FINAL

~~Revised Draft~~ EIR

Hemet Area Drainage & Salt Creek Channel Improvements

ALDERMAN, SWIFT & LEWIS CONSULTING ENGINEERS

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April 3, 1978

Mr. John Bryant
Riverside County Flood Control
and Water Conservation District
P.O. Box 1033
1995 Market Street
Riverside, California 92502

Dear Mr. Bryant:

During the review process a number of comments have been received on the Draft E.I.R. Commenting agencies and organizations included:

1. The City of Hemet
2. Members of the Riverside County Farm Bureau, Inc.
3. The Department of Transportation
4. Sierra Club, San Gorgonio Chapter

The basic issues raised concern the accuracy and completeness of information regarding population, growth inducement and the attendant secondary effects, financing and clarification of the project results. With respect to some of these issues the Draft E.I.R. has been revised or expanded for clarification. With respect to others the following is our response:

With regard to population we contend the report is right on target. Pages 2-14, 2-16 and 2-18 refute the City of Hemet's charge that up to date data were not utilized. Total population for Hemet as shown on page 2-14 is 19,392 (Summation of Census Tracts 433, 434 & 435) which totals approximately the same population the City advertised as of February 9, 1978 in The Enterprise.

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Much of the criticism submitted by The City of Hemet and The Sierra Club contends that the report does not address the various secondary impacts that could occur should maximum development take place in areas currently in flood plain zoning. This report has taken the position that flood hazards should not be used as a growth management tool.

Your District, we understand, has an obligation to provide flood control protection, especially for existing properties. The flood control plan devised by the District not only provides such a protective plan but also offers a logical interim stage project (page 4-2) enroute to eventually achieving the full extent of the protective plan. Removal of a flood hazard in a particular area removes but one obstacle to development. It is not the purpose of this E.I.R. to formulate development policies or growth management tools. The City of Hemet and The County of Riverside have the authority and the responsibility to regulate growth by instituting growth management plans for the correct reasons. If these reasons are that the quality of life will deteriorate with further growth then the responsible agencies should adopt a management plan based on these parameters and not select the removal of flood hazard as the growth management device.

However, to satisfy the speculative interests, we have included in this Revised Draft E.I.R. impacts which could occur should the City and the County allow unimpeded development. Projected population, traffic volumes, public services, noise, air quality and financial impacts to the year 1990 have been added to the appropriate sections for this purpose.

Members of the Riverside County Farm Bureau, Inc. met with representatives of our firm and your Mr. Isbell on 3/23/78 to express their concern with the project. They are primarily concerned with the growing problem of urban encroachment and its attendant impacts - trespassing and higher property taxes. They stated that agricultural utilization of land in the project area is already becoming unprofitable due to increased taxation as well as higher MWD water prices and implied that if any project is constructed it should be the full project which would open their lands to more profitable uses.

It was suggested by the Sierra Club that we address the issue of financing. Although no specific financing plan has been developed we made reference in the report to the Financing Plan for the Master Drainage Plan Zone 4, Improvement District Number 1. We pointed out that this report by the Bank of America covers only the interim size project and this is all the District can do at this time.

We hope that with the included revisions or additions this Revised Draft E.I.R. will serve as the appropriate decision making tool Although we are confident that this document addresses the issues at a level appropriate for this project we invite any comments.

Very truly yours,

William D. Lewis

WDL:bc

ENVIRONMENTAL IMPACT REPORT

Hemet Area Drainage & Salt Creek Channel Improvements

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

1977

Oblique aerial views of Project Region. Dashed line represents approximate alignment of proposed Salt Creek Channel.

Photos by Riverside County Flood Control and Water Conservation District.


HEMET
WINCHESTER
U.S. 395 (ALT)


WINCHESTER
HEMET

PREFACE

The legislature of the State of California enacted legislation in 1970 which requires the preparation of an environmental impact report for review by interested parties, governmental agencies and public decision makers prior to the construction of any project which might have a significant effect upon the environment. The law applies to all State agencies, all Counties and all other political subdivisions of the State of California as well as to private developers and individuals.

This report has been prepared in accordance with the "guidelines for implementation of the California Environmental Quality Act of 1970" developed by the Office of Planning and Research for adoption by the Secretary for Resources in accordance with Section 21083 of the Public Resources Code of the State of California, including all amendments adopted through December 28, 1976.

This document is the "Draft Environmental Impact Report" as prescribed in the guidelines and has been prepared to evaluate the environmental impact of the proposed construction of two closely related and contiguous projects which, for the purpose of this report, are treated as a single unit as authorized in Section 15068, Chapter 3, Division 6, Title 14 of the California Administrative Code. The two related projects are (1) Master Drainage Plan for the Hemet Area (2) Salt Creek Channel, Hemet to Sun City, California.

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HEMET AREA MASTER DRAINAGE PLAN/IMPROVEMENT OF SALT CREEK CHANNEL

1.0 SUMMARY

The information presented in this Section has been extracted from the Draft Environmental Impact Report. This Section contains only a condensed Environmental Setting and details the more significant Impacts which would result as a consequence of the construction of the subject drainage system. Mitigation measures and project alternatives are also summarized.

For more detailed information please refer to the complete Draft E.I.R.

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1.0 Summary

1.1 PROJECT DESCRIPTION

1.1.1 Project Location

This report analyzes the impact on the environment of the construction and operation of a coordinated flood control system known as (1) "Master Drainage Plan for the Hemet Area" and (2) "Salt Creek Channel, Hemet to Sun City", California. Within the Hemet Area a series of underground storm drains to be constructed along with existing and proposed open channels would collect surface water and transmit the water via the Hemet Channel to Salt Creek Channel near Patterson and Olive Avenues. The Salt Creek Channel improvement would be an unlined channel beginning at Lyon Avenue in the southerly portion of the City of Hemet and would extend downstream to the west past the community of Winchester to Highway I15E. The map on the following page shows the project area defined as the area generally parallel with the project alignment inundated during a storm of sizable proportions (hundred year frequency storm). The project area so outlined would be that primarily affected by the proposed construction of the flood control facilities.

1.1.2 Project Objectives

The Hemet Area Drainage Projects and the Salt Creek Channel Improvements are designed to alleviate major flooding during and immediately following severe thunderstorms and periods of intense precipitation. Although the Hemet Area Drainage Projects and the Salt Creek Channel Improvements are separate projects they are interdependent and contiguous and are treated as a single project for the purpose of this report (see section 15068 of the Guidelines). The Salt Creek Channel Improvements are necessary if the Hemet Area Drainage System is to be constructed since it furnishes the outlet for the Hemet Area system. Much of the Salt Creek natural channel has been filled in with soil from adjacent land to make it a productive part of the surrounding agricultural land. This "filling in" process has virtually obliterated the watercourse to the extent that stormwater no longer follows any defined route but instead spreads out over the land and moves westerly toward Highway I15E.

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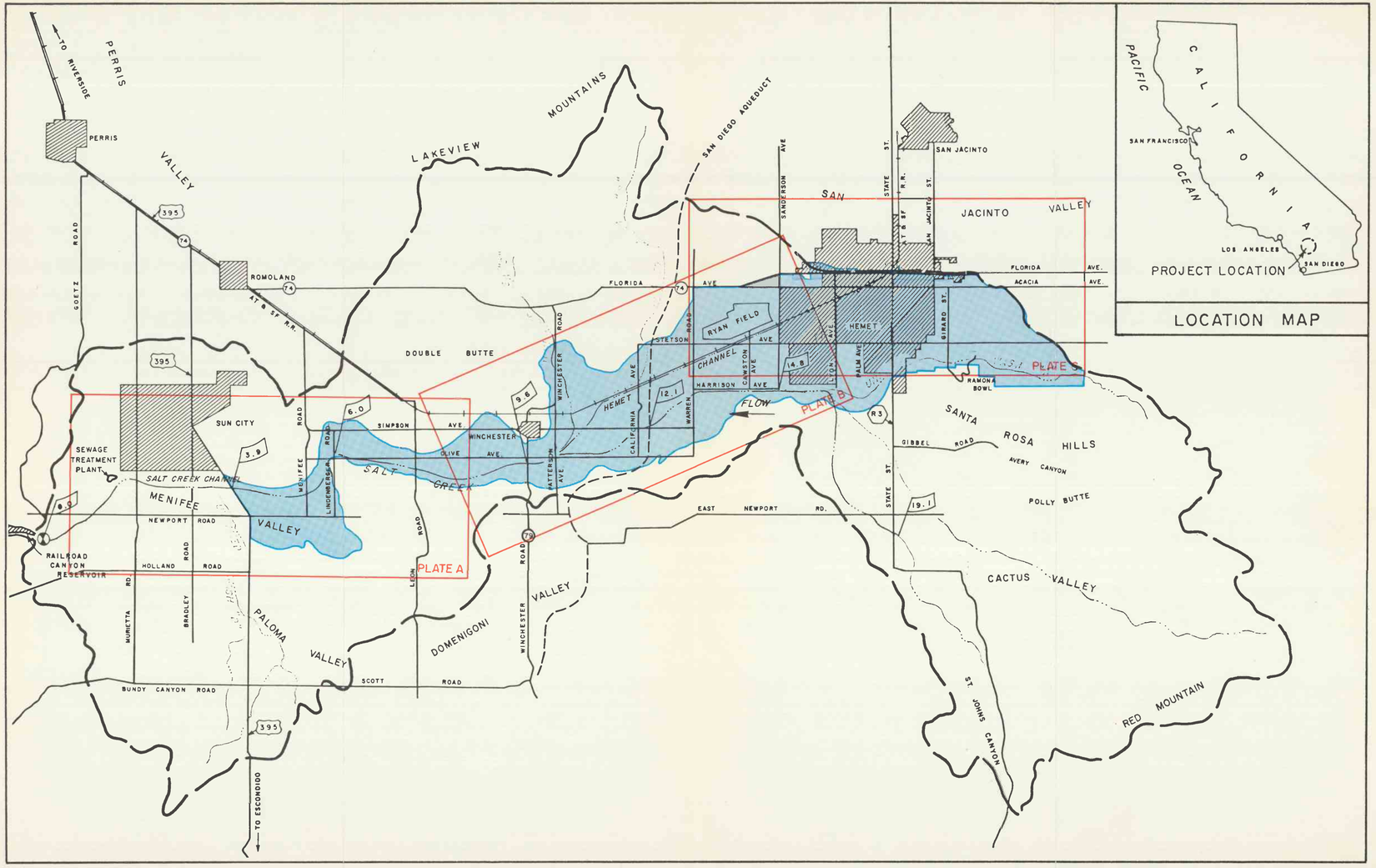
Hemet Area Drainage & Salt Creek Channel Improvements



LOCATION MAP

North

Scale
0 1MI. 2MI.

project area

drainage area boundary

10.5 miles above mouth of river

stream gage

Project Area

map 1

During major storms this flooding of the land becomes a threat to the residents and land owners of the area and to vehicular travel on local roads and streets. During major storms flooding would occur even though the natural drainage course had been left in its natural condition because it has always been inadequate to handle larger quantities of water. The downstream slope is very flat and flood water does not move rapidly under natural conditions.

Improving the Salt Creek Channel to the limits and the hydraulic section proposed would prevent flooding during severe rainfall including 100 year frequency storms.

Specifically, the purpose of the project would be to accomplish the following objectives:

1. To collect and conduct storm water efficiently, safely and economically to drainage courses where it can be carried away without damaging property, isolating residents, creating health and safety hazards.
2. To create adequate drainage courses of appropriate design so that these facilities will not adversly affect the aesthetic aspects of the areas which they serve.
3. Remove from flood hazards substantial portions of the valley and protect agricultural activities against prolonged periods of damage producing inundation.

Photographs on the following pages illustrate some of the problems that frequently develop in the project area during or after heavy rains such as the storms of 1952 and 1969.

Map 2 on the pages following page 3-109 shows the location and general nature of the storm drain facilities for which this Environmental Impact report has been prepared.

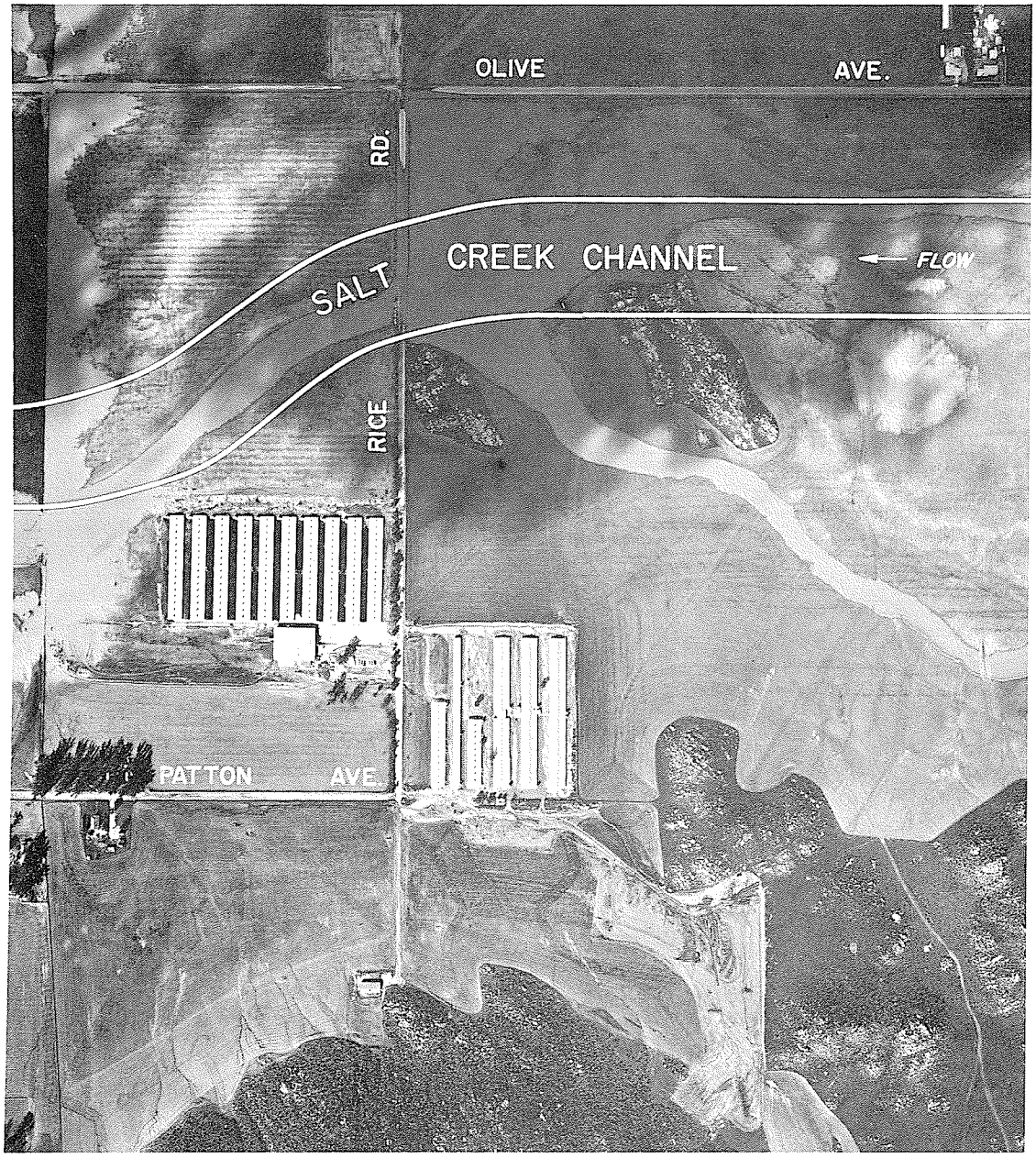
The plan considers the whole Salt Creek Basin. The correction of problems at isolated locations would probably serve only to create new problems in other parts of the Basin.

Vertical aerial view over Railroad Canyon Reservoir
during February 1969 Flood.
Photo by Riverside County Flood Control and Water Conservation District.

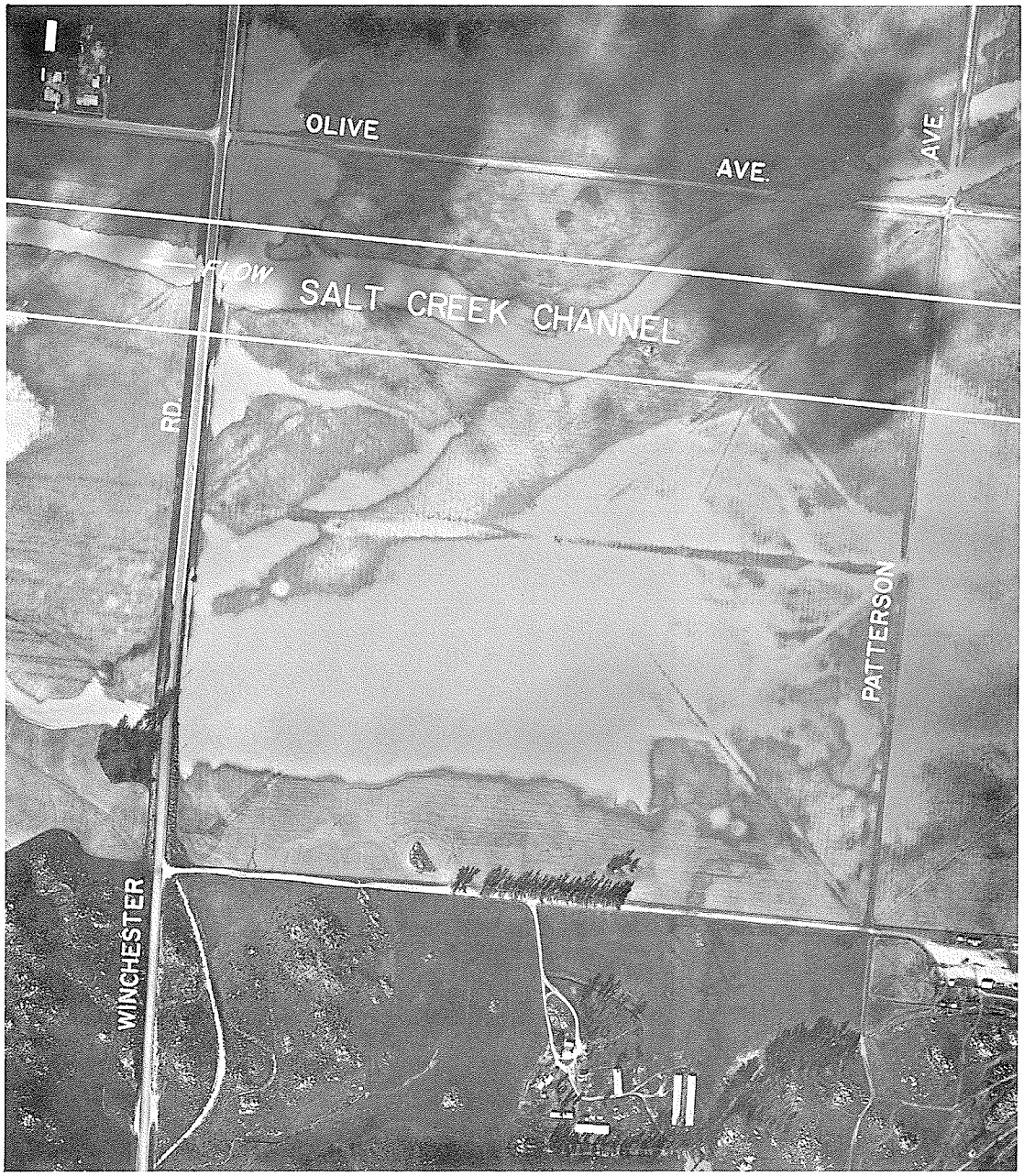
Vertical aerial view over Menifee Road south of Olive Avenue
during February 1969 Flood
Proposed Salt Creek Channel Improvement is superimposed
Photo by Riverside County Flood Control and Water Conservation District

Vertical aerial view over Olive Avenue at Lindenberger Road
during February 1969 Flood
Proposed Salt Creek Channel Improvements are superimposed
Photo by Riverside County Flood Control and Water Conservation District

Vertical aerial view over Leon Road between Olive and Patton Avenues
during February 1969 Flood
Proposed Salt Creek Channel Improvements are superimposed
Photo by Riverside County Flood Control and Water Conservation District



Vertical aerial view over Rice Road at Olive Avenue
during February 1969 Flood
Proposed Salt Creek Channel Improvement is superimposed
Photo by Riverside County Flood Control and Water Conservation District



Vertical aerial view over Olive Avenue
between Winchester Road and Patterson Avenue
during February 1969 Flood.
Proposed Salt Creek Channel Improvements are superimposed
Photo by Riverside County Flood Control and Water Conservation District

Vertical aerial view over California Avenue and San Diego Canal
at Hemet Channel adjacent to A.T. & S. F. Railroad
during February 1969 Flood.
Proposed Hemet Channel Improvement is superimposed
Photo by Riverside County Flood Control and Water Conservation District

Aerial View of Salt Creek near Winchester looking east
during February 26, 1969 Flood.
Photo by Riverside County Flood Control and Water Conservation District

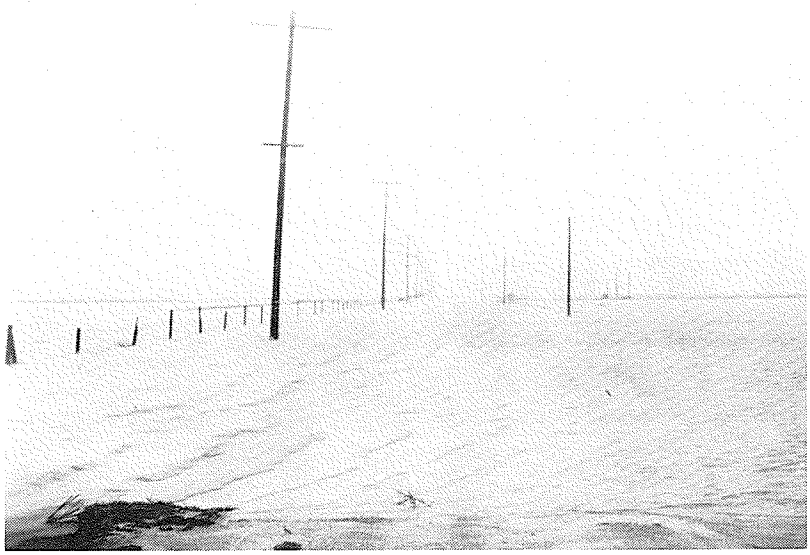
Salt Creek at Newport Road South of Sun City
during February 24, 1969 storm
Photo by Riverside County Flood Control and Water Conservation District

View of Newport Road east of Highway I15E (395)
looking east during January 1952 Flood
Photo by Riverside County Flood Control and Water Conservation District

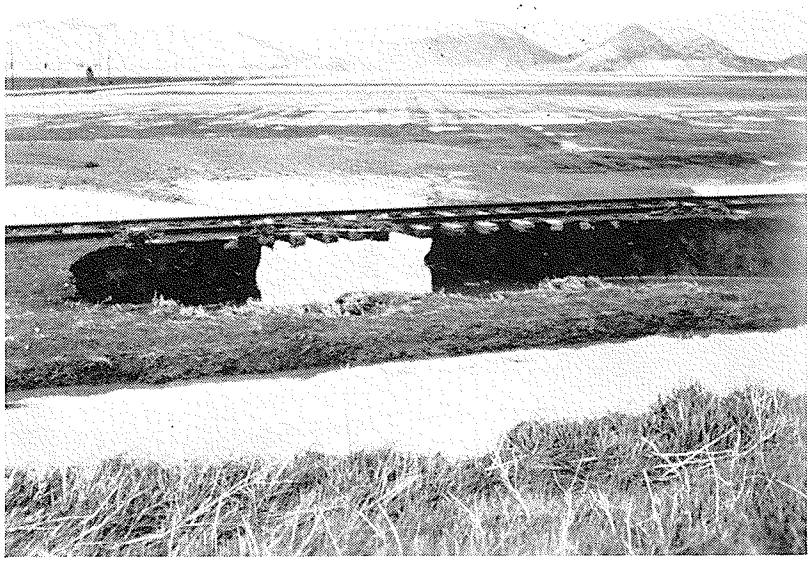
View of Highway I15E (395) north of Newport Road
looking northeasterly during January 1952 Flood
Photo by Riverside County Flood Control and Water Conservation District

Aerial view looking east over U.S. Highway 395 during January 1952 flood. Photo by J. Reid, U.S. Soil Conservation Service.

Aerial view looking west over U.S. Highway 395 during January 1952, flood. Photo by J Reid, U.S.S.C.S.



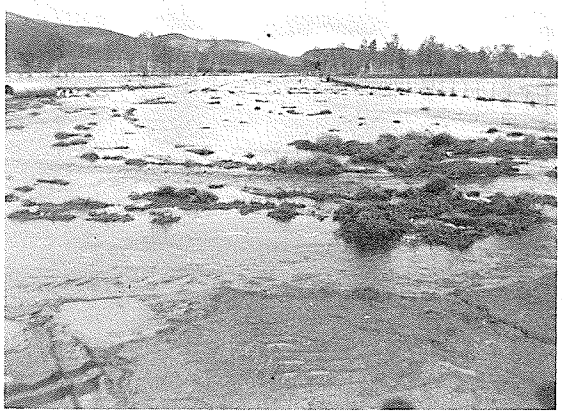
Looking east along Newport Road from U.S. Highway 395 during February 1969, flood. Photo by J. Reid, U.S.S.C.S.



A.T. and S.F. Railroad near California Avenue damaged during February 1969, flood. Photo by Riverside County Flood Control.

Looking west along Newport Road from Lindenberger Road during January 1952, flood.

Looking northwest from Newport Road at Lindenberger Road during January 1952, flood.



Looking north along U.S. Highway 395 (under construction) during January 1952, flood.

Looking southwest from Newport Road at Lindenberger Road during January 1952, flood.

Foods for life barn during January 1952, flood.

Looking south from Newport Road at Lindenberger Road during January 1952, flood.

1.2 ENVIRONMENTAL SETTING

Physical Geography and Topography

The study area encompassing the Salt Creek 100-year flood limit upstream of Highway I15E and including the Hemet Area Master Drainage Plan is shown on map 1. The area consists of a broad alluvial plain ranging in elevation from 1410 feet near Highway I15E to elevation 1920 feet at the southeast corner of the study area. This alluvial plain is disrupted only by a few low hills or knoblike features formed by the granite bedrocks which rise above the plain, for heights between 20 and 180 feet.

The existing unlined storm channel extends southwesterly from Hemet to California Avenue, west of the San Diego Aqueduct. The channel then becomes the original meandering stream course of Salt Creek.

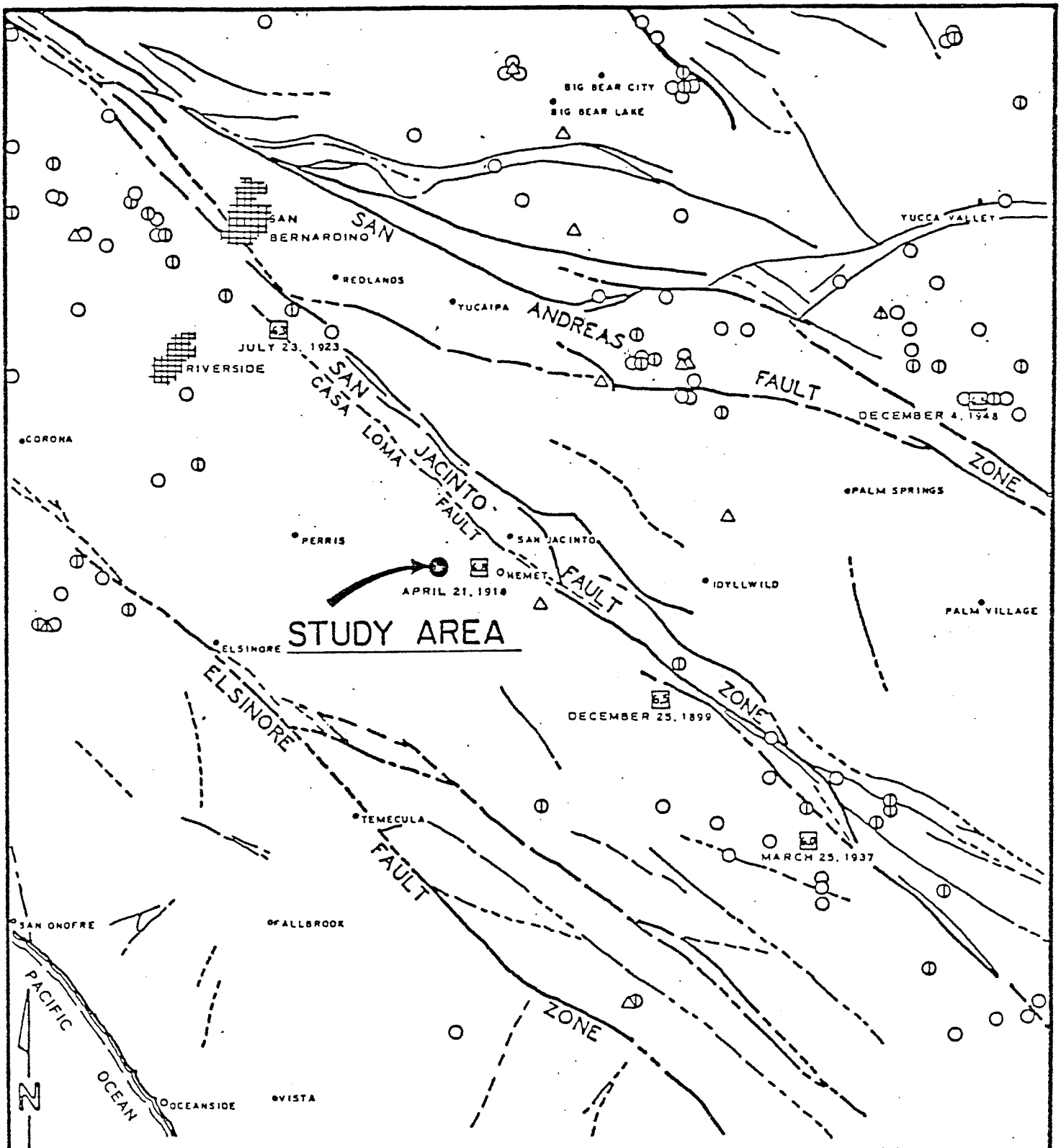
The concrete lined San Diego Aqueduct channel extends in a north-south direction across the middle of the study area, between Winchester and Hemet.

Geology and Soils Characteristics

The valley alluvium which essentially underlies the entire study area consists of unconsolidated silt and sand with local clay-rich areas. These sediments have been derived from outwash from the surrounding hills, Salt Creek tributary valleys to the south of and past out-flows from Bautista Canyon beyond the southeast corner of the Hemet Area Master Drainage Plan. Water Well Drillers' logs and seismic refraction work west of the Casa Loma fault (east boundry of study area) indicate the bedrock at a depth of about 500 feet.

Seismicity

The geologic structure of the entire Southern California area is dominated mainly by the northwest trending faults associated with the right-lateral San Andreas system. Faults such as the Elsinore, the San Jacinto, and the San Andreas are the major faults of this system, see Figure 1. They are all known to be seismically active and the San Andreas and San Jacinto are known to have ruptured the ground surface in historic times. The location of earthquake epicenters larger than Magnitude 4.0 are also shown on Figure 1.



EARTHQUAKE EPICENTER AND FAULT MAP

Figure No. 1

APPROVED FOR PUBLICATION _____ BY _____

The San Jacinto fault, a major branch of the San Andreas fault system, has repeatedly produced disastrous earthquakes in Southern California. Destructive or potentially destructive earthquakes centered near San Jacinto and Hemet were felt in 1899 (6.5 magnitude) and 1918 (6.8 Magnitude). In 1923 an earthquake with a magnitude of 6.3 occurred along the San Jacinto fault and its subsidiary faults. Ground breakage has occurred during at least some of these events.

The Elsinore and associated faults located south of the study area are also seismically active though no ground breakage has ever been observed in historic time. Magnitudes recorded from earthquakes generated along this fault system are considerably less than those of the San Jacinto fault; however, the Elsinore fault is capable of producing a 6.5 magnitude earthquake.

The study area is located immediately west of an active trace of the San Jacinto fault. This particular trace is known as the Casa Loma fault. The trace east of the site is buried with a north-east-facing eroded scarp associated with the fault trace. Park Hill at the east end of the area is bounded on the north-east and southwest by elements of the Casa Loma fault (Sharp, 1972). Several miles southeast of the area are several depressions and evidence of extensive earthquake activated landslides.

Drainage (Surface Water)

Only in recent years has there arisen a need for flood control facilities in the Salt Creek Basin. Moderate ponding of water during the winter was often beneficial to crops; therefore, agricultural land use was compatible with the natural flood situation.

The Hemet Channel, completed in 1970, conveys runoff from the residential area of a portion of Hemet along the Atchison, Topeka and Santa Fe Railroad to an area south of the community of Winchester near Patterson Avenue and Olive Avenue. The Hemet Channel design capacity is about 2,600 cubic feet per second to Cawston Avenue. Downstream from this point, the present capacity of the temporary channel continually diminishes.

The broad, flat valleys of the Salt Creek Basin are especially subject to extensive ponding. Man made embankments, natural topographic features, and agricultural variations affect flooding. Several man made embankments influence flooding significantly. Winchester Road and U.S. Highway I15E, the two major highways crossing Salt Creek Basin were built on earth fill to elevate the roadways above the flood plain. The Atchison, Topeka and Santa Fe Railroad is also elevated above the flood plain.

Existing culverts through these embankments are too small to be of any significance in preventing overflow during major floods.

Ground Water

The Salt Creek basin which underlies the project area is divided for convenience into three sub areas, Hemet, Winchester and Menifee basin because of its size, complexity and the need for localized information. The water bearing portions of these subdivided basins are in hydraulic communication except at a portion of the boundary separating Hemet and San Jacinto water basins along the Casa Loma fault extending in a southeasterly direction near Park Hill. The water levels within these basisns are constantly dropping due to increased extractions as a result of rapid growth and improvement in the standard of living within the last half century. The amount of ground water in storage has been reduced in the order of one million acre feet from 1922 to 1964. The rate at which the water level drops varies from one basin to another, as well as within a single basin. Recent measurements, however, indicate that the water table is rising due apparently to recharge or decrease in withdrawal.

Archaeological and Historical Resources

The headwaters of the Salt Creek Basin originate at the 4,500-foot elevation of the northwest slope of Red Mountain about ten miles southeast of the City of Hemet. Runoff flows from bush-covered mountainous areas of the watershed to the alluvial valley floor. The natural stream pattern has become obscured by past agricultural practices and construction. Natural drainage along most of the valley floor is poorly defined and ditches along roads have replaced much of the original pattern. Water is retained and appears on the surface along the drainage in

certain locations. The first of these locations is near the south projection of Lyon Avenue at the east end of a low range of hills. Significant archaeological resources are understandably found at this location. The Salt Creek Drainage again encounters an obstruction by the very low hills located east of Rice Road and south of Olive Avenue, and again, archaeological resources exist. Near the intersection of Olive Avenue and Lindenberger Road, west of Winchester, Salt Creek is concentrated into the narrow gap between two ranges of low hills which force the water to the surface. Archaeological resources exist also at this location.

Plant Life, Wildlife, Rare and Endangered Species

The portion of the Salt Creek drainage under consideration follows along the bottom of a broad, flat valley system flanked by moderately high ranges of steep rocky slopes. The stream is dry for the greater part of the year and only receives water from excessive precipitation or agricultural runoff. The watercourse has no distinct boundaries along most of its length and the entire valley bottom, including the streambed, is heavily cultivated with alfalfa and dry farm grain. This being the case there is little natural vegetation or wildlife remaining in the area.

The section east of Leon Road is completely lacking in natural habitat and the wildlife here would be limited to several species adapted to an agricultural environment. Between Leon Road and Lindenberger Road to the west, the creek becomes somewhat more discernible, flowing through a narrow ditch lined by occasional thickets of Mulefat (Baccharis Viminea), a few small Cottonwood trees (Populus Fremontii), and small patches of Cattails. Here also are a few temporary impoundments of runoff water which create some small areas of freshwater marsh. It appears, however, that most of the vegetation dies back during the dry summer months, preventing effective development of a permanent marsh habitat.

Immediately along the west side of Lindenberger Road the stream flows through a small pond and marsh which appears to have permanent water available and supports small populations of several bird species and perhaps some amphibians as well. In addition the pond most certainly provides feeding and resting for numerous

migrating and wintering birds. Most of the pond and marsh areas lie outside of the proposed channel right of way.

Air Resources

Southern California climate varies considerably through any given region. The climate in the study area is characterized by hot summers and moderate winters. The climatological data, such as temperature and rainfall recorded during the 1975 calendar year at the weather station in Hemet and San Jacinto areas are shown on Table I. Temperature variations for the City of Hemet were not available; although it is assumed that temperature range would be similar to that of the San Jacinto area. The average annual maximum temperature for the City of San Jacinto is 80.2°f and the average minimum is 45.1°f. The average annual rainfall for the cities of Hemet and San Jacinto is 10.88 inches and 11.68 inches respectively.

Generally wind velocity is 1 to 4 miles per hour (mph) from the south and west direction. Wind direction changes occasionally. Early in the morning and late evening average wind is 4 mph and rarely 9 to 13 mph. The study area is characterized by gentle winds for most of the year.

The air quality within Riverside County is monitored at nine locations. In the past, air quality was monitored for ozone levels and photochemical oxidants only. Recently carbon monoxide concentrations have also been measured and data are available only from April 1976. No information is available for oxides of nitrogen and sulfur dioxide. Ambient air concentration of these pollutants are not considered a present problem in the study area by Riverside County Air Pollution Control District. The monitoring station for the project area is in the City of Hemet.

Existing Land Use

Existing land uses within the combined project area primarily consist of agricultural uses largely devoted to crop production. Some poultry and dairy industry is also present. Portions of the project area in Hemet and the Winchester are used for residential and commercial activity.

TABLE I

CLIMATOLOGICAL DATA FOR THE SALT CREEK BASIN[a]

MONTH	Temperature (San Jacinto)		Precipitation (San Jacinto)		Precipitation (Hemet)	
	1975 Av. Temp °F.	Long R. Av. °F.	1975 (in.)	Long R. Av.(in.)	1975 (in.)	Long R. Av.(in.)
January	51.2	49.3	0.15	2.0	0.14	1.87
February	50.4	51.4	1.46	1.92	1.38	1.15
March	52.6	53.7	3.93	1.96	3.4	1.78
April	53.0	58.8	2.29	1.18	2.30	1.19
May	64.3	64.4	0.28	0.24	0.11	0.20
June	69.4	70.2	0.00	0.04	0.00	0.03
July	76.9	77.7	0.06	0.12	0.00	0.12
August	75.0	77.5	0.00	0.23	0.00	0.23
September	76.1	73.6	0.14	0.31	0.00	0.35
October	63.4	64.9	0.24	0.52	0.10	0.46
November	56.9	55.9	1.17	1.41	1.19	1.30
December	51.4	50.4	0.48	1.75	0.41	1.60
Annual Aver.	61.7	62.3	10.2	11.68	9.03	10.88

(a) Source: Climatological Data of California, U.S. Department of Commerce Annual Summary Vol. 79, No. 13, (1975)

For the purposes of this report, the Salt Creek Flood Plain will be divided into two areas. Area 1 will be from the City of Hemet to the easterly limits of Winchester. Area 2 will be from Winchester to Highway I15E. (See map 1.)

Area 1: The Hemet area is characterized by residential and commercial land uses. Also, located within the area are two parks, two golf courses, Ryan Field Airport and open space areas, either commited to agricultural use or vacant. A neighborhood commercial center is located at the intersection of State Street and Stetson Avenue. Zoning in the area varies with the commercial areas; Neighborhood Commercial (C-1), General Commercial (C-2), and Heavy Commercial-Light Manufacturing (C-M), primarily located along Florida Avenue (Highway 74). C-1 zoning is also located at the intersection of State Street and Stetson Avenue. Property zoned for residential purposes including mobile home parks may be found throughout the area with the Residential Agricultural (R-A) zones generally located westerly of Lyon Avenue.

Area 2: West of Area 1 is the community of Winchester. Winshester is a small residential agricultural oriented area with Rural-Residential (R-R) zoning primarily consisting of single family residences and farm buildings.

The community is bisected by Winchester Road (north-south) and Simpson Road (east-west), with a small commercial area located near the intersection of the two roads.

West of Winchester are two stands of mature eucalyptus trees adjacent to Simpson Road. The remaining area between Winchester and Highway I15E is primarily devoted to agricultural crop uses, with the exception of a dairy operation located adjacent to Simpson Road, and several poultry farms located throughout the

flood plain area. Southerly of the intersection of Lindenberger Road and Newport Road is a large stand of mature eucalyptus trees, as well as additional crop lands. An Edison Company substation is located adjacent to Newport Road, approximately one mile east of Highway I15E. Zoning in the area primarily consists of Rural-Residential (R-R) with Light Agriculture (A-1) zoning located west of Winchester near Simpson Road at its intersection with Leon Road and Briggs Road. A Mobilehome Park (R-T) zone is located south of Patton Avenue and east of Leon Road.

Open Space Parks and Recreation

Existing park and recreational facilities within the project area include Harvey Gibbel Park, the Farmer's Fair State Fairgrounds, a state owned park area immediately south of the Fairgrounds, the nine-hole private golf course in Panorama Village, and the eighteen-hole public golf course in the Seven Hills residential community.

Harvey Gibbel Park is a 10-acre park facility located on Florida Avenue and Kirby Street. The park provides neighborhood recreational facilities including open space passive use areas, children's play apparatus areas and a baseball field. The Farmer's Fair State Fairgrounds are located on Florida Avenue at Palm Avenue and provide facilities for various types of shows (e.g., dog shows, horse shows) and similar events, as well as the annual fair activities held each August. Directly south of the Fairgrounds is a 5± acre state-owned parcel of land currently utilized for organized youth baseball activities. The site is presently developed with two baseball diamonds which are operated and maintained by the Hemet/San Jacinto Youth Baseball Association. Also in the area are the Echo Hills Golf Course and other local parks.

Population

Section 2.6 of the complete Draft Report presents a detailed profile of the existing population characteristics of the Hemet/San Jacinto Study Area. The area's population has experienced a recent annual growth rate of about five percent. Population of the study area is estimated to have reached 59,100 persons in January 1977.

Employment

Section 2.6 presents a profile of the employment base of the Hemet/San Jacinto area. The majority of employment opportunities are in the retail trade and services sector that supports the two communities. Local manufacturing firms also employ a significant number of persons.

Less than ten percent of the local labor force find employment in the construction industry. The total employed labor force of the Hemet/San Jacinto area is estimated to be a maximum of 13,000 persons.

Transportation

The primary means of transporting people and goods within the study area are by private automobile and trucks utilizing the existing highway system.

The major highway transportation routes transecting the study area are U.S. Highway I15E and State Highways 74 and 79. The street system within the westerly half of the study area consists generally of farm-to-market roads connecting these highways. Also within the area there is a limited number of local roads serving the residents in unincorporated Winchester.

The easterly half of the Study area becomes increasingly urban as you proceed easterly of Sanderson Avenue. The collector street system in this area is generally on a quarter-mile grid system with varying street patterns within the grid to serve the

residential, commercial and industrial developments.

Past traffic growth within the westerly half of the study area has remained relatively constant mainly due to the land uses within that area which have remained essentially agricultural. Unlike that area, the easterly half of the study area has experienced rapid urban growth and as a result traffic growth on the major collectors has increased annually from 6 to 8 percent.

Noise

The A-weighted Sound Level of traffic noise and other long-term noise producing activities within and around the Salt Creek Drainage Area varies considerably with time. Measurements of this varying noise level are accomplished by recording values for a specified period of time. Analysis of these recordings yields values of noise which are useful in assessing the potential annoyance of the disturbance. For purposes of this study, noise level readings were taken at twentyfour locations which are shown in Section 3.10 of the Complete Draft Report. Basically most of the Project area is relatively quiet except the strips of land adjacent to the major highways or arterials and land adjacent to or near Ryan Airport. In those areas future growth could increase noise levels to undesirably high levels unless appropriate controls are implemented.

Aesthetics

Salt Creek Channel, throughout most of the project area is poorly defined having been substantially obliterated by agricultrual activity. It is, therefore, difficult to ascribe an aesthetic rating to something that is virtually non-existent.

The already completed portions of the Hemet Area Drainage System which are underground have no significant values either positive or negative from a standpoint of aesthetics.

The open channel portions of the completed sections of the Hemet Area Drainage system are well designed and properly maintained so that their aesthetic appeal is not significantly adverse. Such structures, their required fencing and other appurtenances, are not particulary attractive and it would be difficult within reasonable

financial restrictions to eliminate these adverse impacts.

Socio-Economic

Over the past several decades, the Hemet-San Jacinto region has established itself as a center for retiree living. The region is not characterized by concentrated "retirement communities," as such, but rather the growth has been "unstructured," exhibiting a general community interest insofar as the life style of the retiree is concerned.

Population growth, since 1972, has been relatively steady, increasing at an average annual rate of about five percent per year. (See Table 2).

When analyzing the socio-economic characteristics of the study area, it is important to recognize the unique demographic character of the people in Hemet and San Jacinto. While the median age of persons living in the Hemet-San Jacinto Division is 49 years, the median age of the residents in the City of Hemet is 64 years. As of January, 1976 the average family size in the study area was 2.2 persons, while the City of Hemet averaged 1.9 persons per household. A housing profile of the City of Hemet is shown on Table 3.

Table 2

POPULATION TRENDS: HEMET-SAN JACINTO DISTRICT

Census Tract		Jan. 1972	1973	1974	1975	1976
433	Hemet City	2,347	3,354	3,504	4,012	4,499
	Unincorp.	8,967	9,362	9,714	10,313	10,773
434	Hemet City	11,658	12,835	12,838	13,113	13,629
435	Hemet City	248	251	466	821	1,264
	Unincorp.	7,471	7,182	7,191	7,226	7,239
435	San Jacinto	658	839	815	815	814
436	San Jacinto	4,206	4,519	4,297	4,335	4,415
437	Unincorp.	3,625	3,850	3,767	3,906	3,916
427.01	Unincorp.	7,148	8,774	8,849	9,495	9,668
	TOTALS	46,328	50,966	51,441	55,036	56,217

SOURCE: County of Riverside, Department of Planning, City of Hemet, City of San Jacinto and Urbanomics Research Associates.

Table 3

HOUSING PROFILE OF THE CITY OF HEMET

1970 and 1976

	1970		1976	
	Number of Units	Percent	Number of Units	Percent
Single Family	3,228	52.9%	4,633	46.0%
Duplex	272	4.5	382	3.8
Apartments	676	11.1	1,554	15.4
Mobile Homes	1,925	31.5	3,506	34.8
TOTALS	6,101	100.0%	10,075	100.0%

SOURCE: City of Hemet, Department of Community Development, Urbanomics Research Associates.

Recent building permit activity confirms that the number of new single-family residences has been on the decline, while there has been a corresponding increase in the construction of duplex and multiple family residences.

Employment opportunities in the Hemet/San Jacinto area are in retail trade and services that support the growing retirement community. Manufacturing, especially the mobile home and recreational vehicle industry, also plays an important role in providing opportunities for employment. A large number of persons are employed in the local school systems.

It is estimated that the total employed labor force of the Hemet-San Jacinto region numbers approximatey 13,000 persons. Of this total, approximately 7.2 percent, or 900 persons, are employed in the construction industry.

As might be expected with a large segment of retiree households, the family income levels in the Hemet-San Jacinto are of rather modest proportions. For all households combined in the Hemet-San Jacinto area, 1970 median income was $5,912.

It is estimated that household incomes have risen at six percent annually, since 1970. Thus, the median household income for the Hemet-San Jacinto area is approximately $8,890 in 1977 dollars.

The proposed project would create 186 new jobs at an annual payroll of $3,064,323. It is assumed that 90 of the 186 new construction jobs would be filled from the local Hemet/San Jacinto labor base. Induced economic impact of the construction payroll is estimated at $2,872,000 annually for the local area. The total economic benefit of the project is estimated at $7,117,200.

Service Systems

Telephone, power, water and gas supplies are available throughout the Salt Creek Basin. These services are provided by General Telephone, Southern California Edison Company, Eastern Municipal Water District (EMWD) and the City of Hemet Water Department. In addition, private water supply through drilled wells and liquid waste-water treatment facilities do exist in the study area. An EMWD Regional Water Reclamation Facility located 3/4 mile north of Cottonwood Avenue on Sanderson Avenue is serving the residents of the City of Hemet within the study area. This plant is operated by EMWD. A water treatment plant, which is operated by EMWD is located in Winchester within the 100 year flood limit. Solid waste is transported and disposed of at the nearby land fill site located in the hilly region near Winchester. None of these water and waste water treatment facilities face any inundation danger from a 100 year flood, however, at many points proposed drainage systems do cross the water distribution system. The Salt Creek Channel intersects the San Diego Aqueduct about 1200 feet east of California Avenue near Olive Avenue. The proposed Hemet Channel crosses the San Diego Aqueduct at approximately 1200 feet east of California Avenue and 3200 feet south of Stetson Avenue near Winchester.

Public Services

Police

The traffic law enforcement and police protection within the City of Hemet is carried out by the City police. Outside the City of Hemet and within the project area these duties are carried out by the Riverside County Sheriff Department and the California Highway Patrol. These services could be restricted during and after floods due to inundation and damages to streets and highways by the storm water.

Fire Service

Fire protection service, within the basin but outside the City of Hemet limit, is provided by the Riverside County Fire Department. The service within the City of Hemet is provided by the Hemet City Fire Department. These vital services are seriously hampered by flooding of streets and highways.

Education

Two school districts have jurisdiction within the study area including the Hemet Unified School District and Menifee Union School District. One high school, one junior high school, one intermediate school and six elementary schools serve the entire area. Transportation facilities to these schools may be curtailed or seriously threatened during floods.

Medical Facilities

There is only one hospital which provides the medical services to the communities within the study area. It is located in the City of Hemet and doctors are available in all the major residential areas. The ambulance service provided by the private Hemet Valley Ambulance Company to the residents may be seriously handicapped during floods due to the isolation of areas.

Energy Consumption And Conservation

During the construction period considerable energy will be consumed as is set forth in Section 1.4 of this report, but in the long run, the completed project will result in energy conservation. During each storm of greater -than-average magnitude, some damage to roadway embankments is probable and repair work necessary. As storms of greater intensity occur, such as those of 1952 and 1969, a great deal of repair effort is necessary on roads and streets and on agricultural land as well. "Clean-up" after more severe storms frequently requires the consumption of more energy than that used to construct the proposed storm drain facilities. Similarly, the construction of underground storm drains in the Hemet area will eliminate after storm clean up on many City streets with a consequent saving in energy.

This project, when completed, will be a gravity flow system. No pumping stations or other energy consuming facilities are anticipated. Energy considerations are therefore not significant except energy uses which will result from possible growth inducement with attendant increases in automobile travel and their fuel consumption including those associated with normal municipal type services.

1.3 ENVIRONMENTAL IMPACTS

1.3.1 Beneficial Impacts

The proposed drainage facilities would help eliminate sediment deposition in farmland areas and help eliminate erosion. Drainage control might eliminate hydroconsolidation and collapse of soils from saturation, and could minimize flooding resulting from broken mains or damaged canals caused by earthquakes.

Surface water collection in the project area would be accomplished efficiently and without eroding away soil. Surface water delivered downstream from the project area would be of better quality at least from the standpoint of turbidity.

Other natural water courses which drain into the Salt Creek Channel but are not scheduled for improvement under this project would be afforded a more adequate outlet for the surface water collected with the result that flooding in those reaches might be prevented. The completion of the project would afford more adequate protection from damage by flooding of waste disposal facilities, and sanitary sewers.

A major benefit of the Hemet Area Master Drainage Plan and Salt Creek Improvements relates to future development in areas presently subject to flood inundation. Certain areas are presently subject to city and county ordinances restricting subdivision development within a 100 year flood plain zone. The construction of the Salt Creek Channel will ultimately remove this restriction allowing controlled growth to occur in accordance with the General Plan for the area.

The beneficial impacts of the project for recreation are largely associated with the Salt Creek channelization portion of the project, however, the combined effect of the Hemet Area/Salt Creek drainage improvements does have the potential of providing significant recreational benefits to the residents of Riverside County, particularly those within the Hemet/Sun City area.

Increased population of the local area, as a result of the project, cannot be considered totally adverse in and of itself. Positive economic benefits would accrue through increased household spending,

sales tax receipts, new job opportunities and increased local tax base. Thus, the adverse impact of increased urbanization may be balanced to some extent by the increased economic benefits that would accrue to the local economy.

The project would have a significant benefit to the owners of agricultural land in the project area because it would prevent crop losses and costly regrading of the land.

Construction of the proposed project would have positive impact on the local labor force. It is estimated that the project would employ 185 persons (full-time equivalent) over its three-year construction period. Annual payrolls are expected to reach $3,064,000. To the extent that construction materials and supplies are purchased from local firms, there may be a slight impact on the employment base of the wholesale and retail trade sector.

Construction of the project would produce primary increases in employment, payrolls, income and spending. The primary economic impact would translate into induced (secondary) impacts that will further increase local and regional employment, payrolls, income and spending, especially in the non-basic sectors of the economy.

Since the primary mode of travel within the study area is by automobile, the project would be beneficial in preventing flooding of essentially all the major and collector highways within the 100 year flood plain. The highways in the westerly half of the study area would receive benefit in terms of providing continuous daily and emergency traffic service to the existing isolated inhabited areas. These isolated areas have only one or at most two highway routes serving them. In the predominatly urban easterly half of the study area the elimination of street flooding would reduce accident potential, provide for continuous emergency vehicle travel and prevent congestion on non-flooded streets that would serve as flood detour routes.

Additionally the potential for roadway flood damage such as wash-outs and structural damage would be significantly reduced.

The railroad system and airport facilities would be benefited but to a lesser degree since they are not now or anticipated to be the primary modes of travel in the study area.

The completion of this project would beneficially impact upon all facilities by eliminating travel and transport hazards and delays. Police, fire and ambulance services, particularly, depend upon local roads, streets and highways in the performance of their work. The elimination of wash-outs, flooded roads and accident potential situations will be a substantial improvement in terms of the protection of life and property in the project area.

The completion of the storm water collection system would greatly reduce the probability of the wash-out of improved streets and the possible damage to the water and gas facilities in such streets and contamination of water supply. Likewise water and gas mains installed in rights of way other than streets will be afforded a greater measure of protection.

The completion of the proposed drainage project would leave a very significant beneficial impact on the electrical distribution system in the project area. The electrical distribution system consisting primarily of overhead pole mounted power lines is quite vulnerable to damage from wash-outs of pole foundations. The grounding of high voltage electrical power in damp or flooded areas may cause extensive damage to the system and at the same time create extreme hazards to life and property. An adequate drainage system would greatly alleviate this problem.

Maintenance activity related to overhead power lines is frequently required as a result of storm activity such as lightning damage or tipped over power poles. It is also during storm periods that streets and highways become impassible and hinder such maintenance work. An adequate drainage system would, to a large extent, elimnate this conflict.

1.3.2 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

In order to confine water within the open channels to be constructed under this project it would be necessary, in certain low, flat areas to construct channel embankments higher than adjacent land. This would be particularly true if the interim project is built. These embankments or levees would actually serve to impound water in some places and induce minor flooding in areas that might otherwise be fairly well drained.

It is conceivable that the construction of the project might, in a minor way, reduce the percolation of water into the groundwater reservoirs in the Menifee, Winchester and Hemet basins. The more efficient disposal of water following storms and the prevention of large scale ponding of water might have this effect. It is also conceivable that the distribution of storm water which percolates into the three basins might be slightly altered.

Man made channels with concrete lining, chain link fencing and other visible structures might be considered aesthetically undesirable in the otherwise completely rural areas through which these open channels would pass.

Concrete lined open channels in portions of the proposed project will be constructed on a very flat grade and nuisance water from city streets and other sources may collect in the bottom of these facilities. Over the long dry season this condition may be aesthetically unpleasant.

1.3.3 SIGNIFICANT IRREVERSIBLE IMPACTS

The Hemet Area Drainage Plan and Salt Creek Improvements would result in a commitment of land, presently used for agricultural and street uses, for flood control and drainage improvements.

1.3.4 SHORT TERM USES VERSUS LONG TERM PRODUCTIVITY

Construction of the Hemet Area Master Drainage Plan and Salt Creek Improvements is justified at the earliest possible time to prevent the future reoccurence of flood damage to land uses in the Hemet and Salt Creek areas. On a short term basis, these improvements would protect cropland, residential and other land uses while committing a portion of the Salt Creek flood plain and Hemet road

rights-of-way for flood control and drainage purposes.

In terms of long term productivity, to area land uses, these flood control and drainage improvements would provide the opportunity for future parks and recreational developments within the Salt Creek channel

The overall construction project would include the short term impacts associated with construction of the channel and associated recreational facilities (e.g., dust and exhaust emissions, noise, grading and loss of agricultural croplands). These impacts would be offset by the long term productivity associated with the potential recreational benefits and the virtual elimination of flood hazard in the project area.

1.3.5 GROWTH INDUCING IMPACTS

The Hemet Area Master Drainage Plan and Salt Creek improvements would have a growth inducing impact upon the Hemet and Salt Creek flood plain areas. This growth would be primarily associated with residential development within the Salt Creek flood plain and the Hemet area south of Stetson Avenue. At present, most of the development in these areas is restricted by flood hazard and zoning for agricultural type land uses.

Both Riverside County and the City of Hemet restrict subdivision growth within the 100 year flood zone. In addition, areas on the fringe of the 100 year flood zone must provide adequate flood control and drainage improvements to insure safety from flood hazards.

The development of the Salt Creek flood control improvements would ultimately remove the southwest Hemet area and most of the Salt Creek basin from the 100 year flood hazard. This would provide for the possibility of subdivision development in place of the existing agricultural land uses. The subdivision growth would also have the secondary impact of requiring the extension of community services to the new subdivisions. Appropriate land use and planning controls would influence and guide the rate of development.

Discussions with Riverside County and the City of Hemet planning staffs indicate that urban growth in the southwest Hemet and Salt Creek areas would probably occur as extensions of existing urban areas rather than in scattered developments throughout the outlying undeveloped area. Little development west of Winchester is anticipated because much of that area is located in agricultural preserve.

To the extent that the demand for construction workers cannot be met by the local labor force, there would be immigration of workers to the area. Many of the new jobs would be highly skilled in nature, and many workers would commute to Hemet from the Riverside-San Bernardino area during the construction process. It can be anticipated that some new workers will be drawn to the area simply by the magnitude of the project.

In the long run, the proposed project will not produce significant on-going increases in the primary population and employment bases of the community.

The project would, however, make available new land for development and this will ultimately translate into pressures for residential and other forms of development in the project area. In this sense, the project can be viewed as having potential growth-inducing effects. The project would be growth-accomodating in the geographic sense. The project in and of itself would not induce population and economic growth pressures.

1.3.6 SIGNIFICANT CUMULATIVE EFFECTS

Looking to the future, the most important effects of the project would relate to the potential population and economic growth in the project area. This growth would be accomplished over many decades, and the growth could be accommodated in an orderly fashion, with minimum adverse effects. The resulting urban, economic, social and fiscal benefits of this transition would far outweigh the public costs of the project.

1.4 PROJECT CONSTRUCTION IMPACTS

Construction Noise and Vibrations

Construction noise associated with the Salt Creek Channel improvements would probably not impact greatly upon residents because most of the channel would be constructed through rural and sparsely populated territory. Conversely, however, the Hemet Area Master Drainage Plan Projects would be constructed in urban areas where noise and vibrations would impact upon many people. During construction of the project heavy earth moving equipment, graders, trucks, skiploaders, trenching equipment, hoists, pavement breakers and paving equipment, plus many other kinds of construction equipment would be regularly in use on the project. All of this equipment does create noise and frequently causes vibrations when it is in operation.

The following chart shows typical examples of the level of noise generated by construction equipment. The figures in the chart are noise levels in db(A) ratings (decibels adjusted to consider tonal qualities).

Fortunately the various phases of improvement would follow, one after the other, in logical pre-planned sequences so that the sound would not be cumulative in a single area at any given time.

TABLE OF NOISE LEVELS CAUSED BY CONSTRUCTION EQUIPMENT

	Distance from Equipment		
Equipment	50 ft.	100 ft.	200 ft.
Earthmoving	75-91	69-85	63-79
Concrete Mixer	75-85	69-79	63-73
Crane	75-83	69-77	63-71
Derrick	75-85	69-82	63-76
Pumps	75-76	69-70	63-64
Compressors	75-81	69-75	63-69
Jack Hammer	74-88	69-82	63-76
Saws	75-78	69-72	63-66
Vibrators	75-76	69-70	63-64

Dust

The construction of storm drain facilities both open channel and underground would require excavation, backfill and transportation of earth. A project of this magnitude would require "working" large quantities of soil and dispersal of "dust" into the atmosphere must be anticipated. The level of such dust dispersal would depend upon the level of prevention exercised by the contractor as demanded by the construction specifications. This impact would be significant in populated areas only. In rural areas farming activity does currently create dust conditions.

Air pollution & Odors

Construction equipment which would be used during the construction of the open channels and underground storm drains would be gasoline or diesel powered equipment. These vehicles and machines do emit contaminates into the atmosphere causing some measure of air pollution. Likewise, automobiles and trucks transporting equipment and personnel to the various job sites would emit some pollutants into the air.

A recent report of the Los Angeles County Air Pollution Control District entitled "Energy Use Emission Factors" indicates that the average gasoline powered motor vehicle 1977 models, will emit total pollutants equal to 22.7 grams per mile travelled. Of this total, 18 grams or about 80% of the emission will be carbon monoxide.

This additional use of equipment and vehicles may cause some noticeable air pollution in the vicinity of the separate projects and may create noticeable odors in the form of sulfur oxides or hydrocarbon gases but on an area wide basis this added air pollution would not be significant. Gentle winds in the range of one to four miles per hour are common to this area so the air pollutants would be dispersed from the source and generally would not accumulate to higher levels of concentration except during periods of inversion.

Traffic Disruption

The Hemet Master Drainage Plan area would experience some inconvenience resulting from underground storm drain construction in the streets. The construction of the Salt Creek improvements would impact upon traffic at those locations where existing roads and streets cross the proposed channel but detours around construction could easily be provided where interference of this nature does occur.

Inconvenience and traffic disruption in the more densly populated areas would affect specific locations for limited periods of time. As work progresses along a given route only short segments of street would be closed to property owners in the vicinity, although the street may be closed to through traffic for an extended period of time, particularly in those cases where large diameter pipe is being installed.

Detours and limited access situations affect property owners whose driveways may be blocked during certain work hours and possibly for a day or two in some cases, but may also have a more serious impact upon emergency vehicle operation. Alternate routes for responding to emergency situations should be planned in advance. Traffic volumes will dictate the scope of detours necessary.

Energy (fuel) Consumption

A project of this magnitude would involve the use of a wide variety of heavy construction equipment. Such equipment would consume large quantities of diesel fuel in a relatively short period of time but would use the fuel efficiently. The energy expended in accomplishing the work required can also be considered an irreversible impact since the energy expended is not retrievable.

Truck Traffic & Heavy Equipment Traffic

As indicated in the previous section of this report this project would involve the use of a great variety of equipment and materials. Much of the equipment and all of the material would

be brought into the area over existing streets and highways and there would, at times, be noticible increases in traffic at some locations. This increase could, temporarily, disrupt the normal traffic condition and could result in some traffic congestion at high traffic locations during peak hours. Some of this impact could be mitigated by proper enforcement of suggested mitigation measures. Construction traffic may contribute to or accelerate the deterioration of streets and highways.

Excess Materials

The construction of this project as outlined in the preliminary plans will result in an excess of earth which will have to be legally disposed of at some off site disposal location. This, of course, creates additional truck traffic which has already been discussed but in addition means the "filling in" of some remote site with earth. This may be either a beneficial impact (if it eliminates some environmental problem) or a negative impact if it occupies space that could more advantageously serve some other purpose.

Disruption of Agricultural Activities

Construction activity along the Salt Creek Channel and along the westerly reaches of Line "A" of the Hemet Area Master Drainage Plan may require access roads and peripheral area for equipment operation and storage. This additional land utilization may temporarily affect agricultural activity by taking away additional land area that would otherwise be used productively.

Attractive Nuisance

Storage of construction equipment, supplies, materials and machinery along public rights of way during non-work hours may create opportunities for vandalism and theft. This condition may also attract inquisitive children who could sustain injury while playing in the construction area. This adverse impact can be almost entirely mitigated by rigid enforcement of appropriate mitigation measures.

1.5 MITIGATION MEASURES

(a) Both the City and County have the mechanisms to control and guide the development of the flood plain area as proposed in the Land Use, Conservation and Open Space Elements of the County and City General Plans.

(b) Develop recreational areas and perform landscape work where feasible in flood channel areas to prevent adverse visual impacts.

(c) Roadway capacity deficiencies which may develop can be mitigated by street widening, providing one way street couplets and by constructing new collector routes.

(d) Traffic noise resulting from increased motor vehicle travel in the area will have to be mitigated by enforcement of existing and proposed State Vehicle Code regulations.

(e) Noise barriers can be feasible in some locations although the mitigation of noise impacts by this means is very costly.

(f) Increased aircraft noise emanating from aircraft using Ryan Field as a result of area growth may require restrictions for night and early morning flights.

(g) Design flood control structures with equal sensitivity for aesthetics and utility.

(h) Construction impact mitigation measures include:

(1) Limit heavy construction to week days between the hours of 7:00 a.m. and 6:00 p.m.

(2) Use water and temporary paving to prevent dust.

(3) Reduce air pollution by using well maintained equipment.

(4) Reduce traffic problems by advance planning of construction and the use of appropriate traffic regulation and control devices and by using flagmen if necessary.

(5) Conserve energy needed for construction by using proper equipment and properly maintained equipment and by avoiding unnecessary trips and shuttle runs.

(6) Mitigate stored equipment and material problems by appropriate security measures.

1.6 SUMMARY OF PROJECT ALTERNATIVES

1.6.1 Project Alternatives and Their Costs

A total of four alternatives to the proposed project were investigated. Additionally, a scaled down version of Project I was evaluated. Project I (Interim), from a flood protection standpoint, represents the minimum size project which should be considered. It is a logical interim stage project enroute to eventually achieving the full extent of Project I.

Project Number	Estimated Cost
Project I For project scope see map 2, plates A, B and C.	$21,271,500
Project I (Interim) Modifies Project I scope by eliminating the improvement of Salt Creek upstream of the Line A (Hemet Channel) outlet. Proposes the improvement of Line A and Salt Creek into unlined channels westerly to Highway I15E for 1500 cubic feet per second capacity.	$12,240,000
Project II Only the Salt Creek Channel improvements differ from those of Project I. Peak flows from the headwaters are temporarily stored in a 165 acre retention basin and released at a controlled rate into a 48 feet wide unlined Salt Creek Channel. Downstream of the Line A (Hemet Channel) confluence the Salt Creek Channel improvement would be thirteen percent smaller than under Project I. See map 14.	$21,580,300
Project III The unlined Salt Creek Channel portion of Project I is considered concrete lined under Project III.	$27,254,800

Project IV $21,898,000*

This alternative represents a completely open channel version of Project I.

* Cost for remodeling of streets to route flows to channels is not included.

Project V $ **

Project V represents the "NO PROJECT" alternative.

** The "NO PROJECT" alternative obviously has no implementation cost. The true cost of doing nothing could, however, be quite expensive. The damage caused by previous storms was considerable although accurate dollar figures are not available. The damage potential of future storms in terms of cost is even greater today because more development value is exposed to the flood damage risk. Admittedly these are costs of impacts but it will be beneficial to the decision making process to keep these costs in focus.

1.6.2 Analysis of Project Alternatives

Because of the severeness of the flood hazards within the project area, see map 1 and Photo Plates 1-13, the community, as evidenced through projects already initiated by elected community leaders have already indicated that the "NO PROJECT" alternative, Project V, is not a viable course of action for this rapidly urbanizing area.

Project Alternatives III and IV represent substantially greater financial investments than Project I. Additionally these projects would create significantly greater adverse environmental impacts than Project I. Fenced concrete channels and structures would be built instead of broad unlined channels developable into park-like areas and recreational facilities such as bike and riding trails.

Project II, although slightly higher in estimated construction cost (1.5%) than Project I, can be viewed as a viable alternate project. Nearly 200 acres less in private pro-

perty will have to be committed for flood control purposes under Project II and a reduction of 860,000 cubic yards in earthwork could be achieved over Project I. Additionally, the large parcel of land developed into the retention basin would offer opportunities for selective agricultural, open space or recreational uses.

Project II, however, has some negative impacts as well. There is the adverse visual impact of a 6,100 feet long, 14-foot high levee adjacent to a residential neighborhood and the potential for liabilities associated with impoundment of flood waters, even if only infrequently and for very short durations. Implementation of Project II requires early acquisition of the properties necessary for the retention basin. To minimize the acquisition costs, these properties would have to be purchased before further encroachments by development occur. Initial financial outlay for right of way acquisition is estimated at $800,000 which by itself does not provide any flood protection. A minimum of another $960,000 in construction dollars would have to be spent before any significant partial flood protection would be realized. The option of being able to select Project II over Project I is therefore tied entirely to funding.

Both Projects I and II permit the option to build an interim project described as Project I (Interim) first. However delays in acquiring right of way necessary for the retention basin will result in an even higher Project II cost.

2.0 Description of Project

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

This report analyzes the impact on the environment of the construction and operation of two coordinated flood control systems known as the "Master Drainage Plan for the Hemet Area" [1] and "Salt Creek Channel, Hemet to Sun City"[2], California. Within the Hemet area a series of underground storm drains to be constructed along with existing and proposed open channels would collect surface water and transmit the water via the Hemet Channel to Salt Creek Channel near Patterson and Olive Avenues. The Salt Creek Channel improvement would be an open channel beginning at Lyon Avenue in the southerly portion of the City of Hemet and would extend downstream to the west past the community of Winchester to Highway I15E. The map following Page 1-2 shows the project area defined as the area generally parallel with the project alignment inundated during a storm of sizable proportions (hundred year frequency storm). The project area so outlined would be that primarily affected by the proposed construction of the flood control facilities.

2.2 PROJECT OBJECTIVES

The Hemet Area Drainage Projects and the Salt Creek Channel Improvements are designed to alleviate major flooding during and immediately following severe thunderstorms and periods of intense precipitation. Although the Hemet Area Drainage Projects and the Salt Creek Channel Improvements are separate projects they are interdependent and contiguous and are treated as a single project for the purpose of this report (see section 15068 of the Guidelines). The Salt Creek Channel Improvements are necessary if the Hemet Area Drainage System is to be constructed since it furnishes the outlet for the Hemet Area system. Much of the Salt Creek natural channel has been filled in with soil from adjacent land to make it a productive part of the surrounding agricultural land. This "filling in" process has virtually obliterated the watercourse to the extent that storm-water no longer follows any defined route but instead spreads out over the land and moves westerly toward Highway I15E.

During major storms this flooding of the land becomes a threat to the residents and land owners of the area and to vehicular travel on local roads and streets. During major storms flooding would occur even though the natural drainage course had been left in its natural condition because it has always been inadequate to handle larger quantities of water. The downstream slope is very flat and flood water does not move rapidly under natural conditions.

Improving the Salt Creek Channel to the limits and the hydraulic section proposed would prevent flooding during severe rainfall including 100 year frequency storms.

Specifically, the purpose of the project would be to accomplish the following objectives:

1. To collect and conduct storm water efficiently, safely and economically to drainage courses where it can be carried away without damaging property, isolating residents, creating health and safety hazards.
2. To create adequate drainage courses of appropriate design so that these facilities will not have a negative effect on the aesthetic aspects of the areas which they serve.
3. Remove from flood hazards substantial portions of the valley and protect agricultural activities against prolonged periods of damage producing inundation.

Photo Plates 1 through 13 in Section I illustrate some of the problems that frequently develop in the project area during or after heavy rains such as the storms of 1952 and 1969.

2.3 Project Physical Characteristics

Salt Creek would be improved into an unlined trapezoidal channel, 440± feet wide within a 520-foot right-of-way. The channel depth would average about six and one-half feet with sides constructed on a slope of 15 horizontal to one vertical. This improvement would extend from Highway I15E on the west to Lyon Avenue on the east. No bridges other than the one at I15E will cross Salt Creek. All other crossings will be at grade and will have adequate culverts to accomodate low flows.

The proposed channel alignment and implementation are detailed in the "Conceptual and Preliminary Engineering Plan, Salt Creek Channel,

Hemet to Sun City, California"[2]

The Master Drainage Plan for the Hemet Area[1] will collect surface water from the street system of the greater Hemet Area extending generally from Warren Road south of Stetson Avenue on the west to Lake Street on the east. In the north-south direction the area extends from Devonshire Avenue southerly to Crest Drive and will be drained by underground storm drains and open channels which would discharge the runoff into the proposed Salt Creek Channel via Line A (Hemet Channel). Portions of the underground and channel system are already completed. The effectiveness of the Hemet Area Drainage system would depend very heavily on the ability of downstream facilities to accept the discharge and to carry it downstream without ponding or flooding. Thus, the two drainage systems are interrelated. Flow in the Salt Creek Channel would, of course, be affected by water discharged from the Hemet system. The combined flow would discharge into the existing Salt Creek Channel west of Highway I-15E and eventually into Railroad Canyon Reservoir.

The Master Drainage Plan for the Hemet Area would consist of a combination of concrete lined open channels, reinforced concrete box sections and reinforced concrete pipes. Open channels vary from concrete lined trapezoidal sections 94 feet wide at the top, 70 feet wide at the bottom and eight feet in depth to a small channel with a bottom width of four feet and a depth of four feet. Reinforced concrete pipes range in size from 108-inch to 24-inch diameter in some of the smaller branch lines. This drainage system is described in detail in the District's report "Hemet Area Master Drainage Plan, Addendum" dated July 1977 and is summarized in the following paragraphs.

Line A, between Cawston Avenue and California Street is an unlined trapezoidal channel.

For Existing Flood Control Facilities, See map 2, plates B & C

Line A: A portion of the existing line A, which is called the Hemet Channel, is of adequate capacity and lies between Palm Avenue and Cawston Avenue. It is a concrete lined

trapezoidal channel, extending southwesterly adjacent to the Santa Fe Railroad from Palm Avenue. Line A east of Palm Avenue is an open channel and runs northeasterly along the railroad to Florida Avenue. In Florida Avenue Line A continues easterly to San Jacinto Street as an underground storm drain. Two existing laterals join Line A at Kirby Street and Lyon Avenue.

Line B: A partially completed portion of Line B, which is a concrete lined trapezoidal channel, lies between the confluence with Line A and the intersection of Palm Avenue and Acacia Avenue. Line B drains the storm water accumulated along Acacia Avenue. This street is an important east-west street.

Line C: Line C serves the central portion of the watershed. Line C begins at the confluence with Line A along the westerly prolongation of Whittier Avenue. The completed portion, a concrete lined trapezoidal channel, lies between Line A and the intersection of Whittier Avenue and Lyon Avenue.

Line D: Line D serves the drainage area tributary to Stetson Avenue, a major east-west street. A partially completed portion of Line D which is a concrete lined trapezoidal channel has been constructed between Cawston Avenue and Palm Avenue adjacent to Stetson Avenue. Line D, downstream of Cawston Avenue to Line A (Hemet Channel) is an unlined trapezoidal channel. Four underground storm drain laterals, laterals D-7, D-8, D-10 and D-11 are connected to Line D. Lateral D-8 is located about 700 feet west of the intersection of Stetson Avenue and Lyon Avenue and Lateral D-7 is located in Palm Avenue north of Stetson Avenue. Laterals D-10 and D-11 are located on Stetson Avenue at 1000 feet and 2800 feet east of Sanderson Avenue.

Proposed Improvements (See map 2, plates A,B, & C.)

The recommended improvements for this drainage plan consist of four primary trunk drains, eighteen secondary drains and improvements to

existing channels. A brief description of the location of these primary and secondary drain lines is as follows:

Line A: A portion of Line A, in Florida Avenue, lies between San Jacinto and Yale Streets and extends 300 feet southerly in Yale Street. It will be an underground reinforced concrete pipe drain.

The downstream portion of Line A, an open channel, will be improved from Cawston Avenue to its confluence with the Salt Creek Channel at Patterson Avenue south of Simpson Avenue. The improvement will consist of a concrete lined trapezoidal channel with a base width varying from 20 to 70 feet, an average depth of eight feet and side slopes constructed to a slope of one and one half to one. This report does not assume that any streets or highways will be closed or re-routed on a permanent basis and funding for bridging the proposed open channels has been considered in the cost of the project. If Ryan Airfield is expanded some of the bridging over Line "A" may have to be moved to different locations.

Four proposed laterals will join Line A at the following locations:

Line A-2 at Cawston Avenue
Line A-3 at Sanderson Avenue
Line A-6 at Lyon Avenue
Line A-7 at Palm Avenue

Additionally Line A-3a joins Line A-3 in Sanderson Avenue at Acacia Avenue and Line A-3b connects to Line A-3 in Kirby Street at Florida Avenue

Line B: Line B will be located in Acacia Avenue from its junction with Line A to Dartmouth Street, and in Dartmouth Street south to Mayberry Avenue. The line is planned as an underground reinforced concrete pipe drain. Two laterals, also pipe drains, join Line B at the following locations:

Line B-1 at Buena Vista Street
Line B-2 at San Jacinto Street

Line C: The proposed extension of Line C, an underground reinforced pipe drain will be located in Whittier Avenue between Lyon Avenue and Cornell Street. Three laterals will join Line C at the following intersections:

Line C-1 at Palm Avenue

Line C-2 at Columbia Street

Line C-3 at Yale Street

Line D: Line D will be an underground concrete drain pipe extension of an existing open channel drain adjacent to Stetson Avenue, a major east-west street, from Palm Avenue to near Hemet Street. Additionally seven pipe drain laterals will join Line D at the following locations.

Line D-1 at Buena Vista Street

Line D-2 at Yale Street

Line D-3 at Cornell Street

Line D-4 at Stanford Street-north

Line D-5 at Stanford Street-south

Line D-6 at Gilbert Street

Line D-9 at State Street

2.4 PROJECT DRAINAGE AREA

The project area for which this Environmental Impact Report has been prepared is delineated as the area upon which the construction and operation of this project has primary impact. For the Salt Creek Channel segment the project area is the one hundred year flood limit as shown in blue on Map 6.

For the purposes of this report the project area begins at Highway I15E as it crosses Menifee Valley. From Highway I15E upstream, the project area extends along both sides of a presently meandering Salt Creek about twelve miles in an easterly direction to blend with the Hemet area project boundary.

This portion of the project area varies in width from about two miles in some locations to only a few hundred yards where the Salt Creek stream bed passes between adjacent hills. In all, this meandering area encompasses nearly twenty square miles. Most of it is rural area with a small portion extending into the corporate boundaries of the City of Hemet.

For the Hemet area the project area is defined as the drainage area of the Master Drainage Plan for the Hemet Area.

The construction of the facilities proposed in the Master Drainage Plan for the Hemet Area [1] will affect an area in excess of 15 square miles including nearly all of the City of Hemet and certain Riverside County territory east and west of the City of Hemet. On the west, the project area extends to Warren Road and includes Ryan Field. To the north the area extends generally along Florida Avenue. Between Palm and Kirby Avenues the project boundary extends farther north with Devonshire Avenue being the northernmost limit. The most easterly boundary of the area is at the southeast corner near Lake Street and Thornton Avenue. The south line of the irregularly shaped area is generally in the vicinity of Thornton Avenue. Some of this area does overlap the previously described Salt Creek project area. Together the two projects encompass about 31 square miles as shown on Map 1 in blue.

2.5 PROJECT HYDROLOGIC FEATURES

The Salt Creek Basin from Hemet westerly to Highway I-15E is subject to extensive flooding during storms of above average intensity. The natural Salt Creek drainage course consists of a very shallow meandering creek bed. In some reaches the drainage course is merely a depression in land under cultivation. During periods of significant runoff the flows in Salt Creek spread almost immediately to adjacent lands and form a broad flood plain. This broad expanse of overland sheet flow meanders downstream, its breadth affected by natural and man-made features.

2.5.1 Local Flooding Conditions

Precipitation in the Hemet and Salt Creek Drainage Basin occurs most frequently during the months of December, January, February and March. During these months winter storms which may last several days can produce major flooding such as the storms of 1952 and 1969 illustrated by pictures in this report.

Low areas in this broad relatively flat valley are frequently subject to flooding to the extent that they become part of a wide, shallow river. Fields become a sea of mud

and are subject to erosion. Roadways become covered with mud and debris.

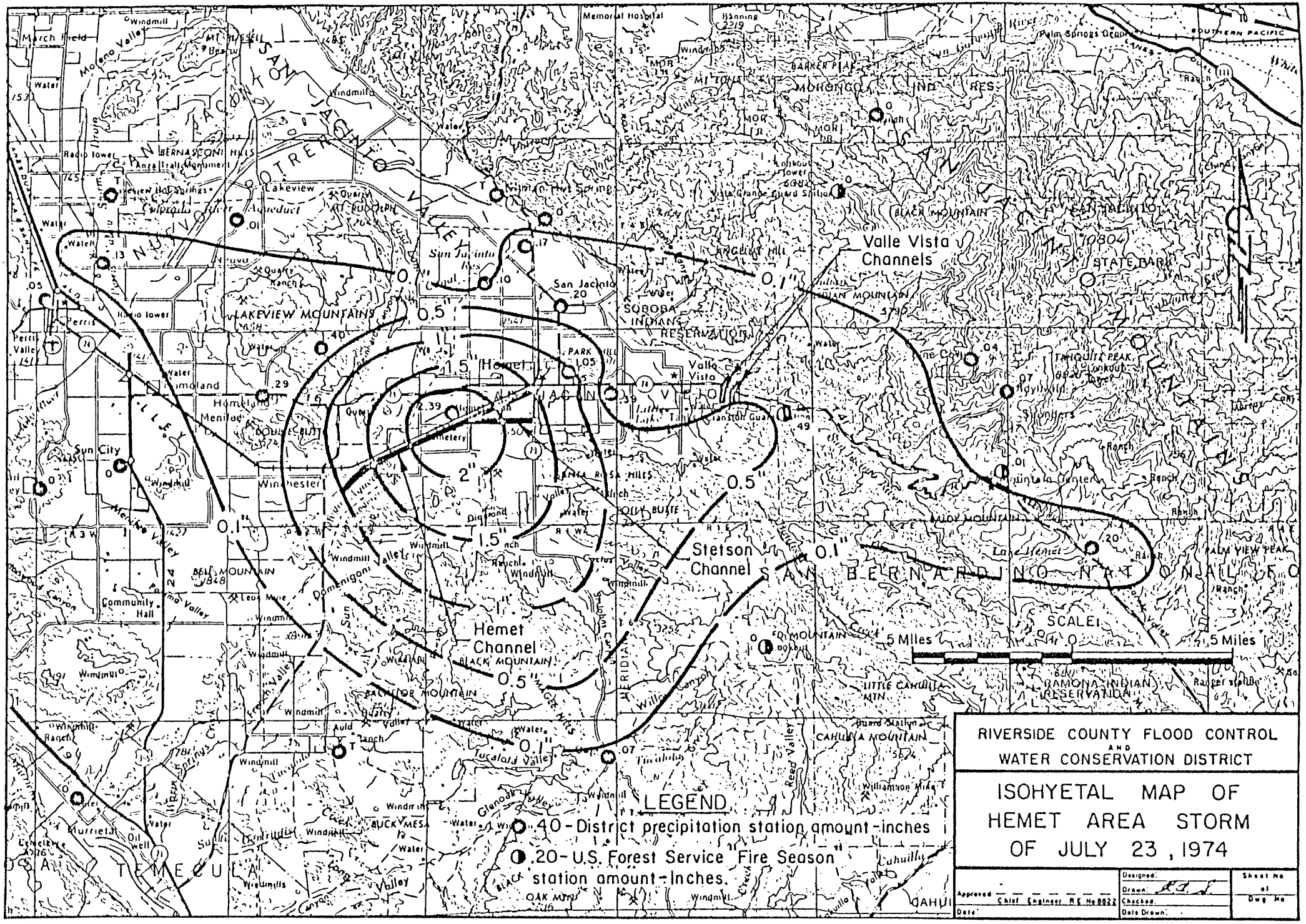
In the more highly improved areas where residential, commercial and light industrial activities are concentrated there is frequent flooding of streets and the potential for flooding of homes, shops and other private property.

During the 1969 floods some sections of the Hemet area were temporarily isolated from the various emergency services.

Flooding in the Project Area occurs at times other than during the winter months. A high intensity thunderstorm accompanied by high winds hit the Hemet area between 1:00 P.M. and 1:30 P.M. on July 23, 1974. Precipitation began in the western part of Hemet and lasted for about two hours. As the storm continued it moved easterly with precipitation beginning in the San Jacinto and Valle Vista areas about 3:00 P.M. PDT, lasting about one hour. The storm was centered over the Ryan Airport where 2.39 inches of rain fell in about two hours. Precise records of precipitation intensities are not available as the nearest automatic recording rain gage (located in San Jacinto) was on the fringe of the storm.

An isohyetal map for the storm is shown on Page 2-9. Due to the lack of data southerly of Hemet precision of the isohyets in this area is conjectural; however, according to the Riverside County Flood Control and Water Conservation District the map does provide a general picture of the storm's intense and local nature.

Because of the relatively short duration of the storm, and limited areal extent, damage due to runoff was light. Flooding of streets and intersections was common, however, throughout the Hemet, San Jacinto, and Valle Vista areas, especially in the vicinity of Ryan Field (the storm center) where the runways were also flooded.[3]



LEGEND

.40 - District precipitation station amount - inches

.20 - U.S. Forest Service Fire Season station amount - inches.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

ISOHYETAL MAP OF HEMET AREA STORM OF JULY 23, 1974

Approved — Chief Engineer R.E. No. 8822	Designed:	Sheet No.
Date:	Drawn:	of
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	Date Drawn:	

2.5.2 Flood Plain

Salt Creek, which drains about 130 square miles of area within Riverside County, California, is a tributary of the San Jacinto River. The headwaters of the Salt Creek Basin originate at the 4,500-foot elevation of the northwest slope of Red Mountain about 10 miles southeast of the City of Hemet.

This remote highland part of the basin presents a northwest exposure to moisture from the Pacific Ocean.

The climate in the area is characterized by hot summers with average maximum temperatures of about 100 degrees and moderate winters with average maximum temperatures of 64 degrees. Mean annual precipitation for the basin is about 13 inches. Runoff flows from brush-covered mountainous areas of the watershed to the alluvial valley floor. With the exception of the 1-mile reach upstream from Railroad Canyon Reservoir, the natural stream pattern has been partially obscured by agricultural practices. Ditches along access roads have relocated most of the natural drainage pattern. Drainage along most of the valley floor is poorly defined. Considerable storage exists in flat depression areas, which are principally devoted to production of barley and potatoes. The cultivation of flood plain areas increases the retentive capacity of the topsoil thereby providing some degree of protection against high rates of runoff from small storms.

Near the intersection of Olive Avenue and Lindenberger Road, about 3-1/2 miles west of Winchester, the runoff is concentrated into the narrow gap between the ridge along Lindenberger Road and the hills west of Menifee Road. Downstream from the narrow gap low flows of Salt Creek are confined to shallow ditches that parallel Lindenberger Road and Newport Road to Highway I15E. Large overland flows from major storms inundate the low valley swales, which are presently devoted to agriculture, and much of the valley floor. A series of 48-inch diameter culverts convey low

flows across Highway I15E to the west; however, sheet overflow over the highway pavement has occurred during major storms in the past. The California Division of Highways has developed plans for improving the section of Highway I15E across the Menifee Valley which include a bridge over the Salt Creek flood channel.

Under present conditions of largely agricultural land use, the natural watercourses have been virtually obliterated and extensive flooding has occurred in the Salt Creek flood plain.

Most of the Salt Creek flood plain is presently devoted to agriculture consisting of small farms producing barley, hay, carrots, potatoes, alfalfa, and related field crops and some poultry production. A few lots are covered by dense growth of mature eucalyptus trees. The present highest economic land use in the Salt Creek basin is single family residential development. Urban development is expanding at two locations, Sun City and the Hemet area. Sun City lies north of Salt Creek and west of Highway I-15E and therefore falls outside the project area. The second location of expanding urban development is in the Hemet area south of Stetson Avenue and west of State Street.

From the standpoint of runoff records, the Salt Creek watershed can be considered an ungaged basin. The only stream-gaging station within the basin is located downstream from Newport Road. This station was established in 1954 by the Riverside County Flood Control and Water Conservation District.

2.5.3 Downstream Flooding Problems

Salt Creek Channel immediately downstream of Highway I15E has been improved to the dimensions necessary to accept the design flow of the proposed project. Further downstream, a portion of the Channel has not been fully improved

to the ultimate width, but has been bonded for this improvement. Full improvement is expected to be accomplished by 1979.

From approximately 1.4 miles west of Highway I-15E Salt Creek flows in its natural stream bed. During periods of high runoff (i.e. 1969) Salt Creek flow rises above the stream bed and spreads over the flood plain but eventually discharges into Railroad Canyon Reservoir. Since no bridges exist over the creek, streets crossing at grade such as Newport and Railroad Canyon Roads are subject to flooding. Salt Creek floodflows in February 1969, estimated at 2,010 cubic feet per second at the streamgage, washed out a section of the Railroad Canyon Road. See photographs.

There are no existing bridges across Salt Creek, only a few low capacity culverts, which are insignificant with respect to conveying major floodflows through road embankments. Downstream areas benefit temporarily from the ponding of water upstream of obstructing embankments because outflow quantities are reduced to discharge capacities of the culverts. The 100 year floodflows will overflow the roadway embankments at Winchester Road. At Highway I-15E a bridge will soon be constructed which is designed to pass the 100 year flood.

During a 100 year flood the average maximum velocity of flow in the valley swales would range from 2 to 3 feet per second; in the Hemet Channel the velocity would range from 5 to 6 feet per second. Floodflows with velocities of 2 feet per second or less would deposit debris and silt. Water flowing at velocities ranging from 5 to 10 feet per second could erode earth embankments of roads that obstruct floodflows. Velocities in excess of 10 feet per second would cause severe erosion to excavated channels in sandy soils.

2.6 SOCIO-ECONOMIC CHARACTERISTICS OF THE PROJECT AREA

Population Profile

Over the past several decades, the Hemet-San Jacinto region has established itself as a center for retiree living. The region is not characterized by concentrated "retirement communities," as such, but rather the growth has been "unstructured," exhibiting a general community interest insofar as the life style of the retiree is concerned.

Population growth, since 1972, has been relatively steady, increasing at an average annual rate of about five percent per year (see Table 2). For purposes of this report, the relevant study area is defined as Riverside County Census Tracts 433, 434, 435, 436 and 437 in the Hemet-San Jacinto Division and the unincorporated portion of Census Tract 427.01 in the Perris Valley Division. The population of this area was 46,328 in January, 1972 and grew by approximately 13,000 persons, reaching an estimated 59,100 persons in January 1977. The recent growth rate for population is somewhat less than that experienced in the Hemet-San Jacinto area during the 1960's.

When analyzing the socio-economic characteristics of the study area, it is important to recognize the unique demographic character of the people in Hemet. While the median age of people living in the Hemet-San Jacinto Division is 49 years, the median age of the residents in the City of Hemet is 64 years. By way of contrast, the median age in the City of Riverside is 26 years. Thus, the community orientation in the City of Hemet reflects the dominance of the City retiree.

The unique demographic character of the Hemet-San Jacinto region is further illustrated by the typical family size. As of January, 1976 the average family size in the study area was 2.2 persons, while the City of Hemet averaged 1.9 persons per household. The City of Riverside, on the other hand, registered an average family size of 3.0 persons per household unit.

Table 2

POPULATION TRENDS: HEMET-SAN JACINTO DISTRICT

Census Tract		Jan. 1972	1973	1974	1975	1976
433*	Hemet City	2,347	3,354	3,504	4,012	4,499
	Unincorp.	8,967	9,362	9,714	10,313	10,773
434*	Hemet City	11,658	12,835	12,838	13,113	13,629
435*	Hemet City	248	251	466	821	1,264
	Unincorp.	7,471	7,182	7,191	7,226	7,239
435	San Jacinto	658	839	815	815	814
436	San Jacinto	4,206	4,519	4,297	4,335	4,415
437	Unincorp.	3,625	3,850	3,767	3,906	3,916
427.01	Unincorp.	7,148	8,774	8,849	9,495	9,668
	TOTALS	46,328	50,966	51,441	55,036	56,217

SOURCE: County of Riverside, Department of Planning, City of Hemet, City of San Jacinto and Urbanomics Research Associates.

*Note: The Hemet City figures in Census Tracts 433, 434, and 435 represent projections from the 1970 Census and include the entire population within the city limits. The total of 19,392 for 1976 is slightly higher than the March, 1977 special Census which indicates a City population of 19,237.

The younger families with more numerous family members tend to be located in the surrounding unincorporated areas of Hemet and San Jacinto. The older, less mobile individual is more dependent upon ready access to medical care facilities, shopping centers and public transportation, thus illustrating further the general socio-economic character of the City of Hemet.

Housing Profile

Many factors have contributed to the emergence of the Hemet-San Jacinto area as a retiree center. One factor is the availability of modestly priced housing. In times of rapid inflation, many older couples and individuals find that limited or fixed budgets force them to seek modestly-priced living quarters as a means of maintaining a reasonable standard of living. To this end, many have found that the modern mobile home fills their housing needs. Thus, the mobile home has become an important element of the Hemet-San Jacinto housing profile.

By 1976, the number of households in the Hemet-San Jacinto Division, living in mobile homes, had grown to 6,665. This represents 31.7 percent of all occupied dwelling units in the area. In addition, another 878 (4.1%) mobile homes were used as second or week-end homes. Thus, mobile homes comprise over one-third of the available housing stock of the Hemet-San Jacinto study area. The specific housing profile, as of January, 1976 is shown in Table 3.

As can be seen in Table 3, the greatest number of households occupy single-family dwelling units. However, the pattern of change shows that an increasing number of residents in the City of Hemet are occupying mobile homes and apartments. The recent increase in housing costs have forced many households into the less expensive mobile homes.

Table 3

HOUSING PROFILE OF THE CITY OF HEMET

1970 and 1976

	1970		1976	
	Number of Units	Percent	Number of Units	Percent
Single Family	3,228	52.9%	4,633	46.0%
Duplex	272	4.5	382	3.8
Apartments	676	11.1	1,554	15.4
Mobile Homes	1,925	31.5	3,506	34.8
TOTALS	6,101	100.0%	10,075	100.0%

SOURCE: City of Hemet, Department of Community Development, Urbanomics Research Associates.

An examination of recent building permit activity confirms the observation that there has been a significant increase in new home construction costs in the Hemet area. Total annual residential construction permits have been, generally, around the 700 unit mark since 1974. The pattern of housing-type has shown a gradual change over this period. The number of new single-family residences has been on the decline, while there has been a corresponding increase in the construction of duplex and multiple family residences. While the single-family home remains dominant in the housing base, the statistical data indicate the gradual emergence of multi-family housing as an element of growing importance in new residential construction.

Although the total number of new units constructed has remained fairly stable, there has been a significant increase in the valuation of new permits. In 1974, building permits issued for residential construction activities (single-family, duplex, apartments and mobile home set-ups) were valued at $4,551,155. Building permit valuations have increased steadily at an annual rate averaging almost 45 percent since then. Annualized data for the first quarter of 1977 indicate that permit valuation for new residential construction will reach an estimated total of $13,091,600, an increase of almost three times since 1974. This shows the striking increase in new housing construction costs since 1974. See table 4.

The significant increase in new housing valuations illustrate the impact on those persons with limited or fixed household budgets. The recent gradual shift in the type of residential units constructed further indicates that new residents to the Hemet-San Jacinto area are seeking more modestly priced housing as a means of coping with the impact of inflation.

Employment

In general, employment opportunities in the Hemet/San Jacinto area are in retail trade and services that support the growing retirement community. Manufacturing, especially the mobile home and recreational vehicle industry, also plays an important role in providing opportunities for employment. A large number of persons are employed in the local school systems.

Table 4

BUILDING PERMIT ACTIVITY

CITY OF HEMET

Number of Units	1974	1975	1976	1977[1]
Single Family	189	335	299	50
Duplex	8	-0-	44	26
Apartments	28	49	63	39
Mobile Home (Spaces)	541	274	308	49
Mobile Home (Set-Ups)				62
Total Units	766	658	714	177
Total Valuation	$4,551,155	$6,941,141	$9,543,005	$3,272,902

[1]Jan.-March, 1977

City of Hemet, Department of Community Development

A non-agricultural employment profile for Hemet-San Jacinto is shown in Table 5. Major employers are shown in Table 6.

Agriculture, in the Hemet Valley, is a significant industry in terms of crop value (over $7,000,000 annually), however it has relatively little impact on the employment base of the area. Major crop production is centered around wheat (4,000 acres), Barley (3,000 acres), oats (1,500 acres) and alfalfa (1,000 acres). Potatoes is a major crop in dollar terms, with 2,600 acres under cultivation, yielding a crop value of $3,900,000 in 1976.

It is estimated that the total employed labor force of the Hemet-San Jacinto region numbers approximately 13,000 persons. Of this total, approximately 7.2 percent, or 900 persons, are employed in the construction industry.

Family Incomes

As might be expected with a large segment of retiree households, the family income levels in the Hemet-San Jacinto are of rather modest proportions. In 1970, the median household income in the Hemet area was $5,947. This compares with median household income of $8,875 for the City of Riverside urban area. Median household income for San Jacinto was $5,747, slightly lower than Hemet. For all households combined in the Hemet-San Jacinto area, 1970 median income was $5,912.

It is estimated that household incomes have risen at six percent annually, since 1970. Thus, the median household income for the Hemet-San Jacinto area is approximately $8,890 in 1977 dollars compared to an estimated $13,344 for the Riverside area.

Table 5

PROFILE OF NON-AGRICULTURAL EMPLOYMENT

IN THE HEMET-SAN JACINTO LABOR MARKET - 1970

	Percent
Construction	7.2%
Manufacturing	14.5
Transportation, Communication & Utilities	6.7
Retail Trade	19.7
Wholesale Trade	3.3
Finance, Real Estate & Insurance	4.3
Services	22.4
Education, Public Administration	11.7
Other (Includes Agriculture)	10.2
	100.0%

SOURCE: Riverside County Department of Development

Table 6

MAJOR EMPLOYERS IN THE HEMET-SAN JACINTO STUDY AREA

Manufacturing	Number of Employees
Skyline Corp.	415
Hemet Casting Co.	145
Rama Corp.	56
Golden West Mobile Homes, Inc.	50
Zieman Manufacturing Co.	45
Imperial Fabrics and Decor	28
Non-Manufacturing	
Hemet Valley Hospital Dist.	525
Hemet Unified School Dist.	250
Agri-Empire	200
Mt. San Jacinto Jr. College	170
Massacre Canyon Inn	100

SOURCE: Riverside County Department of Development

3.0 Environmental Setting, Environmental Impacts and Mitigation Measures

3.0 ENVIRONMENTAL SETTING, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Each of the sub-topics in this section will discuss, if applicable, (1) The Environmental Setting, (2) Environmental Impacts including beneficial impacts, significant unavoidable adverse impacts, significant irreversible impacts, short term uses vs. long term productivity, growth inducement, and significant cumulative effects, (3) Mitigation Measures.

3.1 Land Resources

3.1 LAND RESOURCES

3.1.1 Environmental Setting

3.1.1.1 Physical Geography and Topography

The study area encompassing the Salt Creek 100 year flood limit upstream of Highway I15E and including the Hemet Area Master Drainage Plan is shown on map 1. The area consists of a broad alluvial plain ranging in elevation from 1410 near Highway I15E to elevation 1920 at the southeast corner of the study area. This alluvial plain is disrupted only by a few low hills or knob-like features formed by the granite bedrocks which rise above the plain, for heights between 20 and 180 feet.

An existing unlined storm channel extends westerly from Hemet to California Avenue, west of the San Diego Aqueduct. The channel then becomes the original meandering stream course of Salt Creek.

The concrete lined San Diego aqueduct channel extends in a north-south direction across the middle of the study area, between Winchester and Hemet.

3.1.1.2 Geology and Soils Characteristics (See map 10)

The valley alluvium which essentially underlies the entire study area consists of unconsolidated silt and sand with local clay-rich areas. These sediments have been derived from outwash from the surrounding hills, Salt Creek tributary valleys to the south and past out-flows from Bautista Canyon beyond the southeast corner of the Hemet

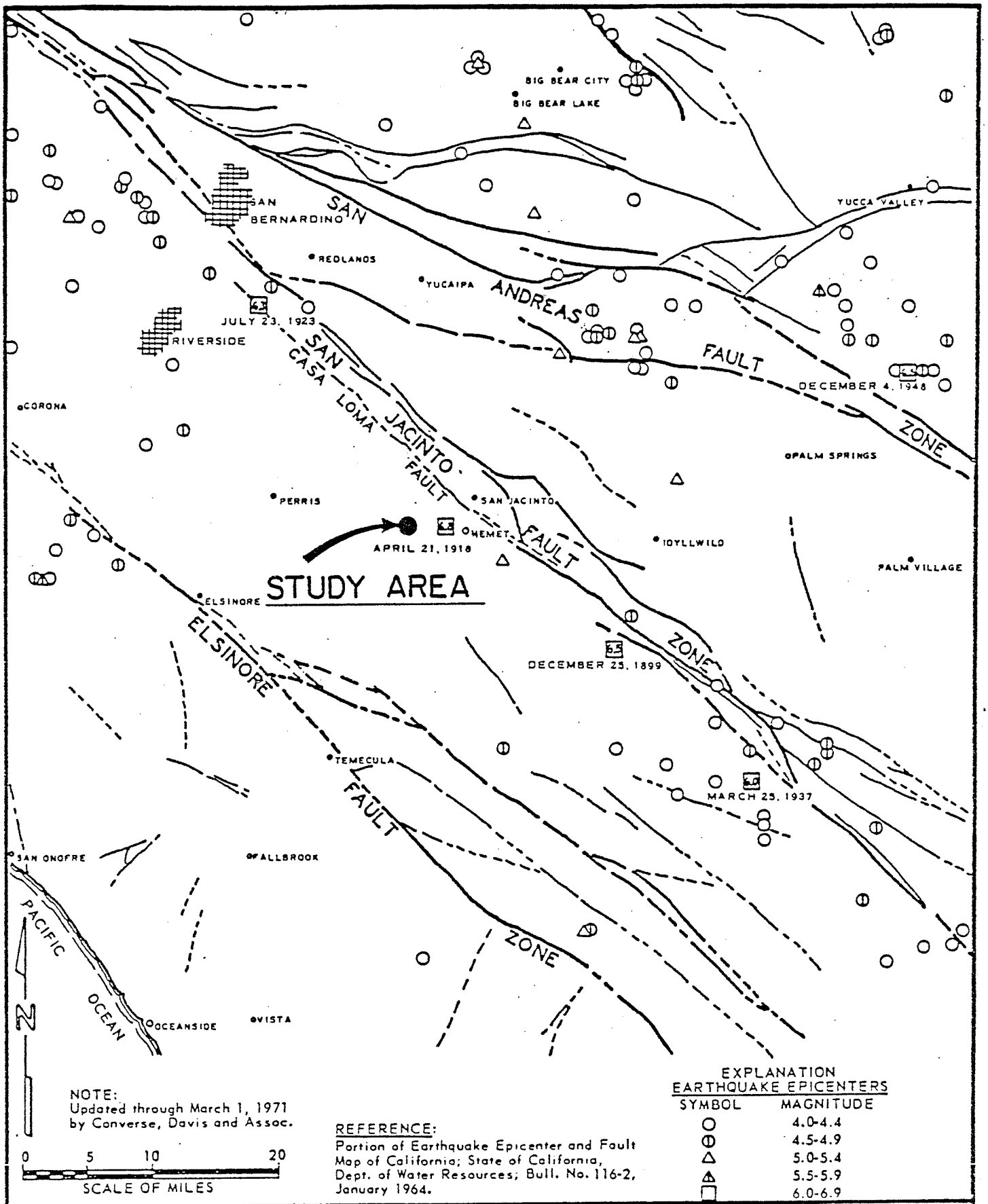
Area Master Drainage Plan. Water Well Drillers' logs and seismic refraction work west of the Casa Loma Fault (east boundary of study area) indicate the bedrock at a depth of about 500 feet.

The bedrock which forms the surrounding hills as well as the few small isolated hills or knobs within the study area, consists chiefly of granite. These rocks are dominantly of intrusive igneous origin or formed by the solidification of molten rock deep within the earth and later uplifted to the surface and its present position. Some of the other varieties of igneous and metamorphic rocks found in the area are; quartz monzonite, quartz diorite, granodiorite, biotite schist, gneiss and marine metasedimentary rocks.

Soil materials present throughout the study area represent the upper alluvial sediments which have undergone additional weathering. Some wind blown silts may also be represented in the soil. It is reported (Fett, personal communication 1977) that local subsidence has occurred in the San Jacinto area due to collapsible soils. Settlements between three and eighteen inches have been recorded. In other portions of the study area clay-rich soils create expansive soil problems.

3.1.1.3 Seismicity

The geologic structure of the entire Southern California area is dominated mainly by the northwest trending faults associated with the right-lateral San Andreas system. Faults such as the Elsinore, the San Jacinto, and the San Andreas are the major faults in this system, see Figure 1. They are also known to be seismically active and the San



EARTHQUAKE EPICENTER AND FAULT MAP

Figure No. 1

APPROVED FOR PUBLICATION _____ BY _____

Andreas and San Jacinto are known to have ruptured the ground surface in historic times. The location of earthquake epicenters larger than Magnitude 4.0 are also shown on Figure 1.

The San Jacinto fault, a major branch of the San Andreas fault system, has repeatedly produced disastrous earthquakes in Southern California. Destructive or potentially destructive earthquakes centered near San Jacinto and Hemet were felt in 1899 (6.5 Magnitude) and 1918 (6.8 Magnitude). In 1923 an earthquake with a magnitude of 6.3 occurred along the San Jacinto fault and its subsidiary faults. Ground breakage has occurred during at least some of these events.

The Elsinore and associated faults located south of the study area are also seismically active though no ground breakage has ever been observed.

Magnitudes recorded from earthquakes generated along this fault system are considerably less than those of the San Jacinto fault; however, the Elsinore fault is capable of producing a 6.5 magnitude earthquake.

The study area is located immediately west of an active trace of the San Jacinto fault. This particular trace is known as the Casa Loma fault. The trace east of the site is buried with a northeast-facing eroded scarp associated with the fault trace. Park Hill at the east end of the area is bounded on the northeast and southwest by elements of the Casa Loma fault (Sharp, 1972). Several miles southeast of the area are several depressions and evidence of extensive earthquake activated landslides. These features, in part, are a result

of the 1899 earthquake centered south of the San Jacinto Valley. North of the study area are additional fault features that are associated with recent faulting along various traces of the San Jacinto fault. Park Hill is an uplifted block (horst) bounded by concealed faults on the northeast and southwest side of the hill. Northeast-facing low scarps in the alluvium have been mapped southwest of Park Hill and are associated with recent movement along the Casa Loma fault.

No fault traces are known to exist or trend into the immediate study area. This data is based on geologic mapping by others and from this particular investigation. The faults described above are considered close enough to the site to cause considerable structural damage from shaking in the event of a major earthquake along the faults. Ground rupture, as a result of tectonism, is remote. Rupture is most likely to occur along the most recently active break of this or any active fault.

Landsliding within the study area due to earthquake shaking was considered remote. Though there are many rock outcrops in the hills above the area, it is unlikely any disruption would extend into the study area in the event of a nearby large magnitude earthquake.

3.1.1.4 Mineral Resources

No commercial mining operations, including sand and gravel quarries are known to be present within the study area. There are, however, several mining operations in the bedrock areas around the perimeter of the valley area. Sand and gravel would be the only potential mineral resource within the study area and due to the fine grained nature of the sediments, it is doubtful there is any source of commercial value.

3.1.2 Environmental Impacts

The construction of the proposed drainage facilities would have no significant adverse impact on geology, topography, seismicity, mineral resources or natural scenic features but might have certain beneficial impacts as follows:

(a) Beneficial Impacts

The proposed drainage facilities would help eliminate sediment deposition in farmland areas and the loss of top soil by erosion. Drainage control might eliminate hydroconsolidation and collapse of soils from saturation, and could minimize flooding resulting from broken mains or damaged canals caused by earthquakes.

3.1.3 Mitigation Measures

(None considered necessary)

3.2 Water Resources

3.2 WATER RESOURCES

3.2.1 Environmental Setting

3.2.1.1 Drainage (Surface Water)

Only in recent years has there arisen a need for flood control facilities in the Salt Creek Basin. Moderate ponding of water during the winter was often beneficial to crops; therefore, agricultural land use was compatible with the natural flood situation.

The Hemet Channel, completed in 1970, conveys runoff from the residential area of a portion of Hemet along the Atchison, Topeka and Santa Fe Railroad to an area south of the community of Winchester near Patterson Avenue and Olive Avenue. The Hemet Channel design capacity is about 2,600 cubic feet per second down to Cawston Avenue. Downstream from this point, the present capacity of the temporary channel continually diminishes.

The broad, flat valleys of the Salt Creek Basin are especially subject to extensive ponding. Man made embankments, natural topographic features, and agricultural variations affect flooding. (See Map 6 following Page 2-8)

Several man made embankments influence flooding significantly. Winchester Road and U.S. Highway I15E, the two major highways crossing the Salt Creek Basin, were built on earth fill to elevate the roadways above the flood plain. The Atchison, Topeka and Santa Fe Railroad is also elevated above the flood plain.

Existing culverts through these embankments are too small to be of any significance in preventing overflow during major floods. The new bridge to be constructed on I-15E will alleviate the problem at this particular point.

The San Diego Aqueduct bisects the Salt Creek Basin. Earth excavated from the canal was deposited on the

sides of the canal to form embankments, which are elevated above the valley floor. Siphons convey the aqueduct water beneath the railroad and the roadways at Simpson Avenue and Olive Avenue. Floodflows obstructed by the canal spoil embankments are diverted through the three openings provided at the siphons.

Floodflows are contracted by the natural gap between the hills where Salt Creek crosses Lindenberger Road.

Documentation of floods prior to 1952 in the Salt Creek Basin is lacking; however, it is probable that the Salt Creek Basin experienced flooding during those storms that caused flooding on the nearby San Jacinto River. The storms of February 1927, January 1916, March 1938, and February 1937, in that order of magnitude were the greatest recorded storms in the San Jacinto River Basin and probably caused the greatest flooding in the Salt Creek Basin.[4]

The winter flood in 1952 occurred just before the construction of the U.S. Highway I15E embankment across the Salt Creek flood plain. Floodwaters formed a large lake covering agricultural lands in the Menifee Valley. Erosion of soil and deposition of debris on cropland were the most serious damages.

Following the heavy rains in January 1969, the February rains fell upon saturated ground. A large lake was formed again in the Menifee Valley. Because of the U.S. Highway I15E embankment, depths of flooding in 1969 were greater than depths of flooding in 1952. Overland flow (from a tributary stream approaching from the south) caused severe erosion as the water dropped into the improved Salt Creek Channel just west of Highway I-15E. Floodwaters eroded several roads including

Railroad Canyon Road, Lindenberger Road and the Atchison, Topeka and Santa Fe Railroad near California Avenue. In 1969 the land use in the Salt Creek Basin was largely agricultural; therefore, most of the flood damages were sustained by croplands and irrigation facilities.

The amount and extent of damage caused by any flood depends on the topography of the area flooded, depth and duration of flooding, velocity of flow, rate of rise, and developments in the flood plain. A 100 year flood on Salt Creek would result in inundation of agricultural and residential areas in the vicinities of Hemet, Winchester and Sun City. Deep floodwater flowing at high velocity and carrying floating debris would create conditions hazardous to persons and to vehicles attempting to cross flooded areas. In general, floodwater moving at 3 or more feet per second easily sweeps a person off his feet, thus creating a definite danger of injury or of drowning.[4] Rapidly rising and swiftly flowing floodwater may trap persons in homes or in vehicles that may ultimately be submerged. The force of floodwaters could damage sanitary sewers and contaminate domestic water supplies. Isolation of areas by floodwater could create hazards in terms of medical, fire, or law enforcement emergencies.

Runoff from the mountain slopes would flow from St. Johns Canyon and Cactus Valley across State Street. Runoff from the San Jacinto Valley part of the watershed would flow west into the Hemet Channel. The natural floodway between Sanderson