland Security Grant Update

III. OES Business

- Palm Pilots and Chips
- Teleminder
- Rolling Black-outs
- EOC Reconfiguration and Upgrades
- Training

IV. Development of Local Citizen Corp Council

V. EMPG Application for 2005

VI. Regional Hazard Mitigation Plan Discussion

VII. Adjournment

VIII. Next IACG Meeting: 1:30 Thursday, October 21, 2004 in Sheriff's Third Floor Training Room.

IACG MEETING MINUTES
Sheriff's 3rd Floor Training Room
September 16, 2004

Attendees:

John Correa, Ojai Sanitation Dist
Kim Chudoba, Moorpark
Graham Watts, City of Thousand Oaks
Russ Olson, Supt. Of Schools
Wayne Lewis, City of Ventura
Dr. Arpana Gupta, Public Health
Sergio Vargas, Watershed Prot. Agency
Mark Sanchez, Ventura Co. Fire
Barbara Spraktes-Wilson, Public Health
Jackie Hull, Sheriff's OES
Tony Stafford, Camrosa Water
Steve Lazenby, Santa Paula Fire
John Fraser, City of Camarillo
Brian Gordon, Ventura City Fire
Julie Frey, Public Health
Sherri Dugdale, Watershed Prot. Agency
Cathie Currie, State OES
Ralph Nieves, NBVC
Laura D. Hernandez, Sheriff's OES
Eugene Kostiuchenko, Sheriff's OES

MINUTES

Welcome from Laura D. Hernandez, Sheriff's OES, and self-introductions.

I. Emergency Management Roundtable

Ralph Nieves - NBVC – Point Mugu mentioned that the Air Show would be this weekend. For security, the FBI, NCIS, and a mobile command post from San Diego would be present. Also, FEMA met with the Naval Center about being a mobilization center in times of a disaster.

John Fraser – City of Camarillo:

Graham Watts – City of Thousand Oaks:

Mark Sanchez – County Fire: Fire's Management Plan should be out next week.

Arpana Gupta – Public Health: Mass vaccination plan.

II. State Homeland Security Grant Update

a. The 2004 Homeland Security Grant was approved August 3, 2004 by the Board of Supervisors to accept the funds.
b. EOC equipment is currently under "conditional approval" by the State. OES has not received final approval to purchase equipment for the Cites and County EOCs.
c. Congress is still debating the monies for the 2005 Homeland Security Grant. Laura asked the cities and agencies to think about purchases they may want to make with the 2005 money when it becomes available. There may be a short turn-around time for that money.

III. OES Business

- Palm Pilots and Chips – New information chips were given out to those cities/agencies who had previously been issued Palm Pilots by OES. Also, Grahame Watts of Thousand Oaks received his Palm Pilot and new information chip.

- Teleminder – Offer of a grant of $25,000 for the Teleminder System. The maintenance costs and phone charges could be paid by the EMPG grant. The Teleminder System would be used to contact emergency personnel during an emergency.

- Rolling blackouts – OES notified about 9:00PM during the weekend of an extensive blackout in the East County area. Edison was able to divert energy to the area and averted the rolling blackout. Graham Watts questioned SCE about the interruption rates and how long it would take to repair them. He urged other cities to ask SCE about interruption rates for their areas as well. SCE has not responded to Graham's request yet.

- EOC Reconfiguration and Upgrades – Dale Carnathan, Sheriff's OES
  With the assistance of County ISD, the Sheriff's EOC is going to be remodeled and upgraded. A committee has been formed to study the EOC and make suggestions to make the EOC more functional and to upgrade services. The committee will be looking at satellite phones, more plasma screen TVs, and satellite television options for the EOC. They will turn in a report on the upgrade to Cmdr. Mark Ball in November.

- West Nile Virus – Graham Watts, City of Thousand Oaks
  This is an issue for the City of Thousand Oaks. It is such a concern that the City has appointed a committee to study the problem. The City arranged for a 5-hour aerial flight of the area to view ponds and swimming pools that might be possible breeding grounds. The result of the aerial survey was 35 to 40 significant areas that may promote the growth of the mosquitoes.

- USC Center of Risk Economic A T Events (CREATE) – Laura Hernandez, Sheriff's OES
  Studying how products can be applied to the community. This group is in the early stages of development. Laura advised the cities that the School of Career Services – Public Planning and Development are looking for agencies interested in hosting no-cost internships for students enrolled in Emergency Management at USC. For information, you can contact Laura Hernandez at 654-2552, or Sandra Buchan by telephone at 213-740-7481 or e-mail at sbuchan@usc.edu.

IV. Development of Local Citizen Corps Council

Within the next six months, the establishment of the Local Citizen Corps Council should take place. group. The range of agencies and individuals on the Council would be very broad. Laura suggested possibly using the Disaster Council as a base for the Citizen Corps Council and then adding other agencies.

V. EMPG Application for 2005

Laura advised the cities to begin planning for 2005. There will be a 40% increase in funding. Last year's funding was $133,000. Congress discussed moving the money to the Homeland Security Department instead of Office of Disaster Preparedness, but the funding will be from the ODP. Laura would like to re-think the formula for distribution. Some of the things that she would like to see covered with the EMPG funds are:

- Maintenance and telephone charges not covered by the Homeland Security Grant
- Satellite telephones
- Casitas Siren maintenance
- Phone lines for the Teleminder system
- Support for other additional costs in the EOC not covered by the '04 Homeland Security Grant

VI. Regional Hazard Mitigation Plan

Some cities and agencies may need assistance in the identification of their Goals, Objectives, and Activities sheets. The deadline to get everything in to Anna at URS is September 24th. Laura reminded everyone that as long as the Ventura County Hazard Mitigation Plan is in FEMA's hands for review by November 1st, everything would be fine.

VII. Other Items

Julie Frey, Public Health Agency, brought in a document prepared by Roz D. Lasker of the Center for the Advancement of Collaborative Strategies in Health from the New York Academy of Medicine. The document is entitled "Redefining Readiness: Terrorism Planning Through the Eyes of the Public." It deals with people's social and psychological reactions to emergencies, as well as preparedness at home and in the workplace. Copies of the document may be obtained from Public Health or OES.

VIII. Adjournment – Adjourned at 2:37 PM.

IX. Next Meeting: 1:30 PM Thursday, October 21, 2004, in Sheriff's Third Floor Training Room

AGENDA
VENTURA COUNTY
DISASTER COUNCIL MEETING

This is a Public Meeting

9:30 am – 11:00 am
Thursday, September 9, 2004
VENTURA COUNTY GOVERNMENT CENTER
Multi-Purpose Training Room, Hall of Administration
800 S. Victoria Avenue

Chairperson: Supervisor Steve Bennett

1. **PUBLIC COMMENT**
2. **SELF-INTRODUCTIONS OF MEMBERS AND ATTENDEES**
3. **APPROVAL OF MINUTES**
4. **OES Reports**
5. **GSA Presentation: "Emergency Procurement Procedures"**
   Rosa Ceniceros, Ventura County Purchasing Agent
6. **Special Presentation: "Ventura County Regional Hazard Mitigation Plan"**
   Anna Davis, URS Corporation
7. **AGENCY ROUNDTABLE REPORTS**
8. **OLD BUSINESS/ NEW BUSINESS**
   a) Continuity of Government Exercise
8. **ADJOURNMENT /NEXT MEETING –** 10:00 a.m. Thursday, December 2, 2004
   Multi-Purpose Training Room, Hall of Administration

This meeting is open to the public.
Public comments will be addressed during the public comment section of the agenda.
Public comments on the Ventura County Regional Hazard Mitigation Plan are invited.

VENTURA COUNTY SHERIFF

MEDIA RELEASE

BOB BROOKS, SHERIFF

Topic: **County Launches Disaster Mitigation Planning Effort**

Date: **Wednesday August 25, 2004**

Narrative:

The Ventura County Sheriff's Office of Emergency Services (OES), in cooperation with seven of the county's cities and over 25 special districts, has launched a countywide effort to assess risks posed by natural disasters and identify ways to reduce those risks.

The planning process, which has been underway for over a year, will result in the preparation of a Regional Hazard Mitigation Plan. The plan is required under the Federal Disaster Mitigation Act of 2000 as a pre-requisite for receiving certain forms of Federal disaster assistance. OES has received a grant from the Federal Emergency Management Agency (FEMA) for preparation of the plan.

As last year's wildfires demonstrated, Ventura County is highly vulnerable to disasters. In the past ten years alone, Ventura County has received five Presidential disaster declarations for fires, earthquakes, landslides, and flooding. The risks posed by these hazards increases as the county's population continues to grow. The plan will provide the county and the participating communities and districts with the tools to identify these risks and prioritize future actions for reducing these risks. Additionally, the plan will provide a framework for future requests for Federal assistance with these actions.

The public is invited to participate in the planning process. Information regarding the planning process, as well as directions for submitting comments, can be found on the Ventura County website at http://www.county.ventura.org/rhmp. OES and its partners are also soliciting input from other local, state, and Federal agencies. Public input can be sent electronically to VenturaCo_HazMitPlan@URSCorp.com.

The draft plan will be presented at the quarterly Disaster Council Meeting on September 9 and will be available for public comment on the county website after that date. OES plans to submit the plan to the Governor's Office of Emergency Services and FEMA later this fall.

Mitigating Factors

September 2004

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

Partnerships in Flood Mitigation Planning

The Ventura County Watershed Protection District, in partnership with the County of Ventura and the Governor's Office of Emergency Services, and with funding from FEMA (Federal Emergency Management Agency), is developing a Flood Mitigation Plan. A Flood Mitigation Plan identifies vulnerabilities to flooding and both short- and long-term strategies for reducing flood losses. The Plan currently under development will focus on Repetitive Loss Structures throughout the unincorporated county.

Because the County of Ventura is a participant in the National Flood Insurance Program (NFIP), residents who live in the unincorporated county have the opportunity to purchase flood insurance. FEMA's strategy in providing funding for a Flood Mitigation Plan is to keep future flood insurance premiums down by reducing claims against the National Flood Insurance Fund.

If you are receiving this newsletter, your property has likely been identified as having repetitive losses. As such, you may have an interest in the planning process and the mitigation measures that are proposed. **The draft Flood Mitigation Plan will be available for public comment October 15—November 1, 2004.** Copies of the draft Plan are available at the following locations:

Ventura County Watershed Protection District
Ventura County Government Center
Hall of Administration
800 South Victoria Avenue
Ventura, CA 93009-1610

www.vcwatershed.org

What is a Repetitive Loss Structure?

Repetitive Loss Structure is a term that is usually associated with the National Flood Insurance Program (see reverse for more about the NFIP). Under the Flood Mitigation Assistance program, a Repetitive Loss Structure meets the following criteria:

- Structure is covered by flood insurance under the National Flood Insurance Program
- Structure has suffered flood damage on two or more occasions over a 10-year period
- The cost to repair the flood damage equals or exceeds 25% of the market value of the structure

Opportunities to comment on the Flood Mitigation Plan:

You are encouraged to provide input on the Flood Mitigation Plan. If you have comments, please submit them in writing **no later than November 1, 2004** to:

Flood Mitigation Plan Coordinator
Ventura County Watershed Protection District
800 South Victoria Avenue, L#1610
Ventura, CA 93009-1610

Or by email to: PublicCommentWPD@mail.co.ventura.ca.us

Mitigating Factors Page 2

Regional Hazard Mitigation Planning

As the wildfires of 2003 demonstrated, Ventura County is vulnerable to disasters. In the past ten years alone, Ventura County has received five Presidential disaster declarations for fires, earthquakes, landslides, and flooding. The risks posed by these hazards increase as the county's population continues to grow.

The Ventura County Watershed Protection District is participating with the County of Ventura, 7 local cities, and 25 other special districts in a county-wide effort to assess risks posed by natural disasters and identify ways to reduce those risks.

The planning process, led by the Ventura County Office of Emergency Services (OES) will profile four hazards: earthquake, wildfire, flood (including dam failures and post-fire debris flow), and geo-hazards (landslides and liquefaction). The result will be a Regional Hazard Mitigation Plan that will provide participating agencies with the tools they need to prioritize future actions for reducing risks.

The Regional Hazard Mitigation Plan is available for public comment until October 9, 2004. For more information, visit the Ventura County website at: www.countyofventura.org/rhmp.

Comments may be sent via email to:

VenturaCoHazMitPlan@URSCorp.com.

More About the National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods.

Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners in these communities.

Flood insurance is available to any property owner located in a community participating in the NFIP and is recommended by FEMA for all property owners—even those in low– to moderate-risk areas.

For more information on the NFIP program, visit FEMA's website at www.fema.gov.

Flood damage is generally *not* covered by homeowner's or business insurance policies and must be purchased separately.

For more information:

FEMA (Federal Emergency Management Agency)

www.fema.gov

Governor's Office of Emergency Services

www.oes.ca.gov

Ventura County Office of Emergency Services

www.vcsd.org/oes/

Ventura County Watershed Protection District

www.vcwatershed.org

Sunday, Dec. 19, 2004 WC The Star COU

EYE ON THE ENVIRONMENT

County officials prepare a disaster plan for hazards

By Sherri Dugdale and Laura Hernandez
Guest writers

As the wildfires of 2003 demonstrated, Ventura County is vulnerable to disasters. In the past 10 years alone, the county has received five presidential disaster declarations for fires, earthquakes, landslides and flooding.

Damage from these hazards — both natural and man-made — costs county residents, businesses and taxpayers millions of dollars. The risks posed by these hazards increase as the county's population continues to grow.

The rising costs of response and recovery from these disasters prompted the president to sign the Disaster Mitigation Act of 2000 on Oct. 30, 2000. This law encourages forward thinking at the local level and supports communities in developing strategies to reduce the effects of disasters.

State and local agencies are required to develop and adopt a hazard mitigation plan to be eligible for certain kinds of federal disaster assistance.

Currently, there is a countywide effort to develop a Regional Hazard Mitigation Plan for Ventura County. Led by the Ventura County Sheriff's Office of Emergency Services, this regional planning effort brought cities, other communities and special districts to the table to discuss disaster mitigation.

The resulting plan identifies the risks posed by natural and human-caused disasters and prioritizes ways to reduce the impacts of such disasters.

On Dec. 2, the Ventura County Disaster Council voted to approve the Regional Hazard Mitigation Plan. The next step is approval and adoption by the county Board of Supervisors.

The Ventura County Watershed Protection District, in partnership with the state Office of Emergency Services and with funding from the Federal Emergency Management Agency, also has been developing a Flood Mitigation Plan. The plan identifies flooding threats and offers short- and long-term strategies for reducing losses. Elements of the flood plan were included in the Regional Hazard Mitigation Plan.

The flood plan will be available for public comment from Monday through Jan. 20. The public is encouraged to participate in the process by reviewing the plan and submitting written comments. Copies of the flood and hazard plans can be obtained at http://www.vcwatershed.org.

On the Net
http://www.countyofventura.org/rhmp/

Sherri Dugdale is a grant coordinator for the Ventura County Watershed Protection District and can be reached at 654-2013. Laura Hernandez is the assistant director of the Ventura County Sheriff's Office of Emergency Services and can be reached at 654-2552. Government or nonprofit agencies that would like to submit an article on an environmental topic for this column can contact Terri Thomas at 289-3117 or terri.thomas@mail.co.ventura.ca.us.

Flood Mitigation Plan is now available!

The Ventura County Watershed Protection District, in partnership with the County of Ventura and the Governor's Office of Emergency Services, and with funding from FEMA (Federal Emergency Management Agency), has completed a draft Flood Mitigation Plan that identifies vulnerabilities to flooding and develops strategies for reducing repetitive flood losses.

We encourage you to participate in the review process. Copies of the draft Plan are available at the District's main office or on the website:

www.vcwatershed.org

Please provide your comments in writing no later than January 21, 2005. You may either mail them to the Flood Mitigation Plan Coordinator at the address listed below, or send an email to:

PublicCommentWPD@mail.co.ventura.ca.us

Ventura County Government Center
Hall of Administration
800 South Victoria Avenue #1610
Ventura, California 93009-1610

Phone: 805-654-2001
Fax: 805-654-3350
Website: www.vcwatershed.org

...Protecting Public Health and Safety and the Future of Our Watersheds

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

Flood Mitigation Plan is now available!

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Ventura County Government Center
Hall of Administration
800 South Victoria Avenue #1610
Ventura, California 93009-1610

Phone: 805-654-2001
Fax: 805-654-3350
Website: www.vcwatershed.org

...Protecting Public Health and Safety and the Future of Our Watersheds

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

Ventura County Government Center
Hall of Administration
800 South Victoria Avenue #1610
Ventura, California 93009-1610

PLEASE PLACE STAMP HERE

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

Ventura County Government Center
Hall of Administration
800 South Victoria Avenue #1610
Ventura, California 93009-1610

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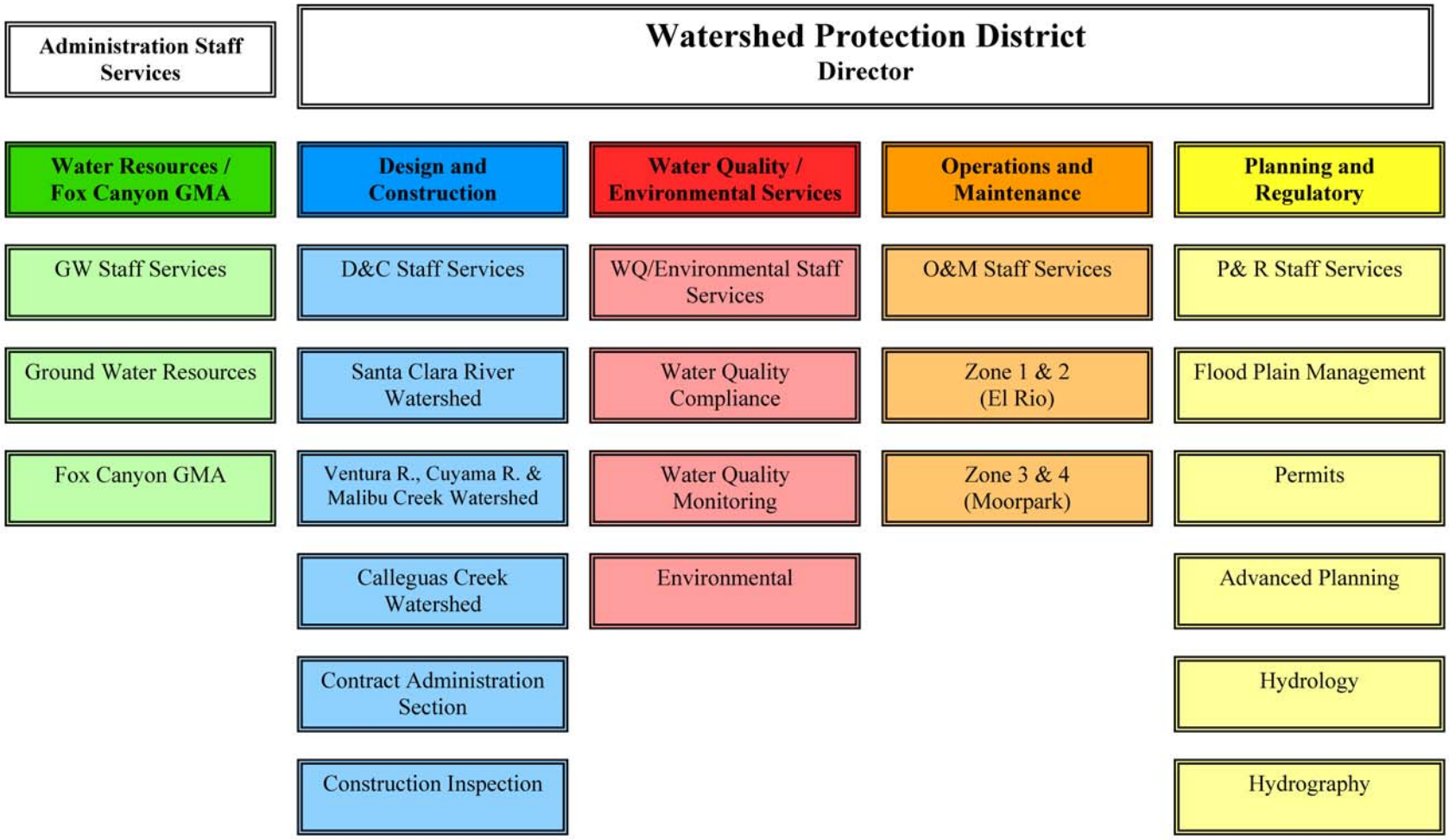
Appendix B
Organizational Chart


Administration Staff Services
Watershed Protection District
Director
Water Resources / Fox Canyon GMA
GW Staff Services
Ground Water Resources
Fox Canyon GMA
Design and Construction
D&C Staff Services
Santa Clara River Watershed
Ventura R., Cuyama R. & Malibu Creek Watershed
Calleguas Creek Watershed
Contract Administration Section
Construction Inspection
Water Quality / Environmental Services
WQ/Environmental Staff Services
Water Quality Compliance
Water Quality Monitoring
Environmental
Operations and Maintenance
O&M Staff Services
Zone 1 & 2 (El Rio)
Zone 3 & 4 (Moorpark)
Planning and Regulatory
P& R Staff Services
Flood Plain Management
Permits
Advanced Planning
Hydrology
Hydrography

Appendix C
ALERT Gauge Locations

ALERT System Gauge Station Data by Watershed

Gauge Station Name	Station Type			Latitude	Longitude
	Rain	Stream	Weather		
Calleguas Creek					
Arroyo Las Posas (below Hitch Blvd.)	X	X		34-16-17	118-55-26
Arroyo Simi (near Simi)	X	X		34-16-41	118-47-43
Beacon	X			34-09-50	118-54-46
Calleguas Creek (at 101)	X	X		34-12-56	119-00-52
Calleguas Creek (at CSUCI)	X	X		34-10-46	119-02-22
Conejo Creek (above Highway)	X	X		34-14-12	118-57-50
Lang Ranch	X		X	34-12-23	118-49-07
Las Llajas Dam	X	X	X	34-18-07	118-41-14
Las Posas Hills	X		X	34-14-58	118-55-07
Las Posas Reservoir	X			34-13-36	119-05-11
Long Canyon	X			34-19-32	118-57-02
Moorpark College	X			34-18-08	118-50-55
Oak Park / Simi Valley	X		X	34-17-28	118-48-52
Revolon Slough		X			
Rocky Peak	X			34-17-32	118-38-34
Santa Susana Pass	X		X	34-15-40	118-38-53
South Mountain East	X			34-18-04	119-02-38
South Mountain West	X		X	34-16-58	119-05-36
Sycamore Canyon Dam	X	X		34-15-18	118-47-52
Coastal Plain Basins					
J Street Drain (at Ormand Beach)		X		34-08-28	119-11-17
Silver Stand-San Nicolas		X		34-09-32	119-13-17
Silverstrand Pump	X	X		34-09-13	119-13-07
Cuyama River					
Apache Canyon	X			34-46-27	119-19-50
Ozena	X		X	34-41-00	119-19-03
Fagan Canyon Basin					
Fagan Canyon	X			34-20-33	119-04-35
Fagan Canyon East	X			34-21-54	119-04-19
Fagan Canyon West	X			34-22-40	119-05-09
Piru Creek					
Chuchupate	X		X	34-48-30	119-00-45
Hungry Valley Wx Station	X		X	34-47-37	118-52-24
Lockwood Valley Yard	X		X	34-43-59	119-06-12
Piru Creek (above Lake Piru)		X		34-31-23	118-45-22
Piru Creek (above Pyramid Lake)		X		34-39-54	118-49-18

ALERT System Gauge Station Data by Watershed (continued)

Gauge Station Name	Station Type			Latitude	Longitude
	Rain	Stream	Weather		
Santa Felicia Dam	X	X			
Temescal	X		X	34-28-22	118-45-28
Rincon/Santa Barbara Coastal Basin					
La Conchita/Seacliff	X		X	34-20-46	119-25-08
Santa Clara River					
County Government Center	X		X	34-16-05	119-12-32
El Rio County Yard	X		X	34-14-29	119-10-39
Fillmore Fish Hatchery	X		X	34-23-37	118-53-07
Hopper Canyon		X		34-24-03	118-49-32
Hopper Creek (near Fillmore)		X		34-24-03	118-49-32
Hopper Mountain	X			34-28-49	118-51-54
Last Chance	X			34-29-34	119-02-58
Pole Creek (near Fillmore)		X		34-24-07	118-54-14
Piru	X		X	34-24-16	118-48-32
Santa Clara River (at 101)		X		34-14-31	119-11-21
Santa Clara River (at Saticoy)		X		34-16-44	119-08-28
Santa Clara River (near Piru)		X		34-14-31	119-11-21
Santa Clara River Freeman Diversion		X		34-17-58	119-06-28
Santa Paula Creek (near Santa Paula)	X	X		34-24-45	119-04-55
Santa Monica Mountains Coastal Basins					
Cheesebro	X		X	34-11-05	118-43-02
Circle X Ranch	X		X	34-06-36	118-56-14
Deal's Flat	X			34-05-16	118-58-06
Sespe Creek					
Choro Grande	X			34-36-29	119-20-14
North of Sisar Peak	X			34-30-17	119-08-11
Ortega Hill	X			34-30-18	119-18-09
Rose Valley	X		X	34-32-38	119-11-05
Rose Valley	X		X	34-32-35	119-11-03
Sespe Creek (near Fillmore)	X	X		34-26-32	118-55-35
Sycamore Canyon	X			34-35-58	119-04-39
Tommy's Creek	X			34-36-14	119-13-17
Ventura River					
Canada Larga	X			34-21-12	119-12-48
Coyote Creek (near Oak View)	X	X		34-25-08	119-22-13
La Granada Mountain	X		X	34-25-04	119-25-25

ALERT System Gauge Station Data by Watershed (concluded)

Gauge Station Name	Station Type			Latitude	Longitude
	Rain	Stream	Weather		
Lake Casitas Dam	X	X		34-22-24	119-19-56
Matilija Canyon Upper	X			34-32-29	119-22-19
Matilija Dam	X	X		34-29-06	119-18-27
Nordhoff Ridge	X			34-30-35	119-13-47
North Fork Matilija Creek (at MHS)	X	X		34-29-35	119-18-22
Ojai	X		X	34-26-54	119-13-49
Old Man Mountain	X			34-30-17	119-26-23
San Antonio Creek		X		34-22-49	119-18-17
San Antonio Creek		X		34-22-49	119-18-17
Santa Ana Creek near Oak View		X		34-25-22	119-20-27
Senior/Gridley Canyon	X			34-28-55	119-12-28
Stewart Canyon	X		X	34-27-38	119-14-55
Sulphur Mountain	X			34-24-37	119-12-13
Ventura River (near Meiners Oaks)	X	X		34-27-54	119-17-26
Ventura River (near Ventura)		X		34-21-08	119-18-28
Ventura River (near Ventura)		X		34-21-08	119-18-28
White Ledge Peak	X			34-28-21	119-23-33