REPORT ON FLOODING AND FLOOD RELATED DAMAGES

SANTA CLARA COUNTY

FEBRUARY 12th THRU 20th, 1986

Santa Clara Valley Water District

REPORT ON FLOODING AND FLOOD RELATED DAMAGES IN SANTA CLARA COUNTY FEBRUARY 12 TO 20, 1986

Prepared by

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ACKNOWLEDGEMENTS

Significant contributions to this report were made by Mark Merritt (data preparation and isohyetal map), Abdullah Saah (streamflow frequencies), Phuong Vu (flood maps), and Nai Hsueh (flooding documentation).

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INTRODUCTION

The Santa Clara Valley experienced heavy rainfall between February 12 and February 20, 1986 causing flooding in various parts of the County. Overbanking from Uvas Creek in the south caused significant damage to homes in the City of Gilroy. In the northwest, overbanking from Calabazas Creek caused some damage to homes and businesses in the City of San Jose. Minor flooding and erosion also occurred along many other creeks in the County.

The Santa Clara Valley Water District's Emergency Operations Center (EOC) was activated Friday, February 14, and from Sunday, February 16, through Thursday, February 20, was staffed around the clock. District staff monitored reservoir and streamflow conditions, prepared flow forecasts, and provided information to other agencies, the public and the news media. District maintenance crews cleared debris blockages in creeks and operated the sandbag program. Approximately 50,000 sandbags were distributed to individuals and public agencies throughout the County.

The Santa Clara County Office of Emergency Services reported that in all the February storm caused flood damage to about 190 homes and 20 businesses. In addition, it was reported that at least 400 homes were evacuated during the storm.

Generally, the statistical recurrence frequencies of peak flows for the creeks that flooded in the February storm varied from less than two years on most creeks to about 100 years on Uvas Creek. The 100-year criterion is commonly used for flood protection design. It is estimated that over $400 million in damages would occur in Santa Clara County if all creeks experienced the 100-year flow or one percent event.

Streamflow is generally expressed as volume per unit of time, e.g., cubic feet per second (cfs). Throughout the report, reference is made to "4-year flow" or "10-year flow" or "100-year flow". This is a shorthand description of streamflow events and does not mean that these flows will occur every four or ten or 100 years but rather that this frequency of occurrence could be expected statistically on the average over a period of

many years. The frequency is also often expressed as a percentage. Thus, a 100-year flow is said to be a one percent flow; that is, a flow that has a one percent chance of occurring in any year.

Rainfall and streamflow data for the February storm period, along with historical data for District precipitation and streamflow stations, are contained in Tables 1 and 2.

The Santa Clara Valley Water District owns and operates ten reservoirs in Santa Clara County having a combined storage capacity of about 155,000 acre-feet. These reservoirs were authorized and built for the purpose of conserving local water resources. The reservoirs have spillways designed to carry safely into the creek channels high flows which would otherwise overtop the dam. During the 1986 storm, these reservoirs substantially reduced the flood peaks. An empty reservoir or one partially full will obviously hold back some of the flood flows from upstream but even a full reservoir has a flood attentuating effect. The water flowing into it cannot move through and out the spillway until it has ponded - spread out over the surface of the lake - and thus raised the whole lake level. The result is a delay and a reduction (attentuation) of peak flows downstream of the reservoir.

The approximate flooded areas were mapped from aerial photos and visual reports. These maps are included in this report and are intended to provide only general flooding information. In most of the maps, the flooded areas are primarily the result of overbanking. In some cases, however, flooded areas include water resulting from drainage problems. Streets may not be able to drain, for example, due to high water in the creek and a resulting backup of the storm drain system. Natural land may be contoured such that ponding results. In addition to the maps, a few representative pictures are also included.

STATEWIDE PERSPECTIVE

Damage and disruption in Santa Clara County were less than those sustained in other parts of the State. Historical high flows were exceeded in the lower Sacramento River system, as well as the Russian, Napa, Cosumnes and Mokelumne Rivers. In the lower Sacramento River, a peak flow of 650,000 cubic feet per second tested levees that were designed for 590,000.

The California Department of Water Resources (DWR) prepared a publication summarizing the February storm which contained these statistics:

> "The Governor proclaimed a state of emergency in 39 counties and damages totaled more than $500 million. More than 50,000 people were forced from their homes and at least 12 people died. An estimated 1,380 homes and 185 businesses were destroyed and more than 12,000 homes and 950 businesses were damaged."

> "High water, slides or snow closed Highways 1, 9, 17, 32, 49, 50, 70, 80, 99, 101, 116, 121, and 680. Interstate 5 was closed for nearly three weeks between Sacramento and Lodi. The northbound section of a Highway 101 bridge over the Eel River collapsed near Rio Dell as a crane tried to dislodge debris."

More than 6,000 federal and State workers including the National Guard, Conservation Corps, Highway Patrol, and Departments of Forestry, Transportation and Water Resources, participated in evacuations, levee patrols and repairs, road repairs and flood fighting efforts.

WEATHER

The "February 1986 storm" really consisted of a series of Pacific storms. The first storm, which began the evening of February 11, produced up to one inch of rain on the valley floor and three to five inches in the higher elevations of the Santa Cruz Mountains.

The second storm, a cold front characterized by gusty winds and heavy rains, reached Northern California on Friday, February 14. Precipitation totals from this second storm were about three inches on the valley floor and eight inches in the mountains.

This cold front was followed by the third and most devastating storm, described as "an extraordinarily strong, deep flow of moist air from Hawaii" which hit Northern California on Sunday evening, February 16, as the jet stream progressed northward from Santa Maria. This third storm produced about roughly one-inch on the valley floor and up to nine inches in the mountains. Rainfall intensities of over .6 inches per hour were experienced in mountain locations.

The last storm in the series hit Central and Northern California on the afternoon of Tuesday, February 18. Precipitation totals of about .7 to 1.6 inches on the valley floor and about three to five inches in the mountains were produced with intensities over .4 inches per hour.

Total storm precipitation at various stations for the period February 12 through February 20 is summarized in Table 1. An isohyetal map showing approximately the pattern of rainfall in the County for this period is shown in Figure 1. Rainfall for Uvas and Lexington watersheds are shown in Figures 2 and 3.

FLOODING

Northwest Zone

Stevens Creek

Stevens Creek overbanked upstream of Stevens Creek Boulevard and McClellan Road. Water overflowed the easterly bank at approximately 200 feet upstream of Stevens Creek Boulevard, caused minor sheet flooding in the adjacent parking lot of the Blackberry Farm Golf Course and Blue Pheasant Restaurant, and returned to the creek along Stevens Creek Boulevard. Floodwater ponded in the parking lot, went into the basement of the Blue Pheasant Restaurant but no damage was reported. Upstream of McClellan Road, floodwater went over both banks and caused sheet flooding in the area of approximately 1,500 feet along Stevens Creek.

Palo Alto Flood Basin

Although flows into the basin from Adobe, Barron, and Matadero Creeks were generally below ten-year frequencies, the flood basin water level reached an elevation of 3.17 feet NGVD, which is the highest elevation reported on this facility.

North Central Zone

Calabazas Creek

The most severe flooding in the North County occurred on Calabazas Creek. The peak flow recorded at Wilcox High School on February 14 was 2,600 cfs. Overbanking occurred at nine cross streets, including downstream of Highway 237 into the westbound lanes, upstream of Highway 237 at the east levee, and upstream of Highway 101 at Oakmead Road. The westbound lanes of Highway 237 were closed temporarily due to this overbanking and overbanking from nearby San Tomas Creek. Channel constrictions at culverts also caused overbanking at Lochinvar, Homestead, Pruneridge, Tantau, Miller Avenues, Bollinger Road, and Saratoga-Sunnyvale Road. In addition, there was sack riprap failure at the wing wall on the downstream side of Bollinger Road. Significant

damage to the Fountainbleu Apartments in Cupertino was reported to have occurred from overbanking at Miller Avenue; one unconfirmed cost estimate to repair the water damage was about $50,000. Significant damage also occurred at Harry Gee's Windows and Walls on Bret Avenue in Cupertino. Most of the building was reportedly flooded to a depth of six to 10 inches, causing approximately $3,700 damage. In another location on Thrush Way, one resident reported $3,800 damage to a swimming pool due to storm sewers at Laurelwood School backing up. Other businesses and residences in the same area were damaged as well but to lesser degrees.

There were also reports of water in the streets and on lawns at many locations along the creek.

San Tomas Creek

The only flooding reported on San Tomas Creek was at Highway 237. There was overbanking downstream of the westbound lanes as well as around the parapet on the upstream side of the highway. Highway 237 westbound was closed temporarily due to this flooding combined with flooding from nearby Calabazas Creek.

Central Zone

Guadalupe River

There were four locations where overbanking occurred: St. John, St. James, Emory, and West Alma Streets. In all cases, flooding was primarily in the streets but at St. John and St. James Streets, the water traveled to the Highway 87 embankment where ponding took place. A peak flow of about 9,000 cfs was recorded at the U.S.G.S. station on Guadalupe River at St. John Street on February 19. This corresponds to a seven-year flood frequency. There was no major damage as a result of this flooding.

Ross Creek

Ross Creek overflowed its banks in two locations. Upstream of Cherry Avenue and Jarvis Avenue, water went over both banks and caused minor street flooding. The overbanking of Ross Creek at these locations was caused by the debris piled in the culverts and blocked the water way.

Guadalupe Creek

The Guadalupe Creek went over its west bank downstream of the intersection of Hicks Road and Shannon Road. The water went over the low point on the west bank and flowed back to the creek immediately causing no significant damage.

Los Gatos Creek

Los Gatos Creek overflowed its banks downstream of Lark Avenue for approximately 1,800 feet. Water was confined within Charter Oaks Drive and Oka Road and never went over the curbs of the streets. A few mobile homes in this area were reportedly damaged by the flooding.

East Zone

Upper Penitencia Creek

Overbanking occurred at several locations along the creek in the City of San Jose: upstream on the south side of North King Road, upstream of Toyon Avenue, down to Piedmont Road. A peak flow of 1,080 cfs was recorded at the U.S.G.S. station on Upper Penitencia Creek on February 17, corresponding to a seven-year flood frequency. There was also overbanking at Educational Park Drive and 200 feet downstream of Jackson Avenue on the north side of the creek. These overflows resulted in some ponding and the shallow flooding of one residence.

Sierra Creek

There was flooding on the upstream side of Piedmont Road in San Jose due to a blocked culvert. No damage was reported.

South Zone

Jones Creek

Overbanking occurred at the intersection of Dunlap Avenue and Furlong Avenue in Gilroy. No damage was reported.

Llagas Creek

On February 19 flooding occurred when Llagas Creek overbanked on both sides upstream of Rucker Avenue in Gilroy. The area enclosed by Center Avenue in the east and approximately Rice Lane on the west side acted as a floodway directing water to Buena Vista Avenue. The floodway narrowed at this point but there was weir flow across Buena Vista Avenue which was estimated to be 50 cfs. The station below Chesbro Reservoir recorded a peak flow of 2,320 cfs, corresponding to a 40-year flood frequency. The flooded area was mostly farm land; however, some homeowners reported floodwaters in their homes. There was also overbanking at the confluence of Llagas Creek with the Paja o River. In addition to the flooding, high velocity flows estimated at 10 fps caused a partial deck collapse at the Rucker Avenue bridge.

Uvas Creek

Most of the damage in the South County occurred when Uvas Creek overbanked upstream of Thomas Road. The water moved into the residential area enclosed by Tenth Street in the north, Thomas Road in the south, and the railroad tracks to the east with water flooding an estimated 170 homes. Heavy damage was suffered by the residents of Antonio Court, a location near the point of overbanking, and by residents of London Place. Other floodwaters along the creek submerged bridges at Old Creek Road and Thousand Trails and a private bridge at River Bank Drive was lost. A peak flow of 14,200 cfs was recorded at the station near Thomas Road operated by the United States Geological Survey (U.S.G.S.). This corresponds approximately to the 100-year or one percent flood frequency. Appendix 1 to this report contains correspondence from the U.S.G.S. which discusses their evaluation of this record flow on Uvas Creek. Figure 2 illustrates Uvas watershed hydrographs during the February storm.

Appendix 2 contains details of storm damage estimates as reported by the City of Gilroy.

Tennant Creek

Flooding was reported to have occurred at Hill Road and Maple Avenue on February 19.

Corrallitos Creek

Flooding was reported to have occurred at the confluence with Tennant Creek, at Columbet Avenue, and downstream of Middle Avenue. Two houses were reported to have sustained some damage from this flooding.

DAMAGES

Preliminary estimates of damages by the Santa Clara County Office of Emergency Services (OES) were $4,515,000 in private sector damage and $2,819,000 in public sector damage, for a total of $7,334,800. The County OES has not updated these figures since February 1986.

The City of Gilroy's preliminary estimate of damages indicated private sector damage of $2,630,000 and public sector damage of at least $750,000 (primarily Gilroy High School). The public sector damage estimate was subsequently revised to $112,136; the private sector estimate has not been updated. Most of the 170 homes flooded by Uvas Creek were not covered by flood insurance. Appendix 2 contains details of flood damages.

The Santa Clara Valley Water District submitted claims to the Federal Emergency Management Agency (FEMA) totaling $290,227. FEMA reimburses 75% of certain flood fighting and flood damage repair costs. This claim for damages includes the following projects:

Flood fighting expenses	$ 62,854
Coyote Dam spillway repairs	87,965
Guadalupe Creek access road	4,691
Uvas Creek downstreamof Uvas Dam	3,348
Ross Creek downstream of Kird Road	7,920
Alamitos Creek downstream of Greystone	31,574
Matadero Creek upstream of El Camino	7,839
San Tomas Creek upstream of McCoy	13,345
Uvas Creek near Galetto property	12,955
Princevalle Storm Drain	17,181
Calabazas Creek downstream of Bollinger	10,908
Alamitos Creek upstream of Camden Avenue	1,978
Alamitos Creek near Fleetwood Drive	13,293
Coyote Canal upstream of Metcalf	14,376
Total costs submitted to FEMA	$290,227

Another cost-sharing program of the State of California (AB 2536) has provided $44,633 in reimbursement of flood fighting expenses due to the February storm. In addition to these costs, the District's Maintenance Division estimates that at least

$500,000 was spent on silt and debris removal due to the February storm which did not qualify for any cost-sharing program.

Thus, total District flood fighting costs were about $107,500. Costs to repair District flood control facilities were about $730,000.

Appendix 2 contains supporting letters and memos regarding damage estimates.

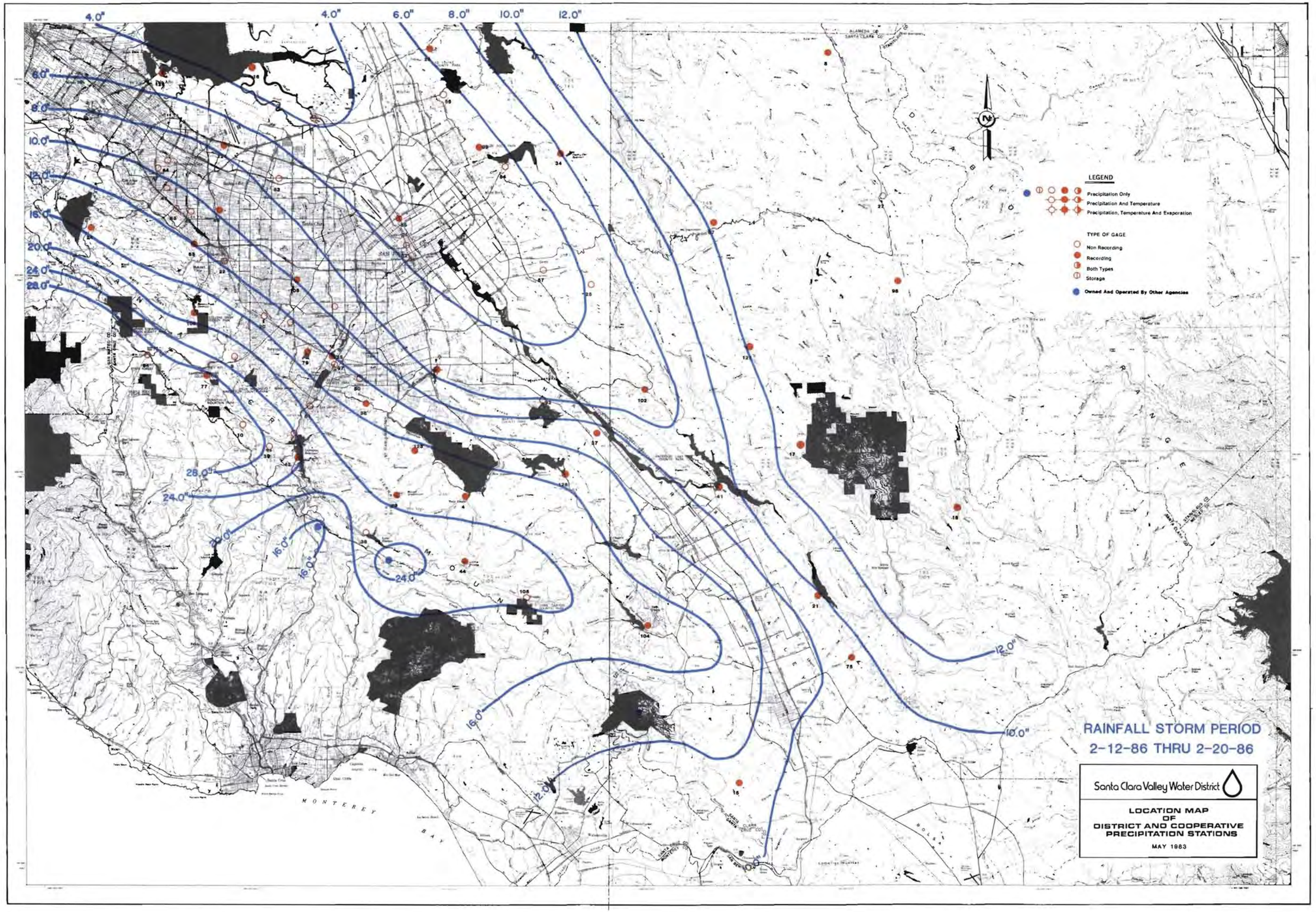
Table 1
STORM OF FEBRUARY 12-20, 1986
RAINFALL DATA

Station Name	Station Number*	Location (Basin)	Elevation (Feet)	Season Records Began	Feb.12-20 Storm Rainfall (Inches)	Total Rainfall 1985/86 Season (Inches)	Historical Seasonal High** (Inches, Season)	Historical Seasonal Average (Inches)
Palo Alto Tide	---/2099	Adobe, Barron, Matadero Crks.	5	1985	4.5	15.55	N/A	N/A
Dahl Ranch	24/----	Adobe, Barron, Matadero Crks.	1960	1965	15.9	36.5	70.7 1982-83	34.1
Stevens Creek Res.	100/----	Stevens Creek	620	1937	18.8	40.5	62.1 1982-83	28.4
Valley Christian	77/----	Calabazas, Saratoga Crks.	1440	1958	28.8	63.5	96.7 1982-83	45.7
Lexington Reservoir	42/2068	Los Gatos Crk.	699	1952	24.2	55.0	79.6 1982-83	38.7
Johnson Ranch	36/2066	Los Gatos Crk.	754	1968	14.0	34.2	51.1 1982-83	21.3
Mt. Umunhum	69/2081	Guadalupe River	3090	1969	19.4	58.6	86.6 1982-83	45.2
Loma Prieta	44/2072	Guadalupe River	3788	1962	22.8	58.9	91.1 1982-83	51.3
Almaden	4/----	Guadalupe River	630	1971	18.6	44.0	62.6 1982-83	33.8
Alamitos	1/2065	Guadalupe River	184	1960	7.9	20.3	31.4 1982-83	16.8
San Jose	86/----	Guadalupe River	67	1874	5.4	18.6	30.15 1889-90	14.4
Anderson Reservoir	41/2073	Coyote Creek	666	1951	9.2	24.5	41.4 1982-83	20.3
Coyote Reservoir	21/2075	Coyote Creek	800	1936	9.9	27.9	37.4 1982-83	21.2
Coe Park	17/2079	Coyote Creek	2739	1961	13.3	38.2	54.6 1982-83	30.3
Cow Ridge	127/2071	Coyote Creek	2998	1978	12.1	35.2	55.7 1982-83	33.7
U.T.C.	102/2067	Coyote Creek	735	1962	7.3	22.2	40.1 1982-83	20.4
Penitencia W.T.P.	99/2070	U.Penitencia Crk	469	1968	4.5	17.8	29.9 1982-83	17.1
Mt. Madonna***	---/15	Llagas, Uvas Crk	1879	1985	13.2	42.6	N/A	N/A
Peabody	75/----	Coyote, Llagas Cr	500	1932	9.2	25.3	36.9 1982-83	19.7
Uvas Reservoir	104/----	Uvas Creek	489	1962	18.2	44.4	57.0 1982-83	32.2
Castro Valley	15/----	Uvas Creek	640	1940	10.8	32.4	53.3 1977-78	27.4

* The first gage number is for the ADR gage, the second is the radio gage ID.
** The rainfall season is from July 1 to June 30. The "Historical Seasonal Average" includes all seasons through 1983-84.
***Mt. Madonna gage is operated by Monterey County.
N/A = Gage installed within the last rainfall season, too recently to have a seasonal high.

Table 2
STORM OF FEBRUARY 12-20, 1986
PEAK FLOWS AND STORAGES FOR VARIOUS STREAMS AND RESERVOIRS

Station Name	Station Number	Gage Type	Peak Flow or Storage	Date	Time	Frequency (years)	1% Design Event(cfs)	Comments
UVAS WATERSHED								
Uvas Crk. at Thomas Rd.	11154200	ADR(USGS)	14200 cfs	2/17	22:15	100	14200	Peak flow on Uvas Crk. at Thomas Rd.
	2084	Radio	14200 cfs	2/17	22:08			verified by USGS (see Appendix 1).
Bodfish Crk. at Gilroy		ADR	1295 cfs	2/17	20:45	10	2500	Peak flow on Little Arthur Crk.
Little Arthur at Redwood	65	ADR	2500 cfs	2/17	21:15	25	3400	estimated from field data.
Uvas Reservoir Storage	10	ADR	11700 af	2/17	22:00			
Uvas Reservoir Spillway			9475 cfs	2/17	22:00			
PALO ALTO FLOOD BASIN								
San Francisquito Crk.	11164500	ADR(USGS)	3350 cfs	2/18	?	6	8600	USGS gages on both San Francisquito
Matadero at Middlefield	11166000	ADR(USGS)	1020 cfs	2/18	16:00	8	2900	and Matadero Crks. malfunctioned;
Barron at Middlefield	1462	Radio	270 cfs	2/18	22:14	3	830	peak flows estimated from other data.
Adobe Crk. at Middlefield	1460	Radio	440 cfs	2/18	23:56	3	3100	Gap in radio data from Matadero gage
PAFB - Inside	2098	Radio	3.17 ft	2/19	09:47			on 2/18 from 5:02 to 21:15. Adobe
PAFB - Outside	2097	Radio	4.73 ft	2/19	08:00			and Barron rating curves developed
CALABAZAS WATERSHED								from hydraulic analyses.
Calabazas Crk. at Rainbow	31	ADR	1500 cfs	2/14	?	30	1900	Calabazas Crk. at Rainbow Dr. gage not
			1220 cfs	2/18	22:45			working 2/12 (17:00) to 2/14 (15:30).
Calabazas at Wilcox Sch.	26A	ADR	2600 cfs	2/14	14:00		3800	
			1400 cfs	2/18	22:15			
COYOTE WATERSHED								
Coyote at Montague Expwy.	2060	Radio	2560 cfs	2/17	23:39	5	14500	
Upper Penitencia Crk. at San Jose	11172100	ADR(USGS)	1080 cfs	2/17	21:15	7	4300	
Upper Penitencia Crk. at Piedmont Road	1	ADR	850 cfs	2/17	20:45	5	4500	
Coyote Reservoir Storage	5	ADR	28300 af	2/18	03:00			
Coyote Reservoir Spillway			7660 cfs	2/18	03:00			
Anderson Res. Storage	2	ADR	49280 af	2/21	00:00			
GUADALUPE WATERSHED								
Guadalupe R. at Alamitos	20	ADR	5580 cfs	2/19	00:30	10	11800	
	2064	Radio	5705 cfs	2/19	00:28			
Guadalupe at Almaden Expwy.	23B	ADR	6125 cfs	2/19	00:30	7	14300	
	2088	Radio	6435 cfs	2/19	00:03			
Ross Crk. at Cherry Ave.	51	ADR	1050 cfs	2/14	14:15	5	1800	Ross Crk. at Cherry Ave. was observed
			900 cfs	2/18	22:45			to be at top of bank on 2/14.
Ross Crk. at Blossom Hill	21	ADR	800 cfs	2/14	13:30	25	1100	
Canoas at Almaden Expwy.	73	ADR	1030 cfs	2/19	00:15	10	2400	
Los Gatos Crk. at Lark Ave.	59	ADR	2800 cfs	2/19	04:45	17	7000	
Los Gatos Crk. at Lincoln	50	ADR	3600 cfs	2/19	07:00	17	7600	Gage height on Los Gatos at Lincoln
Guadalupe R. at St. John	11169000	ADR(USGS)	9000 cfs	2/19	02:30	7	19800	station verified by field observation.
Calero Reservoir Storage	3	ADR	8000 af	2/20	21:45			
Almaden Res. Storage	1	ADR	1820 af	2/18	23:00			
Almaden Res. Spillway			1660 cfs	2/18	23:00			
Guadalupe Res. Storage	6	ADR	3895 af	2/19	00:00			
Guadalupe Res. Spillway			770 cfs	2/19	00:00			
Lexington Res. Storage	7	ADR	21435 af	2/19	01:00			
Lexington Res. Spillway			2500 cfs	2/19	01:00			
Vasona Res. Storage	11	ADR	510 af	2/19	23:00			
Vasona Res. Spillway			1642 cfs	2/19	23:00			
LLAGAS WATERSHED								
Llagas Crk. at Chesbro	69	ADR	2320 cfs	2/19	01:00	40	3900	
Chesbro Res. Storage	4	ADR	8760 af	2/19	04:00			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12.0"
LEGEND
Precipitation Only
Precipitation And Temperature
Precipitation, Temperature And Evaporation
TYPE OF GAGE
Non Recording
Recording
Both Types
Storage
Owned And Operated By Other Agencies
RAINFALL STORM PERIOD
2-12-86 THRU 2-20-86
Santa Clara Valley Water District
LOCATION MAP
OF
DISTRICT AND COOPERATIVE
PRECIPITATION STATIONS
MAY 1983
MONTEREY
BAY

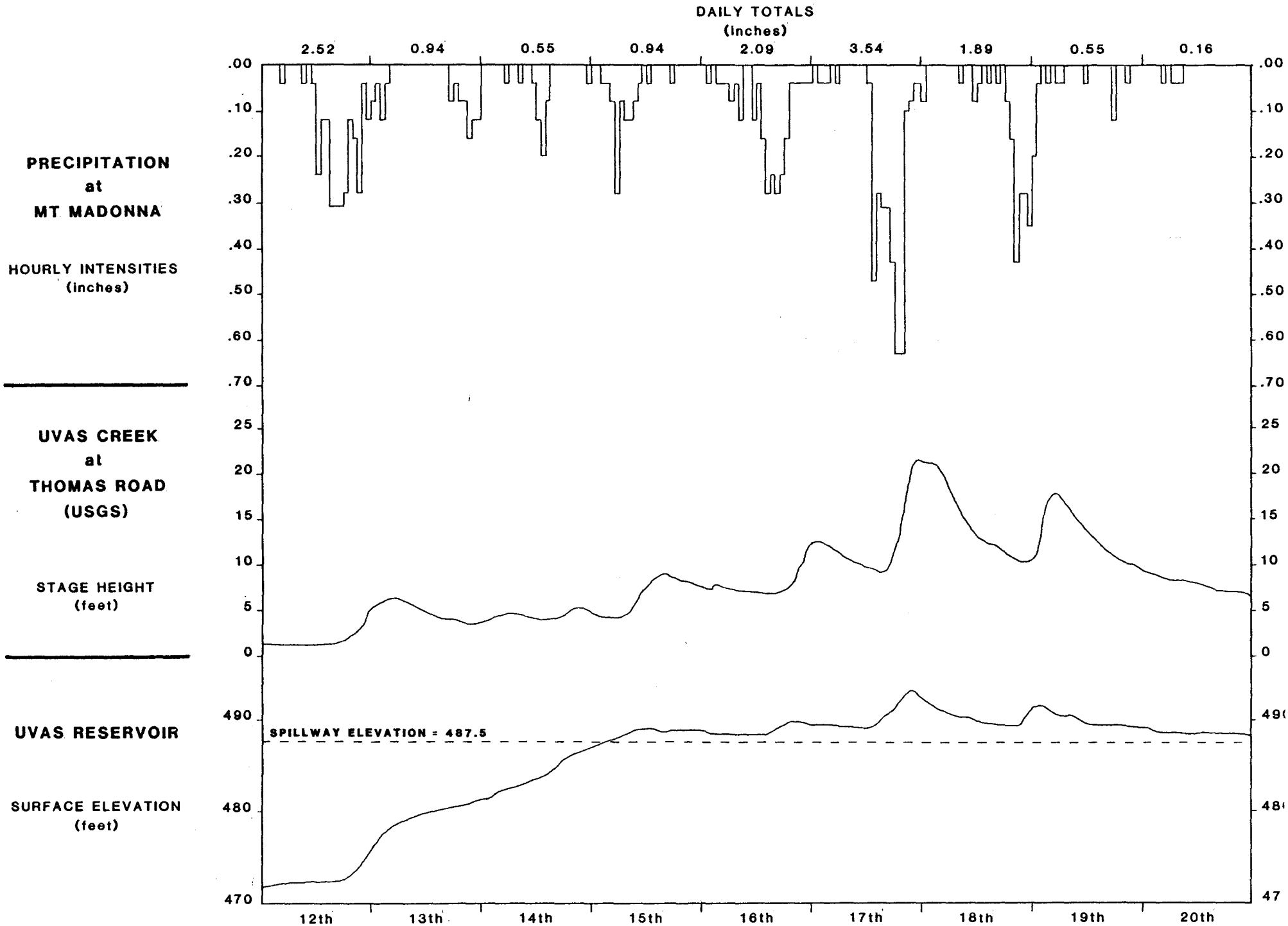
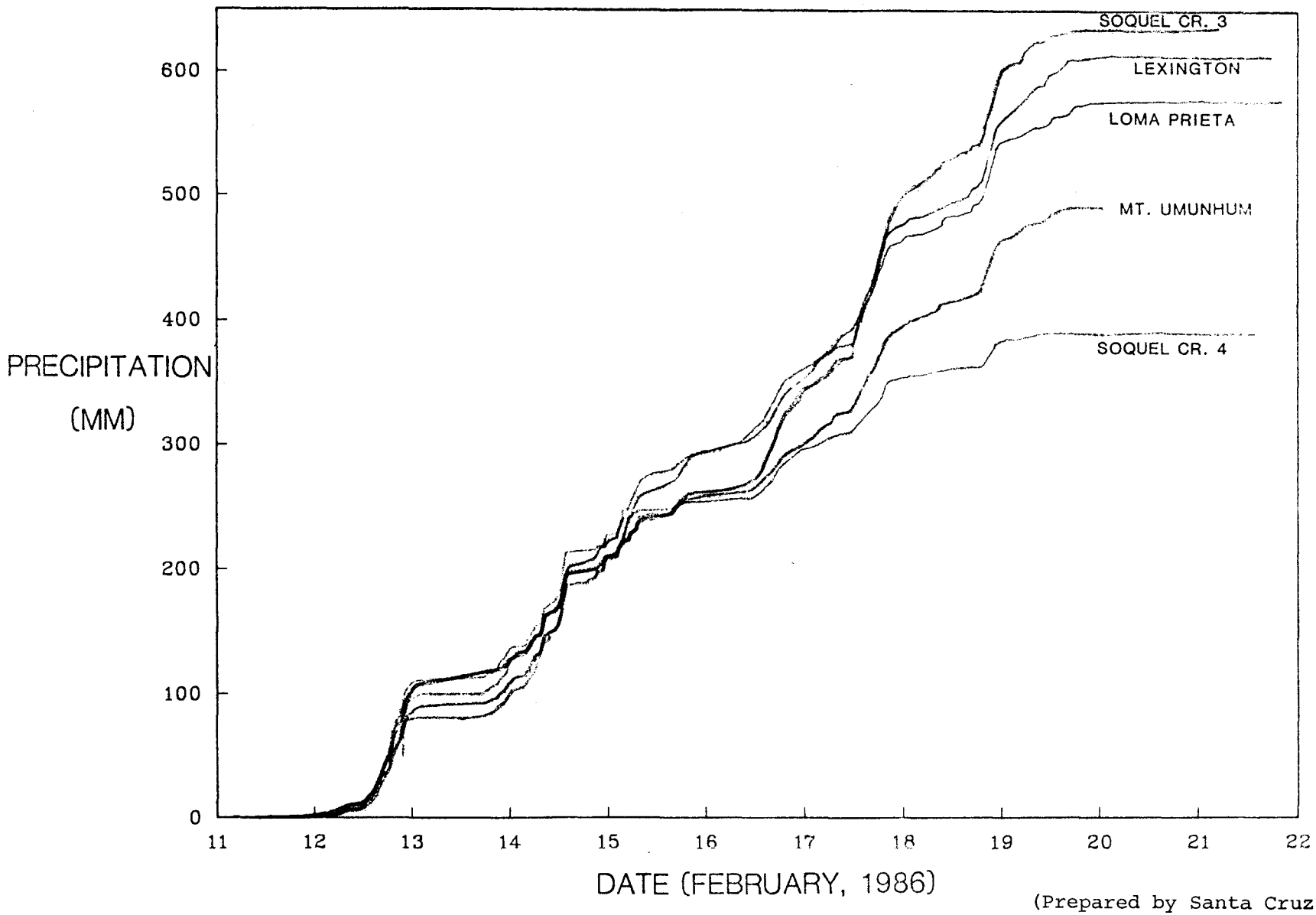

DAILY TOTALS
(inches)
2.52
0.94
0.55
0.94
2.09
3.54
1.89
0.55
0.16
PRECIPITATION
at
MT MADONNA
HOURLY INTENSITIES
(inches)
.00
.10
.20
.30
.40
.50
.60
.70
UVAS CREEK
at
THOMAS ROAD
(USGS)
STAGE HEIGHT
(feet)
25
20
15
10
5
0
UVAS RESERVOIR
SURFACE ELEVATION
(feet)
490
480
470
SPILLWAY ELEVATION = 487.5
12th
13th
14th
15th
16th
17th
18th
19th
20th
FEBRUARY 12th THRU 20th 1986

FIGURE 2

FIGURE 3.

STORM PRECIPITATION - LEXINGTON BURN - FEBRUARY 12-22, 1986



(Prepared by Santa Cruz County)

APPENDIX 1

UVAS CREEK SLOPE/AREA CALCULATIONS

San Jose

September 5, 1986
145-86-00

9/10 ADS n/a
SNW

Mr. Abdullah D. Saah
Hydrologist
Project Development Branch
Santa Clara Valley Water District
San Jose, CA 95118

Re: Uvas Creek
U.S.G.S. - Response to Slope/Area Calculations

Dear Abdullah:

Enclosed is a copy of the U.S. Geological Survey's comments on our slope/area calculations. Also enclosed are copies of their computer runs based on the field information that we supplied to them.

Basically, the U.S.G.S. is in agreement with our calculations and roughness evaluation, with the exception of an average high water mark elevation at cross-section 2. They made their runs with this value corrected, which yielded a flow rate of 14,200 cfs. They intend to publish this as the peak flow rate for the February 17, 1986 flood.

If you have any questions, please feel free to call.

Very truly yours,

NOLTE and ASSOCIATES

Craig S. Giordano
Project Engineer

cc: Ray Lenaburg, FEMA, San Francisco

cg2150/sma

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors

60 South Market Street, Suite 600, San Jose, CA 95113 Tel. (408) 287-3400 FAX No. (408) 287-6906

United States Department of the Interior

GEOLOGICAL SURVEY

District Office
Water Resources Division
Room W-2234, Federal Building
2800 Cottage Way
Sacramento, California 95825
(916) 978-5445

August 18, 1986

John E. Eastus
Water Resources Division Manager
George S. Nolte and Associates
1731 North First Street
San Jose, California 95112

Dear Mr. Eastus:

Enclosed is the Uvas Creek slope-area measurement you sent to us with your letter of May 16, 1986. I must apologize for not reviewing it sooner, and I hope my comments do not arrive too late to be of some help.

Only one significant error was noticed; the average water surface from the high-water mark profiles at cross-section 2 was shown as 231.65 ft, but should have been 232.15. We ran your survey data through our computer, with the corrected elevation, and obtained a discharge of 14,200 ft ^{3}/s.

The right bank profile is somewhat dubious, what with the 1 ft rise between sections 1 and 2, and the large undulations downstream from section 3. We ran the slope-area using high-water elevations based on the left bank profile only, and obtained a discharge of 14,500 ft ^{3}/s. Copies of the runs are enclosed.

We agree with your Mannings n value estimate of 0.035, and have used it in our computations. We intend to publish 14,200 ft ^{3}/s for the February 17, 1986, peak.

Thank you very much for the opportunity to review this measurement. It has been of great help to us in rating our gaging station on Uvas Creek.

Very truly yours,

Stuart H. Hoffard

Stuart H. Hoffard
Hydrologist

Enclosures

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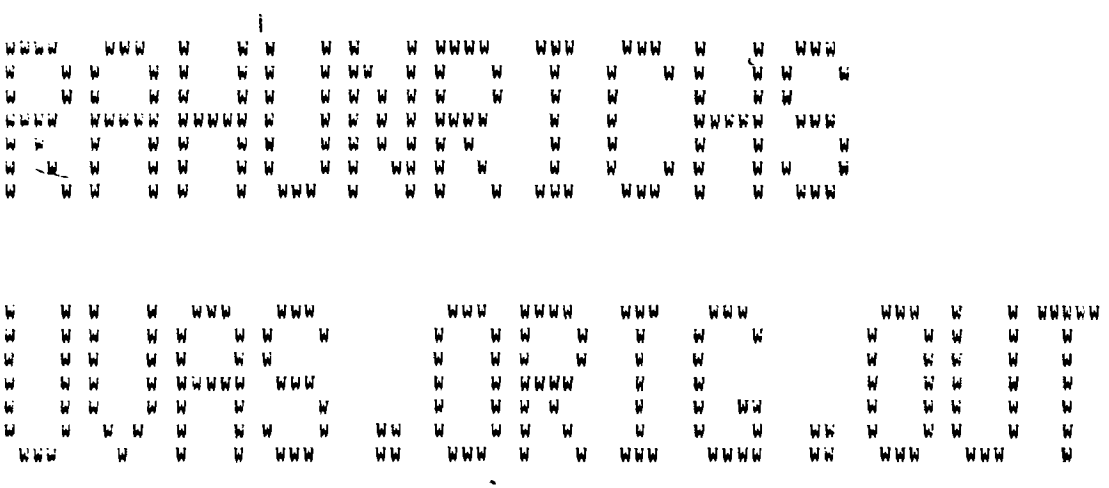

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1UVAS CREEK D/S OF HECKER PASS ROAD                    11154200  021786  4 00010 1

1UVAS CREEK D/S OF HECKER PASS ROAD                    11154200  021786  4 00010 1
    1     13     0  1       0                                               00020 2
    7 01    344    10 01    335    25 01    284    38 01    301    50 01    285  00030 3
   86 01    276   122 01    246   148 01    253   200 01    244   241 01    224  00040 3
  247 01    255   257 01    315   274 01    414                               00050 3
      035              |                                                     00060 4
     3250                                                                    00070 5
    2     14    85  2     478                                               00080 2
   70 01    333    85 01    313    90 01    307   155 02    312   165 02    269  00090 3
  169 02    233   178 02    213   200 02    211   228 02    233   335 02    266  00100 3
  400 02    270   412 02    301   414 02    320   428 02    393               00110 3
      035    035                                                             00120 4
     3130   3175                                                            00130 5
    3     21   165  1     974                                               00140 2
   63 01    314    70 01    314    72 01    294    80 01    227    96 01    219  00150 3
  147 01    236   187 01    221   200 01    191   224 01    230   231 01    214  00160 3
  258 01    208   277 01    238   296 01    231   303 01    228   315 01    268  00170 3
  323 01    235   323 01    235   410 01    294   417 01    306   427 01    323  00180 3
  465 01    393                                                             00190 3
      035                                                                   00200 4
     3000                                                                   00210 5
    4     15   260  1    1670                                               00220 2
   86 01    286    92 01    286    93 01    284   104 01    241   123 01    242  00230 3
  148 01    230   160 01    204   200 01    173   232 01    191   262 01    183  00240 3
  285 01    180   293 01    225   306 01    239   308 01    264   317 01    374  00250 3
      035                                                                   00260 4
     2740                                                                   00270 5
0                                  NO FATAL ERRORS WERE DETECTED IN THIS SET.
1
                    UVAS CREEK D/S OF HECKER PASS ROAD                    11154200  021786
                    DISCHARGE BETWEEN SECTIONS     DELH        L             Q
                     1      -    2                  0.85       478.        10535.
                     2      -    3                  1.65       496.        17831.
                     3      -    4                  2.60       696.        13659.
                     1      -    3                  2.50       974.        13949.
                     2      -    4                  4.25      1192.        14907.
                     1      -    4                  5.10      1670.        13799.
1
0                   UVAS CREEK D/S OF HECKER PASS ROAD                    11154200  021786
 PROPERTIES FOR SECTION  1
          AREA     TOP WIDTH      WETTED   HYDRAULIC  CONVEYANCE    DISCHARGE
                                PERIMETER    RADIUS
   1     1555.33       245.78       249.56        6.23   223634.62     13798.92
0
  SUM    1555.33       245.78       249.56               223634.62     13798.92
0
     ALPHA = 1.0000  FROUDE NUMBER = 0.6215  VELOCITY HEAD = 1.2223
0
0
 PROPERTIES FOR SECTION  2
          AREA     TOP WIDTH      WETTED   HYDRAULIC  CONVEYANCE    DISCHARGE
                                PERIMETER    RADIUS
   1       24.25        70.00        70.04        0.35      507.68        27.14
   2     1727.33       258.74       262.42        6.58   257583.41     13771.78
0
  SUM    1751.58       328.74       332.45               258091.06     13798.92
0
```

ALPHA = 1.0223 FROUDE NUMBER = 0.6014 VELOCITY HEAD = 0.9852

0
0

PROPERTIES FOR SECTION 3

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	2173.83	342.10	347.51	6.26	313337.56	13798.92
0						
SUM	2173.83	342.10	347.51		313337.56	13798.92

0

ALPHA = 1.0000 FROUDE NUMBER = 0.4438 VELOCITY HEAD = 0.6257

0
0
1
0 UVAS CREEK D/S OF HECKER PASS ROAD 11154200 0217[illegible]

PROPERTIES FOR SECTION 4

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	1465.94	213.26	217.30	6.75	222211.84	13798.92
0						
SUM	1465.94	213.26	217.30		222211.84	13798.92

0

ALPHA = 1.0000 FROUDE NUMBER = 0.6327 VELOCITY HEAD = 1.3759

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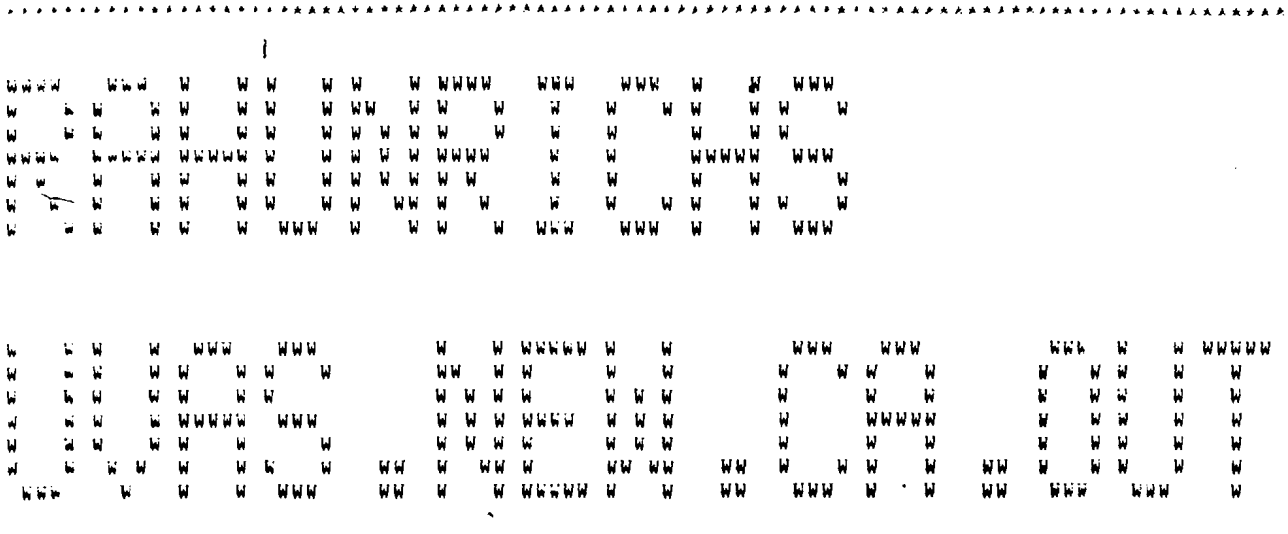

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   1      13    0  1        0                                                     20.0 2
    7  1    344   10  1    335   25  1    284   38  1    301   50  1    285        30.0 3
   85  1    276  122  1    246  148  1    253  200  1    244  241  1    224        40.0 3
  247  1    255  257  1    315  274  1    414    0  0      0    0  0      0        50.0 3
      035                                                                         60.0 4
    3250       0       0       0       0       0       0       0       0       0  70.0 5
0
   2      14   35  2      478                                                     80.0 2
   70  1    333   85  1    313   90  1    307  155  2    312  165  2    269        90.0 3
  109  2    233  178  2    213  200  2    211  228  2    233  335  2    266       100.0 3
  400  2    270  412  2    301  414  2    320  428  2    393    0  0      0       110.0 3
      035    035                                                                 120.0 4
    3190   3220        0       0       0       0       0       0       0       0 130.0 5
0
   3      21  215  1      974                                                    140.0 2
   63  1    314   70  1    314   72  1    294   80  1    227   96  1    219       150.0 3
  147  1    236  187  1    221  200  1    191  224  1    230  231  1    214       160.0 3
  256  1    208  277  1    238  296  1    231  303  1    228  315  1    268       170.0 3
  323  1    235  323  1    235  410  1    294  417  1    306  427  1    323       180.0 3
  465  1    393    0  0      0    0  0      0    0  0      0    0  0      0       190.0 3
      035                                                                        200.0 4
    3000       0       0       0       0       0       0       0       0       0 210.0 5
0
   4      15  260  1     1670                                                    220.0 2
   86  1    286   92  1    286   93  1    284  104  1    241  123  1    242       230.0 3
  148  1    230  160  1    204  200  1    173  232  1    191  262  1    183       240.0 3
  285  1    180  293  1    225  306  1    239  308  1    264  317  1    374       250.0 3
      035                                                                        260.0 4
    2740       0       0       0       0       0       0       0       0       0 270.0 5
0
1
                  UVAS CREEK D/S OF HECKER PASS ROAD                       11154200   021786

     DISCHARGE BETWEEN SECTIONS              E          DELH         L            Q          (Q1-Q0)/ Q0


0     1      -     2                        1.0         0.35       478.         8041.
0     1      -     2                        0.0         0.35       478.         6883.          0.17
0     1      -     2                        0.5         0.35       478.         7395.
0     2      -     3                        1.0         2.15       496.        22325.
0     2      -     3                        0.0         2.15       496.        19823.          0.13
0     2      -     3                        0.5         2.15       496.        20963.
0     3      -     4                        1.0         2.60       696.        13659.
0     1      -     3                                    2.50     *******       14879.
0     2      -     4                                    4.75     *******       15883.
0     1      -     4                                    5.10     *******       14218.
1
0                  UVAS CREEK D/S OF HECKER PASS ROAD                       11154200   021766
 PROPERTIES FOR SECTION  1
          AREA     TOP WIDTH       WETTED    HYDRAULIC  CONVEYANCE   DISCHARGE
                                 PERIMETER    RADIUS
  1      1555.33      245.75      249.56         6.23   227634.72     14217.93
0
```

SUM	1555.33	245.78	249.56	223634.72	14217.93

ALPHA = 1.0000 FROUDE NUMBER = 0.6404

PROPERTIES FOR SECTION 2

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	67.60	74.50	74.58	0.91	2688.17	132.11
2	1843.89	259.38	263.21	7.01	286619.62	14085.82
SUM	1911.49	333.88	337.79		289307.75	14217.93

ALPHA = 1.0456 FROUDE NUMBER = 0.5049

PROPERTIES FOR SECTION 3

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	2173.83	342.10	347.51	6.26	313337.81	14217.93
SUM	2173.83	342.10	347.51		313337.81	14217.93

ALPHA = 1.0000 FROUDE NUMBER = 0.4572

PROPERTIES FOR SECTION 4

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	1465.94	213.26	217.30	6.75	222211.91	14217.93
SUM	1465.94	213.26	217.30		222211.91	14217.93

ALPHA = 1.0000 FROUDE NUMBER = 0.6519

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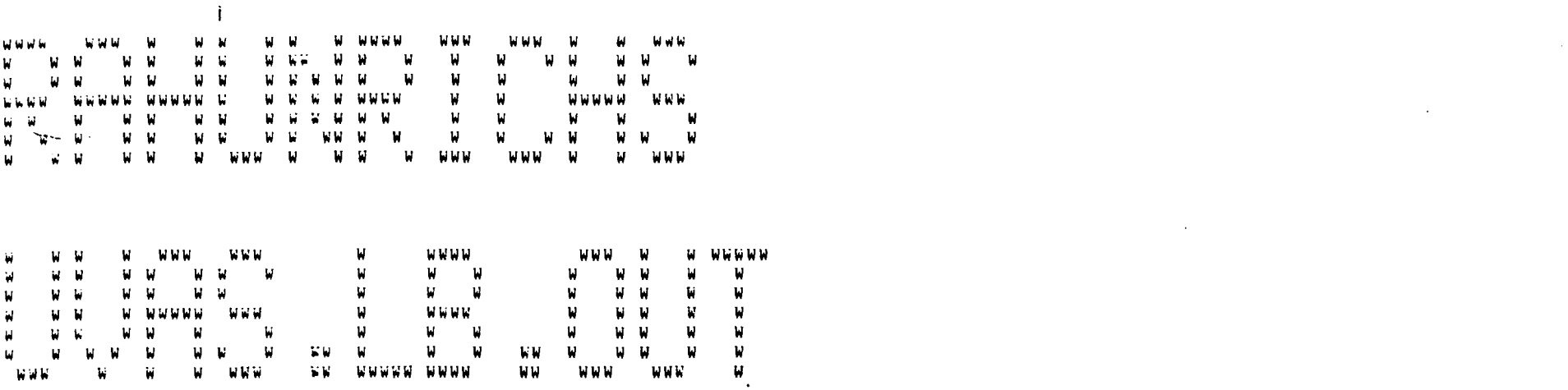

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  1      13      0  1        0                                            00020 2
    7 01    344    10 01    335    25 01    284    38 01    301    50 01    285  00030 3
   85 01    276   122 01    246   148 01    253   200 01    244   241 01    224  00040 3
  247 01    255   257 01    315   274 01    414                              00050 3
       035                                                                   00060 4
      3350                                                                   00070 5
    2       14  170  2       478                                            00080 2
   70 01    333    85 01    313    90 01    307   155 02    312   165 02    269  00090 3
  169 02    233   178 02    213   200 02    211   228 02    233   335 02    266  00100 3
  460 02    270   412 02    301   414 02    320   428 02    393                  00110 3
       035      035                                                          00120 4
      3180     3180                                                          00130 5
    3       21  240  1       974                                            00140 2
   63 01    314    70 01    314    72 01    294    80 01    227    96 01    219  00150 3
  147 01    236   187 01    221   200 01    191   224 01    230   231 01    214  00160 3
  258 01    208   277 01    238   296 01    231   303 01    228   315 01    268  00170 3
  323 01    235   323 01    235   410 01    294   417 01    306   427 01    323  00180 3
  465 01    393                                                              00190 3
       035                                                                   00200 4
      2940                                                                   00210 5
    4       15  100  1      1670                                            00220 2
   86 01    286    92 01    286    93 01    284   104 01    241   123 01    242  00230 3
  148 01    230   160 01    204   200 01    173   232 01    191   262 01    183  00240 3
  285 01    180   293 01    225   306 01    239   308 01    264   317 01    374  00250 3
       035                                                                   00260 4
      2840                                                                   00270 5
0                                  NO FATAL ERRORS WERE DETECTED IN THIS SET.
1
                        UVAS CREEK D/S OF HECKER PASS ROAD                  11154200  021786
                        DISCHARGE BETWEEN SECTIONS      DELH        L            Q
                         1       -    2                  1.70      478.      15973.
                         2       -    3                  2.40      496.      19165.
                         3       -    4                  1.00      696.       9575.
                         1       -    3                  4.10      974.      17626.
                         2       -    4                  3.40     1192.      13962.
                         1       -    4                  5.10     1670.      14546.
1
0                       UVAS CREEK D/S OF HECKER PASS ROAD                  11154200  021786
 PROPERTIES FOR SECTION  1
          AREA     TOP WIDTH      WETTED   HYDRAULIC  CONVEYANCE   DISCHARGE
                                PERIMETER    RADIUS
  1     1803.43       250.43       254.65        7.08   282370.44    14545.53
0
 SUM    1803.43       250.43       254.65               282370.44    14545.53
0
    ALPHA = 1.0000  FROUDE NUMBER = 0.5297  VELOCITY HEAD = 1.0101
0
0
 PROPERTIES FOR SECTION  2
          AREA     TOP WIDTH      WETTED   HYDRAULIC  CONVEYANCE   DISCHARGE
                                PERIMETER    RADIUS
  1       60.19        73.75        73.82        0.82     2230.20      123.35
  2     1740.27       258.79       262.49        6.63   260759.25    14422.18

 SUM    1800.46       332.54       336.31             262989.44    14545.53
```

ALPHA = 1.0439 FROUDE NUMBER = 0.6119 VELOCITY HEAD = 1.0580

PROPERTIES FOR SECTION 3

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	1969.80	338.00	343.11	5.74	268140.62	14545.53
SUM	1969.80	338.00	343.11		268140.62	14545.53

ALPHA = 1.0000 FROUDE NUMBER = 0.5390 VELOCITY HEAD = 0.8467

UVAS CREEK D/S OF HECKER PASS ROAD 11154200 021786

PROPERTIES FOR SECTION 4

	AREA	TOP WIDTH	WETTED PERIMETER	HYDRAULIC RADIUS	CONVEYANCE	DISCHARGE
1	1680.89	216.64	221.34	7.59	275723.19	14545.53
SUM	1680.89	216.64	221.34		275723.19	14545.53

ALPHA = 1.0000 FROUDE NUMBER = 0.5475 VELOCITY HEAD = 1.1628

APPENDIX 2

DAMAGES AND COST REIMBURSEMENTS

memorandum

TO	FROM
Sally Reed, County Executive	M. Earl Thompson, OES Manager
SUBJECT	**DATE**
Status Report: Post Flood Activities	[redacted]

Several issues have been dealt with as a consequence of the floods and mudslides that have occurred in recent days.

1) As a result of the federal declaration for Santa Clara County, A Disaster Assistance Center (DAC) has been established in Gilroy. It opened Wednesday, February 26 at 9:00 a.m. and will close March 2 at 6:00 p.m. In excess of 100 people have already been processed through the DAC. From personal observation and reports received, the process seems to be operating in a smooth manner.

2) A Federal Assistance Survey Team (FAST) surveyed those public buildings, roads, bridges, and other public facilities that were damaged by the storms. This survey was conducted Wednesday, 2/26 and the information subsequently submitted to the federal government for their consideration. This particular survey is intended to determine if a federal declaration should be declared. At the present time, the federal declaration only covers the private sector.

3) The installation of a bridge on Sanborn Road is proceeding according to schedule. The bridge should be operational tomorrow, Friday, February 28.

4) Engineers from the Corp of Engineers and State OES are reviewing the situation at Rucker Avenue in which Santa Clara County is requesting the removal of the bridge over Llagas Creek due to its perilous condition. A favorable decision is expected in which case we will ask the Corp of Engineers to demolish the bridge. Its continued existence in its present condition could eventually cause flooding of nearby homes.

5) Preliminary estimates from the cities and special districts in the county indicate that damages as a result of the storms amounted to:

Private Sector	$ 4,515,000
Public Sector	2,819,800
For a total of	$ 7,334,800

M. Earl Thompson

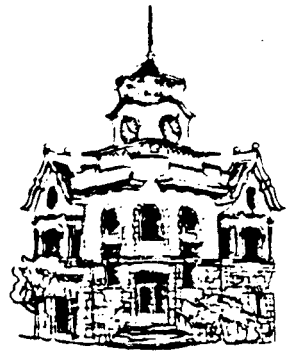
M. EARL THOMPSON, OES Manager

MET:mk

cc: John Maltbie
Board of Supervisors
OES staff
George Soto
Jane Decker

County of Santa Clara
Office of Emergency Services
County Government Center
70 West Hedding Street
San Jose, California 95110

PLANNING DEPARTMENT
Inter-department Memo



CITY OF GILROY

February 19, 1986

TO: City Administrator

FROM: Chief Building Inspector
Director of Planning

SUBJECT: Damage Survey Report, February 18 & 19, 1986

A survey of storm flood damage was conducted on Tuesday and Wednesday, February 18 and 19, 1986 by the Building Department Staff.

Several areas of town were checked including the north area around Ronan Avenue, Church Street and Welburn Avenue, the east side Walnut Lane area, and the rain damage area from Tenth Street south of Thomas Road.

In the south area, 135 single family homes and 35 multiple family dwellings have major water/mud damage. Seven commercial buildings were counted on South Monterey Street with substantial damage to several.

Estimated damage to the residential buildings in this area is $2,375,000 and commercial is around $160,000.

The Ronan Avenue, Church Street and Welburn Avenue areas sustained some water damage as this area is prone to flooding. Approximately 16-20 residential units were counted with an estimated amount of damage at $90,000. Approximately 12 businesses in the area had various amounts of water in them with an estimated amount of damage at $48,000.

Total estimated dollar amount of storm damage to private property within the City of Gilroy is $2,673,000.

There is no estimate yet as to the extent of damage to personal property or landscaping. Approximately 50 vehicles were damaged by flood waters.

The Gilroy High School Gymnasium, Theater, Stadium and parking areas were inundated, with damages estimated at $750,000.

There is minor flood damage to City streets, street trees and storm drainage system, with no cost estimates yet. We have not yet received information on public utility damage totals for gas, electric, cable TV lines or telephone lines. Both Christmas Hill and Las Animas Parks are still inundated, so no estimates of damage have been made to these facilities.

Respectfully,

Michael Dorn

Michael Dorn
Director of Planning

Telephone (408) 842-3191

City of Gilroy

7351 Rosanna Street
GILROY, CALIFORNIA
95020

ROBERTA H. HUGHAN
MAYOR

3/5 JTO
RRS
JDC
DFK
JCM
JHS

February 28, 1986

State of California
Department of Water Resources
c/o A.J. Brown
State Coordinator of
Flood Plain Management Program
P.O. Box 942836
Sacramento, CA 94236-0001

Dear Mr. Brown:

As you know, the City of Gilroy suffered a great deal of damage during the recent floods. Although the flood has been described as a 25-year flood, most of our damage was sustained in areas in the southern part of our city shown on FEMA maps as "Flood Zone B," the 500-year flood plain. It is clear, then, that a restudy and reclassification of this area is necessary as soon as possible.

To assist your staff and FEMA with this study and reclassification, the City of Gilroy will be happy to provide whatever data and documentation we have on past flooding as well as a complete synopsis of this year's flood, which we are now compiling.

The population of Gilroy was estimated by the State Department of Finance at 26,132, as of January 1, 1985. Our General Plan projects the population to increase to 30,000 in 1990 and to 40,000 in the year 2000, and regional projections show even higher projections.

We do not want the people of Gilroy to be subjected to this type of disaster again in the future. Please assist us by scheduling this restudy as soon as possible.

We look forward to working with you on this project.

Sincerely,

Roberta H. Hughan

Roberta H. Hughan
Mayor

cc: Assemblyman Rusty Areias
Santa Clara Valley Water District

86 MAR 5 A11 : 54

SANTA CLARA
VALLEY WATER DISTRICT

Telephone (408) 842-3191

City of Gilroy

7351 Rosanna Street
GILROY, CALIFORNIA
95020

JAY BAKSA
CITY ADMINISTRATOR

NEWS CONFERENCE ON 1986 GILROY FLOOD
February 24, 1986
9:30 a.m.

Moderator: Chuck Myer — Associate Planner (Public Information Officer)

Panel of City Officials:

Jay Baksa	City Administrator (Director of Emergency Services)
Cecil Reinsch	Assistant City Administrator (Special Projects)
Dick Cox	Director of Public Works
Harold Ritter	Assistant Fire Chief
Greg Cowart	Chief of Police
Vern Gardner	Police Commander
Bill Ayer	Director of Parks and Recreation (Shelter Coordinator)
John Booth	Personnel Director (Volunteer Coordinator)
Mike Dorn	Planning Director (Special Projects)
Norm Allen	City Engineer

PRESENTATION OF PREPARED STATEMENT
by Public Information Officer

As you know, Gilroy suffered about $5 million worth of damage caused by the flash flood which occurred one week ago today. The City of Gilroy is pleased to be able to announce that late last Friday, February 21, Santa Clara County was designated a federal disaster area, opening the way for federal relief programs to assist Gilroy victims of the flooding.

In the next few days, the City of Gilroy will provide temporary office space, equipment, chairs and supplies to representatives of the Federal Emergency Management Agency, FEMA, which will administrate the federal aid programs. FEMA will operate out of Wheeler Auditorium (on Sixth St. between Church and Rosanna Streets). FEMA has its own staff, including public relations personnel, and will announce the details of Federal programs as soon as they arrive. All citizens who have contacted or will contact the City to request information on federal programs will be referred to FEMA.

Prior to applying to FEMA for federal aid programs, flood victims should determine their FEMA flood insurance coverage, since disaster aid cannot duplicate insurance benefits. Residents of flooded areas should be prepared to bring all of their property insurance policies and policy numbers, and complete lists of their losses and needs, with them when they apply for aid. Residents who do not have FEMA flood insurance can still apply for other FEMA disaster assistance programs.

The City has been assisting residents in determining which of the current FEMA flood insurance areas their home is located in. The flood occurred in areas designated by FEMA as "Zone A" (100 year floodplain) and "Zone B" (100-500 year floodplain). Residences in Zone A are required to have federal flood insurance; for Zone B residences, it is optional.

A check of City archives has revealed that between 1974 and 1980, the entire City limits of Gilroy south of Sixth Street was designated Zone A. But a study done between 1977 and 1979 by George Nolte and Associates of San Jose, commissioned by FEMA, recommended the current flood zone configurations which FEMA has been using since 1980.

Flood victims are eligible for Property Tax Relief. County Assessor forms are available at the City's Building Department (and in your packets) which will exempt property owners from being reassessed on reconstruction made as a result of the flood. Residents may call the County Assessor for more information.

In the meantime, cleanup operations by City crews, in conjunction with the California Conservation Corps and citizen volunteers, are continuing seven days a week. General cleanup operations of streets and public areas began last Wednesday after flood waters receded, and will continue for at least two weeks. Also last Wednesday, the Gilroy Police Dept. began a two-day outreach program to assist flood victims. On Friday, City workers formed canvass crews to assess the needs of citizens who

were cleaning up their private property. The goal of these two programs was to facilitate a better flow of information to and from flood victims.

On Saturday and Sunday, City crews and California Conservation Corps workers assisted 65 flood victims who requested private household cleanup services: Cleaning mud from backyards and garages, pulling up carpets, moving heavy furniture, disposing of debris, etc. City crews will be taking care of all debris disposal, and will also pick up remaining sandbags on a specified future date.

Other agencies are also providing assistance. P.G.E. crews are assisting citizens with gas and electricity problems. The American Red Cross is offering post-disaster assistance in the dance & craft rooms at Wheeler Community Center (at Sixth and Church Streets). South County Housing Corporation is offering assistance with assessment of damage, construction training, advice on use of professional services, and help in locating low-interest financing. The offices of our local legislators are also addressing the needs of flood victims. Phone numbers for all of these agencies are listed in your packets.

Questions about health have arisen as a result of the flooding. There have been reports from residents in the area of a poison oak-like rash. The County Environmental Health Department is investigating the situation. Further, there is no danger of water contamination. Drinking water samples taken last Tuesday and Thursday were tested and found to be clean; samples will continue to be taken and tested. (Immediately after the flood, chlorination levels were increased as a precautionary measure.)

At no time during the crisis was the Gilroy Sewage Treatment Plant in danger of spilling. Pump capacity at the plant is 17 million gallons per day, and the highest flow rate during the storm was 15 million gallons per day. (This compares to an average daily February flow of 5 million gallons per day.)

Unfortunately, disaster victims are often preyed upon by unscrupulous businesspeople who use scare tactics to sell their scams to distraught persons. Citizens who need referrals or have any doubt about the credentials of any person operating in affected areas are encouraged to call the City Public Information Officer, at 842-2137.

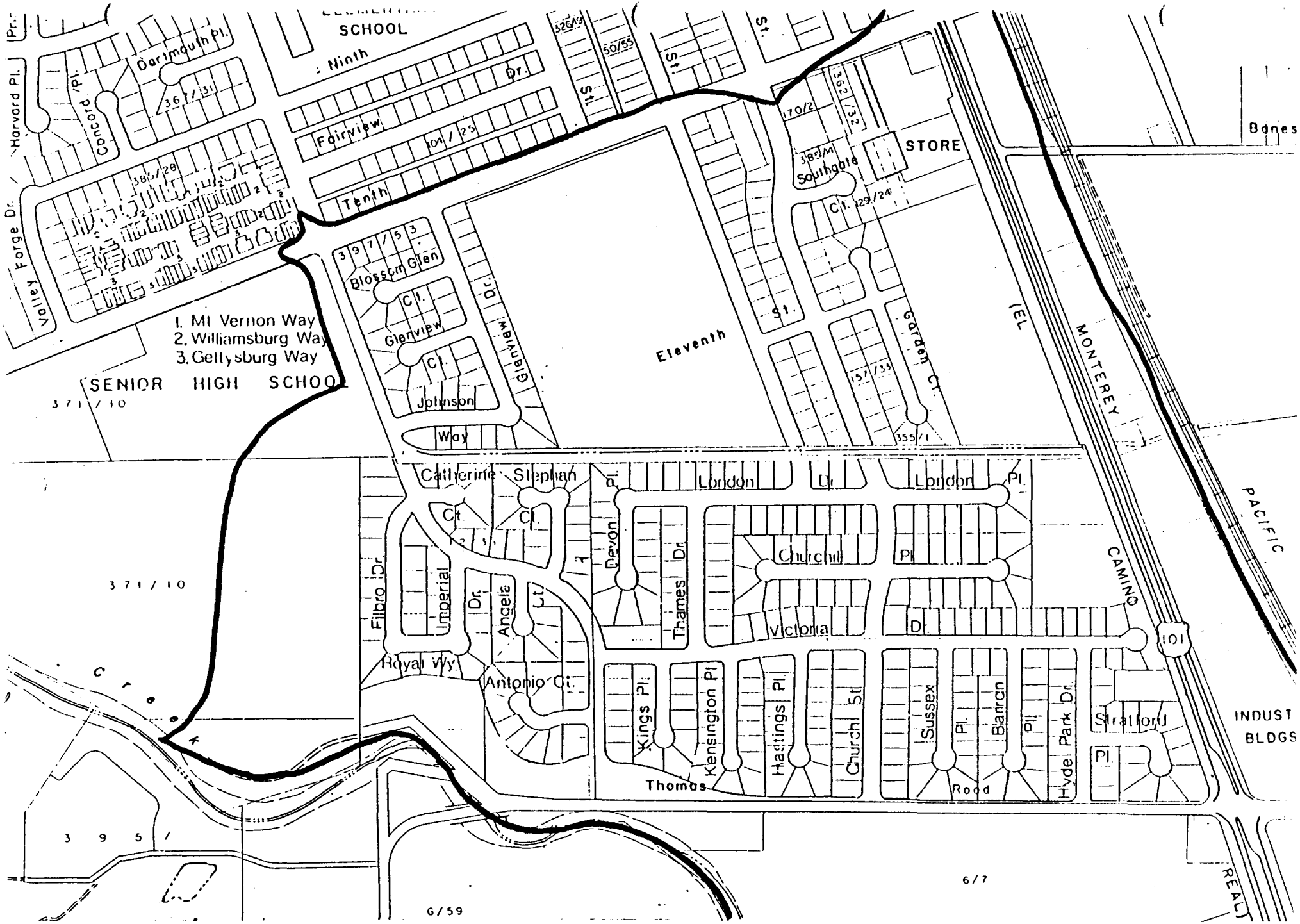
We realize the public has many questions regarding the timing of events on Monday night, February 17. Logbooks, records, tapes, meters and memories of the events of that night are being analyzed and compared. All indicate one thing: an unprecedented rise in the water level of Uvas Creek in an extremely short period of time.

Experienced Uvas Creek watchers, including residents who have lived at the Thomas Road Bridge crossing most of their lives, observed the heavy runoff in the Uvas on Monday afternoon just as they have many times before during heavy storms. Between 6:00 and 6:30 p.m., the continuing rise led trained observers to believe that the water level could rise above the top of the levee by around midnight. The volume of water which followed was a flash flood unprecedented in recent memory.

According to a Gavilan Water Conservation District spokesperson, no physical failure of any dam or levee occurred. The flash flood was simply a result of large amounts of water from the Uvas Reservoir spillway, combining with heavy runoff from the Little Arthur and Bodfish Creeks into the Uvas-Carnadero Creek system.

Meanwhile, City crews spent Monday afternoon in what is known as "heavy rain duty," attending to flooded streets and blocked storm drains all over town. Most attention was paid to traditional areas of flooding, specifically the north and northwest quadrants, Walnut Lane and eastside areas, the sewage treatment plant, and Miller Crossing at Christmas Hill Park (which had been closed since Saturday, February 15).

This chart of water volumes was made from readings taken by the USGS gauge just



N

FURTHEST EXTENT OF FLOOD AREA

GILROY, CA

2/24/86

upstream of the Thomas Road Bridge. As you can see, water levels were actually declining Monday until 2:00 p.m. A gradual increase was recorded between 2:00 and 6:-00 p.m. Suddenly, between 6:00 and 9:00 p.m., the volumes increased from 5766 cfs to 12,500 cfs, an increase of over over 117%. The flow rate doubled, peaking at a rate that would fill four swimming pools in one second. At 7:55 p.m., Jay Baksa, as the City Director of Emergency Services, gave the order for the Emergency Operations Center (EOC) to be activated, utilizing the Emergency Operations Plan as approved by the City Council in October 1980.

By 8:15 p.m., the flash flood waters had begun to escape the levee. The increase in water flow during the next 45 minutes was the highest recorded. After being notified, City staff, many just returning to Gilroy through the holiday storm, drove immediately to the Emergency Operations Center located at Gilroy Police Headquarters. Field crews continued to attempt to barricade streets from the rising Uvas Creek and to respond to emergency calls in flooding areas in the north section of town. At 8:55, City workers abandoned attempts to stem the floodwaters and began to shout evacuation warnings to residents on Victoria Drive. Just after 9:00, public safety personnel were dispatched by the E.O.C. to begin evacuations.

But it was too little, too late. Rescue operations were required immediately as the flood waters swirled through streets and yards, inundating everything south of Tenth Street under at least 1½-2 feet of water by 8:45 p.m. (and some up to 5½ feet by 9:45 p.m.). The turbulating waters damaged 135 homes and 35 apartments, and then moved southeast drenching residences and businesses along South Monterey Street and farms downstream. Emergency evacuation centers were set up at both Wheeler Auditorium and Brownell School, and up to 300 evacuees were sheltered and fed for the next four nights. The National Guard was called to assist with welfare checks and additional evacuations early Tuesday morning.

Tuesday night, an additional sandbag levee, 1800 to 1900 feet long and 2½ to 3 feet high, was built to protect the area's residents from further flooding. This monumental task was accomplished work was done by City crews, the California Conservation Corps, and volunteers. Water levels along Uvas Creek were monitored all night. Early Wednesday morning, the water began to rise as it had Monday night. When the water level passed the safety point just before 3:00 a.m., an evacuation was ordered. Approximately 4 a.m., the rising waters crested within nine inches of going over the top of the levee north of the Thomas Road Bridge. The all clear was given to evacuated residents at 6:15 a.m.

As a result of this experience, many governmental agencies, including the City, have learned valuable lessons on how to be better prepared for the next emergency of this nature. All emergency operations procedures will be thoroughly scrutinized. Valuable lessons in effective communications have been learned. For example, the City will in the future work closely with other water agencies with the goal of designing and developing early warning systems for similar disasters.

Several steps can be taken to prevent further flooding in this area. Despite the lack of clarity about which jurisdiction has the responsibility for maintenance and repair of the levee along the Uvas, the City did clean out Uvas Park Preserve area from Wren Avenue through Christmas Hill Park this past fall. The Uvas-Carnadero Creek Levee Project, a joint effort by the Santa Clara Valley Water District and the Army Corps of Engineers, has been planned for over 15 years, but has been delayed annually by federal budget cuts. We pray that this disaster will speed up federal funding of this crucial project.

Our Public Works Department will analyze the City's storm drainage and utility systems in all areas which experienced flooding. Many citizens have already offered valuable suggestions; we encourage those who have additional suggestions to send them in writing to the City, in care of the Public Information Officer.

During the crisis, the 911 Public Safety Answering Point, staffed by Santa Clara County Communications personnel to service all of the South County area, was overloaded with calls for information as well as other storm-related accidents and emergencies. Working with the County, efforts will be made to increase the efficiency of this system during future emergencies.

The City would like to commend all private citizens and public safety personnel who performed heroic acts during the crisis. We hope that you, as media representatives, will also continue to recognize these heroes, many of whom still remain anonymous, including the man who saved the life of Public Works employee Mauro Lugo. Public safety, Parks, and Public Works employees are all to be commended for their courageous acts in rescuing trapped residents. Many brave citizens also volunteered use of their boats and vehicles in the midst of the crisis.

We would like to thank all of the many organizations which came to our assistance during this time of crisis, particularly the California Conservation Corps, the Gilroy Unified School District, the American Red Cross, the National Guard, the City of Morgan Hill, the Santa Clara County Elmwood Correctional Facility, and the Gilroy Police Reserves and Police Explorers.

Many local businesses and restaurants donated equipment for the emergency operations and food for the meals served to evacuees and workers. The names of these businesses are also included in your packets.

The San Jose Mercury News printed an excellent clean-up checklist for affected homeowners; it is included for your reference. The Dispatch and local banks have also offered additional assistance. We also appreciate the courtesy shown by you, as representatives of the media, for getting necessary information out quickly, and for your courtesy and camaraderie during our emergency operations.

##

QUESTION AND ANSWER PERIOD - For news media representatives only

Ground rules: One question with up to one follow-up question per reporter per turn

Turns will be rotated so everyone has an opportunity to speak

Maximum number of turns per reporter: unlimited

Please state your name and affiliation before asking your question

The Public Information Officer will call on media representatives.

The Director of Emergency Operations will respond to questions,

or refer them to the appropriate Emergency Operation staff person.

DAMAGE SURVEY

Date: February 18 & 19, 1986
By: Building Department Staff

	ESTIMATED LOSSES
PRIVATE PROPERTY	
South side: Between Tenth St. and Thomas Rd.	
135 single family and 35 multi-family homes	$2,375,000
7 commercial buildings	160,000
Landscaping	100,000
North area: Ronan, Church and Welburn	
16-20 residences	90,000
12 businesses	50,000
East side: Walnut Lane area	minimal
PUBLIC PROPERTY	
Gilroy High School Gym, Theater, Stadium and Parking	750,000
Public utilities: electric, gas, cable TV, telephone	200,000
City streets, trees, storm drains, parks, equipment	300,000
PERSONAL PROPERTY	
Appliances, belongings, etc. (rough estimate)	500,000
50+ vehicles	250,000
Total	$4,775,000

BUSINESSES WHICH DONATED EQUIPMENT

Bilardi Construction	Water truck & driver
Donhardt Construction	Water truck & driver
P.G. & E.	Dump truck & driver
	2 high pressure sprayers
	14 people with spray washers
	Dump trucks, loader
Tree Haven	Dump truck, driver
South Valley Disposal	2 trucks, many bins

BUSINESSES WHICH RENTED EQUIPMENT AT REDUCED RATES

Cal Leneave	920 loader, dump truck, 2 drivers
Spencer Rental	Misc. equipment
Western Tile	Sand and labor

BUSINESSES WHICH DONATED FOOD

Coors Distributing	Sodas
McDonald's on 1st Street	Coffee
Sandrino's	Food

BUSINESSES WHICH GAVE FOOD AT REDUCED RATES

O'Henry's	Donuts, drinks
Happy Stop	Sandwiches
Nob Hill Foods	Soft Drinks
Kentucky Fried Chicken	Food

OTHER SOURCES OF ASSISTANCE:

Marie Juncker/Dennis Lawler
South County Housing Corp.
842-9181

25th District Assemblyman
Rusty Areias

848-1461
422-4344 (Salinas)

12th U.S. Congressional Dist.
Ed Zschau
730-8555
Contact: Joan Williams

17th Dist. State Senator
Henry Mello
848-1437

Office of Emergency Services
Earl Thompson
298-3031

P.G.E.
842-9361

Red Cross post-disaster relief
c/o Wheeler Community Center
847-0697

AMOUNT OF WATER RELEASED BY DAMS:

Uvas Reservoir:
300 acre-feet/day released
6400 acre-feet/day spilling

Chesbro Reservoir:
800 acre-feet/day released
1300 acre-feet/day spilling

Source: Faith Stoddard
Gavilan Water District
847-7881
(2 p.m. Tues. 2/18)

LIST OF STREETS FLOODED 2/17/86

(South Quadrant)

Angela Court
Antonio Court
Barron Place
Blossom Glen Court
Catherine Court
Church Street (South of Tenth)
Churchill Place
Devon Place
Eleventh Street
Filbro Drive
Garden Court
Glenview Court
Glenview Drive
Hastings Place
Hyde Park Place
Imperial Drive
Johnson Way
Kensington Place
Kings Place
London Drive
London Place
Monterey Road (South of Tenth)
Princevalle Street (South of Tenth)
Royal Way
Southgate Court
Stephan Court
Stratford Place
Sussex Place
Tenth Street (West of Monterey)
Thames Drive
Thomas Road (East of the bridge)
Victoria Drive

(North Quadrant)

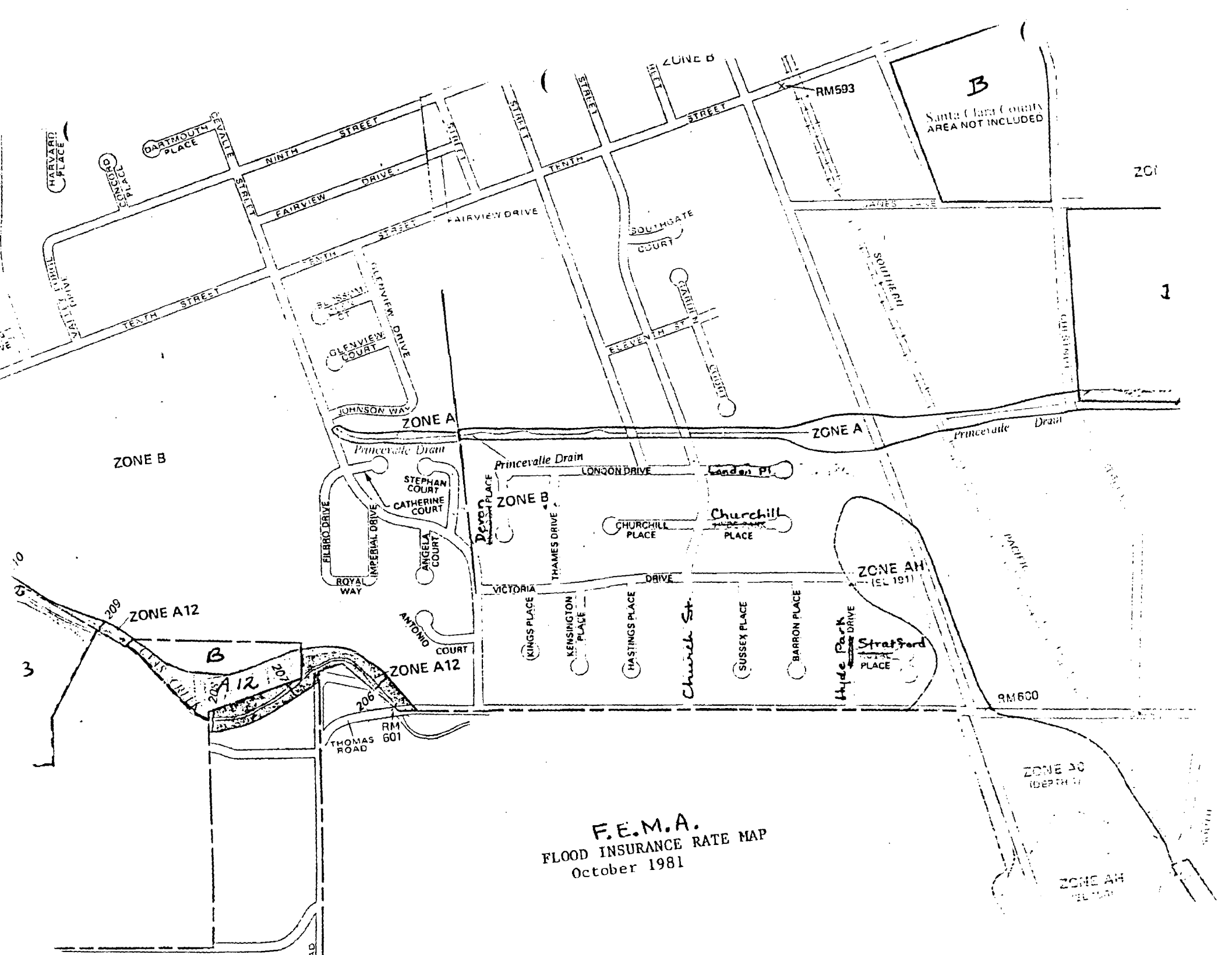
Church Street (North of Welburn)
Kern Avenue
Ronan Avenue
Santa Teresa Blvd. (North of Mantelli)
Wren Avenue (North of Ronan)

VOLUNTEERS

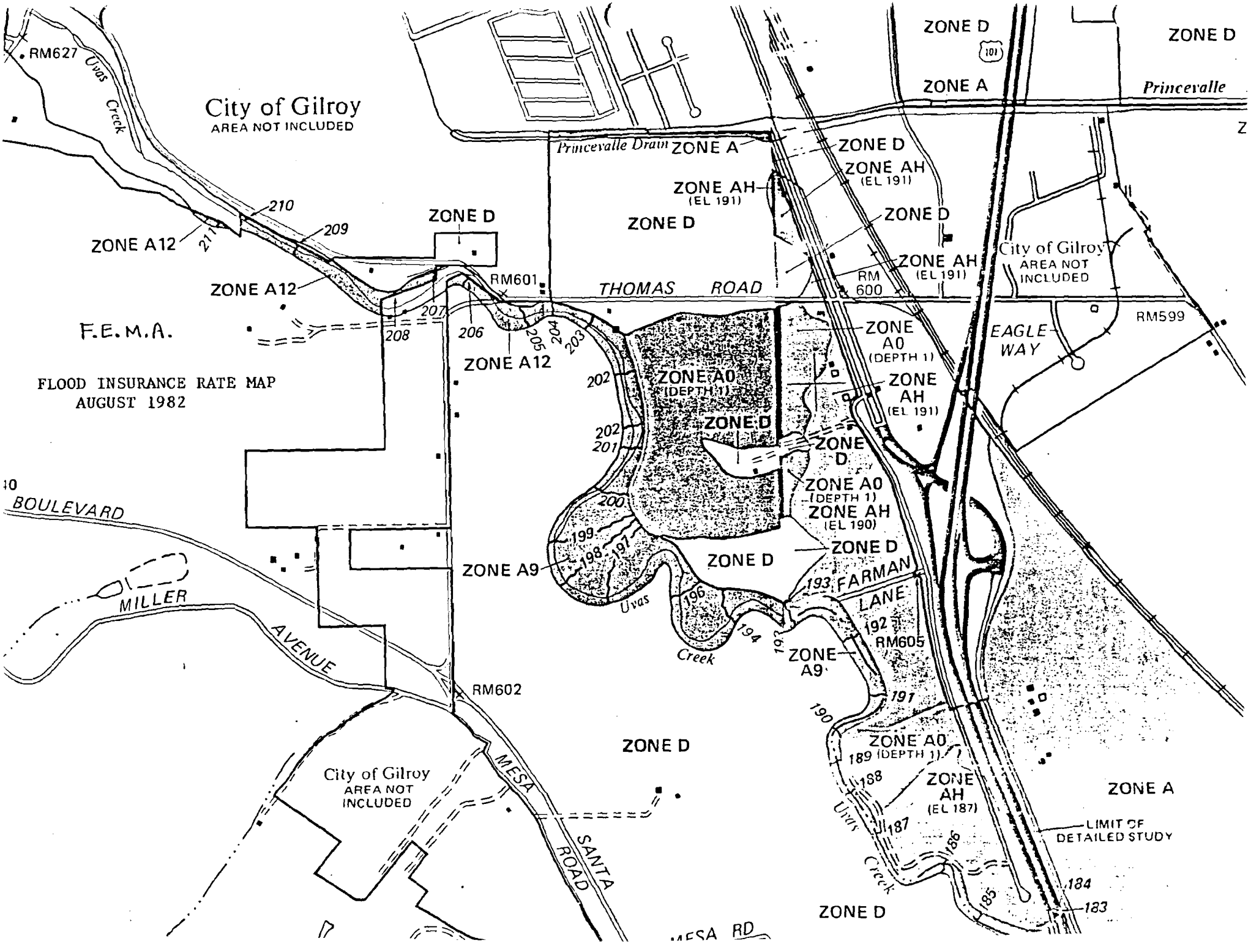
2/17/86	MONDAY	
9		Evacuation & sandbagging
6		Shelter
2/18/86	TUESDAY	
30	CCC	Sandbagging
20	ARC	Shelter
58	Citizens	Sandbagging
9	Citizens	Shelter
20	Police Explorer	Shelter
7	School District Employees	Shelter
2/19/86	WEDNESDAY	
25	CCC	Sandbagging
20	ARC	Shelters
15	Inmates, Elmwood Facility	Sandbagging
22	Citizens	Sandbagging
7	School district Employees	Shelter
9	Citizens	Shelter
20	Police Explorer	
2/20/86	THURSDAY	
25	CCC	Clean-up
20	ARC	Shelter
25	Inmates	Clean-up
9	Citezens	Shelter
11	Citizens	Clean-up
15-20	Private Volunteers	Routed to private homes
2/21/86	FRIDAY	
30	CCC	Clean-up
25	Inmates	Clean-up
1	Citizen	Clean-up (water truck)
15-20	Private Volunteers	Routed to private homes
2/22-23/86	SATURDAY AND SUNDAY	
40	Inmates	
30	CCC	
2	Citizens	Water truck

EVACUEES SHELTERED OVERNIGHT

	BROWNELL SCHOOL	WHEELER AUDITORIUM
MONDAY NIGHT	58	0
TUESDAY NIGHT	186	106
WEDNESDAY NIGHT	125	0



F.E.M.A.
FLOOD INSURANCE RATE MAP
October 1981


RM627
Uvas Creek
City of Gilroy
AREA NOT INCLUDED
Princevalle Drain
ZONE A
ZONE D
ZONE AH
(EL 191)
Princevalle
ZONE A12
210
211
209
RM601
THOMAS ROAD
RM 600
City of Gilroy
AREA NOT INCLUDED
RM599
F.E.M.A.
FLOOD INSURANCE RATE MAP
AUGUST 1982
207
208
206
205
204
203
202
201
200
199
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197
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192
191
190
189
188
187
186
185
184
183
ZONE A0
(DEPTH 1)
ZONE AH
(EL 190)
ZONE AH
(EL 187)
EAGLE WAY
FARMAN LANE
RM605
BOULEVARD
MILLER AVENUE
RM602
MESA ROAD
SANTA
Uvas Creek
ZONE A9
LIMIT OF DETAILED STUDY

Telephone (408) 842-3191

City of Gilroy

7351 Rosanna Street
GILROY, CALIFORNIA
95020

CECIL A. REINSCH
ASSISTANT CITY ADMINISTRATOR
CITY TREASURER
FINANCE

2/23 JCM
JHS

February 20, 1987

Ms. Joan A. Maher, Associate Civil Engineer
Technical Services Division
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, Ca. 95118

RE: Your request for updated 1986 flood expense.

Dear Ms. Maher;

The following is a breakdown by areas or projects for loss. We do not have a record of the Unified School Dist. cost.

1.	Mud & debris removal from city streets.	$ 40651.10
2.	Debris removal, Las Animas Park	1004.65
3.	" " Christmas Hill & Misc Parks	8986.10
4.	City wide flood prevention	30997.57
5.	Damage to city vehicles & equipt.	17536.51
6.	Electrical and sprinkler systems at Christmas Hill Park	3606.93
7.	Tree replacement, Uvas & Christmas Hill Park	799.89
8.	Uvas Creek pedestrian and maintenance road repairs	2288.78
9.	Golf Course path repairs	6264.75
Total loss		$112136.28

Thanks for your patience. Sorry it took so long to give you the information. Please advise if you need additional information.

Sincerely,

Cecil A. Reinsch
Director of Finance

87 FEB 23 P1:58

SANTA CLARA
VALLEY WATER DISTRICT

Mike McNeely

Steve Dunlap

Calabazas Creek 1986 Flood Questionnaire

May 16, 1986

On April 18 the attached questionnaire was sent to residents and businesses in the Calabazas Creek floodplain between Miller Avenue and Lawrence Expressway. Approximately 300 of the 650 questionnaires have been returned. This is a summary of the responses received.

Over 170 of the responses indicated flooding in the immediate area. The attached map indicates the properties where flooding was experienced. Most responses indicated that flooding was limited to streets and yards. Shallow flooding of buildings was experienced near the Miller Avenue culvert and along Stevens Creek Boulevard.

One retail store received $3,700 damage, an additional $200 to the landscaping and was closed for two weeks for clean up and repair. Floodwaters got inside at least three residences causing damage to carpets and draperies. These residents were forced to evacuate. They also lost time from work. One swimming pool was damaged, requiring $3,800 in cleanup and repair. At least two vehicles were damaged.

Residents reported damage figures of only $9,100.

The actual damage from the event was many times greater when considering costs not recognized by the victims such as evacuation costs, loss of work, cleanup costs and erosion damages.

Many responses indicated concern about the flood and erosion problems and hope that some additional protection could be provided.

In general, the response to this questionnaire was very positive. This questionnaire served as an effective means for residents of a floodplain to communicate with the District and provided the District with a good picture of the effects of flooding from Calabazas Creek this past February. I suggest that a questionnaire be used for similar situations in the future.

Steve K. Dunlap
Engineering Technician I
Predesign Division

Attachments

cc: J. Micko - w/attachments
R. Smith - "
S. Wolfe - "
R. Talley - "

Whitehead

JAM:mw *Dunlap

Santa Clara Valley Water District

memorandum

FC 14 (10-02-84)

TO: Steve Fujii

FROM: Jim Cooper

SUBJECT: Non-FEMA Funding Allocations

DATE: October 21, 1986

You recently received a check from the County of Santa Clara for $44,633. This was for flood emergency expenses incurred in February of 1986 and as provided for in State Assembly Bill 2536.

$10,413 of this amount should be allocated to Scope 80036A (operation of the Emergency Center).

The remaining $34,220 should be allocated to Maintenance Cost Centers by the following:

N. W. Zone	=	15% = $5,134
N.C. Zone	=	25% = $8,555
Central Zone	=	16% = $5,475
East Zone	=	30% = $10,266
R.W.T.&D.	=	14% = $ 4,790

If you have any further questions please call me or Mike Hamer.

ORIGINAL SIGNED BY

Senior Civil Engineer
South Valley Coordinator

cc: D. Erling
M. Hamer
J. Sutcliffe
J. Cooper

JDC:jf

Santa Clara Valley Water District

memorandum

FC 14 (10-02-84)

TO: Joan Maher

FROM: Mike Hamer

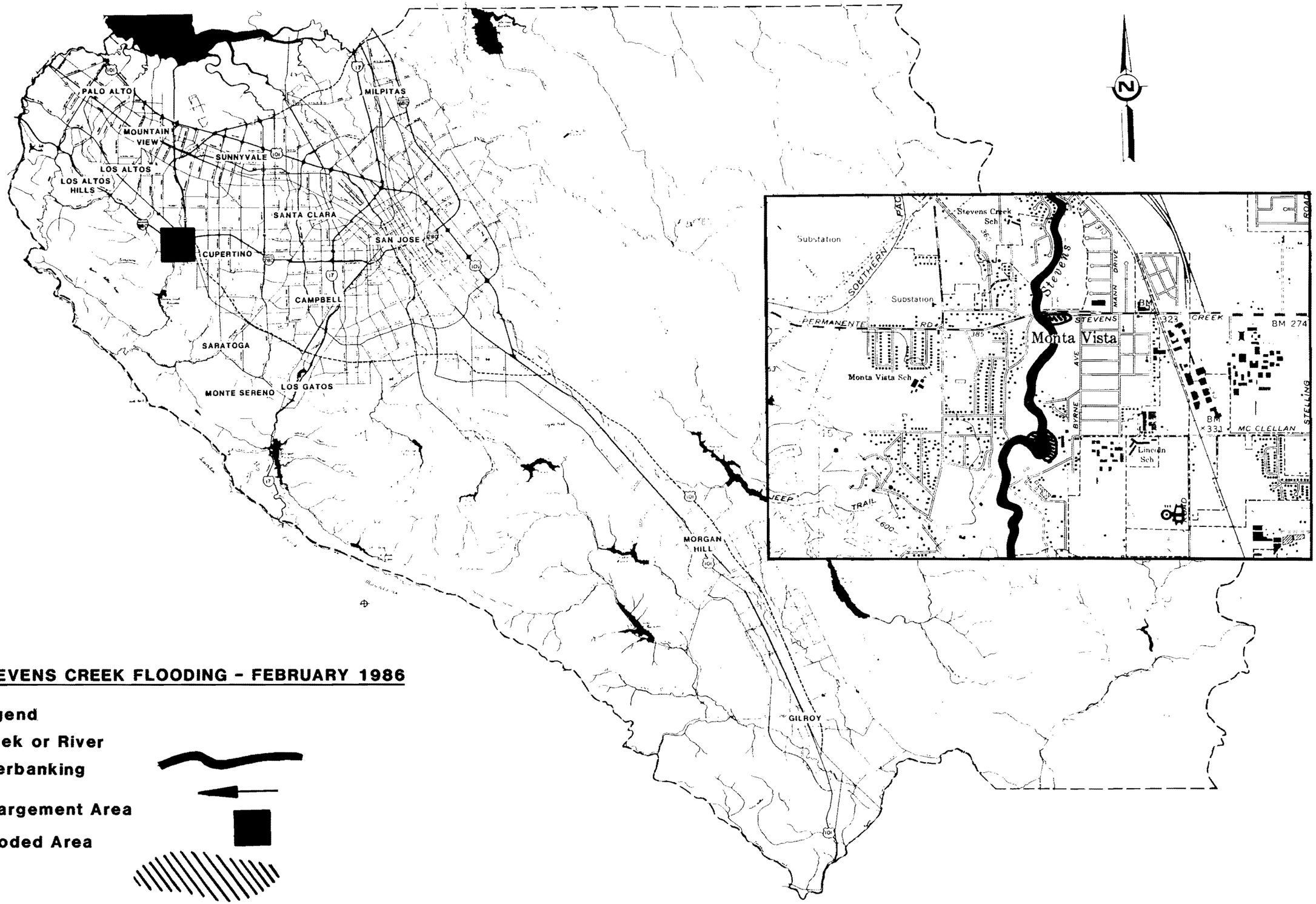
SUBJECT: FEMA: DSR Submittals

DATE: August 3, 1987

SITE	DISTRICT FACILITY	ESTIMATED COST
1.	Flood Fighting (General - All Cost Centers)	$ 62,854.00
2.	Coyote Spillway Repairs (Failed Rock Revetment)	$ 87,965.00
3.	Guadalupe Creek Access Road (Bank Erosion)	$ 4,691.00
4.	Uvas Creek D/S of Uvas Spillway (Failed Rock Revetment)	$ 3,348.00
5.	Ross Creek D/S Kirk Road (Failed Concrete Sack Revetment)	$ 7,920.00
6.	Alamitos Creek D/S Greystone Lane (Damaged 60-inch Outfall)	$ 31,574.00
7.	Matadero Creek U/S El Camino Real (Failed Concrete Sack Revetment)	$ 7,839.00
8.	San Tomas Creek U/S McCoy Avenue (Failed Concrete Sack Revetment)	$ 13,345.00
9.	Uvas Creek at Galetto Property (Failed Rock Revetment)	$ 12,955.00
10.	Princevalle Storm Drain (Failed Concrete Sack Revetment)	$ 17,181.00
11.	Calabazas Creek D/S Bollinger Road (Failed Concrete Sack Revetment)	$ 10,908.00
12.	Alamitos Creek U/S Camden Avenue (Bank Erosion - 72-inch Pipe Exposed)	$ 1,978.00
13.	Alamitos Creek at Fleetwood Drive (Bank Erosion)	$ 13,293.00
14.	Coyote Canal U/S Metcalf Road (Slope Erosion)	$ 14,376.00
	Total 1986 Storm Damage Submitted for FEMA Reimbursement	$290,227.00

APPENDIX 3

FLOODING MAPS



STEVENS CREEK FLOODING - FEBRUARY 1986

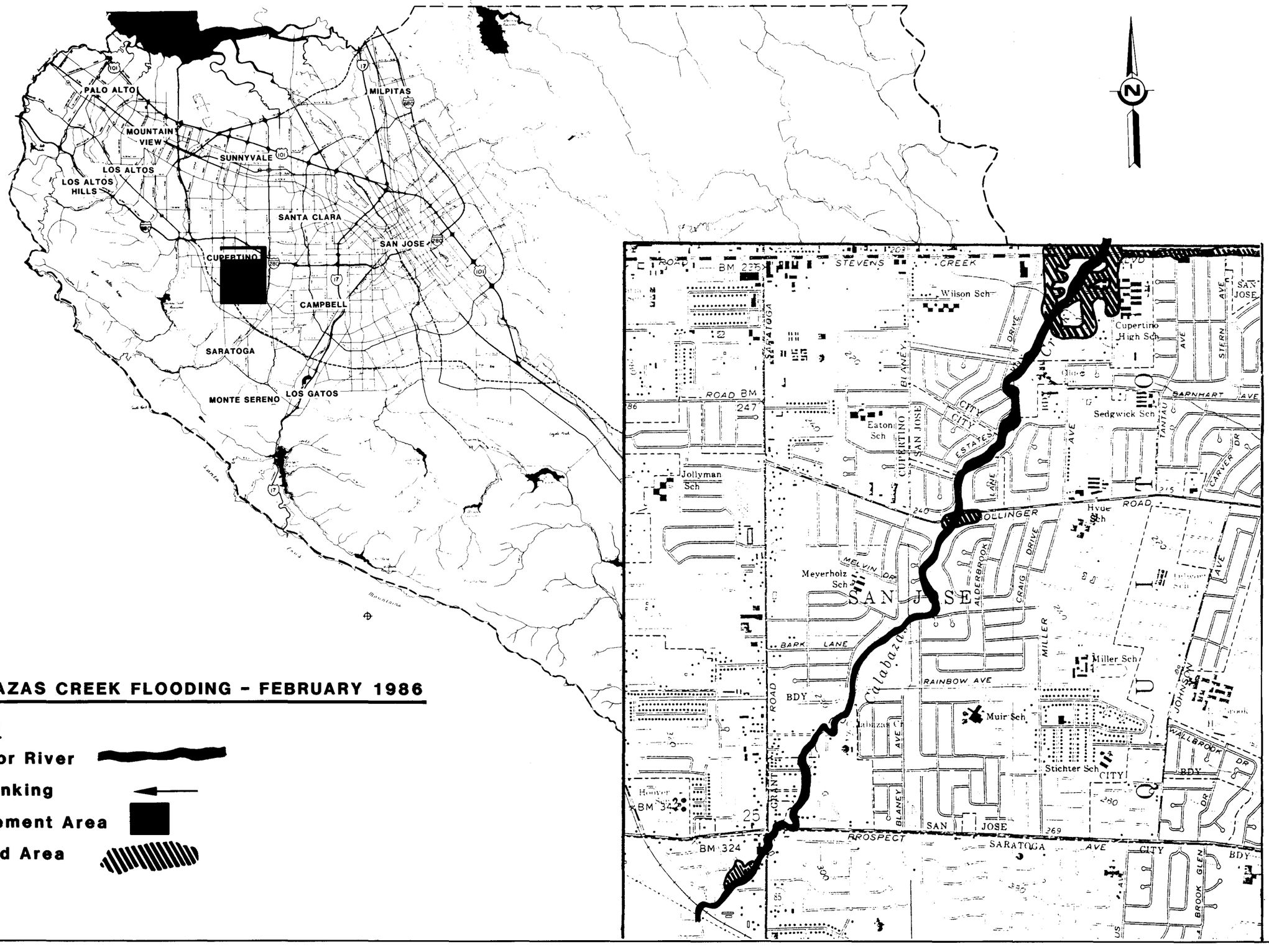
Legend

Creek or River

Overbanking

Enlargement Area

Flooded Area



CALABAZAS CREEK FLOODING - FEBRUARY 1986

Legend

- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area

CALABAZAS CREEK FLOODING - FEBUARY 1986

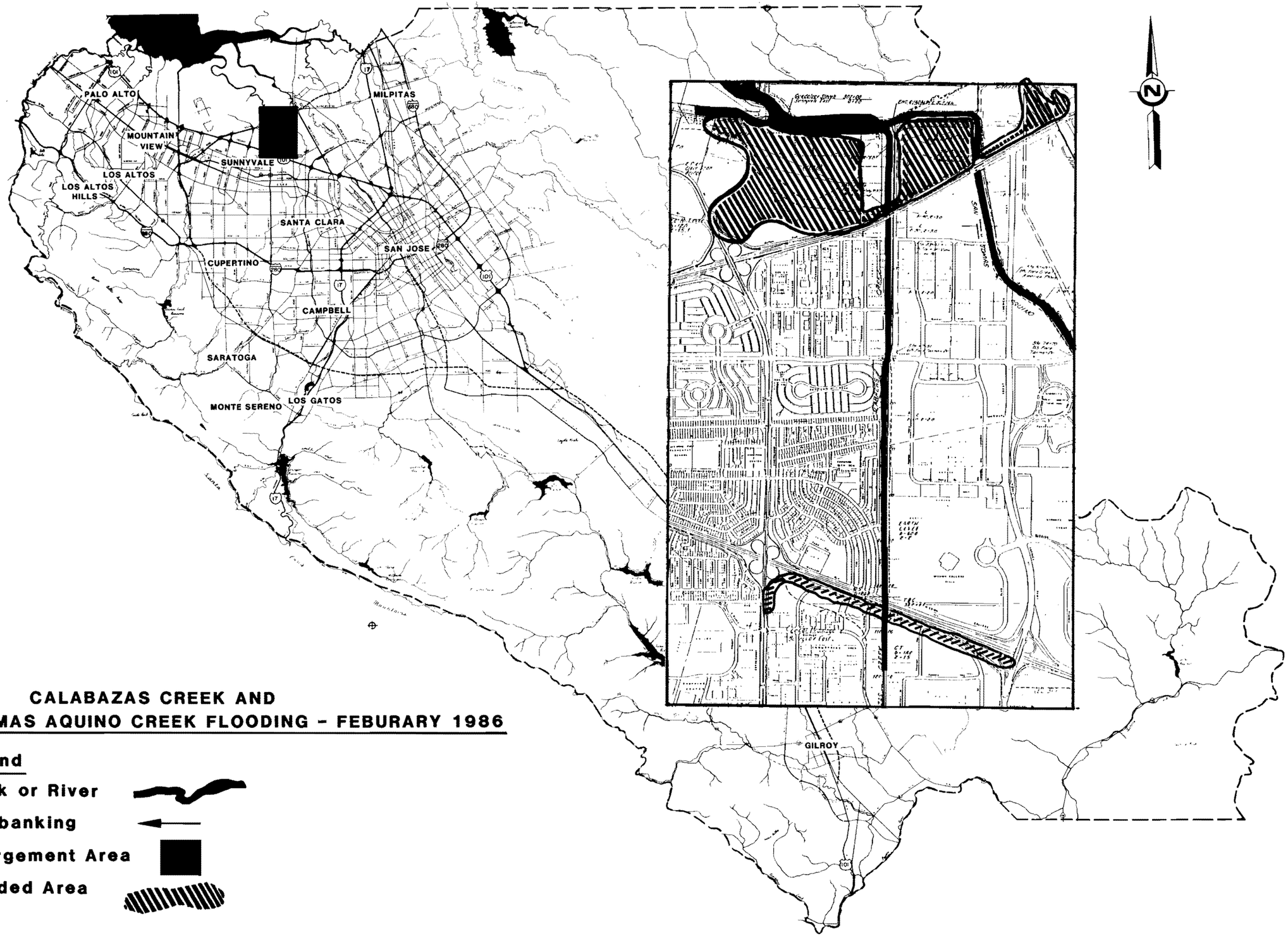
Legend

Creek Or River

Overbanking

Enlargement Area

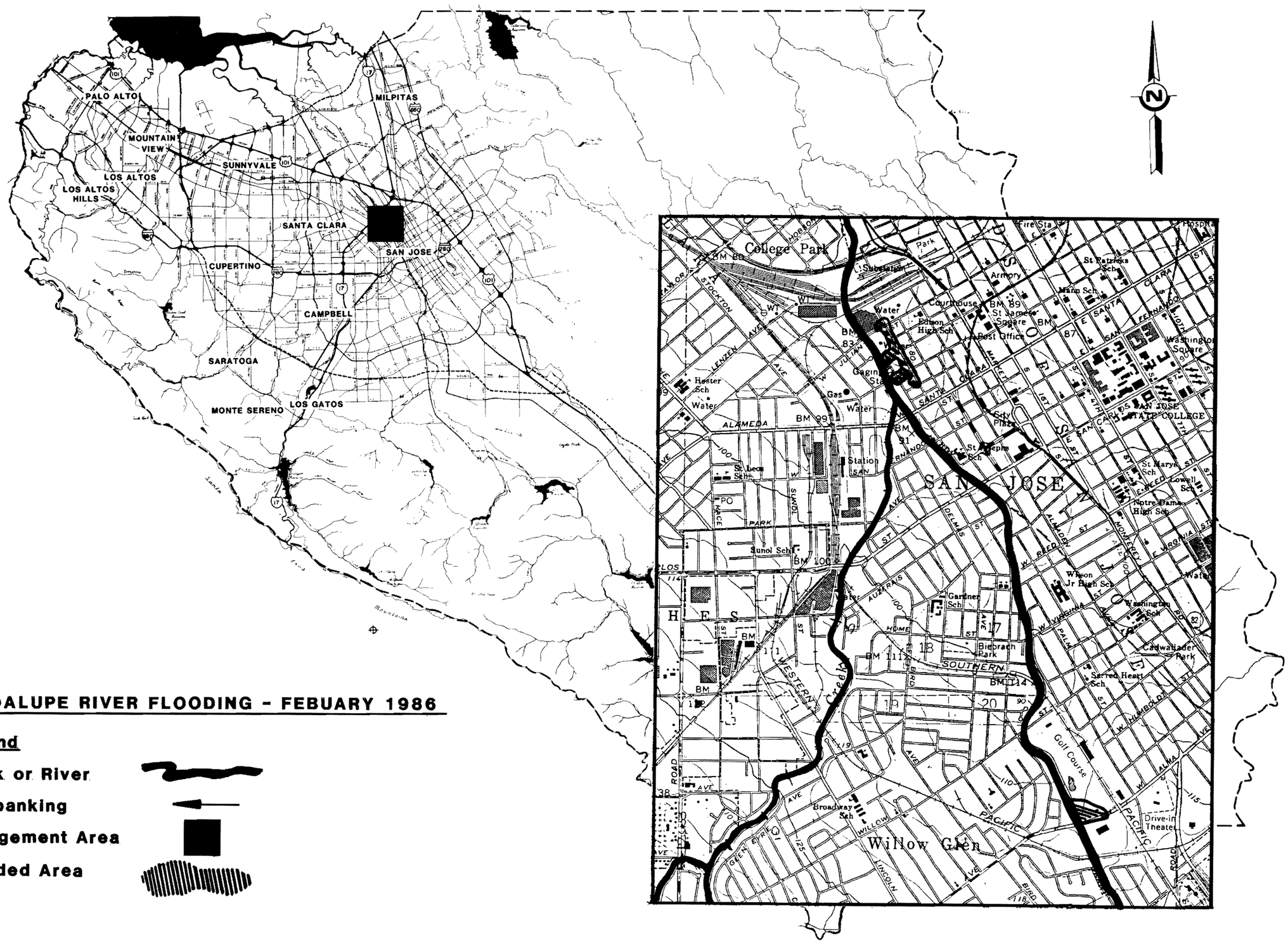
Flooded Area



CALABAZAS CREEK AND SAN TOMAS AQUINO CREEK FLOODING - FEBURARY 1986

Legend

- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area

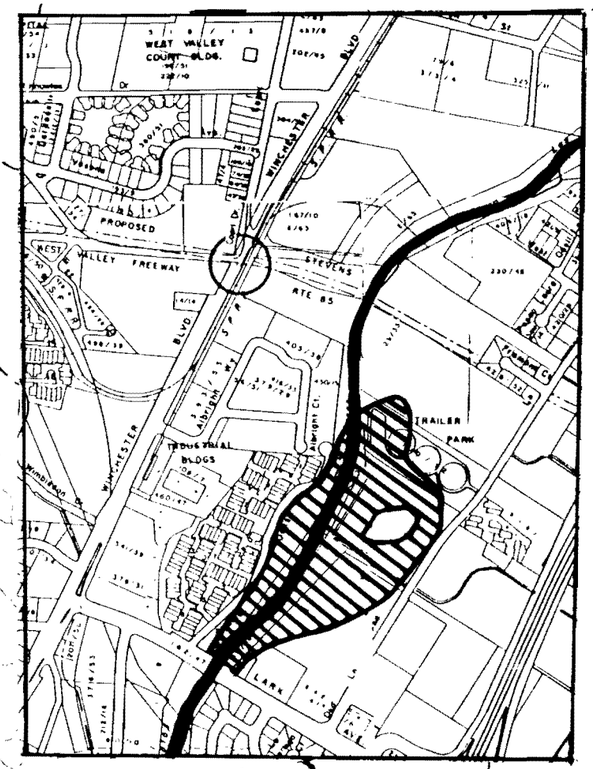


GUADALUPE RIVER FLOODING - FEBUARY 1986

Legend

- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area

PALO ALTO
MOUNTAIN VIEW
LOS ALTOS
LOS ALTOS HILLS
SUNNYVALE
MILPITAS
SANTA CLARA
SAN JOSE
CUPERTINO
CAMPBELL
SARATOGA
MONTE SERENO
LOS GATOS
MORGAN HILL
GILROY



LOS GATOS CREEK FLOODING - FEBRUARY 1986

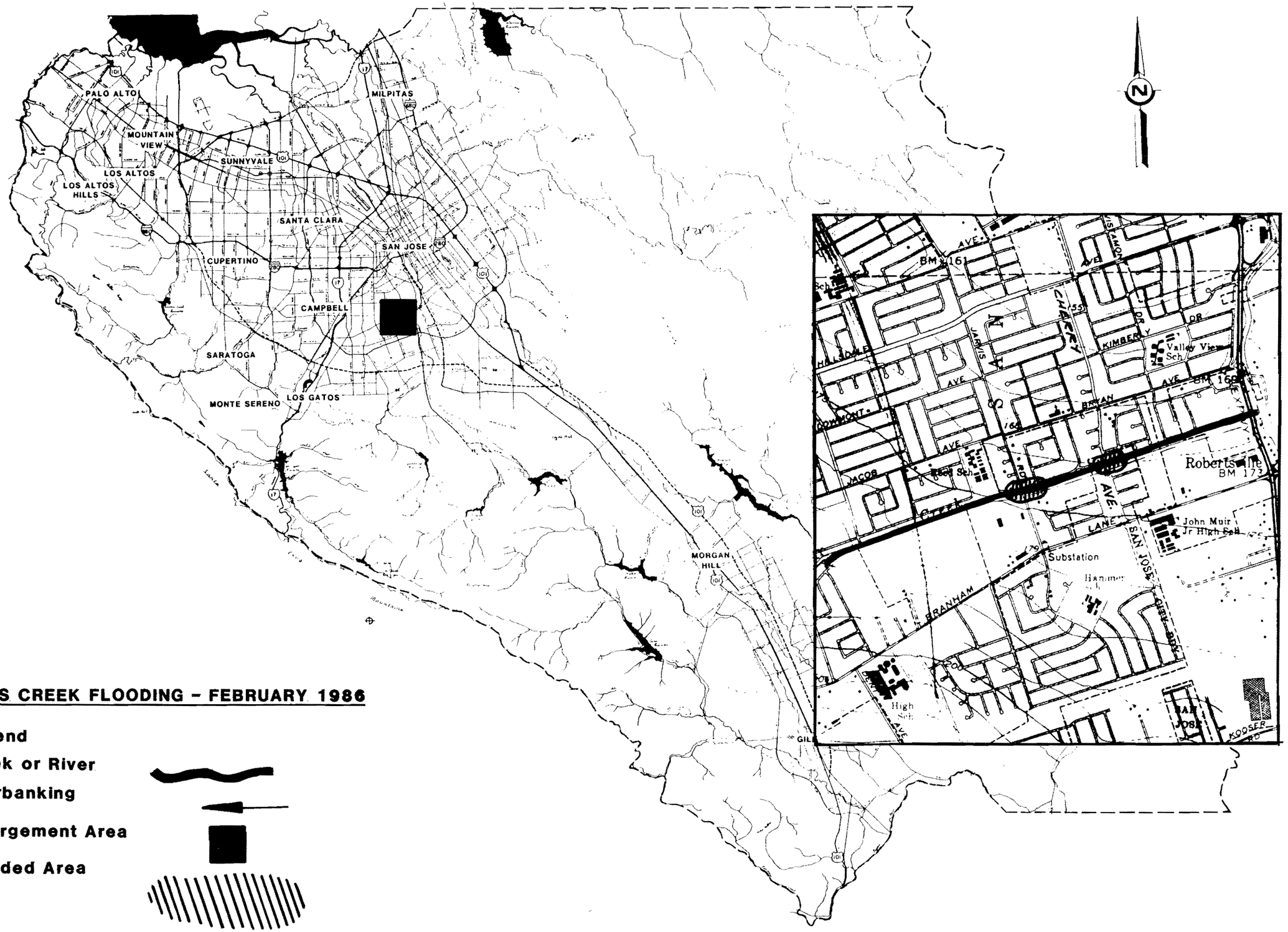
Legend

Creek or River

Overbanking

Enlargement Area

Flooded Area



ROSS CREEK FLOODING - FEBRUARY 1986

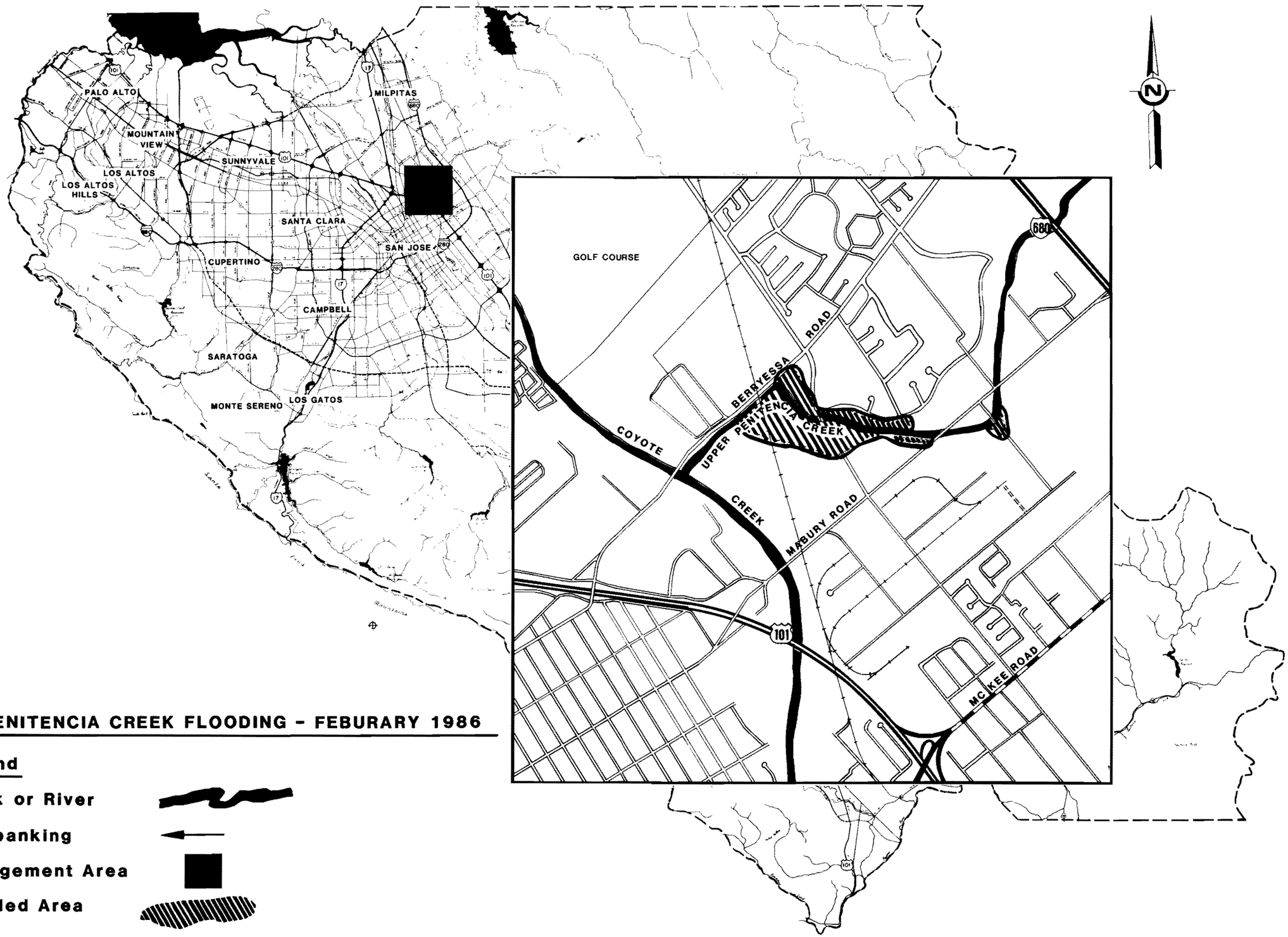
Legend

Creek or River

Overbanking

Enlargement Area

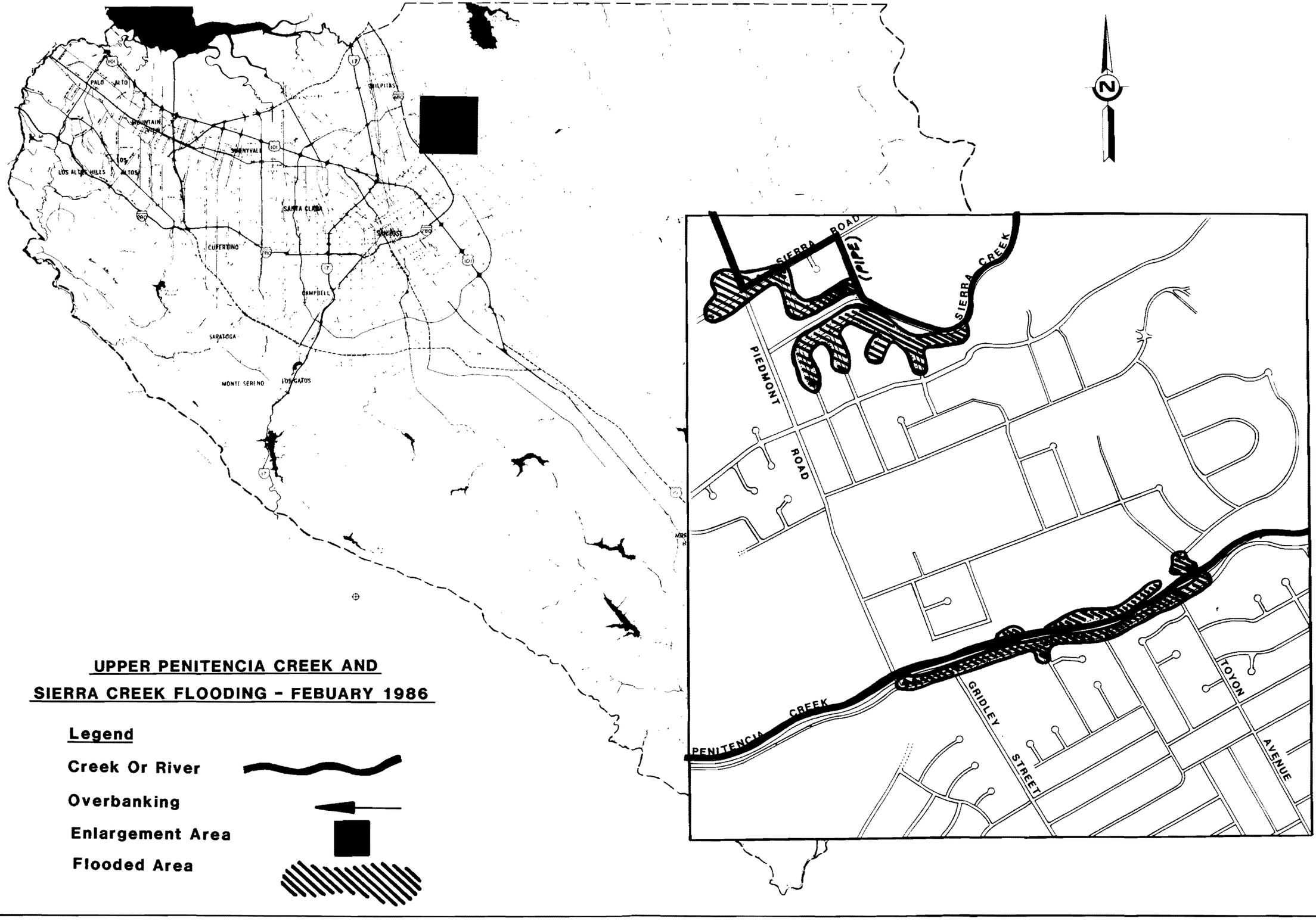
Flooded Area



UPPER PENITENCIA CREEK FLOODING - FEBURARY 1986

Legend

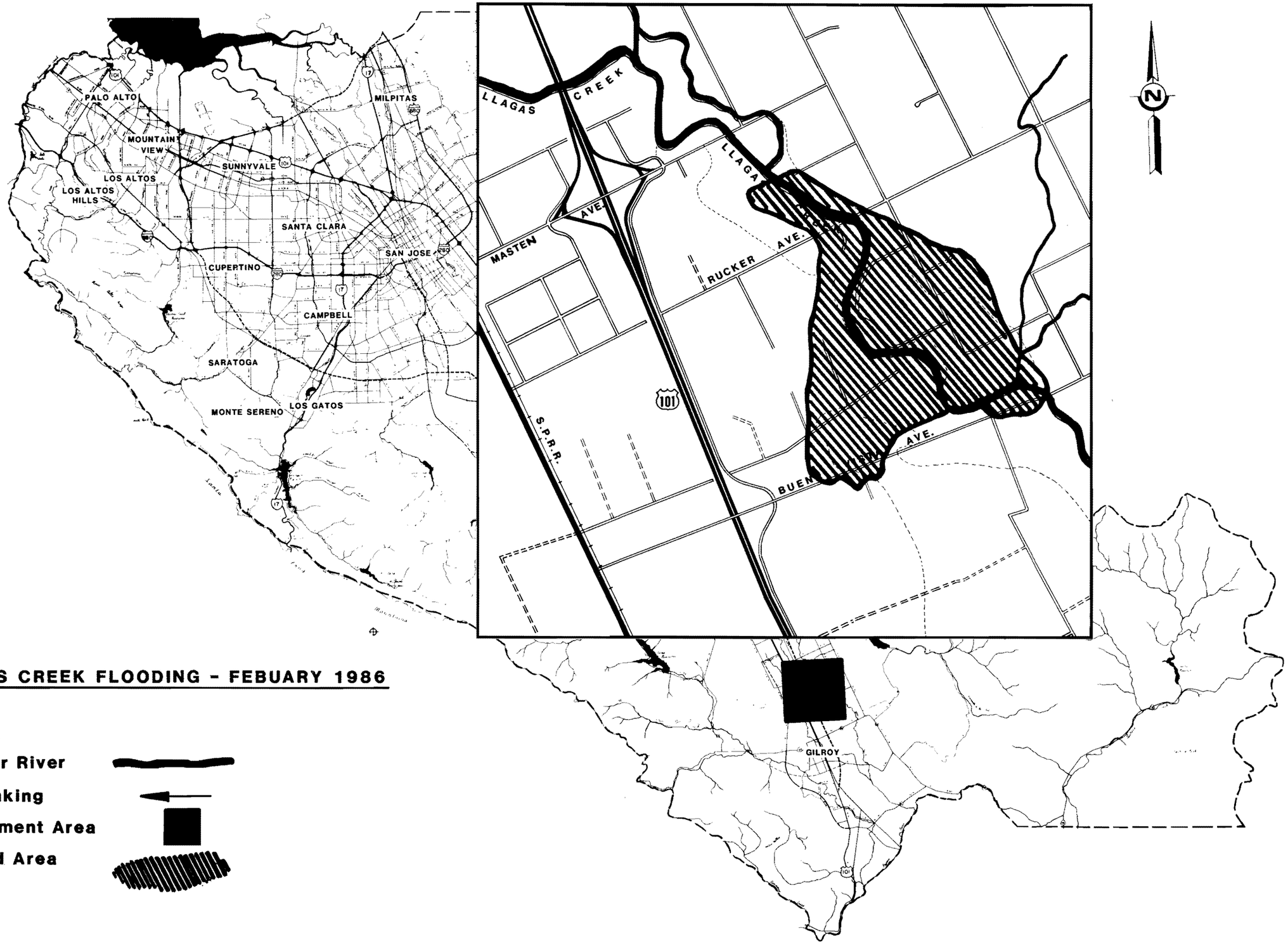
- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area



UPPER PENITENCIA CREEK AND SIERRA CREEK FLOODING - FEBUARY 1986

Legend

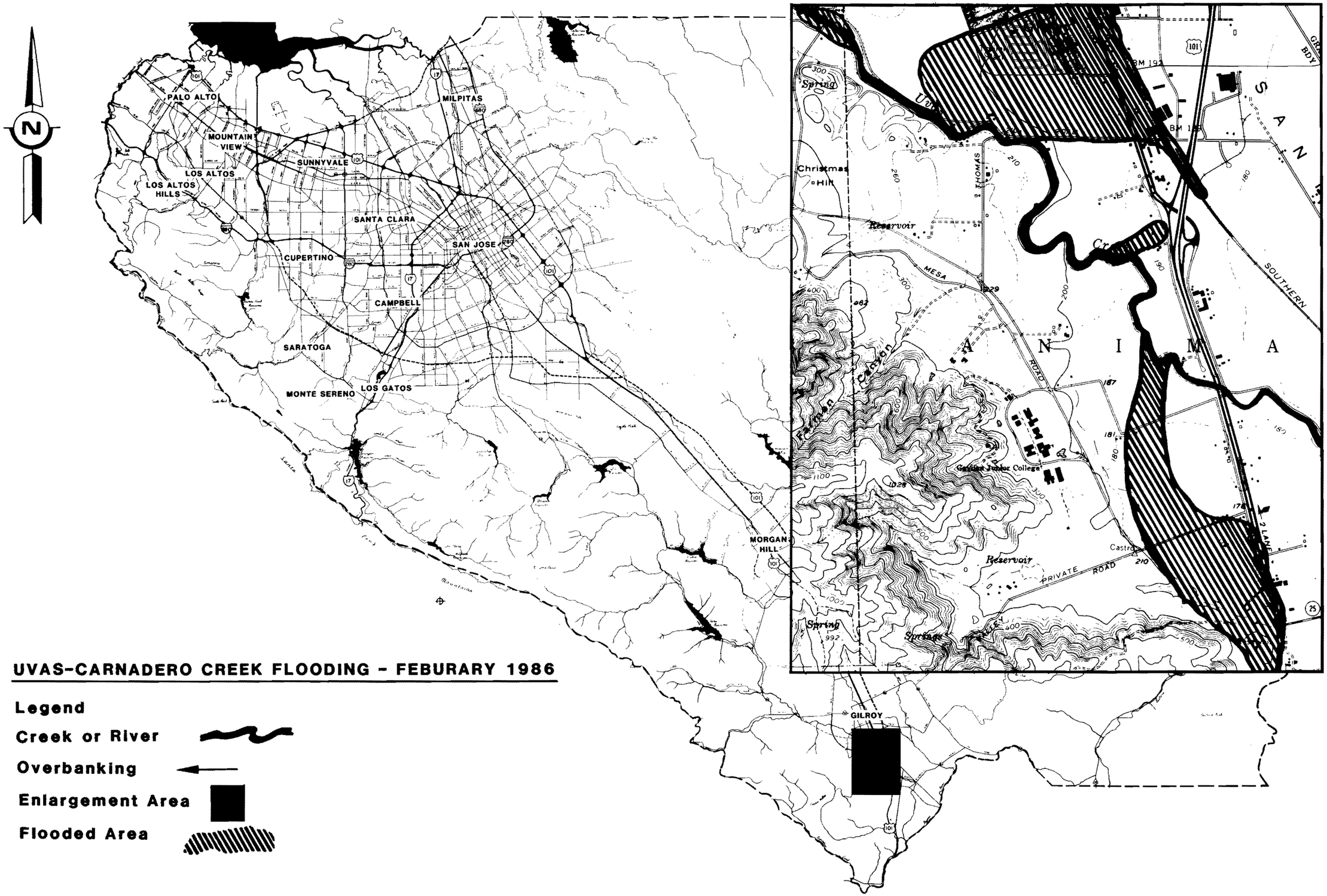
- Creek Or River
- Overbanking
- Enlargement Area
- Flooded Area



LLAGAS CREEK FLOODING - FEBUARY 1986

Legend

- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area



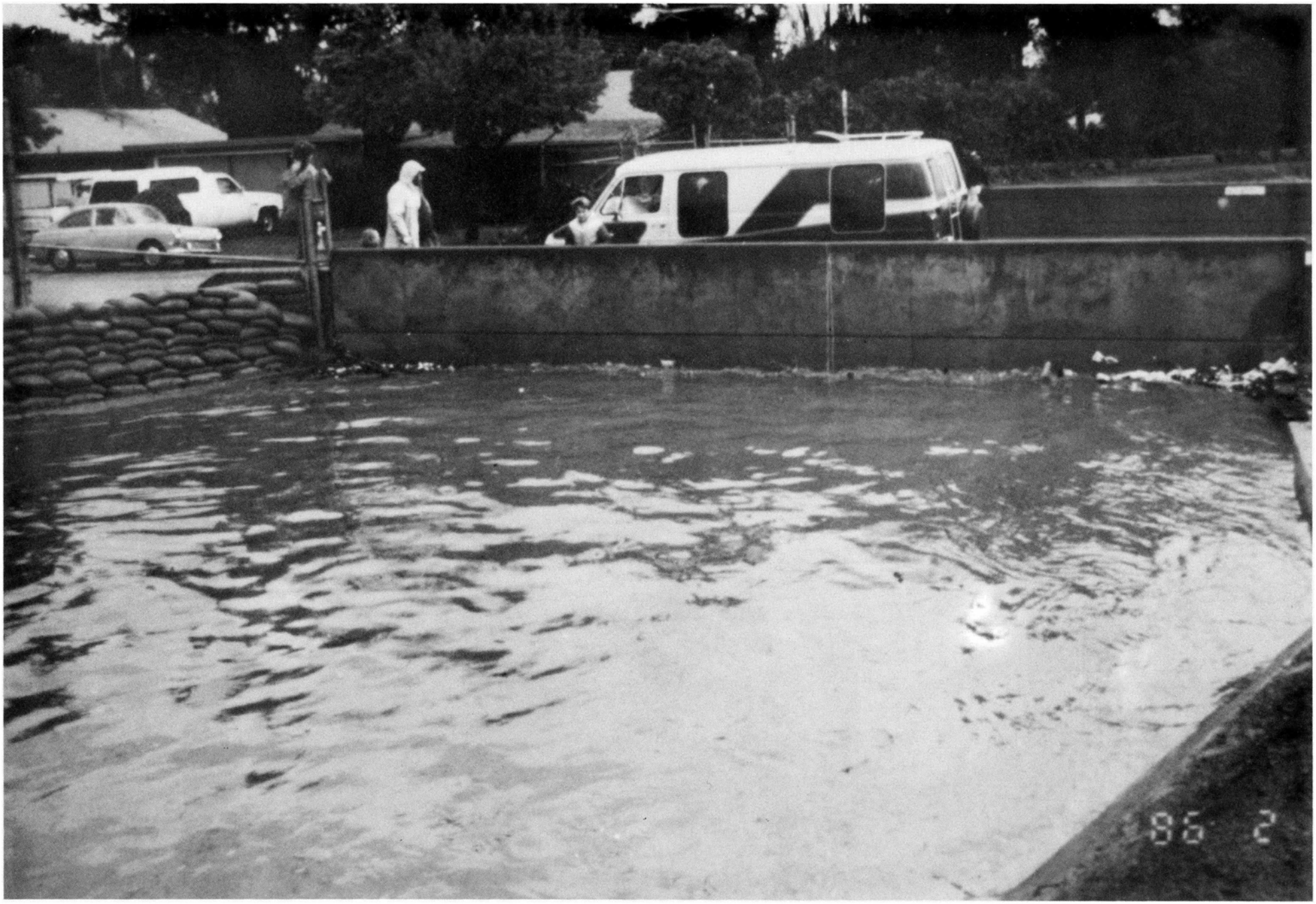
UVAS-CARNADERO CREEK FLOODING - FEBURARY 1986

Legend

- Creek or River
- Overbanking
- Enlargement Area
- Flooded Area

APPENDIX 4

FLOODING PHOTOGRAPHS



MATADERO CREEK AT GREER AVE. 2/14/86

CALABAZAS CREEK AT MILLER AVE. 2/14/86

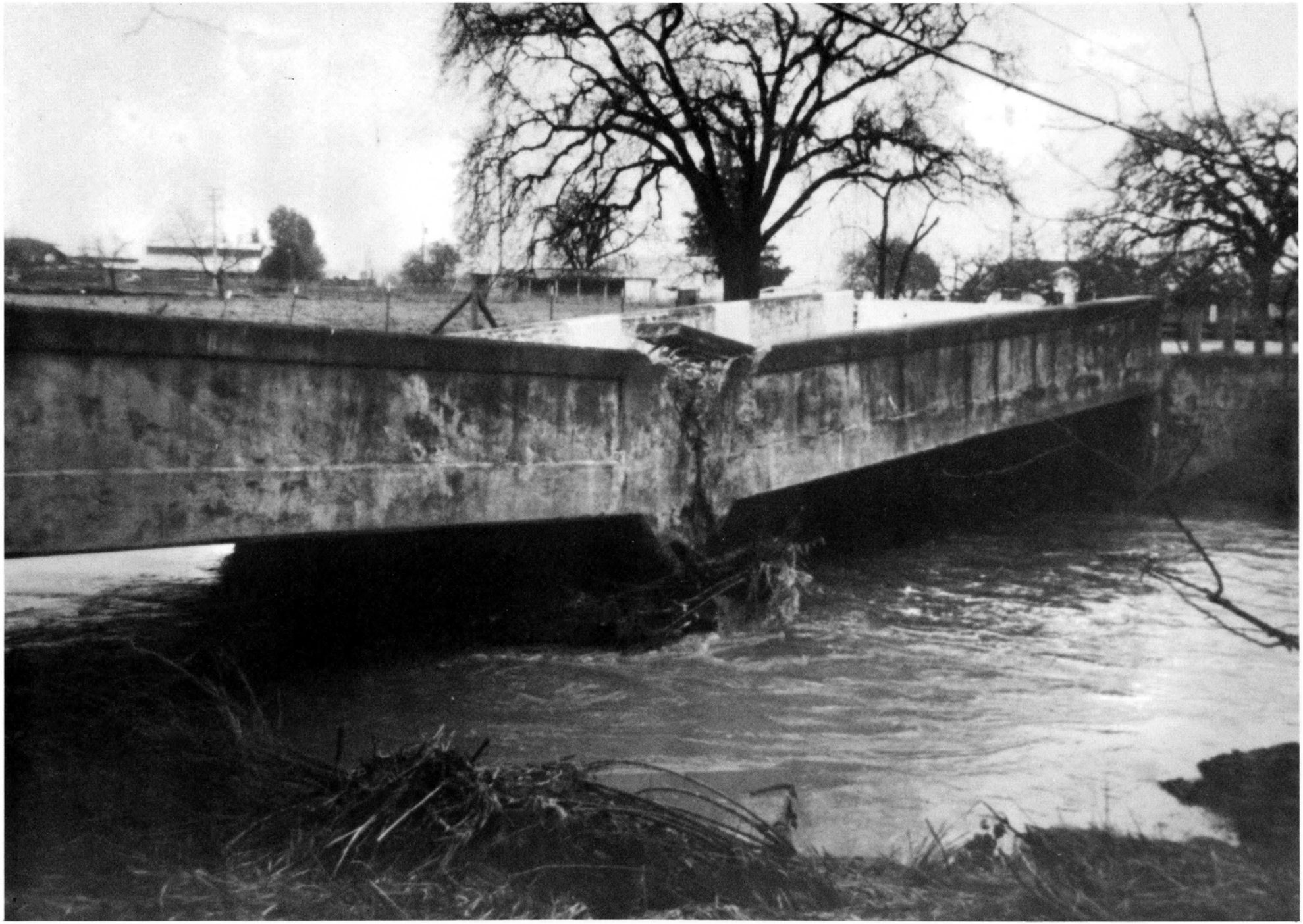
CALABAZAS CREEK AT 19200 STEVENS CREEK BLVD. 2/14/86

CALABAZAS CREEK AT HWY. 237 WESTBOUND LANES CLOSED 2/14/86

LOS GATOS CREEK NEAR LARK AVE. BONNIE VIEW MOBLE HOME PARK 2/19/86

FLOODING FROM UVAS-CARNADERO CREEK NEAR THOMAS ROAD, GILROY 2/18/86

BUILDING TEMPORARY LEVEE ON UVAS-CARNADERO CREEK NEAR THOMAS ROAD, GILROY 2/18/86



LLAGAS CREEK AT RUCKER AVE. BRIDGE FAILURE 2/19/86